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<150> PCT/US2020/035591
<151> 2020-06-01

<150> 62/854,865
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aggcatccgc cagggctacg gcctgacaga aacaaccagc gccattctga tcacccccga 8640

aggggacgac aagcctggcg cagtaggcaa ggtggtgccc ttcttcgagg ctaaggtggt 8700

ggacttggac accggtaaga cactgggtgt gaaccagcgc ggcgagctgt gcgtccgtgg 8760

ccccatgatc atgagcggct acgttaacaa ccccgaggct acaaacgctc tcatcgacaa 8820

ggacggctgg ctgcacagcg gcgacatcgc ctactgggac gaggacgagc acttcttcat 8880

cgtggaccgg ctgaagagcc tgatcaaata caagggctac caggtagccc cagccgaact 8940

ggagagcatc ctgctgcaac accccaacat cttcgacgcc ggggtcgccg gcctgcccga 9000

cgacgatgcc ggcgagctgc ccgccgcagt cgtcgtgctg gaacacggta aaaccatgac 9060

cgagaaggag atcgtggact atgtggccag ccaggttaca accgccaaga agctgcgcgg 9120

tggtgttgtg ttcgtggacg aggtgcctaa aggactgacc ggcaagttgg acgcccgcaa 9180

gatccgcgag attctcatta aggccaagaa gggcggcaag atcgccgtgt aattcgaacg 9240

gccgtatcac gcccaaacat ttacagccgc ggtgtcaaaa accgcgtgga cgtggttaac 9300

atccctgctg ggaggatcag ccgtaattat tataattggc ttggtgctgg ctactattgt 9360

ggccatgtac gtgctgacca accagaaaca taattgaata cagcagcaat tggcaagctg 9420

cttacataga actcgcggcg attggcatgc cgccttaaaa tttttatttt atttttttctt 9480

ttcttttccg aatcggattt tgtttttaat atttcaaaaa aaaaaaaaaa aaaaaaaaaa 9540

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaa 9595

<210> 16
<211> 139
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 16
Pro Ser Ser Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys
1 5 10 15

Arg Ala Ser Gln Ser Ile Asn Ser Tyr Leu Asp Trp Tyr Gln Gln Lys
20 25 30

Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr Ala Ala Ser Ser Leu Gln
35 40 45

Ser Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
50 55 60

Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr
65 70 75 80

Cys Gln Gln Tyr Tyr Ser Thr Pro Phe Thr Phe Gly Pro Gly Thr Lys

85 90 95

Val Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro
100 105 110

Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu
115 120 125

Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val
130 135

<210> 17
<211> 167
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 17
Gly Val Val Gln Pro Gly Arg Ser Leu Arg Leu Ser Cys Ala Ala Ser
1 5 10 15

Gly Phe Thr Phe Ser Ser Tyr Gly Met His Trp Val Arg Gln Ala Pro
20 25 30

Gly Lys Gly Leu Glu Trp Val Ala Val Ile Trp Tyr Asp Gly Ser Asn
35 40 45

Lys Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
50 55 60

Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu
65 70 75 80

Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Pro Arg Gly Ala Thr Leu
85 90 95

Tyr Tyr Tyr Tyr Tyr Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val
100 105 110

Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala
115 120 125

Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu
130 135 140

Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly
145 150 155 160

Ala Leu Thr Ser Gly Val His
165

<210> 18
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 18
Gly Phe Thr Phe Ser Ser Tyr Gly Met His
1 5 10

<210> 19
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 19
Val Ile Trp Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val
1 5 10 15

<210> 20
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 20
Asp Pro Arg Gly Ala Thr Leu Tyr Tyr Tyr Tyr Tyr Gly Met Asp Val
1 5 10 15

<210> 21
<211> 11
<212> PRT

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 21
Arg Ala Ser Gln Ser Ile Asn Ser Tyr Leu Asp
1 5 10

<210> 22
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 22
Ala Ala Ser Ser Leu Gln Ser
1 5

<210> 23
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 23
Gln Gln Tyr Tyr Ser Thr Pro Phe Thr
1 5

<210> 24
<211> 108
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 24
Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly
1 5 10 15

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Arg Val Ser Ser Ser
20 25 30

```
Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
        35                  40                  45

Ile Tyr Asp Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser
    50                  55                  60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu
65                  70                  75                  80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Ser Leu Pro
                85                  90                  95

Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100                 105
```

<210> 25
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 25

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Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1               5                   10                  15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Arg Tyr
            20                  25                  30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35                  40                  45

Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val
    50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65                  70                  75                  80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Glu Gly Gly Trp Phe Gly Glu Leu Ala Phe Asp Tyr Trp Gly
            100                 105                 110
```

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 26
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 26
Arg Tyr Trp Met Ser
1 5

<210> 27
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 27
Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val Lys
1 5 10 15

Gly

<210> 28
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 28
Glu Gly Gly Trp Phe Gly Glu Leu Ala Phe Asp Tyr
1 5 10

<210> 29
<211> 12
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
peptide

<400> 29
Arg Ala Ser Gln Arg Val Ser Ser Ser Tyr Leu Ala
1 5 10

<210> 30
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 30
Asp Ala Ser Ser Arg Ala Thr
1 5

<210> 31
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 31
Gln Gln Tyr Gly Ser Leu Pro Trp Thr
1 5

<210> 32
<211> 2019
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 32
gcccgggcat ttaaatgcga tcgcatcgat tacgactcta gaatagtcta gtccgcaggc 60

caccatgcag atcttcgtga agaccctgac cggcaagacc atcaccctag aggtggagcc 120

cagtgacacc atcgagaacg tgaaggccaa gatccaggat aaagagggca tccccccctga 180

ccagcagagg ctgatctttg ccggcaagca gctggaagat ggccgcaccc tctctgatta 240

caacatccag aaggagtcaa ccctgcacct ggtccttcgc ctgagaggtg ccatgtttca 300

ggcgctgagc gaaggctgca ccccgtatga tattaaccag atgctgaacg tgctgggcga 360

tcatcaggtc tcaggccttg agcagcttga gagtataatc aactttgaaa aactgactga 420

atggaccagt tctaatgtta tgcctatcct gtctcctctg acaaagggca tcctgggctt 480

cgtgtttacc ctgaccgtgc cttctgagag aggacttagc tgcattagcg aagcggatgc 540

gaccaccccg gaaagcgcga acctgggcga agaaattctg agccagctgt atctttggcc 600

aagggtgacc taccattccc ctagttatgc ttaccaccaa tttgaaagac gagccaaata 660

taaaagacac ttccccggct ttggccagag cctgctgttt ggctaccctg tgtacgtgtt 720

cggcgattgc gtgcagggcg attgggatgc gattcgcttt cgctattgcg cgccgccggg 780

ctatgcgctg ctgcgctgca acgataccaa ctatagcgct ctgctggctg tgggggccct 840

agaaggaccc aggaatcagg actggcttgg tgtcccaaga caacttgtaa ctcggatgca 900

ggctattcag aatgccggcc tgtgtaccct ggtggccatg ctggaagaga caatcttctg 960

gctgcaagcg tttctgatgg cgctgaccga tagcggcccg aaaaccaaca ttattgtgga 1020

tagccagtat gtgatgggca ttagcaaacc gagctttcag gaatttgtgg attgggaaaa 1080

cgtgagcccg gaactgaaca gcaccgatca gccgttttgg caagccggaa tcctggccag 1140

aaatctggtg cctatggtgg ccacagtgca gggccagaac ctgaagtacc agggtcagtc 1200

actagtcatc tctgcttcta tcattgtctt caacctgctg gaactggaag gtgattatcg 1260

agatgatggc aacgtgtggg tgcatacccc gctgagcccg cgcaccctga acgcgtgggt 1320

gaaagcggtg gaagaaaaaa aaggtattcc agttcaccta gagctggcca gtatgaccaa 1380

catggagctc atgagcagta ttgtgcatca gcaggtcaga acatacggcc ccgtgttcat 1440

gtgtctcggc ggactgctta caatggtggc tggtgctgtg tggctgacag tgcgagtgct 1500

cgagctgttc cgggccgcgc agctggccaa cgacgtggtc ctccagatca tggagctttg 1560

tggtgcagcg tttcgccagg tgtgccatac caccgtgccg tggccgaacg cgagcctgac 1620

cccgaaatgg aacaacgaaa ccacccagcc ccagatcgcc aactgcagcg tgtatgactt 1680

ttttgtgtgg ctccattatt attctgttcg agacacactt tggccaaggg tgacctacca 1740

tatgaacaaa tatgcgtatc atatgctgga aagacgagcc aaatataaaa gaggaccagg 1800

acctggcgct aaatttgtgg ccgcctggac actgaaagcc gctgctggtc ctggacctgg 1860

ccagtacatc aaggccaaca gcaagttcat cggcatcacc gaactcggac ccggaccagg 1920

ctgatgattt cgaaatttaa ataagcttgc ggccgctagg gataacaggg taattatcac 1980

gcccaaacat ttacagccgc ggtgtcaaaa accgcgtgg 2019

<210> 33
<211> 619
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 33
Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
50 55 60

Ser Thr Leu His Leu Val Leu Arg Leu Arg Gly Ala Met Phe Gln Ala
65 70 75 80

Leu Ser Glu Gly Cys Thr Pro Tyr Asp Ile Asn Gln Met Leu Asn Val
85 90 95

Leu Gly Asp His Gln Val Ser Gly Leu Glu Gln Leu Glu Ser Ile Ile
100 105 110

Asn Phe Glu Lys Leu Thr Glu Trp Thr Ser Ser Asn Val Met Pro Ile
115 120 125

Leu Ser Pro Leu Thr Lys Gly Ile Leu Gly Phe Val Phe Thr Leu Thr
130 135 140

Val Pro Ser Glu Arg Gly Leu Ser Cys Ile Ser Glu Ala Asp Ala Thr
145 150 155 160

Thr Pro Glu Ser Ala Asn Leu Gly Glu Glu Ile Leu Ser Gln Leu Tyr
165 170 175

Leu Trp Pro Arg Val Thr Tyr His Ser Pro Ser Tyr Ala Tyr His Gln
180 185 190

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Phe Glu Arg Arg Ala Lys Tyr Lys Arg His Phe Pro Gly Phe Gly Gln
        195                 200                 205

Ser Leu Leu Phe Gly Tyr Pro Val Tyr Val Phe Gly Asp Cys Val Gln
    210                 215                 220

Gly Asp Trp Asp Ala Ile Arg Phe Arg Tyr Cys Ala Pro Pro Gly Tyr
225                 230                 235                 240

Ala Leu Leu Arg Cys Asn Asp Thr Asn Tyr Ser Ala Leu Leu Ala Val
                245                 250                 255

Gly Ala Leu Glu Gly Pro Arg Asn Gln Asp Trp Leu Gly Val Pro Arg
            260                 265                 270

Gln Leu Val Thr Arg Met Gln Ala Ile Gln Asn Ala Gly Leu Cys Thr
        275                 280                 285

Leu Val Ala Met Leu Glu Glu Thr Ile Phe Trp Leu Gln Ala Phe Leu
    290                 295                 300

Met Ala Leu Thr Asp Ser Gly Pro Lys Thr Asn Ile Ile Val Asp Ser
305                 310                 315                 320

Gln Tyr Val Met Gly Ile Ser Lys Pro Ser Phe Gln Glu Phe Val Asp
                325                 330                 335

Trp Glu Asn Val Ser Pro Glu Leu Asn Ser Thr Asp Gln Pro Phe Trp
            340                 345                 350

Gln Ala Gly Ile Leu Ala Arg Asn Leu Val Pro Met Val Ala Thr Val
        355                 360                 365

Gln Gly Gln Asn Leu Lys Tyr Gln Gly Gln Ser Leu Val Ile Ser Ala
    370                 375                 380

Ser Ile Ile Val Phe Asn Leu Leu Glu Leu Glu Gly Asp Tyr Arg Asp
385                 390                 395                 400

Asp Gly Asn Val Trp Val His Thr Pro Leu Ser Pro Arg Thr Leu Asn
                405                 410                 415
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Ala Trp Val Lys Ala Val Glu Glu Lys Lys Gly Ile Pro Val His Leu
            420                 425                 430

Glu Leu Ala Ser Met Thr Asn Met Glu Leu Met Ser Ser Ile Val His
        435                 440                 445

Gln Gln Val Arg Thr Tyr Gly Pro Val Phe Met Cys Leu Gly Gly Leu
    450                 455                 460

Leu Thr Met Val Ala Gly Ala Val Trp Leu Thr Val Arg Val Leu Glu
465                 470                 475                 480

Leu Phe Arg Ala Ala Gln Leu Ala Asn Asp Val Val Leu Gln Ile Met
                485                 490                 495

Glu Leu Cys Gly Ala Ala Phe Arg Gln Val Cys His Thr Thr Val Pro
            500                 505                 510

Trp Pro Asn Ala Ser Leu Thr Pro Lys Trp Asn Asn Glu Thr Thr Gln
        515                 520                 525

Pro Gln Ile Ala Asn Cys Ser Val Tyr Asp Phe Phe Val Trp Leu His
    530                 535                 540

Tyr Tyr Ser Val Arg Asp Thr Leu Trp Pro Arg Val Thr Tyr His Met
545                 550                 555                 560

Asn Lys Tyr Ala Tyr His Met Leu Glu Arg Arg Ala Lys Tyr Lys Arg
                565                 570                 575

Gly Pro Gly Pro Gly Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala
            580                 585                 590

Ala Ala Gly Pro Gly Pro Gly Gln Tyr Ile Lys Ala Asn Ser Lys Phe
        595                 600                 605

Ile Gly Ile Thr Glu Leu Gly Pro Gly Pro Gly
    610                 615
```

<210> 34
<211> 1638
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 34
atggccggga tgttccaggc actgtccgaa ggctgcacac cctatgatat taaccagatg 60

ctgaatgtcc tgggagacca ccaggtctct ggcctggagc agctggagag catcatcaac 120

ttcgagaagc tgaccgagtg gacaagctcc aatgtgatgc ctatcctgtc cccactgacc 180

aagggcatcc tgggcttcgt gtttaccctg acagtgcctt ctgagcgggg cctgtcttgc 240

atcagcgagg cagacgcaac cacaccagag tccgccaatc tgggcgagga gatcctgtct 300

cagctgtacc tgtggccccg ggtgacatat cactcccctt cttacgccta tcaccagttc 360

gagcggagag ccaagtacaa gagacacttc ccaggctttg gccagtctct gctgttcggc 420

taccccgtgt acgtgttcgg cgattgcgtg cagggcgact gggatgccat ccggtttaga 480

tactgcgcac cacctggata tgcactgctg aggtgtaacg acaccaatta ttccgccctg 540

ctggcagtgg gcgccctgga gggccctcgc aatcaggatt ggctgggcgt gccaaggcag 600

ctggtgacac gcatgcaggc catccagaac gcaggcctgt gcaccctggt ggcaatgctg 660

gaggagacaa tcttctggct gcaggccttt ctgatggccc tgaccgacag cggccccaag 720

acaaacatca tcgtggattc ccagtacgtg atgggcatct ccaagccttc tttccaggag 780

tttgtggact gggagaacgt gagcccagag ctgaattcca ccgatcagcc attctggcag 840

gcaggaatcc tggcaaggaa cctggtgcct atggtggcca cagtgcaggg ccagaatctg 900

aagtaccagg gccagagcct ggtcatcagc gcctccatca tcgtgtttaa cctgctggag 960

ctggagggcg actatcggga cgatggcaac gtgtgggtgc acaccccact gagccccaga 1020

acactgaacg cctgggtgaa ggccgtggag gagaagaagg gcatcccagt gcacctggag 1080

ctggcctcca tgaccaatat ggagctgatg tctagcatcg tgcaccagca ggtgaggaca 1140

tacggacccg tgttcatgtg cctgggaggc ctgctgacca tggtggcagg agccgtgtgg 1200

ctgacagtgc gggtgctgga gctgttcaga gccgcccagc tggccaacga tgtggtgctg 1260

cagatcatgg agctgtgcgg agcagccttt cgccaggtgt gccacaccac agtgccatgg 1320

cccaatgcct ccctgacccc caagtggaac aatgagacaa cacagcctca gatcgccaac 1380

tgtagcgtgt acgacttctt cgtgtggctg cactactata gcgtgaggga taccctgtgg 1440

ccccgcgtga cataccacat gaataagtac gcctatcaca tgctggagag gcgcgccaag 1500

tataagagag gccctggccc aggcgcaaag tttgtggcag catggaccct gaaggccgcc 1560

gccggccccg gccccggcca gtatatcaag gctaacagta agttcattgg aatcacagag 1620

ctgggacccg gacctgga 1638

<210> 35
<211> 546
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 35
Met Ala Gly Met Phe Gln Ala Leu Ser Glu Gly Cys Thr Pro Tyr Asp
1 5 10 15

Ile Asn Gln Met Leu Asn Val Leu Gly Asp His Gln Val Ser Gly Leu
20 25 30

Glu Gln Leu Glu Ser Ile Ile Asn Phe Glu Lys Leu Thr Glu Trp Thr
35 40 45

Ser Ser Asn Val Met Pro Ile Leu Ser Pro Leu Thr Lys Gly Ile Leu
50 55 60

Gly Phe Val Phe Thr Leu Thr Val Pro Ser Glu Arg Gly Leu Ser Cys
65 70 75 80

Ile Ser Glu Ala Asp Ala Thr Thr Pro Glu Ser Ala Asn Leu Gly Glu
85 90 95

Glu Ile Leu Ser Gln Leu Tyr Leu Trp Pro Arg Val Thr Tyr His Ser
100 105 110

Pro Ser Tyr Ala Tyr His Gln Phe Glu Arg Arg Ala Lys Tyr Lys Arg
115 120 125

His Phe Pro Gly Phe Gly Gln Ser Leu Leu Phe Gly Tyr Pro Val Tyr
130 135 140

Val Phe Gly Asp Cys Val Gln Gly Asp Trp Asp Ala Ile Arg Phe Arg
145 150 155 160

Tyr Cys Ala Pro Pro Gly Tyr Ala Leu Leu Arg Cys Asn Asp Thr Asn

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                165                 170                 175

Tyr Ser Ala Leu Leu Ala Val Gly Ala Leu Glu Gly Pro Arg Asn Gln
            180                 185                 190

Asp Trp Leu Gly Val Pro Arg Gln Leu Val Thr Arg Met Gln Ala Ile
        195                 200                 205

Gln Asn Ala Gly Leu Cys Thr Leu Val Ala Met Leu Glu Glu Thr Ile
    210                 215                 220

Phe Trp Leu Gln Ala Phe Leu Met Ala Leu Thr Asp Ser Gly Pro Lys
225                 230                 235                 240

Thr Asn Ile Ile Val Asp Ser Gln Tyr Val Met Gly Ile Ser Lys Pro
                245                 250                 255

Ser Phe Gln Glu Phe Val Asp Trp Glu Asn Val Ser Pro Glu Leu Asn
            260                 265                 270

Ser Thr Asp Gln Pro Phe Trp Gln Ala Gly Ile Leu Ala Arg Asn Leu
        275                 280                 285

Val Pro Met Val Ala Thr Val Gln Gly Gln Asn Leu Lys Tyr Gln Gly
    290                 295                 300

Gln Ser Leu Val Ile Ser Ala Ser Ile Ile Val Phe Asn Leu Leu Glu
305                 310                 315                 320

Leu Glu Gly Asp Tyr Arg Asp Asp Gly Asn Val Trp Val His Thr Pro
                325                 330                 335

Leu Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Ala Val Glu Glu Lys
            340                 345                 350

Lys Gly Ile Pro Val His Leu Glu Leu Ala Ser Met Thr Asn Met Glu
        355                 360                 365

Leu Met Ser Ser Ile Val His Gln Gln Val Arg Thr Tyr Gly Pro Val
    370                 375                 380

Phe Met Cys Leu Gly Gly Leu Leu Thr Met Val Ala Gly Ala Val Trp
385                 390                 395                 400
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```
Leu Thr Val Arg Val Leu Glu Leu Phe Arg Ala Ala Gln Leu Ala Asn
                405                 410                 415

Asp Val Val Leu Gln Ile Met Glu Leu Cys Gly Ala Ala Phe Arg Gln
            420                 425                 430

Val Cys His Thr Thr Val Pro Trp Pro Asn Ala Ser Leu Thr Pro Lys
        435                 440                 445

Trp Asn Asn Glu Thr Thr Gln Pro Gln Ile Ala Asn Cys Ser Val Tyr
    450                 455                 460

Asp Phe Phe Val Trp Leu His Tyr Tyr Ser Val Arg Asp Thr Leu Trp
465                 470                 475                 480

Pro Arg Val Thr Tyr His Met Asn Lys Tyr Ala Tyr His Met Leu Glu
                485                 490                 495

Arg Arg Ala Lys Tyr Lys Arg Gly Pro Gly Pro Gly Ala Lys Phe Val
            500                 505                 510

Ala Ala Trp Thr Leu Lys Ala Ala Ala Gly Pro Gly Pro Gly Gln Tyr
        515                 520                 525

Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Gly Pro Gly
    530                 535                 540

Pro Gly
545
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<210> 36
<211> 2019
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 36
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caccatgcag atcttcgtga agaccctgac cggcaagacc atcaccctag aggtggagcc 120

cagtgacacc atcgagaacg tgaaggccaa gatccaggat aaagagggca tccccctga 180

ccagcagagg ctgatctttg ccggcaagca gctggaagat ggccgcaccc tctctgatta 240

caacatccag aaggagtcaa ccctgcacct ggtccttcgc ctgagaggtg ccatgtttca 300

ggcgctgagc gaaggctgca ccccgtatga tattaaccag atgctgaacg tgctgggcga 360

tcatcagttt aagcacatca aagcctttga ccggacattt gctaacaacc caggtcccat 420

ggttgtgttt gccacacctg ggcctatcct gtctcctctg acaaagggca tcctgggctt 480

cgtgtttacc ctgaccgtgc cttctgagag aggacttagc tgcattagcg aagcggatgc 540

gaccaccccg gaaagcgcga acctgggcga agaaattctg agccagctgt atctttggcc 600

aagggtgacc taccattccc ctagttatgc ttaccaccaa tttgaaagac gagccaaata 660

taaaagacac ttccccggct ttggccagag cctgctgttt ggctaccctg tgtacgtgtt 720

cggcgattgc gtgcagggcg attgggatgc gattcgcttt cgctattgcg cgccgccggg 780

ctatgcgctg ctgcgctgca acgataccaa ctatagcgct ctgctggctg tgggggccct 840

agaaggaccc aggaatcagg actggcttgg tgtcccaaga caacttgtaa ctcggatgca 900

ggctattcag aatgccggcc tgtgtaccct ggtggccatg ctggaagaga caatcttctg 960

gctgcaagcg tttctgatgg cgctgaccga tagcggcccg aaaaccaaca ttattgtgga 1020

tagccagtat gtgatgggca ttagcaaacc gagctttcag gaatttgtgg attgggaaaa 1080

cgtgagcccg gaactgaaca gcaccgatca gccgttttgg caagccggaa tcctggccag 1140

aaatctggtg cctatggtgg ccacagtgca gggccagaac ctgaagtacc agggtcagtc 1200

actagtcatc tctgcttcta tcattgtctt caacctgctg gaactggaag gtgattatcg 1260

agatgatggc aacgtgtggg tgcatacccc gctgagcccg cgcaccctga acgcgtgggt 1320

gaaagcggtg gaagaaaaaa aaggtattcc agttcaccta gagctggcca gtatgaccaa 1380

catggagctc atgagcagta ttgtgcatca gcaggtcaga acatacggcc ccgtgttcat 1440

gtgtctcggc ggactgctta caatggtggc tggtgctgtg tggctgacag tgcgagtgct 1500

cgagctgttc cgggccgcgc agctggccaa cgacgtggtc ctccagatca tggagctttg 1560

tggtgcagcg tttcgccagg tgtgccatac caccgtgccg tggccgaacg cgagcctgac 1620

cccgaaatgg aacaacgaaa ccacccagcc ccagatcgcc aactgcagcg tgtatgactt 1680

ttttgtgtgg ctccattatt attctgttcg agacacactt tggccaaggg tgacctacca 1740

tatgaacaaa tatgcgtatc atatgctgga aagacgagcc aaatataaaa gaggaccagg 1800

acctggcgct aaatttgtgg ccgcctggac actgaaagcc gctgctggtc ctggacctgg 1860

ccagtacatc aaggccaaca gcaagttcat cggcatcacc gaactcggac ccggaccagg 1920

ctgatgattt cgaaatttaa ataagcttgc ggccgctagg gataacaggg taattatcac 1980

gcccaaacat ttacagccgc ggtgtcaaaa accgcgtgg 2019

<210> 37
<211> 619
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 37
Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
50 55 60

Ser Thr Leu His Leu Val Leu Arg Leu Arg Gly Ala Met Phe Gln Ala
65 70 75 80

Leu Ser Glu Gly Cys Thr Pro Tyr Asp Ile Asn Gln Met Leu Asn Val
85 90 95

Leu Gly Asp His Gln Phe Lys His Ile Lys Ala Phe Asp Arg Thr Phe
100 105 110

Ala Asn Asn Pro Gly Pro Met Val Val Phe Ala Thr Pro Gly Pro Ile
115 120 125

Leu Ser Pro Leu Thr Lys Gly Ile Leu Gly Phe Val Phe Thr Leu Thr
130 135 140

Val Pro Ser Glu Arg Gly Leu Ser Cys Ile Ser Glu Ala Asp Ala Thr
145 150 155 160

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Thr Pro Glu Ser Ala Asn Leu Gly Glu Glu Ile Leu Ser Gln Leu Tyr
                165                 170                 175

Leu Trp Pro Arg Val Thr Tyr His Ser Pro Ser Tyr Ala Tyr His Gln
            180                 185                 190

Phe Glu Arg Arg Ala Lys Tyr Lys Arg His Phe Pro Gly Phe Gly Gln
        195                 200                 205

Ser Leu Leu Phe Gly Tyr Pro Val Tyr Val Phe Gly Asp Cys Val Gln
    210                 215                 220

Gly Asp Trp Asp Ala Ile Arg Phe Arg Tyr Cys Ala Pro Pro Gly Tyr
225                 230                 235                 240

Ala Leu Leu Arg Cys Asn Asp Thr Asn Tyr Ser Ala Leu Leu Ala Val
                245                 250                 255

Gly Ala Leu Glu Gly Pro Arg Asn Gln Asp Trp Leu Gly Val Pro Arg
            260                 265                 270

Gln Leu Val Thr Arg Met Gln Ala Ile Gln Asn Ala Gly Leu Cys Thr
        275                 280                 285

Leu Val Ala Met Leu Glu Glu Thr Ile Phe Trp Leu Gln Ala Phe Leu
    290                 295                 300

Met Ala Leu Thr Asp Ser Gly Pro Lys Thr Asn Ile Ile Val Asp Ser
305                 310                 315                 320

Gln Tyr Val Met Gly Ile Ser Lys Pro Ser Phe Gln Glu Phe Val Asp
                325                 330                 335

Trp Glu Asn Val Ser Pro Glu Leu Asn Ser Thr Asp Gln Pro Phe Trp
            340                 345                 350

Gln Ala Gly Ile Leu Ala Arg Asn Leu Val Pro Met Val Ala Thr Val
        355                 360                 365

Gln Gly Gln Asn Leu Lys Tyr Gln Gly Gln Ser Leu Val Ile Ser Ala
    370                 375                 380

Ser Ile Ile Val Phe Asn Leu Leu Glu Leu Glu Gly Asp Tyr Arg Asp
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385 390 395 400

Asp Gly Asn Val Trp Val His Thr Pro Leu Ser Pro Arg Thr Leu Asn
405 410 415

Ala Trp Val Lys Ala Val Glu Glu Lys Lys Gly Ile Pro Val His Leu
420 425 430

Glu Leu Ala Ser Met Thr Asn Met Glu Leu Met Ser Ser Ile Val His
435 440 445

Gln Gln Val Arg Thr Tyr Gly Pro Val Phe Met Cys Leu Gly Gly Leu
450 455 460

Leu Thr Met Val Ala Gly Ala Val Trp Leu Thr Val Arg Val Leu Glu
465 470 475 480

Leu Phe Arg Ala Ala Gln Leu Ala Asn Asp Val Val Leu Gln Ile Met
485 490 495

Glu Leu Cys Gly Ala Ala Phe Arg Gln Val Cys His Thr Thr Val Pro
500 505 510

Trp Pro Asn Ala Ser Leu Thr Pro Lys Trp Asn Asn Glu Thr Thr Gln
515 520 525

Pro Gln Ile Ala Asn Cys Ser Val Tyr Asp Phe Phe Val Trp Leu His
530 535 540

Tyr Tyr Ser Val Arg Asp Thr Leu Trp Pro Arg Val Thr Tyr His Met
545 550 555 560

Asn Lys Tyr Ala Tyr His Met Leu Glu Arg Arg Ala Lys Tyr Lys Arg
565 570 575

Gly Pro Gly Pro Gly Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala
580 585 590

Ala Ala Gly Pro Gly Pro Gly Gln Tyr Ile Lys Ala Asn Ser Lys Phe
595 600 605

Ile Gly Ile Thr Glu Leu Gly Pro Gly Pro Gly
610 615

<210> 38
<211> 228
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 38
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gacaccatcg agaacgtgaa ggccaagatc caggataaag agggcatccc ccctgaccag 120

cagaggctga tctttgccgg caagcagctg gaagatggcc gcaccctctc tgattacaac 180

atccagaagg agtcaaccct gcacctggtc cttcgcctga gaggtggc 228

<210> 39
<211> 228
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 39
atgcagatct tcgtgaagac cctgaccggc aagaccatca ccctagaggt ggagcccagt 60

gacaccatcg agaacgtgaa ggccaagatc caggataaag agggcatccc ccctgaccag 120

cagaggctga tctttgccgg caagcagctg gaagatggcc gcaccctctc tgattacaac 180

atccagaagg agtcaaccct gcacctggtc cttcgcctga gaggtgcc 228

<210> 40
<211> 78
<212> DNA
<213> Homo sapiens

<400> 40
atggccgtca tggcgccccg aaccctcgtc ctgctactct cgggggctct ggccctgacc 60

cagacctggg cgggctct 78

<210> 41
<211> 201
<212> DNA
<213> Homo sapiens

<400> 41

ccgtcttccc agcccaccat ccccatcgtg ggcatcattg ctggcctggt tctctttgga 60

gctgtgatca ctggagctgt ggtcgctgct gtgatgtgga ggaggaagag ctcagataga 120

aaaggaggga gctactctca ggctgcaagc agtgacagtg cccagggctc tgatgtgtct 180

ctcacagctt gtaaagtgtg a 201

<210> 42
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 42
atggagaccg atacactgct gctgtgggtg ctgctcctgt gggtgccagg aagcacaggc 60

<210> 43
<211> 3178
<212> DNA
<213> Homo sapiens

<400> 43
ggcaccgatt cggggcctgc ccggacttcg ccgcacgctg cagaacctcg cccagcgccc 60

accatgcccc ggcagctcag cgcggcggcc gcgctcttcg cgtccctggc cgtaattttg 120

cacgatggca gtcaaatgag agcaaaagca tttccagaaa ccagagatta ttctcaacct 180

actgcagcag caacagtaca ggacataaaa aaacctgtcc agcaaccagc taagcaagca 240

cctcaccaaa ctttagcagc aagattcatg gatggtcata tcacctttca aacagcggcc 300

acagtaaaaa ttccaacaac taccccagca actacaaaaa acactgcaac caccagccca 360

attacctaca ccctggtcac aacccaggcc acacccaaca actcacacac agctcctcca 420

gttactgaag ttacagtcgg ccctagctta gcccccttatt cactgccacc caccatcacc 480

ccaccagctc atacagctgg aaccagttca tcaaccgtca gccacacaac tgggaacacc 540

actcaaccca gtaaccagac cacccttcca gcaactttat cgatagcact gcacaaaagc 600

acaaccggtc agaagcctga tcaacccacc catgccccag gaacaacggc agctgcccac 660

aataccaccc gcacagctgc acctgcctcc acggttcctg ggcccaccct tgcacctcag 720

ccatcgtcag tcaagactgg aatttatcag gttctaaacg gaagcagact ctgtataaaa 780

gcagagatgg ggatacagct gattgttcaa gacaaggagt cggtttttc acctcggaga 840

tacttcaaca tcgaccccaa cgcaacgcaa gcctctggga actgtggcac ccgaaaatcc 900

aaccttctgt tgaattttca gggcggattt gtgaatctca catttaccaa ggatgaagaa 960

tcatattata tcagtgaagt gggagcctat ttgaccgtct cagatccaga gacagtttac 1020

caaggaatca aacatgcggt ggtgatgttc cagacagcag tcgggcattc cttcaagtgc 1080

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cttcaagcct ttgattttga agatgaccac tttggaaatg tggatgagtg ctcgtctgac 1200

tacacaattg tgcttcctgt gattggggcc atcgtggttg gtctctgcct tatgggtatg 1260

ggtgtctata aaatccgcct aaggtgtcaa tcatctggat accagagaat ctaattgttg 1320

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ttgggaaatt ccctcagagt gtgggtcctt caaacaatgt aaaccaccat cttctattca 1440

aatgaagtga gtcatgtgtg atttaagttc aggcagcaca tcaatttcta aatacttttt 1500

gtttatttta tgaaagatat agtgagctgt ttattttcta gtttccttta gaatatttta 1560

gccactcaaa gtcaacattt gagatatgtt gaattaacat aatatatgta aagtagaata 1620

agccttcaaa ttataaacca agggtcaatt gtaactaata ctactgtgtg tgcattgaag 1680

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gctaattttt gtatttttat tatagacggg tttcaccatg ttggccagac tggtcttgaa 2040

ctcttgacct caggtgatcc acccacctca gcctcccaaa gtgctgggat tacaggcatg 2100

agccattgcg cccggcctta aatgtttttt ttaatcatca aaaagaacaa catatctcag 2160

gttgtctaag tgtttttatg taaaaccaac aaaaagaaca aatcagctta tatttttttat 2220

cttgatgact cctgctccag aattgctaga ctaagaatta ggtggctaca gatggtagaa 2280

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taggctaagc actttatcta tatctcattt cattctcaca acttataagt gaatgagtaa 2400

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gagcttgaat tcatgttggt ctgacatcaa ggtctttggt cttctcccta caccaagtta 2520

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gaattttatt tctgctgttt tttttgctgc taaagaaagg aactaagtca ggatgttaac 3000

agaaaagtcc acataaccct agaattctta gtcaaggaat aattcaagtc agcctagaga 3060

ccatgttgac tttcctcatg tgtttcctta tgactcagta agttggcaag gtcctgactt 3120

tagtcttaat aaaacattga attgtagtaa aggtttttgc aataaaaact tactttgg 3178

<210> 44
<211> 1858
<212> DNA
<213> Mus sp.

<400> 44
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gcagaagtac tgaaaaatgg cagttcttgt ggtaaagaaa atgtttctga ccccagcctc 180

acaattactt ttggaagagg atatttactg acactcaact tcacaaaaaa tacaacacgt 240

tacagtgtcc agcatatgta ttttacatat aacttgtcag atacagaaca ttttcccaat 300

gccatcagca aagagatcta caccatggat tccacaactg acatcaaggc agacatcaac 360

aaagcatacc ggtgtgtcag tgatatccgg gtctacatga agaatgtgac cgttgtgctc 420

cgggatgcca ctatccaggc ctacctgtcg agtggcaact tcagcaagga agagacacac 480

tgcacacagg atggaccttc cccaaccact gggccaccca gcccctcacc accacttgtg 540

cccacaaacc ccactgtatc caagtacaat gttactggta acaacggaac ctgcctgctg 600

gcctctatgg cactgcaact gaatatcacc tacctgaaaa aggacaacaa gacggtgacc 660

agagcgttca acatcagccc aaatgacaca tctagtggga gttgcggtat caacttggtg 720

accctgaaag tggagaacaa gaacagagcc ctggaattgc agtttgggat gaatgccagc 780

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aagcttagat aggtgtggaa gggaggcaca ctttctggca aactgtttta aaatctgctt 1260

tatcaaatgt gaagttcatc ttgcaacatt tactatgcac aaaggaataa ctattgaaat 1320

gacggtgtta attttgctaa ctgggttaaa tattgatgag aaggctccac tgatttgact 1380

tttaagactt ggtgtttggt tcttcattct tttactcaga tttaagccta tcaaagggat 1440

actctggtcc agaccttggc ctggcaaggg tggctgatgg ttaggctgca cacacttaag 1500

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tgtctctgca ctgtgtacaa taatagattc acactgctga cgtgtcttgc agcgtaggtg 1800

ggttgtacac tgggcatcag ctcacgtaat gcattgcctg taacgatgct aataaaaa 1858

<210> 45
<211> 2339
<212> DNA
<213> Homo sapiens

<400> 45
ggcccaaccg ccgcccgcgc ccccgctctc cgcaccgtac ccggccgcct cgcgccatgg 60

cggcccccgg cagcgcccgg cgacccctgc tgctgctact gctgttgctg ctgctcggcc 120

tcatgcattg tgcgtcagca gcaatgttta tggtgaaaaa tggcaacggg accgcgtgca 180

taatggccaa cttctctgct gccttctcag tgaactacga caccaagagt ggccctaaga 240

acatgacctt tgacctgcca tcagatgcca cagtggtgct caaccgcagc tcctgtggaa 300

aagagaacac ttctgacccc agtctcgtga ttgcttttgg aagaggacat acactcactc 360

tcaatttcac gagaaatgca acacgttaca gcgtccagct catgagtttt gtttataact 420

tgtcagacac acacctttc cccaatgcga gctccaaaga aatcaagact gtggaatcta 480

taactgacat cagggcagat atagataaaa aatacagatg tgttagtggc acccaggtcc 540

acatgaacaa cgtgaccgta acgctccatg atgccaccat ccaggcgtac ctttccaaca 600

gcagcttcag caggggagag acacgctgtg aacaagacag gccttcccca accacagcgc 660

cccctgcgcc acccagcccc tcgccctcac ccgtgcccaa gagcccctct gtggacaagt 720

acaacgtgag cggcaccaac gggacctgcc tgctggccag catggggctg cagctgaacc 780

tcacctatga gaggaaggac aacacgacgg tgacaaggct tctcaacatc aaccccaaca 840

agacctcggc cagcgggagc tgcggcgccc acctggtgac tctggagctg cacagcgagg 900

gcaccaccgt cctgctcttc cagttcggga tgaatgcaag ttctagccgg tttttcctac 960

aaggaatcca gttgaataca attcttcctg acgccagaga ccctgccttt aaagctgcca 1020

acggctccct gcgagcgctg caggccacag tcggcaattc ctacaagtgc aacgcggagg 1080

agcacgtccg tgtcacgaag gcgttttcag tcaatatatt caaagtgtgg gtccaggctt 1140

tcaaggtgga aggtggccag tttggctctg tggaggagtg tctgctggac gagaacagca 1200

tgctgatccc catcgctgtg ggtggtgccc tggcggggct ggtcctcatc gtcctcatcg 1260

cctacctcgt cggcaggaag aggagtcacg caggctacca gactatctag cctggtgcac 1320

gcaggcacag cagctgcagg ggcctctgtt cctttctctg ggcttagggt cctgtcgaag 1380

gggaggcaca ctttctggca aacgtttctc aaatctgctt catccaatgt gaagttcatc 1440

ttgcagcatt tactatgcac aacagagtaa ctatcgaaat gacggtgtta attttgctaa 1500

ctgggttaaa tattttgcta actggttaaa cattaatatt taccaaagta ggattttgag 1560

ggtgggggtg ctctctctga gggggtgggg gtgccgctgt ctctgagggg tgggggtgcc 1620

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agtgtctgga gcgcttcagt tcagctttaa aggccaggac gggccacacg tggctggcgg 2040

cctcgttcca gtggcggcac gtccttgggc gtctctaatg tctgcagctc aagggctggc 2100

actttttaa atataaaaat gggtgttatt tttatttttt tttgtaaagt gatttttggt 2160

cttctgttga cattcggggt gatcctgttc tgcgctgtgt acaatgtgag atcggtgcgt 2220

tctcctgatg ttttgccgtg gcttggggat tgtacacggg accagctcac gtaatgcatt 2280

gcctgtaaca atgtaataaa aagcctcttt cttttaaaaa aaaaaaaaaa aaaaaaaaa 2339

<210> 46
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 46
cagtacatca aggccaacag caagttcatc ggcatcaccg aactc 45

<210> 47
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 47
Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu
1 5 10 15

<210> 48
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 48
gctaaatttg tggctgcctg gacactgaaa gccgccgct 39

<210> 49
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 49
Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
1 5 10

<210> 50
<211> 593
<212> DNA
<213> Woodchuck hepatitis virus

<400> 50
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ccttttacgc tatgtggata cgctgcttta atgcctttgt atcatgctat tgcttcccgt 120

atggctttca ttttctcctc cttgtataaa tcctggttgc tgtctcttta tgaggagttg 180

tggcccgttg tcaggcaacg tggcgtggtg tgcactgtgt ttgctgacgc aacccccact 240

ggttggggca ttgccaccac ctgtcagctc ctttccggga ctttcgcttt ccccctccct 300

attgccacgg cggaactcat cgccgcctgc cttgcccgct gctggacagg ggctcggctg 360

ttgggcactg acaattccgt ggtgttgtcg gggaagctga cgtcctttcc atggctgctc 420

gcctgtgttg ccacctggat tctgcgcggg acgtccttct gctacgtccc ttcggccctc 480

aatccagcgg accttccttc ccgcggcctg ctgccggctc tgcggcctct tccgcgtctt 540

cgccttcgcc ctcagacgag tcggatctcc ctttgggccg cctccccgcc tgt 593

<210> 51
<211> 589
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 51
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taaggccggt gtgcgtttgt ctatatgtta ttttccacca tattgccgtc ttttggcaat 120

gtgagggccc ggaaacctgg ccctgtcttc ttgacgagca ttcctagggg tctttccccct 180

ctcgccaaag gaatgcaagg tctgttgaat gtcgtgaagg aagcagttcc tctggaagct 240

tcttgaagac aaacaacgtc tgtagcgacc ctttgcaggc agcggaaccc cccacctggc 300

gacaggtgcc tctgcggcca aaagccacgt gtataagata cacctgcaaa ggcggcacaa 360

ccccagtgcc acgttgtgag ttggatagtt gtggaaagag tcaaatggct ctcctcaagc 420

gtattcaaca aggggctgaa ggatgcccag aaggtacccc attgtatggg atctgatctg 480

gggcctcggt gcacatgctt tacatgtgtt tagtcgaggt taaaaaaacg tctaggcccc 540

ccgaaccacg gggacgtggt tttcctttga aaaacacgat gataatatg 589

<210> 52
<211> 720
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 52
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ggcaagctga ccctgaagtt catctgcacc accggcaagc tgcccgtgcc ctggcccacc 180

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ttcaaggacg acggcaacta caagacccgc gccgaggtga agttcgaggg cgacaccctg 360

gtgaaccgca tcgagctgaa gggcatcgac ttcaaggagg acggcaacat cctggggcac 420

aagctggagt acaactacaa cagccacaac gtctatatca tggccgacaa gcagaagaac 480

ggcatcaagg tgaacttcaa gatccgccac aacatcgagg acggcagcgt gcagctcgcc 540

gaccactacc agcagaacac ccccatcggc gacggccccg tgctgctgcc cgacaaccac 600

tacctgagca cccagtccgc cctgagcaaa gaccccaacg agaagcgcga tcacatggtc 660

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<211> 1563
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

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aagaagctgc agcctgcaca gacagccgcc aagaacctca tcatcttcct gggcgatggg 180

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<211> 1653
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

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tgcagcgaga atagcttgca gttcttcatg cccgtgttgg gtgccctgtt catcggtgtg 300

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aaggccaaga agggcggcaa gatcgccgtg taa 1653

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<211> 66

<212> DNA
<213> Foot-and-mouth disease virus

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<210> 56
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 56
Gly Pro Gly Pro Gly
1 5

<210> 57
<211> 30876
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

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tgacgttttg atgacgtggt tgcgaggagg agccagtttg caagttctcg tgggaaaagt 180

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<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 60
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<210> 61
<211> 410
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

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agtgaaagtc gagtttacca ctccctatca gtgatagaga aaagtgaaag tcgagtttac 120

cactccctat cagtgataga gaaaagtgaa agtcgagttt accactccct atcagtgata 180

gagaaaagtg aaagtcgagt ttaccactcc ctatcagtga tagagaaaag tgaaagtcga 240

gtttaccact ccctatcagt gatagagaaa agtgaaagtc gagtttacca ctccctatca 300

gtgatagaga aaagtgaaag tcgagctcgg tacccgggtc gaggtaggcg tgtacggtgg 360

gaggcctata taagcagagc tcgtttagtg aaccgtcaga tcgcctggag 410

<210> 62
<211> 849
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 62

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ctgtattggc acgtgcggaa caagcagacc ctgatgaata tgctgagcga ggccatcctg 180

gccaagcacc atacaagatc tgcccctctg ccaaccgaga gctggcagca gtttctgcaa 240

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acactgggcg ccgtgctgga agaacaggcc accaaccaga tcgagaacaa ccacgtgatc 480

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ctgagccagc ggagcctgta ccgggaagtg atgctggaaa actacagcaa cctggcctcc 780

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<210> 63
<211> 282
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

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Leu Asn Glu Val Gly Ile Glu Gly Leu Thr Thr Arg Lys Leu Ala Gln
20 25 30

Lys Leu Gly Val Glu Gln Pro Thr Leu Tyr Trp His Val Arg Asn Lys
35 40 45

Gln Thr Leu Met Asn Met Leu Ser Glu Ala Ile Leu Ala Lys His His
50 55 60

Thr Arg Ser Ala Pro Leu Pro Thr Glu Ser Trp Gln Gln Phe Leu Gln
65 70 75 80

Glu Asn Ala Leu Ser Phe Arg Lys Ala Leu Leu Val His Arg Asp Gly
85 90 95

Ala Arg Leu His Ile Gly Thr Ser Pro Thr Pro Pro Gln Phe Glu Gln
100 105 110

Ala Glu Ala Gln Leu Arg Cys Leu Cys Asp Ala Gly Phe Ser Val Glu
115 120 125

Glu Ala Leu Phe Ile Leu Gln Ser Ile Ser His Phe Thr Leu Gly Ala
130 135 140

Val Leu Glu Glu Gln Ala Thr Asn Gln Ile Glu Asn Asn His Val Ile
145 150 155 160

Asp Ala Ala Pro Pro Leu Leu Gln Glu Ala Phe Asn Ile Gln Ala Arg
165 170 175

Thr Ser Ala Glu Met Ala Phe His Phe Gly Leu Lys Ser Leu Ile Phe
180 185 190

Gly Phe Ser Ala Gln Leu Asp Glu Lys Lys His Thr Pro Ile Glu Asp
195 200 205

Gly Asn Lys Pro Lys Lys Lys Arg Lys Leu Ala Val Ser Val Thr Phe
210 215 220

Glu Asp Val Ala Val Leu Phe Thr Arg Asp Glu Trp Lys Lys Leu Asp
225 230 235 240

Leu Ser Gln Arg Ser Leu Tyr Arg Glu Val Met Leu Glu Asn Tyr Ser
245 250 255

Asn Leu Ala Ser Met Ala Gly Phe Leu Phe Thr Lys Pro Lys Val Ile
260 265 270

Ser Leu Leu Gln Gln Gly Glu Asp Pro Trp
275 280

<210> 64

<211> 627
<212> DNA
<213> Artificial Sequence

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polynucleotide

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acgacccccg cccattgacg tcaataatga cgtatgttcc catagtaacg ccaataggga 180

ctttccattg acgtcaatgg gtggagtatt tacggtaaac tgcccacttg gcagtacatc 240

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ggcaccaaaa tcaacgggac tttccaaaat gtcgtaataa ccccgccccg ttgacgcaaa 540

tgggcggtag gcgtgtacgg tgggaggtct atataagcag agctctccct atcagtgata 600

gagatctccc tatcagtgat agagatc 627

<210> 65
<211> 31402
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

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tgacgttttg atgacgtggt tgcgaggagg agccagtttg caagttctcg tgggaaaagt 180

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gacattgatt attgactagt tattaaagta cttccctatc agtgatagag aaaagtgaaa 660

gtcgagttta ccactcccta tcagtgatag agaaaagtga aagtcgagtt taccactccc 720

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<211> 8
<212> PRT
<213> Mus sp.

<400> 72
Ser Ile Ile Asn Phe Glu Lys Leu
1 5

<210> 73
<211> 9
<212> PRT
<213> Mus sp.

<400> 73
Ser Pro Ser Tyr Ala Tyr His Gln Phe
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<210> 74
<211> 100
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<220>
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Met Tyr Glu Val Gln Trp Pro Gly Gln Thr Gln Pro Gln Ile Ala Asn
20 25 30

Cys Ser Val Tyr Asp Phe Phe Val Trp Leu His Tyr Tyr Ser Val Arg
35 40 45

Asp Thr Val Thr Asn Thr Glu Met Phe Val Thr Ala Pro Asp Asn Leu
50 55 60

Gly Tyr Met Tyr Glu Val Gln Trp Pro Gly Gln Thr Gln Pro Gln Ile
65 70 75 80

Ala Asn Cys Ser Val Tyr Asp Phe Phe Val Trp Leu His Tyr Tyr Ser
85 90 95

Val Arg Asp Thr
100

<210> 75
<211> 25
<212> PRT
<213> Mus sp.

<400> 75
Val Thr Asn Thr Glu Met Phe Val Thr Ala Pro Asp Asn Leu Gly Tyr
1 5 10 15

Met Tyr Glu Val Gln Trp Pro Gly Gln
20 25

<210> 76
<211> 25
<212> PRT
<213> Mus sp.

<400> 76
Thr Gln Pro Gln Ile Ala Asn Cys Ser Val Tyr Asp Phe Phe Val Trp
1 5 10 15

Leu His Tyr Tyr Ser Val Arg Asp Thr
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<210> 77
<211> 10
<212> PRT
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<400> 77
Tyr Val Tyr Val Ala Asp Val Ala Ala Lys
1 5 10

<210> 78
<211> 9
<212> PRT
<213> Homo sapiens

<400> 78
Asn Leu Val Pro Met Val Ala Thr Val
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<210> 79
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<400> 79
Cys Leu Gly Gly Leu Leu Thr Met Val

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<210> 80
<211> 9
<212> PRT
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<400> 80
Gly Ile Leu Gly Phe Val Phe Thr Leu
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<210> 81
<211> 9
<212> PRT
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Leu Leu Phe Gly Tyr Pro Val Tyr Val
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<210> 82
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<213> Homo sapiens

<400> 82
Gly Leu Cys Thr Leu Val Ala Met Leu
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<210> 83
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T2 epitope sequence

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<210> 84
<211> 8
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<220>
<223> Description of Unknown:
T2 epitope sequence

<400> 84

Phe Leu Leu Thr Arg Ile Cys Thr
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<210> 85
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<400> 85
Trp Gln Ala Gly Ile Leu Ala Arg
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<210> 86
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<212> PRT
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<400> 86
Gln Gly Gln Asn Leu Lys Tyr Gln
1 5

<210> 87
<211> 25
<212> PRT
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<400> 87
Trp Gln Ala Gly Ile Leu Ala Arg Asn Leu Val Pro Met Val Ala Thr
1 5 10 15

Val Gln Gly Gln Asn Leu Lys Tyr Gln
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<210> 88
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<400> 88
Asn Thr Asp Asn Asn Leu Ala Val Tyr
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<210> 89
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<400> 89
Glu Val Asp Pro Ile Gly His Val Tyr
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<210> 90
<211> 9
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<400> 90
Leu Leu Ala Ser Ser Ile Leu Cys Ala
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<210> 91
<211> 10
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<400> 91
Ala Ile Phe Pro Gly Ala Val Pro Ala Ala
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<210> 92
<211> 9
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<400> 92
Val Tyr Asp Leu Ser Arg Asp Ile Leu
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<210> 93
<211> 10
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<213> Homo sapiens

<400> 93
Ala Ser Ser Leu Pro Thr Thr Met Asn Tyr
1 5 10

<210> 94
<211> 13
<212> PRT
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<400> 94
Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr
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<210> 95
<211> 14
<212> PRT
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<400> 95

Leu Pro Leu Lys Met Leu Asn Ile Pro Ser Ile Asn Val His
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<210> 96
<211> 15
<212> PRT
<213> Homo sapiens

<400> 96
Pro Glu Gln Trp Met Phe Gln Gly Ala Pro Pro Ser Gln Gly Thr
1 5 10 15

<210> 97
<211> 15
<212> PRT
<213> Homo sapiens

<400> 97
Glu His Pro Thr Phe Thr Ser Gln Tyr Arg Ile Gln Gly Lys Leu
1 5 10 15

<210> 98
<211> 25
<212> PRT
<213> Homo sapiens

<400> 98
Pro Ile Leu Ser Pro Leu Thr Lys Gly Ile Leu Gly Phe Val Phe Thr
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Leu Thr Val Pro Ser Glu Arg Gly Leu
20 25

<210> 99
<211> 25
<212> PRT
<213> Homo sapiens

<400> 99
His Phe Pro Gly Phe Gly Gln Ser Leu Leu Phe Gly Tyr Pro Val Tyr
1 5 10 15

Val Phe Gly Asp Cys Val Gln Gly Asp
20 25

<210> 100
<211> 25
<212> PRT
<213> Homo sapiens

<400> 100
Arg Met Gln Ala Ile Gln Asn Ala Gly Leu Cys Thr Leu Val Ala Met
1 5 10 15

Leu Glu Glu Thr Ile Phe Trp Leu Gln
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<210> 101
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<212> PRT
<213> Homo sapiens

<400> 101
Arg Thr Tyr Gly Pro Val Phe Met Cys Leu Gly Gly Leu Leu Thr Met
1 5 10 15

Val Ala Gly Ala Val Trp Leu Thr Val
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<210> 102
<211> 25
<212> PRT
<213> Homo sapiens

<400> 102
Ser Ser Ser Gly Leu Ile Asn Ser Asn Thr Asp Asn Asn Leu Ala Val
1 5 10 15

Tyr Asp Leu Ser Arg Asp Ile Leu Asn
20 25

<210> 103
<211> 25
<212> PRT
<213> Homo sapiens

<400> 103
Leu Val Phe Gly Ile Glu Leu Met Glu Val Asp Pro Ile Gly His Val
1 5 10 15

Tyr Ile Phe Ala Thr Cys Leu Gly Leu
20 25

<210> 104
<211> 25
<212> PRT
<213> Homo sapiens

<400> 104

Met Asn Phe Tyr Leu Leu Leu Ala Ser Ser Ile Leu Cys Ala Leu Ile
1 5 10 15

Val Phe Trp Lys Tyr Arg Arg Phe Gln
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<210> 105
<211> 25
<212> PRT
<213> Homo sapiens

<400> 105
Ala Ala Ala Ala Ala Ala Ala Ala Ile Phe Pro Gly Ala Val Pro Ala
1 5 10 15

Ala Arg Pro Pro Tyr Pro Gly Ala Val
20 25

<210> 106
<211> 25
<212> PRT
<213> Homo sapiens

<400> 106
Ser Asn Thr Asp Asn Asn Leu Ala Val Tyr Asp Leu Ser Arg Asp Ile
1 5 10 15

Leu Asn Asn Phe Pro His Ser Ile Ala
20 25

<210> 107
<211> 25
<212> PRT
<213> Homo sapiens

<400> 107
Asp Pro Pro Gln Ser Pro Gln Gly Ala Ser Ser Leu Pro Thr Thr Met
1 5 10 15

Asn Tyr Pro Leu Trp Ser Gln Ser Tyr
20 25

<210> 108
<211> 25
<212> PRT
<213> Homo sapiens

<400> 108
Ile Thr Tyr Gly Ala Cys Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys

1 5 10 15

Leu Ala Thr Gly Met Arg Asn Val Pro
20 25

<210> 109
<211> 25
<212> PRT
<213> Homo sapiens

<400> 109
Ser Ile Tyr Val Tyr Ala Leu Pro Leu Lys Met Leu Asn Ile Pro Ser
1 5 10 15

Ile Asn Val His His Tyr Pro Ser Ala
20 25

<210> 110
<211> 25
<212> PRT
<213> Homo sapiens

<400> 110
Glu Gly Pro Trp Val Pro Glu Gln Trp Met Phe Gln Gly Ala Pro Pro
1 5 10 15

Ser Gln Gly Thr Asp Val Val Gln His
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<210> 111
<211> 25
<212> PRT
<213> Homo sapiens

<400> 111
Arg Gly Pro Gln Tyr Ser Glu His Pro Thr Phe Thr Ser Gln Tyr Arg
1 5 10 15

Ile Gln Gly Lys Leu Glu Tyr Arg His
20 25

<210> 112
<211> 9
<212> PRT
<213> Macaca mulatta

<400> 112
Cys Thr Pro Tyr Asp Ile Asn Gln Met
1 5

<210> 113
<211> 8
<212> PRT
<213> Macaca mulatta

<400> 113
Thr Thr Pro Glu Ser Ala Asn Leu
1 5

<210> 114
<211> 9
<212> PRT
<213> Macaca mulatta

<400> 114
Cys Ala Pro Pro Gly Tyr Ala Leu Leu
1 5

<210> 115
<211> 9
<212> PRT
<213> Macaca mulatta

<400> 115
Ser Gly Pro Lys Thr Asn Ile Ile Val
1 5

<210> 116
<211> 9
<212> PRT
<213> Macaca mulatta

<400> 116
Leu Ser Pro Arg Thr Leu Asn Ala Trp
1 5

<210> 117
<211> 9
<212> PRT
<213> Macaca mulatta

<400> 117
Thr Val Pro Trp Pro Asn Ala Ser Leu
1 5

<210> 118
<211> 15
<212> PRT
<213> Macaca mulatta

<400> 118
Pro Asn Gly Thr His Ser Trp Glu Tyr Trp Gly Ala Gln Leu Asn
1 5 10 15

<210> 119
<211> 13
<212> PRT
<213> Macaca mulatta

<400> 119
Tyr Lys Tyr Lys Val Val Lys Ile Glu Pro Leu Gly Val
1 5 10

<210> 120
<211> 15
<212> PRT
<213> Macaca mulatta

<400> 120
Thr Glu Glu Ala Lys Gln Ile Val Gln Arg His Leu Val Val Glu
1 5 10 15

<210> 121
<211> 13
<212> PRT
<213> Macaca fascicularis

<400> 121
Ala Gly Ser Leu Gln Gly Gln Trp Arg Gly Ala Ala Gly
1 5 10

<210> 122
<211> 16
<212> PRT
<213> Macaca fascicularis

<400> 122
Glu Ile Ser Thr Asn Ile Arg Gln Ala Gly Val Gln Tyr Ser Arg Ala
1 5 10 15

<210> 123
<211> 9
<212> PRT
<213> Macaca fascicularis

<400> 123
Arg Pro Lys Gln Ala Trp Cys Trp Phe
1 5

<210> 124
<211> 9

<212> PRT
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<400> 124
Arg Pro Lys Val Pro Leu Arg Thr Met
1 5

<210> 125
<211> 9
<212> PRT
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<400> 125
Gly Pro Arg Lys Pro Ile Lys Cys Trp
1 5

<210> 126
<211> 9
<212> PRT
<213> Macaca fascicularis

<400> 126
Leu Asn Met Ala Asp Lys Lys Glu Thr
1 5

<210> 127
<211> 25
<212> PRT
<213> Macaca mulatta

<400> 127
Met Phe Gln Ala Leu Ser Glu Gly Cys Thr Pro Tyr Asp Ile Asn Gln
1 5 10 15

Met Leu Asn Val Leu Gly Asp His Gln
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<210> 128
<211> 25
<212> PRT
<213> Macaca mulatta

<400> 128
Ser Cys Ile Ser Glu Ala Asp Ala Thr Thr Pro Glu Ser Ala Asn Leu
1 5 10 15

Gly Glu Glu Ile Leu Ser Gln Leu Tyr
20 25

<210> 129

<211> 25
<212> PRT
<213> Macaca mulatta

<400> 129
Trp Asp Ala Ile Arg Phe Arg Tyr Cys Ala Pro Pro Gly Tyr Ala Leu
1 5 10 15

Leu Arg Cys Asn Asp Thr Asn Tyr Ser
20 25

<210> 130
<211> 25
<212> PRT
<213> Macaca mulatta

<400> 130
Ala Phe Leu Met Ala Leu Thr Asp Ser Gly Pro Lys Thr Asn Ile Ile
1 5 10 15

Val Asp Ser Gln Tyr Val Met Gly Ile
20 25

<210> 131
<211> 25
<212> PRT
<213> Macaca mulatta

<400> 131
Gly Asn Val Trp Val His Thr Pro Leu Ser Pro Arg Thr Leu Asn Ala
1 5 10 15

Trp Val Lys Ala Val Glu Glu Lys Lys
20 25

<210> 132
<211> 25
<212> PRT
<213> Macaca mulatta

<400> 132
Ala Phe Arg Gln Val Cys His Thr Thr Val Pro Trp Pro Asn Ala Ser
1 5 10 15

Leu Thr Pro Lys Trp Asn Asn Glu Thr
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<210> 133
<211> 25

<212> PRT
<213> Macaca mulatta

<400> 133
Val Phe Asn Phe Pro Pro Asn Gly Thr His Ser Trp Glu Tyr Trp Gly
1 5 10 15

Ala Gln Leu Asn Ala Met Lys Gly Asp
20 25

<210> 134
<211> 25
<212> PRT
<213> Macaca mulatta

<400> 134
Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val Lys Ile Glu Pro
1 5 10 15

Leu Gly Val Ala Pro Thr Lys Ala Lys
20 25

<210> 135
<211> 25
<212> PRT
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<400> 135
Glu Lys Val Lys His Thr Glu Glu Ala Lys Gln Ile Val Gln Arg His
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Leu Val Val Glu Thr Gly Thr Thr Glu
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<210> 136
<211> 25
<212> PRT
<213> Macaca fascicularis

<400> 136
Asp Gln Val Glu Ser Thr Ala Gly Ser Leu Gln Gly Gln Trp Arg Gly
1 5 10 15

Ala Ala Gly Thr Ala Ala Gln Ala Ala
20 25

<210> 137
<211> 25
<212> PRT

<213> Macaca fascicularis

<400> 137
Gln Glu Leu Asp Glu Ile Ser Thr Asn Ile Arg Gln Ala Gly Val Gln
1 5 10 15

Tyr Ser Arg Ala Asp Glu Glu Gln Gln
20 25

<210> 138
<211> 25
<212> PRT
<213> Macaca fascicularis

<400> 138
Phe His Ser Gln Pro Ile Asn Glu Arg Pro Lys Gln Ala Trp Cys Trp
1 5 10 15

Phe Gly Gly Ser Trp Lys Glu Ala Ile
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<210> 139
<211> 25
<212> PRT
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<400> 139
Asp Asp Ile Asp Glu Glu Asp Asp Asp Leu Val Gly Val Ser Val Arg
1 5 10 15

Pro Lys Val Pro Leu Arg Thr Met Ser
20 25

<210> 140
<211> 25
<212> PRT
<213> Macaca fascicularis

<400> 140
Pro Phe Ala Ala Ala Gln Gln Arg Gly Pro Arg Lys Pro Ile Lys Cys
1 5 10 15

Trp Asn Cys Gly Lys Glu Gly His Ser
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<210> 141
<211> 25
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<213> Macaca fascicularis

<400> 141
Arg Arg Leu Thr Ala Arg Gly Leu Leu Asn Met Ala Asp Lys Lys Glu
1 5 10 15

Thr Arg Thr Pro Lys Lys Ala Lys Ala
20 25

<210> 142
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<400> 142
Glu Gly Pro Arg Asn Gln Asp Trp Leu
1 5

<210> 143
<211> 9
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<400> 143
Thr Ala Pro Asp Asn Leu Gly Tyr Met
1 5

<210> 144
<211> 9
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<400> 144
Ser Val Tyr Asp Phe Phe Val Trp Leu
1 5

<210> 145
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<400> 145
Met Asn Lys Tyr Ala Tyr His Met Leu
1 5

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<400> 146
Ser Ile Ile Val Phe Asn Leu Leu

1 5

<210> 147
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<400> 147
Ala Ser Met Thr Asn Met Glu Leu Met
1 5

<210> 148
<211> 9
<212> PRT
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<400> 148
Ala Gln Leu Ala Asn Asp Val Val Leu
1 5

<210> 149
<211> 9
<212> PRT
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<400> 149
Leu Pro Tyr Leu Gly Trp Leu Val Phe
1 5

<210> 150
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<400> 150
Gly Tyr Cys Gly Leu Arg Gly Thr Gly Val
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<400> 151
Leu Ser Ile Phe Lys His Lys Leu
1 5

<210> 152
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<400> 152
Leu Ile Trp Ile Pro Ala Leu Leu
1 5

<210> 153
<211> 9
<212> PRT
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<400> 153
Ser Ser Gly His Asn Glu Cys Pro Val
1 5

<210> 154
<211> 9
<212> PRT
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<400> 154
Gly Gln Lys Met Asn Ala Gln Ala Ile
1 5

<210> 155
<211> 17
<212> PRT
<213> Mus sp.

<400> 155
Ile Ser Gln Ala Val His Ala Ala His Ala Glu Ile Asn Glu Ala Gly
1 5 10 15

Arg

<210> 156
<211> 20
<212> PRT
<213> Mus sp.

<400> 156
Met Thr Glu Gln Gln Trp Asn Phe Ala Gly Ile Glu Ala Ala Ala Ser
1 5 10 15

Ala Ile Gln Gly
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<210> 157
<211> 21
<212> PRT

<213> Mus sp.

<400> 157
Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser
1 5 10 15

Ala Ser His Leu Glu
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<210> 158
<211> 15
<212> PRT
<213> Mus sp.

<400> 158
Asp Gly Ser Thr Asp Tyr Gly Ile Leu Gln Ile Asn Ser Arg Trp
1 5 10 15

<210> 159
<211> 21
<212> PRT
<213> Mus sp.

<400> 159
Met Glu Val Gly Trp Tyr Arg Ser Pro Phe Ser Arg Val Val His Leu
1 5 10 15

Tyr Arg Asn Gly Lys
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<210> 160
<211> 25
<212> PRT
<213> Mus sp.

<400> 160
Val Ser Gly Leu Glu Gln Leu Glu Ser Ile Ile Asn Phe Glu Lys Leu
1 5 10 15

Thr Glu Trp Thr Ser Ser Asn Val Met
20 25

<210> 161
<211> 25
<212> PRT
<213> Mus sp.

<400> 161
Ala Leu Leu Ala Val Gly Ala Leu Glu Gly Pro Arg Asn Gln Asp Trp
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Leu Gly Val Pro Arg Gln Leu Val Thr
20 25

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<211> 25
<212> PRT
<213> Mus sp.

<400> 162
Leu Trp Pro Arg Val Thr Tyr His Ser Pro Ser Tyr Ala Tyr His Gln
1 5 10 15

Phe Glu Arg Arg Ala Lys Tyr Lys Arg
20 25

<210> 163
<211> 25
<212> PRT
<213> Mus sp.

<400> 163
Leu Trp Pro Arg Val Thr Tyr His Met Asn Lys Tyr Ala Tyr His Met
1 5 10 15

Leu Glu Arg Arg Ala Lys Tyr Lys Arg
20 25

<210> 164
<211> 25
<212> PRT
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<400> 164
Gly Gln Ser Leu Val Ile Ser Ala Ser Ile Ile Val Phe Asn Leu Leu
1 5 10 15

Glu Leu Glu Gly Asp Tyr Arg Asp Asp
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<210> 165
<211> 25
<212> PRT
<213> Mus sp.

<400> 165
Gly Ile Pro Val His Leu Glu Leu Ala Ser Met Thr Asn Met Glu Leu
1 5 10 15

Met Ser Ser Ile Val His Gln Gln Val
20 25

<210> 166
<211> 25
<212> PRT
<213> Mus sp.

<400> 166
Arg Val Leu Glu Leu Phe Arg Ala Ala Gln Leu Ala Asn Asp Val Val
1 5 10 15

Leu Gln Ile Met Glu Leu Cys Gly Ala
20 25

<210> 167
<211> 25
<212> PRT
<213> Mus sp.

<400> 167
His Arg Tyr Ser Leu Glu Glu Ile Leu Pro Tyr Leu Gly Trp Leu Val
1 5 10 15

Phe Ala Val Val Thr Thr Ser Phe Leu
20 25

<210> 168
<211> 25
<212> PRT
<213> Mus sp.

<400> 168
Tyr Leu Ser Lys Asn Pro Asp Gly Tyr Cys Gly Leu Arg Gly Thr Gly
1 5 10 15

Val Ser Cys Pro Met Ala Ile Lys Lys
20 25

<210> 169
<211> 25
<212> PRT
<213> Mus sp.

<400> 169
Asn Glu Ile Pro Phe Thr Tyr Glu Gln Leu Ser Ile Phe Lys His Lys
1 5 10 15

Leu Asp Lys Thr Tyr Pro Gln Gly Tyr
20 25

<210> 170
<211> 25
<212> PRT
<213> Mus sp.

<400> 170
Ser Arg Ala Ser Leu Leu Gly Pro Gly Phe Val Leu Ile Trp Ile Pro
1 5 10 15

Ala Leu Leu Pro Ala Leu Arg Leu Ser
20 25

<210> 171
<211> 25
<212> PRT
<213> Mus sp.

<400> 171
Asn Trp His Lys Gly Trp Asn Trp Ser Ser Gly His Asn Glu Cys Pro
1 5 10 15

Val Gly Ala Ser Cys His Pro Phe Thr
20 25

<210> 172
<211> 25
<212> PRT
<213> Mus sp.

<400> 172
Lys Thr Leu Leu Lys Val Ser Lys Gly Gln Lys Met Asn Ala Gln Ala
1 5 10 15

Ile Ala Leu Val Ala Cys Tyr Leu Arg
20 25

<210> 173
<211> 25
<212> PRT
<213> Mus sp.

<400> 173
Glu Ser Leu Lys Ile Ser Gln Ala Val His Ala Ala His Ala Glu Ile
1 5 10 15

Asn Glu Ala Gly Arg Glu Val Val Gly

20 25

<210> 174
<211> 25
<212> PRT
<213> Mus sp.

<400> 174
Met Thr Glu Gln Gln Trp Asn Phe Ala Gly Ile Glu Ala Ala Ala Ser
1 5 10 15

Ala Ile Gln Gly Asn Val Thr Ser Ile
20 25

<210> 175
<211> 25
<212> PRT
<213> Mus sp.

<400> 175
Asp Met Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys
1 5 10 15

Val Ser Ala Ser His Leu Glu Gln Tyr
20 25

<210> 176
<211> 25
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<213> Mus sp.

<400> 176
Thr Asn Arg Asn Thr Asp Gly Ser Thr Asp Tyr Gly Ile Leu Gln Ile
1 5 10 15

Asn Ser Arg Trp Trp Cys Asn Asp Gly
20 25

<210> 177
<211> 25
<212> PRT
<213> Mus sp.

<400> 177
Thr Gly Met Glu Val Gly Trp Tyr Arg Ser Pro Phe Ser Arg Val Val
1 5 10 15

His Leu Tyr Arg Asn Gly Lys Asp Gln
20 25

<210> 178
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 178
gtggtgtgca gcgagaatag 20

<210> 179
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 179
cgctcgttgt agatgtcgtt ag 22

<210> 180
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic probe

<400> 180
ttcatgcccg tgttg 15

<210> 181
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 181
gtttttgatc cagacccaga tg 22

<210> 182
<211> 21
<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 182
gcccattatt cagagcgagt a 21

<210> 183
<211> 14
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
probe

<400> 183
tcaccaggat ccac 14

<210> 184
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 184
ccttgcacat gccggag 17

<210> 185
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 185
acagagcctc gcctttg 17

<210> 186
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
probe

<400> 186
gtgagctggc gg 12

<210> 187
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 187
ctgaaagctc ggtttgctaa tg 22

<210> 188
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 188
ccatgctgga agagacaatc t 21

<210> 189
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic probe

<400> 189
tggcgctgac cgata 15

<210> 190
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 190
tatgcctatc ctgtctcctc tg 22

<210> 191
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 191
gctaatgcag ctaagtcctc tc 22

<210> 192
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic probe

<400> 192
tgaccgtgcc ttctg 15

<210> 193
<211> 9
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: AH1 epitope sequence

<400> 193
Ser Pro Ser Tyr Val Tyr His Gln Phe
1 5

<210> 194
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 194
Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu
1 5 10

<210> 195
<211> 9
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<213> Homo sapiens

<400> 195
Asp Leu Met Gly Tyr Ile Pro Ala Val
1 5

<210> 196
<211> 10
<212> PRT
<213> Homo sapiens

<400> 196
Phe Leu Pro Ser Asp Phe Phe Pro Ser Val
1 5 10

<210> 197
<211> 9
<212> PRT
<213> Homo sapiens

<400> 197
Phe Leu Leu Thr Arg Ile Leu Thr Ile
1 5

<210> 198
<211> 9
<212> PRT
<213> Homo sapiens

<400> 198
Phe Leu Leu Ser Leu Gly Ile His Leu
1 5

<210> 199
<211> 9
<212> PRT
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<400> 199
Ile Leu Lys Glu Pro Val His Gly Val
1 5

<210> 200
<211> 10
<212> PRT
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<400> 200
Tyr Met Leu Asp Leu Gln Pro Glu Thr Thr
1 5 10

<210> 201
<211> 9
<212> PRT
<213> Homo sapiens

<400> 201
Cys Ile Asn Gly Val Cys Trp Thr Val
1 5

<210> 202
<211> 10
<212> PRT
<213> Homo sapiens

<400> 202
Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu
1 5 10

<210> 203
<211> 9
<212> PRT
<213> Homo sapiens

<400> 203
Phe Leu Tyr Ala Leu Ala Leu Leu Leu
1 5

<210> 204
<211> 9
<212> PRT
<213> Homo sapiens

<400> 204
Ala Ala Gly Ile Gly Ile Leu Thr Val
1 5

<210> 205
<211> 9
<212> PRT
<213> Homo sapiens

<400> 205
Ser Leu Leu Met Trp Ile Thr Gln Val
1 5

<210> 206
<211> 9
<212> PRT
<213> Homo sapiens

<400> 206
Lys Leu Gly Gly Ala Leu Gln Ala Lys

1 5

<210> 207
<211> 9
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<213> Homo sapiens

<400> 207
Arg Leu Arg Ala Glu Ala Gln Val Lys
1 5

<210> 208
<211> 10
<212> PRT
<213> Homo sapiens

<400> 208
Glu Glu Asn Leu Leu Asp Phe Val Arg Phe
1 5 10

<210> 209
<211> 9
<212> PRT
<213> Homo sapiens

<400> 209
Glu Glu Tyr Leu Gln Ala Phe Thr Tyr
1 5

<210> 210
<211> 9
<212> PRT
<213> Mus sp.

<400> 210
Asp Trp Glu Asn Val Ser Pro Glu Leu
1 5