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<120> CHIMERIC ANTIGEN RECEPTORS AND METHODS OF MAKING

<130> UTFC.P1231WO

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<150> 61/940,339
<151> 2014-02-14

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cccagcgaca gcgagagcca ctacaaccag aagttcaagg acaaggccac actgaccgtg 600

gacaagagca gcaacaccgc ctacatccag ctgtcttctc tgaccagcga ggacagcgcc 660

gtgtactatt gcgccagata cgactacgac gacaccatgg actactgggg ccagggcacc 720

agcgtgaccg tgtct 735

<210> 12
<211> 810
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 12
atggattttc aggtgcagat tttcagcttc ctgctaatca gtgcctcagt cataatgtct 60

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agacggaggc ctggacacga tctggaatgg attggataca ttaatcctag cagtggatgt 240

tctgactaca atcaaaactt caagggcaag accacattga ctgcagacaa gtcctccaac 300

acagcctaca tgcaactgaa cagcctgaca tctgaggact ctgcggtcta ttactgtgca 360

agaagagcgg actatggtaa ctacgaatat acctggtttg cttactgggg ccaagggacc 420

acggtcaccg tctcctcaag tggaggcggt tcaggtggag gtggctctgg cggtggcgga 480

tcggtcatcg agctcactca gtctccaaaa ttcatgtcca catcagtagg agacagggtc 540

aacgtcacct acaaggccag tcagaatgtg ggtactaatg tagcctggtt tcaacaaaaa 600

ccagggcaat ctcctaaagt tctgatttac tcggcatctt accgatacag tggagtccct 660

gatcgcttca caggcagtgg atctggaaca gatttcactc tcaccatcag caatgtgcag 720

tctgaagact tggcagagta tttctgtcag caatatcaca cctatcctct cacgttcgga 780

gggggcacca agctggaaat caaacggtcg 810

<210> 13
<211> 735
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 13
caggtgcagc tggtgcagag cggcggcggc ctggtgcagc atggcggcag cctgcgcctg 60

agctgcgcgg cgagcggctt tacctttagc agctatgaaa tgaactgggt gcgccaggcg 120

ccgggcaaag gcctggaatg ggtgagcggc attagcggca gcggcggcag cacctattat 180

gcggatagcg tgaaaggccg ctttaccccc attagccgcg ataacagcaa aaacaccctg 240

tatctgcaga tgaaccgcct gcgcgcggaa gataccgcgg tgtattattg cgcgcgcgat 300

aacggctggg aactgaccga ttggtatttt gatctgtggg gccgcggcac catggtgacc 360

gtgagcagcg gcggcggcgg cagcggcggc ggcggcagcg gcggcggcgg cagcgatatt 420

cagatgaccc agagcccgag caccctgagc gcgagcattg gcgatcgcgt gaccattacc 480

tgccgcgcga gcgaaggcat ttatcattgg ctggcgtggt atcagcagaa accgggcaaa 540

gcgccgaaac tgctgattta taaagcgagc agcctggcga gcggcgcgcc gagccgcttt 600

agcggcagcg gcagcggcac cgattttacc ctgaccatta gcagcctgca gccggatgat 660

tttgcgacct attattgcca gcagtatagc aactatccgc tgacctttgg cggcggcacc 720

aaactggaaa ttaaa 735

<210> 14
<211> 747
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 14
gacgttgtga tgacccagac ccctctgagc ctgcctgtgt ccctgggaga tcaggccagc 60

atcagctgca gaagcagcca gagcctgctg aagaacaacg gcaacacctt cctgcactgg 120

tatctgcaga agtccggcca gtcccccaag ctgctgatct acaaggtgtc caaccggctg 180

agcggcgtgc ccgatagatt ttctggctct ggcagcggca cctacttcac cctgaagatc 240

agccgggtgg aagccgagga cctgggcgtg tacttctgta gccagagcac ccacatccct 300

tacaccttcg gcggaggcac caagctggaa ctgaagcggg gcagcacctc cggcagcggc 360

aagcctggca gcggcgaggg cagcaccaag ggcgaagtga agctggtgga aagcggcgga 420

ggcctggtgc tgcctggcga ttctctgaga ctgagctgcg ccaccagcga gttcaccttc 480

accgactact acatgacctg ggtgcgccag ccccccagaa aggctctgga atggctgggc 540

ttcatccgga accgggccaa cggctacacc accgagtaca accctagcgt gaagggccgg 600

ttcaccatca gccgggacaa cagccagagc atcctgtacc tgcagatgaa caccctgcgg 660

accgaggaca gcgccaccta ctactgtgct cgggtgtcca actgggcctt cgactattgg 720

ggccagggca ccaccctgac cgtgtct 747

<210> 15
<211> 759
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 15
gacatcaaga tgacccagag ccccagctct atgtacgcca gcctgggcga gcgcgtgacc 60

atcacctgta aagccagccc cgacatcaac agctacctga gctggttcca gcagaagccc 120

ggcaagagcc ccaagaccct gatctaccgg gccaacagac tggtggatgg cgtgcccagc 180

agattcagcg gcggaggctc tggccaggac tacagcctga ccatcaactc cctggaatac 240

gaggacatgg gcatctacta ctgcctgcag tacgacgagt tcccctacac cttcggaggc 300

ggcaccaagc tggaaatgaa gggcagcaca agcggcagcg gcaagcctgg atctggcgag 360

ggaagcacca agggcgaagt gaagctggtg gaatctggcg gcggactcgt gaagcctggc 420

ggctctctga agctgtcttg tgccgccagc ggcttcacct tcagcagcta cgccatgagc 480

tgggtgcggc agatccccga gaagcggctg gaatgggtgg ccagcatcag cagaggcgga 540

accacctact accccgactc tgtgaagggc cggttcacca tcagccggga caacgtgcgg 600

aacatcctgt acctgcagat gagcagcctg cggagcgagg acaccgccat gtactactgt 660

ggcagatacg actacgacgg ctactatgcc atggattact ggggccaggg caccagcgtg 720

accgtgtcta gccagggaac ctccgtgaca gtgtccagc 759

<210> 16
<211> 759
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 16
gaagtacatc tggttgagtc tggtggagac ttagtgaagc ctggagggtc cctgaaactc 60

tcctgtgcag cctctggatt cactttcagt cactatggca tgtcttgggt tcgccagact 120

ccagacaaga ggctggagtg ggtcgcaacc attggtagtc gtggtactta cacccactat 180

ccagacagtg tgaagggacg attcaccatc tccagagaca atgacaagaa cgccctgtac 240

ctgcaaatga acagtctgaa gtctgaagac acagccatgt attactgtgc aagaagaagt 300

gaattttatt actacggtaa tacctactat tactctgcta tggactactg gggccaaggc 360

accacggtca ccgtctcctc aggtggcggt ggcagcggcg gtggtgggtc cggtggcggc 420

ggatctgaca tcgtactcac acagtctcca gctagcctgg ctgtatctct aggacagagg 480

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tggttccaac agaaaccagg acagccaccc aaactcctca tctatgctat atccaaccga 600

ggatccgggg tccctgccag gtttagtggc agtgggtctg ggacagactt cagcctcaac 660

atccatcctg tagaggagga tgatcctgca atgtatttct gtcagcaaac taaggaggtt 720

ccgtggacgt tcggagctgg caccaagctc gagatcaaa 759

<210> 17
<211> 543
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 17
atggccatct ggcggagcaa cagcggcagc aacaccctgg aaaacggcta cttcctgagc 60

cggaacaaag agaaccacag ccagcccacc cagagcagcc tggaagatag cgtgaccccc 120

accaaggccg tgaaaaccac cggcgtgctg tccagcccct gccctcccaa ctggatcatc 180

tacgagaaga gctgctacct gttcagcatg agcctgaaca gctgggacgg cagcaagcgg 240

cagtgctggc agctgggcag caacctgctg aagatcgaca gcagcaacga gctgggcttc 300

atcgtgaagc aggtgtccag ccagcccgac aactccttct ggatcggcct gagcaggccc 360

cagaccgagg tgccctggct gtgggaggac ggctccacct tcagctccaa cctgttccag 420

atccggacca ccgccacaca ggaaaacccc agccccaact gcgtgtggat ccacgtgagc 480

gtgatctacg accagctgtg cagcgtgccc agctacagca tctgcgagaa gaaattcagc 540

atg 543

<210> 18
<211> 987
<212> DNA
<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 18
atggattttc aggtgcagat tttcagcttc ctgctaatca gtgcctcagt cataatgtct 60

agacaattcc aagtgaagct ggaggagtct ggggctgagc ttgtgaggcc aggggccttg 120

gtcaagttgt cctgcaaaac ttctggcttc aacattaaag actacttttt acactgggtg 180

agacagaggc ctgaccaggg cctggagtgg attggatgga ttaatcctga taatggtaat 240

actgtttatg acccgaagct tcagggcacg gccagtttaa cagcagacac atcctccaac 300

acagtctact tgcagctcag cggcctgaca tctgaggaca ctgccgtcta tttctgtact 360

cggagggact atacttatga aaaggctgct ctggactact ggggtcaggg agcctcagtc 420

atcgtctcct cagccaaaac aacagcccca tcggtctatc cactggcccc tgtgtgtgga 480

gatacaactg gctcctcggt gactctagga tgcctggtca agagatctgg cggtggcggt 540

tctggtggcg gtggctccgg cggtggcggt tctggagctc gacattgtgc tcacacagac 600

tccaaatcca tgtccatgtc agtaggagag agggtcacct tgacctgcaa ggccagtgag 660

aatgtggtta cttatgtttc ctggtatcaa cagaaaccag agcagtctcc taaactgctg 720

atatacgggg catccaaccg gtacactggg gtccccgatc gcttcacagg cagtggatct 780

gcaacagatt tcactctgac catcagcagt gtgcaggctg aagaccttgc agattatcac 840

tgtggacagg gttacagcta tccgtacacg ttcggagggg ggaccaagct ggaaataaaa 900

cgggctgatg ctgcaccaac ttatccgcat caccatcatc atcatcatct gcagatatcc 960

agcacagtgg cggccgctcg agtctag 987

<210> 19
<211> 753
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 19
ctgatcccca tggcccaggt gaagctgcag cagagcggcc ctgatctggt gaagcctggc 60

gccagcgtga agatcagctg caaggccagc ggctacagct tcaccggcta ctacatgcac 120

tgggtgaaac agagccacgg caagagcctg gaatggatcg gcagagtgaa ccccaatagc 180

ggcggcacca gctacaacca gaagttcaag gacaaggcca tcctgaccgt ggacaagagc 240

agcagcaccg cctacatgga actgcggagc ctgaccagcg aggacagcgc cgtgtactac 300

tgcgcccggt ccaagggcaa ctacttctac gccatggact actggggcca gggcaccacc 360

gtgaccgtgt ctagcagcgg cggaggaagc ggaggggggag gatctggcgg aggcggcagc 420

gatatcgagc tgacccagag ccctagcagc ctggccgtgt cactgggcca gagagccacc 480

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cagcagaagc ccggccagcc ccccaagttc ctgatctacc gggccagcaa cctggaaagc 600

ggcatccccg ccagattttc cggcagcggc agcagaaccg acttcaccct gaccatcaac 660

cccgtggaga cagacgacgt ggccatctac tactgccagc agagcaacga ggaccctccc 720

acctttggcg gaggcaccaa gctggaactg aag 753

<210> 20
<211> 732
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 20
gaagtgcagc tggtggaatc tggcggcgga ctggtgcagc ctggcggatc tctgagactg 60

agctgtgccg ccagcggctt cgacttcagc cggtactgga tgagctgggt gcgccaggcc 120

cctggcaaag gcctggaatg gatcggcgag atcaaccccg acagcagcac catcaactac 180

gcccccagcc tgaaggacaa gttcatcatc agccgggaca acgccaagaa cagcctgtac 240

ctgcagatga actccctgcg ggccgaggac accgccgtgt actattgcgc cagacccgac 300

ggcaactact ggtacttcga cgtgtggggc cagggcaccc tcgtgacagt gtctggcagc 360

acaagcggct ctggcaagcc tggatctggc gagggctcta ccaagggcga catccagatg 420

acccagagcc ccagcagcct gtctgccagc gtgggcgaca gagtgaccat cacatgcaag 480

gccagccagg acgtgggaat cgccgtggcc tggtatcagc agaaacccgg caaggtgccc 540

aagctgctga tctactgggc cagcaccaga cacaccggcg tgcccgatag attttccggc 600

agcggctccg gcaccgactt caccctgaca atcagctccc tgcagcctga ggacgtggcc 660

acctactact gccagcagta cagcagctac ccctacacct tcggacaggg caccaaggtg 720

gaaatcaagc gg 732

<210> 21
<211> 720
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 21
caggtgcagc tgcagcagtc tggccccgag ctggaaaaac ctggcgcctc cgtgaagatc 60

agctgcaagg ccagcggcta cagcttcacc ggctacacca tgaactgggt caagcagagc 120

cacggcaaga gcctggaatg gatcggcctg atcaccccct acaacggcgc cagcagctac 180

aaccagaagt tccggggcaa ggccaccctg accgtggaca agtctagcag caccgcctac 240

atggacctgc tgagcctgac cagcgaggac agcgccgtgt acttctgtgc cagaggcggc 300

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gtgggaggat ctggcggagg cggaagtggc ggaggggat ctgatatcga gctgacccag 420

agccccgcca tcatgtctgc tagccctggc gagaaagtga ccatgacctg cagcgccagc 480

tccagcgtgt cctacatgca ctggtatcag cagaagtccg gcaccagccc caagcggtgg 540

atctacgaca caagcaagct ggcctctggc gtgcccggca gattttctgg cagcggctcc 600

ggcaacagct actccctgac aatcagcagc gtggaagccg aggacgacgc cacctactac 660

tgccagcagt ggagcggcta ccccctgact tttggagccg gcaccaagct ggaaatcaag 720

<210> 22
<211> 60
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 22
agccaggaag agatgaccaa gaaccaggtg tccctgacct gcctcgtgaa gggcttctac 60

<210> 23
<211> 141
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 23
aagcctacca caacccctgc ccccagacct cctacacccg cccctacaat tgccagccag 60

cctctgtctc tgaggcccga ggcttgtaga cctgctgctg gcggagccgt gcacaccaga 120

ggactggatt tcgcctgcga c 141

<210> 24
<211> 696
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 24
agcgagagca agtacggccc tccctgcccc ccttgccctg cccccgagtt cctgggcgga 60

cccagcgtgt tcctgttccc ccccaagccc aaggacaccc tgatgatcag ccggaccccc 120

gaggtgacct gtgtggtggt ggacgtgtcc caggaggacc ccgaggtcca gttcaactgg 180

tacgtggacg gcgtggaggt gcacaacgcc aagaccaagc cccgggagga gcagttcaat 240

agcacctacc gggtggtgtc cgtgctgacc gtgctgcacc aggactggct gaacggcaag 300

gaatacaagt gtaaggtgtc caacaagggc ctgcccagca gcatcgagaa aaccatcagc 360

aaggccaagg gccagcctcg ggagccccag gtgtacaccc tgcccccctag ccaagaggag 420

atgaccaaga atcaggtgtc cctgacctgc ctggtgaagg gcttctaccc cagcgacatc 480

gccgtggagt gggagagcaa cggccagccc gagaacaact acaagaccac ccccccctgtg 540

ctggacagcg acggcagctt cttcctgtac agcaggctga ccgtggacaa gagccggtgg 600

caggagggca acgtctttag ctgctccgtg atgcacgagg ccctgcacaa ccactacacc 660

cagaagagcc tgtccctgag cctgggcaag atgttc 696

<210> 25
<211> 60

<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 25
agccaggaag agatgaccaa gaaccaggtg tccctgacct gcctcgtgaa gggcttctac 60

<210> 26
<211> 696
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 26
agcgagagca agtacggccc tccctgcccc ccttgccctg cccccgagtt cctgggcgga 60

cccagcgtgt tcctgttccc ccccaagccc aaggacaccc tgatgatcag ccggaccccc 120

gaggtgacct gtgtggtggt ggacgtgtcc caggaggacc ccgaggtcca gttcaactgg 180

tacgtggacg gcgtggaggt gcacaacgcc aagaccaagc cccgggagga gcagttccag 240

agcacctacc gggtggtgtc cgtgctgacc gtgctgcacc aggactggct gaacggcaag 300

gaatacaagt gtaaggtgtc caacaagggc ctgcccagca gcatcgagaa aaccatcagc 360

aaggccaagg gccagcctcg ggagccccag gtgtacaccc tgcccccctag ccaagaggag 420

atgaccaaga atcaggtgtc cctgacctgc ctggtgaagg gcttctaccc cagcgacatc 480

gccgtggagt gggagagcaa cggccagccc gagaacaact acaagaccac ccccccctgtg 540

ctggacagcg acggcagctt cttcctgtac agcaggctga ccgtggacaa gagccggtgg 600

caggagggca acgtctttag ctgctccgtg atgcacgagg ccctgcacaa ccactacacc 660

cagaagagcc tgtccctgag cctgggcaag atgttc 696

<210> 27
<211> 696
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 27
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cccagcgtgt tcctgttccc ccccaagccc aaggacaccc tgatgatcag ccggaccccc 120

gaggtgacct gtgtggtggt ggacgtgtcc caggaggacc ccgaggtcca gttcaactgg 180

tacgtggacg gcgtggaggt gcacaacgcc aagaccaagc cccgggagga gcagttccag 240

agcacctacc gggtggtgtc cgtgctgacc gtgctgcacc aggactggct gaacggcaag 300

gaatacaagt gtaaggtgtc caacaagggc ctgcccagca gcatcgagaa aaccatcagc 360

aaggccaagg gccagcctcg ggagccccag gtgtacaccc tgcccccctag ccaagaggag 420

atgaccaaga atcaggtgtc cctgacctgc ctggtgaagg gcttctaccc cagcgacatc 480

gccgtggagt gggagagcaa cggccagccc gagaacaact acaagaccac ccccccctgtg 540

ctggacagcg acggcagctt cttcctgtac agcaggctga ccgtggacaa gagccggtgg 600

caggagggca acgtctttag ctgctccgtg atgcacgagg ccctgcacaa ccactacacc 660

cagaagagcc tgtccctgag cctgggcaag atgttc 696

<210> 28
<211> 711
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 28
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ggcaccgtga acaaccacca cttcaagtgc accagcgagg gagagggcaa gccctacgag 120

ggcacccaga ccatgcggat caaggtggtc gagggcggac ctctgccctt cgccttcgac 180

atcctggcca caagcttcat gtacggcagc aagaccttca tcaaccacac ccagggcatc 240

cccgatttct tcaagcagag cttccccgag ggcttcacct gggagagagt gaccacctac 300

gaggacggcg gcgtgctgac cgccacccag gacaccagcc tgcaggacgg ctgcctgatc 360

tacaacgtga agatccgggg cgtgaacttc cccagcaacg gccccgtgat gcagaagaaa 420

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acctacagaa gcaagaagcc cgccaagaac ctgaagatgc ccggcgtgta ctacgtggac 600

cggcggctgg aaaggatcaa agaggccgac aaagaaacct acgtggagca gcacgaggtg 660

gccgtggccc ggtactgcga cctgccctcc aagctgggcc acaaactgaa c 711

<210> 29
<211> 333
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 29
atgatcgaga agtccttcgt gatcaccgac ccccggctgc ccgactaccc tatcatcttt 60

gccagcgacg gcttcctgga actgaccgag tacagccggg aagagatcat gggccggaac 120

gccagattcc tgcagggccc cgaaaccgat caggccaccg tgcagaagat ccgggacgcc 180

atcagggacc agcgggaaac cacagtgcag ctgatcaact acaccaagag cggcaagaag 240

ttctggaacc tgctgcatct gcagcccgtg cgggatagaa agggcggcct gcagtacttc 300

atcggcgtgc agctcgtggg cagcgaccac gtg 333

<210> 30
<211> 675
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 30
atggccagca gcgaggacgt gatcaaagaa ttcatgcggt tcaaagtgcg gatggaaggc 60

agcgtgaacg gccacgagtt cgagattgag ggcgagggcg aaggcagacc ctacgaggga 120

acacagaccg ccaagctgaa agtgaccaag ggcggacccc tgcccttcgc ctgggatatc 180

ctgagccccc agttccagta cggcagcaag gtgtacgtga agcaccccgc cgacatcccc 240

gactacaaga agctgagctt ccccgagggc ttcaagtggg agagagtgat gaacttcgag 300

gacggcggcg tcgtgaccgt gacccaggat agctctctgc aggacggcag cttcatctac 360

aaagtgaagt ttatcggcgt gaacttcccc agcgacggcc ccgtgatgca gaaaaagacc 420

atgggctggg aggccagcac cgagagactg taccctagag atggcgtgct gaagggcgag 480

atccacaagg ccctgaagct gaaggatggc ggccactacc tggtggaatt caagagcatc 540

tacatggcca agaaacccgt gcagctgccc ggctactact acgtggacag caagctggac 600

atcaccagcc acaacgagga ctacaccatc gtggaacagt acgagcgggc cgagggccgg 660

caccatctgt ttctg 675

<210> 31
<211> 717
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 31
atggtgtcca agggcgagga actgttcacc ggcgtggtgc ccatcctggt ggaactggat 60

ggcgacgtga acggccacaa gttcagcgtg tccggcgagg gcgaaggcga cgccacatat 120

ggcaagctga ccctgaagct gatctgcacc accggcaagc tgcccgtgcc ttggcctacc 180

ctcgtgacca cactgggcta cggcctgcag tgcttcgcca gataccccga ccatatgaag 240

cagcacgact tcttcaagag cgccatgccc gagggctacg tgcaggaacg gaccatcttc 300

tttaaggacg acggcaacta caagaccagg gccgaagtga agttcgaggg cgacaccctc 360

gtgaaccgga tcgagctgaa gggcatcgac ttcaaagagg acggcaacat cctgggccac 420

aagctggagt acaactacaa cagccacaac gtgtacatca ccgccgacaa gcagaagaac 480

ggcatcaagg ccaacttcaa gatccggcac aacatcgagg acggcggcgt gcagctggcc 540

gatcactacc agcagaacac ccctatcggc gacggccctg tgctgctgcc cgacaatcac 600

tacctgagct accagagcgc cctgagcaag gaccccaacg agaagcggga ccacatggtg 660

ctgctggaat tcgtgaccgc cgctggcatc accctgggca tggacgagct gtacaag 717

<210> 32
<211> 717
<212> DNA
<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 32
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ggcgacgtaa acggccacaa gttcagcgtg tccggcgagg gcgagggcga tgccacctac 120

ggcaagctga ccctgaagtt catctgcacc accggcaagc tgcccgtgcc ctggcccacc 180

ctcgtgacca ccctgaccta cggcgtgcag tgcttcagcc gctaccccga ccacatgaag 240

cagcacgact tcttcaagtc cgccatgccc gaaggctacg tccaggagcg caccatcttc 300

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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

ctgctggagt tcgtgaccgc cgccgggatc actctcggca tggacgagct gtacaag 717

<210> 33
<211> 363
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 33
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accaagaatc aggtgtccct gacctgcctg gtgaagggct tctaccccag cgacatcgcc 120

gtggagtggg agagcaacgg ccagcccgag aacaactaca agaccacccc ccctgtgctg 180

gacagcgacg gcagcttctt cctgtacagc aggctgaccg tggacaagag ccggtggcag 240

gagggcaacg tctttagctg ctccgtgatg cacgaggccc tgcacaacca ctacacccag 300

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tac 363

<210> 34
<211> 708
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 34
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ctgaagatgg agggcaacgt gaatggccac gccttcgtga tcgagggcga gggcgagggc 120

aagccctacg acggcaccaa caccatcaac ctggaggtga aggagggagc ccccctgccc 180

ttctcctacg acattctgac caccgcgttc gcctacggca acagggcctt caccaagtac 240

cccgacgaca tccccaacta cttcaagcag tccttccccg agggctactc ttgggagcgc 300

accatgacct tcgaggacaa gggcatcgtg aaggtgaagt ccgacatctc catggaggag 360

gactccttca tctacgagat acacctcaag ggcgagaact tccccccccaa cggccccgtg 420

atgcagaaga agaccaccgg ctgggacgcc tccaccgaga ggatgtacgt gcgcgacggc 480

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gacttcaaga ccatctacag ggccaagaag gcggtgaagc tgcccgacta tcactttgtg 600

gaccaccgca tcgagatcct gaaccacgac aaggactaca acaaggtgac cgtttacgag 660

agcgccgtgg cccgcaactc caccgacggc atggacgagc tgtacaag 708

<210> 35
<211> 423
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 35
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ggactggatt tcgcctgcga caagcctacc acaacccctg cccccagacc tcctacaccc 180

gcccctacaa ttgccagcca gcctctgtct ctgaggcccg aggcttgtag acctgctgct 240

ggcggagccg tgcacaccag aggactggat ttcgcctgcg acagcagcgg cggcggcggc 300

agcggcggcg gcggcagcgg cggcggcggc agcgcgcagc tgaaaaaaaa actgcaggcg 360

ctgaaaaaaa aaaacgcgca gctgaaatgg aaactgcagg cgctgaaaaa aaaactggcg 420

cag 423

<210> 36
<211> 423
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 36
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cctctgtctc tgaggcccga ggcttgtaga cctgctgctg gcggagccgt gcacaccaga 120

ggactggatt tcgcctgcga caagcctacc acaacccctg cccccagacc tcctacaccc 180

gcccctacaa ttgccagcca gcctctgtct ctgaggcccg aggcttgtag acctgctgct 240

ggcggagccg tgcacaccag aggactggat ttcgcctgcg acagcagcgg cggcggcggc 300

agcggcggcg gcggcagcgg cggcggcggc agcgcccagc tggaaaaaga gctgcaggcc 360

ctggaaaaag aaaacgctca gctggaatgg gaactgcagg ctctggaaaa agagctggcc 420

cag 423

<210> 37
<211> 69
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 37
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ttcatcatc 69

<210> 38
<211> 81
<212> DNA
<213> Artificial sequence

<220>
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<400> 38
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accctgcggt tcagcgtggt g 81

<210> 39
<211> 84
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 39
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acccttttact gcaaccacag gaac 84

<210> 40
<211> 63
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 40
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ctg 63

<210> 41
<211> 144
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 41
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agatacagct gccccagaga ggaagagggc agcaccatcc caatccagga agattaccgg 120

aagcccgagc ccgcctgtag ccct 144

<210> 42
<211> 132
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 42
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cggaggcctg gccccacccg gaagcactac cagccctacg cccctcccag ggacttcgcc 120

gcctaccgga gc 132

<210> 43
<211> 132
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 43
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cggaggcctg gccccacccg gaagcactac cagccctacg cccctcccag ggacttcgcc 120

gcctaccgga gc 132

<210> 44
<211> 108
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 44
agggaccaga gactgcctcc cgatgcccac aaacctccag gcggcggaag cttcagaacc 60

cccatccagg aagaacaggc cgacgcccac agcaccctgg ccaagatt 108

<210> 45
<211> 126
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 45
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accacccagg aagaggacgg ctgctcctgc agattccccg aggaagaaga aggcggctgc 120

gagctg 126

<210> 46
<211> 102
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 46
aagaaaaagt acagcagcag cgtgcacgac cccaacggcg agtacatgtt catgcgggcc 60

gtgaacaccg ccaagaagtc cagactgacc gacgtgaccc tg 102

<210> 47
<211> 336
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 47
cgggtgaagt tcagccggag cgccgacgcc cctgcctacc agcagggcca gaaccagctg 60

tacaacgagc tgaacctggg ccggagggag gagtacgacg tgctggacaa gcggagaggc 120

cgggaccctg agatgggcgg caagccccgg agaaagaacc ctcaggaggg cctgtataac 180

gaactgcaga aagacaagat ggccgaggcc tacagcgaga tcggcatgaa gggcgagcgg 240

cggaggggca agggccacga cggcctgtac cagggcctga gcaccgccac caaggatacc 300

tacgacgccc tgcacatgca ggccctgccc cccaga 336

<210> 48
<211> 759
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 48
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attacctgcc gcagcagcca gaacattgtg catagcaacg gcaacaccta tctggattgg 120

tatcagcaga ccccgggcaa agcgccgaaa ctgctgattt ataaagtgag caaccgcttt 180

agcggcgtgc cgagccgctt tagcggcagc ggcagcggca ccgattttac ctttaccatt 240

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tggacctttg gccagggcac caaactgcag attaccggca gcacctccgg cagcggcaag 360

cctggcagcg gcgagggcag caccaagggc agccaggtgc agctgcagca gagcggcgcg 420

gaagtgaaaa aaccgggcag cagcgtgaaa gtgagctgca aagcgagcgg ctataccttt 480

accaactatt atatttattg ggtgcgccag gcgccgggcc agggcctgga atggattggc 540

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attaccgcgg atgaaagcag caccaccgcg tatatggaac tgagcagcct gcgcagcgaa 660

gataccgcgt tttatttttg cacccgccag ggcctgtggt ttgatagcga tggccgcggc 720

tttgattttt ggggccaggg caccaccgtg accgtgagc 759

<210> 49
<211> 732
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 49
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tttagctgcc gcgcgagcca gagcattggc accaacattc attggtatca gcagcgcacc 120

aacggcagcc cgcgcctgct gattaaatat gcgagcgaaa gcattagcgg cattccgagc 180

cgctttagcg gcagcggcag cggcaccgat tttaccctga gcattaacag cgtggaaagc 240

gaagatattg cggattatta ttgccagcag aacaacaact ggccgaccac ctttggcgcg 300

ggcaccaaac tggaactgaa aggcagcacc tccggcagcg gcaagcctgg cagcggcgag 360

ggcagcacca agggcagcca ggtgcagctg aaacagagcg gcccgggcct ggtgcagccg 420

agccagagcc tgagcattac ctgcaccgtg agcggcttta gcctgaccaa ctatggcgtg 480

cattgggtgc gccagagccc gggcaaaggc ctggaatggc tgggcgtgat ttggagcggc 540

ggcaacaccg attataacac cccgtttacc agccgcctga gcattaacaa agataacagc 600

aaaagccagg tgtttttaa aatgaacagc ctgcagagca acgataccgc gatttattat 660

tgcgcgcgcg cgctgaccta ttatgattat gaatttgcgt attggggcca gggcaccctg 720

gtgaccgtga gc 732

<210> 50
<211> 726
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 50
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agctgcaaag cgagcggcta tagctttacc ggctataaca tgaactgggt gaaacagagc 120

catggcaaaa gcctggaatg gattggccat attgatccgt attatggcga taccagctat 180

aaccagaaat ttcgcggcaa agcgaccctg accgtggata aaagcagcag caccgcgtat 240

atgcagctga aaagcctgac cagcgaagat agcgcggtgt attattgcgt gaaaggcggc 300

tattatggcc attggtattt tgatgtgtgg ggcgcgggca ccaccgtgac cgtgagcagc 360

ggcggaggcg gctctggcgg cggaggatca ggtggcggag gatccgatat tcagatgacc 420

cagagcccga gcagcctgag cgcgagcctg ggcgaacgcg tgagcctgac ctgccgcgcg 480

agccaggata ttggcagcag cctgaactgg ctgcagcagg gcccggatgg caccattaaa 540

cgcctgattt atgcgaccag cagcctggat agcggcgtgc cgaaacgctt tagcggcagc 600

cgcagcggca gcgattatag cctgaccatt agcagcctgg aaagcgaaga ttttgtggat 660

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ctgaaa 726

<210> 51
<211> 111
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 51

Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly
1 5 10 15

Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
20 25 30

Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys
35 40 45

Pro Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys
50 55 60

Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg
65 70 75 80

Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr
85 90 95

Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
100 105 110

<210> 52
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 52

Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly
1 5 10 15

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Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
            20                  25                  30

Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys
        35                  40                  45

Pro Gln Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln
    50                  55                  60

Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu
65                  70                  75                  80

Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala
                85                  90                  95

Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala
            100                 105
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<210> 53
<211> 112
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 53

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Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly
1               5                   10                  15

Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
            20                  25                  30

Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys
        35                  40                  45

Pro Gln Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln
    50                  55                  60

Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu
65                  70                  75                  80
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Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala
85 90 95

Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
100 105 110

<210> 54
<211> 111
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 54

Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly
1 5 10 15

Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
20 25 30

Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys
35 40 45

Pro Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys
50 55 60

Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg
65 70 75 80

Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr
85 90 95

Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
100 105 110

<210> 55
<211> 2034
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 55
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gtgaccatca gctgccgggc cagccaggac atcagcaagt acctgaactg gtatcagcag 180

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gtgtcctgga tccggcagcc ccctaggaag ggcctggagt ggctgggcgt gatctggggc 600

agcgagacca cctactacaa cagcgccctg aagagccggc tgaccatcat caaggacaac 660

agcaagagcc aggtgttcct gaagatgaac agcctgcaga ccgacgacac cgccatctac 720

tactgtgcca agcactacta ctacggcggc agctacgcca tggactactg gggccagggc 780

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gacaagcgga gaggccggga ccctgagatg ggcggcaagc cccggagaaa gaaccctcag 1860

gagggcctgt ataacgaact gcagaaagac aagatggccg aggcctacag cgagatcggc 1920

atgaagggcg agcggcggag gggcaagggc cacgacggcc tgtaccaggg cctgagcacc 1980

gccaccaagg atacctacga cgccctgcac atgcaggccc tgcccccag atga 2034

<210> 56
<211> 2040
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 56
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gtgaccatca gctgccgggc cagccaggac atcagcaagt acctgaactg gtatcagcag 180

aagcccgacg gcaccgtcaa gctgctgatc taccacacca gccggctgca cagcggcgtg 240

cccagccggt ttagcggcag cggctccggc accgactaca gcctgaccat ctccaacctg 300

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atcgagaaaa ccatcagcaa ggccaagggc cagcctcggg agccccaggt gtacaccctg 1200

ccccctagcc aagaggagat gaccaagaat caggtgtccc tgacctgcct ggtgaagggc 1260

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