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SEQUENCE LISTING

<110> Pfizer Inc.
Geles, Kenneth G.

<120> ANTI-NOTCH3 ANTIBODIES AND ANTIBODY-DRUG CONJUGATES

<130> PC71980

<160> 68

<170> PatentIn version 3.5

<210> 1
<211> 296
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

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Ala Pro Glu Val Ser Glu Glu Pro Arg Cys Pro Arg Ala Ala Cys Gln
1 5 10 15

Ala Lys Arg Gly Asp Gln Arg Cys Asp Arg Glu Cys Asn Ser Pro Gly
20 25 30

Cys Gly Trp Asp Gly Gly Asp Cys Ser Leu Ser Val Gly Asp Pro Trp
35 40 45

Arg Gln Cys Glu Ala Leu Gln Cys Trp Arg Leu Phe Asn Asn Ser Arg
50 55 60

Cys Asp Pro Ala Cys Ser Ser Pro Ala Cys Leu Tyr Asp Asn Phe Asp
65 70 75 80

Cys His Ala Gly Gly Arg Glu Arg Thr Cys Asn Pro Val Tyr Glu Lys
85 90 95

Tyr Cys Ala Asp His Phe Ala Asp Gly Arg Cys Asp Gln Gly Cys Asn

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            100                 105                 110

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

Ala Leu Leu Ala Arg Gly Val Leu Val Leu Thr Val Leu Leu Pro Pro
    130                 135                 140

Glu Glu Leu Leu Arg Ser Ser Ala Asp Phe Leu Gln Arg Leu Ser Ala
145                 150                 155                 160

Ile Leu Arg Thr Ser Leu Arg Phe Arg Leu Asp Ala His Gly Gln Ala
                165                 170                 175

Met Val Phe Pro Tyr His Arg Pro Ser Pro Gly Ser Glu Pro Arg Ala
            180                 185                 190

Arg Arg Glu Leu Ala Pro Glu Val Ile Gly Ser Val Val Met Leu Glu
        195                 200                 205

Ile Asp Asn Arg Leu Cys Leu Gln Ser Pro Glu Asn Asp His Cys Phe
    210                 215                 220

Pro Asp Ala Gln Ser Ala Ala Asp Tyr Leu Gly Ala Leu Ser Ala Val
225                 230                 235                 240

Glu Arg Leu Asp Phe Pro Tyr Pro Leu Arg Asp Val Arg Gly Glu Pro
                245                 250                 255

Leu Glu Pro Pro Glu Pro Ser Val Pro Gly Gly Gly Ser Gly Gly Gly
            260                 265                 270

Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His Glu Gly Gly
        275                 280                 285

Pro Pro His His His His His His
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290 295

<210> 2
<211> 888
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 2
gcacccgagg tctcggagga gccgcggtgc ccgcgcgccg cctgccaggc caagcgcggg 60

gaccagcgct gcgaccgcga gtgcaacagc ccaggctgcg gctgggacgg cggcgactgc 120

tcgctgagcg tgggcgaccc ctggcggcaa tgcgaggcgc tgcagtgctg gcgcctcttc 180

aacaacagcc gctgcgaccc cgcctgcagc tcgcccgcct gcctctacga caacttcgac 240

tgccacgccg gtggccgcga gcgcacttgc aacccggtgt acgagaagta ctgcgccgac 300

cactttgccg acggccgctg cgaccagggc tgcaacacgg aggagtgcgg ctgggatggg 360

ctggattgtg ccagcgaggt gccggccctg ctggcccgcg gcgtgctggt gctcacagtg 420

ctgctgccgc cggaggagct actgcgttcc agcgccgact ttctgcagcg gctcagcgcc 480

atcctgcgca cctcgctgcg cttccgcctg gacgcgcacg gccaggccat ggtcttccct 540

taccaccggc ctagtcctgg ctccgaaccc cgggcccgtc gggagctggc ccccgaggtg 600

atcggctcgg tagtaatgct ggagattgac aaccggctct gcctgcagtc gcctgagaat 660

gatcactgct tccccgatgc ccagagcgcc gctgactacc tgggagcgtt gtcagcggtg 720

gagcgcctgg acttcccgta cccactgcgg gacgtgcggg gggagccgct ggagcctcca 780

gaacccagcg tcccgggagg gggaagcgga ggcggactga acgacatctt cgaggctcag 840

aaaatcgaat ggcacgaagg tggcccacca catcatcatc atcatcac 888

<210> 3
<211> 296
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 3

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Ala Pro Glu Val Pro Glu Glu Pro Arg Cys Pro Arg Ala Ala Cys Gln
1               5                  10                  15


Ala Lys Arg Gly Asp Gln Asn Cys Asp Arg Glu Cys Asn Thr Pro Gly
            20                  25                  30


Cys Gly Trp Asp Gly Gly Asp Cys Ser Leu Asn Val Asp Asp Pro Trp
        35                  40                  45


Arg Gln Cys Glu Ala Leu Gln Cys Trp Arg Leu Phe Asn Asn Ser Arg
    50                  55                  60


Cys Asp Pro Ala Cys Ser Ser Pro Ala Cys Leu Tyr Asp Asn Phe Asp
65                  70                  75                  80


Cys Tyr Ser Gly Gly Arg Asp Arg Thr Cys Asn Pro Val Tyr Glu Lys
                85                  90                  95


Tyr Cys Ala Asp His Phe Ala Asp Gly Arg Cys Asp Gln Gly Cys Asn
            100                 105                 110


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


Ala Leu Leu Ala Arg Gly Val Leu Val Leu Thr Val Leu Leu Pro Pro
    130                 135                 140


Glu Glu Leu Leu Arg Ser Ser Ala Asp Phe Leu Gln Arg Leu Ser Ala
145                 150                 155                 160


Ile Leu Arg Thr Ser Leu Arg Phe Arg Leu Asp Ala Arg Gly Gln Ala
                165                 170                 175
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Met Val Phe Pro Tyr His Arg Pro Ser Pro Gly Ser Glu Ser Arg Val
            180                 185                 190


Arg Arg Glu Leu Gly Pro Glu Val Ile Gly Ser Val Val Met Leu Glu
        195                 200                 205


Ile Asp Asn Arg Leu Cys Leu Gln Ser Ala Glu Asn Asp His Cys Phe
    210                 215                 220


Pro Asp Ala Gln Ser Ala Ala Asp Tyr Leu Gly Ala Leu Ser Ala Val
225                 230                 235                 240


Glu Arg Leu Asp Phe Pro Tyr Pro Leu Arg Asp Val Arg Gly Glu Pro
                245                 250                 255


Leu Glu Ala Pro Glu Gln Ser Val Pro Gly Gly Gly Ser Gly Gly Gly
            260                 265                 270


Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His Glu Gly Gly
        275                 280                 285


Pro Pro His His His His His His
    290                 295
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<210> 4
<211> 888
<212> DNA
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<220>
<223> Synthetic nucleotide sequence

<400> 4

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gaccagaact gcgatcgtga gtgcaacacc ccaggctgtg gctgggatgg cggtgactgc      120

tcactgaacg tggacgaccc ctggaggcag tgtgaggcac tgcagtgctg gcgtctcttc      180
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aacaacagcc ggtgtgaccc ggcctgcagc tctccagcct gcctctatga caactttgac 240

tgctactctg gtggccgcga ccgcacctgc aaccctgttt atgagaagta ctgcgccgac 300

cactttgcag atggccgttg tgaccagggc tgcaacactg aggaatgcgg ctgggatggg 360

ctggactgtg ccagcgaggt cccggccctt ttggcccgag gggttctggt cctcacagtt 420

cttctgcctc ctgaagagtt gctgcgctcc agtgccgact ttctgcagcg actcagcgct 480

attctgcgca cctcactgcg cttccgcttg gacgcacgtg gccaggccat ggtcttcccc 540

tatcaccggc caagccctgg ctctgaatcc cgggtccgtc gtgagctggg tcctgaggtg 600

atcggctctg tggtgatgct ggagattgac aaccggctct gtctgcagtc agctgagaat 660

gaccactgct tccctgatgc ccagagtgct gctgactacc tgggagcctt gtcagcagtg 720

gagcgacttg atttcccata cccacttcgg gatgtgcgag gagagccgct ggaggcccca 780

gagcagagcg tgccaggagg gggaagcgga ggcggactga acgacatctt cgaggctcag 840

aaaatcgaat ggcacgaagg tggcccacca catcatcatc atcatcac 888

<210> 5
<211> 117
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 5

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

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

Gly Met Thr Trp Ile Arg Gln Ala Pro Gly Lys Gly Leu Thr Trp Val
35 40 45

Ala Tyr Ile Ser Ser Gly Ser Asn Tyr Ile Tyr Tyr Ala Glu Ala Val

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50 55 60

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

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

Thr Arg Arg Gly Pro Phe Val Leu Asp Ala Trp Gly Gln Gly Ala Ser
100 105 110

Val Thr Val Ser Ser
115

<210> 6
<211> 351
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 6
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tcctgtgtag cctctggatt cactttcagg gactatggaa tgacctggat tcgccaggct 120

ccagggaagg ggctgacatg ggttgcatat attagtagtg gtagcaatta catctattat 180

gcagaagcgg tgaagggccg attcaccatc tccagagaca atgccaagaa caccctgtac 240

ctgcaaatga ccagtctgag gtctgaagac actgccttgt atttttgtac aagacgaggc 300

ccgtttgttt tggatgcctg gggtcaagga gcttcagtca ctgtctcctc a 351

<210> 7
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 7

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Asp Ile Gln Met Thr Gln Ser Pro Ser Phe Leu Ser Ala Ser Val Gly
1               5                  10                  15


Asp Arg Val Thr Ile Asn Cys Lys Ala Ser Gln Ser Ile Asn Arg Tyr
            20                  25                  30


Leu His Trp Phe Gln Gln Lys Leu Gly Glu Ala Pro Lys Leu Leu Ile
        35                  40                  45


Tyr Asn Ala Asn Gly Leu Gln Thr Gly Ile Pro Ser Arg Phe Ser Gly
    50                  55                  60


Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Ser
65                  70                  75                  80


Glu Asp Val Ala Thr Tyr Phe Cys Leu Gln His Asn Thr Trp Pro Asp
                85                  90                  95


Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
            100                 105
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<210> 8
<211> 320
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 8

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atcaactgca aagcaagtca gagtattaac aggtacttac actggtttca gcagaaactt      120

ggagaagctc ccaaactcct gatatataat gcaaacggtt tgcaaacggg catcccatca      180

aggttcagtg gcagtggatc tggtactgat ttcacactta ccatcagcag cctgcagtct      240
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gaagatgttg ccacatattt ctgcttgcag cataatacgt ggccggacac gtttggcgct 300

gggaccaagc tggaactgaa 320

<210> 9
<211> 119
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 9

Gln Val Lys Leu Leu Gln Ser Gly Ala Ala Leu Val Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asp Tyr
20 25 30

Trp Val Thr Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu Trp Ile
35 40 45

Gly Glu Ile Ser Pro Asn Ser Gly Gly Thr Asn Phe Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Thr Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Arg Leu Thr Ser Glu Asp Ser Ala Ile Tyr Tyr Cys
85 90 95

Thr Arg Gly Glu Ile Arg Tyr Asn Trp Phe Ala Tyr Trp Gly Gln Gly
100 105 110

Thr Leu Val Thr Val Ser Ser
115

<210> 10

<211> 357
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 10
caggtcaagc tgctgcagtc tggggctgca ctggtgaagc ctggagcctc tgtgaagatg 60

tcttgcaaag cttctggtta tgcattcact gactactggg tgacctgggt gaagcagagt 120

catggaaaga gccttgagtg gattggggaa atttctccta acagtggtgg tactaacttc 180

aatgaaaagt tcaagggcaa ggccacattg actgtagaca aatccaccag cacagcctat 240

atggagctca gcagattgac atctgaggac tctgcaatct attactgtac aagaggggaa 300

atccgttaca attggtttgc ttactggggc caaggcactc tggtcactgt ctcctca 357

<210> 11
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 11

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asn Val Gly Asn Asn
20 25 30

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

Tyr Tyr Ala Ser Asn Arg Tyr Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Tyr Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro

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65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Arg Leu Tyr Asn Ser Pro Phe
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
100 105

<210> 12
<211> 321
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 12
aacattgtga tgacccagtc tcccaaatcc atgtccatat cagtaggaga cagggtcacc 60

atgaactgca aggccagtca gaatgtgggt aataatatag cctggtatca acagaaacca 120

gggcagtctc ctaaactgtt gatctactat gcatctaacc ggtacactgg ggtccctgat 180

cgcttcacag gcggtggata tgggacagat ttcactctca ccatcaatag tatgcaagct 240

gaagatgcag ccttttatta ctgtcagcgt ctttacaatt ctccattcac gttcggctca 300

gggacgaagt tggaaataaa g 321

<210> 13
<211> 117
<212> PRT
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<223> Synthetic peptide sequence

<400> 13

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 Arg Asp Tyr

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20 25 30

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

Ala Tyr Ile Ser Ser Gly Ser Asn Tyr Ile Tyr Tyr Ala Glu Ala 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 Arg Gly Pro Phe Val Leu Asp Ala Trp Gly Gln Gly Thr Leu
100 105 110

Val Thr Val Ser Ser
115

<210> 14
<211> 351
<212> DNA
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<220>
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<400> 14
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tcctgtgcag cctctggatt cactttcagg gactatggaa tgacctgggt ccgccaggct 120

ccagggaagg ggctggagtg ggtggcctat attagtagtg gtagcaatta catctattat 180

gcagaagcgg tgaagggccg attcaccatc tccagagaca acgccaagaa ctcactgtat 240

ctgcaaatga acagcctgag agccgaggac acggctgtgt attactgtgc gagacgaggc 300

ccgtttgttt tggatgcctg gggccaggga accctggtca ccgtctcctc a 351

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

<220>
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<400> 15

Asp Tyr Gly Met Thr
1 5

<210> 16
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
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<400> 16

Gly Phe Thr Phe Arg Asp Tyr
1 5

<210> 17
<211> 15
<212> DNA
<213> Artificial Sequence

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<400> 17
gactatggaa tgacc 15

<210> 18
<211> 21
<212> DNA
<213> Artificial Sequence

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<400> 18
ggattcactt tcagggacta t 21

<210> 19
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
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<400> 19

Tyr Ile Ser Ser Gly Ser Asn Tyr Ile Tyr Tyr Ala Glu Ala Val Lys
1 5 10 15

Gly

<210> 20
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
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<400> 20

Ser Ser Gly Ser Asn Tyr
1 5

<210> 21
<211> 51
<212> DNA
<213> Artificial Sequence

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<400> 21
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<210> 22
<211> 18
<212> DNA
<213> Artificial Sequence

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<400> 22
agtagtggta gcaattac 18

<210> 23
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
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<400> 23

Arg Gly Pro Phe Val Leu Asp Ala
1 5

<210> 24
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
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<400> 24
cgaggcccgt ttgttttgga tgcc 24

<210> 25
<211> 107
<212> PRT
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<400> 25

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Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1               5                  10                  15

Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Ser Ile Asn Arg Tyr
            20                  25                  30

Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
        35                  40                  45

Tyr Asn Ala Asn Gly Leu Gln Thr Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65                  70                  75                  80

Glu Asp Phe Ala Thr Tyr Tyr Cys Leu Gln His Asn Thr Trp Pro Asp
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
            100                 105
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<210> 26
<211> 321
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 26

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atcacttgca aagcaagtca gagtattaac aggtacttac actggtatca gcagaaacca      120

gggaaagccc ctaagctcct gatctataat gcaaacggtt tgcaaacggg ggtcccatca      180

aggttcagtg gcagtggatc tgggacagat ttcactctca ccatcagcag tctgcaacct      240

gaagattttg caacttacta ctgtttgcag cataatacgt ggccggacac gtttggcgga      300
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gggaccaagg tggagatcaa a 321

<210> 27
<211> 11
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<213> Artificial Sequence

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<400> 27

Lys Ala Ser Gln Ser Ile Asn Arg Tyr Leu His
1 5 10

<210> 28
<211> 33
<212> DNA
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<400> 28
aaagcaagtc agagtattaa caggtactta cac 33

<210> 29
<211> 7
<212> PRT
<213> Artificial Sequence

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<400> 29

Asn Ala Asn Gly Leu Gln Thr
1 5

<210> 30
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 30
aatgcaaacg gtttgcaaac g 21

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

<220>
<223> Synthetic peptide sequence

<400> 31

Leu Gln His Asn Thr Trp Pro Asp Thr
1 5

<210> 32
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 32
ttgcagcata atacgtggcc ggacacgttt 30

<210> 33
<211> 446
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 33

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 Arg Asp Tyr

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            20                  25                  30

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

Ala Tyr Ile Ser Ser Gly Ser Asn Tyr Ile Tyr Tyr Ala Glu Ala 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 Arg Gly Pro Phe Val Leu Asp Ala Trp Gly Gln Gly Thr Leu
            100                 105                 110

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

Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys
    130                 135                 140

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

Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser
                165                 170                 175

Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser
            180                 185                 190

Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn
        195                 200                 205

Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His
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    210                 215                 220

Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val
225                 230                 235                 240

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
                245                 250                 255

Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu
            260                 265                 270

Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
        275                 280                 285

Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser
    290                 295                 300

Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
305                 310                 315                 320

Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile
                325                 330                 335

Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro
            340                 345                 350

Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
        355                 360                 365

Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
    370                 375                 380

Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser
385                 390                 395                 400

Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg
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405 410 415

Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
420 425 430

His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
435 440 445

<210> 34
<211> 1338
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 34
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ccagggaagg ggctggagtg ggtggcctat attagtagtg gtagcaatta catctattat 180

gcagaagcgg tgaagggccg attcaccatc tccagagaca acgccaagaa ctcactgtat 240

ctgcaaatga acagcctgag agccgaggac acggctgtgt attactgtgc gagacgaggc 300

ccgtttgttt tggatgcctg gggccaggga accctggtca ccgtctcctc agcgtcgacc 360

aagggcccat cggtcttccc cctggcaccc tcctccaaga gcacctctgg gggcacagcg 420

gccctgggct gcctggtcaa ggactacttc cccgaaccgg tgacggtgtc gtggaactca 480

ggcgccctga ccagcggcgt gcacaccttc ccggctgtcc tacagtcctc aggactctac 540

tccctcagca gcgtggtgac cgtgccctcc agcagcttgg gcacccagac ctacatctgc 600

aacgtgaatc acaagcccag caacaccaag gtggacaaga aagttgagcc caaatcttgt 660

gacaaaactc acacatgccc accgtgccca gcacctgaac tcctgggggg accgtcagtc 720

ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcaca 780

tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac 840

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac 900

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag 960

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 1020

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggagga gatgaccaag 1080

aaccaggtca gcctgacctg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 1140

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 1200

gacggctcct tcttcctcta tagcaagctc accgtggaca agagcaggtg gcagcagggg 1260

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 1320

ctctccctgt ccccgggt 1338

<210> 35
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 35

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Ser Ile Asn Arg Tyr
20 25 30

Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Asn Ala Asn Gly Leu Gln Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

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Glu Asp Phe Ala Thr Tyr Tyr Cys Leu Gln His Asn Thr Trp Pro Asp
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
            100                 105                 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
            180                 185                 190

Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser
        195                 200                 205

Phe Asn Arg Gly Glu Cys
    210
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<210> 36
<211> 642
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 36
gacatccaga tgacccagtc tccatcctcc ctgtctgcat ctgtaggaga cagagtcacc 60

atcacttgca aagcaagtca gagtattaac aggtacttac actggtatca gcagaaacca 120

gggaaagccc ctaagctcct gatctataat gcaaacggtt tgcaaacggg ggtcccatca 180

aggttcagtg gcagtggatc tgggacagat ttcactctca ccatcagcag tctgcaacct 240

gaagattttg caacttacta ctgtttgcag cataatacgt ggccggacac gtttggcgga 300

gggaccaagg tggagatcaa acggaccgtg gccgctcctt ccgtgttcat cttcccccct 360

tccgacgagc agctgaagtc tggcaccgcc tctgtggtgt gtctgctgaa caacttctac 420

ccccgggagg ccaaggtgca gtggaaggtg gacaacgctc tgcagtccgg caactcccag 480

gagtctgtga ccgagcagga ctccaaggac agcacctact ccctgtcctc taccctgacc 540

ctgtccaagg ccgactacga gaagcacaag gtgtacgcct gtgaggtgac ccaccagggc 600

ctgtcctctc ctgtgaccaa gtccttcaac cggggcgagt gc 642

<210> 37
<211> 119
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 37

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 Tyr Ala Phe Thr Asp Tyr
20 25 30

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

Ala Glu Ile Ser Pro Asn Ser Gly Gly Thr Asn Phe Asn Glu Lys Phe
50 55 60

Lys Gly Arg Phe Thr Ile Ser Val Asp Asn Ala Lys Asn Ser Leu Tyr

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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 Gly Glu Ile Arg Tyr Asn Trp Phe Ala Tyr Trp Gly Gln Gly
100 105 110

Thr Leu Val Thr Val Ser Ser
115

<210> 38
<211> 357
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 38
gaggtgcagc tggtggagtc tgggggaggc ttggtccagc ctgggggtc cctgagactc 60

tcctgtgcag cctctggtta tgcattcact gactactgga tgacctgggt ccgccaggct 120

ccagggaagg ggctggagtg ggtggccgaa atttctccta acagtggtgg tactaacttc 180

aatgaaaagt tcaagggccg attcaccatc tccgttgaca acgccaagaa ctcactgtat 240

ctgcaaatga acagcctgag agccgaggac acggctgtgt attactgtgc gagaggggaa 300

atccgttaca attggtttgc ttactggggc cagggaaccc tggtcaccgt ctcctca 357

<210> 39
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 39

Asp Tyr Trp Met Thr

1 5

<210> 40
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 40

Gly Tyr Ala Phe Thr Asp Tyr
1 5

<210> 41
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 41
gactactgga tgacc 15

<210> 42
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 42
ggttatgcat tcactgacta c 21

<210> 43
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 43

Glu Ile Ser Pro Asn Ser Gly Gly Thr Asn Phe Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 44
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 44

Ser Pro Asn Ser Gly Gly
1 5

<210> 45
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 45
gaaatttctc ctaacagtgg tggtactaac ttcaatgaaa agttcaaggg c 51

<210> 46
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 46
tctcctaaca gtggtggt 18

<210> 47
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 47

Gly Glu Ile Arg Tyr Asn Trp Phe Ala Tyr
1 5 10

<210> 48
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 48
ggggaaatcc gttacaattg gtttgcttac 30

<210> 49
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 49

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asn Val Gly Asn Asn
20 25 30

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

Tyr Tyr Ala Ser Asn Arg Tyr Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

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

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Arg Leu Tyr Asn Ser Pro Phe
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
100 105

<210> 50
<211> 321
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 50
gacatccaga tgacccagtc tccatcctcc ctgtctgcat ctgtaggaga cagagtcacc 60

atcacttgca aggccagtca gaatgtgggt aataatatag cctggtatca gcagaaacca 120

gggaaagccc ctaagctcct gatctattat gcatctaacc ggtacactgg ggtcccatca 180

aggttcagtg gcagtggata tgggacagat ttcactctca ccatcagcag tctgcaacct 240

gaagattttg caacttacta ctgtcagcgt ctttacaatt ctccattcac gttcggcgga 300

gggaccaagg tggagatcaa a 321

<210> 51
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 51

Lys Ala Ser Gln Asn Val Gly Asn Asn Ile Ala
1 5 10

<210> 52
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 52
aaggccagtc agaatgtggg taataatata gcc 33

<210> 53
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 53

Tyr Ala Ser Asn Arg Tyr Thr
1 5

<210> 54
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 54
tatgcatcta accggtacac t 21

<210> 55
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 55

Gln Arg Leu Tyr Asn Ser Pro Phe Thr
1 5

<210> 56
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 56
cagcgtcttt acaattctcc attcacgttc 30

<210> 57
<211> 448
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 57

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 Tyr Ala Phe Thr Asp Tyr
20 25 30

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

Ala Glu Ile Ser Pro Asn Ser Gly Gly Thr Asn Phe Asn Glu Lys Phe
50 55 60

Lys Gly Arg Phe Thr Ile Ser Val Asp Asn Ala Lys Asn Ser Leu Tyr

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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 Gly Glu Ile Arg Tyr Asn Trp Phe Ala Tyr Trp Gly Gln Gly
            100                 105                 110

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

Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu
    130                 135                 140

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

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
                165                 170                 175

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
            180                 185                 190

Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro
        195                 200                 205

Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys
    210                 215                 220

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro
225                 230                 235                 240

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
                245                 250                 255

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
```

```
            260                 265                 270

Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
        275                 280                 285

Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
    290                 295                 300

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
305                 310                 315                 320

Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys
                325                 330                 335

Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
            340                 345                 350

Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr
        355                 360                 365

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
    370                 375                 380

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu
385                 390                 395                 400

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
                405                 410                 415

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
            420                 425                 430

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
        435                 440                 445
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<210> 58

<211> 1344
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 58
gaggtgcagc tggtggagtc tgggggaggc ttggtccagc ctgggggtc cctgagactc 60

tcctgtgcag cctctggtta tgcattcact gactactgga tgacctgggt ccgccaggct 120

ccagggaagg ggctggagtg ggtggccgaa atttctccta acagtggtgg tactaacttc 180

aatgaaaagt tcaagggccg attcaccatc tccgttgaca acgccaagaa ctcactgtat 240

ctgcaaatga acagcctgag agccgaggac acggctgtgt attactgtgc gagaggggaa 300

atccgttaca attggtttgc ttactggggc cagggaaccc tggtcaccgt ctcctcagcg 360

tcgaccaagg gcccatcggt cttccccctg gcaccctcct ccaagagcac ctctgggggc 420

acagcggccc tgggctgcct ggtcaaggac tacttccccg aaccggtgac ggtgtcgtgg 480

aactcaggcg ccctgaccag cggcgtgcac accttcccgg ctgtcctaca gtcctcagga 540

ctctactccc tcagcagcgt ggtgaccgtg ccctccagca gcttgggcac ccagacctac 600

atctgcaacg tgaatcacaa gcccagcaac accaaggtgg acaagaaagt tgagcccaaa 660

tcttgtgaca aaactcacac atgcccaccg tgcccagcac ctgaactcct gggggggaccg 720

tcagtcttcc tcttcccccc aaaacccaag gacaccctca tgatctcccg gacccctgag 780

gtcacatgcg tggtggtgga cgtgagccac gaagaccctg aggtcaagtt caactggtac 840

gtggacggcg tggaggtgca taatgccaag acaaagccgc gggaggagca gtacaacagc 900

acgtaccgtg tggtcagcgt cctcaccgtc ctgcaccagg actggctgaa tggcaaggag 960

tacaagtgca aggtctccaa caaagccctc ccagccccca tcgagaaaac catctccaaa 1020

gccaaagggc agccccgaga accacaggtg tacaccctgc ccccatcccg ggaggagatg 1080

accaagaacc aggtcagcct gacctgcctg gtcaaaggct tctatcccag cgacatcgcc 1140

gtggagtggg agagcaatgg gcagccggag aacaactaca agaccacgcc tcccgtgctg 1200

gactccgacg gctccttctt cctctatagc aagctcaccg tggacaagag caggtggcag 1260

caggggaacg tcttctcatg ctccgtgatg catgaggctc tgcacaacca ctacacgcag 1320

aagagcctct ccctgtcccc gggt 1344

<210> 59
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 59

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asn Val Gly Asn Asn
20 25 30

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

Tyr Tyr Ala Ser Asn Arg Tyr Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

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

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Arg Leu Tyr Asn Ser Pro Phe
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
115 120 125

```
Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
            180                 185                 190

Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser
        195                 200                 205

Phe Asn Arg Gly Glu Cys
    210
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<210> 60
<211> 642
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 60
gacatccaga tgacccagtc tccatcctcc ctgtctgcat ctgtaggaga cagagtcacc 60

atcacttgca aggccagtca gaatgtgggt aataatatag cctggtatca gcagaaacca 120

gggaaagccc ctaagctcct gatctattat gcatctaacc ggtacactgg ggtcccatca 180

aggttcagtg gcagtggata tgggacagat ttcactctca ccatcagcag tctgcaacct 240

gaagattttg caacttacta ctgtcagcgt ctttacaatt ctccattcac gttcggcgga 300

gggaccaagg tggagatcaa acggaccgtg gccgctcctt ccgtgttcat cttcccccct 360

tccgacgagc agctgaagtc tggcaccgcc tctgtggtgt gtctgctgaa caacttctac 420

ccccgggagg ccaaggtgca gtggaaggtg gacaacgctc tgcagtccgg caactcccag 480

gagtctgtga ccgagcagga ctccaaggac agcacctact ccctgtcctc taccctgacc 540

ctgtccaagg ccgactacga gaagcacaag gtgtacgcct gtgaggtgac ccaccagggc 600

ctgtcctctc ctgtgaccaa gtccttcaac cggggcgagt gc 642

<210> 61
<211> 446
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 61

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 Arg Asp Tyr
20 25 30

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

Ala Tyr Ile Ser Ser Gly Ser Asn Tyr Ile Tyr Tyr Ala Glu Ala 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 Arg Gly Pro Phe Val Leu Asp Ala Trp Gly Gln Gly Thr Leu
100 105 110

Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu

```
        115                 120                 125

Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys
    130                 135                 140

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

Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser
                165                 170                 175

Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser
            180                 185                 190

Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn
        195                 200                 205

Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His
    210                 215                 220

Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val
225                 230                 235                 240

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
                245                 250                 255

Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu
            260                 265                 270

Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
        275                 280                 285

Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser
    290                 295                 300

Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
```

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305 310 315 320

Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile
325 330 335

Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro
340 345 350

Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
355 360 365

Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
370 375 380

Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser
385 390 395 400

Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg
405 410 415

Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
420 425 430

His Asn His Tyr Thr Gln Lys Ser Leu Ser Cys Ser Pro Gly
435 440 445

<210> 62
<211> 1338
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 62
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tcctgtgcag cctctggatt cactttcagg gactatggaa tgacctgggt ccgccaggct 120

ccagggaagg ggctggagtg ggtggcctat attagtagtg gtagcaatta catctattat 180

gcagaagcgg tgaagggccg attcaccatc tccagagaca acgccaagaa ctcactgtat 240

ctgcaaatga acagcctgag agccgaggac acggctgtgt attactgtgc gagacgaggc 300

ccgtttgttt tggatgcctg gggccaggga accctggtca ccgtctcctc agcgtcgacc 360

aagggcccat cggtcttccc cctggcaccc tcctccaaga gcacctctgg gggcacagcg 420

gccctgggct gcctggtcaa ggactacttc cccgaaccgg tgacggtgtc gtggaactca 480

ggcgccctga ccagcggcgt gcacaccttc ccggctgtcc tacagtcctc aggactctac 540

tccctcagca gcgtggtgac cgtgccctcc agcagcttgg gcacccagac ctacatctgc 600

aacgtgaatc acaagcccag caacaccaag gtggacaaga aagttgagcc caaatcttgt 660

gacaaaactc acacatgccc accgtgccca gcacctgaac tcctgggggg accgtcagtc 720

ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcaca 780

tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac 840

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac 900

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag 960

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 1020

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggagga gatgaccaag 1080

aaccaggtca gcctgacctg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 1140

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 1200

gacggctcct tcttcctcta tagcaagctc accgtggaca agagcaggtg gcagcagggg 1260

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 1320

ctctcctgct ccccgggt 1338

<210> 63
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 63

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Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1               5                  10                  15


Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Ser Ile Asn Arg Tyr
            20                  25                  30


Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
        35                  40                  45


Tyr Asn Ala Asn Gly Leu Gln Thr Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60


Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65                  70                  75                  80


Glu Asp Phe Ala Thr Tyr Tyr Cys Leu Gln His Asn Thr Trp Pro Asp
                85                  90                  95


Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
            100                 105                 110


Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125


Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140


Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160


Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175
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Ser Thr Leu Thr Leu Ser Cys Ala Asp Tyr Glu Lys His Lys Val Tyr
180 185 190

Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser
195 200 205

Phe Asn Arg Gly Glu Cys
210

<210> 64
<211> 642
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 64
gacatccaga tgacccagtc tccatcctcc ctgtctgcat ctgtaggaga cagagtcacc 60

atcacttgca aagcaagtca gagtattaac aggtacttac actggtatca gcagaaacca 120

gggaaagccc ctaagctcct gatctataat gcaaacggtt tgcaaacggg ggtcccatca 180

aggttcagtg gcagtggatc tgggacagat ttcactctca ccatcagcag tctgcaacct 240

gaagattttg caacttacta ctgtttgcag cataatacgt ggccggacac gtttggcgga 300

gggaccaagg tggagatcaa acgaactgtg gctgcaccat ctgtcttcat cttcccgcca 360

tctgatgagc agttgaaatc tggaactgcc tctgttgtgt gcctgctgaa taacttctat 420

cccagagagg ccaaagtaca gtggaaggtg gataacgccc tccaatcggg taactcccag 480

gagagtgtca cagagcagga cagcaaggac agcacctaca gcctcagcag caccctgacg 540

ctgagctgcg cagactacga gaaacacaaa gtctacgcct gcgaagtcac ccatcagggc 600

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<210> 65
<211> 446
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 65

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Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
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Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Arg Asp Tyr
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Gly Met Thr Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35                  40                  45


Ala Tyr Ile Ser Ser Gly Ser Asn Tyr Ile Tyr Tyr Ala Glu Ala 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 Arg Gly Pro Phe Val Leu Asp Ala Trp Gly Gln Gly Thr Leu
            100                 105                 110


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


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


Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser
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Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser
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Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn
        195                 200                 205

Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His
    210                 215                 220

Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val
225                 230                 235                 240

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
                245                 250                 255

Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu
            260                 265                 270

Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
        275                 280                 285

Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser
    290                 295                 300

Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
305                 310                 315                 320

Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile
                325                 330                 335

Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro
            340                 345                 350

Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
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355 360 365

Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
370 375 380

Gly Gln Pro Glu Asn Asn Tyr Cys Thr Thr Pro Pro Val Leu Asp Ser
385 390 395 400

Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg
405 410 415

Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
420 425 430

His Asn His Tyr Thr Gln Lys Ser Leu Ser Cys Ser Pro Gly
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<210> 66
<211> 1338
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

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ccagggaagg ggctggagtg ggtggcctat attagtagtg gtagcaatta catctattat 180

gcagaagcgg tgaagggccg attcaccatc tccagagaca acgccaagaa ctcactgtat 240

ctgcaaatga acagcctgag agccgaggac acggctgtgt attactgtgc gagacgaggc 300

ccgtttgttt tggatgcctg gggccaggga accctggtca ccgtctcctc agcgtcgacc 360

aagggcccat cggtcttccc cctggcaccc tcctccaaga gcacctctgg gggcacagcg 420

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cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag 960

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 1020

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aaccaggtca gcctgacctg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 1140

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gacggctcct tcttcctcta tagcaagctc accgtggaca agagcaggtg gcagcagggg 1260

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<211> 113
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 67

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
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Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser 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 Tyr Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser
100 105 110

Ser

<210> 68
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 68

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Ser Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly

```
                                    eolf-seql
    50                  55                  60


Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65                  70                  75                  80


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


Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
            100                 105
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