SEQUENCE LISTING

<110> Kannan, et al.

<120> HETERODIMERIC IMMUNOGLOBULINS

<130> 31173/47233B

<150> US-61/729,148
<151> 2012-11-21

<150> US-61/779,439
<151> 2013-03-13

<160> 1049

<170> PatentIn version 3.5

<210> 1
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<213> Homo sapiens

<400> 1

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Gln Gly Trp Gln Ala Phe Lys Asn Asp Ala Thr Glu Ile Ile Pro Glu
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Leu Gly Glu Tyr Pro Glu Pro Pro Pro Glu Leu Glu Asn Asn Lys Thr
            20                  25                  30

Met Asn Arg Ala Glu Asn Gly Gly Arg Pro Pro His His Pro Phe Glu
        35                  40                  45

Thr Lys Asp Val Ser Glu Tyr Ser Cys Arg Glu Leu His Phe Thr Arg
    50                  55                  60

Tyr Val Thr Asp Gly Pro Cys Arg Ser Ala Lys Pro Val Thr Glu Leu
65                  70                  75                  80

Val Cys Ser Gly Gln Cys Gly Pro Ala Arg Leu Leu Pro Asn Ala Ile
                85                  90                  95

Gly Arg Gly Lys Trp Trp Arg Pro Ser Gly Pro Asp Phe Arg Cys Ile
            100                 105                 110

Pro Asp Arg Tyr Arg Ala Gln Arg Val Gln Leu Leu Cys Pro Gly Gly
        115                 120                 125

Glu Ala Pro Arg Ala Arg Lys Val Arg Leu Val Ala Ser Cys Lys Cys
    130                 135                 140

Lys Arg Leu Thr Arg Phe His Asn Gln Ser Glu Leu Lys Asp Phe Gly
145                 150                 155                 160

Thr Glu Ala Ala Arg Pro Gln Lys Gly Arg Lys Pro Arg Pro Arg Ala
                165                 170                 175
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Arg Ser Ala Lys Ala Asn Gln Ala Glu Leu Glu Asn Ala Tyr
180 185 190

<210> 2
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Asp Val Ser Glu Tyr Ser Cys Arg Glu Leu His Phe Thr Arg
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<210> 3
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<400> 3

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<210> 4
<211> 17
<212> PRT
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<400> 4

Trp Trp Arg Pro Ser Gly Pro Asp Phe Arg Cys Ile Pro Asp Arg Tyr
1 5 10 15

Arg

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<400> 5

Leu Val Ala Ser Cys Lys Cys Lys Arg Leu Thr Arg
1 5 10

<210> 6
<211> 26
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<400> 6

Cys Gly Pro Ala Arg Leu Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp
1 5 10 15

Trp Arg Pro Ser Gly Pro Asp Phe Arg Cys
20 25

<210> 7
<211> 214
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<400> 7

Asp Val Gln Met Ile Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
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Asp Ile Val Thr Met Thr Cys Gln Ala Ser Gln Gly Thr Ser Ile Asn
20 25 30

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

Tyr Gly Ser Ser Asn Leu Glu Asp Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

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

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

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

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

Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile
130 135 140

Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu
145 150 155 160

Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser
165 170 175

Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr
180 185 190

Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser
195 200 205

Phe Asn Arg Asn Glu Cys
210

<210> 8
<211> 645
<212> DNA
<213> Mus musculus

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atgacttgcc aggcaagtca gggcactagc attaatttaa actggtttca gcaaaaacca 120

gggaaggctc ctaagctcct gatctatggt tcaagcaact tggaagatgg ggtcccatca 180

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tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac 420

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg 480

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg 540

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca 600

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag 645

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<211> 236
<212> PRT
<213> Mus musculus

<400> 9

Met Asn Thr Arg Ala Pro Ala Glu Phe Leu Gly Phe Leu Leu Leu Trp
1 5 10 15

Phe Leu Gly Ala Arg Cys Asp Val Gln Met Ile Gln Ser Pro Ser Ser
20 25 30

Leu Ser Ala Ser Leu Gly Asp Ile Val Thr Met Thr Cys Gln Ala Ser
35 40 45

Gln Gly Thr Ser Ile Asn Leu Asn Trp Phe Gln Gln Lys Pro Gly Lys
50 55 60

Ala Pro Lys Leu Leu Ile Tyr Gly Ser Ser Asn Leu Glu Asp Gly Val
65 70 75 80

Pro Ser Arg Phe Ser Gly Ser Arg Tyr Gly Thr Asp Phe Thr Leu Thr
85 90 95

Ile Ser Ser Leu Glu Asp Glu Asp Leu Ala Thr Tyr Phe Cys Leu Gln
100 105 110

His Ser Tyr Leu Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
115 120 125

Lys Arg Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser
130 135 140

Glu Gln Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn

```
145                 150                 155                 160

Phe Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu
                165                 170                 175

Arg Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp
            180                 185                 190

Ser Thr Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr
        195                 200                 205

Glu Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr
    210                 215                 220

Ser Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230                 235
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<210> 10
<211> 711
<212> DNA
<213> Mus musculus

<400> 10

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agatgtgatg tccagatgat tcagtctcca tcctccctgt ctgcatcttt gggagacata      120

gtcaccatga cttgccaggc aagtcagggc actagcatta atttaaactg gtttcagcaa      180

aaaccaggga aggctcctaa gctcctgatc tatggttcaa gcaacttgga agatggggtc      240

ccatcaaggt tcagtggcag tagatatggg acagatttca ctctcaccat cagcagcctg      300

gaggatgaag atctggcaac ttatttctgt ctacaacata gttatctccc gtacacgttc      360

ggaggggggа ccaagctgga aataaaacgg gctgatgctg caccaactgt atccatcttc      420

ccaccatcca gtgagcagtt aacatctgga ggtgcctcag tcgtgtgctt cttgaacaac      480

ttctacccca aagacatcaa tgtcaagtgg aagattgatg gcagtgaacg acaaaatggc      540

gtcctgaaca gttggactga tcaggacagc aaagacagca cctacagcat gagcagcacc      600

ctcacgttga ccaaggacga gtatgaacga cataacagct atacctgtga ggccactcac      660

aagacatcaa cttcacccat tgtcaagagc ttcaacagga atgagtgtta g                711
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<210> 11
<211> 443
<212> PRT
<213> Mus musculus

<400> 11

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

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asp His
            20                  25                  30
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Tyr Met Ser Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu Trp Ile
        35                  40                  45

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

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

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

Ala Arg Asp Asp Tyr Asp Ala Ser Pro Phe Ala Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Leu Val Thr Val Ser Ala Ala Lys Thr Thr Pro Pro Ser Val Tyr
        115                 120                 125

Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser Met Val Thr Leu
    130                 135                 140

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

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

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

Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala His Pro Ala Ser
        195                 200                 205

Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp Cys Gly Cys Lys
    210                 215                 220

Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val Phe Ile Phe Pro
225                 230                 235                 240

Pro Lys Pro Lys Asp Val Leu Thr Ile Thr Leu Thr Pro Lys Val Thr
                245                 250                 255

Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu Val Gln Phe Ser
            260                 265                 270

Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln Thr Gln Pro Arg
        275                 280                 285

Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser Glu Leu Pro Ile
    290                 295                 300
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Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys Cys Arg Val Asn
305                 310                 315                 320

Ser Pro Ala Phe Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys
                325                 330                 335

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

Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met Ile Thr Asp Phe
        355                 360                 365

Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn Gly Gln Pro Ala
    370                 375                 380

Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr Asp Gly Ser Tyr
385                 390                 395                 400

Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn Trp Glu Ala Gly
                405                 410                 415

Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His Asn His His
            420                 425                 430

Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440
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<210> 12
<211> 1332
<212> DNA
<213> Mus musculus

<400> 12

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tcttgtaagg cttctggata cacattcact gaccactaca tgagctgggt gaagcagagt      120

catggaaaaa gccttgagtg gattggagat attaatccct attctggtga aactacctac      180

aaccagaagt tcaagggcac ggccacattg actgtagaca agtcttccag tatagcctac      240

atggagatcc gcggcctgac atctgaggac tctgcagtct attactgtgc aagagatgat      300

tacgacgcct ctccgtttgc ttactggggc caagggactc tggtcactgt ctctgcagcc      360

aaaacgacac ccccatctgt ctatccactg gcccctggat ctgctgccca aactaactcc      420

atggtgaccc tgggatgcct ggtcaagggc tatttccctg agccagtgac agtgacctgg      480

aactctggat ccctgtccag cggtgtgcac accttcccag ctgtcctgca gtctgacctc      540

tacactctga gcagctcagt gactgtcccc tccagcacct ggcccagcga gaccgtcacc      600

tgcaacgttg cccacccggc cagcagcacc aaggtggaca agaaaattgt gcccagggat      660

tgtggttgta agccttgcat atgtacagtc ccagaagtat catctgtctt catcttcccc      720

ccaaagccca aggatgtgct caccattact ctgactccta aggtcacgtg tgttgtggta      780
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gacatcagca aggatgatcc cgaggtccag ttcagctggt ttgtagatga tgtggaggtg 840

cacacagctc agacgcaacc ccgggaggag cagttcaaca gcactttccg ctcagtcagt 900

gaacttccca tcatgcacca ggactggctc aatggcaagg agttcaaatg cagggtcaac 960

agtccagctt tccctgcccc catcgagaaa accatctcca aaaccaaagg cagaccgaag 1020

gctccacagg tgtacaccat tccacctccc aaggagcaga tggccaagga taaagtcagt 1080

ctgacctgca tgataacaga cttcttccct gaagacatta ctgtggagtg gcagtggaat 1140

gggcagccag cggagaacta caagaacact cagcccatca tggacacaga tggctcttac 1200

ttcatctaca gcaagctcaa tgtgcagaag agcaactggg aggcaggaaa tactttcacc 1260

tgctctgtgt tacatgaggg cctgcacaac caccatactg agaagagcct ctcccactct 1320

cctggtaaat ga 1332

<210> 13
<211> 462
<212> PRT
<213> Mus musculus

<400> 13

Met Arg Cys Arg Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val Leu Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Thr
20 25 30

Pro Gly Ala Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp His Tyr Met Ser Trp Val Lys Gln Ser His Gly Lys Ser Leu
50 55 60

Glu Trp Ile Gly Asp Ile Asn Pro Tyr Ser Gly Glu Thr Thr Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Thr Ala Thr Leu Thr Val Asp Lys Ser Ser Ser
85 90 95

Ile Ala Tyr Met Glu Ile Arg Gly Leu Thr Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Asp Asp Tyr Asp Ala Ser Pro Phe Ala Tyr Trp
115 120 125

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

Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser Met
145 150 155 160

```
Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro Val Thr
                165                 170                 175

Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr Phe Pro
            180                 185                 190

Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val Thr Val
        195                 200                 205

Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala His
    210                 215                 220

Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp Cys
225                 230                 235                 240

Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val Phe
                245                 250                 255

Ile Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile Thr Leu Thr Pro
            260                 265                 270

Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu Val
        275                 280                 285

Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln Thr
    290                 295                 300

Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser Glu
305                 310                 315                 320

Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys Cys
                325                 330                 335

Arg Val Asn Ser Pro Ala Phe Pro Ala Pro Ile Glu Lys Thr Ile Ser
            340                 345                 350

Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr Thr Ile Pro Pro
        355                 360                 365

Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met Ile
    370                 375                 380

Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn Gly
385                 390                 395                 400

Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr Asp
                405                 410                 415

Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn Trp
            420                 425                 430
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Glu Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His
435 440 445

Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
450 455 460

<210> 14
<211> 1389
<212> DNA
<213> Mus musculus

<400> 14
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tgtaaggctt ctggatacac attcactgac cactacatga gctgggtgaa gcagagtcat 180

ggaaaaagcc ttgagtggat tggagatatt aatccctatt ctggtgaaac tacctacaac 240

cagaagttca agggcacggc cacattgact gtagacaagt cttccagtat agcctacatg 300

gagatccgcg gcctgacatc tgaggactct gcagtctatt actgtgcaag agatgattac 360

gacgcctctc cgtttgctta ctggggccaa gggactctgg tcactgtctc tgcagccaaa 420

acgacacccc catctgtcta tccactggcc cctggatctg ctgcccaaac taactccatg 480

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actctgagca gctcagtgac tgtcccctcc agcacctggc ccagcgagac cgtcacctgc 660

aacgttgccc acccggccag cagcaccaag gtggacaaga aaattgtgcc cagggattgt 720

ggttgtaagc cttgcatatg tacagtccca gaagtatcat ctgtcttcat cttccccca 780

aagcccaagg atgtgctcac cattactctg actcctaagg tcacgtgtgt tgtggtagac 840

atcagcaagg atgatcccga ggtccagttc agctggtttg tagatgatgt ggaggtgcac 900

acagctcaga cgcaaccccg ggaggagcag ttcaacagca ctttccgctc agtcagtgaa 960

cttcccatca tgcaccagga ctggctcaat ggcaaggagt tcaaatgcag ggtcaacagt 1020

ccagctttcc ctgcccccat cgagaaaacc atctccaaaa ccaaaggcag accgaaggct 1080

ccacaggtgt acaccattcc acctcccaag gagcagatgg ccaaggataa agtcagtctg 1140

acctgcatga taacagactt cttccctgaa gacattactg tggagtggca gtggaatggg 1200

cagccagcgg agaactacaa gaacactcag cccatcatgg acacagatgg ctcttacttc 1260

atctacagca agctcaatgt gcagaagagc aactgggagg caggaaatac tttcacctgc 1320

tctgtgttac atgagggcct gcacaaccac catactgaga agagcctctc ccactctcct 1380

ggtaaatga 1389

<210> 15
<211> 218
<212> PRT
<213> Mus musculus

<400> 15

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

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

Gly Asp Ser Tyr Met Asn Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro
35 40 45

Lys Leu Leu Ile Tyr Ala Ala Ser Asn Leu Glu Ser Gly Ile Pro Ala
50 55 60

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

Pro Val Glu Glu Glu Asp Ala Val Thr Tyr Tyr Cys Gln Gln Ser Asn
85 90 95

Glu Asp Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105 110

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln
115 120 125

Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr
130 135 140

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln
145 150 155 160

Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr
165 170 175

Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg
180 185 190

His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro
195 200 205

Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
210 215

<210> 16
<211> 657
<212> DNA
<213> Mus musculus

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atctcctgca aggccagcca aagtgttgat tatgatggtg atagttatat gaactggtac 120

cagcagaaac caggacagcc acccaaactc ctcatctatg ctgcatccaa tctagaatct 180

gggatcccag ccaggtttag tggcaatggg tctgggacag acttcaccct caacatccat 240

cctgtggagg aggaggatgc tgtaacctat tactgtcaac aaagtaatga ggatccgtgg 300

acgttcggtg gaggcaccaa gctggaaatc aaacgggctg atgctgcacc aactgtatcc 360

atcttcccac catccagtga gcagttaaca tctggaggtg cctcagtcgt gtgcttcttg 420

aacaacttct accccaaaga catcaatgtc aagtggaaga ttgatggcag tgaacgacaa 480

aatggcgtcc tgaacagttg gactgatcag gacagcaaag acagcaccta cagcatgagc 540

agcaccctca cgttgaccaa ggacgagtat gaacgacata acagctatac ctgtgaggcc 600

actcacaaga catcaacttc acccattgtc aagagcttca acaggaatga gtgttag 657

<210> 17
<211> 238
<212> PRT
<213> Mus musculus

<400> 17

Met Glu Thr Asp Thr Ile Leu Leu Trp Val Leu Leu Leu Trp Val Pro
1 5 10 15

Gly Ser Thr Gly Asp Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Thr
20 25 30

Val Ser Leu Gly Leu Arg Ala Thr Ile Ser Cys Lys Ala Ser Gln Ser
35 40 45

Val Asp Tyr Asp Gly Asp Ser Tyr Met Asn Trp Tyr Gln Gln Lys Pro
50 55 60

Gly Gln Pro Pro Lys Leu Leu Ile Tyr Ala Ala Ser Asn Leu Glu Ser
65 70 75 80

Gly Ile Pro Ala Arg Phe Ser Gly Asn Gly Ser Gly Thr Asp Phe Thr
85 90 95

Leu Asn Ile His Pro Val Glu Glu Glu Asp Ala Val Thr Tyr Tyr Cys
100 105 110

Gln Gln Ser Asn Glu Asp Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125

Glu Ile Lys Arg Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro
130 135 140

Ser Ser Glu Gln Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu
145 150 155 160

Asn Asn Phe Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly

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                165                 170                 175

Ser Glu Arg Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser
            180                 185                 190

Lys Asp Ser Thr Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp
        195                 200                 205

Glu Tyr Glu Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr
    210                 215                 220

Ser Thr Ser Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230                 235
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<210> 18
<211> 717
<212> DNA
<213> Mus musculus

<400> 18

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gacattgtgc tgacccaatc tccagcttct ttgactgtgt ctctaggcct gagggccacc      120

atctcctgca aggccagcca aagtgttgat tatgatggtg atagttatat gaactggtac      180

cagcagaaac caggacagcc acccaaactc ctcatctatg ctgcatccaa tctagaatct      240

gggatcccag ccaggtttag tggcaatggg tctgggacag acttcaccct caacatccat      300

cctgtggagg aggaggatgc tgtaacctat tactgtcaac aaagtaatga ggatccgtgg      360

acgttcggtg gaggcaccaa gctggaaatc aaacgggctg atgctgcacc aactgtatcc      420

atcttcccac catccagtga gcagttaaca tctggaggtg cctcagtcgt gtgcttcttg      480

aacaacttct accccaaaga catcaatgtc aagtggaaga ttgatggcag tgaacgacaa      540

aatggcgtcc tgaacagttg gactgatcag gacagcaaag acagcaccta cagcatgagc      600

agcaccctca cgttgaccaa ggacgagtat gaacgacata acagctatac ctgtgaggcc      660

actcacaaga catcaacttc acccattgtc aagagcttca acaggaatga gtgttag         717
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<210> 19
<211> 449
<212> PRT
<213> Mus musculus

<400> 19

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

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

Tyr Met Asn Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu Trp Ile
        35                  40                  45
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Gly Asp Ile Asn Pro Phe Asn Gly Gly Thr Thr Tyr Asn Gln Lys Phe
    50                  55                  60

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

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

Ala Arg Ser His Tyr Tyr Phe Asp Gly Arg Val Pro Trp Asp Ala Met
            100                 105                 110

Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Ala Lys Thr
        115                 120                 125

Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr
    130                 135                 140

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

Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser
            180                 185                 190

Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn
        195                 200                 205

Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro
    210                 215                 220

Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser
225                 230                 235                 240

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

Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp
            260                 265                 270

Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr
        275                 280                 285

Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser
    290                 295                 300

Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu
305                 310                 315                 320
```

```
Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu Lys
                325                 330                 335

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

Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr
        355                 360                 365

Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln
    370                 375                 380

Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met
385                 390                 395                 400

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

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

Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly
        435                 440                 445

Lys
```

<210> 20
<211> 1350
<212> DNA
<213> Mus musculus

<400> 20

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gaggtccagc tgcaacaatc tggacctgag ctggtgaagc ctgggacttc agtgaagatg       60

tcctgtaagg cttctggata cacattcact gactgctaca tgaactgggt gaagcagagc      120

catgggaaga gccttgaatg gattggagat attaatcctt tcaacggtgg tactacctac      180

aaccagaagt tcaagggcaa ggccacattg actgtagaca aatcctccag cacagcctac      240

atgcagctca acagcctgac atctgacgac tctgcagtct attactgtgc aagatcccat      300

tattacttcg atggtagagt cccttgggat gctatggact actggggtca aggaacctca      360

gtcaccgtct cctcagccaa aacgacaccc ccatctgtct atccactggc ccctggatct      420

gctgcccaaa ctaactccat ggtgaccctg ggatgcctgg tcaagggcta tttccctgag      480

ccagtgacag tgacctggaa ctctggatcc ctgtccagcg gtgtgcacac cttcccagct      540

gtcctgcagt ctgacctcta cactctgagc agctcagtga ctgtccctc cagcacctgg       600

cccagcgaga ccgtcacctg caacgttgcc cacccggcca gcagcaccaa ggtggacaag      660

aaaattgtgc ccagggattg tggttgtaag ccttgcatat gtacagtccc agaagtatca      720

tctgtcttca tcttcccccc aaagcccaag gatgtgctca ccattactct gactcctaag      780
```

gtcacgtgtg ttgtggtaga catcagcaag gatgatcccg aggtccagtt cagctggttt 840

gtagatgatg tggaggtgca cacagctcag acgcaacccc gggaggagca gttcaacagc 900

actttccgct cagtcagtga acttcccatc atgcaccagg actggctcaa tggcaaggag 960

ttcaaatgca gggtcaacag tgcagctttc cctgccccca tcgagaaaac catctccaaa 1020

accaaaggca gaccgaaggc tccacaggtg tacaccattc cacctcccaa ggagcagatg 1080

gccaaggata aagtcagtct gacctgcatg ataacagact tcttccctga agacattact 1140

gtggagtggc agtggaatgg gcagccagcg gagaactaca agaacactca gcccatcatg 1200

gacacagatg gctcttactt catctacagc aagctcaatg tgcagaagag caactgggag 1260

gcaggaaata ctttcacctg ctctgtgtta catgagggcc tgcacaacca ccatactgag 1320

aagagcctct cccactctcc tggtaaatga 1350

<210> 21
<211> 468
<212> PRT
<213> Mus musculus

<400> 21

Met Gly Trp Asn Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val Tyr Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys
20 25 30

Pro Gly Thr Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Cys Tyr Met Asn Trp Val Lys Gln Ser His Gly Lys Ser Leu
50 55 60

Glu Trp Ile Gly Asp Ile Asn Pro Phe Asn Gly Gly Thr Thr Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser
85 90 95

Thr Ala Tyr Met Gln Leu Asn Ser Leu Thr Ser Asp Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Ser His Tyr Tyr Phe Asp Gly Arg Val Pro Trp
115 120 125

Asp Ala Met Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser
130 135 140

Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala
145 150 155 160

```
Ala Gln Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr
                165                 170                 175

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser
            180                 185                 190

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu
        195                 200                 205

Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val
    210                 215                 220

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys
225                 230                 235                 240

Ile Val Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro
                245                 250                 255

Glu Val Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu
            260                 265                 270

Thr Ile Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser
        275                 280                 285

Lys Asp Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu
    290                 295                 300

Val His Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr
305                 310                 315                 320

Phe Arg Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn
                325                 330                 335

Gly Lys Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro
            340                 345                 350

Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln
        355                 360                 365

Val Tyr Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val
    370                 375                 380

Ser Leu Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val
385                 390                 395                 400

Glu Trp Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln
                405                 410                 415

Pro Ile Met Asp Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn
            420                 425                 430
```

Val Gln Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val
435 440 445

Leu His Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His
450 455 460

Ser Pro Gly Lys
465

<210> 22
<211> 1407
<212> DNA
<213> Mus musculus

<400> 22
atgggatgga actggatctt tctcttcctc ttgtcaggaa ctgcaggtgt ctactctgag 60

gtccagctgc aacaatctgg acctgagctg gtgaagcctg ggacttcagt gaagatgtcc 120

tgtaaggctt ctggatacac attcactgac tgctacatga actgggtgaa gcagagccat 180

gggaagagcc ttgaatggat tggagatatt aatcctttca acggtggtac tacctacaac 240

cagaagttca agggcaaggc cacattgact gtagacaaat cctccagcac agcctacatg 300

cagctcaaca gcctgacatc tgacgactct gcagtctatt actgtgcaag atcccattat 360

tacttcgatg gtagagtccc ttgggatgct atggactact ggggtcaagg aacctcagtc 420

accgtctcct cagccaaaac gacaccccca tctgtctatc cactggcccc tggatctgct 480

gcccaaacta actccatggt gaccctggga tgcctggtca agggctattt ccctgagcca 540

gtgacagtga cctggaactc tggatccctg tccagcggtg tgcacacctt cccagctgtc 600

ctgcagtctg acctctacac tctgagcagc tcagtgactg tcccctccag cacctggccc 660

agcgagaccg tcacctgcaa cgttgcccac ccggccagca gcaccaaggt ggacaagaaa 720

attgtgccca gggattgtgg ttgtaagcct tgcatatgta cagtcccaga agtatcatct 780

gtcttcatct tcccccaaa gcccaaggat gtgctcacca ttactctgac tcctaaggtc 840

acgtgtgttg tggtagacat cagcaaggat gatcccgagg tccagttcag ctggtttgta 900

gatgatgtgg aggtgcacac agctcagacg caaccccggg aggagcagtt caacagcact 960

ttccgctcag tcagtgaact tcccatcatg caccaggact ggctcaatgg caaggagttc 1020

aaatgcaggg tcaacagtgc agctttccct gcccccatcg agaaaaccat ctccaaaacc 1080

aaaggcagac cgaaggctcc acaggtgtac accattccac ctcccaagga gcagatggcc 1140

aaggataaag tcagtctgac ctgcatgata acagacttct tccctgaaga cattactgtg 1200

gagtggcagt ggaatgggca gccagcggag aactacaaga acactcagcc catcatggac 1260

acagatggct cttacttcat ctacagcaag ctcaatgtgc agaagagcaa ctgggaggca 1320

ggaaatactt tcacctgctc tgtgttacat gagggcctgc acaaccacca tactgagaag 1380

agcctctccc actctcctgg taaatga 1407

<210> 23
<211> 217
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Rabbit-mouse chimera

<400> 23

```
Ala Gln Val Leu Thr Gln Thr Pro Ala Ser Val Ser Ala Ala Val Gly
1               5                  10                  15

Gly Thr Val Thr Ile Asn Cys Gln Ser Ser Gln Ser Val Tyr Asp Asn
            20                  25                  30

Asn Trp Leu Ala Trp Phe Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu
        35                  40                  45

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

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

Gln Cys Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Gly Ala Tyr Asn Asp
                85                  90                  95

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

Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln Leu
        115                 120                 125

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

Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn
145                 150                 155                 160

Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr
                165                 170                 175

Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His
            180                 185                 190

Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile
        195                 200                 205

Val Lys Ser Phe Asn Arg Asn Glu Cys
```

210 215

<210> 24
<211> 654
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Rabbit-mouse chimera

<400> 24
gcgcaagtgc tgacccagac tccagcctcc gtgtctgcag ctgtgggagg cacagtcacc 60

atcaattgcc agtccagtca gagtgtttat gataacaact ggttagcctg gtttcagcag 120

aaaccagggc agcctcccaa gctcctgatt tatgatgcat ccgatctggc atctggggtc 180

ccatcgcggt tcagtggcag tggatctggg acacagttca ctctcaccat cagcggcgtg 240

cagtgtgccg atgctgccac ttactactgt caaggcgctt ataatgatgt tatttatgct 300

ttcggcggag ggaccgaggt ggtggtcaaa cgtacggatg ctgcaccaac tgtatccatc 360

ttcccaccat ccagtgagca gttaacatct ggaggtgcct cagtcgtgtg cttcttgaac 420

aacttctacc ccaaagacat caatgtcaag tggaagattg atggcagtga acgacaaaat 480

ggcgtcctga acagttggac tgatcaggac agcaaagaca gcacctacag catgagcagc 540

accctcacgt tgaccaagga cgagtatgaa cgacataaca gctatacctg tgaggccact 600

cacaagacat caacttcacc cattgtcaag agcttcaaca ggaatgagtg ttag 654

<210> 25
<211> 239
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Rabbit-mouse chimera

<400> 25

Met Asp Thr Arg Ala Pro Thr Gln Leu Leu Gly Leu Leu Leu Leu Trp
1 5 10 15

Leu Pro Gly Ala Thr Phe Ala Gln Val Leu Thr Gln Thr Pro Ala Ser
20 25 30

Val Ser Ala Ala Val Gly Gly Thr Val Thr Ile Asn Cys Gln Ser Ser
35 40 45

Gln Ser Val Tyr Asp Asn Asn Trp Leu Ala Trp Phe Gln Gln Lys Pro

```
    50                  55                  60

Gly Gln Pro Pro Lys Leu Leu Ile Tyr Asp Ala Ser Asp Leu Ala Ser
65                  70                  75                  80

Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Gln Phe Thr
                85                  90                  95

Leu Thr Ile Ser Gly Val Gln Cys Ala Asp Ala Ala Thr Tyr Tyr Cys
            100                 105                 110

Gln Gly Ala Tyr Asn Asp Val Ile Tyr Ala Phe Gly Gly Gly Thr Glu
        115                 120                 125

Val Val Val Lys Arg Thr Asp Ala Ala Pro Thr Val Ser Ile Phe Pro
    130                 135                 140

Pro Ser Ser Glu Gln Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe
145                 150                 155                 160

Leu Asn Asn Phe Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp
                165                 170                 175

Gly Ser Glu Arg Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp
            180                 185                 190

Ser Lys Asp Ser Thr Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys
        195                 200                 205

Asp Glu Tyr Glu Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys
    210                 215                 220

Thr Ser Thr Ser Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230                 235


<210>  26
<211>  720
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Synthetic Polypeptide


<220>
<221>  misc_feature
<223>  Rabbit-mouse chimera

<400>  26
atggacacga gggcccccac tcagctgctg gggctcctgc tgctctggct cccaggtgcc       60

acatttgcgc aagtgctgac ccagactcca gcctccgtgt ctgcagctgt gggaggcaca      120

gtcaccatca attgccagtc cagtcagagt gtttatgata acaactggtt agcctggttt      180

cagcagaaac cagggcagcc tcccaagctc ctgatttatg atgcatccga tctggcatct      240
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ggggtcccat cgcggttcag tggcagtgga tctgggacac agttcactct caccatcagc 300

ggcgtgcagt gtgccgatgc tgccacttac tactgtcaag gcgcttataa tgatgttatt 360

tatgctttcg gcggagggac cgaggtggtg gtcaaacgta cggatgctgc accaactgta 420

tccatcttcc caccatccag tgagcagtta acatctggag gtgcctcagt cgtgtgcttc 480

ttgaacaact tctaccccaa agacatcaat gtcaagtgga agattgatgg cagtgaacga 540

caaaatggcg tcctgaacag ttggactgat caggacagca aagacagcac ctacagcatg 600

agcagcaccc tcacgttgac caaggacgag tatgaacgac ataacagcta tacctgtgag 660

gccactcaca agacatcaac ttcacccatt gtcaagagct tcaacaggaa tgagtgttag 720

<210> 27
<211> 433
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polynucleotide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody

<400> 27

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

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

Met Asn Trp Val Arg Gln Ala Pro Gly Glu Gly Leu Glu Trp Ile Gly
35 40 45

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

Arg Phe Thr Ile Ser Arg Thr Ser Thr Thr Met Asp Leu Lys Met Thr
65 70 75 80

Ser Leu Thr Thr Gly Asp Thr Ala Arg Tyr Phe Cys Ala Arg Asn Trp
85 90 95

Asn Leu Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr
100 105 110

Lys Gly Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr
115 120 125

Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu
130 135 140

```
Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His
145                 150                 155                 160

Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser
                165                 170                 175

Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn
            180                 185                 190

Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro
        195                 200                 205

Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser
    210                 215                 220

Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile Thr
225                 230                 235                 240

Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp
                245                 250                 255

Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr
            260                 265                 270

Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser
        275                 280                 285

Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu
    290                 295                 300

Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu Lys
305                 310                 315                 320

Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr Thr
                325                 330                 335

Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr
            340                 345                 350

Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln
        355                 360                 365

Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met
    370                 375                 380

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

Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu
                405                 410                 415
```

Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly
420 425 430

Lys

<210> 28
<211> 1302
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody

<400> 28
cagtcgctgg aggagtccgg gggtcgcctg gtcacgcctg ggacacccct gacactcacc 60

tgcacagcct ctggattctc cctcagtagt tattggatga actgggtccg ccaggctcca 120

ggggaggggc tggaatggat cggaaccatt gattctggtg gtaggacgga ctacgcgagc 180

tgggcaaaag gccgattcac catctccaga acctcgacta cgatggatct gaaaatgacc 240

agtctgacga ccggggacac ggcccgttat ttctgtgcca gaaattggaa cttgtggggc 300

caaggcaccc tcgtcaccgt ctcgagcgct tctacaaagg gcccatctgt ctatccactg 360

gcccctggat ctgctgccca aactaactcc atggtgaccc tgggatgcct ggtcaagggc 420

tatttccctg agccagtgac agtgacctgg aactctggat ccctgtccag cggtgtgcac 480

accttcccag ctgtcctgca gtctgacctc tacactctga gcagctcagt gactgtcccc 540

tccagcacct ggcccagcga gaccgtcacc tgcaacgttg cccacccggc cagcagcacc 600

aaggtggaca agaaaattgt gcccagggat tgtggttgta agccttgcat atgtacagtc 660

ccagaagtat catctgtctt catcttcccc ccaaagccca aggatgtgct caccattact 720

ctgactccta aggtcacgtg tgttgtggta gacatcagca aggatgatcc cgaggtccag 780

ttcagctggt ttgtagatga tgtggaggtg cacacagctc agacgcaacc ccgggaggag 840

cagttcaaca gcactttccg ctcagtcagt gaacttccca tcatgcacca ggactggctc 900

aatggcaagg agttcaaatg cagggtcaac agtgcagctt tccctgcccc catcgagaaa 960

accatctcca aaaccaaagg cagaccgaag gctccacagg tgtacaccat tccacctccc 1020

aaggagcaga tggccaagga taaagtcagt ctgacctgca tgataacaga cttcttccct 1080

gaagacatta ctgtggagtg gcagtggaat gggcagccag cggagaacta caagaacact 1140

cagcccatca tggacacaga tggctcttac ttcgtctaca gcaagctcaa tgtgcagaag 1200

agcaactggg aggcaggaaa tactttcacc tgctctgtgt tacatgaggg cctgcacaac 1260

caccatactg agaagagcct ctcccactct cctggtaaat ga 1302

<210> 29
<211> 452
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody

<400> 29

Met Glu Thr Gly Leu Arg Trp Leu Leu Leu Val Ala Val Leu Lys Gly
1 5 10 15

Val His Cys Gln Ser Leu Glu Glu Ser Gly Gly Arg Leu Val Thr Pro
20 25 30

Gly Thr Pro Leu Thr Leu Thr Cys Thr Ala Ser Gly Phe Ser Leu Ser
35 40 45

Ser Tyr Trp Met Asn Trp Val Arg Gln Ala Pro Gly Glu Gly Leu Glu
50 55 60

Trp Ile Gly Thr Ile Asp Ser Gly Gly Arg Thr Asp Tyr Ala Ser Trp
65 70 75 80

Ala Lys Gly Arg Phe Thr Ile Ser Arg Thr Ser Thr Thr Met Asp Leu
85 90 95

Lys Met Thr Ser Leu Thr Thr Gly Asp Thr Ala Arg Tyr Phe Cys Ala
100 105 110

Arg Asn Trp Asn Leu Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
115 120 125

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

Ala Gln Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr
145 150 155 160

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser
165 170 175

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu
180 185 190

Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val
195 200 205

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys

210 215 220

Ile Val Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro
225 230 235 240

Glu Val Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu
245 250 255

Thr Ile Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser
260 265 270

Lys Asp Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu
275 280 285

Val His Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr
290 295 300

Phe Arg Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn
305 310 315 320

Gly Lys Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro
325 330 335

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

Val Tyr Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val
355 360 365

Ser Leu Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val
370 375 380

Glu Trp Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln
385 390 395 400

Pro Ile Met Asn Thr Asn Gly Ser Tyr Phe Val Tyr Ser Lys Leu Asn
405 410 415

Val Gln Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val
420 425 430

Leu His Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His
435 440 445

Ser Pro Gly Lys
450

<210> 30
<211> 1359
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody

<400> 30
atggagactg ggctgcgctg gcttctcctg gtcgctgtgc tcaaaggtgt ccactgtcag 60

tcgctggagg agtccggggg tcgcctggtc acgcctggga cacccctgac actcacctgc 120

acagcctctg gattctccct cagtagttat tggatgaact gggtccgcca ggctccaggg 180

gaggggctgg aatggatcgg aaccattgat tctggtggta ggacggacta cgcgagctgg 240

gcaaaaggcc gattcaccat ctccagaacc tcgactacga tggatctgaa aatgaccagt 300

ctgacgaccg gggacacggc ccgttatttc tgtgccagaa attggaactt gtggggccaa 360

ggcaccctcg tcaccgtctc gagcgcttct acaaagggcc catctgtcta tccactggcc 420

cctggatctg ctgcccaaac taactccatg gtgaccctgg gatgcctggt caagggctat 480

ttccctgagc cagtgacagt gacctggaac tctggatccc tgtccagcgg tgtgcacacc 540

ttcccagctg tcctgcagtc tgacctctac actctgagca gctcagtgac tgtcccctcc 600

agcacctggc ccagcgagac cgtcacctgc aacgttgccc acccggccag cagcaccaag 660

gtggacaaga aaattgtgcc cagggattgt ggttgtaagc cttgcatatg tacagtccca 720

gaagtatcat ctgtcttcat cttcccccca aagcccaagg atgtgctcac cattactctg 780

actcctaagg tcacgtgtgt tgtggtagac atcagcaagg atgatcccga ggtccagttc 840

agctggtttg tagatgatgt ggaggtgcac acagctcaga cgcaaccccg ggaggagcag 900

ttcaacagca ctttccgctc agtcagtgaa cttcccatca tgcaccagga ctggctcaat 960

ggcaaggagt tcaaatgcag ggtcaacagt gcagctttcc ctgccccat cgagaaaacc 1020

atctccaaaa ccaaaggcag accgaaggct ccacaggtgt acaccattcc acctcccaag 1080

gagcagatgg ccaaggataa agtcagtctg acctgcatga taacagactt cttccctgaa 1140

gacattactg tggagtggca gtggaatggg cagccagcgg agaactacaa gaacactcag 1200

cccatcatgg acacagatgg ctcttacttc gtctacagca agctcaatgt gcagaagagc 1260

aactgggagg caggaaatac tttcacctgc tctgtgttac atgagggcct gcacaaccac 1320

catactgaga agagcctctc ccactctcct ggtaaatga 1359

<210> 31
<211> 213
<212> PRT
<213> Mus musculus

<400> 31

Gln Ile Val Leu Thr Gln Ser Pro Thr Ile Val Ser Ala Ser Pro Gly
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Glu Lys Val Thr Leu Ile Cys Ser Ala Ser Ser Ser Val Ser Phe Val

20 25 30

Asp Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys Arg Trp Ile Tyr
35 40 45

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

Gly Ser Gly Thr Ser His Ser Leu Thr Ile Ser Arg Met Glu Ala Glu
65 70 75 80

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Thr Tyr Pro Pro Thr
85 90 95

Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg Ala Asp Ala Ala Pro
100 105 110

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

Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile Asn
130 135 140

Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu Asn
145 150 155 160

Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser Ser
165 170 175

Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr Thr
180 185 190

Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser Phe
195 200 205

Asn Arg Asn Glu Cys
210

<210> 32
<211> 642
<212> DNA
<213> Mus musculus

<400> 32
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acttctccca aacgctggat ttacagaaca tccaacctgg gttttggagt ccctgctcgc 180

ttcagtggcg gtggatctgg gacctctcac tctctcacaa tcagccgaat ggaggctgaa 240

gatgctgcca cttattactg ccagcaaagg agtacttacc cacccacgtt cggtgctggg 300

accaagctgg aactgaaacg ggctgatgct gcaccaactg tatccatctt cccaccatcc 360

agtgagcagt taacatctgg aggtgcctca gtcgtgtgct tcttgaacaa cttctacccc 420

aaagacatca atgtcaagtg gaagattgat ggcagtgaac gacaaaatgg cgtcctgaac 480

agttggactg atcaggacag caaagacagc acctacagca tgagcagcac cctcacgttg 540

accaaggacg agtatgaacg acataacagc tatacctgtg aggccactca caagacatca 600

acttcaccca ttgtcaagag cttcaacagg aatgagtgtt ag 642

<210> 33
<211> 235
<212> PRT
<213> Mus musculus

<400> 33

Met His Phe Gln Val Gln Ile Phe Ser Phe Leu Leu Ile Ser Ala Ser
1 5 10 15

Val Ile Val Ser Arg Gly Gln Ile Val Leu Thr Gln Ser Pro Thr Ile
20 25 30

Val Ser Ala Ser Pro Gly Glu Lys Val Thr Leu Ile Cys Ser Ala Ser
35 40 45

Ser Ser Val Ser Phe Val Asp Trp Phe Gln Gln Lys Pro Gly Thr Ser
50 55 60

Pro Lys Arg Trp Ile Tyr Arg Thr Ser Asn Leu Gly Phe Gly Val Pro
65 70 75 80

Ala Arg Phe Ser Gly Gly Gly Ser Gly Thr Ser His Ser Leu Thr Ile
85 90 95

Ser Arg Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg
100 105 110

Ser Thr Tyr Pro Pro Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
115 120 125

Arg Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu
130 135 140

Gln Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe
145 150 155 160

Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg
165 170 175

Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser
180 185 190

Thr Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu

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        195                 200                 205

Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser
    210                 215                 220

Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230                 235
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<210> 34
<211> 708
<212> DNA
<213> Mus musculus

<400> 34

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ccaggcactt ctcccaaacg ctggatttac agaacatcca acctgggttt tggagtccct      240

gctcgcttca gtggcggtgg atctgggacc tctcactctc tcacaatcag ccgaatggag      300

gctgaagatg ctgccactta ttactgccag caaaggagta cttacccacc cacgttcggt      360

gctgggacca agctggaact gaaacgggct gatgctgcac caactgtatc catcttccca      420

ccatccagtg agcagttaac atctggaggt gcctcagtcg tgtgcttctt gaacaacttc      480

taccccaaag acatcaatgt caagtggaag attgatggca gtgaacgaca aaatggcgtc      540

ctgaacagtt ggactgatca ggacagcaaa gacagcacct acagcatgag cagcaccctc      600

acgttgacca aggacgagta tgaacgacat aacagctata cctgtgaggc cactcacaag      660

acatcaactt cacccattgt caagagcttc aacaggaatg agtgttag                   708
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<210> 35
<211> 449
<212> PRT
<213> Mus musculus

<400> 35

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Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
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Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20                  25                  30

Gly Met Gly Val Gly Trp Ile Arg His Pro Ser Gly Lys Asn Leu Glu
        35                  40                  45

Trp Leu Ala His Ile Trp Trp Asp Asp Val Lys Arg Tyr Asn Pro Val
    50                  55                  60

Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Asn Ser Gln Val
65                  70                  75                  80
```

```
Phe Leu Lys Ile Ala Asn Val Asp Thr Ala Asp Thr Ala Thr Tyr Tyr
                85                  90                  95

Cys Ala Arg Ile Glu Asp Phe Asp Tyr Asp Glu Glu Tyr Tyr Ala Met
            100                 105                 110

Asp Tyr Trp Gly Gln Gly Thr Ser Val Ile Val Ser Ser Ala Lys Thr
        115                 120                 125

Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr
    130                 135                 140

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

Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser
            180                 185                 190

Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn
        195                 200                 205

Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro
    210                 215                 220

Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser
225                 230                 235                 240

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

Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp
            260                 265                 270

Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr
        275                 280                 285

Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser
    290                 295                 300

Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu
305                 310                 315                 320

Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu Lys
                325                 330                 335

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

```
Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr
        355                 360                 365

Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln
    370                 375                 380

Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met
385                 390                 395                 400

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

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

Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly
        435                 440                 445

Lys
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<210> 36
<211> 1350
<212> DNA
<213> Mus musculus

<400> 36

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acttgttctt tctctgggtt ttcactgagc acttctggta tgggtgtagg ctggattcgt      120

cacccatcag ggaagaatct ggagtggctg gcacacattt ggtgggatga tgtcaagcgc      180

tataacccag tcctgaagag ccgactgact atctccaagg atacctccaa cagccaggta      240

ttcctcaaga tcgccaatgt ggacactgca gatactgcca catactactg tgctcgaata      300

gaggactttg attacgacga ggagtattat gctatggact actggggtca aggaacctca      360

gtcatcgtct cctcagccaa aacgacaccc ccatctgtct atccactggc ccctggatct      420

gctgcccaaa ctaactccat ggtgaccctg ggatgcctgg tcaagggcta tttccctgag      480

ccagtgacag tgacctggaa ctctggatcc ctgtccagcg gtgtgcacac cttcccagct      540

gtcctgcagt ctgacctcta cactctgagc agctcagtga ctgtcccctc cagcacctgg      600

cccagcgaga ccgtcacctg caacgttgcc cacccggcca gcagcaccaa ggtggacaag      660

aaaattgtgc ccagggattg tggttgtaag ccttgcatat gtacagtccc agaagtatca      720

tctgtcttca tcttcccccc aaagcccaag gatgtgctca ccattactct gactcctaag      780

gtcacgtgtg ttgtggtaga catcagcaag gatgatcccg aggtccagtt cagctggttt      840

gtagatgatg tggaggtgca cacagctcag acgcaacccc gggaggagca gttcaacagc      900

actttccgct cagtcagtga acttcccatc atgcaccagg actggctcaa tggcaaggag      960

ttcaaatgca gggtcaacag tgcagctttc cctgccccca tcgagaaaac catctccaaa     1020
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accaaaggca gaccgaaggc tccacaggtg tacaccattc cacctcccaa ggagcagatg 1080

gccaaggata aagtcagtct gacctgcatg ataacagact tcttccctga agacattact 1140

gtggagtggc agtggaatgg gcagccagcg gagaactaca agaacactca gcccatcatg 1200

gacacagatg gctcttactt cgtctacagc aagctcaatg tgcagaagag caactgggag 1260

gcaggaaata ctttcacctg ctctgtgtta catgagggcc tgcacaacca ccatactgag 1320

aagagcctct cccactctcc tggtaaatga 1350

<210> 37
<211> 468
<212> PRT
<213> Mus musculus

<400> 37

Met Gly Arg Leu Thr Ser Ser Phe Leu Leu Leu Ile Val Pro Ala Tyr
1 5 10 15

Val Leu Ser Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln
20 25 30

Pro Ser Gln Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu
35 40 45

Ser Thr Ser Gly Met Gly Val Gly Trp Ile Arg His Pro Ser Gly Lys
50 55 60

Asn Leu Glu Trp Leu Ala His Ile Trp Trp Asp Asp Val Lys Arg Tyr
65 70 75 80

Asn Pro Val Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Asn
85 90 95

Ser Gln Val Phe Leu Lys Ile Ala Asn Val Asp Thr Ala Asp Thr Ala
100 105 110

Thr Tyr Tyr Cys Ala Arg Ile Glu Asp Phe Asp Tyr Asp Glu Glu Tyr
115 120 125

Tyr Ala Met Asp Tyr Trp Gly Gln Gly Thr Ser Val Ile Val Ser Ser
130 135 140

Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala
145 150 155 160

Ala Gln Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr
165 170 175

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser
180 185 190

```
Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu
        195                 200                 205

Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val
    210                 215                 220

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys
225                 230                 235                 240

Ile Val Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro
                245                 250                 255

Glu Val Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu
            260                 265                 270

Thr Ile Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser
        275                 280                 285

Lys Asp Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu
    290                 295                 300

Val His Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr
305                 310                 315                 320

Phe Arg Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn
                325                 330                 335

Gly Lys Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro
            340                 345                 350

Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln
        355                 360                 365

Val Tyr Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val
    370                 375                 380

Ser Leu Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val
385                 390                 395                 400

Glu Trp Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln
                405                 410                 415

Pro Ile Met Asp Thr Asp Gly Ser Tyr Phe Val Tyr Ser Lys Leu Asn
            420                 425                 430

Val Gln Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val
        435                 440                 445

Leu His Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His
    450                 455                 460
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Ser Pro Gly Lys
465

<210> 38
<211> 1407
<212> DNA
<213> Mus musculus

<400> 38
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tgttctttct ctgggttttc actgagcact tctggtatgg gtgtaggctg gattcgtcac 180

ccatcaggga agaatctgga gtggctggca cacatttggt gggatgatgt caagcgctat 240

aacccagtcc tgaagagccg actgactatc tccaaggata cctccaacag ccaggtattc 300

ctcaagatcg ccaatgtgga cactgcagat actgccacat actactgtgc tcgaatagag 360

gactttgatt acgacgagga gtattatgct atggactact ggggtcaagg aacctcagtc 420

atcgtctcct cagccaaaac gacaccccca tctgtctatc cactggcccc tggatctgct 480

gcccaaacta actccatggt gaccctggga tgcctggtca agggctattt ccctgagcca 540

gtgacagtga cctggaactc tggatccctg tccagcggtg tgcacacctt cccagctgtc 600

ctgcagtctg acctctacac tctgagcagc tcagtgactg tcccctccag cacctggccc 660

agcgagaccg tcacctgcaa cgttgcccac ccggccagca gcaccaaggt ggacaagaaa 720

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acgtgtgttg tggtagacat cagcaaggat gatcccgagg tccagttcag ctggtttgta 900

gatgatgtgg aggtgcacac agctcagacg caaccccggg aggagcagtt caacagcact 960

ttccgctcag tcagtgaact tcccatcatg caccaggact ggctcaatgg caaggagttc 1020

aaatgcaggg tcaacagtgc agctttccct gcccccatcg agaaaaccat ctccaaaacc 1080

aaaggcagac cgaaggctcc acaggtgtac accattccac ctcccaagga gcagatggcc 1140

aaggataaag tcagtctgac ctgcatgata acagacttct tccctgaaga cattactgtg 1200

gagtggcagt ggaatgggca gccagcggag aactacaaga acactcagcc catcatggac 1260

acagatggct cttacttcgt ctacagcaag ctcaatgtgc agaagagcaa ctgggaggca 1320

ggaaatactt tcacctgctc tgtgttacat gagggcctgc acaaccacca tactgagaag 1380

agcctctccc actctcctgg taaatga 1407

<210> 39
<211> 5
<212> PRT
<213> Mus musculus

<400> 39

Asp His Tyr Met Ser

1 5

<210> 40
<211> 17
<212> PRT
<213> Mus musculus

<400> 40

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

Gly

<210> 41
<211> 10
<212> PRT
<213> Mus musculus

<400> 41

Asp Asp Tyr Asp Ala Ser Pro Phe Ala Tyr
1 5 10

<210> 42
<211> 11
<212> PRT
<213> Mus musculus

<400> 42

Gln Ala Ser Gln Gly Thr Ser Ile Asn Leu Asn
1 5 10

<210> 43
<211> 7
<212> PRT
<213> Mus musculus

<400> 43

Gly Ser Ser Asn Leu Glu Asp
1 5

<210> 44
<211> 9
<212> PRT
<213> Mus musculus

<400> 44

Leu Gln His Ser Tyr Leu Pro Tyr Thr
1 5

<210> 45
<211> 5
<212> PRT
<213> Mus musculus

<400> 45

Asp Cys Tyr Met Asn
1 5

<210> 46
<211> 17
<212> PRT
<213> Mus musculus

<400> 46

Asp Ile Asn Pro Phe Asn Gly Gly Thr Thr Tyr Asn Gln Lys Phe Lys
1 5 10 15

Gly

<210> 47
<211> 16
<212> PRT
<213> Mus musculus

<400> 47

Ser His Tyr Tyr Phe Asp Gly Arg Val Pro Trp Asp Ala Met Asp Tyr
1 5 10 15

<210> 48
<211> 15
<212> PRT
<213> Mus musculus

<400> 48

Lys Ala Ser Gln Ser Val Asp Tyr Asp Gly Asp Ser Tyr Met Asn
1 5 10 15

<210> 49
<211> 7
<212> PRT
<213> Mus musculus

<400> 49

Ala Ala Ser Asn Leu Glu Ser
1 5

<210> 50
<211> 9
<212> PRT
<213> Mus musculus

<400> 50

Gln Gln Ser Asn Glu Asp Pro Trp Thr
1 5

<210> 51
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
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<220>
<221> MISC_FEATURE
<223> Rabbit-mouse chimera

<400> 51

Ser Tyr Trp Met Asn
1   5

<210> 52
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Rabbit-mouse chimera

<400> 52

Thr Ile Asp Ser Gly Gly Arg Thr Asp Tyr Ala Ser Trp Ala Lys Gly
1   5   10   15

<210> 53
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<400> 53

Asn Trp Asn Leu
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<210> 54
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Rabbit-mouse chimera

<400> 54

Gln Ser Ser Gln Ser Val Tyr Asp Asn Asn Trp Leu Ala
1   5   10

<210> 55

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

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Rabbit-mouse chimera

<400> 55

Asp Ala Ser Asp Leu Ala Ser
1 5

<210> 56
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Rabbit-mouse chimera

<400> 56

Gln Gly Ala Tyr Asn Asp Val Ile Tyr Ala
1 5 10

<210> 57
<211> 7
<212> PRT
<213> Mus musculus

<400> 57

Thr Ser Gly Met Gly Val Gly
1 5

<210> 58
<211> 16
<212> PRT
<213> Mus musculus

<400> 58

His Ile Trp Trp Asp Asp Val Lys Arg Tyr Asn Pro Val Leu Lys Ser
1 5 10 15

<210> 59
<211> 14
<212> PRT
<213> Mus musculus

<400> 59

Glu Asp Phe Asp Tyr Asp Glu Glu Tyr Tyr Ala Met Asp Tyr
1 5 10

<210> 60
<211> 10
<212> PRT
<213> Mus musculus

<400> 60

Ser Ala Ser Ser Ser Val Ser Phe Val Asp
1 5 10

<210> 61
<211> 7
<212> PRT
<213> Mus musculus

<400> 61

Arg Thr Ser Asn Leu Gly Phe
1 5

<210> 62
<211> 9
<212> PRT
<213> Mus musculus

<400> 62

Gln Gln Arg Ser Thr Tyr Pro Pro Thr
1 5

<210> 63
<211> 20
<212> PRT
<213> Homo sapiens

<400> 63

Cys Gly Pro Ala Arg Leu Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp
1 5 10 15

Trp Arg Pro Ser
20

<210> 64
<211> 20
<212> PRT
<213> Homo sapiens

<400> 64

Gly Pro Ala Arg Leu Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp Trp
1 5 10 15

Arg Pro Ser Gly
20

<210> 65
<211> 20
<212> PRT

<213> Homo sapiens

<400> 65

Pro Ala Arg Leu Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp Trp Arg
1 5 10 15

Pro Ser Gly Pro
20

<210> 66
<211> 20
<212> PRT
<213> Homo sapiens

<400> 66

Ala Arg Leu Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp Trp Arg Pro
1 5 10 15

Ser Gly Pro Asp
20

<210> 67
<211> 20
<212> PRT
<213> Homo sapiens

<400> 67

Arg Leu Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp Trp Arg Pro Ser
1 5 10 15

Gly Pro Asp Phe
20

<210> 68
<211> 20
<212> PRT
<213> Homo sapiens

<400> 68

Leu Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp Trp Arg Pro Ser Gly
1 5 10 15

Pro Asp Phe Arg
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<210> 69
<211> 20
<212> PRT
<213> Homo sapiens

<400> 69

Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp Trp Arg Pro Ser Gly Pro
1 5 10 15

Asp Phe Arg Cys
20

<210> 70
<211> 14
<212> PRT
<213> Homo sapiens

<400> 70

Ser Ala Lys Pro Val Thr Glu Leu Val Cys Ser Gly Gln Cys
1 5 10

<210> 71
<211> 7
<212> PRT
<213> Homo sapiens

<400> 71

Leu Val Ala Ser Cys Lys Cys
1 5

<210> 72
<211> 8
<212> PRT
<213> Homo sapiens

<400> 72

Cys Arg Glu Leu His Phe Thr Arg
1 5

<210> 73
<211> 7
<212> PRT
<213> Homo sapiens

<400> 73

Cys Ile Pro Asp Arg Tyr Arg
1 5

<210> 74
<211> 399
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 74
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gtgactatta cctgtcaatc tagtcagagc gtgtatgata acaattggct ggcgtggtac 180

cagcaaaaac cgggcaaagc cccgaagctg ctcatctatg acgcgtccga tctggctagc 240

ggtgtgccaa gccgtttcag tggcagtggc agcggtactg actttaccct cacaatttcg 300

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tatgccttcg gtcagggcac taaagtagaa atcaaacgt 399

<210> 75
<211> 133
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 75

Met Asp Thr Arg Ala Pro Thr Gln Leu Leu Gly Leu Leu Leu Leu Trp
1 5 10 15

Leu Pro Gly Ala Thr Phe Ala Gln Val Leu Thr Gln Ser Pro Ser Ser
20 25 30

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Gln Ser Ser
35 40 45

Gln Ser Val Tyr Asp Asn Asn Trp Leu Ala Trp Tyr Gln Gln Lys Pro
50 55 60

Gly Lys Ala Pro Lys Leu Leu Ile Tyr Asp Ala Ser Asp Leu Ala Ser
65 70 75 80

Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
85 90 95

Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys
100 105 110

Gln Gly Ala Tyr Asn Asp Val Ile Tyr Ala Phe Gly Gln Gly Thr Lys
115 120 125

Val Glu Ile Lys Arg
130

<210> 76
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 76
atggagactg ggctgcgctg gcttctcctg gtcgctgtgc tcaaaggtgt ccactgtgag 60

gtgcagctgt tggagtctgg aggcgggctt gtccagcctg gagggagcct gcgtctctct 120

tgtgcagcaa gcggcttcag cttatcctct tactggatga attgggtgcg gcaggcacct 180

gggaagggcc tggagtgggt gggcaccatt gattccggag gccgtacaga ctacgcgtct 240

tgggcaaagg gccgtttcac catttcccgc gacaactcca aaaataccat gtacctccag 300

atgaactctc tccgcgcaga ggacacagca cgttattact gtgcacgcaa ctggaatctg 360

tggggtcaag gtactcttgt aacagtctcg agc 393

<210> 77
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 77

Met Glu Thr Gly Leu Arg Trp Leu Leu Leu Val Ala Val Leu Lys Gly
1 5 10 15

Val His Cys Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu Val Gln
20 25 30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Leu
35 40 45

Ser Ser Tyr Trp Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
50 55 60

Glu Trp Val Gly Thr Ile Asp Ser Gly Gly Arg Thr Asp Tyr Ala Ser
65 70 75 80

Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr
85 90 95

Met Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Arg Tyr
100 105 110

Tyr Cys Ala Arg Asn Trp Asn Leu Trp Gly Gln Gly Thr Leu Val Thr
115 120 125

Val Ser Ser
    130

<210> 78
<211> 11
<212> PRT
<213> Mus musculus

<400> 78

Arg Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn
1   5   10

<210> 79
<211> 7
<212> PRT
<213> Mus musculus

<400> 79

Tyr Thr Ser Arg Leu Leu Ser
1   5

<210> 80
<211> 9
<212> PRT
<213> Mus musculus

<400> 80

Gln Gln Gly Asp Thr Leu Pro Tyr Thr
1   5

<210> 81
<211> 11
<212> PRT
<213> Mus musculus

<400> 81

Arg Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn
1   5   10

<210> 82
<211> 24
<212> PRT
<213> Rattus norvegicus

<400> 82

Gln Gly Trp Gln Ala Phe Lys Asn Asp Ala Thr Glu Ile Ile Pro Gly
1   5   10   15

Leu Arg Glu Tyr Pro Glu Pro Pro
            20

<210> 83
<211> 20
<212> PRT
<213> Rattus norvegicus

<400> 83

Thr Glu Ile Ile Pro Gly Leu Arg Glu Tyr Pro Glu Pro Pro Gln Glu
1 5 10 15

Leu Glu Asn Asn
20

<210> 84
<211> 20
<212> PRT
<213> Rattus norvegicus

<400> 84

Pro Glu Pro Pro Gln Glu Leu Glu Asn Asn Gln Thr Met Asn Arg Ala
1 5 10 15

Glu Asn Gly Gly
20

<210> 85
<211> 20
<212> PRT
<213> Rattus norvegicus

<400> 85

Glu Asn Gly Gly Arg Pro Pro His His Pro Tyr Asp Thr Lys Asp Val
1 5 10 15

Ser Glu Tyr Ser
20

<210> 86
<211> 14
<212> PRT
<213> Rattus norvegicus

<400> 86

Cys Arg Glu Leu His Tyr Thr Arg Phe Val Thr Asp Gly Pro
1 5 10

<210> 87
<211> 25
<212> PRT
<213> Rattus norvegicus

<400> 87

Cys Arg Glu Leu His Tyr Thr Arg Phe Val Thr Asp Gly Pro Ser Arg
1 5 10 15

Ser Ala Lys Pro Val Thr Glu Leu Val
20 25

<210> 88
<211> 23

<212> PRT
<213> Rattus norvegicus

<400> 88

Cys Arg Ser Ala Lys Pro Val Thr Glu Leu Val Ser Ser Gly Gln Ser
1 5 10 15

Gly Pro Arg Ala Arg Leu Leu
20

<210> 89
<211> 25
<212> PRT
<213> Rattus norvegicus

<400> 89

Cys Gly Pro Ala Arg Leu Leu Pro Asn Ala Ile Gly Arg Val Lys Trp
1 5 10 15

Trp Arg Pro Asn Gly Pro Asp Phe Arg
20 25

<210> 90
<211> 20
<212> PRT
<213> Rattus norvegicus

<400> 90

Arg Ala Gln Arg Val Gln Leu Leu Cys Pro Gly Gly Ala Ala Pro Arg
1 5 10 15

Ser Arg Lys Val
20

<210> 91
<211> 16
<212> PRT
<213> Rattus norvegicus

<400> 91

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

<210> 92
<211> 23
<212> PRT
<213> Rattus norvegicus

<400> 92

Lys Arg Leu Thr Arg Phe His Asn Gln Ser Glu Leu Lys Asp Phe Gly
1 5 10 15

Pro Glu Thr Ala Arg Pro Gln
20

<210> 93
<211> 16
<212> PRT
<213> Rattus norvegicus

<400> 93

Ile Pro Asp Arg Tyr Ala Gln Arg Val Gln Leu Leu Ser Pro Gly Gly
1 5 10 15

<210> 94
<211> 24
<212> PRT
<213> Rattus norvegicus

<400> 94

Ser Glu Leu Lys Asp Phe Gly Pro Glu Thr Ala Arg Pro Gln Lys Gly
1 5 10 15

Arg Lys Pro Arg Pro Arg Ala Arg
20

<210> 95
<211> 23
<212> PRT
<213> Rattus norvegicus

<400> 95

Lys Gly Arg Lys Pro Arg Pro Arg Ala Arg Gly Ala Lys Ala Asn Gln
1 5 10 15

Ala Glu Leu Glu Asn Ala Tyr
20

<210> 96
<211> 18
<212> PRT
<213> Rattus norvegicus

<400> 96

Pro Asn Ala Ile Gly Arg Val Lys Trp Trp Arg Pro Asn Gly Pro Asp
1 5 10 15

Phe Arg

<210> 97
<211> 22
<212> PRT
<213> Rattus norvegicus

<400> 97

Lys Trp Trp Arg Pro Asn Gly Pro Asp Phe Arg Cys Ile Pro Asp Arg
1 5 10 15

Tyr Arg Ala Gln Arg Val
20

<210> 98
<211> 213
<212> PRT
<213> Rattus norvegicus

<400> 98

Met Gln Leu Ser Leu Ala Pro Cys Leu Ala Cys Leu Leu Val His Ala
1 5 10 15

Ala Phe Val Ala Val Glu Ser Gln Gly Trp Gln Ala Phe Lys Asn Asp
20 25 30

Ala Thr Glu Ile Ile Pro Gly Leu Arg Glu Tyr Pro Glu Pro Pro Gln
35 40 45

Glu Leu Glu Asn Asn Gln Thr Met Asn Arg Ala Glu Asn Gly Gly Arg
50 55 60

Pro Pro His His Pro Tyr Asp Thr Lys Asp Val Ser Glu Tyr Ser Cys
65 70 75 80

Arg Glu Leu His Tyr Thr Arg Phe Val Thr Asp Gly Pro Cys Arg Ser
85 90 95

Ala Lys Pro Val Thr Glu Leu Val Cys Ser Gly Gln Cys Gly Pro Ala
100 105 110

Arg Leu Leu Pro Asn Ala Ile Gly Arg Val Lys Trp Trp Arg Pro Asn
115 120 125

Gly Pro Asp Phe Arg Cys Ile Pro Asp Arg Tyr Arg Ala Gln Arg Val
130 135 140

Gln Leu Leu Cys Pro Gly Gly Ala Ala Pro Arg Ser Arg Lys Val Arg
145 150 155 160

Leu Val Ala Ser Cys Lys Cys Lys Arg Leu Thr Arg Phe His Asn Gln
165 170 175

Ser Glu Leu Lys Asp Phe Gly Pro Glu Thr Ala Arg Pro Gln Lys Gly
180 185 190

Arg Lys Pro Arg Pro Arg Ala Arg Gly Ala Lys Ala Asn Gln Ala Glu
195 200 205

Leu Glu Asn Ala Tyr
210

<210> 99

<211> 7
<212> PRT
<213> Mus musculus

<400> 99

Tyr Thr Ser Arg Leu His Ser
1 5

<210> 100
<211> 9
<212> PRT
<213> Mus musculus

<400> 100

Gln Gln Gly Asp Thr Leu Pro Tyr Thr
1 5

<210> 101
<211> 11
<212> PRT
<213> Mus musculus

<400> 101

Arg Ala Ser Gln Val Ile Thr Asn Tyr Leu Tyr
1 5 10

<210> 102
<211> 7
<212> PRT
<213> Mus musculus

<400> 102

Tyr Thr Ser Arg Leu His Ser
1 5

<210> 103
<211> 9
<212> PRT
<213> Mus musculus

<400> 103

Gln Gln Gly Asp Thr Leu Pro Tyr Thr
1 5

<210> 104
<211> 11
<212> PRT
<213> Mus musculus

<400> 104

Arg Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 105
<211> 7
<212> PRT

<213> Mus musculus

<400> 105

Tyr Thr Ser Arg Leu Leu Ser
1 5

<210> 106
<211> 9
<212> PRT
<213> Mus musculus

<400> 106

Gln Gln Gly Asp Thr Leu Pro Tyr Thr
1 5

<210> 107
<211> 11
<212> PRT
<213> Mus musculus

<400> 107

Arg Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 108
<211> 7
<212> PRT
<213> Mus musculus

<400> 108

Tyr Thr Ser Arg Leu Phe Ser
1 5

<210> 109
<211> 9
<212> PRT
<213> Mus musculus

<400> 109

Gln Gln Gly Asp Thr Leu Pro Tyr Thr
1 5

<210> 110
<211> 11
<212> PRT
<213> Mus musculus

<400> 110

Arg Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 111
<211> 7
<212> PRT
<213> Mus musculus

<400> 111

Tyr Thr Ser Arg Leu Leu Ser
1 5

<210> 112
<211> 9
<212> PRT
<213> Mus musculus

<400> 112

Gln Gln Gly Asp Thr Leu Pro Tyr Thr
1 5

<210> 113
<211> 11
<212> PRT
<213> Mus musculus

<400> 113

Arg Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 114
<211> 7
<212> PRT
<213> Mus musculus

<400> 114

Tyr Thr Ser Thr Leu Gln Ser
1 5

<210> 115
<211> 9
<212> PRT
<213> Mus musculus

<400> 115

Gln Gln Gly Asp Thr Leu Pro Tyr Thr
1 5

<210> 116
<211> 12
<212> PRT
<213> Mus musculus

<400> 116

Ser Val Ser Ser Ser Ile Ser Ser Ser Asn Leu His
1 5 10

<210> 117
<211> 213
<212> PRT
<213> Mus musculus

<400> 117

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

Glu Lys Val Thr Met Thr Cys Arg Ala Ser Ser Ser Val Tyr Tyr Met
            20                  25                  30

His Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Pro Trp Ile Tyr
        35                  40                  45

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

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Thr Arg Val Glu Ala Glu
65                  70                  75                  80

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

Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg Ala Asp Ala Ala Pro
            100                 105                 110

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

Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile Asn
    130                 135                 140

Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu Asn
145                 150                 155                 160

Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser Ser
                165                 170                 175

Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr Thr
            180                 185                 190

Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser Phe
        195                 200                 205

Asn Arg Asn Glu Cys
    210
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<210> 118
<211> 642
<212> DNA
<213> Mus musculus

<400> 118
caaattgttc tctcccagtc tccagcaatc ctgtctacat ctccagggga gaaggtcaca 60

atgacttgca gggccagctc aagtgtatat tacatgcact ggtaccagca gaagccagga 120

tcctccccca aaccctggat ttatgccaca tccaacctgg cttctggagt ccctgttcgc 180

ttcagtggca gtgggtctgg gacctcttac tctctcacaa tcaccagagt ggaggctgaa 240

gatgctgcca cttattactg ccagcagtgg agtagtgacc cactcacgtt cggtgctggg 300

accaagctgg agctgaaacg ggctgatgct gcaccaactg tatccatctt cccaccatcc 360

agtgagcagt taacatctgg aggtgcctca gtcgtgtgct tcttgaacaa cttctacccc 420

aaagacatca atgtcaagtg gaagattgat ggcagtgaac gacaaaatgg cgtcctgaac 480

agttggactg atcaggacag caaagacagc acctacagca tgagcagcac cctcacgttg 540

accaaggacg agtatgaacg acataacagc tatacctgtg aggccactca caagacatca 600

acttcaccca ttgtcaagag cttcaacagg aatgagtgtt ag 642

<210> 119
<211> 235
<212> PRT
<213> Mus musculus

<400> 119

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

Val Ile Met Ser Arg Gly Gln Ile Val Leu Ser Gln Ser Pro Ala Ile
20 25 30

Leu Ser Thr Ser Pro Gly Glu Lys Val Thr Met Thr Cys Arg Ala Ser
35 40 45

Ser Ser Val Tyr Tyr Met His Trp Tyr Gln Gln Lys Pro Gly Ser Ser
50 55 60

Pro Lys Pro Trp Ile Tyr Ala Thr Ser Asn Leu Ala Ser Gly Val Pro
65 70 75 80

Val Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile
85 90 95

Thr Arg Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp
100 105 110

Ser Ser Asp Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
115 120 125

Arg Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu
130 135 140

Gln Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe
145 150 155 160

Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg
165 170 175

```
Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser
            180                 185                 190

Thr Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu
        195                 200                 205

Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser
    210                 215                 220

Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230                 235
```

<210> 120
<211> 708
<212> DNA
<213> Mus musculus

<400> 120

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atggattttc aagtgcagat tttcagcttc ctgctaatca gtgcttcagt cattatgtcc       60

aggggacaaa ttgttctctc ccagtctcca gcaatcctgt ctacatctcc aggggagaag      120

gtcacaatga cttgcagggc cagctcaagt gtatattaca tgcactggta ccagcagaag      180

ccaggatcct cccccaaacc ctggatttat gccacatcca acctggcttc tggagtccct      240

gttcgcttca gtggcagtgg gtctgggacc tcttactctc tcacaatcac cagagtggag      300

gctgaagatg ctgccactta ttactgccag cagtggagta gtgacccact cacgttcggt      360

gctgggacca agctggagct gaaacgggct gatgctgcac caactgtatc catcttccca      420

ccatccagtg agcagttaac atctggaggt gcctcagtcg tgtgcttctt gaacaacttc      480

taccccaaag acatcaatgt caagtggaag attgatggca gtgaacgaca aaatggcgtc      540

ctgaacagtt ggactgatca ggacagcaaa gacagcacct acagcatgag cagcaccctc      600

acgttgacca aggacgagta tgaacgacat aacagctata cctgtgaggc cactcacaag      660

acatcaactt cacccattgt caagagcttc aacaggaatg agtgttag                   708
```

<210> 121
<211> 445
<212> PRT
<213> Mus musculus

<400> 121

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

Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Ile Lys Asp Tyr
            20                  25                  30

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

Gly Arg Leu Asp Pro Glu Asp Gly Glu Ser Asp Tyr Ala Pro Lys Phe
    50                  55                  60
```

```
Gln Asp Lys Ala Ile Met Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr
65                  70                  75                  80

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

Glu Arg Glu Asp Tyr Asp Gly Thr Tyr Thr Phe Phe Pro Tyr Trp Gly
            100                 105                 110

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

Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser Met Val
    130                 135                 140

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

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

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

Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala His Pro
        195                 200                 205

Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp Cys Gly
    210                 215                 220

Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val Phe Ile
225                 230                 235                 240

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

Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu Val Gln
            260                 265                 270

Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln Thr Gln
        275                 280                 285

Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser Glu Leu
    290                 295                 300

Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys Cys Arg
305                 310                 315                 320

Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
                325                 330                 335
```

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

Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met Ile Thr
        355                 360                 365

Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn Gly Gln
    370                 375                 380

Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr Asp Gly
385                 390                 395                 400

Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn Trp Glu
                405                 410                 415

Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His Asn
            420                 425                 430

His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440                 445
```

<210> 122
<211> 1338
<212> DNA
<213> Mus musculus

<400> 122

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gaggttcagg tgcagcagtc tgggccagaa cttgtgaagc caggggcctc agtcaagttg       60

tcctgcacag cttctggctt caacattaaa gactacttta tacactgggt gaagcagagg      120

cctgaacagg gcctggagtg gattggaagg cttgatcctg aggatggtga aagtgattat      180

gccccgaagt tccaggacaa ggccattatg acagcagaca catcatccaa cacagcctat      240

cttcagctca gaagcctgac atctgaggac actgccatct attattgtga gagagaggac      300

tacgatggta cctacacctt ttttccttac tggggccaag ggactctggt cactgtctct      360

gcagccaaaa cgacaccccc atctgtctat ccactggccc ctggatctgc tgcccaaact      420

aactccatgg tgaccctggg atgcctggtc aagggctatt tccctgagcc agtgacagtg      480

acctggaact ctggatccct gtccagcggt gtgcacacct tcccagctgt cctgcagtct      540

gacctctaca ctctgagcag ctcagtgact gtcccctcca gcacctggcc cagcgagacc      600

gtcacctgca acgttgccca cccggccagc agcaccaagg tggacaagaa aattgtgccc      660

agggattgtg gttgtaagcc ttgcatatgt acagtcccag aagtatcatc tgtcttcatc      720

ttcccccaa agcccaagga tgtgctcacc attactctga ctcctaaggt cacgtgtgtt      780

gtggtagaca tcagcaagga tgatcccgag gtccagttca gctggtttgt agatgatgtg      840

gaggtgcaca cagctcagac gcaaccccgg gaggagcagt tcaacagcac tttccgctca      900

gtcagtgaac ttcccatcat gcaccaggac tggctcaatg gcaaggagtt caaatgcagg      960
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gtcaacagtg cagctttccc tgcccccatc gagaaaacca tctccaaaac caaaggcaga 1020

ccgaaggctc cacaggtgta caccattcca cctcccaagg agcagatggc caaggataaa 1080

gtcagtctga cctgcatgat aacagacttc ttccctgaag acattactgt ggagtggcag 1140

tggaatgggc agccagcgga gaactacaag aacactcagc ccatcatgga cacagatggc 1200

tcttacttca tctacagcaa gctcaatgtg cagaagagca actgggaggc aggaaatact 1260

ttcacctgct ctgtgttaca tgagggcctg cacaaccacc atactgagaa gagcctctcc 1320

cactctcctg gtaaatga 1338

<210> 123
<211> 464
<212> PRT
<213> Mus musculus

<400> 123

Met Lys Cys Ser Trp Val Ile Phe Phe Leu Met Ala Val Val Thr Gly
1 5 10 15

Val Asn Ser Glu Val Gln Val Gln Gln Ser Gly Pro Glu Leu Val Lys
20 25 30

Pro Gly Ala Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Ile
35 40 45

Lys Asp Tyr Phe Ile His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu
50 55 60

Glu Trp Ile Gly Arg Leu Asp Pro Glu Asp Gly Glu Ser Asp Tyr Ala
65 70 75 80

Pro Lys Phe Gln Asp Lys Ala Ile Met Thr Ala Asp Thr Ser Ser Asn
85 90 95

Thr Ala Tyr Leu Gln Leu Arg Ser Leu Thr Ser Glu Asp Thr Ala Ile
100 105 110

Tyr Tyr Cys Glu Arg Glu Asp Tyr Asp Gly Thr Tyr Thr Phe Phe Pro
115 120 125

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala Ala Lys Thr Thr
130 135 140

Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn
145 150 155 160

Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro
165 170 175

Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr
180 185 190

```
Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val
        195                 200                 205

Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val
    210                 215                 220

Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg
225                 230                 235                 240

Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser
                245                 250                 255

Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile Thr Leu
            260                 265                 270

Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro
        275                 280                 285

Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala
    290                 295                 300

Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val
305                 310                 315                 320

Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe
                325                 330                 335

Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu Lys Thr
            340                 345                 350

Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr Thr Ile
        355                 360                 365

Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys
    370                 375                 380

Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp
385                 390                 395                 400

Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp
                405                 410                 415

Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser
            420                 425                 430

Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly
        435                 440                 445

Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
    450                 455                 460
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<210> 124
<211> 1395
<212> DNA
<213> Mus musculus

<400> 124
atgaaatgca gctgggtcat cttcttcctg atggcagtgg ttacaggggt caattcagag 60

gttcaggtgc agcagtctgg gccagaactt gtgaagccag gggcctcagt caagttgtcc 120

tgcacagctt ctggcttcaa cattaaagac tactttatac actgggtgaa gcagaggcct 180

gaacagggcc tggagtggat tggaaggctt gatcctgagg atggtgaaag tgattatgcc 240

ccgaagttcc aggacaaggc cattatgaca gcagacacat catccaacac agcctatctt 300

cagctcagaa gcctgacatc tgaggacact gccatctatt attgtgagag agaggactac 360

gatggtacct acacctttt tccttactgg ggccaaggga ctctggtcac tgtctctgca 420

gccaaaacga cacccccatc tgtctatcca ctggcccctg gatctgctgc ccaaactaac 480

tccatggtga ccctgggatg cctggtcaag ggctatttcc ctgagccagt gacagtgacc 540

tggaactctg gatccctgtc cagcggtgtg cacaccttcc cagctgtcct gcagtctgac 600

ctctacactc tgagcagctc agtgactgtc ccctccagca cctggcccag cgagaccgtc 660

acctgcaacg ttgcccaccc ggccagcagc accaaggtgg acaagaaaat tgtgcccagg 720

gattgtggtt gtaagccttg catatgtaca gtcccagaag tatcatctgt cttcatcttc 780

cccccaaagc ccaaggatgt gctcaccatt actctgactc ctaaggtcac gtgtgttgtg 840

gtagacatca gcaaggatga tcccgaggtc agttcagct ggtttgtaga tgatgtggag 900

gtgcacacag ctcagacgca accccgggag gagcagttca acagcacttt ccgctcagtc 960

agtgaacttc ccatcatgca ccaggactgg ctcaatggca aggagttcaa atgcagggtc 1020

aacagtgcag ctttccctgc ccccatcgag aaaaccatct ccaaaaccaa aggcagaccg 1080

aaggctccac aggtgtacac cattccacct cccaaggagc agatggccaa ggataaagtc 1140

agtctgacct gcatgataac agacttcttc cctgaagaca ttactgtgga gtggcagtgg 1200

aatgggcagc cagcggagaa ctacaagaac actcagccca tcatggacac agatggctct 1260

tacttcatct acagcaagct caatgtgcag aagagcaact gggaggcagg aaatactttc 1320

acctgctctg tgttacatga gggcctgcac aaccaccata ctgagaagag cctctcccac 1380

tctcctggta aatga 1395

<210> 125
<211> 215
<212> PRT
<213> Mus musculus

<400> 125

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

```
Glu Lys Val Thr Ile Thr Cys Ser Val Ser Ser Thr Ile Ser Ser Asn
            20                  25                  30

His Leu His Trp Phe Gln Gln Lys Ser Asp Thr Ser Pro Lys Pro Trp
        35                  40                  45

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

Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu
65                  70                  75                  80

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

Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Arg Arg Ala Asp Ala
            100                 105                 110

Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln Leu Thr Ser
        115                 120                 125

Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp
    130                 135                 140

Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val
145                 150                 155                 160

Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met
                165                 170                 175

Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser
            180                 185                 190

Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys
        195                 200                 205

Ser Phe Asn Arg Asn Glu Cys
    210                 215
```

<210> 126
<211> 648
<212> DNA
<213> Mus musculus

<400> 126
gaaattgtgc tcacccagtc tccagcactc atggctgcat ctccggggga gaaggtcacc 60

atcacctgca gtgtcagttc aactataagt tccaaccact tgcactggtt ccagcagaag 120

tcagacacct cccccaaacc ctggatttat ggcacatcca acctggcttc tggagtccct 180

gttcgcttca gtggcagtgg atctgggacc tcttattctc tcacaatcag cagcatggag 240

gctgaggatg ctgccactta ttactgtcaa cagtggagta gttacccact cacgttcggc 300

gctgggacca agctggagct gagacgggct gatgctgcac caactgtatc catcttccca 360

ccatccagtg agcagttaac atctggaggt gcctcagtcg tgtgcttctt gaacaacttc 420

taccccaaag acatcaatgt caagtggaag attgatggca gtgaacgaca aaatggcgtc 480

ctgaacagtt ggactgatca ggacagcaaa gacagcacct acagcatgag cagcaccctc 540

acgttgacca aggacgagta tgaacgacat aacagctata cctgtgaggc cactcacaag 600

acatcaactt cacccattgt caagagcttc aacaggaatg agtgttag 648

<210> 127
<211> 237
<212> PRT
<213> Mus musculus

<400> 127

Met Asp Phe His Val Gln Ile Phe Ser Phe Met Leu Ile Ser Val Thr
1 5 10 15

Val Ile Leu Ser Ser Gly Glu Ile Val Leu Thr Gln Ser Pro Ala Leu
20 25 30

Met Ala Ala Ser Pro Gly Glu Lys Val Thr Ile Thr Cys Ser Val Ser
35 40 45

Ser Thr Ile Ser Ser Asn His Leu His Trp Phe Gln Gln Lys Ser Asp
50 55 60

Thr Ser Pro Lys Pro Trp Ile Tyr Gly Thr Ser Asn Leu Ala Ser Gly
65 70 75 80

Val Pro Val Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu
85 90 95

Thr Ile Ser Ser Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln
100 105 110

Gln Trp Ser Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu
115 120 125

Leu Arg Arg Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser
130 135 140

Ser Glu Gln Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn
145 150 155 160

Asn Phe Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser
165 170 175

Glu Arg Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys
180 185 190

```
Asp Ser Thr Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu
        195                 200                 205

Tyr Glu Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser
    210                 215                 220

Thr Ser Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230                 235
```

<210> 128
<211> 714
<212> DNA
<213> Mus musculus

<400> 128

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atggattttc atgtgcagat tttcagcttc atgctaatca gtgtcacagt cattttgtcc       60

agtggagaaa ttgtgctcac ccagtctcca gcactcatgg ctgcatctcc gggggagaag      120

gtcaccatca cctgcagtgt cagttcaact ataagttcca accacttgca ctggttccag      180

cagaagtcag acacctcccc caaaccctgg atttatggca catccaacct ggcttctgga      240

gtccctgttc gcttcagtgg cagtggatct gggacctctt attctctcac aatcagcagc      300

atggaggctg aggatgctgc cacttattac tgtcaacagt ggagtagtta cccactcacg      360

ttcggcgctg ggaccaagct ggagctgaga cgggctgatg ctgcaccaac tgtatccatc      420

ttcccaccat ccagtgagca gttaacatct ggaggtgcct cagtcgtgtg cttcttgaac      480

aacttctacc ccaaagacat caatgtcaag tggaagattg atggcagtga acgacaaaat      540

ggcgtcctga acagttggac tgatcaggac agcaaagaca gcacctacag catgagcagc      600

accctcacgt tgaccaagga cgagtatgaa cgacataaca gctatacctg tgaggccact      660

cacaagacat caacttcacc cattgtcaag agcttcaaca ggaatgagtg ttag            714
```

<210> 129
<211> 449
<212> PRT
<213> Mus musculus

<400> 129

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

Leu Val Lys Leu Ser Cys Thr Ala Ser Asp Phe Asn Ile Lys Asp Phe
            20                  25                  30

Tyr Leu His Trp Met Arg Gln Arg Pro Glu Gln Gly Leu Asp Trp Ile
        35                  40                  45

Gly Arg Ile Asp Pro Glu Asn Gly Asp Thr Leu Tyr Asp Pro Lys Phe
    50                  55                  60

Gln Asp Lys Ala Thr Leu Thr Thr Asp Thr Ser Ser Asn Thr Ala Tyr
65                  70                  75                  80
```

```
Leu Gln Leu Ser Gly Leu Thr Ser Glu Thr Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ser Arg Glu Ala Asp Tyr Phe His Asp Gly Thr Ser Tyr Trp Tyr Phe
            100                 105                 110

Asp Val Trp Gly Ala Gly Thr Thr Ile Thr Val Ser Ser Ala Lys Thr
        115                 120                 125

Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr
    130                 135                 140

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

Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser
            180                 185                 190

Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn
        195                 200                 205

Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro
    210                 215                 220

Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser
225                 230                 235                 240

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

Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp
            260                 265                 270

Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr
        275                 280                 285

Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser
    290                 295                 300

Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu
305                 310                 315                 320

Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu Lys
                325                 330                 335

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

```
Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr
        355                 360                 365

Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln
    370                 375                 380

Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met
385                 390                 395                 400

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

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

Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly
        435                 440                 445

Lys
```

<210> 130
<211> 1350
<212> DNA
<213> Mus musculus

<400> 130

```
gaggttcagc tgcagcagtc tggggctgaa cttgtgaggc caggggcctt agtcaagttg       60

tcctgcacag cttctgactt caacattaaa gacttctatc tacactggat gaggcagcgg      120

cctgaacagg gcctggactg gattggaagg attgatcctg agaatggtga tactttatat      180

gacccgaagt tccaggacaa ggccactctt acaacagaca catcctccaa cacagcctac      240

ctgcagctca gcggcctgac atctgagacc actgccgtct attactgttc tagagaggcg      300

gattatttcc acgatggtac ctcctactgg tacttcgatg tctggggcgc agggaccaca      360

atcaccgtct cctcagccaa aacgacaccc ccatctgtct atccactggc ccctggatct      420

gctgcccaaa ctaactccat ggtgaccctg ggatgcctgg tcaagggcta tttccctgag      480

ccagtgacag tgacctggaa ctctggatcc ctgtccagcg gtgtgcacac cttcccagct      540

gtcctgcagt ctgacctcta cactctgagc agctcagtga ctgtcccctc cagcacctgg      600

cccagcgaga ccgtcacctg caacgttgcc cacccggcca gcagcaccaa ggtggacaag      660

aaaattgtgc ccagggattg tggttgtaag ccttgcatat gtacagtccc agaagtatca      720

tctgtcttca tcttcccccc aaagcccaag gatgtgctca ccattactct gactcctaag      780

gtcacgtgtg ttgtggtaga catcagcaag gatgatcccg aggtccagtt cagctggttt      840

gtagatgatg tggaggtgca cacagctcag acgcaacccc gggaggagca gttcaacagc      900

actttccgct cagtcagtga acttcccatc atgcaccagg actggctcaa tggcaaggag      960
```

ttcaaatgca gggtcaacag tgcagctttc cctgccccca tcgagaaaac catctccaaa 1020

accaaaggca gaccgaaggc tccacaggtg tacaccattc cacctcccaa ggagcagatg 1080

gccaaggata aagtcagtct gacctgcatg ataacagact tcttccctga agacattact 1140

gtggagtggc agtggaatgg gcagccagcg gagaactaca agaacactca gcccatcatg 1200

gacacagatg gctcttactt catctacagc aagctcaatg tgcagaagag caactgggag 1260

gcaggaaata ctttcacctg ctctgtgtta catgagggcc tgcacaacca ccatactgag 1320

aagagcctct cccactctcc tggtaaatga 1350

<210> 131
<211> 468
<212> PRT
<213> Mus musculus

<400> 131

Met Lys Cys Ser Trp Val Ile Phe Phe Leu Met Ala Val Val Thr Gly
1 5 10 15

Val Asn Ser Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg
20 25 30

Pro Gly Ala Leu Val Lys Leu Ser Cys Thr Ala Ser Asp Phe Asn Ile
35 40 45

Lys Asp Phe Tyr Leu His Trp Met Arg Gln Arg Pro Glu Gln Gly Leu
50 55 60

Asp Trp Ile Gly Arg Ile Asp Pro Glu Asn Gly Asp Thr Leu Tyr Asp
65 70 75 80

Pro Lys Phe Gln Asp Lys Ala Thr Leu Thr Thr Asp Thr Ser Ser Asn
85 90 95

Thr Ala Tyr Leu Gln Leu Ser Gly Leu Thr Ser Glu Thr Thr Ala Val
100 105 110

Tyr Tyr Cys Ser Arg Glu Ala Asp Tyr Phe His Asp Gly Thr Ser Tyr
115 120 125

Trp Tyr Phe Asp Val Trp Gly Ala Gly Thr Thr Ile Thr Val Ser Ser
130 135 140

Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala
145 150 155 160

Ala Gln Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr
165 170 175

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser
180 185 190

```
Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu
        195                 200                 205

Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val
    210                 215                 220

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys
225                 230                 235                 240

Ile Val Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro
                245                 250                 255

Glu Val Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu
            260                 265                 270

Thr Ile Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser
        275                 280                 285

Lys Asp Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu
    290                 295                 300

Val His Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr
305                 310                 315                 320

Phe Arg Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn
                325                 330                 335

Gly Lys Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro
            340                 345                 350

Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln
        355                 360                 365

Val Tyr Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val
    370                 375                 380

Ser Leu Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val
385                 390                 395                 400

Glu Trp Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln
                405                 410                 415

Pro Ile Met Asp Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn
            420                 425                 430

Val Gln Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val
        435                 440                 445

Leu His Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His
    450                 455                 460
```

Ser Pro Gly Lys
465

<210> 132
<211> 1407
<212> DNA
<213> Mus musculus

<400> 132
atgaaatgca gctgggtcat cttcttcctg atggcagtgg ttacaggggt caattcagag 60

gttcagctgc agcagtctgg ggctgaactt gtgaggccag gggccttagt caagttgtcc 120

tgcacagctt ctgacttcaa cattaaagac ttctatctac actggatgag gcagcggcct 180

gaacagggcc tggactggat tggaaggatt gatcctgaga atggtgatac tttatatgac 240

ccgaagttcc aggacaaggc cactcttaca acagacacat cctccaacac agcctacctg 300

cagctcagcg gcctgacatc tgagaccact gccgtctatt actgttctag agaggcggat 360

tatttccacg atggtacctc ctactggtac ttcgatgtct ggggcgcagg gaccacaatc 420

accgtctcct cagccaaaac gacaccccca tctgtctatc cactggcccc tggatctgct 480

gcccaaacta actccatggt gaccctggga tgcctggtca agggctattt ccctgagcca 540

gtgacagtga cctggaactc tggatccctg tccagcggtg tgcacacctt cccagctgtc 600

ctgcagtctg acctctacac tctgagcagc tcagtgactg tcccctccag cacctggccc 660

agcgagaccg tcacctgcaa cgttgcccac ccggccagca gcaccaaggt ggacaagaaa 720

attgtgccca gggattgtgg ttgtaagcct tgcatatgta cagtcccaga agtatcatct 780

gtcttcatct tccccccaaa gcccaaggat gtgctcacca ttactctgac tcctaaggtc 840

acgtgtgttg tggtagacat cagcaaggat gatcccgagg tccagttcag ctggtttgta 900

gatgatgtgg aggtgcacac agctcagacg caaccccggg aggagcagtt caacagcact 960

ttccgctcag tcagtgaact tcccatcatg caccaggact ggctcaatgg caaggagttc 1020

aaatgcaggg tcaacagtgc agctttccct gcccccatcg agaaaaccat ctccaaaacc 1080

aaaggcagac cgaaggctcc acaggtgtac accattccac ctcccaagga gcagatggcc 1140

aaggataaag tcagtctgac ctgcatgata acagacttct tccctgaaga cattactgtg 1200

gagtggcagt ggaatgggca gccagcggag aactacaaga acactcagcc catcatggac 1260

acagatggct cttacttcat ctacagcaag ctcaatgtgc agaagagcaa ctgggaggca 1320

ggaaatactt tcacctgctc tgtgttacat gagggcctgc acaaccacca tactgagaag 1380

agcctctccc actctcctgg taaatga 1407

<210> 133
<211> 214
<212> PRT
<213> Mus musculus

<400> 133

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

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

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Phe Lys Leu Leu Ile
        35                  40                  45

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

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Tyr Asn Leu Glu Gln
65                  70                  75                  80

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

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

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

Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile
    130                 135                 140

Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu
145                 150                 155                 160

Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser
                165                 170                 175

Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr
            180                 185                 190

Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser
        195                 200                 205

Phe Asn Arg Asn Glu Cys
    210
```

<210> 134
<211> 645
<212> DNA
<213> Mus musculus

<400> 134
gatatccaga tgacacagat tacatcctcc ctgtctgcct ctctgggaga cagggtctcc 60

atcagttgca gggcaagtca agacattagc aattatttaa actggtatca gcagaaacca 120

gatggaactt ttaaactcct tatcttctac acatcaagat tactctcagg agtcccatca 180

aggttcagtg gcagtgggtc tggaacagat tattctctca ccatttacaa cctggagcaa 240

gaagattttg ccacttactt ttgccaacag ggagatacgc ttccgtacac tttcggaggg 300

gggaccaagc tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacca 360

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac 420

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg 480

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg 540

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca 600

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag 645

<210> 135
<211> 234
<212> PRT
<213> Mus musculus

<400> 135

Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln
1 5 10 15

Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Ile Thr Ser Ser Leu Ser
20 25 30

Ala Ser Leu Gly Asp Arg Val Ser Ile Ser Cys Arg Ala Ser Gln Asp
35 40 45

Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Phe
50 55 60

Lys Leu Leu Ile Phe Tyr Thr Ser Arg Leu Leu Ser Gly Val Pro Ser
65 70 75 80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Tyr
85 90 95

Asn Leu Glu Gln Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asp
100 105 110

Thr Leu Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
115 120 125

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln
130 135 140

Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr
145 150 155 160

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln
165 170 175

```
Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr
            180                 185                 190

Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg
        195                 200                 205

His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro
    210                 215                 220

Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230
```

<210> 136
<211> 705
<212> DNA
<213> Mus musculus

<400> 136

```
atgatgtcct ctgctcagtt ccttggtctc ctgttgctct gttttcaagg taccagatgt       60

gatatccaga tgacacagat tacatcctcc ctgtctgcct ctctgggaga cagggtctcc      120

atcagttgca gggcaagtca agacattagc aattatttaa actggtatca gcagaaacca      180

gatggaactt ttaaactcct tatcttctac acatcaagat tactctcagg agtcccatca      240

aggttcagtg gcagtgggtc tggaacagat tattctctca ccatttacaa cctggagcaa      300

gaagattttg ccacttactt ttgccaacag ggagatacgc ttccgtacac tttcggaggg      360

gggaccaagc tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacca      420

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac      480

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg      540

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg      600

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca      660

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag                      705
```

<210> 137
<211> 447
<212> PRT
<213> Mus musculus

<400> 137

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

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

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

Gly Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn Gln Lys Phe
    50                  55                  60
```

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

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

Ala Arg Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
            100                 105                 110

Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr Thr Pro
        115                 120                 125

Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser
    130                 135                 140

Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro Val
145                 150                 155                 160

Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr Phe
                165                 170                 175

Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val Thr
            180                 185                 190

Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala
        195                 200                 205

His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp
    210                 215                 220

Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val
225                 230                 235                 240

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

Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu
            260                 265                 270

Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln
        275                 280                 285

Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser
    290                 295                 300

Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys
305                 310                 315                 320

Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu Lys Thr Ile
                325                 330                 335
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Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr Thr Ile Pro
            340                 345                 350

Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met
        355                 360                 365

Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn
    370                 375                 380

Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr
385                 390                 395                 400

Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn
                405                 410                 415

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

His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440                 445
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<210> 138
<211> 1344
<212> DNA
<213> Mus musculus

<400> 138

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gaggtccaac tgcaacagtc tggacctgaa ctaatgaagc ctggggcttc agtgaagatg       60

tcctgcaagg cttctggata tacattcact gactacaaca tgcactgggt gaagcagaac      120

caaggaaaga ccctagagtg gataggagaa attaatccta acagtggtgg tgctggctac      180

aaccagaagt tcaagggcaa ggccacattg actgtagaca agtcctccac cacagcctac      240

atggagctcc gcagcctgac atctgaggac tctgcagtct attactgtgc aagattgggc      300

tacgatgata tctacgacga ctggtacttc gatgtctggg gcgcagggac cacggtcacc      360

gtctcctcag ccaaaacgac acccccatct gtctatccac tggccctgg atctgctgcc       420

caaactaact ccatggtgac cctgggatgc ctggtcaagg gctatttccc tgagccagtg      480

acagtgacct ggaactctgg atccctgtcc agcggtgtgc acaccttccc agctgtcctg      540

cagtctgacc tctacactct gagcagctca gtgactgtcc cctccagcac ctggcccagc      600

gagaccgtca cctgcaacgt tgcccacccg gccagcagca ccaaggtgga caagaaaatt      660

gtgcccaggg attgtggttg taagccttgc atatgtacag tcccagaagt atcatctgtc      720

ttcatcttcc ccccaaagcc caaggatgtg ctcaccatta ctctgactcc taaggtcacg      780

tgtgttgtgg tagacatcag caaggatgat cccgaggtcc agttcagctg gtttgtagat      840

gatgtggagg tgcacacagc tcagacgcaa ccccgggagg agcagttcaa cagcactttc      900

cgctcagtca gtgaacttcc catcatgcac caggactggc tcaatggcaa ggagttcaaa      960
```

tgcagggtca acagtgcagc tttccctgcc cccatcgaga aaaccatctc caaaaccaaa 1020

ggcagaccga aggctccaca ggtgtacacc attccacctc ccaaggagca gatggccaag 1080

gataaagtca gtctgacctg catgataaca gacttcttcc ctgaagacat tactgtggag 1140

tggcagtgga atgggcagcc agcggagaac tacaagaaca ctcagcccat catggacaca 1200

gatggctctt acttcatcta cagcaagctc aatgtgcaga agagcaactg ggaggcagga 1260

aatactttca cctgctctgt gttacatgag ggcctgcaca accaccatac tgagaagagc 1320

ctctcccact ctcctggtaa atga 1344

<210> 139
<211> 466
<212> PRT
<213> Mus musculus

<400> 139

Met Gly Trp Ser Trp Thr Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val Leu Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Met Lys
20 25 30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Asn Met His Trp Val Lys Gln Asn Gln Gly Lys Thr Leu
50 55 60

Glu Trp Ile Gly Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Thr
85 90 95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr
115 120 125

Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys
130 135 140

Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln
145 150 155 160

Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro
165 170 175

Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val
180 185 190

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His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser
        195                 200                 205

Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys
    210                 215                 220

Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val
225                 230                 235                 240

Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val
                245                 250                 255

Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile
            260                 265                 270

Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp
        275                 280                 285

Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His
    290                 295                 300

Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
305                 310                 315                 320

Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu
            340                 345                 350

Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr
        355                 360                 365

Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu
    370                 375                 380

Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp
385                 390                 395                 400

Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile
                405                 410                 415

Met Asp Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln
            420                 425                 430

Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His
        435                 440                 445

Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro
    450                 455                 460
```

Gly Lys
465

<210> 140
<211> 1401
<212> DNA
<213> Mus musculus

<400> 140
atgggatgga gctggacctt tctcttcctc ctgtcaggaa ctgcaggtgt cctctctgag 60

gtccaactgc aacagtctgg acctgaacta atgaagcctg gggcttcagt gaagatgtcc 120

tgcaaggctt ctggatatac attcactgac tacaacatgc actgggtgaa gcagaaccaa 180

ggaaagaccc tagagtggat aggagaaatt aatcctaaca gtggtggtgc tggctacaac 240

cagaagttca agggcaaggc cacattgact gtagacaagt cctccaccac agcctacatg 300

gagctccgca gcctgacatc tgaggactct gcagtctatt actgtgcaag attgggctac 360

gatgatatct acgacgactg gtacttcgat gtctggggcg cagggaccac ggtcaccgtc 420

tcctcagcca aaacgacacc cccatctgtc tatccactgg cccctggatc tgctgcccaa 480

actaactcca tggtgaccct gggatgcctg gtcaagggct atttccctga gccagtgaca 540

gtgacctgga actctggatc cctgtccagc ggtgtgcaca ccttcccagc tgtcctgcag 600

tctgacctct acactctgag cagctcagtg actgtcccct ccagcacctg gcccagcgag 660

accgtcacct gcaacgttgc ccacccggcc agcagcacca aggtggacaa gaaaattgtg 720

cccagggatt gtggttgtaa gccttgcata tgtacagtcc cagaagtatc atctgtcttc 780

atcttccccc caaagcccaa ggatgtgctc accattactc tgactcctaa ggtcacgtgt 840

gttgtggtag acatcagcaa ggatgatccc gaggtccagt tcagctggtt tgtagatgat 900

gtggaggtgc acacagctca gacgcaaccc cgggaggagc agttcaacag cactttccgc 960

tcagtcagtg aacttcccat catgcaccag gactggctca atggcaagga gttcaaatgc 1020

agggtcaaca gtgcagcttt ccctgccccc atcgagaaaa ccatctccaa aaccaaaggc 1080

agaccgaagg ctccacaggt gtacaccatt ccacctccca aggagcagat ggccaaggat 1140

aaagtcagtc tgacctgcat gataacagac ttcttccctg aagacattac tgtggagtgg 1200

cagtggaatg ggcagccagc ggagaactac aagaacactc agcccatcat ggacacagat 1260

ggctcttact tcatctacag caagctcaat gtgcagaaga gcaactggga ggcaggaaat 1320

actttcacct gctctgtgtt acatgagggc ctgcacaacc accatactga gaagagcctc 1380

tcccactctc ctggtaaatg a 1401

<210> 141
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 141

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 Asp Ile Ser Asn Tyr
20 25 30

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

Tyr Tyr Thr Ser Arg Leu Leu Ser 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 Gln Gln Gly Asp Thr Leu Pro Tyr
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

<210> 142
<211> 642
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 142
gacatccaga tgacccagtc tccatcctcc ctctccgcat ccgtaggcga ccgcgtaacc 60

ataacatgta gagcatctca agatatttcc aactatttga attggtacca acaaaaaccc 120

ggcaaagcac ctaaactcct catttactat acatcaagac tcctctccgg cgttccatca 180

cgattctcag gctccggctc cggcacagat ttcacactca ctatttcctc cctccaacca 240

gaagattttg caacctatta ctgtcaacaa ggcgatacac tcccatacac attcggcggc 300

ggcacaaaag ttgaaattaa acgtacggtg 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

ctgagcaaag cagactacga gaaacacaaa gtctacgcct gcgaagtcac ccatcagggc 600

ctgagctcgc ccgtcacaaa gagcttcaac aggggagagt gt 642

<210> 143
<211> 236
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 143

Met Asp Met Arg Val Pro Ala Gln Leu Leu Gly Leu Leu Leu Leu Trp
1 5 10 15

Leu Arg Gly Ala Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser
20 25 30

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser
35 40 45

Gln Asp Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys
50 55 60

Ala Pro Lys Leu Leu Ile Tyr Tyr Thr Ser Arg Leu Leu Ser Gly Val
65 70 75 80

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Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
                85                  90                  95

Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln
            100                 105                 110

Gly Asp Thr Leu Pro Tyr Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
        115                 120                 125

Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp
    130                 135                 140

Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn
145                 150                 155                 160

Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu
                165                 170                 175

Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp
            180                 185                 190

Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr
        195                 200                 205

Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser
    210                 215                 220

Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225                 230                 235
```

<210> 144
<211> 708
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 144

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atggacatga gggtccccgc tcagctcctg gggctcctgc tactctggct ccgaggtgcc       60

agatgtgaca tccagatgac ccagtctcca tcctccctct ccgcatccgt aggcgaccgc      120

gtaaccataa catgtagagc atctcaagat atttccaact atttgaattg gtaccaacaa      180

aaacccggca aagcacctaa actcctcatt tactatacat caagactcct ctccggcgtt      240

ccatcacgat tctcaggctc cggctccggc acagatttca cactcactat ttcctccctc      300

caaccagaag attttgcaac ctattactgt caacaaggcg atacactccc atacacattc      360

ggcggcggca caaaagttga aattaaacgt acggtggctg caccatctgt cttcatcttc      420
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ccgccatctg atgagcagtt gaaatctgga actgcctctg ttgtgtgcct gctgaataac 480

ttctatccca gagaggccaa agtacagtgg aaggtggata acgccctcca atcgggtaac 540

tcccaggaga gtgtcacaga gcaggacagc aaggacagca cctacagcct cagcagcacc 600

ctgacgctga gcaaagcaga ctacgagaaa cacaaagtct acgcctgcga agtcacccat 660

cagggcctga gctcgcccgt cacaaagagc ttcaacaggg gagagtgt 708

<210> 145
<211> 449
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 145

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

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

Asn Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

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

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

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

Ala Arg Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
100 105 110

Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys Gly
115 120 125

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

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

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

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

Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val
        195                 200                 205

Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys
    210                 215                 220

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala 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 Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
        275                 280                 285

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

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

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

Thr Ile Ser Lys Thr 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 Met 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
```

Lys

<210> 146
<211> 1347
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 146
gaggtgcagc tggtgcagag cggcgccgag gtaaaaaaac caggagcaag cgttaaagtt 60

tcttgtaaag caagcggata tacatttaca gattacaaca tgcattgggt aagacaagcg 120

ccaggacaag gattggaatg gatgggcgaa attaacccta atagtggagg agcaggctac 180

aatcaaaaat tcaaagggag agttacaatg acaacagaca caagcacttc aacagcatat 240

atggaactgc gatcacttag aagcgacgat acagctgtat actattgcgc acgacttggg 300

tatgatgata tatatgatga ctggtatttc gatgtttggg gccagggaac aacagttacc 360

gtctctagtg cctccaccaa gggcccatcg gtcttccccc tggcgccctg ctccaggagc 420

acctccgaga gcacagcggc cctgggctgc ctggtcaagg actacttccc cgaaccggtg 480

acggtgtcgt ggaactcagg cgctctgacc agcggcgtgc acaccttccc agctgtccta 540

cagtcctcag gactctactc cctcagcagc gtggtgaccg tgccctccag caacttcggc 600

acccagacct acacctgcaa cgtagatcac aagcccagca acaccaaggt ggacaagaca 660

gttgagcgca aatgttgtgt cgagtgccca ccgtgcccag caccacctgt ggcaggaccg 720

tcagtcttcc tcttcccccc aaaacccaag gacaccctca tgatctcccg gacccctgag 780

gtcacgtgcg tggtggtgga cgtgagccac gaagaccccg aggtccagtt caactggtac 840

gtggacggcg tggaggtgca taatgccaag acaaagccac gggaggagca gttcaacagc 900

acgttccgtg tggtcagcgt cctcaccgtt gtgcaccagg actggctgaa cggcaaggag 960

tacaagtgca aggtctccaa caaaggcctc ccagccccca tcgagaaaac catctccaaa 1020

accaaagggc agccccgaga accacaggtg tacaccctgc ccccatcccg ggaggagatg 1080

accaagaacc aggtcagcct gacctgcctg gtcaaaggct tctaccccag cgacatcgcc 1140

gtggagtggg agagcaatgg gcagccggag aacaactaca agaccacacc tcccatgctg 1200

gactccgacg gctccttctt cctctacagc aagctcaccg tggacaagag caggtggcag 1260

caggggaacg tcttctcatg ctccgtgatg catgaggctc tgcacaacca ctacacgcag 1320

aagagcctct ccctgtctcc gggtaaa 1347

<210> 147

<211> 468
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 147

Met Asp Trp Thr Trp Arg Ile Leu Phe Leu Val Ala Ala Ala Thr Gly
1 5 10 15

Ala His Ser Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Asn Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60

Glu Trp Met Gly Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Arg Val Thr Met Thr Thr Asp Thr Ser Thr Ser
85 90 95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Arg Ser Asp Asp Thr Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr
115 120 125

Phe Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser
130 135 140

Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr
145 150 155 160

Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro
165 170 175

Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val
180 185 190

His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser
195 200 205

Ser Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr
210 215 220

```
Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr Val
225                 230                 235                 240

Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val
                245                 250                 255

Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
            260                 265                 270

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
        275                 280                 285

His Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
    290                 295                 300

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
305                 310                 315                 320

Phe Arg Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn
                325                 330                 335

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro
            340                 345                 350

Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln
        355                 360                 365

Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val
    370                 375                 380

Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val
385                 390                 395                 400

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
                405                 410                 415

Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr
            420                 425                 430

Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val
        435                 440                 445

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
    450                 455                 460

Ser Pro Gly Lys
465
```

<210> 148
<211> 1404

<212> DNA
<213> Mus musculus

<400> 148
atggactgga cctggaggat cctcttcttg gtggcagcag ccacaggagc ccactccgag 60

gtgcagctgg tgcagagcgg cgccgaggta aaaaaaccag gagcaagcgt taaagtttct 120

tgtaaagcaa gcggatatac atttacagat tacaacatgc attgggtaag acaagcgcca 180

ggacaaggat tggaatggat gggcgaaatt aaccctaata gtggaggagc aggctacaat 240

caaaaattca aagggagagt tacaatgaca acagacacaa gcacttcaac agcatatatg 300

gaactgcgat cacttagaag cgacgataca gctgtatact attgcgcacg acttgggtat 360

gatgatatat atgatgactg gtatttcgat gtttggggcc agggaacaac agttaccgtc 420

tctagtgcct ccaccaaggg cccatcggtc ttcccctgg cgccctgctc caggagcacc 480

tccgagagca cagcggccct gggctgcctg gtcaaggact acttccccga accggtgacg 540

gtgtcgtgga actcaggcgc tctgaccagc ggcgtgcaca ccttcccagc tgtcctacag 600

tcctcaggac tctactccct cagcagcgtg gtgaccgtgc cctccagcaa cttcggcacc 660

cagacctaca cctgcaacgt agatcacaag cccagcaaca ccaaggtgga caagacagtt 720

gagcgcaaat gttgtgtcga gtgcccaccg tgcccagcac cacctgtggc aggaccgtca 780

gtcttcctct tccccccaaa acccaaggac accctcatga tctcccggac ccctgaggtc 840

acgtgcgtgg tggtggacgt gagccacgaa gaccccgagg tccagttcaa ctggtacgtg 900

gacggcgtgg aggtgcataa tgccaagaca aagccacggg aggagcagtt caacagcacg 960

ttccgtgtgg tcagcgtcct caccgttgtg caccaggact ggctgaacgg caaggagtac 1020

aagtgcaagg tctccaacaa aggcctccca gcccccatcg agaaaaccat ctccaaaacc 1080

aaagggcagc cccgagaacc acaggtgtac accctgcccc catcccggga ggagatgacc 1140

aagaaccagg tcagcctgac ctgcctggtc aaaggcttct accccagcga catcgccgtg 1200

gagtgggaga gcaatgggca gccggagaac aactacaaga ccacacctcc catgctggac 1260

tccgacggct ccttcttcct ctacagcaag ctcaccgtgg acaagagcag gtggcagcag 1320

gggaacgtct tctcatgctc cgtgatgcat gaggctctgc acaaccacta cacgcagaag 1380

agcctctccc tgtctccggg taaa 1404

<210> 149
<211> 214
<212> PRT
<213> Mus musculus

<400> 149

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

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

```
Leu Asn Trp Phe Gln Gln Lys Pro Asp Gly Thr Leu Lys Leu Leu Ile
        35                  40                  45

Phe Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln
65                  70                  75                  80

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

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

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

Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile
    130                 135                 140

Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu
145                 150                 155                 160

Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser
                165                 170                 175

Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr
            180                 185                 190

Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser
        195                 200                 205

Phe Asn Arg Asn Glu Cys
    210
```

<210> 150
<211> 645
<212> DNA
<213> Mus musculus

<400> 150

```
gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagagtcacc       60

atcagttgca gggcaagtca ggacattagc aattatttaa actggtttca gcagaaacca      120

gatggaactc ttaaactcct gatcttctac acatcaagat tacactcagg agttccatca      180

aggttcagtg gcagtgggtc tggaacagat tattctctca ccattagcaa cctggagcaa      240

gaagatattg ccacttactt ttgccaacag ggtgatacgc ttccgtacac gttcgggggg      300

gggaccaagc tggaaataag acgggctgat gctgcaccaa ctgtatccat cttcccacca      360

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac      420
```

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg 480

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg 540

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca 600

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag 645

<210> 151
<211> 234
<212> PRT
<213> Mus musculus

<400> 151

Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln
1 5 10 15

Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser
20 25 30

Ala Ser Leu Gly Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp
35 40 45

Ile Ser Asn Tyr Leu Asn Trp Phe Gln Gln Lys Pro Asp Gly Thr Leu
50 55 60

Lys Leu Leu Ile Phe Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser
65 70 75 80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser
85 90 95

Asn Leu Glu Gln Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asp
100 105 110

Thr Leu Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Arg Arg
115 120 125

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln
130 135 140

Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr
145 150 155 160

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln
165 170 175

Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr
180 185 190

Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg
195 200 205

```
His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro
    210                 215                 220

Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230
```

<210> 152
<211> 705
<212> DNA
<213> Mus musculus

<400> 152

```
atgatgtcct ctgctcagtt ccttggtctc ctgttgctct gttttcaagg taccagatgt       60

gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagagtcacc      120

atcagttgca gggcaagtca ggacattagc aattatttaa actggtttca gcagaaacca      180

gatggaactc ttaaactcct gatcttctac acatcaagat tacactcagg agttccatca      240

aggttcagtg gcagtgggtc tggaacagat tattctctca ccattagcaa cctggagcaa      300

gaagatattg ccacttactt ttgccaacag ggtgatacgc ttccgtacac gttcgggggg      360

gggaccaagc tggaaataag acgggctgat gctgcaccaa ctgtatccat cttcccacca      420

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac      480

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg      540

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg      600

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca      660

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag                      705
```

<210> 153
<211> 447
<212> PRT
<213> Mus musculus

<400> 153

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

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

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

Gly Glu Ile Asn Pro Asn Ser Gly Gly Ser Gly Tyr Asn Gln Lys Phe
    50                  55                  60

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

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

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

Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr Thr Pro
        115                 120                 125

Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser
    130                 135                 140

Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro Val
145                 150                 155                 160

Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr Phe
                165                 170                 175

Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val Thr
            180                 185                 190

Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala
        195                 200                 205

His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp
    210                 215                 220

Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val
225                 230                 235                 240

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

Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu
            260                 265                 270

Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln
        275                 280                 285

Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser
    290                 295                 300

Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys
305                 310                 315                 320

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

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

Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met
        355                 360                 365
```

```
Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn
    370                 375                 380

Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr
385                 390                 395                 400

Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn
                405                 410                 415

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

His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440                 445
```

<210> 154
<211> 1344
<212> DNA
<213> Mus musculus

<400> 154

```
gaggtccagc tgcaacagtc tggacctgaa ctaatgaagc ctggggcttc agtgaagatg       60

tcctgcaagg cttctggata cacattcact gactacaaca tgcactgggt gaaacagaac      120

caaggaaaga gcctagagtg gataggagaa attaatccta acagtggtgg tagtggctac      180

aaccaaaagt tcaaaggcaa ggccacattg actgtagaca agtcttccag cacagcctac      240

atggagctcc gcagcctgac atctgaggac tctgcagtct attactgtgc aagattggtc      300

tacgatggca gctacgagga ctggtacttc gatgtctggg gcgcagggac cacggtcacc      360

gtctcctcag ccaaaacgac acccccatct gtctatccac tggccctgg atctgctgcc       420

caaactaact ccatggtgac cctgggatgc ctggtcaagg gctatttccc tgagccagtg      480

acagtgacct ggaactctgg atccctgtcc agcggtgtgc acaccttccc agctgtcctg      540

cagtctgacc tctacactct gagcagctca gtgactgtcc cctccagcac ctggcccagc      600

gagaccgtca cctgcaacgt tgcccacccg gccagcagca ccaaggtgga caagaaaatt      660

gtgcccaggg attgtggttg taagccttgc atatgtacag tcccagaagt atcatctgtc      720

ttcatcttcc ccccaaagcc caaggatgtg ctcaccatta ctctgactcc taaggtcacg      780

tgtgttgtgg tagacatcag caaggatgat cccgaggtcc agttcagctg gtttgtagat      840

gatgtggagg tgcacacagc tcagacgcaa ccccgggagg agcagttcaa cagcactttc      900

cgctcagtca gtgaacttcc catcatgcac caggactggc tcaatggcaa ggagttcaaa      960

tgcagggtca acagtgcagc tttccctgcc cccatcgaga aaaccatctc caaaaccaaa     1020

ggcagaccga aggctccaca ggtgtacacc attccacctc ccaaggagca gatggccaag     1080

gataaagtca gtctgacctg catgataaca gacttcttcc ctgaagacat tactgtggag     1140

tggcagtgga atgggcagcc agcggagaac tacaagaaca ctcagcccat catggacaca     1200
```

gatggctctt acttcatcta cagcaagctc aatgtgcaga agagcaactg ggaggcagga 1260

aatactttca cctgctctgt gttacatgag ggcctgcaca accaccatac tgagaagagc 1320

ctctcccact ctcctggtaa atga 1344

<210> 155
<211> 466
<212> PRT
<213> Mus musculus

<400> 155

Met Gly Trp Ser Trp Thr Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val Leu Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Met Lys
20 25 30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Asn Met His Trp Val Lys Gln Asn Gln Gly Lys Ser Leu
50 55 60

Glu Trp Ile Gly Glu Ile Asn Pro Asn Ser Gly Gly Ser Gly Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser
85 90 95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Leu Val Tyr Asp Gly Ser Tyr Glu Asp Trp Tyr
115 120 125

Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys
130 135 140

Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln
145 150 155 160

Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro
165 170 175

Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val
180 185 190

His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser
195 200 205

Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys
210 215 220

```
Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val
225                 230                 235                 240

Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val
                245                 250                 255

Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile
            260                 265                 270

Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp
        275                 280                 285

Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His
    290                 295                 300

Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
305                 310                 315                 320

Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu
            340                 345                 350

Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr
        355                 360                 365

Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu
    370                 375                 380

Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp
385                 390                 395                 400

Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile
                405                 410                 415

Met Asp Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln
            420                 425                 430

Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His
        435                 440                 445

Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro
    450                 455                 460

Gly Lys
465
```

<210> 156
<211> 1401

<212> DNA
<213> Mus musculus

<400> 156
atgggatgga gctggacctt tctcttcctc ctgtcaggaa ctgcaggtgt cctctctgag 60

gtccagctgc aacagtctgg acctgaacta atgaagcctg gggcttcagt gaagatgtcc 120

tgcaaggctt ctggatacac attcactgac tacaacatgc actgggtgaa acagaaccaa 180

ggaaagagcc tagagtggat aggagaaatt aatcctaaca gtggtggtag tggctacaac 240

caaaagttca aaggcaaggc cacattgact gtagacaagt cttccagcac agcctacatg 300

gagctccgca gcctgacatc tgaggactct gcagtctatt actgtgcaag attggtctac 360

gatggcagct acgaggactg gtacttcgat gtctggggcg cagggaccac ggtcaccgtc 420

tcctcagcca aaacgacacc cccatctgtc tatccactgg cccctggatc tgctgcccaa 480

actaactcca tggtgaccct gggatgcctg gtcaagggct atttccctga gccagtgaca 540

gtgacctgga actctggatc cctgtccagc ggtgtgcaca ccttcccagc tgtcctgcag 600

tctgacctct acactctgag cagctcagtg actgtcccct ccagcacctg gcccagcgag 660

accgtcacct gcaacgttgc ccacccggcc agcagcacca aggtggacaa gaaaattgtg 720

cccagggatt gtggttgtaa gccttgcata tgtacagtcc cagaagtatc atctgtcttc 780

atcttccccc caaagcccaa ggatgtgctc accattactc tgactcctaa ggtcacgtgt 840

gttgtggtag acatcagcaa ggatgatccc gaggtccagt tcagctggtt tgtagatgat 900

gtggaggtgc acacagctca gacgcaaccc cgggaggagc agttcaacag cactttccgc 960

tcagtcagtg aacttcccat catgcaccag gactggctca atggcaagga gttcaaatgc 1020

agggtcaaca gtgcagcttt ccctgccccc atcgagaaaa ccatctccaa aaccaaaggc 1080

agaccgaagg ctccacaggt gtacaccatt ccacctccca aggagcagat ggccaaggat 1140

aaagtcagtc tgacctgcat gataacagac ttcttccctg aagacattac tgtggagtgg 1200

cagtggaatg ggcagccagc ggagaactac aagaacactc agcccatcat ggacacagat 1260

ggctcttact tcatctacag caagctcaat gtgcagaaga gcaactggga ggcaggaaat 1320

actttcacct gctctgtgtt acatgagggc ctgcacaacc accatactga gaagagcctc 1380

tcccactctc ctggtaaatg a 1401

<210> 157
<211> 214
<212> PRT
<213> Mus musculus

<400> 157

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

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

```
Leu Tyr Trp Tyr Gln Gln Lys Pro Asp Gly Thr Phe Lys Leu Leu Ile
        35                  40                  45

Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln
65                  70                  75                  80

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

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

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

Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile
    130                 135                 140

Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu
145                 150                 155                 160

Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser
                165                 170                 175

Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr
            180                 185                 190

Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser
        195                 200                 205

Phe Asn Arg Asn Glu Cys
    210
```

<210> 158
<211> 642
<212> DNA
<213> Mus musculus

<400> 158
gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagagtcacc 60

atctgttgca gggcaagtca ggtcattacc aattatttat actggtatca gcagaaacca 120

gatggaactt ttaaactcct gatctactac acatcaagat tacactcagg agtcccatca 180

aggttcagtg gcagtgggtc tggaacagat tattctctca ccattagcaa cctggaacag 240

gaagatattg ccacttactt ttgccaacag ggtgatacgc ttccgtacac gttcggaggg 300

gggaccaagc tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacca 360

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac 420

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg 480

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg 540

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca 600

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gt 642

<210> 159
<211> 234
<212> PRT
<213> Mus musculus

<400> 159

Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln
1 5 10 15

Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser
20 25 30

Ala Ser Leu Gly Asp Arg Val Thr Ile Cys Cys Arg Ala Ser Gln Val
35 40 45

Ile Thr Asn Tyr Leu Tyr Trp Tyr Gln Gln Lys Pro Asp Gly Thr Phe
50 55 60

Lys Leu Leu Ile Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser
65 70 75 80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser
85 90 95

Asn Leu Glu Gln Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asp
100 105 110

Thr Leu Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
115 120 125

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln
130 135 140

Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr
145 150 155 160

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln
165 170 175

Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr
180 185 190

Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg
195 200 205

```
His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro
    210                 215                 220

Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230
```

<210> 160
<211> 702
<212> DNA
<213> Mus musculus

<400> 160

```
atgatgtcct ctgctcagtt ccttggtctc ctgttgctct gttttcaagg taccagatgt       60

gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagagtcacc      120

atctgttgca gggcaagtca ggtcattacc aattatttat actggtatca gcagaaacca      180

gatggaactt ttaaactcct gatctactac acatcaagat tacactcagg agtcccatca      240

aggttcagtg gcagtgggtc tggaacagat tattctctca ccattagcaa cctggaacag      300

gaagatattg ccacttactt ttgccaacag ggtgatacgc ttccgtacac gttcggaggg      360

gggaccaagc tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacca      420

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac      480

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg      540

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg      600

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca      660

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gt                          702
```

<210> 161
<211> 447
<212> PRT
<213> Mus musculus

<400> 161

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

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

Asn Met His Trp Met Lys Gln Asn Gln Gly Lys Ser Leu Glu Trp Ile
        35                  40                  45

Gly Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn Gln Gln Phe
    50                  55                  60

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

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

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

Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr Thr Pro
        115                 120                 125

Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser
    130                 135                 140

Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro Val
145                 150                 155                 160

Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr Phe
                165                 170                 175

Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val Thr
            180                 185                 190

Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala
        195                 200                 205

His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp
    210                 215                 220

Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val
225                 230                 235                 240

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

Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu
            260                 265                 270

Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln
        275                 280                 285

Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser
    290                 295                 300

Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys
305                 310                 315                 320

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

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

Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met
        355                 360                 365
```

```
Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn
    370                 375                 380

Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr
385                 390                 395                 400

Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn
                405                 410                 415

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

His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440                 445
```

<210> 162
<211> 1341
<212> DNA
<213> Mus musculus

<400> 162

```
gaggtccagc tgcaacagtc tggacctgaa ctaatgaagc ctggggcttc agtgaagatg       60

tcctgcaagg cttctggata cacattcact gactacaaca tgcactggat gaagcagaac      120

caaggaaaga gcctagaatg gataggagaa attaatccta acagtggtgg tgctggctac      180

aaccagcagt tcaaaggcaa ggccacattg actgtagaca agtcctccag gacagcctac      240

atggagctcc gcagcctgac atctgaggac tctgcagtct attactgtgc aagattgggc      300

tacgttggta attacgagga ctggtacttc gatgtctggg gcgcagggac cacggtcacc      360

gtctcctcag ccaaaacgac acccccatct gtctatccac tggccctgg atctgctgcc       420

caaactaact ccatggtgac cctgggatgc ctggtcaagg gctatttccc tgagccagtg      480

acagtgacct ggaactctgg atccctgtcc agcggtgtgc acaccttccc agctgtcctg      540

cagtctgacc tctacactct gagcagctca gtgactgtcc cctccagcac ctggcccagc      600

gagaccgtca cctgcaacgt tgcccacccg gccagcagca ccaaggtgga caagaaaatt      660

gtgcccaggg attgtggttg taagccttgc atatgtacag tcccagaagt atcatctgtc      720

ttcatcttcc ccccaaagcc caaggatgtg ctcaccatta ctctgactcc taaggtcacg      780

tgtgttgtgg tagacatcag caaggatgat cccgaggtcc agttcagctg gtttgtagat      840

gatgtggagg tgcacacagc tcagacgcaa ccccgggagg agcagttcaa cagcactttc      900

cgctcagtca gtgaacttcc catcatgcac caggactggc tcaatggcaa ggagttcaaa      960

tgcagggtca acagtgcagc tttccctgcc cccatcgaga aaaccatctc caaaaccaaa     1020

ggcagaccga aggctccaca ggtgtacacc attccacctc ccaaggagca gatggccaag     1080

gataaagtca gtctgacctg catgataaca gacttcttcc ctgaagacat tactgtggag     1140

tggcagtgga atgggcagcc agcggagaac tacaagaaca ctcagcccat catggacaca     1200
```

gatggctctt acttcatcta cagcaagctc aatgtgcaga agagcaactg ggaggcagga 1260

aatactttca cctgctctgt gttacatgag ggcctgcaca accaccatac tgagaagagc 1320

ctctcccact ctcctggtaa a 1341

<210> 163
<211> 466
<212> PRT
<213> Mus musculus

<400> 163

Met Gly Trp Ser Trp Thr Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val Leu Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Met Lys
20 25 30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Asn Met His Trp Met Lys Gln Asn Gln Gly Lys Ser Leu
50 55 60

Glu Trp Ile Gly Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn
65 70 75 80

Gln Gln Phe Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Arg
85 90 95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Leu Gly Tyr Val Gly Asn Tyr Glu Asp Trp Tyr
115 120 125

Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys
130 135 140

Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln
145 150 155 160

Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro
165 170 175

Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val
180 185 190

His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser
195 200 205

Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys
210 215 220

```
Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val
225                 230                 235                 240

Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val
                245                 250                 255

Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile
            260                 265                 270

Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp
        275                 280                 285

Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His
    290                 295                 300

Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
305                 310                 315                 320

Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu
            340                 345                 350

Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr
        355                 360                 365

Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu
    370                 375                 380

Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp
385                 390                 395                 400

Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile
                405                 410                 415

Met Asp Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln
            420                 425                 430

Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His
        435                 440                 445

Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro
    450                 455                 460

Gly Lys
465
```

<210> 164
<211> 1398

<212> DNA
<213> Mus musculus

<400> 164
atgggatgga gctggacctt tctcttcctc ctgtcaggaa ctgcaggtgt cctctctgag 60

gtccagctgc aacagtctgg acctgaacta atgaagcctg gggcttcagt gaagatgtcc 120

tgcaaggctt ctggatacac attcactgac tacaacatgc actggatgaa gcagaaccaa 180

ggaaagagcc tagaatggat aggagaaatt aatcctaaca gtggtggtgc tggctacaac 240

cagcagttca aaggcaaggc cacattgact gtagacaagt cctccaggac agcctacatg 300

gagctccgca gcctgacatc tgaggactct gcagtctatt actgtgcaag attgggctac 360

gttggtaatt acgaggactg gtacttcgat gtctggggcg cagggaccac ggtcaccgtc 420

tcctcagcca aaacgacacc cccatctgtc tatccactgg cccctggatc tgctgcccaa 480

actaactcca tggtgaccct gggatgcctg gtcaagggct atttccctga gccagtgaca 540

gtgacctgga actctggatc cctgtccagc ggtgtgcaca ccttcccagc tgtcctgcag 600

tctgacctct acactctgag cagctcagtg actgtccct ccagcacctg gcccagcgag 660

accgtcacct gcaacgttgc ccacccggcc agcagcacca aggtggacaa gaaaattgtg 720

cccagggatt gtggttgtaa gccttgcata tgtacagtcc cagaagtatc atctgtcttc 780

atcttccccc caaagcccaa ggatgtgctc accattactc tgactcctaa ggtcacgtgt 840

gttgtggtag acatcagcaa ggatgatccc gaggtccagt tcagctggtt tgtagatgat 900

gtggaggtgc acacagctca gacgcaaccc cgggaggagc agttcaacag cactttccgc 960

tcagtcagtg aacttcccat catgcaccag gactggctca atggcaagga gttcaaatgc 1020

agggtcaaca gtgcagcttt ccctgccccc atcgagaaaa ccatctccaa aaccaaaggc 1080

agaccgaagg ctccacaggt gtacaccatt ccacctccca aggagcagat ggccaaggat 1140

aaagtcagtc tgacctgcat gataacagac ttcttccctg aagacattac tgtggagtgg 1200

cagtggaatg ggcagccagc ggagaactac aagaacactc agcccatcat ggacacagat 1260

ggctcttact tcatctacag caagctcaat gtgcagaaga gcaactggga ggcaggaaat 1320

actttcacct gctctgtgtt acatgagggc ctgcacaacc accatactga gaagagcctc 1380

tcccactctc ctggtaaa 1398

<210> 165
<211> 214
<212> PRT
<213> Mus musculus

<400> 165

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

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

```
Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Phe Lys Leu Leu Ile
        35                  40                  45

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

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Tyr Asn Leu Glu Gln
65                  70                  75                  80

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

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

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

Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile
    130                 135                 140

Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu
145                 150                 155                 160

Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser
                165                 170                 175

Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr
            180                 185                 190

Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser
        195                 200                 205

Phe Asn Arg Asn Glu Cys
    210
```

<210> 166
<211> 645
<212> DNA
<213> Mus musculus

<400> 166
gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagggtctcc 60

atcagttgca gggcaagtca agacattagc aattatttaa actggtatca gcagaaacca 120

gatggaactt ttaaactcct tatcttctac acatcaagat tactctcagg agtcccatca 180

aggttcagtg gcagtgggtc tggaacagat tattctctca ccatttacaa cctggagcaa 240

gaagattttg ccacttactt ttgccaacag ggagatacgc ttccgtacac tttcggaggg 300

gggaccaaac tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacca 360

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac 420

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg 480

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg 540

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca 600

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag 645

<210> 167
<211> 234
<212> PRT
<213> Mus musculus

<400> 167

Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln
1 5 10 15

Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser
20 25 30

Ala Ser Leu Gly Asp Arg Val Ser Ile Ser Cys Arg Ala Ser Gln Asp
35 40 45

Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Phe
50 55 60

Lys Leu Leu Ile Phe Tyr Thr Ser Arg Leu Leu Ser Gly Val Pro Ser
65 70 75 80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Tyr
85 90 95

Asn Leu Glu Gln Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asp
100 105 110

Thr Leu Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
115 120 125

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln
130 135 140

Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr
145 150 155 160

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln
165 170 175

Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr
180 185 190

Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg
195 200 205

```
His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro
    210                 215                 220

Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230
```

<210> 168
<211> 705
<212> DNA
<213> Mus musculus

<400> 168

```
atgatgtcct ctgctcagtt ccttggtctc ctgttgctct gttttcaagg taccagatgt       60

gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagggtctcc      120

atcagttgca gggcaagtca agacattagc aattatttaa actggtatca gcagaaacca      180

gatggaactt ttaaactcct tatcttctac acatcaagat tactctcagg agtcccatca      240

aggttcagtg gcagtgggtc tggaacagat tattctctca ccatttacaa cctggagcaa      300

gaagattttg ccacttactt ttgccaacag ggagatacgc ttccgtacac tttcggaggg      360

gggaccaaac tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacca      420

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac      480

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg      540

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg      600

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca      660

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag                      705
```

<210> 169
<211> 447
<212> PRT
<213> Mus musculus

<400> 169

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

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

Asn Met His Trp Val Lys Gln Asn Gln Gly Lys Thr Leu Asp Trp Ile
        35                  40                  45

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

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

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

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

Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr Thr Pro
        115                 120                 125

Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser
    130                 135                 140

Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro Val
145                 150                 155                 160

Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr Phe
                165                 170                 175

Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val Thr
            180                 185                 190

Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala
        195                 200                 205

His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp
    210                 215                 220

Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val
225                 230                 235                 240

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

Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu
            260                 265                 270

Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln
        275                 280                 285

Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser
    290                 295                 300

Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys
305                 310                 315                 320

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

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

Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met
        355                 360                 365
```

```
Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn
    370                 375                 380

Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr
385                 390                 395                 400

Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn
                405                 410                 415

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

His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440                 445
```

<210> 170
<211> 1344
<212> DNA
<213> Mus musculus

<400> 170

```
gaggtccaac tgcaacagtc tggacctgaa ctaatgaagc ctggggcttc agtgaagatg       60

tcctgcaagg cttctggata tacattcact gactacaaca tgcactgggt gaagcagaac      120

caaggaaaga ccctagactg gataggagaa attaatccta acagtggtgg tgctggctac      180

aaccagaagt tcaagggcaa ggccacattg actgtagaca agtcctccac cacagcctac      240

atggagctcc gcagcctgac atctgaggac tctgcagtct attactgtgc aagattgggc      300

tacgatgata tctacgacga ctggtacttc gatgtctggg gcgcagggac cacggtcacc      360

gtctcctcag ccaaaacgac acccccatct gtctatccac tggccctgg atctgctgcc       420

caaactaact ccatggtgac cctgggatgc ctggtcaagg gctatttccc tgagccagtg      480

acagtgacct ggaactctgg atccctgtcc agcggtgtgc acaccttccc agctgtcctg      540

cagtctgacc tctacactct gagcagctca gtgactgtcc cctccagcac ctggcccagc      600

gagaccgtca cctgcaacgt tgcccacccg gccagcagca ccaaggtgga caagaaaatt      660

gtgcccaggg attgtggttg taagccttgc atatgtacag tcccagaagt atcatctgtc      720

ttcatcttcc ccccaaagcc caaggatgtg ctcaccatta ctctgactcc taaggtcacg      780

tgtgttgtgg tagacatcag caaggatgat cccgaggtcc agttcagctg gtttgtagat      840

gatgtggagg tgcacacagc tcagacgcaa ccccgggagg agcagttcaa cagcactttc      900

cgctcagtca gtgaacttcc catcatgcac caggactggc tcaatggcaa ggagttcaaa      960

tgcagggtca acagtgcagc tttccctgcc cccatcgaga aaaccatctc caaaaccaaa     1020

ggcagaccga aggctccaca ggtgtacacc attccacctc ccaaggagca gatggccaag     1080

gataaagtca gtctgacctg catgataaca gacttcttcc ctgaagacat tactgtggag     1140

tggcagtgga atgggcagcc agcggagaac tacaagaaca ctcagcccat catggacaca     1200
```

gatggctctt acttcatcta cagcaagctc aatgtgcaga agagcaactg ggaggcagga 1260

aatactttca cctgctctgt gttacatgag ggcctgcaca accaccatac tgagaagagc 1320

ctctcccact ctcctggtaa atga 1344

<210> 171
<211> 466
<212> PRT
<213> Mus musculus

<400> 171

Met Gly Trp Ser Trp Thr Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val Leu Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Met Lys
20 25 30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Asn Met His Trp Val Lys Gln Asn Gln Gly Lys Thr Leu
50 55 60

Asp Trp Ile Gly Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Thr
85 90 95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr
115 120 125

Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys
130 135 140

Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln
145 150 155 160

Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro
165 170 175

Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val
180 185 190

His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser
195 200 205

Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys
210 215 220

```
Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val
225                 230                 235                 240

Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val
                245                 250                 255

Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile
            260                 265                 270

Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp
        275                 280                 285

Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His
    290                 295                 300

Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
305                 310                 315                 320

Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu
            340                 345                 350

Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr
        355                 360                 365

Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu
    370                 375                 380

Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp
385                 390                 395                 400

Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile
                405                 410                 415

Met Asp Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln
            420                 425                 430

Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His
        435                 440                 445

Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro
    450                 455                 460

Gly Lys
465
```

<210> 172
<211> 1401

<212> DNA
<213> Mus musculus

<400> 172
atgggatgga gctggacctt tctcttcctc ctgtcaggaa ctgcaggtgt cctctctgag 60

gtccaactgc aacagtctgg acctgaacta atgaagcctg gggcttcagt gaagatgtcc 120

tgcaaggctt ctggatatac attcactgac tacaacatgc actgggtgaa gcagaaccaa 180

ggaaagaccc tagactggat aggagaaatt aatcctaaca gtggtggtgc tggctacaac 240

cagaagttca agggcaaggc cacattgact gtagacaagt cctccaccac agcctacatg 300

gagctccgca gcctgacatc tgaggactct gcagtctatt actgtgcaag attgggctac 360

gatgatatct acgacgactg gtacttcgat gtctggggcg cagggaccac ggtcaccgtc 420

tcctcagcca aaacgacacc cccatctgtc tatccactgg cccctggatc tgctgcccaa 480

actaactcca tggtgaccct gggatgcctg gtcaagggct atttccctga gccagtgaca 540

gtgacctgga actctggatc cctgtccagc ggtgtgcaca ccttcccagc tgtcctgcag 600

tctgacctct acactctgag cagctcagtg actgtccct ccagcacctg gcccagcgag 660

accgtcacct gcaacgttgc ccacccggcc agcagcacca aggtggacaa gaaaattgtg 720

cccagggatt gtggttgtaa gccttgcata tgtacagtcc cagaagtatc atctgtcttc 780

atcttccccc caaagcccaa ggatgtgctc accattactc tgactcctaa ggtcacgtgt 840

gttgtggtag acatcagcaa ggatgatccc gaggtccagt tcagctggtt tgtagatgat 900

gtggaggtgc acacagctca gacgcaaccc cgggaggagc agttcaacag cactttccgc 960

tcagtcagtg aacttcccat catgcaccag gactggctca atggcaagga gttcaaatgc 1020

agggtcaaca gtgcagcttt ccctgccccc atcgagaaaa ccatctccaa aaccaaaggc 1080

agaccgaagg ctccacaggt gtacaccatt ccacctccca aggagcagat ggccaaggat 1140

aaagtcagtc tgacctgcat gataacagac ttcttccctg aagacattac tgtggagtgg 1200

cagtggaatg ggcagccagc ggagaactac aagaacactc agcccatcat ggacacagat 1260

ggctcttact tcatctacag caagctcaat gtgcagaaga gcaactggga ggcaggaaat 1320

actttcacct gctctgtgtt acatgagggc ctgcacaacc accatactga gaagagcctc 1380

tcccactctc ctggtaaatg a 1401

<210> 173
<211> 214
<212> PRT
<213> Mus musculus

<400> 173

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

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

```
Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Phe Lys Leu Leu Ile
        35                  40                  45

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

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Tyr Asn Leu Glu Gln
65                  70                  75                  80

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

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

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

Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile
    130                 135                 140

Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu
145                 150                 155                 160

Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser
                165                 170                 175

Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr
            180                 185                 190

Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser
        195                 200                 205

Phe Asn Arg Asn Glu Cys
    210
```

<210> 174
<211> 642
<212> DNA
<213> Mus musculus

<400> 174
gatatccaga tgacacagat tacatcctcc ctgtctgcct ctctgggaga cagggtctcc 60

atcagttgca gggcaagtca agacattagc aattatttaa attggtatca gcagaaacca 120

gatggaactt ttaaactcct tatcttctac acatcaagat tattttcagg agtcccatca 180

aggttcagtg gcagtgggtc tggaacagat tattctctca ccatttacaa cctggagcaa 240

gaagattttg ccacttactt ttgccaacag ggagatacgc ttccgtacac tttcggaggg 300

gggaccaagg tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacca 360

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac 420

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg 480

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg 540

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca 600

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gt 642

<210> 175
<211> 234
<212> PRT
<213> Mus musculus

<400> 175

Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln
1 5 10 15

Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Ile Thr Ser Ser Leu Ser
20 25 30

Ala Ser Leu Gly Asp Arg Val Ser Ile Ser Cys Arg Ala Ser Gln Asp
35 40 45

Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Phe
50 55 60

Lys Leu Leu Ile Phe Tyr Thr Ser Arg Leu Phe Ser Gly Val Pro Ser
65 70 75 80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Tyr
85 90 95

Asn Leu Glu Gln Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asp
100 105 110

Thr Leu Pro Tyr Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg
115 120 125

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln
130 135 140

Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr
145 150 155 160

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln
165 170 175

Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr
180 185 190

Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg
195 200 205

```
His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro
    210                 215                 220

Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230
```

<210> 176
<211> 702
<212> DNA
<213> Mus musculus

<400> 176

```
atgatgtcct ctgctcagtt ccttggtctc ctgttgctct gttttcaagg taccagatgt       60

gatatccaga tgacacagat tacatcctcc ctgtctgcct ctctgggaga cagggtctcc      120

atcagttgca gggcaagtca agacattagc aattatttaa attggtatca gcagaaacca      180

gatggaactt ttaaactcct tatcttctac acatcaagat tattttcagg agtcccatca      240

aggttcagtg gcagtgggtc tggaacagat tattctctca ccatttacaa cctggagcaa      300

gaagattttg ccacttactt ttgccaacag ggagatacgc ttccgtacac tttcggaggg      360

gggaccaagg tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacca      420

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac      480

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg      540

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg      600

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca      660

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gt                         702
```

<210> 177
<211> 450
<212> PRT
<213> Mus musculus

<400> 177

```
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Met Lys Pro Gly Thr
1               5                   10                  15

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

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

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

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

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

```
Ala Lys Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
            100                 105                 110

Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr Thr Ala
        115                 120                 125

Pro Ser Val Tyr Pro Leu Ala Pro Val Cys Gly Asp Thr Thr Gly Ser
    130                 135                 140

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

Thr Leu Thr Trp Asn Ser Gly Ser Leu Ser Ser Asp Val His Thr Phe
                165                 170                 175

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

Val Thr Thr Trp Pro Ser Gln Thr Ile Thr Cys Asn Val Ala His Pro
        195                 200                 205

Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Glu Pro Arg Gly Ser Pro
    210                 215                 220

Thr His Lys Pro Cys Pro Pro Cys Pro Ala Pro Asn Leu Leu Gly Gly
225                 230                 235                 240

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

Ser Leu Ser Pro Met Val Thr Cys Val Val Val Asp Val Ser Glu Asp
            260                 265                 270

Asp Pro Asp Val His Val Ser Trp Phe Val Asn Asn Val Glu Val His
        275                 280                 285

Thr Ala Gln Thr Gln Thr His Arg Glu Asp Tyr Asn Ser Thr Ile Arg
    290                 295                 300

Val Val Ser Ala Leu Pro Ile Gln His Gln Asp Trp Met Ser Gly Lys
305                 310                 315                 320

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

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

Val Leu Pro Pro Pro Glu Glu Glu Met Thr Lys Lys Gln Val Thr Leu
        355                 360                 365
```

```
Thr Cys Met Ile Thr Asp Phe Met Pro Glu Asp Ile Tyr Val Glu Trp
    370                 375                 380

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

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

Lys Lys Asn Trp Val Glu Arg Asn Ser Tyr Ser Cys Ser Val Val His
            420                 425                 430

Glu Gly Leu His Asn His His Thr Thr Lys Ser Phe Ser Arg Thr Pro
        435                 440                 445

Gly Lys
    450
```

<210> 178
<211> 1350
<212> DNA
<213> Mus musculus

<400> 178

```
gaggtccaac tgcaacagtc tggacctgaa ctaatgaagc ctgggacttc agtgaagatg       60

tcctgcaagg cttctggata tacattcact gactacaaca tgcactgggt gaagcagacc      120

caaggaaaga ccctagagtg gataggagaa attaatccta acagtggtgg tgctggctac      180

aaccagaagt tcaagggcaa ggccacattg actgtagaca agtcctccac cacagcctac      240

atggagctcc gcagcctgac atctgaggac tctgcagtct attactgtgc aaaattgggc      300

tacgatgata tctacgacga ctggtatttc gatgtctggg gcgcagggac cacggtcacc      360

gtctcctcag ccaaaacaac agccccatcg gtctatccac tggccctgt gtgtggagat       420

acaactggct cctcggtgac tctaggatgc ctggtcaagg gttatttccc tgagccagtg      480

accttgacct ggaactctgg atccctgtcc agtgatgtgc acaccttccc agctctcctg      540

cagtctggcc tctacaccct cagcagctca gtgactgtaa ccacctggcc cagccagacc      600

atcacctgca atgtggccca cccggcaagc agcaccaaag tggacaagaa aattgagccc      660

agagggtccc caacacataa accctgtcct ccatgcccag ctcctaacct cttgggtgga      720

ccatccgtct tcatcttccc tccaaagatc aaggatgtac tcatgatctc cctgagcccc      780

atggtcacgt gtgtggtggt ggatgtgagc gaggatgacc cagatgtcca tgtcagctgg      840

ttcgtgaaca acgtggaagt acacacagct cagacacaaa cccatagaga ggattacaac      900

agtactatcc gggtggtcag tgccctcccc atccagcacc aggactggat gagtggcaag      960

gagttcaaat gcaaggtcaa caacaaagcc ctcccagcgc ccatcgagag aaccatctca     1020

aaacccaaag ggccagtaag agctccacag gtatatgtct tgcctccacc agaagaagag     1080
```

atgactaaga aacaggtcac tctgacctgc atgatcacag acttcatgcc tgaagacatt 1140

tacgtggagt ggaccaacaa cgggcaaaca gagctaaact acaagaacac tgaaccagtc 1200

ctggactctg atggttctta cttcatgtac agcaagctga gagtggaaaa gaagaactgg 1260

gtggaaagaa atagctactc ctgttcagtg gtccacgagg gtctgcacaa tcaccacacg 1320

actaagagct tctcccggac tccgggtaaa 1350

<210> 179
<211> 469
<212> PRT
<213> Mus musculus

<400> 179

Met Gly Trp Ser Trp Thr Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val Leu Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Met Lys
20 25 30

Pro Gly Thr Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Asn Met His Trp Val Lys Gln Thr Gln Gly Lys Thr Leu
50 55 60

Glu Trp Ile Gly Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Thr
85 90 95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Lys Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr
115 120 125

Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys
130 135 140

Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Val Cys Gly Asp Thr
145 150 155 160

Thr Gly Ser Ser Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro
165 170 175

Glu Pro Val Thr Leu Thr Trp Asn Ser Gly Ser Leu Ser Ser Asp Val
180 185 190

His Thr Phe Pro Ala Leu Leu Gln Ser Gly Leu Tyr Thr Leu Ser Ser
195 200 205

```
Ser Val Thr Val Thr Thr Trp Pro Ser Gln Thr Ile Thr Cys Asn Val
    210                 215                 220

Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Glu Pro Arg
225                 230                 235                 240

Gly Ser Pro Thr His Lys Pro Cys Pro Pro Cys Pro Ala Pro Asn Leu
                245                 250                 255

Leu Gly Gly Pro Ser Val Phe Ile Phe Pro Pro Lys Ile Lys Asp Val
            260                 265                 270

Leu Met Ile Ser Leu Ser Pro Met Val Thr Cys Val Val Asp Val
        275                 280                 285

Ser Glu Asp Asp Pro Asp Val His Val Ser Trp Phe Val Asn Asn Val
    290                 295                 300

Glu Val His Thr Ala Gln Thr Gln Thr His Arg Glu Asp Tyr Asn Ser
305                 310                 315                 320

Thr Ile Arg Val Val Ser Ala Leu Pro Ile Gln His Gln Asp Trp Met
                325                 330                 335

Ser Gly Lys Glu Phe Lys Cys Lys Val Asn Asn Lys Ala Leu Pro Ala
            340                 345                 350

Pro Ile Glu Arg Thr Ile Ser Lys Pro Lys Gly Pro Val Arg Ala Pro
        355                 360                 365

Gln Val Tyr Val Leu Pro Pro Pro Glu Glu Glu Met Thr Lys Lys Gln
    370                 375                 380

Val Thr Leu Thr Cys Met Ile Thr Asp Phe Met Pro Glu Asp Ile Tyr
385                 390                 395                 400

Val Glu Trp Thr Asn Asn Gly Gln Thr Glu Leu Asn Tyr Lys Asn Thr
                405                 410                 415

Glu Pro Val Leu Asp Ser Asp Gly Ser Tyr Phe Met Tyr Ser Lys Leu
            420                 425                 430

Arg Val Glu Lys Lys Asn Trp Val Glu Arg Asn Ser Tyr Ser Cys Ser
        435                 440                 445

Val Val His Glu Gly Leu His Asn His His Thr Thr Lys Ser Phe Ser
    450                 455                 460

Arg Thr Pro Gly Lys
465
```

<210> 180
<211> 1407
<212> DNA
<213> Mus musculus

<400> 180
atgggatgga gctggacctt tctcttcctc ctgtcaggaa ctgcaggtgt cctctctgag 60

gtccaactgc aacagtctgg acctgaacta atgaagcctg ggacttcagt gaagatgtcc 120

tgcaaggctt ctggatatac attcactgac tacaacatgc actgggtgaa gcagacccaa 180

ggaaagaccc tagagtggat aggagaaatt aatcctaaca gtggtggtgc tggctacaac 240

cagaagttca agggcaaggc cacattgact gtagacaagt cctccaccac agcctacatg 300

gagctccgca gcctgacatc tgaggactct gcagtctatt actgtgcaaa attgggctac 360

gatgatatct acgacgactg gtatttcgat gtctggggcg cagggaccac ggtcaccgtc 420

tcctcagcca aaacaacagc cccatcggtc tatccactgg cccctgtgtg tggagataca 480

actggctcct cggtgactct aggatgcctg gtcaagggtt atttccctga gccagtgacc 540

ttgacctgga actctggatc cctgtccagt gatgtgcaca ccttcccagc tctcctgcag 600

tctggcctct acaccctcag cagctcagtg actgtaacca cctggcccag ccagaccatc 660

acctgcaatg tggcccaccc ggcaagcagc accaaagtgg acaagaaaat tgagcccaga 720

gggtccccaa cacataaacc ctgtcctcca tgcccagctc ctaacctctt gggtggacca 780

tccgtcttca tcttccctcc aaagatcaag gatgtactca tgatctccct gagccccatg 840

gtcacgtgtg tggtggtgga tgtgagcgag gatgacccag atgtccatgt cagctggttc 900

gtgaacaacg tggaagtaca cacagctcag acacaaaccc atagagagga ttacaacagt 960

actatccggg tggtcagtgc cctccccatc cagcaccagg actggatgag tggcaaggag 1020

ttcaaatgca aggtcaacaa caaagccctc ccagcgccca tcgagagaac catctcaaaa 1080

cccaaagggc cagtaagagc tccacaggta tatgtcttgc ctccaccaga agaagagatg 1140

actaagaaac aggtcactct gacctgcatg atcacagact tcatgcctga agacatttac 1200

gtggagtgga ccaacaacgg gcaaacagag ctaaactaca agaacactga accagtcctg 1260

gactctgatg gttcttactt catgtacagc aagctgagag tggaaaagaa gaactgggtg 1320

gaaagaaata gctactcctg ttcagtggtc cacgagggtc tgcacaatca ccacacgact 1380

aagagcttct cccggactcc gggtaaa 1407

<210> 181
<211> 214
<212> PRT
<213> Mus musculus

<400> 181

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

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

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Phe Lys Leu Leu Ile
        35                  40                  45

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

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Tyr Asn Leu Glu Gln
65                  70                  75                  80

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

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

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

Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile
    130                 135                 140

Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu
145                 150                 155                 160

Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser
                165                 170                 175

Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr
            180                 185                 190

Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser
        195                 200                 205

Phe Asn Arg Asn Glu Cys
    210
```

<210> 182
<211> 645
<212> DNA
<213> Mus musculus

<400> 182
gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagggtctcc 60

atcagttgca gggcaagtca agacattagc aattatttaa actggtatca gcagaaacca 120

gatggaactt ttaaactcct tatcttctac acatcaagat tactctcagg agtcccatca 180

aggttcagtg gcagtgggtc tggaacagat tattctctca ccatttacaa cctggagcaa 240

gaagattttg ccacttactt ttgccaacag ggagatacgc ttccgtacac tttcggaggg 300

gggaccaaac tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacta 360

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac 420

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg 480

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg 540

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca 600

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag 645

<210> 183
<211> 234
<212> PRT
<213> Mus musculus

<400> 183

Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln
1 5 10 15

Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser
20 25 30

Ala Ser Leu Gly Asp Arg Val Ser Ile Ser Cys Arg Ala Ser Gln Asp
35 40 45

Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Phe
50 55 60

Lys Leu Leu Ile Phe Tyr Thr Ser Arg Leu Leu Ser Gly Val Pro Ser
65 70 75 80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Tyr
85 90 95

Asn Leu Glu Gln Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asp
100 105 110

Thr Leu Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
115 120 125

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Leu Ser Ser Glu Gln
130 135 140

Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr
145 150 155 160

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln
165 170 175

Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr
180 185 190

Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg
195 200 205

His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro
210 215 220

Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225 230

<210> 184
<211> 705
<212> DNA
<213> Mus musculus

<400> 184
atgatgtcct ctgctcagtt ccttggtctc ctgttgctct gttttcaagg taccagatgt 60

gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagggtctcc 120

atcagttgca gggcaagtca agacattagc aattatttaa actggtatca gcagaaacca 180

gatggaactt ttaaactcct tatcttctac acatcaagat tactctcagg agtcccatca 240

aggttcagtg gcagtgggtc tggaacagat tattctctca ccatttacaa cctggagcaa 300

gaagattttg ccacttactt ttgccaacag ggagatacgc ttccgtacac tttcggaggg 360

gggaccaaac tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacta 420

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac 480

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg 540

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg 600

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca 660

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag 705

<210> 185
<211> 447
<212> PRT
<213> Mus musculus

<400> 185

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

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

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

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

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

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

Ala Arg Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
            100                 105                 110

Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr Thr Pro
        115                 120                 125

Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser
    130                 135                 140

Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro Val
145                 150                 155                 160

Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr Phe
                165                 170                 175

Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val Thr
            180                 185                 190

Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala
        195                 200                 205

His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp
    210                 215                 220

Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val
225                 230                 235                 240

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

Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu
            260                 265                 270

Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln
        275                 280                 285

Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser
    290                 295                 300

Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys
305                 310                 315                 320

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

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

```
Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met
        355                 360                 365

Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn
    370                 375                 380

Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr
385                 390                 395                 400

Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn
                405                 410                 415

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

His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440                 445
```

<210> 186
<211> 1344
<212> DNA
<213> Mus musculus

<400> 186

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gaggtccaac tgcaacagtc tggacctgaa ctaatgaagc ctggggcttc agtgaagatg       60

tcctgcaagg cttctggata tacattcact gactacaaca tgcactgggt gaagcagaac      120

caaggaaaga ccctagaatg gataggagaa attaatccta acagtggtgg tgctggctac      180

aaccagaagt tcaagggcaa ggccacattg actgtagaca agtcctccac cacagcctac      240

atggagctcc gcagcctgac atctgaggac tctgcagtct attactgtgc aagattgggc      300

tacgatgata tctacgacga ctggtacttc gatgtctggg gcgcagggac cacggtcacc      360

gtctcctcag ccaaaacgac acccccatct gtctatccac tggccctgg atctgctgcc       420

caaactaact ccatggtgac cctgggatgc ctggtcaagg gctatttccc tgagccagtg      480

acagtgacct ggaactctgg atccctgtcc agcggtgtgc acaccttccc agctgtcctg      540

cagtctgacc tctacactct gagcagctca gtgactgtcc cctccagcac ctggcccagc      600

gagaccgtca cctgcaacgt tgcccacccg gccagcagca ccaaggtgga caagaaaatt      660

gtgcccaggg attgtggttg taagccttgc atatgtacag tcccagaagt atcatctgtc      720

ttcatcttcc ccccaaagcc caaggatgtg ctcaccatta ctctgactcc taaggtcacg      780

tgtgttgtgg tagacatcag caaggatgat cccgaggtcc agttcagctg gtttgtagat      840

gatgtggagg tgcacacagc tcagacgcaa ccccgggagg agcagttcaa cagcactttc      900

cgctcagtca gtgaacttcc catcatgcac caggactggc tcaatggcaa ggagttcaaa      960

tgcagggtca acagtgcagc tttccctgcc cccatcgaga aaaccatctc caaaaccaaa     1020

ggcagaccga aggctccaca ggtgtacacc attccacctc ccaaggagca gatggccaag     1080
```

gataaagtca gtctgacctg catgataaca gacttcttcc ctgaagacat tactgtggag 1140

tggcagtgga atgggcagcc agcggagaac tacaagaaca ctcagcccat catggacaca 1200

gatggctctt acttcatcta cagcaagctc aatgtgcaga agagcaactg ggaggcagga 1260

aatactttca cctgctctgt gttacatgag ggcctgcaca accaccatac tgagaagagc 1320

ctctcccact ctcctggtaa atga 1344

<210> 187
<211> 466
<212> PRT
<213> Mus musculus

<400> 187

Met Gly Trp Ser Trp Thr Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val Leu Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Met Lys
20 25 30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Asn Met His Trp Val Lys Gln Asn Gln Gly Lys Thr Leu
50 55 60

Glu Trp Ile Gly Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Thr
85 90 95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr
115 120 125

Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys
130 135 140

Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln
145 150 155 160

Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro
165 170 175

Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val
180 185 190

His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser
195 200 205

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Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys
    210                 215                 220

Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val
225                 230                 235                 240

Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val
                245                 250                 255

Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile
            260                 265                 270

Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp
        275                 280                 285

Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His
    290                 295                 300

Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
305                 310                 315                 320

Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu
            340                 345                 350

Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr
        355                 360                 365

Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu
    370                 375                 380

Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp
385                 390                 395                 400

Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile
                405                 410                 415

Met Asp Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln
            420                 425                 430

Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His
        435                 440                 445

Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro
    450                 455                 460

Gly Lys
465
```

<210> 188
<211> 1401
<212> DNA
<213> Mus musculus

<400> 188
atgggatgga gctggacctt tctcttcctc ctgtcaggaa ctgcaggtgt cctctctgag 60

gtccaactgc aacagtctgg acctgaacta atgaagcctg gggcttcagt gaagatgtcc 120

tgcaaggctt ctggatatac attcactgac tacaacatgc actgggtgaa gcagaaccaa 180

ggaaagaccc tagaatggat aggagaaatt aatcctaaca gtggtggtgc tggctacaac 240

cagaagttca agggcaaggc cacattgact gtagacaagt cctccaccac agcctacatg 300

gagctccgca gcctgacatc tgaggactct gcagtctatt actgtgcaag attgggctac 360

gatgatatct acgacgactg gtacttcgat gtctggggcg cagggaccac ggtcaccgtc 420

tcctcagcca aaacgacacc cccatctgtc tatccactgg cccctggatc tgctgcccaa 480

actaactcca tggtgaccct gggatgcctg gtcaagggct atttccctga gccagtgaca 540

gtgacctgga actctggatc cctgtccagc ggtgtgcaca ccttcccagc tgtcctgcag 600

tctgacctct acactctgag cagctcagtg actgtccctc ccagcacctg gcccagcgag 660

accgtcacct gcaacgttgc ccacccggcc agcagcacca aggtggacaa gaaaattgtg 720

cccagggatt gtggttgtaa gccttgcata tgtacagtcc cagaagtatc atctgtcttc 780

atcttccccc caaagcccaa ggatgtgctc accattactc tgactcctaa ggtcacgtgt 840

gttgtggtag acatcagcaa ggatgatccc gaggtccagt tcagctggtt tgtagatgat 900

gtggaggtgc acacagctca gacgcaaccc cgggaggagc agttcaacag cactttccgc 960

tcagtcagtg aacttcccat catgcaccag gactggctca atggcaagga gttcaaatgc 1020

agggtcaaca gtgcagcttt ccctgccccc atcgagaaaa ccatctccaa aaccaaaggc 1080

agaccgaagg ctccacaggt gtacaccatt ccacctccca aggagcagat ggccaaggat 1140

aaagtcagtc tgacctgcat gataacagac ttcttccctg aagacattac tgtggagtgg 1200

cagtggaatg ggcagccagc ggagaactac aagaacactc agcccatcat ggacacagat 1260

ggctcttact tcatctacag caagctcaat gtgcagaaga gcaactggga ggcaggaaat 1320

actttcacct gctctgtgtt acatgagggc ctgcacaacc accatactga gaagagcctc 1380

tcccactctc ctggtaaatg a 1401

<210> 189
<211> 213
<212> PRT
<213> Mus musculus

<400> 189

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

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

His Trp Phe Gln Gln Lys Pro Gly Ser Ser Pro Arg Ser Trp Ile Tyr
35 40 45

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

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Val Glu Ala Glu
65 70 75 80

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

Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg Ala Asp Ala Ala Pro
100 105 110

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

Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile Asn
130 135 140

Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu Asn
145 150 155 160

Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser Ser
165 170 175

Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr Thr
180 185 190

Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser Phe
195 200 205

Asn Arg Asn Glu Cys
210

<210> 190
<211> 642
<212> DNA
<213> Mus musculus

<400> 190
caaattgttc tctcccagtc tccagcattc ctgtctgtat ctccagggga taaggtcaca 60

atgacttgca gggccagctc aagtataagt tacatacact ggtttcagca gaagccagga 120

tcctccccca gatcctggat ttatgccaca tccaacctgg cttctggagt ccctggtcgc 180

ttcagtggca gtgggtctgg gacctcttac tctctcacaa tcagcagagt ggaggctgag 240

gatgctgcca cttattactg ccagcagtgg agtagtgacc cactcacgtt cggtgctggg 300

accaagctgg agctgaaacg ggctgatgct gcaccaactg tatccatctt cccaccatcc 360

agtgagcagt taacatctgg aggtgcctca gtcgtgtgct tcttgaacaa cttctacccc 420

aaagacatca atgtcaagtg gaagattgat ggcagtgaac gacaaaatgg cgtcctgaac 480

agttggactg atcaggacag caaagacagc acctacagca tgagcagcac cctcacgttg 540

accaaggacg agtatgaacg acataacagc tatacctgtg aggccactca caagacatca 600

acttcaccca ttgtcaagag cttcaacagg aatgagtgtt ag 642

<210> 191
<211> 235
<212> PRT
<213> Mus musculus

<400> 191

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

Val Ile Met Ser Arg Gly Gln Ile Val Leu Ser Gln Ser Pro Ala Phe
20 25 30

Leu Ser Val Ser Pro Gly Asp Lys Val Thr Met Thr Cys Arg Ala Ser
35 40 45

Ser Ser Ile Ser Tyr Ile His Trp Phe Gln Gln Lys Pro Gly Ser Ser
50 55 60

Pro Arg Ser Trp Ile Tyr Ala Thr Ser Asn Leu Ala Ser Gly Val Pro
65 70 75 80

Gly Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile
85 90 95

Ser Arg Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp
100 105 110

Ser Ser Asp Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
115 120 125

Arg Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu
130 135 140

Gln Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe
145 150 155 160

Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg
165 170 175

Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser
180 185 190

Thr Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu
195 200 205

Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser
210 215 220

Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225 230 235

<210> 192
<211> 708
<212> DNA
<213> Mus musculus

<400> 192
atggattttc aagtgcagat tttcagcttc ctgctaatca gtgcttcagt cataatgtcc 60

agaggacaaa ttgttctctc ccagtctcca gcattcctgt ctgtatctcc aggggataag 120

gtcacaatga cttgcagggc cagctcaagt ataagttaca tacactggtt tcagcagaag 180

ccaggatcct cccccagatc ctggatttat gccacatcca acctggcttc tggagtccct 240

ggtcgcttca gtggcagtgg gtctgggacc tcttactctc tcacaatcag cagagtggag 300

gctgaggatg ctgccactta ttactgccag cagtggagta gtgacccact cacgttcggt 360

gctgggacca agctggagct gaaacgggct gatgctgcac caactgtatc catcttccca 420

ccatccagtg agcagttaac atctggaggt gcctcagtcg tgtgcttctt gaacaacttc 480

taccccaaag acatcaatgt caagtggaag attgatggca gtgaacgaca aaatggcgtc 540

ctgaacagtt ggactgatca ggacagcaaa gacagcacct acagcatgag cagcaccctc 600

acgttgacca aggacgagta tgaacgacat aacagctata cctgtgaggc cactcacaag 660

acatcaactt cacccattgt caagagcttc aacaggaatg agtgttag 708

<210> 193
<211> 445
<212> PRT
<213> Mus musculus

<400> 193

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

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

Tyr Ile His Trp Met Lys Gln Arg Pro Asp Gln Gly Leu Glu Trp Ile
35 40 45

Gly Arg Val Asp Pro Asp Asn Gly Glu Thr Glu Phe Ala Pro Lys Phe
50 55 60

Pro Gly Lys Ala Thr Phe Thr Thr Asp Thr Ser Ser Asn Thr Ala Tyr
65 70 75 80

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

Gly Arg Glu Asp Tyr Asp Gly Thr Tyr Thr Trp Phe Pro Tyr Trp Gly
            100                 105                 110

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

Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser Met Val
    130                 135                 140

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

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

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

Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala His Pro
        195                 200                 205

Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp Cys Gly
    210                 215                 220

Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val Phe Ile
225                 230                 235                 240

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

Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu Val Gln
            260                 265                 270

Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln Thr Gln
        275                 280                 285

Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser Glu Leu
    290                 295                 300

Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys Cys Arg
305                 310                 315                 320

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

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

```
Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met Ile Thr
        355                 360                 365

Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn Gly Gln
    370                 375                 380

Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr Asp Gly
385                 390                 395                 400

Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn Trp Glu
                405                 410                 415

Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His Asn
            420                 425                 430

His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440                 445
```

<210> 194
<211> 1338
<212> DNA
<213> Mus musculus

<400> 194

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gaagttcagc tgcaacagtc tggggcagac cttgtgcagc caggggcctc agtcaaggtg       60

tcctgcacag cttctggctt cgacattaag gactactata tacactggat gaaacagagg      120

cctgaccagg gcctggagtg gattggaagg gttgatcctg acaatggtga gactgaattt      180

gccccgaagt tcccgggcaa ggccactttt acaacagaca catcctccaa cacagcctac      240

ctacaactca gaggcctgac atctgaggac actgccatct attactgtgg gagagaagac      300

tacgatggta cctacacctg gtttccttat tggggccaag ggactctggt cactgtctct      360

gcagccaaaa cgacaccccc atctgtctat ccactggccc ctggatctgc tgcccaaact      420

aactccatgg tgaccctggg atgcctggtc aagggctatt tccctgagcc agtgacagtg      480

acctggaact ctggatccct gtccagcggt gtgcacacct tcccagctgt cctgcagtct      540

gacctctaca ctctgagcag ctcagtgact gtcccctcca gcacctggcc cagcgagacc      600

gtcacctgca acgttgccca cccggccagc agcaccaagg tggacaagaa aattgtgccc      660

agggattgtg gttgtaagcc ttgcatatgt acagtcccag aagtatcatc tgtcttcatc      720

ttcccccaa agcccaagga tgtgctcacc attactctga ctcctaaggt cacgtgtgtt      780

gtggtagaca tcagcaagga tgatcccgag gtccagttca gctggtttgt agatgatgtg      840

gaggtgcaca cagctcagac gcaaccccgg gaggagcagt tcaacagcac tttccgctca      900

gtcagtgaac ttcccatcat gcaccaggac tggctcaatg gcaaggagtt caaatgcagg      960

gtcaacagtg cagctttccc tgcccccatc gagaaaacca tctccaaaac caaaggcaga     1020

ccgaaggctc cacaggtgta caccattcca cctcccaagg agcagatggc caaggataaa     1080
```

gtcagtctga cctgcatgat aacagacttc ttccctgaag acattactgt ggagtggcag 1140

tggaatgggc agccagcgga gaactacaag aacactcagc ccatcatgga cacagatggc 1200

tcttacttca tctacagcaa gctcaatgtg cagaagagca actgggaggc aggaaatact 1260

ttcacctgct ctgtgttaca tgagggcctg cacaaccacc atactgagaa gagcctctcc 1320

cactctcctg gtaaatga 1338

<210> 195
<211> 464
<212> PRT
<213> Mus musculus

<400> 195

Met Lys Cys Ser Trp Val Ile Phe Phe Leu Met Ala Val Val Thr Gly
1 5 10 15

Val Asn Ser Glu Val Gln Leu Gln Gln Ser Gly Ala Asp Leu Val Gln
20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Thr Ala Ser Gly Phe Asp Ile
35 40 45

Lys Asp Tyr Tyr Ile His Trp Met Lys Gln Arg Pro Asp Gln Gly Leu
50 55 60

Glu Trp Ile Gly Arg Val Asp Pro Asp Asn Gly Glu Thr Glu Phe Ala
65 70 75 80

Pro Lys Phe Pro Gly Lys Ala Thr Phe Thr Thr Asp Thr Ser Ser Asn
85 90 95

Thr Ala Tyr Leu Gln Leu Arg Gly Leu Thr Ser Glu Asp Thr Ala Ile
100 105 110

Tyr Tyr Cys Gly Arg Glu Asp Tyr Asp Gly Thr Tyr Thr Trp Phe Pro
115 120 125

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala Ala Lys Thr Thr
130 135 140

Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn
145 150 155 160

Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro
165 170 175

Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr
180 185 190

Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val
195 200 205

```
Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val
    210                 215                 220

Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg
225                 230                 235                 240

Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser
                245                 250                 255

Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile Thr Leu
            260                 265                 270

Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro
        275                 280                 285

Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala
    290                 295                 300

Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val
305                 310                 315                 320

Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe
                325                 330                 335

Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu Lys Thr
            340                 345                 350

Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr Thr Ile
        355                 360                 365

Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys
    370                 375                 380

Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp
385                 390                 395                 400

Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp
                405                 410                 415

Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser
            420                 425                 430

Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly
        435                 440                 445

Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
    450                 455                 460
```

<210> 196
<211> 1395

<212> DNA
<213> Mus musculus

<400> 196
atgaaatgca gctgggtcat cttcttcctg atggcagtgg ttacaggggt caattcagaa 60

gttcagctgc aacagtctgg ggcagacctt gtgcagccag gggcctcagt caaggtgtcc 120

tgcacagctt ctggcttcga cattaaggac tactatatac actggatgaa acagaggcct 180

gaccagggcc tggagtggat tggaagggtt gatcctgaca atggtgagac tgaatttgcc 240

ccgaagttcc cgggcaaggc cacttttaca acagacacat cctccaacac agcctaccta 300

caactcagag gcctgacatc tgaggacact gccatctatt actgtgggag agaagactac 360

gatggtacct acacctggtt tccttattgg ggccaaggga ctctggtcac tgtctctgca 420

gccaaaacga cacccccatc tgtctatcca ctggcccctg gatctgctgc ccaaactaac 480

tccatggtga ccctgggatg cctggtcaag ggctatttcc ctgagccagt gacagtgacc 540

tggaactctg gatccctgtc cagcggtgtg cacaccttcc cagctgtcct gcagtctgac 600

ctctacactc tgagcagctc agtgactgtc ccctccagca cctggcccag cgagaccgtc 660

acctgcaacg ttgcccaccc ggccagcagc accaaggtgg acaagaaaat tgtgcccagg 720

gattgtggtt gtaagccttg catatgtaca gtcccagaag tatcatctgt cttcatcttc 780

cccccaaagc ccaaggatgt gctcaccatt actctgactc ctaaggtcac gtgtgttgtg 840

gtagacatca gcaaggatga tcccgaggtc agttcagct ggtttgtaga tgatgtggag 900

gtgcacacag ctcagacgca accccgggag gagcagttca acagcacttt ccgctcagtc 960

agtgaacttc ccatcatgca ccaggactgg ctcaatggca aggagttcaa atgcagggtc 1020

aacagtgcag ctttccctgc ccccatcgag aaaaccatct ccaaaaccaa aggcagaccg 1080

aaggctccac aggtgtacac cattccacct cccaaggagc agatggccaa ggataaagtc 1140

agtctgacct gcatgataac agacttcttc cctgaagaca ttactgtgga gtggcagtgg 1200

aatgggcagc cagcggagaa ctacaagaac actcagccca tcatggacac agatggctct 1260

tacttcatct acagcaagct caatgtgcag aagagcaact gggaggcagg aaatactttc 1320

acctgctctg tgttacatga gggcctgcac aaccaccata ctgagaagag cctctcccac 1380

tctcctggta aatga 1395

<210> 197
<211> 214
<212> PRT
<213> Mus musculus

<400> 197

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

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

```
Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

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

Ser Gly Ser Gly Thr Asn Tyr Ser Leu Thr Ile Thr Asn Leu Glu Gln
65                  70                  75                  80

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

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

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

Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile
    130                 135                 140

Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu
145                 150                 155                 160

Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser
                165                 170                 175

Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr
            180                 185                 190

Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser
        195                 200                 205

Phe Asn Arg Asn Glu Cys
    210
```

<210> 198
<211> 645
<212> DNA
<213> Mus musculus

<400> 198
gatctccaga tgacacagac tacttcctcc ctgtctgcct ctctgggaga cagagtcacc 60

atcagttgca gggcaagtca ggacattagc aattatttaa actggtatca gcagaaacca 120

gatggaactg ttaagctcct gatcttctac acatcaacat tacagtcagg agtcccatcg 180

aggttcagtg gcagtgggtc tggaacaaat tattctctca ccattaccaa cctggagcaa 240

gatgatgctg ccacttactt ttgccaacag ggtgatacgc ttccgtacac gttcggaggg 300

gggaccaagc tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacca 360

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac 420

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg 480

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg 540

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca 600

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag 645

<210> 199
<211> 234
<212> PRT
<213> Mus musculus

<400> 199

Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln
1 5 10 15

Gly Ser Arg Cys Asp Leu Gln Met Thr Gln Thr Thr Ser Ser Leu Ser
20 25 30

Ala Ser Leu Gly Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp
35 40 45

Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val
50 55 60

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

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asn Tyr Ser Leu Thr Ile Thr
85 90 95

Asn Leu Glu Gln Asp Asp Ala Ala Thr Tyr Phe Cys Gln Gln Gly Asp
100 105 110

Thr Leu Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
115 120 125

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln
130 135 140

Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr
145 150 155 160

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln
165 170 175

Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr
180 185 190

Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg
195 200 205

```
His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro
    210                 215                 220

Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230
```

<210> 200
<211> 705
<212> DNA
<213> Mus musculus

<400> 200

```
atgatgtcct ctgctcagtt ccttggtctc ctgttgctct gttttcaagg ttccagatgt       60

gatctccaga tgacacagac tacttcctcc ctgtctgcct ctctgggaga cagagtcacc      120

atcagttgca gggcaagtca ggacattagc aattatttaa actggtatca gcagaaacca      180

gatggaactg ttaagctcct gatcttctac acatcaacat tacagtcagg agtcccatcg      240

aggttcagtg gcagtgggtc tggaacaaat tattctctca ccattaccaa cctggagcaa      300

gatgatgctg ccacttactt ttgccaacag ggtgatacgc ttccgtacac gttcggaggg      360

gggaccaagc tggaaataaa acgggctgat gctgcaccaa ctgtatccat cttcccacca      420

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac      480

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg      540

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg      600

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca      660

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag                      705
```

<210> 201
<211> 447
<212> PRT
<213> Mus musculus

<400> 201

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

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

Asn Met His Trp Met Lys Gln Asn Gln Gly Lys Ser Leu Glu Trp Ile
        35                  40                  45

Gly Glu Ile Asn Pro Asn Ser Gly Gly Ser Gly Tyr Asn Gln Lys Phe
    50                  55                  60

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

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

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

Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr Thr Pro
        115                 120                 125

Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser
    130                 135                 140

Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro Val
145                 150                 155                 160

Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr Phe
                165                 170                 175

Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val Thr
            180                 185                 190

Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala
        195                 200                 205

His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp
    210                 215                 220

Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val
225                 230                 235                 240

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

Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu
            260                 265                 270

Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln
        275                 280                 285

Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser
    290                 295                 300

Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys
305                 310                 315                 320

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

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

Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met
        355                 360                 365
```

```
Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn
    370                 375                 380

Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr
385                 390                 395                 400

Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn
                405                 410                 415

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

His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440                 445
```

<210> 202
<211> 1344
<212> DNA
<213> Mus musculus

<400> 202

```
gaggtccagt tgcaacagtc tggacctgaa ctaatgaagc ctggggcttc agtgaagatg       60

tcctgcaagg cttctggata cacattcact gactacaaca tgcactggat gaagcagaac      120

caaggaaaga gcctagagtg gataggagag attaatccta acagtggtgg ttctggttac      180

aaccagaagt tcaaaggcaa ggccacattg actgtagaca agtcctccag cacagcctac      240

atggagctcc gcagcctgac atctgaggac tctgcagtct attactgtgc aagattgggc      300

tactatggta actacgagga ctggtatttc gatgtctggg gcgcagggac cacggtcacc      360

gtctcctctg ccaaaacgac acccccatct gtctatccac tggcccctgg atctgctgcc      420

caaactaact ccatggtgac cctgggatgc ctggtcaagg gctatttccc tgagccagtg      480

acagtgacct ggaactctgg atccctgtcc agcggtgtgc acaccttccc agctgtcctg      540

cagtctgacc tctacactct gagcagctca gtgactgtcc cctccagcac ctggcccagc      600

gagaccgtca cctgcaacgt tgcccacccg gccagcagca ccaaggtgga caagaaaatt      660

gtgcccaggg attgtggttg taagccttgc atatgtacag tcccagaagt atcatctgtc      720

ttcatcttcc ccccaaagcc caaggatgtg ctcaccatta ctctgactcc taaggtcacg      780

tgtgttgtgg tagacatcag caaggatgat cccgaggtcc agttcagctg gtttgtagat      840

gatgtggagg tgcacacagc tcagacgcaa ccccgggagg agcagttcaa cagcactttc      900

cgctcagtca gtgaacttcc catcatgcac caggactggc tcaatggcaa ggagttcaaa      960

tgcagggtca acagtgcagc tttccctgcc cccatcgaga aaaccatctc caaaaccaaa     1020

ggcagaccga aggctccaca ggtgtacacc attccacctc ccaaggagca gatggccaag     1080

gataaagtca gtctgacctg catgataaca gacttcttcc ctgaagacat tactgtggag     1140

tggcagtgga atgggcagcc agcggagaac tacaagaaca ctcagcccat catggacaca     1200
```

gatggctctt acttcatcta cagcaagctc aatgtgcaga agagcaactg ggaggcagga 1260

aatactttca cctgctctgt gttacatgag ggcctgcaca accaccatac tgagaagagc 1320

ctctcccact ctcctggtaa atga 1344

<210> 203
<211> 466
<212> PRT
<213> Mus musculus

<400> 203

Met Gly Trp Ser Trp Thr Phe Leu Phe Leu Leu Ser Gly Thr Ser Gly
1 5 10 15

Val Leu Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Met Lys
20 25 30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Asn Met His Trp Met Lys Gln Asn Gln Gly Lys Ser Leu
50 55 60

Glu Trp Ile Gly Glu Ile Asn Pro Asn Ser Gly Gly Ser Gly Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser
85 90 95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Leu Gly Tyr Tyr Gly Asn Tyr Glu Asp Trp Tyr
115 120 125

Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys
130 135 140

Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln
145 150 155 160

Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro
165 170 175

Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val
180 185 190

His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser
195 200 205

Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys
210 215 220

```
Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val
225                 230                 235                 240

Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val
                245                 250                 255

Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile
            260                 265                 270

Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp
        275                 280                 285

Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His
    290                 295                 300

Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
305                 310                 315                 320

Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu
            340                 345                 350

Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr
        355                 360                 365

Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu
    370                 375                 380

Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp
385                 390                 395                 400

Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile
                405                 410                 415

Met Asp Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln
            420                 425                 430

Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His
        435                 440                 445

Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro
    450                 455                 460

Gly Lys
465
```

<210> 204
<211> 1401

<212> DNA
<213> Mus musculus

<400> 204
atgggatgga gctggacctt tctcttcctc ctgtcaggaa cttcgggtgt cctctctgag 60

gtccagttgc aacagtctgg acctgaacta atgaagcctg gggcttcagt gaagatgtcc 120

tgcaaggctt ctggatacac attcactgac tacaacatgc actggatgaa gcagaaccaa 180

ggaaagagcc tagagtggat aggagagatt aatcctaaca gtggtggttc tggttacaac 240

cagaagttca aaggcaaggc cacattgact gtagacaagt cctccagcac agcctacatg 300

gagctccgca gcctgacatc tgaggactct gcagtctatt actgtgcaag attgggctac 360

tatggtaact acgaggactg gtatttcgat gtctggggcg cagggaccac ggtcaccgtc 420

tcctctgcca aaacgacacc cccatctgtc tatccactgg cccctggatc tgctgcccaa 480

actaactcca tggtgaccct gggatgcctg gtcaagggct atttccctga gccagtgaca 540

gtgacctgga actctggatc cctgtccagc ggtgtgcaca ccttcccagc tgtcctgcag 600

tctgacctct acactctgag cagctcagtg actgtcccct ccagcacctg gcccagcgag 660

accgtcacct gcaacgttgc ccacccggcc agcagcacca aggtggacaa gaaaattgtg 720

cccagggatt gtggttgtaa gccttgcata tgtacagtcc cagaagtatc atctgtcttc 780

atcttccccc caaagcccaa ggatgtgctc accattactc tgactcctaa ggtcacgtgt 840

gttgtggtag acatcagcaa ggatgatccc gaggtccagt tcagctggtt tgtagatgat 900

gtggaggtgc acacagctca gacgcaaccc cgggaggagc agttcaacag cactttccgc 960

tcagtcagtg aacttcccat catgcaccag gactggctca atggcaagga gttcaaatgc 1020

agggtcaaca gtgcagcttt ccctgccccc atcgagaaaa ccatctccaa aaccaaaggc 1080

agaccgaagg ctccacaggt gtacaccatt ccacctccca aggagcagat ggccaaggat 1140

aaagtcagtc tgacctgcat gataacagac ttcttccctg aagacattac tgtggagtgg 1200

cagtggaatg ggcagccagc ggagaactac aagaacactc agcccatcat ggacacagat 1260

ggctcttact tcatctacag caagctcaat gtgcagaaga gcaactggga ggcaggaaat 1320

actttcacct gctctgtgtt acatgagggc ctgcacaacc accatactga gaagagcctc 1380

tcccactctc ctggtaaatg a 1401

<210> 205
<211> 215
<212> PRT
<213> Mus musculus

<400> 205

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

Glu Lys Val Thr Met Thr Cys Arg Ala Ser Ser Ser Val Thr Ser Ser
20 25 30

```
Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Leu Trp
        35                  40                  45

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

Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Val Glu
65                  70                  75                  80

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

Ser Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Ala Asp Ala
            100                 105                 110

Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln Leu Thr Ser
        115                 120                 125

Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp
    130                 135                 140

Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val
145                 150                 155                 160

Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met
                165                 170                 175

Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser
            180                 185                 190

Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys
        195                 200                 205

Ser Phe Asn Arg Asn Glu Cys
    210                 215
```

<210> 206
<211> 645
<212> DNA
<213> Mus musculus

<400> 206
cagattgttc tcacccagtc tccagcaatc atgtctgcat ctccagggga gaaggtcacc 60

atgacctgca gggccagctc aagtgtaact tccagttact tgaactggta ccagcagaag 120

ccaggatctt cccccaaact ctggatttat agcacatcca acctggcttc aggagtccca 180

gctcgcttca gtggcagtgg gtctgggacc tcttactctc tcacaatcag cagtgtggag 240

gctgaggatg ctgccactta ttactgccag cagtatgatt ttttcccatc gacgttcggt 300

ggaggcacca agctggaaat caagcgggct gatgctgcac caactgtatc catcttccca 360

ccatccagtg agcagttaac atctggaggt gcctcagtcg tgtgcttctt gaacaacttc 420

taccccaaag acatcaatgt caagtggaag attgatggca gtgaacgaca aaatggcgtc 480

ctgaacagtt ggactgatca ggacagcaaa gacagcacct acagcatgag cagcaccctc 540

acgttgacca aggacgagta tgaacgacat aacagctata cctgtgaggc cactcacaag 600

acatcaactt cacccatcgt caagagcttc aacaggaatg agtgt 645

<210> 207
<211> 237
<212> PRT
<213> Mus musculus

<400> 207

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

Val Lys Met Ser Arg Gly Gln Ile Val Leu Thr Gln Ser Pro Ala Ile
20 25 30

Met Ser Ala Ser Pro Gly Glu Lys Val Thr Met Thr Cys Arg Ala Ser
35 40 45

Ser Ser Val Thr Ser Ser Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly
50 55 60

Ser Ser Pro Lys Leu Trp Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly
65 70 75 80

Val Pro Ala Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu
85 90 95

Thr Ile Ser Ser Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln
100 105 110

Gln Tyr Asp Phe Phe Pro Ser Thr Phe Gly Gly Gly Thr Lys Leu Glu
115 120 125

Ile Lys Arg Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser
130 135 140

Ser Glu Gln Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn
145 150 155 160

Asn Phe Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser
165 170 175

Glu Arg Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys
180 185 190

Asp Ser Thr Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu
195 200 205

```
Tyr Glu Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser
    210                 215                 220

Thr Ser Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230                 235
```

<210> 208
<211> 711
<212> DNA
<213> Mus musculus

<400> 208

```
atggattctc aagtgcagat tttcagcttc cttctaatca gtgccttagt caaaatgtcc       60

agaggacaga ttgttctcac ccagtctcca gcaatcatgt ctgcatctcc aggggagaag      120

gtcaccatga cctgcagggc cagctcaagt gtaacttcca gttacttgaa ctggtaccag      180

cagaagccag gatcttcccc caaactctgg atttatagca catccaacct ggcttcagga      240

gtcccagctc gcttcagtgg cagtgggtct gggacctctt actctctcac aatcagcagt      300

gtggaggctg aggatgctgc cacttattac tgccagcagt atgatttttt cccatcgacg      360

ttcggtggag gcaccaagct ggaaatcaag cgggctgatg ctgcaccaac tgtatccatc      420

ttcccaccat ccagtgagca gttaacatct ggaggtgcct cagtcgtgtg cttcttgaac      480

aacttctacc ccaaagacat caatgtcaag tggaagattg atggcagtga acgacaaaat      540

ggcgtcctga acagttggac tgatcaggac agcaaagaca gcacctacag catgagcagc      600

accctcacgt tgaccaagga cgagtatgaa cgacataaca gctatacctg tgaggccact      660

cacaagacat caacttcacc catcgtcaag agcttcaaca ggaatgagtg t                711
```

<210> 209
<211> 445
<212> PRT
<213> Mus musculus

<400> 209

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

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

Tyr Met Asn Trp Val Lys Gln Ser His Gly Glu Ser Leu Glu Trp Ile
        35                  40                  45

Gly Asp Ile Asn Pro Tyr Asn Asp Asp Thr Thr Tyr Asn His Lys Phe
    50                  55                  60

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

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

```
Ala Arg Glu Thr Ala Val Ile Thr Thr Asn Ala Met Asp Tyr Trp Gly
            100                 105                 110

Gln Gly Thr Ser Val Thr Val Ser Ser Ala Lys Thr Thr Pro Pro Ser
        115                 120                 125

Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser Met Val
    130                 135                 140

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

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

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

Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala His Pro
        195                 200                 205

Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp Cys Gly
    210                 215                 220

Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val Phe Ile
225                 230                 235                 240

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

Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu Val Gln
            260                 265                 270

Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln Thr Gln
        275                 280                 285

Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser Glu Leu
    290                 295                 300

Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys Cys Arg
305                 310                 315                 320

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

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

Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met Ile Thr
        355                 360                 365
```

```
Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn Gly Gln
    370                 375                 380

Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr Asp Gly
385                 390                 395                 400

Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn Trp Glu
                405                 410                 415

Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His Asn
            420                 425                 430

His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440                 445
```

<210> 210
<211> 1335
<212> DNA
<213> Mus musculus

<400> 210

```
gaggtccagc tgcaacaatc tggacctgag ctggtgaagc ctggggcttc agtgaagatg       60

tcctgtaagg cttctggata cacattcact gactactaca tgaactgggt gaagcagagc      120

catggagaga gccttgagtg gattggagat attaatcctt acaacgatga tactacctac      180

aaccacaagt tcaagggcaa ggccacattg actgtagaca aatcctccaa cacagcctac      240

atgcagctca acagcctgac atctgaggac tctgcagtct attactgtgc aagagagacg      300

gccgttatta ctacgaatgc tatggactac tggggtcaag gaacctcagt caccgtctcc      360

tcagccaaaa cgacaccccc atctgtctat ccactggccc ctggatctgc tgcccaaact      420

aactccatgg tgaccctggg atgcctggtc aagggctatt tccctgagcc agtgacagtg      480

acctggaact ctggatccct gtccagcggt gtgcacacct tcccagctgt cctgcagtct      540

gacctctaca ctctgagcag ctcagtgact gtcccctcca gcacctggcc cagcgagacc      600

gtcacctgca acgttgccca cccggccagc agcaccaagg tggacaagaa aattgtgccc      660

agggattgtg gttgtaagcc ttgcatatgt acagtcccag aagtatcatc tgtcttcatc      720

ttcccccaa agcccaagga tgtgctcacc attactctga ctcctaaggt cacgtgtgtt      780

gtggtagaca tcagcaagga tgatcccgag gtccagttca gctggtttgt agatgatgtg      840

gaggtgcaca cagctcagac gcaaccccgg gaggagcagt tcaacagcac tttccgctca      900

gtcagtgaac ttcccatcat gcaccaggac tggctcaatg gcaaggagtt caaatgcagg      960

gtcaacagtg cagctttccc tgcccccatc gagaaaacca tctccaaaac caaaggcaga     1020

ccgaaggctc cacaggtgta caccattcca cctcccaagg agcagatggc caaggataaa     1080

gtcagtctga cctgcatgat aacagacttc ttccctgaag acattactgt ggagtggcag     1140

tggaatgggc agccagcgga gaactacaag aacactcagc ccatcatgga cacagatggc     1200
```

tcttacttca tctacagcaa gctcaatgtg cagaagagca actgggaggc aggaaatact 1260

ttcacctgct ctgtgttaca tgagggcctg cacaaccacc atactgagaa gagcctctcc 1320

cactctcctg gtaaa 1335

<210> 211
<211> 464
<212> PRT
<213> Mus musculus

<400> 211

Met Gly Trp Asn Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val Tyr Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys
20 25 30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Tyr Met Asn Trp Val Lys Gln Ser His Gly Glu Ser Leu
50 55 60

Glu Trp Ile Gly Asp Ile Asn Pro Tyr Asn Asp Asp Thr Thr Tyr Asn
65 70 75 80

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

Thr Ala Tyr Met Gln Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Glu Thr Ala Val Ile Thr Thr Asn Ala Met Asp
115 120 125

Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Ala Lys Thr Thr
130 135 140

Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn
145 150 155 160

Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro
165 170 175

Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr
180 185 190

Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val
195 200 205

Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val
210 215 220

```
Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg
225                 230                 235                 240

Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser
                245                 250                 255

Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile Thr Leu
            260                 265                 270

Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro
        275                 280                 285

Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala
    290                 295                 300

Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val
305                 310                 315                 320

Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe
                325                 330                 335

Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu Lys Thr
            340                 345                 350

Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr Thr Ile
        355                 360                 365

Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys
    370                 375                 380

Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp
385                 390                 395                 400

Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp
                405                 410                 415

Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser
            420                 425                 430

Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly
        435                 440                 445

Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
    450                 455                 460
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<210> 212
<211> 1392
<212> DNA
<213> Mus musculus

<400> 212

atgggatgga actggatctt tctcttcctc ttgtcaggaa ctgcaggtgt ctactctgag 60

gtccagctgc aacaatctgg acctgagctg gtgaagcctg gggcttcagt gaagatgtcc 120

tgtaaggctt ctggatacac attcactgac tactacatga actgggtgaa gcagagccat 180

ggagagagcc ttgagtggat tggagatatt aatccttaca acgatgatac tacctacaac 240

cacaagttca agggcaaggc cacattgact gtagacaaat cctccaacac agcctacatg 300

cagctcaaca gcctgacatc tgaggactct gcagtctatt actgtgcaag agagacggcc 360

gttattacta cgaatgctat ggactactgg ggtcaaggaa cctcagtcac cgtctcctca 420

gccaaaacga caccccatc tgtctatcca ctggcccctg gatctgctgc ccaaactaac 480

tccatggtga ccctgggatg cctggtcaag ggctatttcc ctgagccagt gacagtgacc 540

tggaactctg gatccctgtc cagcggtgtg cacaccttcc cagctgtcct gcagtctgac 600

ctctacactc tgagcagctc agtgactgtc ccctccagca cctggcccag cgagaccgtc 660

acctgcaacg ttgcccaccc ggccagcagc accaaggtgg acaagaaaat tgtgcccagg 720

gattgtggtt gtaagccttg catatgtaca gtcccagaag tatcatctgt cttcatcttc 780

cccccaaagc ccaaggatgt gctcaccatt actctgactc ctaaggtcac gtgtgttgtg 840

gtagacatca gcaaggatga tcccgaggtc cagttcagct ggtttgtaga tgatgtggag 900

gtgcacacag ctcagacgca accccgggag gagcagttca acagcacttt ccgctcagtc 960

agtgaacttc ccatcatgca ccaggactgg ctcaatggca aggagttcaa atgcagggtc 1020

aacagtgcag ctttccctgc ccccatcgag aaaaccatct ccaaaaccaa aggcagaccg 1080

aaggctccac aggtgtacac cattccacct cccaaggagc agatggccaa ggataaagtc 1140

agtctgacct gcatgataac agacttcttc cctgaagaca ttactgtgga gtggcagtgg 1200

aatgggcagc cagcggagaa ctacaagaac actcagccca tcatggacac agatggctct 1260

tacttcatct acagcaagct caatgtgcag aagagcaact gggaggcagg aaatactttc 1320

acctgctctg tgttacatga gggcctgcac aaccaccata ctgagaagag cctctcccac 1380

tctcctggta aa 1392

<210> 213
<211> 215
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 213

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

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

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

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

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

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

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

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

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

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

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

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

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

Ser Phe Asn Arg Gly Glu Cys
210 215

<210> 214
<211> 645
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 214
gacatccagc tgacccagag ccccagcttc ctttccgcat ccgttggtga ccgagtaaca 60

atcacatgcc gcgcctcatc ttcagttaca tcttcttatc ttaattggta tcaacaaaaa 120

ccaggaaaag cacctaaact tcttatatac tctacatcta atctcgcatc aggagttccc 180

tctcgatttt caggatctgg atcaggcaca gaatttacac ttactatatc atcactccaa 240

ccagaagact tcgccactta ttactgccaa caatacgatt tttttccaag cacattcgga 300

ggaggtacaa aagtagaaat caagcgtacg gtggctgcac catctgtctt catcttcccg 360

ccatctgatg agcagttgaa atctggaact gcctctgttg tgtgcctgct gaataacttc 420

tatcccagag aggccaaagt acagtggaag gtggataacg ccctccaatc gggtaactcc 480

caggagagtg tcacagagca ggacagcaag gacagcacct acagcctcag cagcaccctg 540

acgctgagca aagcagacta cgagaaacac aaagtctacg cctgcgaagt cacccatcag 600

ggcctgagct cgcccgtcac aaagagcttc aacaggggag agtgt 645

<210> 215
<211> 237
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 215

Met Asp Met Arg Val Pro Ala Gln Leu Leu Gly Leu Leu Leu Leu Trp
1 5 10 15

Leu Pro Gly Ala Arg Cys Asp Ile Gln Leu Thr Gln Ser Pro Ser Phe
20 25 30

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser
35 40 45

Ser Ser Val Thr Ser Ser Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly
50 55 60

Lys Ala Pro Lys Leu Leu Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly
65 70 75 80

Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu
85 90 95

Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln
100 105 110

Gln Tyr Asp Phe Phe Pro Ser Thr Phe Gly Gly Gly Thr Lys Val Glu
115 120 125

Ile Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser
130 135 140

Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn
145 150 155 160

Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala
165 170 175

Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys
180 185 190

Asp Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp
195 200 205

Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu
210 215 220

Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225 230 235

<210> 216
<211> 711
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 216
atggacatga gggtccccgc tcagctcctg gggctcctgc tactctggct cccaggtgcc 60

agatgtgaca tccagctgac ccagagcccc agcttccttt ccgcatccgt tggtgaccga 120

gtaacaatca catgccgcgc ctcatcttca gttacatctt cttatcttaa ttggtatcaa 180

caaaaaccag gaaaagcacc taaacttctt atatactcta catctaatct cgcatcagga 240

gttccctctc gattttcagg atctggatca ggcacagaat ttacacttac tatatcatca 300

ctccaaccag aagacttcgc cacttattac tgccaacaat acgatttttt tccaagcaca 360

ttcggaggag gtacaaaagt agaaatcaag cgtacggtgg ctgcaccatc tgtcttcatc 420

ttcccgccat ctgatgagca gttgaaatct ggaactgcct ctgttgtgtg cctgctgaat 480

aacttctatc ccagagaggc caaagtacag tggaaggtgg ataacgccct ccaatcgggt 540

aactcccagg agagtgtcac agagcaggac agcaaggaca gcacctacag cctcagcagc 600

accctgacgc tgagcaaagc agactacgag aaacacaaag tctacgcctg cgaagtcacc 660

catcagggcc tgagctcgcc cgtcacaaag agcttcaaca ggggagagtg t 711

<210> 217

<211> 447
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 217

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

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

Tyr Met Asn Trp Val Arg Gln Ala Pro Gly Gln Arg Leu Glu Trp Met
35 40 45

Gly Asp Ile Asn Pro Tyr Asn Asp Asp Thr Thr Tyr Asn His Lys Phe
50 55 60

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

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

Ala Arg Glu Thr Ala Val Ile Thr Thr Asn Ala Met Asp Tyr Trp Gly
100 105 110

Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser
115 120 125

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

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

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

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

Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His
195 200 205

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

```
Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala 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 Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
        275                 280                 285

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

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

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

Ser Lys Thr 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 Met 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 Leu Ser Pro Gly Lys
        435                 440                 445
```

<210> 218
<211> 1341
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>

<221> misc_feature
<223> Humanized Antibody Sequence

<400> 218
gaggtgcagc tggtgcagag cggcgccgag gtcaagaaac ctggagcaag cgtaaaggtt 60

agttgcaaag catctggata cacatttacc gactactaca tgaattgggt acgacaagcc 120

cctggacaaa gacttgaatg gatgggagac attaaccctt ataacgacga cactacatac 180

aatcataaat ttaaaggaag agttacaatt acaagagata catccgcatc aaccgcctat 240

atggaacttt cctcattgag atctgaagac actgctgttt attactgtgc aagagaaact 300

gccgttatta ctactaacgc tatggattac tggggtcaag gaaccactgt taccgtctct 360

agtgcctcca ccaagggccc atcggtcttc cccctggcgc cctgctccag gagcacctcc 420

gagagcacag cggccctggg ctgcctggtc aaggactact tccccgaacc ggtgacggtg 480

tcgtggaact caggcgctct gaccagcggc gtgcacacct tcccagctgt cctacagtcc 540

tcaggactct actccctcag cagcgtggtg accgtgccct ccagcaactt cggcacccag 600

acctacacct gcaacgtaga tcacaagccc agcaacacca aggtggacaa gacagttgag 660

cgcaaatgtt gtgtcgagtg cccaccgtgc ccagcaccac ctgtggcagg accgtcagtc 720

ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcacg 780

tgcgtggtgg tggacgtgag ccacgaagac cccgaggtcc agttcaactg gtacgtggac 840

ggcgtggagg tgcataatgc caagacaaag ccacgggagg agcagttcaa cagcacgttc 900

cgtgtggtca gcgtcctcac cgttgtgcac caggactggc tgaacggcaa ggagtacaag 960

tgcaaggtct ccaacaaagg cctcccagcc cccatcgaga aaaccatctc caaaaccaaa 1020

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggagga gatgaccaag 1080

aaccaggtca gcctgacctg cctggtcaaa ggcttctacc ccagcgacat cgccgtggag 1140

tgggagagca atgggcagcc ggagaacaac tacaagacca cacctcccat gctggactcc 1200

gacggctcct tcttcctcta cagcaagctc accgtggaca agagcaggtg gcagcagggg 1260

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 1320

ctctccctgt ctccgggtaa a 1341

<210> 219
<211> 466
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 219

Met Asp Trp Thr Trp Arg Ile Leu Phe Leu Val Ala Ala Ala Thr Gly
1 5 10 15

```
Ala His Ser Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            20                  25                  30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        35                  40                  45

Thr Asp Tyr Tyr Met Asn Trp Val Arg Gln Ala Pro Gly Gln Arg Leu
    50                  55                  60

Glu Trp Met Gly Asp Ile Asn Pro Tyr Asn Asp Asp Thr Thr Tyr Asn
65                  70                  75                  80

His Lys Phe Lys Gly Arg Val Thr Ile Thr Arg Asp Thr Ser Ala Ser
                85                  90                  95

Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Glu Thr Ala Val Ile Thr Thr Asn Ala Met Asp
        115                 120                 125

Tyr Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys
    130                 135                 140

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

Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
                165                 170                 175

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
            180                 185                 190

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
        195                 200                 205

Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn
    210                 215                 220

Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg
225                 230                 235                 240

Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly
                245                 250                 255

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
            260                 265                 270

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
        275                 280                 285
```

Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
290 295 300

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
305 310 315 320

Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys
325 330 335

Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu
340 345 350

Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
355 360 365

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
370 375 380

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
385 390 395 400

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met
405 410 415

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
420 425 430

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
435 440 445

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
450 455 460

Gly Lys
465

<210> 220
<211> 1398
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 220
atggactgga cctggaggat cctcttcttg gtggcagcag ccacaggagc ccactccgag 60

gtgcagctgg tgcagagcgg cgccgaggtc aagaaacctg gagcaagcgt aaaggttagt 120

tgcaaagcat ctggatacac atttaccgac tactacatga attgggtacg acaagcccct 180

ggacaaagac ttgaatggat gggagacatt aacccttata acgacgacac tacatacaat 240

cataaattta aaggaagagt tacaattaca agagatacat ccgcatcaac cgcctatatg 300

gaactttcct cattgagatc tgaagacact gctgtttatt actgtgcaag agaaactgcc 360

gttattacta ctaacgctat ggattactgg ggtcaaggaa ccactgttac cgtctctagt 420

gcctccacca agggcccatc ggtcttcccc ctggcgccct gctccaggag cacctccgag 480

agcacagcgg ccctgggctg cctggtcaag gactacttcc ccgaaccggt gacggtgtcg 540

tggaactcag gcgctctgac cagcggcgtg cacaccttcc cagctgtcct acagtcctca 600

ggactctact ccctcagcag cgtggtgacc gtgccctcca gcaacttcgg cacccagacc 660

tacacctgca acgtagatca caagcccagc aacaccaagg tggacaagac agttgagcgc 720

aaatgttgtg tcgagtgccc accgtgccca gcaccacctg tggcaggacc gtcagtcttc 780

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggacccctga ggtcacgtgc 840

gtggtggtgg acgtgagcca cgaagacccc gaggtccagt tcaactggta cgtggacggc 900

gtggaggtgc ataatgccaa gacaaagcca cgggaggagc agttcaacag cacgttccgt 960

gtggtcagcg tcctcaccgt tgtgcaccag gactggctga acggcaagga gtacaagtgc 1020

aaggtctcca acaaaggcct cccagccccc atcgagaaaa ccatctccaa aaccaaaggg 1080

cagccccgag aaccacaggt gtacaccctg cccccatccc gggaggagat gaccaagaac 1140

caggtcagcc tgacctgcct ggtcaaaggc ttctacccca gcgacatcgc cgtggagtgg 1200

gagagcaatg ggcagccgga gaacaactac aagaccacac ctcccatgct ggactccgac 1260

ggctccttct tcctctacag caagctcacc gtggacaaga gcaggtggca gcaggggaac 1320

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacacgca gaagagcctc 1380

tccctgtctc cgggtaaa 1398

<210> 221
<211> 215
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 221

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 Ser Val Ser Ser Thr Ile Ser Ser Asn
20 25 30

```
His Leu His Trp Phe Gln Gln Lys Pro Gly Lys Ala Pro Lys Ser Leu
        35                  40                  45

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

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

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

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

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

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

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

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

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

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

Ser Phe Asn Arg Gly Glu Cys
    210                 215


<210>  222
<211>  645
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Synthetic Polynucleotide


<220>
<221>  misc_feature
<223>  Humanized Antibody Sequence

<400>  222
gacatccaga tgacccagtc tccatcctcc ctctcagcat ccgtaggcga tagagttaca       60

ataacatgca gcgtatcatc aactatatca tcaaatcatc ttcattggtt ccaacagaaa      120

cccggcaaag cacctaaatc acttatatac ggcacatcaa atctcgcatc aggcgttcct      180
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tcaagatttt caggctctgg ctcaggcacc gactttactc ttacaatatc ctccctccaa 240

cccgaagact tcgcaaccta ttactgtcaa caatggtcct catatccact cacatttggc 300

ggcggcacaa aagtagaaat taaacgtacg gtggctgcac catctgtctt catcttcccg 360

ccatctgatg agcagttgaa atctggaact gcctctgttg tgtgcctgct gaataacttc 420

tatcccagag aggccaaagt acagtggaag gtggataacg ccctccaatc gggtaactcc 480

caggagagtg tcacagagca ggacagcaag gacagcacct acagcctcag cagcaccctg 540

acgctgagca aagcagacta cgagaaacac aaagtctacg cctgcgaagt cacccatcag 600

ggcctgagct cgcccgtcac aaagagcttc aacaggggag agtgt 645

<210> 223
<211> 237
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 223

Met Asp Met Arg Val Pro Ala Gln Leu Leu Gly Leu Leu Leu Leu Trp
1 5 10 15

Leu Arg Gly Ala Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser
20 25 30

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Ser Val Ser
35 40 45

Ser Thr Ile Ser Ser Asn His Leu His Trp Phe Gln Gln Lys Pro Gly
50 55 60

Lys Ala Pro Lys Ser Leu Ile Tyr Gly Thr Ser Asn Leu Ala Ser Gly
65 70 75 80

Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu
85 90 95

Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln
100 105 110

Gln Trp Ser Ser Tyr Pro Leu Thr Phe Gly Gly Gly Thr Lys Val Glu
115 120 125

Ile Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser
130 135 140

```
Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn
145                 150                 155                 160

Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala
                165                 170                 175

Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys
            180                 185                 190

Asp Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp
        195                 200                 205

Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu
    210                 215                 220

Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225                 230                 235
```

<210> 224
<211> 711
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 224
atggacatga gggtccccgc tcagctcctg gggctcctgc tactctggct ccgaggtgcc 60

agatgtgaca tccagatgac ccagtctcca tcctccctct cagcatccgt aggcgataga 120

gttacaataa catgcagcgt atcatcaact atatcatcaa atcatcttca ttggttccaa 180

cagaaacccg gcaaagcacc taaatcactt atatacggca catcaaatct cgcatcaggc 240

gttccttcaa gattttcagg ctctggctca ggcaccgact ttactcttac aatatcctcc 300

ctccaacccg aagacttcgc aacctattac tgtcaacaat ggtcctcata tccactcaca 360

tttggcggcg gcacaaaagt agaaattaaa cgtacggtgg ctgcaccatc tgtcttcatc 420

ttcccgccat ctgatgagca gttgaaatct ggaactgcct ctgttgtgtg cctgctgaat 480

aacttctatc ccagagaggc caaagtacag tggaaggtgg ataacgccct ccaatcgggt 540

aactcccagg agagtgtcac agagcaggac agcaaggaca gcacctacag cctcagcagc 600

accctgacgc tgagcaaagc agactacgag aaacacaaag tctacgcctg cgaagtcacc 660

catcagggcc tgagctcgcc cgtcacaaag agcttcaaca ggggagagtg t 711

<210> 225
<211> 451
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 225

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

Ser Val Lys Val Ser Cys Lys Ala Ser Asp Phe Asn Ile Lys Asp Phe
            20   25   30

Tyr Leu His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35   40   45

Gly Arg Ile Asp Pro Glu Asn Gly Asp Thr Leu Tyr Asp Pro Lys Phe
    50   55   60

Gln Asp Lys Val Thr Met Thr Thr Asp Thr Ser Thr Ser Thr Ala Tyr
65   70   75   80

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

Ala Arg Glu Ala Asp Tyr Phe His Asp Gly Thr Ser Tyr Trp Tyr Phe
            100   105   110

Asp Val Trp Gly Arg Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr
        115   120   125

Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser
    130   135   140

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

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

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

Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys
        195   200   205

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

Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala
225   230   235   240

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

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

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

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe
    290                 295                 300

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

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

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

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

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

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

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

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
            420                 425                 430

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
        435                 440                 445

Pro Gly Lys
    450
```

<210> 226
<211> 1353
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<400> 226
gaggtgcagc tggtgcagtc tggggctgag gtgaagaagc ctggggcctc agtgaaggtc 60

tcctgcaagg cttctgactt caacattaaa gacttctatc tacactgggt gcgacaggcc 120

cctggacaag ggcttgagtg gattggaagg attgatcctg agaatggtga tactttatat 180

gacccgaagt tccaggacaa ggtcaccatg accacagaca cgtccaccag cacagcctac 240

atggagctga ggagcctgag atctgacgac acggccgtgt attactgtgc gagagaggcg 300

gattatttcc acgatggtac ctcctactgg tacttcgatg tctggggccg tggcaccctg 360

gtcaccgtct ctagtgcctc caccaagggc ccatcggtct tcccccctggc gccctgctcc 420

aggagcacct ccgagagcac agcggccctg ggctgcctgg tcaaggacta cttccccgaa 480

ccggtgacgg tgtcgtggaa ctcaggcgct ctgaccagcg gcgtgcacac cttcccagct 540

gtcctacagt cctcaggact ctactccctc agcagcgtgg tgaccgtgcc ctccagcaac 600

ttcggcaccc agacctacac ctgcaacgta gatcacaagc ccagcaacac caaggtggac 660

aagacagttg agcgcaaatg ttgtgtcgag tgcccaccgt gcccagcacc acctgtggca 720

ggaccgtcag tcttcctctt ccccccaaaa cccaaggaca ccctcatgat ctcccggacc 780

cctgaggtca cgtgcgtggt ggtggacgtg agccacgaag accccgaggt ccagttcaac 840

tggtacgtgg acggcgtgga ggtgcataat gccaagacaa agccacggga ggagcagttc 900

aacagcacgt tccgtgtggt cagcgtcctc accgttgtgc accaggactg gctgaacggc 960

aaggagtaca agtgcaaggt ctccaacaaa ggcctcccag cccccatcga gaaaaccatc 1020

tccaaaacca aagggcagcc ccgagaacca caggtgtaca ccctgccccc atcccgggag 1080

gagatgacca agaaccaggt cagcctgacc tgcctggtca aaggcttcta ccccagcgac 1140

atcgccgtgg agtgggagag caatgggcag ccggagaaca actacaagac cacacctccc 1200

atgctggact ccgacggctc cttcttcctc tacagcaagc tcaccgtgga caagagcagg 1260

tggcagcagg ggaacgtctt ctcatgctcc gtgatgcatg aggctctgca caaccactac 1320

acgcagaaga gcctctccct gtctccgggt aaa 1353

<210> 227
<211> 470
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 227

Met Asp Trp Thr Trp Arg Ile Leu Phe Leu Val Ala Ala Ala Thr Gly
1 5 10 15

Ala His Ser Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

```
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Asp Phe Asn Ile
        35                  40                  45

Lys Asp Phe Tyr Leu His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    50                  55                  60

Glu Trp Ile Gly Arg Ile Asp Pro Glu Asn Gly Asp Thr Leu Tyr Asp
65                  70                  75                  80

Pro Lys Phe Gln Asp Lys Val Thr Met Thr Thr Asp Thr Ser Thr Ser
                85                  90                  95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Arg Ser Asp Asp Thr Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Glu Ala Asp Tyr Phe His Asp Gly Thr Ser Tyr
        115                 120                 125

Trp Tyr Phe Asp Val Trp Gly Arg Gly Thr Leu Val Thr Val Ser Ser
    130                 135                 140

Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg
145                 150                 155                 160

Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr
                165                 170                 175

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
            180                 185                 190

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
        195                 200                 205

Leu Ser Ser Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr
    210                 215                 220

Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys
225                 230                 235                 240

Thr Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro
                245                 250                 255

Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
            260                 265                 270

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
        275                 280                 285

Val Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly
    290                 295                 300
```

```
Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn
305                 310                 315                 320

Ser Thr Phe Arg Val Val Ser Val Leu Thr Val Val His Gln Asp Trp
                325                 330                 335

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro
            340                 345                 350

Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu
        355                 360                 365

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn
    370                 375                 380

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
385                 390                 395                 400

Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
                405                 410                 415

Thr Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
            420                 425                 430

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
        435                 440                 445

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
    450                 455                 460

Ser Leu Ser Pro Gly Lys
465                 470
```

<210> 228
<211> 1410
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 228
atggactgga cctggaggat cctcttcttg gtggcagcag ccacaggagc ccactccgag 60

gtgcagctgg tgcagtctgg ggctgaggtg aagaagcctg gggcctcagt gaaggtctcc 120

tgcaaggctt ctgacttcaa cattaaagac ttctatctac actgggtgcg acaggcccct 180

ggacaagggc ttgagtggat tggaaggatt gatcctgaga atggtgatac tttatatgac 240

ccgaagttcc aggacaaggt caccatgacc acagacacgt ccaccagcac agcctacatg 300

gagctgagga gcctgagatc tgacgacacg gccgtgtatt actgtgcgag agaggcggat 360

tatttccacg atggtacctc ctactggtac ttcgatgtct ggggccgtgg caccctggtc 420

accgtctcta gtgcctccac caagggccca tcggtcttcc ccctggcgcc ctgctccagg 480

agcacctccg agagcacagc ggccctgggc tgcctggtca aggactactt ccccgaaccg 540

gtgacggtgt cgtggaactc aggcgctctg accagcggcg tgcacacctt cccagctgtc 600

ctacagtcct caggactcta ctccctcagc agcgtggtga ccgtgccctc cagcaacttc 660

ggcacccaga cctacacctg caacgtagat cacaagccca gcaacaccaa ggtggacaag 720

acagttgagc gcaaatgttg tgtcgagtgc ccaccgtgcc cagcaccacc tgtggcagga 780

ccgtcagtct tcctcttccc cccaaaaccc aaggacaccc tcatgatctc ccggaccccct 840

gaggtcacgt gcgtggtggt ggacgtgagc cacgaagacc ccgaggtcca gttcaactgg 900

tacgtggacg gcgtggaggt gcataatgcc aagacaaagc cacgggagga gcagttcaac 960

agcacgttcc gtgtggtcag cgtcctcacc gttgtgcacc aggactggct gaacggcaag 1020

gagtacaagt gcaaggtctc caacaaaggc ctcccagccc ccatcgagaa aaccatctcc 1080

aaaaccaaag ggcagccccg agaaccacag gtgtacaccc tgccccatc ccgggaggag 1140

atgaccaaga accaggtcag cctgacctgc ctggtcaaag gcttctaccc cagcgacatc 1200

gccgtggagt gggagagcaa tgggcagccg gagaacaact acaagaccac acctcccatg 1260

ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcaggtgg 1320

cagcagggga acgtcttctc atgctccgtg atgcatgagg ctctgcacaa ccactacacg 1380

cagaagagcc tctccctgtc tccgggtaaa 1410

<210> 229
<211> 213
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 229

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

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

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

Ala Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser Gly Ser

50 55 60

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

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

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

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

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

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

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

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

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

Asn Arg Gly Glu Cys
210

<210> 230
<211> 639
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 230
gacatccagt tgacccagtc tccatccttc ctgtctgcat ctgtaggaga cagagtcacc 60

atcacttgca gggccagctc aagtataagt tacatacact ggtatcagca aaaaccaggg 120

aaagccccta agctcctgat ctatgccaca tccaacctgg cttctggggt cccatcaagg 180

ttcagcggca gtggatctgg gacagaattc actctcacaa tcagcagcct gcagcctgaa 240

gattttgcaa cttattactg tcagcagtgg agtagtgacc cactcacgtt cggcggaggg 300

accaaggtgg agatcaaacg tacggtggct gcaccatctg tcttcatctt cccgccatct 360

gatgagcagt tgaaatctgg aactgcctct gttgtgtgcc tgctgaataa cttctatccc 420

agagaggcca aagtacagtg gaaggtggat aacgccctcc aatcgggtaa ctcccaggag 480

agtgtcacag agcaggacag caaggacagc acctacagcc tcagcagcac cctgacgctg 540

agcaaagcag actacgagaa acacaaagtc tacgcctgcg aagtcaccca tcagggcctg 600

agctcgcccg tcacaaagag cttcaacagg ggagagtgt 639

<210> 231
<211> 235
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 231

Met Asp Met Arg Val Pro Ala Gln Leu Leu Gly Leu Leu Leu Leu Trp
1 5 10 15

Leu Pro Gly Ala Arg Cys Asp Ile Gln Leu Thr Gln Ser Pro Ser Phe
20 25 30

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser
35 40 45

Ser Ser Ile Ser Tyr Ile His Trp Tyr Gln Gln Lys Pro Gly Lys Ala
50 55 60

Pro Lys Leu Leu Ile Tyr Ala Thr Ser Asn Leu Ala Ser Gly Val Pro
65 70 75 80

Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile
85 90 95

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

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

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
130 135 140

Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe
145 150 155 160

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln

```
                165                 170                 175

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
            180                 185                 190

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
        195                 200                 205

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
    210                 215                 220

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225                 230                 235
```

<210> 232
<211> 705
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 232
atggacatga gggtccccgc tcagctcctg gggctcctgc tgctctggct cccaggtgcc 60

agatgtgaca tccagttgac ccagtctcca tccttcctgt ctgcatctgt aggagacaga 120

gtcaccatca cttgcagggc cagctcaagt ataagttaca tacactggta tcagcaaaaa 180

ccagggaaag cccctaagct cctgatctat gccacatcca acctggcttc tggggtccca 240

tcaaggttca gcggcagtgg atctgggaca gaattcactc tcacaatcag cagcctgcag 300

cctgaagatt ttgcaactta ttactgtcag cagtggagta gtgacccact cacgttcggc 360

ggagggacca aggtggagat caaacgtacg gtggctgcac catctgtctt catcttcccg 420

ccatctgatg agcagttgaa atctggaact gcctctgttg tgtgcctgct gaataacttc 480

tatcccagag aggccaaagt acagtggaag gtggataacg ccctccaatc gggtaactcc 540

caggagagtg tcacagagca ggacagcaag gacagcacct acagcctcag cagcaccctg 600

acgctgagca aagcagacta cgagaaacac aaagtctacg cctgcgaagt cacccatcag 660

ggcctgagct cgcccgtcac aaagagcttc aacaggggag agtgt 705

<210> 233
<211> 447
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>

<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 233

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

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

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Arg Val Asp Pro Asp Asn Gly Glu Thr Glu Phe Ala Pro Lys Phe
    50                  55                  60

Pro Gly Lys Val Thr Met Thr Thr Asp Thr Ser Ile Ser Thr Ala Tyr
65                  70                  75                  80

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

Ala Arg Glu Asp Tyr Asp Gly Thr Tyr Thr Trp Phe Pro Tyr Trp Gly
            100                 105                 110

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

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

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

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

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

Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His
        195                 200                 205

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

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

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

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

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

Ser Lys Thr 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 Met 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 Leu Ser Pro Gly Lys
        435                 440                 445


<210>  234
<211>  1341
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Synthetic Polynucleotide


<220>
<221>  misc_feature
<223>  Humanized Antibody Sequence

<400>  234
gaggtgcagc tggtgcagtc tggggctgag gtgaagaagc ctggggcctc agtgaaggtc       60

tcctgcaagg cttctggatt cgacattaag gactactata tacactgggt gcgacaggcc      120

cctggacaag ggcttgagtg gatcggaagg gttgatcctg acaatggtga gactgaattt      180
```

gccccgaagt tcccgggcaa ggtcaccatg accacagaca cgtccatcag cacagcctac 240

atggagctga gcaggctgag atctgacgac acggccgtgt attactgtgc gagagaagac 300

tacgatggta cctacacctg gtttccttat tggggccaag ggactctggt caccgtctct 360

agtgcctcca ccaagggccc atcggtcttc cccctggcgc cctgctccag gagcacctcc 420

gagagcacag cggccctggg ctgcctggtc aaggactact tccccgaacc ggtgacggtg 480

tcgtggaact caggcgctct gaccagcggc gtgcacacct tcccagctgt cctacagtcc 540

tcaggactct actccctcag cagcgtggtg accgtgccct ccagcaactt cggcacccag 600

acctacacct gcaacgtaga tcacaagccc agcaacacca aggtggacaa gacagttgag 660

cgcaaatgtt gtgtcgagtg cccaccgtgc ccagcaccac ctgtggcagg accgtcagtc 720

ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcacg 780

tgcgtggtgg tggacgtgag ccacgaagac cccgaggtcc agttcaactg gtacgtggac 840

ggcgtggagg tgcataatgc caagacaaag ccacgggagg agcagttcaa cagcacgttc 900

cgtgtggtca gcgtcctcac cgttgtgcac caggactggc tgaacggcaa ggagtacaag 960

tgcaaggtct ccaacaaagg cctcccagcc cccatcgaga aaaccatctc caaaaccaaa 1020

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggagga gatgaccaag 1080

aaccaggtca gcctgacctg cctggtcaaa ggcttctacc ccagcgacat cgccgtggag 1140

tgggagagca atgggcagcc ggagaacaac tacaagacca cacctcccat gctggactcc 1200

gacggctcct tcttcctcta cagcaagctc accgtggaca agagcaggtg gcagcagggg 1260

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 1320

ctctccctgt ctccgggtaa a 1341

<210> 235
<211> 466
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 235

Met Asp Trp Thr Trp Arg Ile Leu Phe Leu Val Ala Ala Ala Thr Gly
1 5 10 15

Ala His Ser Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Asp Ile
35 40 45

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Lys Asp Tyr Tyr Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    50                  55                  60

Glu Trp Ile Gly Arg Val Asp Pro Asp Asn Gly Glu Thr Glu Phe Ala
65                  70                  75                  80

Pro Lys Phe Pro Gly Lys Val Thr Met Thr Thr Asp Thr Ser Ile Ser
                85                  90                  95

Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Glu Asp Tyr Asp Gly Thr Tyr Thr Trp Phe Pro
        115                 120                 125

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys
    130                 135                 140

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

Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
                165                 170                 175

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
            180                 185                 190

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
        195                 200                 205

Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn
    210                 215                 220

Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg
225                 230                 235                 240

Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly
                245                 250                 255

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
            260                 265                 270

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
        275                 280                 285

Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
    290                 295                 300

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
305                 310                 315                 320
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Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu
            340                 345                 350

Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
        355                 360                 365

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
    370                 375                 380

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
385                 390                 395                 400

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met
                405                 410                 415

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
            420                 425                 430

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
        435                 440                 445

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
    450                 455                 460

Gly Lys
465
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<210> 236
<211> 1398
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 236

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tgcaaggctt ctggattcga cattaaggac tactatatac actgggtgcg acaggcccct      180

ggacaagggc ttgagtggat cggaagggtt gatcctgaca atggtgagac tgaatttgcc      240

ccgaagttcc cgggcaaggt caccatgacc acagacacgt ccatcagcac agcctacatg      300

gagctgagca ggctgagatc tgacgacacg gccgtgtatt actgtgcgag agaagactac      360

gatggtacct acacctggtt tccttattgg ggccaaggga ctctggtcac cgtctctagt      420
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gcctccacca agggcccatc ggtcttcccc ctggcgccct gctccaggag cacctccgag 480

agcacagcgg ccctgggctg cctggtcaag gactacttcc ccgaaccggt gacggtgtcg 540

tggaactcag gcgctctgac cagcggcgtg cacaccttcc cagctgtcct acagtcctca 600

ggactctact ccctcagcag cgtggtgacc gtgccctcca gcaacttcgg cacccagacc 660

tacacctgca acgtagatca caagcccagc aacaccaagg tggacaagac agttgagcgc 720

aaatgttgtg tcgagtgccc accgtgccca gcaccacctg tggcaggacc gtcagtcttc 780

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggacccctga ggtcacgtgc 840

gtggtggtgg acgtgagcca cgaagacccc gaggtccagt tcaactggta cgtggacggc 900

gtggaggtgc ataatgccaa gacaaagcca cgggaggagc agttcaacag cacgttccgt 960

gtggtcagcg tcctcaccgt tgtgcaccag gactggctga acggcaagga gtacaagtgc 1020

aaggtctcca acaaaggcct cccagccccc atcgagaaaa ccatctccaa aaccaaaggg 1080

cagccccgag aaccacaggt gtacaccctg cccccatccc gggaggagat gaccaagaac 1140

caggtcagcc tgacctgcct ggtcaaaggc ttctacccca gcgacatcgc cgtggagtgg 1200

gagagcaatg ggcagccgga gaacaactac aagaccacac ctcccatgct ggactccgac 1260

ggctccttct tcctctacag caagctcacc gtggacaaga gcaggtggca gcaggggaac 1320

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacacgca gaagagcctc 1380

tccctgtctc cgggtaaa 1398

<210> 237
<211> 7
<212> PRT
<213> Mus musculus

<400> 237

Gly Thr Ser Asn Leu Ala Ser
1 5

<210> 238
<211> 8
<212> PRT
<213> Mus musculus

<400> 238

Gln Gln Trp Thr Thr Thr Tyr Thr
1 5

<210> 239
<211> 11
<212> PRT
<213> Mus musculus

<400> 239

Arg Ala Ser Gln Asp Ile Ser Ser Tyr Leu Asn
1 5 10

<210> 240
<211> 7
<212> PRT
<213> Mus musculus

<400> 240

Ser Thr Ser Arg Leu Asn Ser
1 5

<210> 241
<211> 8
<212> PRT
<213> Mus musculus

<400> 241

Gln Gln Asp Ile Lys His Pro Thr
1 5

<210> 242
<211> 11
<212> PRT
<213> Mus musculus

<400> 242

Lys Ala Ser Gln Asp Val Phe Thr Ala Val Ala
1 5 10

<210> 243
<211> 7
<212> PRT
<213> Mus musculus

<400> 243

Trp Ala Ser Thr Arg His Thr
1 5

<210> 244
<211> 9
<212> PRT
<213> Mus musculus

<400> 244

Gln Gln Tyr Ser Ser Tyr Pro Leu Thr
1 5

<210> 245
<211> 5
<212> PRT
<213> Mus musculus

<400> 245

Asp Tyr Asn Met His
1 5

<210> 246

<211> 17
<212> PRT
<213> Mus musculus

<400> 246

Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn Gln Lys Phe Lys
1 5 10 15

Gly

<210> 247
<211> 14
<212> PRT
<213> Mus musculus

<400> 247

Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
1 5 10

<210> 248
<211> 5
<212> PRT
<213> Mus musculus

<400> 248

Asp Tyr Asn Met His
1 5

<210> 249
<211> 17
<212> PRT
<213> Mus musculus

<400> 249

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

Gly

<210> 250
<211> 14
<212> PRT
<213> Mus musculus

<400> 250

Leu Val Tyr Asp Gly Ser Tyr Glu Asp Trp Tyr Phe Asp Val
1 5 10

<210> 251
<211> 5
<212> PRT
<213> Mus musculus

<400> 251

Asp Tyr Asn Met His
1 5

<210> 252
<211> 17
<212> PRT
<213> Mus musculus

<400> 252

Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn Gln Gln Phe Lys
1 5 10 15

Gly

<210> 253
<211> 14
<212> PRT
<213> Mus musculus

<400> 253

Leu Gly Tyr Val Gly Asn Tyr Glu Asp Trp Tyr Phe Asp Val
1 5 10

<210> 254
<211> 5
<212> PRT
<213> Mus musculus

<400> 254

Asp Tyr Asn Met His
1 5

<210> 255
<211> 17
<212> PRT
<213> Mus musculus

<400> 255

Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn Gln Lys Phe Lys
1 5 10 15

Gly

<210> 256
<211> 14
<212> PRT
<213> Mus musculus

<400> 256

Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
1 5 10

<210> 257
<211> 5
<212> PRT
<213> Mus musculus

<400> 257

Asp Tyr Asn Met His
1 5

<210> 258
<211> 17
<212> PRT
<213> Mus musculus

<400> 258

Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn Gln Lys Phe Lys
1 5 10 15

Gly

<210> 259
<211> 14
<212> PRT
<213> Mus musculus

<400> 259

Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
1 5 10

<210> 260
<211> 5
<212> PRT
<213> Mus musculus

<400> 260

Asp Tyr Asn Met His
1 5

<210> 261
<211> 17
<212> PRT
<213> Mus musculus

<400> 261

Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn Gln Lys Phe Lys
1 5 10 15

Gly

<210> 262
<211> 14
<212> PRT
<213> Mus musculus

<400> 262

Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
1 5 10

<210> 263
<211> 5
<212> PRT
<213> Mus musculus

<400> 263

Asp Tyr Asn Met His
1 5

<210> 264
<211> 17
<212> PRT
<213> Mus musculus

<400> 264

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

Gly

<210> 265
<211> 14
<212> PRT
<213> Mus musculus

<400> 265

Leu Gly Tyr Tyr Gly Asn Tyr Glu Asp Trp Tyr Phe Asp Val
1 5 10

<210> 266
<211> 5
<212> PRT
<213> Mus musculus

<400> 266

Asp Tyr Tyr Ile His
1 5

<210> 267
<211> 17
<212> PRT
<213> Mus musculus

<400> 267

Arg Ile Asp Pro Asp Asn Gly Glu Ser Thr Tyr Val Pro Lys Phe Gln
1 5 10 15

Gly

<210> 268
<211> 13
<212> PRT
<213> Mus musculus

<400> 268

Glu Gly Leu Asp Tyr Gly Asp Tyr Tyr Ala Val Asp Tyr
1 5 10

<210> 269
<211> 5
<212> PRT
<213> Mus musculus

<400> 269

Asp Tyr Ile Met His
1 5

<210> 270
<211> 17
<212> PRT
<213> Mus musculus

<400> 270

Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 271
<211> 11
<212> PRT
<213> Mus musculus

<400> 271

Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr
1 5 10

<210> 272
<211> 5
<212> PRT
<213> Mus musculus

<400> 272

Asp Tyr Tyr Met His
1 5

<210> 273
<211> 17
<212> PRT
<213> Mus musculus

<400> 273

Arg Ile Asp Pro Glu Asn Gly Asp Ile Ile Tyr Asp Pro Lys Phe Gln

1 5 10 15

Gly

<210> 274
<211> 10
<212> PRT
<213> Mus musculus

<400> 274

Asp Ala Gly Asp Pro Ala Trp Phe Thr Tyr
1 5 10

<210> 275
<211> 10
<212> PRT
<213> Mus musculus

<400> 275

Arg Ala Ser Ser Ser Val Tyr Tyr Met His
1 5 10

<210> 276
<211> 7
<212> PRT
<213> Mus musculus

<400> 276

Ala Thr Ser Asn Leu Ala Ser
1 5

<210> 277
<211> 9
<212> PRT
<213> Mus musculus

<400> 277

Gln Gln Trp Ser Ser Asp Pro Leu Thr
1 5

<210> 278
<211> 12
<212> PRT
<213> Mus musculus

<400> 278

Ser Val Ser Ser Thr Ile Ser Ser Asn His Leu His
1 5 10

<210> 279
<211> 7
<212> PRT
<213> Mus musculus

<400> 279

Gly Thr Ser Asn Leu Ala Ser
1 5

<210> 280
<211> 9
<212> PRT
<213> Mus musculus

<400> 280

Gln Gln Trp Ser Ser Tyr Pro Leu Thr
1 5

<210> 281
<211> 10
<212> PRT
<213> Mus musculus

<400> 281

Arg Ala Ser Ser Ser Ile Ser Tyr Ile His
1 5 10

<210> 282
<211> 7
<212> PRT
<213> Mus musculus

<400> 282

Ala Thr Ser Asn Leu Ala Ser
1 5

<210> 283
<211> 9
<212> PRT
<213> Mus musculus

<400> 283

Gln Gln Trp Ser Ser Asp Pro Leu Thr
1 5

<210> 284
<211> 12
<212> PRT
<213> Mus musculus

<400> 284

Arg Ala Ser Ser Ser Val Thr Ser Ser Tyr Leu Asn
1 5 10

<210> 285
<211> 7
<212> PRT
<213> Mus musculus

<400> 285

Ser Thr Ser Asn Leu Ala Ser

1 5

<210> 286
<211> 9
<212> PRT
<213> Mus musculus

<400> 286

Gln Gln Tyr Asp Phe Phe Pro Ser Thr
1 5

<210> 287
<211> 5
<212> PRT
<213> Mus musculus

<400> 287

Asp Tyr Phe Ile His
1 5

<210> 288
<211> 17
<212> PRT
<213> Mus musculus

<400> 288

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

Asp

<210> 289
<211> 12
<212> PRT
<213> Mus musculus

<400> 289

Glu Asp Tyr Asp Gly Thr Tyr Thr Phe Phe Pro Tyr
1 5 10

<210> 290
<211> 5
<212> PRT
<213> Mus musculus

<400> 290

Asp Phe Tyr Leu His
1 5

<210> 291
<211> 17
<212> PRT
<213> Mus musculus

<400> 291

Arg Ile Asp Pro Glu Asn Gly Asp Thr Leu Tyr Asp Pro Lys Phe Gln
1 5 10 15

Asp

<210> 292
<211> 16
<212> PRT
<213> Mus musculus

<400> 292

Glu Ala Asp Tyr Phe His Asp Gly Thr Ser Tyr Trp Tyr Phe Asp Val
1 5 10 15

<210> 293
<211> 5
<212> PRT
<213> Mus musculus

<400> 293

Asp Tyr Tyr Ile His
1 5

<210> 294
<211> 17
<212> PRT
<213> Mus musculus

<400> 294

Arg Val Asp Pro Asp Asn Gly Glu Thr Glu Phe Ala Pro Lys Phe Pro
1 5 10 15

Gly

<210> 295
<211> 12
<212> PRT
<213> Mus musculus

<400> 295

Glu Asp Tyr Asp Gly Thr Tyr Thr Trp Phe Pro Tyr
1 5 10

<210> 296
<211> 5
<212> PRT
<213> Mus musculus

<400> 296

Asp Tyr Tyr Met Asn
1 5

<210> 297
<211> 17
<212> PRT
<213> Mus musculus

<400> 297

Asp Ile Asn Pro Tyr Asn Asp Asp Thr Thr Tyr Asn His Lys Phe Lys
1 5 10 15

Gly

<210> 298
<211> 11
<212> PRT
<213> Mus musculus

<400> 298

Glu Thr Ala Val Ile Thr Thr Asn Ala Met Asp
1 5 10

<210> 299
<211> 130
<212> PRT
<213> Mus musculus

<400> 299

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

Val Ile Leu Ser Ser Gly Glu Ile Val Leu Thr Gln Ser Pro Ala Leu
20 25 30

Met Ala Ala Ser Pro Gly Glu Lys Val Thr Ile Thr Cys Ser Val Ser
35 40 45

Ser Ser Ile Ser Ser Ser Asn Leu His Trp Ser Gln Gln Lys Ser Gly
50 55 60

Thr Ser Pro Lys Leu Trp Ile Tyr Gly Thr Ser Asn Leu Ala Ser Gly
65 70 75 80

Val Pro Val Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu
85 90 95

Thr Ile Ser Ser Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln
100 105 110

Gln Trp Thr Thr Thr Tyr Thr Phe Gly Ser Gly Thr Lys Leu Glu Leu
115 120 125

Lys Arg
130

<210> 300
<211> 390
<212> DNA
<213> Mus musculus

<400> 300
atggattttc aggtgcagat tttcagcttc atgctaatca gtgtcacagt catattgtcc 60

agtggagaaa ttgtgctcac ccagtctcca gcactcatgg ctgcatctcc aggggagaag 120

gtcaccatca cctgcagtgt cagctcgagt ataagttcca gcaacttaca ctggtcccag 180

cagaagtcag gaacctcccc caaactctgg atttatggca catccaacct tgcttctgga 240

gtccctgttc gcttcagtgg cagtggatct gggacctctt attctctcac aatcagcagc 300

atggaggctg aagatgctgc cacttattac tgtcaacagt ggactactac gtatacgttc 360

ggatcgggga ccaagctgga gctgaaacgt 390

<210> 301
<211> 141
<212> PRT
<213> Mus musculus

<400> 301

Met Gly Trp Asn Trp Ile Ile Phe Phe Leu Met Ala Val Val Thr Gly
1 5 10 15

Val Asn Ser Glu Val Gln Leu Arg Gln Ser Gly Ala Asp Leu Val Lys
20 25 30

Pro Gly Ala Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Ile
35 40 45

Lys Asp Tyr Tyr Ile His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu
50 55 60

Glu Trp Ile Gly Arg Ile Asp Pro Asp Asn Gly Glu Ser Thr Tyr Val
65 70 75 80

Pro Lys Phe Gln Gly Lys Ala Thr Ile Thr Ala Asp Thr Ser Ser Asn
85 90 95

Thr Ala Tyr Leu Gln Leu Arg Ser Leu Thr Ser Glu Asp Thr Ala Ile
100 105 110

Tyr Tyr Cys Gly Arg Glu Gly Leu Asp Tyr Gly Asp Tyr Tyr Ala Val
115 120 125

Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser
130 135 140

<210> 302
<211> 423
<212> DNA

<213> Mus musculus

<400> 302
atgggatgga actggatcat cttcttcctg atggcagtgg ttacaggggt caattcagag 60

gtgcagttgc ggcagtctgg ggcagacctt gtgaagccag gggcctcagt caagttgtcc 120

tgcacagctt ctggcttcaa cattaaagac tactatatac actgggtgaa gcagaggcct 180

gaacagggcc tggagtggat tggaaggatt gatcctgata atggtgaaag tacatatgtc 240

ccgaagttcc agggcaaggc cactataaca gcagacacat catccaacac agcctaccta 300

caactcagaa gcctgacatc tgaggacact gccatctatt attgtgggag agaggggctc 360

gactatggtg actactatgc tgtggactac tggggtcaag gaacctcggt cacagtctcg 420

agc 423

<210> 303
<211> 130
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 303

Met Asp Met Arg Val Pro Ala Gln Leu Leu Gly Leu Leu Leu Leu Trp
1 5 10 15

Leu Pro Gly Ala Arg Cys Asp Ile Gln Leu Thr Gln Ser Pro Ser Phe
20 25 30

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Ser Val Ser
35 40 45

Ser Ser Ile Ser Ser Ser Asn Leu His Trp Tyr Gln Gln Lys Pro Gly
50 55 60

Lys Ala Pro Lys Leu Leu Ile Tyr Gly Thr Ser Asn Leu Ala Ser Gly
65 70 75 80

Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu
85 90 95

Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln
100 105 110

Gln Trp Thr Thr Thr Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile
115 120 125

Lys Arg

130

<210> 304
<211> 390
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 304
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cgctgcgata ttcagctgac ccagagcccg agctttctga gcgcgagcgt gggcgatcgc 120

gtgaccatta cctgcagcgt gagcagcagc attagcagca gcaacctgca ttggtatcag 180

cagaaaccgg gcaaagcgcc gaaactgctg atttatggca ccagcaacct ggcgagcggc 240

gtgccgagcc gctttagcgg cagcggcagc ggcaccgaat ttaccctgac cattagcagc 300

ctgcagccgg aagattttgc gacctattat tgccagcagt ggaccaccac ctatacctttt 360

ggccagggca ccaaactgga aattaaacgt 390

<210> 305
<211> 141
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 305

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

Ala His Ser Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Asn Ile
35 40 45

Lys Asp Tyr Tyr Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60

Glu Trp Met Gly Arg Ile Asp Pro Asp Asn Gly Glu Ser Thr Tyr Val
65 70 75 80

Pro Lys Phe Gln Gly Arg Val Thr Met Thr Thr Asp Thr Ser Thr Ser

85 90 95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Arg Ser Asp Asp Thr Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Glu Gly Leu Asp Tyr Gly Asp Tyr Tyr Ala Val
115 120 125

Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
130 135 140

<210> 306
<211> 423
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 306
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gtgcagctgg tgcagagcgg cgcggaagtg aaaaaaccgg gcgcgagcgt gaaagtgagc 120

tgcaaagcga gcggctttaa cattaaagat tattatattc attgggtgcg ccaggcgccg 180

ggccagggcc tggaatggat gggccgcatt gatccggata acggcgaaag cacctatgtg 240

ccgaaatttc agggccgcgt gaccatgacc accgatacca gcaccagcac cgcgtatatg 300

gaactgcgca gcctgcgcag cgatgatacc gcggtgtatt attgcgcgcg cgaaggcctg 360

gattatggcg attattatgc ggtggattat tggggccagg gcaccctggt gaccgtctcg 420

agc 423

<210> 307
<211> 127
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 307

Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln
1 5 10 15

Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser
20 25 30

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Ala Ser Leu Gly Asp Arg Val Asn Ile Ser Cys Arg Ala Ser Gln Asp
        35                  40                  45

Ile Ser Ser Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val
    50                  55                  60

Lys Leu Leu Ile Tyr Ser Thr Ser Arg Leu Asn Ser Gly Val Pro Ser
65                  70                  75                  80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser
                85                  90                  95

Asn Leu Ala Gln Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Asp Ile
            100                 105                 110

Lys His Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys Arg
        115                 120                 125
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<210> 308
<211> 381
<212> DNA
<213> Mus musculus

<400> 308
atgatgtcct ctgctcagtt ccttggtctc ctgttgctct gttttcaagg taccagatgt 60

gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagagtcaac 120

atcagctgca gggcaagtca ggacattagc agttatttaa actggtatca gcagaaacca 180

gatggaactg ttaaactcct gatctactcc acatcaagat taaactcagg agtcccatca 240

aggttcagtg gcagtgggtc tgggacagat tattctctca ctattagcaa cctggcacaa 300

gaagatattg ccacttactt ttgccaacag gatattaagc atccgacgtt cggtggaggc 360

accaagttgg agctgaaacg t 381

<210> 309
<211> 139
<212> PRT
<213> Mus musculus

<400> 309

```
Met Glu Trp Ile Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1               5                   10                  15

Val His Ser Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys
            20                  25                  30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Phe Thr Phe
        35                  40                  45

Thr Asp Tyr Ile Met His Trp Val Lys Gln Lys Pro Gly Gln Gly Leu
    50                  55                  60
```

```
Glu Trp Ile Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn
65                  70                  75                  80

Glu Lys Phe Lys Gly Lys Ala Thr Leu Thr Ser Asp Lys Ser Ser Ser
                85                  90                  95

Thr Ala Tyr Met Asp Leu Ser Ser Leu Thr Ser Glu Gly Ser Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr
        115                 120                 125

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
    130                 135
```

<210> 310
<211> 417
<212> DNA
<213> Mus musculus

<400> 310
atggaatgga tctggatatt tctcttcctc ctgtcaggaa ctgcaggtgt ccactctgag 60

gtccagctgc agcagtctgg acctgagctg gtaaagcctg gggcttcagt gaagatgtcc 120

tgcaaggctt ctgggttcac attcactgac tacattatgc actgggtgaa gcagaagcct 180

gggcagggcc ttgagtggat tggatatatt aatccttaca atgatgatac tgaatacaat 240

gagaagttca aaggcaaggc cacactgact tcagacaaat cctccagcac agcctacatg 300

gatctcagca gtctgacctc tgagggctct gcggtctatt actgtgcaag atcgatttat 360

tactacgatg ccccgtttgc ttactggggc caagggactc tggtcacagt ctcgagc 417

<210> 311
<211> 127
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 311

```
Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln
1               5                   10                  15

Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser
            20                  25                  30

Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp
        35                  40                  45
```

```
Ile Ser Ser Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro
    50                  55                  60

Lys Leu Leu Ile Tyr Ser Thr Ser Arg Leu Asn Ser Gly Val Pro Ser
65                  70                  75                  80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
                85                  90                  95

Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Asp Ile
            100                 105                 110

Lys His Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
        115                 120                 125
```

<210> 312
<211> 381
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 312
atgatgtcct ctgctcagtt ccttggtctc ctgttgctct gttttcaagg taccagatgt 60

gatatccaga tgacccagtc tccatcctcc ctgtctgcat ctgtaggtga ccgtgtcacc 120

atcacttgcc gcgcaagtca ggatattagc agctatttaa attggtatca gcagaaacca 180

gggaaagccc ctaagctcct gatctattct acttcccgtt tgaatagtgg ggtcccatca 240

cgcttcagtg gcagtggctc tgggacagat ttcactctca ccatcagcag tctgcaacct 300

gaagattttg caacttacta ctgtcaacag gatattaaac accctacgtt cggtcaaggc 360

accaaggtgg agatcaaacg t 381

<210> 313
<211> 139
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 313

```
Met Glu Trp Ile Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1               5                   10                  15
```

```
Val His Ser Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            20                  25                  30

Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Thr Phe
        35                  40                  45

Thr Asp Tyr Ile Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    50                  55                  60

Glu Trp Met Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn
65                  70                  75                  80

Glu Lys Phe Lys Gly Arg Val Thr Ile Thr Ala Asp Lys Ser Thr Ser
                85                  90                  95

Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr
        115                 120                 125

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
    130                 135
```

<210> 314
<211> 107
<212> PRT
<213> Mus musculus

<400> 314

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

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

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

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

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Ala Gln
65                  70                  75                  80

Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Asp Ile Lys His Pro Thr
                85                  90                  95

Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys Arg
            100                 105
```

<210> 315
<211> 128
<212> PRT
<213> Mus musculus

<400> 315

Met Lys Ser Gln Thr Gln Val Phe Val Tyr Met Leu Leu Trp Leu Ser
1 5 10 15

Gly Val Glu Gly Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser
20 25 30

Thr Ser Val Gly Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp
35 40 45

Val Phe Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro
50 55 60

Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg His Thr Gly Val Pro Asp
65 70 75 80

Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
85 90 95

Asn Val Gln Ser Glu Asp Leu Ala Asp Tyr Phe Cys Gln Gln Tyr Ser
100 105 110

Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
115 120 125

<210> 316
<211> 381
<212> DNA
<213> Mus musculus

<400> 316
atgaagtcac agacccaggt ctttgtatac atgttgctgt ggttgtctgg tgttgaagga 60

gacattgtga tgacccagtc tcacaaattc atgtccacgt cagtaggaga cagggtcacc 120

atcacctgca aggccagtca ggatgtcttt actgctgtag cctggtatca acagaaacca 180

ggacaatctc ctaaactact gatttactgg gcatccaccc ggcacactgg agtccctgat 240

cgcttcacag gcagtggatc tgggacagat ttcactctca ccattagcaa tgtgcagtct 300

gaagacttgg cagattattt ctgtcaacaa tatagcagct atcctctcac gttcggtgct 360

gggaccaagt tggagctgaa a 381

<210> 317
<211> 138
<212> PRT
<213> Mus musculus

<400> 317

Met Gly Trp Asn Trp Ile Ile Phe Phe Leu Met Ala Val Val Thr Gly

```
1               5                   10                  15

Val Asn Ser Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg
            20                  25                  30

Pro Gly Ala Leu Val Lys Leu Ser Cys Lys Ala Ser Gly Phe Asn Ile
        35                  40                  45

Lys Asp Tyr Tyr Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu
    50                  55                  60

Glu Trp Ile Gly Arg Ile Asp Pro Glu Asn Gly Asp Ile Ile Tyr Asp
65                  70                  75                  80

Pro Lys Phe Gln Gly Lys Ala Ser Ile Thr Thr Asp Thr Ser Ser Asn
                85                  90                  95

Thr Ala Tyr Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Tyr Asp Ala Gly Asp Pro Ala Trp Phe Thr Tyr Trp
        115                 120                 125

Gly Gln Gly Thr Leu Val Thr Val Ser Ser
    130                 135
```

<210> 318
<211> 411
<212> DNA
<213> Mus musculus

<400> 318

```
atgggatgga actggatcat cttcttcctg atggcagtgg ttacaggggt caattcagag       60

gttcagctgc agcagtctgg ggctgagctt gtgaggccag gggccttagt caagttgtcc      120

tgcaaagctt ctggcttcaa tattaaagac tactatatgc actgggtgaa gcagaggcct      180

gaacagggcc tggagtggat tggaaggatt gatcctgaga atggtgatat tatatatgac      240

ccgaagttcc agggcaaggc cagtataaca acagacacat cctccaacac agcctacctg      300

cagctcagca gcctgacgtc tgaggacact gccgtctatt actgtgctta cgatgctggt      360

gaccccgcct ggtttactta ctggggccaa gggactctgg tcaccgtctc g               411
```

<210> 319
<211> 130
<212> PRT
<213> Mus musculus

<400> 319

```
Met Asp Met Arg Val Pro Ala Gln Leu Leu Gly Leu Leu Leu Leu Trp
1               5                   10                  15

Leu Arg Gly Ala Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser
```

```
            20                  25                  30

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Lys Ala Ser
        35                  40                  45

Gln Asp Val Phe Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys
    50                  55                  60

Ala Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg His Thr Gly Val
65                  70                  75                  80

Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
                85                  90                  95

Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln
            100                 105                 110

Tyr Ser Ser Tyr Pro Leu Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
        115                 120                 125

Lys Arg
    130
```

<210> 320
<211> 390
<212> DNA
<213> Mus musculus

<400> 320
atggatatgc gcgtgccggc gcagctgctg ggcctgctgc tgctgtggct gcgcggcgcg 60

cgctgcgata tccagatgac ccagagcccg agcagcctga gcgcgagcgt gggcgatcgc 120

gtgaccatta cctgcaaagc gagccaggat gtgtttaccg cggtggcgtg gtatcagcag 180

aaaccgggca aagcgccgaa actgctgatt tattgggcga gcacccgcca taccggcgtg 240

ccgagtcgct ttagcggcag cggcagcggc accgatttta ccctgaccat tagcagcctg 300

cagccggaag attttgcgac ctattattgc cagcagtata gcagctatcc gctgaccttt 360

ggcggcggca ccaaagtgga aattaaacgt 390

<210> 321
<211> 138
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 321

```
Met Asp Trp Thr Trp Ser Ile Leu Phe Leu Val Ala Ala Pro Thr Gly
```

1 5 10 15

Ala His Ser Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Asn Ile
35 40 45

Lys Asp Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60

Glu Trp Ile Gly Arg Ile Asp Pro Glu Asn Gly Asp Ile Ile Tyr Asp
65 70 75 80

Pro Lys Phe Gln Gly Arg Val Thr Met Thr Thr Asp Thr Ser Thr Ser
85 90 95

Thr Ala Tyr Met Glu Leu Arg Ser Leu Arg Ser Asp Asp Thr Ala Val
100 105 110

Tyr Tyr Cys Ala Tyr Asp Ala Gly Asp Pro Ala Trp Phe Thr Tyr Trp
115 120 125

Gly Gln Gly Thr Leu Val Thr Val Ser Ser
130 135

<210> 322
<211> 414
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Polynucleotide

<220>
<221> misc_feature
<223> Humanized Antibody Sequence

<400> 322
atggattgga cctggagcat tctgtttctg gtggcggcgc cgaccggcgc gcatagcgaa 60

gtgcagctgg tgcagagcgg cgcggaagtg aaaaaaccgg gcgcgagcgt gaaagtgagc 120

tgcaaagcga gcggctttaa cattaaagat tattatatgc attgggtgcg ccaggcgccg 180

ggccagggcc tggaatggat cggccgcatt gatccggaaa acggcgatat tatttatgat 240

ccgaaatttc agggccgcgt gaccatgacc accgatacca gcaccagcac cgcgtatatg 300

gaactgcgca gcctgcgcag cgatgatacc gcggtgtatt attgcgcgta tgatgcgggc 360

gatccggcgt ggtttaccta ttggggccag ggcaccctgg tgaccgtctc gagc 414

<210> 323
<211> 106
<212> PRT
<213> Mus musculus

<400> 323

```
Thr Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln
1               5                  10                  15

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

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln
        35                  40                  45

Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr
    50                  55                  60

Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg
65                  70                  75                  80

His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro
                85                  90                  95

Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
            100                 105
```

<210> 324
<211> 320
<212> PRT
<213> Mus musculus

<400> 324

```
Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala
1               5                  10                  15

Ala Gln Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr
            20                  25                  30

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser
        35                  40                  45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu
    50                  55                  60

Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val
65                  70                  75                  80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys
                85                  90                  95

Ile Val Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro
            100                 105                 110

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

```
Thr Ile Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser
    130                 135                 140

Lys Asp Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu
145                 150                 155                 160

Val His Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr
                165                 170                 175

Phe Arg Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn
            180                 185                 190

Gly Lys Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro
        195                 200                 205

Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln
    210                 215                 220

Val Tyr Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val
225                 230                 235                 240

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

Glu Trp Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln
            260                 265                 270

Pro Ile Met Asp Thr Asp Gly Ser Tyr Phe Val Tyr Ser Lys Leu Asn
        275                 280                 285

Val Gln Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val
    290                 295                 300

Leu His Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His
305                 310                 315                 320

<210>  325
<211>  106
<212>  PRT
<213>  Homo sapiens

<400>  325

Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln
1               5                   10                  15

Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr
            20                  25                  30

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser
        35                  40                  45
```

```
Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr
    50                  55                  60

Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys
65                  70                  75                  80

His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro
                85                  90                  95

Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
            100                 105
```

<210> 326
<211> 327
<212> PRT
<213> Homo sapiens

<400> 326

```
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg
1               5                   10                  15

Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr
            20                  25                  30

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
        35                  40                  45

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

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr
65                  70                  75                  80

Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys
                85                  90                  95

Arg Val Glu Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro
            100                 105                 110

Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys
        115                 120                 125

Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val
    130                 135                 140

Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp
145                 150                 155                 160

Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe
                165                 170                 175
```

```
Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp
            180                 185                 190

Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu
        195                 200                 205

Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
    210                 215                 220

Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys
225                 230                 235                 240

Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp
                245                 250                 255

Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys
            260                 265                 270

Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
        275                 280                 285

Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser
    290                 295                 300

Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
305                 310                 315                 320

Leu Ser Leu Ser Leu Gly Lys
                325
```

<210> 327
<211> 120
<212> PRT
<213> Mus musculus

<400> 327

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

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

Ile Met His Trp Val Lys Gln Lys Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe
    50                  55                  60

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

Met Asp Leu Ser Ser Leu Thr Ser Glu Gly Ser Ala Val Tyr Tyr Cys
```

```
                85                  90                  95

Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>  328
<211>  120
<212>  PRT
<213>  Mus musculus

<400>  328

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

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

Ile Met His Trp Val Lys Gln Lys Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe
    50                  55                  60

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

Met Asp Leu Ser Ser Leu Thr Ser Glu Gly Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>  329
<211>  120
<212>  PRT
<213>  Mus musculus

<400>  329

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

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

Ile Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
        35                  40                  45
```

```
Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe
    50                  55                  60

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

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

Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 330
<211> 226
<212> PRT
<213> Mus musculus

<400> 330

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

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

Ile Met His Trp Val Lys Gln Lys Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe
    50                  55                  60

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

Met Asp Leu Ser Ser Leu Thr Ser Glu Gly Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

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

Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val
    130                 135                 140

Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp
145                 150                 155                 160
```

```
Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr
                165                 170                 175

Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr
            180                 185                 190

Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val
        195                 200                 205

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

Glu Cys
225
```

<210> 331
<211> 447
<212> PRT
<213> Mus musculus

<400> 331

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

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

Ile Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
        35                  40                  45

Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe
    50                  55                  60

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

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

Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

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

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

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

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
```

```
                165                 170                 175

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

Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys
        195                 200                 205

Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser Lys Tyr Gly Pro
    210                 215                 220

Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe 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 Gln Glu Asp Pro Glu
            260                 265                 270

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

Thr Lys Pro Arg Glu Glu Gln Phe 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 Gly Leu Pro Ser Ser 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 Gln 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 Arg Leu Thr Val Asp Lys Ser Arg
                405                 410                 415

Trp Gln Glu 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 Leu Gly Lys
```

435 440 445

<210> 332
<211> 107
<212> PRT
<213> Mus musculus

<400> 332

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

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

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Phe Lys Leu Leu Ile
35 40 45

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

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Tyr Asn Leu Glu Gln
65 70 75 80

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

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

<210> 333
<211> 324
<212> PRT
<213> Mus musculus

<400> 333

Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala
1 5 10 15

Ala Gln Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr
20 25 30

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser
35 40 45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu Tyr Thr Leu
50 55 60

Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Glu Thr Val
65 70 75 80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys
85 90 95

```
Ile Val Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro
            100                 105                 110

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

Thr Ile Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser
    130                 135                 140

Lys Asp Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu
145                 150                 155                 160

Val His Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr
                165                 170                 175

Phe Arg Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn
            180                 185                 190

Gly Lys Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro
        195                 200                 205

Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln
    210                 215                 220

Val Tyr Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val
225                 230                 235                 240

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

Glu Trp Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln
            260                 265                 270

Pro Ile Met Asp Thr Asp Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn
        275                 280                 285

Val Gln Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val
    290                 295                 300

Leu His Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His
305                 310                 315                 320

Ser Pro Gly Lys
```

<210> 334
<211> 213
<212> PRT
<213> Mus musculus

<400> 334

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

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

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

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

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Ala Gln
65                  70                  75                  80

Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Asp Ile Lys His Pro Thr
                85                  90                  95

Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys Arg Thr Asp Ala Ala Pro
            100                 105                 110

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

Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile Asn
    130                 135                 140

Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu Asn
145                 150                 155                 160

Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser Ser
                165                 170                 175

Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr Thr
            180                 185                 190

Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser Phe
        195                 200                 205

Asn Arg Asn Glu Cys
    210

<210>  335
<211>  444
<212>  PRT
<213>  Mus musculus

<400>  335

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

Ser Val Lys Met Ser Cys Lys Ala Ser Gly Phe Thr Phe Thr Asp Tyr
```

```
            20                  25                  30

Ile Met His Trp Val Lys Gln Lys Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe
    50                  55                  60

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

Met Asp Leu Ser Ser Leu Thr Ser Glu Gly Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

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

Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser Met Val Thr
    130                 135                 140

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

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

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

Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala His Pro Ala
        195                 200                 205

Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp Cys Gly Cys
    210                 215                 220

Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val Phe Ile Phe
225                 230                 235                 240

Pro Pro Lys Pro Lys Asp Val Leu Thr Ile Thr Leu Thr Pro Lys Val
                245                 250                 255

Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu Val Gln Phe
            260                 265                 270

Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln Thr Gln Pro
        275                 280                 285

Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser Glu Leu Pro
```

```
    290                 295                 300

Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys Cys Arg Val
305                 310                 315                 320

Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr
                325                 330                 335

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

Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met Ile Thr Asp
        355                 360                 365

Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn Gly Gln Pro
    370                 375                 380

Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr Asp Gly Ser
385                 390                 395                 400

Tyr Phe Val Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn Trp Glu Ala
                405                 410                 415

Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His Asn His
            420                 425                 430

His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440


<210>  336
<211>  108
<212>  PRT
<213>  Mus musculus

<400>  336

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 Asp Val Phe Thr Ala
            20                  25                  30

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

Tyr Trp Ala Ser Thr Arg His 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 Gln Gln Tyr Ser Ser Tyr Pro Leu
                85                  90                  95
```

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


<210>  337
<211>  324
<212>  DNA
<213>  Mus musculus

<400>  337
gatatccaga tgacccagag cccgagcagc ctgagcgcga gcgtgggcga tcgcgtgacc       60

attacctgca aagcgagcca ggatgtgttt accgcggtgg cgtggtatca gcagaaaccg      120

ggcaaagcgc cgaaactgct gatttattgg gcgagcaccc gccataccgg cgtgccgagt      180

cgctttagcg gcagcggcag cggcaccgat tttaccctga ccattagcag cctgcagccg      240

gaagattttg cgacctatta ttgccagcag tatagcagct atccgctgac ctttggcggc      300

ggcaccaaag tggaaattaa acgt                                             324


<210>  338
<211>  119
<212>  PRT
<213>  Mus musculus

<400>  338

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


Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Asn Ile Lys Asp Tyr
            20                  25                  30


Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45


Gly Arg Ile Asp Pro Glu Asn Gly Asp Ile Ile Tyr Asp Pro Lys Phe
    50                  55                  60


Gln Gly Arg Val Thr Met Thr Thr Asp Thr Ser Thr Ser Thr Ala Tyr
65                  70                  75                  80


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


Ala Tyr Asp Ala Gly Asp Pro Ala Trp Phe Thr Tyr Trp Gly Gln Gly
            100                 105                 110


Thr Leu Val Thr Val Ser Ser
        115


<210>  339
<211>  357
<212>  DNA
<213>  Mus musculus
```

<400> 339
gaagtgcagc tggtgcagag cggcgcggaa gtgaaaaaac cgggcgcgag cgtgaaagtg 60

agctgcaaag cgagcggctt taacattaaa gattattata tgcattgggt gcgccaggcg 120

ccgggccagg gcctggaatg gatcggccgc attgatccgg aaaacggcga tattatttat 180

gatccgaaat ttcagggccg cgtgaccatg accaccgata ccagcaccag caccgcgtat 240

atggaactgc gcagcctgcg cagcgatgat accgcggtgt attattgcgc gtatgatgcg 300

ggcgatccgg cgtggtttac ctattggggc cagggcaccc tggtgaccgt ctcgagc 357

<210> 340
<211> 1395
<212> DNA
<213> Mus musculus

<400> 340
atggactgga cctggaggat cctcttcttg gtggcagcag ccacaggagc ccactccgag 60

gtgcagctgg tgcagtctgg ggctgaggtg aagaagcctg ggtcctcggt gaaggtctcc 120

tgcaaggctt ctggttttac cttcaccgac tatattatgc actgggtgcg tcaggcccct 180

ggtcaagggc ttgagtggat gggctatatc aacccttata atgatgacac cgaatacaac 240

gagaagttca agggccgtgt cacgattacc gcggacaaat ccacgagcac agcctacatg 300

gagctgagca gcctgcgctc tgaggacacg gccgtgtatt actgtgcgcg ttcgatttat 360

tactacgatg ccccgtttgc ttactggggc caagggactc tggtcaccgt ctctagtgcc 420

tccaccaagg gcccatcggt cttccccctg gcgccctgct ccaggagcac ctccgagagc 480

acagcggccc tgggctgcct ggtcaaggac tacttccccg aaccggtgac ggtgtcgtgg 540

aactcaggcg ctctgaccag cggcgtgcac accttcccag ctgtcctaca gtcctcagga 600

ctctactccc tcagcagcgt ggtgaccgtg ccctccagca acttcggcac ccagacctac 660

acctgcaacg tagatcacaa gcccagcaac accaaggtgg acaagacagt tgagcgcaaa 720

tgttgtgtcg agtgcccacc gtgcccagca ccacctgtgg caggaccgtc agtcttcctc 780

ttccccccaa aacccaagga caccctcatg atctcccgga cccctgaggt cacgtgcgtg 840

gtggtggacg tgagccacga agaccccgag gtccagttca actggtacgt ggacggcgtg 900

gaggtgcata atgccaagac aaagccacgg gaggagcagt tcaacagcac gttccgtgtg 960

gtcagcgtcc tcaccgttgt gcaccaggac tggctgaacg gcaaggagta caagtgcaag 1020

gtctccaaca aaggcctccc agcccccatc gagaaaacca tctccaaaac caaagggcag 1080

ccccgagaac cacaggtgta caccctgccc ccatcccggg aggagatgac caagaaccag 1140

gtcagcctga cctgcctggt caaaggcttc taccccagcg acatcgccgt ggagtgggag 1200

agcaatgggc agccggagaa caactacaag accacacctc ccatgctgga ctccgacggc 1260

tccttcttcc tctacagcaa gctcaccgtg gacaagagca ggtggcagca ggggaacgtc 1320

ttctcatgct ccgtgatgca tgaggctctg cacaaccact acacgcagaa gagcctctcc 1380

ctgtctccgg gtaaa 1395

<210> 341
<211> 213
<212> PRT
<213> Mus musculus

<400> 341

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 Asp 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 Ser Thr Ser Arg Leu Asn Ser 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 Gln Gln Asp Ile Lys His Pro Thr
85 90 95

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

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

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

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

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

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

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

Asn Arg Gly Glu Cys
210

<210> 342
<211> 639
<212> DNA

<213> Mus musculus

<400> 342
gacatccaga tgacccagtc tccatcctcc ctgtctgcat ctgtaggtga ccgtgtcacc 60

atcacttgcc gcgcaagtca ggatattagc agctatttaa attggtatca gcagaaacca 120

gggaaagccc ctaagctcct gatctattct acttcccgtt tgaatagtgg ggtcccatca 180

cgcttcagtg gcagtggctc tgggacagat ttcactctca ccatcagcag tctgcaacct 240

gaagattttg caacttacta ctgtcaacag gatattaaac accctacgtt cggtcaaggc 300

accaaggtgg agatcaaacg tacggtggct gcaccatctg tcttcatctt cccgccatct 360

gatgagcagt tgaaatctgg aactgcctct gttgtgtgcc tgctgaataa cttctatccc 420

agagaggcca aagtacagtg gaaggtggat aacgccctcc aatcgggtaa ctcccaggag 480

agtgtcacag agcaggacag caaggacagc acctacagcc tcagcagcac cctgacgctg 540

agcaaagcag actacgagaa acacaaagtc tacgcctgcg aagtcaccca tcagggcctg 600

agctcgcccg tcacaaagag cttcaacagg ggagagtgt 639

<210> 343
<211> 235
<212> PRT
<213> Mus musculus

<400> 343

Met Asp Met Arg Val Pro Ala Gln Leu Leu Gly Leu Leu Leu Leu Trp
1 5 10 15

Leu Arg Gly Ala Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser
20 25 30

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser
35 40 45

Gln Asp Ile Ser Ser Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys
50 55 60

Ala Pro Lys Leu Leu Ile Tyr Ser Thr Ser Arg Leu Asn Ser Gly Val
65 70 75 80

Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
85 90 95

Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln
100 105 110

Asp Ile Lys His Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
115 120 125

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
130 135 140

```
Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe
145                 150                 155                 160

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
                165                 170                 175

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
            180                 185                 190

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
        195                 200                 205

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
    210                 215                 220

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225                 230                 235
```

<210> 344
<211> 705
<212> DNA
<213> Mus musculus

<400> 344

```
atggacatga gggtgcccgc tcagctcctg gggctcctgc tgctgtggct gagaggtgcc       60

agatgtgaca tccagatgac ccagtctcca tcctccctgt ctgcatctgt aggtgaccgt      120

gtcaccatca cttgccgcgc aagtcaggat attagcagct atttaaattg gtatcagcag      180

aaaccaggga aagcccctaa gctcctgatc tattctactt cccgtttgaa tagtggggtc      240

ccatcacgct tcagtggcag tggctctggg acagatttca ctctcaccat cagcagtctg      300

caacctgaag attttgcaac ttactactgt caacaggata ttaaacaccc tacgttcggt      360

caaggcacca aggtggagat caaacgtacg gtggctgcac catctgtctt catcttcccg      420

ccatctgatg agcagttgaa atctggaact gcctctgttg tgtgcctgct gaataacttc      480

tatcccagag aggccaaagt acagtggaag gtggataacg ccctccaatc gggtaactcc      540

caggagagtg tcacagagca ggacagcaag gacagcacct acagcctcag cagcaccctg      600

acgctgagca aagcagacta cgagaaacac aaagtctacg cctgcgaagt cacccatcag      660

ggcctgagct cgcccgtcac aaagagcttc aacaggggag agtgt                      705
```

<210> 345
<211> 446
<212> PRT
<213> Mus musculus

<400> 345

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

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Thr Phe Thr Asp Tyr
```

```
            20                  25                  30

Ile Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
        35                  40                  45

Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe
    50                  55                  60

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

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

Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

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

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

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

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

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

Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys
        195                 200                 205

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

Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe
225                 230                 235                 240

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

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

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

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val
```

```
    290                 295                 300

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

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

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

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

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

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

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

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

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

<210> 346
<211> 1338
<212> DNA
<213> Mus musculus

<400> 346
gaggtgcagc tggtgcagtc tggggctgag gtgaagaagc ctgggtcctc ggtgaaggtc 60

tcctgcaagg cttctggttt taccttcacc gactatatta tgcactgggt gcgtcaggcc 120

cctggtcaag ggcttgagtg gatgggctat atcaaccctt ataatgatga caccgaatac 180

aacgagaagt tcaagggccg tgtcacgatt accgcggaca aatccacgag cacagcctac 240

atggagctga gcagcctgcg ctctgaggac acggccgtgt attactgtgc gcgttcgatt 300

tattactacg atgccccgtt tgcttactgg ggccaaggga ctctggtcac cgtctctagt 360

gcctccacca agggcccatc ggtcttcccc ctggcgccct gctccaggag cacctccgag 420

agcacagcgg ccctgggctg cctggtcaag gactacttcc ccgaaccggt gacggtgtcg 480

tggaactcag gcgctctgac cagcggcgtg cacaccttcc cagctgtcct acagtcctca 540

ggactctact ccctcagcag cgtggtgacc gtgccctcca gcaacttcgg cacccagacc 600

tacacctgca acgtagatca caagcccagc aacaccaagg tggacaagac agttgagcgc 660

aaatgttgtg tcgagtgccc accgtgccca gcaccacctg tggcaggacc gtcagtcttc 720

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggacccctga ggtcacgtgc 780

gtggtggtgg acgtgagcca cgaagacccc gaggtccagt tcaactggta cgtggacggc 840

gtggaggtgc ataatgccaa gacaaagcca cgggaggagc agttcaacag cacgttccgt 900

gtggtcagcg tcctcaccgt tgtgcaccag gactggctga acggcaagga gtacaagtgc 960

aaggtctcca acaaaggcct cccagccccc atcgagaaaa ccatctccaa aaccaaaggg 1020

cagccccgag aaccacaggt gtacaccctg cccccatccc gggaggagat gaccaagaac 1080

caggtcagcc tgacctgcct ggtcaaaggc ttctacccca gcgacatcgc cgtggagtgg 1140

gagagcaatg ggcagccgga gaacaactac aagaccacac ctcccatgct ggactccgac 1200

ggctccttct tcctctacag caagctcacc gtggacaaga gcaggtggca gcaggggaac 1260

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacacgca gaagagcctc 1320

tccctgtctc cgggtaaa 1338

<210> 347
<211> 465
<212> PRT
<213> Mus musculus

<400> 347

Met Asp Trp Thr Trp Arg Ile Leu Phe Leu Val Ala Ala Ala Thr Gly
1 5 10 15

Ala His Ser Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Thr Phe
35 40 45

Thr Asp Tyr Ile Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60

Glu Trp Met Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn
65 70 75 80

Glu Lys Phe Lys Gly Arg Val Thr Ile Thr Ala Asp Lys Ser Thr Ser
85 90 95

Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr
115 120 125

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly
130 135 140

Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser

```
145                 150                 155                 160

Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val
                165                 170                 175

Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe
            180                 185                 190

Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val
        195                 200                 205

Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val
    210                 215                 220

Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys
225                 230                 235                 240

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro
                245                 250                 255

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
            260                 265                 270

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
        275                 280                 285

Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
    290                 295                 300

Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val
305                 310                 315                 320

Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu
                325                 330                 335

Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys
            340                 345                 350

Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
        355                 360                 365

Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr
    370                 375                 380

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
385                 390                 395                 400

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu
                405                 410                 415

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
```

420 425 430

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
435 440 445

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
450 455 460

Lys
465

<210> 348
<211> 1395
<212> DNA
<213> Mus musculus

<400> 348
atggactgga cctggaggat cctcttcttg gtggcagcag ccacaggagc ccactccgag 60

gtgcagctgg tgcagtctgg ggctgaggtg aagaagcctg ggtcctcggt gaaggtctcc 120

tgcaaggctt ctggttttac cttcaccgac tatattatgc actgggtgcg tcaggcccct 180

ggtcaagggc ttgagtggat gggctatatc aacccttata atgatgacac cgaatacaac 240

gagaagttca agggccgtgt cacgattacc gcggacaaat ccacgagcac agcctacatg 300

gagctgagca gcctgcgctc tgaggacacg gccgtgtatt actgtgcgcg ttcgatttat 360

tactacgatg ccccgtttgc ttactggggc caagggactc tggtcaccgt ctctagtgcc 420

tccaccaagg gcccatcggt cttccccctg gcgccctgct ccaggagcac ctccgagagc 480

acagcggccc tgggctgcct ggtcaaggac tacttccccg aaccggtgac ggtgtcgtgg 540

aactcaggcg ctctgaccag cggcgtgcac accttcccag ctgtcctaca gtcctcagga 600

ctctactccc tcagcagcgt ggtgaccgtg ccctccagca acttcggcac ccagacctac 660

acctgcaacg tagatcacaa gcccagcaac accaaggtgg acaagacagt tgagcgcaaa 720

tgttgtgtcg agtgcccacc gtgcccagca ccacctgtgg caggaccgtc agtcttcctc 780

ttcccccaa aacccaagga caccctcatg atctcccgga cccctgaggt cacgtgcgtg 840

gtggtggacg tgagccacga agaccccgag gtccagttca actggtacgt ggacggcgtg 900

gaggtgcata atgccaagac aaagccacgg gaggagcagt tcaacagcac gttccgtgtg 960

gtcagcgtcc tcaccgttgt gcaccaggac tggctgaacg gcaaggagta caagtgcaag 1020

gtctccaaca aaggcctccc agcccccatc gagaaaacca tctccaaaac caaagggcag 1080

ccccgagaac cacaggtgta caccctgccc ccatcccggg aggagatgac caagaaccag 1140

gtcagcctga cctgcctggt caaaggcttc taccccagcg acatcgccgt ggagtgggag 1200

agcaatgggc agccggagaa caactacaag accacacctc ccatgctgga ctccgacggc 1260

tccttcttcc tctacagcaa gctcaccgtg gacaagagca ggtggcagca ggggaacgtc 1320

ttctcatgct ccgtgatgca tgaggctctg cacaaccact acacgcagaa gagcctctcc 1380

ctgtctccgg gtaaa 1395

<210> 349
<211> 417
<212> DNA
<213> Mus musculus

<400> 349
atggaatgga tctggatatt tctcttcctc ctgtcaggaa ctgcaggtgt ccactctgag 60

gtgcagctgg tgcagtctgg ggctgaggtg aagaagcctg ggtcctcggt gaaggtctcc 120

tgcaaggctt ctggttttac cttcaccgac tatattatgc actgggtgcg tcaggcccct 180

ggtcaagggc ttgagtggat gggctatatc aacccttata atgatgacac cgaatacaac 240

gagaagttca agggccgtgt cacgattacc gcggacaaat ccacgagcac agcctacatg 300

gagctgagca gcctgcgctc tgaggacacg gccgtgtatt actgtgcgcg ttcgatttat 360

tactacgatg ccccgtttgc ttactggggc caagggactc tggtcacagt ctcgagc 417

<210> 350
<211> 218
<212> PRT
<213> Mus musculus

<400> 350

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

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

Gly Thr Ser Tyr Met Asn Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro
35 40 45

Lys Leu Leu Ile Tyr Ala Ala Ser Asn Leu Glu Ser Glu Ile Pro Ala
50 55 60

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

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

Glu Asp Pro Phe Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105 110

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln
115 120 125

Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr
130 135 140

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln
145 150 155 160

```
Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr
                165                 170                 175


Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg
            180                 185                 190


His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro
        195                 200                 205


Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
    210                 215


<210>  351
<211>  15
<212>  PRT
<213>  Mus musculus

<400>  351

Lys Ala Ser Gln Ser Val Asp Tyr Asp Gly Thr Ser Tyr Met Asn
1               5                   10                  15


<210>  352
<211>  7
<212>  PRT
<213>  Mus musculus

<400>  352

Ala Ala Ser Asn Leu Glu Ser
1               5


<210>  353
<211>  9
<212>  PRT
<213>  Mus musculus

<400>  353

Gln Gln Ser Asn Glu Asp Pro Phe Thr
1               5


<210>  354
<211>  657
<212>  DNA
<213>  Mus musculus

<400>  354
gacattgtgt tgacccagtc tccagcttct ttggctgtgt ctctagggca gagggccacc       60

atcgcctgca aggccagcca aagtgttgat tatgatggta ctagttatat gaattggtac      120

caacagaaac caggacagcc acccaaactc ctcatctatg ctgcatccaa tctagaatct      180

gagatcccag ccaggtttag tggcactggg tctgggacag acttcaccct caacatccat      240

cctgtggagg aggaggatat cacaacctat tactgtcagc aaagtaatga ggatccgttc      300

acgttcggag gggggaccaa gttggaaata aaacgggctg atgctgcacc aactgtatcc      360
```

atcttcccac catccagtga gcagttaaca tctggaggtg cctcagtcgt gtgcttcttg 420

aacaacttct accccaaaga catcaatgtc aagtggaaga ttgatggcag tgaacgacaa 480

aatggcgtcc tgaacagttg gactgatcag gacagcaaag acagcaccta cagcatgagc 540

agcaccctca cgttgaccaa ggacgagtat gaacgacata acagctatac ctgtgaggcc 600

actcacaaga catcaacttc acccattgtc aagagcttca acaggaatga gtgttag 657

<210> 355
<211> 238
<212> PRT
<213> Mus musculus

<400> 355

Met Glu Thr Asp Thr Ile Leu Leu Trp Val Leu Leu Leu Trp Val Pro
1 5 10 15

Gly Ser Thr Gly Asp Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ala
20 25 30

Val Ser Leu Gly Gln Arg Ala Thr Ile Ala Cys Lys Ala Ser Gln Ser
35 40 45

Val Asp Tyr Asp Gly Thr Ser Tyr Met Asn Trp Tyr Gln Gln Lys Pro
50 55 60

Gly Gln Pro Pro Lys Leu Leu Ile Tyr Ala Ala Ser Asn Leu Glu Ser
65 70 75 80

Glu Ile Pro Ala Arg Phe Ser Gly Thr Gly Ser Gly Thr Asp Phe Thr
85 90 95

Leu Asn Ile His Pro Val Glu Glu Glu Asp Ile Thr Thr Tyr Tyr Cys
100 105 110

Gln Gln Ser Asn Glu Asp Pro Phe Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125

Glu Ile Lys Arg Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro
130 135 140

Ser Ser Glu Gln Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu
145 150 155 160

Asn Asn Phe Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly
165 170 175

Ser Glu Arg Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser
180 185 190

Lys Asp Ser Thr Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp

```
        195                 200                 205

Glu Tyr Glu Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr
    210                 215                 220

Ser Thr Ser Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230                 235
```

<210> 356
<211> 717
<212> DNA
<213> Mus musculus

<400> 356

```
atggagacag acacaatcct gctatgggtg ctgctgctct gggttccagg ctccactggt       60

gacattgtgt tgacccagtc tccagcttct ttggctgtgt ctctagggca gagggccacc      120

atcgcctgca aggccagcca agtgttgat tatgatggta ctagttatat gaattggtac      180

caacagaaac caggacagcc acccaaactc ctcatctatg ctgcatccaa tctagaatct      240

gagatcccag ccaggtttag tggcactggg tctgggacag acttcaccct caacatccat      300

cctgtggagg aggaggatat cacaacctat tactgtcagc aaagtaatga ggatccgttc      360

acgttcggag gggggaccaa gttggaaata aaacgggctg atgctgcacc aactgtatcc      420

atcttcccac catccagtga gcagttaaca tctggaggtg cctcagtcgt gtgcttcttg      480

aacaacttct accccaaaga catcaatgtc aagtggaaga ttgatggcag tgaacgacaa      540

aatggcgtcc tgaacagttg gactgatcag gacagcaaag acagcaccta cagcatgagc      600

agcaccctca cgttgaccaa ggacgagtat gaacgacata acagctatac ctgtgaggcc      660

actcacaaga catcaacttc acccattgtc aagagcttca acaggaatga gtgttag         717
```

<210> 357
<211> 442
<212> PRT
<213> Mus musculus

<400> 357

```
Gln Val Gln Leu Gln Gln Pro Gly Thr Glu Leu Val Arg Pro Gly Thr
1               5                   10                  15

Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Ile Phe Thr Thr Tyr
            20                  25                  30

Trp Met Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Met Ile His Pro Ser Ala Ser Glu Ile Arg Leu Asp Gln Lys Phe
    50                  55                  60

Lys Asp Lys Ala Thr Leu Thr Leu Asp Lys Ser Ser Ser Thr Ala Tyr
65                  70                  75                  80
```

```
Met His Leu Ser Gly Pro Thr Ser Val Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Ser Gly Glu Trp Gly Ser Met Asp Tyr Trp Gly Gln Gly Thr
            100                 105                 110

Ser Val Thr Val Ser Ser Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro
        115                 120                 125

Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser Met Val Thr Leu Gly
    130                 135                 140

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

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

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

Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala His Pro Ala Ser Ser
        195                 200                 205

Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp Cys Gly Cys Lys Pro
    210                 215                 220

Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val Phe Ile Phe Pro Pro
225                 230                 235                 240

Lys Pro Lys Asp Val Leu Thr Ile Thr Leu Thr Pro Lys Val Thr Cys
                245                 250                 255

Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu Val Gln Phe Ser Trp
            260                 265                 270

Phe Val Asp Asp Val Glu Val His Thr Ala Gln Thr Gln Pro Arg Glu
        275                 280                 285

Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser Glu Leu Pro Ile Met
    290                 295                 300

His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys Cys Arg Val Asn Ser
305                 310                 315                 320

Ala Ala Phe Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly
                325                 330                 335

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

```
Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met Ile Thr Asp Phe Phe
        355                 360                 365

Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn Gly Gln Pro Ala Glu
    370                 375                 380

Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr Asp Gly Ser Tyr Phe
385                 390                 395                 400

Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn Trp Glu Ala Gly Asn
                405                 410                 415

Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His Asn His His Thr
            420                 425                 430

Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440
```

<210> 358
<211> 5
<212> PRT
<213> Mus musculus

<400> 358

```
Thr Tyr Trp Met Asn
1               5
```

<210> 359
<211> 17
<212> PRT
<213> Mus musculus

<400> 359

```
Met Ile His Pro Ser Ala Ser Glu Ile Arg Leu Asp Gln Lys Phe Lys
1               5                   10                  15

Asp
```

<210> 360
<211> 9
<212> PRT
<213> Mus musculus

<400> 360

```
Ser Gly Glu Trp Gly Ser Met Asp Tyr
1               5
```

<210> 361
<211> 1329
<212> DNA
<213> Mus musculus

<400> 361

caggtccaac tacagcagcc tgggactgag ctggtgaggc ctggaacttc agtgaagttg 60

tcctgtaagg cttctggcta catcttcacc acctactgga tgaactgggt gaaacagagg 120

cctggacaag gccttgagtg gattggcatg attcatcctt ccgcaagtga aattaggttg 180

gatcagaaat tcaaggacaa ggccacattg actcttgaca aatcctccag cacagcctat 240

atgcacctca gcggcccgac atctgtggat tctgcggtct attactgtgc aagatcaggg 300

gaatgggggt ctatggacta ctggggtcaa ggaacctcag tcaccgtctc ctcagccaaa 360

acgacacccc catctgtcta tccactggcc cctggatctg ctgcccaaac taactccatg 420

gtgaccctgg gatgcctggt caagggctat ttccctgagc cagtgacagt gacctggaac 480

tctggatccc tgtccagcgg tgtgcacacc ttcccagctg tcctgcagtc tgacctctac 540

actctgagca gctcagtgac tgtcccctcc agcacctggc ccagcgagac cgtcacctgc 600

aacgttgccc acccggccag cagcaccaag gtggacaaga aaattgtgcc cagggattgt 660

ggttgtaagc cttgcatatg tacagtccca gaagtatcat ctgtcttcat cttccccca 720

aagcccaagg atgtgctcac cattactctg actcctaagg tcacgtgtgt tgtggtagac 780

atcagcaagg atgatcccga ggtccagttc agctggtttg tagatgatgt ggaggtgcac 840

acagctcaga cgcaaccccg ggaggagcag ttcaacagca ctttccgctc agtcagtgaa 900

cttcccatca tgcaccagga ctggctcaat ggcaaggagt tcaaatgcag ggtcaacagt 960

gcagctttcc ctgcccccat cgagaaaacc atctccaaaa ccaaaggcag accgaaggct 1020

ccacaggtgt acaccattcc acctcccaag gagcagatgg ccaaggataa agtcagtctg 1080

acctgcatga taacagactt cttccctgaa gacattactg tggagtggca gtggaatggg 1140

cagccagcgg agaactacaa gaacactcag cccatcatgg acacagatgg ctcttacttc 1200

atctacagca agctcaatgt gcagaagagc aactgggagg caggaaatac tttcacctgc 1260

tctgtgttac atgagggcct gcacaaccac catactgaga agagcctctc ccactctcct 1320

ggtaaatga 1329

<210> 362
<211> 461
<212> PRT
<213> Mus musculus

<400> 362

Met Gly Trp Ser Ser Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

Val His Ser Gln Val Gln Leu Gln Gln Pro Gly Thr Glu Leu Val Arg
20 25 30

Pro Gly Thr Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Ile Phe
35 40 45

Thr Thr Tyr Trp Met Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu
50 55 60

```
Glu Trp Ile Gly Met Ile His Pro Ser Ala Ser Glu Ile Arg Leu Asp
65                  70                  75                  80

Gln Lys Phe Lys Asp Lys Ala Thr Leu Thr Leu Asp Lys Ser Ser Ser
                85                  90                  95

Thr Ala Tyr Met His Leu Ser Gly Pro Thr Ser Val Asp Ser Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Ser Gly Glu Trp Gly Ser Met Asp Tyr Trp Gly
        115                 120                 125

Gln Gly Thr Ser Val Thr Val Ser Ser Ala Lys Thr Thr Pro Pro Ser
    130                 135                 140

Val Tyr Pro Leu Ala Pro Gly Ser Ala Ala Gln Thr Asn Ser Met Val
145                 150                 155                 160

Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro Val Thr Val
                165                 170                 175

Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr Phe Pro Ala
            180                 185                 190

Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val Thr Val Pro
        195                 200                 205

Ser Ser Thr Trp Pro Ser Glu Thr Val Thr Cys Asn Val Ala His Pro
    210                 215                 220

Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asp Cys Gly
225                 230                 235                 240

Cys Lys Pro Cys Ile Cys Thr Val Pro Glu Val Ser Ser Val Phe Ile
                245                 250                 255

Phe Pro Pro Lys Pro Lys Asp Val Leu Thr Ile Thr Leu Thr Pro Lys
            260                 265                 270

Val Thr Cys Val Val Val Asp Ile Ser Lys Asp Asp Pro Glu Val Gln
        275                 280                 285

Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln Thr Gln
    290                 295                 300

Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser Glu Leu
305                 310                 315                 320

Pro Ile Met His Gln Asp Trp Leu Asn Gly Lys Glu Phe Lys Cys Arg
                325                 330                 335
```

```
Val Asn Ser Ala Ala Phe Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
            340                 345                 350

Thr Lys Gly Arg Pro Lys Ala Pro Gln Val Tyr Thr Ile Pro Pro Pro
        355                 360                 365

Lys Glu Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met Ile Thr
    370                 375                 380

Asp Phe Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn Gly Gln
385                 390                 395                 400

Pro Ala Glu Asn Tyr Lys Asn Thr Gln Pro Ile Met Asp Thr Asp Gly
                405                 410                 415

Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn Trp Glu
            420                 425                 430

Ala Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His Asn
        435                 440                 445

His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
    450                 455                 460
```

<210> 363
<211> 1386
<212> DNA
<213> Mus musculus

<400> 363

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atgggatgga gctctatcat cctcttcttg gtagcaacag ctacaggtgt ccactcccag       60

gtccaactac agcagcctgg gactgagctg gtgaggcctg gaacttcagt gaagttgtcc      120

tgtaaggctt ctggctacat cttcaccacc tactggatga actgggtgaa acagaggcct      180

ggacaaggcc ttgagtggat tggcatgatt catccttccg caagtgaaat taggttggat      240

cagaaattca aggacaaggc cacattgact cttgacaaat cctccagcac agcctatatg      300

cacctcagcg gcccgacatc tgtggattct gcggtctatt actgtgcaag atcaggggaa      360

tgggggtcta tggactactg gggtcaagga acctcagtca ccgtctcctc agccaaaacg      420

acacccccat ctgtctatcc actggcccct ggatctgctg cccaaactaa ctccatggtg      480

accctgggat gcctggtcaa gggctatttc cctgagccag tgacagtgac ctggaactct      540

ggatccctgt ccagcggtgt gcacaccttc ccagctgtcc tgcagtctga cctctacact      600

ctgagcagct cagtgactgt cccctccagc acctggccca gcgagaccgt cacctgcaac      660

gttgcccacc cggccagcag caccaaggtg gacaagaaaa ttgtgcccag ggattgtggt      720

tgtaagcctt gcatatgtac agtcccagaa gtatcatctg tcttcatctt cccccaaag       780

cccaaggatg tgctcaccat tactctgact cctaaggtca cgtgtgttgt ggtagacatc      840
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agcaaggatg atcccgaggt ccagttcagc tggtttgtag atgatgtgga ggtgcacaca 900

gctcagacgc aaccccggga ggagcagttc aacagcactt tccgctcagt cagtgaactt 960

cccatcatgc accaggactg gctcaatggc aaggagttca aatgcagggt caacagtgca 1020

gctttccctg cccccatcga gaaaaccatc tccaaaacca aaggcagacc gaaggctcca 1080

caggtgtaca ccattccacc tcccaaggag cagatggcca aggataaagt cagtctgacc 1140

tgcatgataa cagacttctt ccctgaagac attactgtgg agtggcagtg gaatgggcag 1200

ccagcggaga actacaagaa cactcagccc atcatggaca cagatggctc ttacttcatc 1260

tacagcaagc tcaatgtgca gaagagcaac tgggaggcag gaaatacttt cacctgctct 1320

gtgttacatg agggcctgca caaccaccat actgagaaga gcctctccca ctctcctggt 1380

aaatga 1386

<210> 364
<211> 106
<212> PRT
<213> Mus musculus

<400> 364

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 Asp 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 Ser Thr Ser Arg Leu Asn Ser 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 Gln Gln Asp Ile Lys His Pro Thr
85 90 95

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

<210> 365
<211> 318
<212> DNA
<213> Mus musculus

<400> 365
gacatccaga tgacccagtc tccatcctcc ctgtctgcat ctgtaggtga ccgtgtcacc 60

atcacttgcc gcgcaagtca ggatattagc agctatttaa attggtatca gcagaaacca 120

gggaaagccc ctaagctcct gatctattct acttcccgtt tgaatagtgg ggtcccatca 180

cgcttcagtg gcagtggctc tgggacagat ttcactctca ccatcagcag tctgcaacct 240

gaagattttg caacttacta ctgtcaacag gatattaaac accctacgtt cggtcaaggc 300

accaaggtgg agatcaaa 318

<210> 366
<211> 120
<212> PRT
<213> Mus musculus

<400> 366

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

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

Ile Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe
50 55 60

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

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

Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 367
<211> 360
<212> DNA
<213> Mus musculus

<400> 367
gaggtgcagc tggtgcagtc tggggctgag gtgaagaagc ctgggtcctc ggtgaaggtc 60

tcctgcaagg cttctggttt taccttcacc gactatatta tgcactgggt gcgtcaggcc 120

cctggtcaag ggcttgagtg gatgggctat atcaaccctt ataatgatga caccgaatac 180

aacgagaagt tcaagggccg tgtcacgatt accgcggaca aatccacgag cacagcctac 240

atggagctga gcagcctgcg ctctgaggac acggccgtgt attactgtgc gcgttcgatt 300

tattactacg atgccccgtt tgcttactgg ggccaaggga ctctggtcac cgtctctagt 360

<210> 368
<211> 108
<212> PRT

<213> Mus musculus

<400> 368

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 Asp Val Phe Thr Ala
20 25 30

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

Tyr Trp Ala Ser Thr Arg His 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 Gln Gln Tyr Ser Ser Tyr Pro Leu
85 90 95

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

<210> 369
<211> 324
<212> DNA
<213> Mus musculus

<400> 369
gatatccaga tgacccagag cccgagcagc ctgagcgcga gcgtgggcga tcgcgtgacc 60

attacctgca aagcgagcca ggatgtgttt accgcggtgg cgtggtatca gcagaaaccg 120

ggcaaagcgc cgaaactgct gatttattgg gcgagcaccc gccataccgg cgtgccgagt 180

cgctttagcg gcagcggcag cggcaccgat tttaccctga ccattagcag cctgcagccg 240

gaagattttg cgacctatta ttgccagcag tatagcagct atccgctgac ctttggcggc 300

ggcaccaaag tggaaattaa acgt 324

<210> 370
<211> 119
<212> PRT
<213> Mus musculus

<400> 370

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

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Asn Ile Lys Asp Tyr
20 25 30

Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

```
Gly Arg Ile Asp Pro Glu Asn Gly Asp Ile Ile Tyr Asp Pro Lys Phe
    50                  55                  60

Gln Gly Arg Val Thr Met Thr Thr Asp Thr Ser Thr Ser Thr Ala Tyr
65                  70                  75                  80

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

Ala Tyr Asp Ala Gly Asp Pro Ala Trp Phe Thr Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Leu Val Thr Val Ser Ser
        115
```

<210> 371
<211> 357
<212> DNA
<213> Mus musculus

<400> 371
gaagtgcagc tggtgcagag cggcgcggaa gtgaaaaaac cgggcgcgag cgtgaaagtg 60

agctgcaaag cgagcggctt taacattaaa gattattata tgcattgggt gcgccaggcg 120

ccgggccagg gcctggaatg gatcggccgc attgatccgg aaaacggcga tattatttat 180

gatccgaaat ttcagggccg cgtgaccatg accaccgata ccagcaccag caccgcgtat 240

atggaactgc gcagcctgcg cagcgatgat accgcggtgt attattgcgc gtatgatgcg 300

ggcgatccgg cgtggtttac ctattggggc cagggcaccc tggtgaccgt ctcgagc 357

<210> 372
<211> 108
<212> PRT
<213> Mus musculus

<400> 372

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

Asp Arg Val Thr Ile Thr Cys Ser Val Ser Ser Ser Ile Ser Ser Ser
            20                  25                  30

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

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

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln
65                  70                  75                  80
```

```
Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Trp Thr Thr Thr Tyr
                85                  90                  95

Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105
```

<210> 373
<211> 324
<212> DNA
<213> Mus musculus

<400> 373

```
gatattcagc tgacccagag cccgagcttt ctgagcgcga gcgtgggcga tcgcgtgacc       60

attacctgca gcgtgagcag cagcattagc agcagcaacc tgcattggta tcagcagaaa      120

ccgggcaaag cgccgaaact gctgatttat ggcaccagca acctggcgag cggcgtgccg      180

agccgcttta gcggcagcgg cagcggcacc gaatttaccc tgaccattag cagcctgcag      240

ccggaagatt ttgcgaccta ttattgccag cagtggacca ccacctatac ctttggccag      300

ggcaccaaac tggaaattaa acgt                                             324
```

<210> 374
<211> 122
<212> PRT
<213> Mus musculus

<400> 374

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

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Asn Ile Lys Asp Tyr
            20                  25                  30

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
        35                  40                  45

Gly Arg Ile Asp Pro Asp Asn Gly Glu Ser Thr Tyr Val Pro Lys Phe
    50                  55                  60

Gln Gly Arg Val Thr Met Thr Thr Asp Thr Ser Thr Ser Thr Ala Tyr
65                  70                  75                  80

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

Ala Arg Glu Gly Leu Asp Tyr Gly Asp Tyr Tyr Ala Val Asp Tyr Trp
            100                 105                 110

Gly Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 375
<211> 366

<212> DNA
<213> Mus musculus

<400> 375
gaagtgcagc tggtgcagag cggcgcggaa gtgaaaaaac cgggcgcgag cgtgaaagtg 60

agctgcaaag cgagcggctt taacattaaa gattattata ttcattgggt gcgccaggcg 120

ccgggccagg gcctggaatg gatgggccgc attgatccgg ataacggcga aagcacctat 180

gtgccgaaat ttcagggccg cgtgaccatg accaccgata ccagcaccag caccgcgtat 240

atggaactgc gcagcctgcg cagcgatgat accgcggtgt attattgcgc gcgcgaaggc 300

ctggattatg gcgattatta tgcggtggat tattggggcc agggcaccct ggtgaccgtc 360

tcgagc 366

<210> 376
<211> 107
<212> PRT
<213> Mus musculus

<400> 376

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 Asp Ile Ser Asn Tyr
20 25 30

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

Tyr Tyr Thr Ser Arg Leu Leu Ser 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 Gln Gln Gly Asp Thr Leu Pro Tyr
85 90 95

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

<210> 377
<211> 321
<212> DNA
<213> Mus musculus

<400> 377
gacatccaga tgacccagtc tccatcctcc ctctccgcat ccgtaggcga ccgcgtaacc 60

ataacatgta gagcatctca agatatttcc aactatttga attggtacca acaaaaaccc 120

ggcaaagcac ctaaactcct catttactat acatcaagac tcctctccgg cgttccatca 180

cgattctcag gctccggctc cggcacagat ttcacactca ctatttcctc cctccaacca 240

gaagattttg caacctatta ctgtcaacaa ggcgatacac tcccatacac attcggcggc 300

ggcacaaaag ttgaaattaa a 321

<210> 378
<211> 123
<212> PRT
<213> Mus musculus

<400> 378

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

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

Asn Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

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

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

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

Ala Arg Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
100 105 110

Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120

<210> 379
<211> 369
<212> DNA
<213> Mus musculus

<400> 379
gaggtgcagc tggtgcagag cggcgccgag gtaaaaaaac caggagcaag cgttaaagtt 60

tcttgtaaag caagcggata tacatttaca gattacaaca tgcattgggt aagacaagcg 120

ccaggacaag gattggaatg gatgggcgaa attaacccta atagtggagg agcaggctac 180

aatcaaaaat tcaaagggag agttacaatg acaacagaca caagcacttc aacagcatat 240

atggaactgc gatcacttag aagcgacgat acagctgtat actattgcgc acgacttggg 300

tatgatgata tatatgatga ctggtatttc gatgtttggg gccagggaac aacagttacc 360

gtctctagt 369

<210> 380
<211> 108
<212> PRT

<213> Mus musculus

<400> 380

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

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

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

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

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

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

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

<210> 381
<211> 324
<212> DNA
<213> Mus musculus

<400> 381
gacatccagc tgacccagag ccccagcttc ctttccgcat ccgttggtga ccgagtaaca 60

atcacatgcc gcgcctcatc ttcagttaca tcttcttatc ttaattggta tcaacaaaaa 120

ccaggaaaag cacctaaact tcttatatac tctacatcta atctcgcatc aggagttccc 180

tctcgatttt caggatctgg atcaggcaca gaatttacac ttactatatc atcactccaa 240

ccagaagact tcgccactta ttactgccaa caatacgatt tttttccaag cacattcgga 300

ggaggtacaa aagtagaaat caag 324

<210> 382
<211> 121
<212> PRT
<213> Mus musculus

<400> 382

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

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

Tyr Met Asn Trp Val Arg Gln Ala Pro Gly Gln Arg Leu Glu Trp Met
35 40 45

```
Gly Asp Ile Asn Pro Tyr Asn Asp Asp Thr Thr Tyr Asn His Lys Phe
    50                  55                  60

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

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

Ala Arg Glu Thr Ala Val Ile Thr Thr Asn Ala Met Asp Tyr Trp Gly
            100                 105                 110

Gln Gly Thr Thr Val Thr Val Ser Ser
        115                 120
```

<210> 383
<211> 363
<212> DNA
<213> Mus musculus

<400> 383

```
gaggtgcagc tggtgcagag cggcgccgag gtcaagaaac ctggagcaag cgtaaaggtt       60

agttgcaaag catctggata cacatttacc gactactaca tgaattgggt acgacaagcc      120

cctggacaaa gacttgaatg gatgggagac attaaccctt ataacgacga cactacatac      180

aatcataaat ttaaaggaag agttacaatt acaagagata catccgcatc aaccgcctat      240

atggaacttt cctcattgag atctgaagac actgctgttt attactgtgc aagagaaact      300

gccgttatta ctactaacgc tatggattac tggggtcaag gaaccactgt taccgtctct      360

agt                                                                    363
```

<210> 384
<211> 108
<212> PRT
<213> Mus musculus

<400> 384

```
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 Ser Val Ser Ser Thr Ile Ser Ser Asn
            20                  25                  30

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

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

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

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

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

<210> 385
<211> 324
<212> DNA
<213> Mus musculus

<400> 385

```
gacatccaga tgacccagtc tccatcctcc ctctcagcat ccgtaggcga tagagttaca       60

ataacatgca gcgtatcatc aactatatca tcaaatcatc ttcattggtt ccaacagaaa      120

cccggcaaag cacctaaatc acttatatac ggcacatcaa atctcgcatc aggcgttcct      180

tcaagatttt caggctctgg ctcaggcacc gactttactc ttacaatatc ctccctccaa      240

cccgaagact tcgcaaccta ttactgtcaa caatggtcct catatccact cacatttggc      300

ggcggcacaa aagtagaaat taaa                                             324
```

<210> 386
<211> 125
<212> PRT
<213> Mus musculus

<400> 386

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

Ser Val Lys Val Ser Cys Lys Ala Ser Asp Phe Asn Ile Lys Asp Phe
            20                  25                  30

Tyr Leu His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Arg Ile Asp Pro Glu Asn Gly Asp Thr Leu Tyr Asp Pro Lys Phe
    50                  55                  60

Gln Asp Lys Val Thr Met Thr Thr Asp Thr Ser Thr Ser Thr Ala Tyr
65                  70                  75                  80

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

Ala Arg Glu Ala Asp Tyr Phe His Asp Gly Thr Ser Tyr Trp Tyr Phe
            100                 105                 110

Asp Val Trp Gly Arg Gly Thr Leu Val Thr Val Ser Ser
        115                 120                 125
```

<210> 387
<211> 375
<212> DNA
<213> Mus musculus

<400> 387
gaggtgcagc tggtgcagtc tggggctgag gtgaagaagc ctggggcctc agtgaaggtc 60

tcctgcaagg cttctgactt caacattaaa gacttctatc tacactgggt gcgacaggcc 120

cctggacaag ggcttgagtg gattggaagg attgatcctg agaatggtga tactttatat 180

gacccgaagt tccaggacaa ggtcaccatg accacagaca cgtccaccag cacagcctac 240

atggagctga ggagcctgag atctgacgac acggccgtgt attactgtgc gagagaggcg 300

gattatttcc acgatggtac ctcctactgg tacttcgatg tctggggccg tggcaccctg 360

gtcaccgtct ctagt 375

<210> 388
<211> 106
<212> PRT
<213> Mus musculus

<400> 388

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

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

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

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

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

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

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

<210> 389
<211> 318
<212> DNA
<213> Mus musculus

<400> 389
gacatccagt tgacccagtc tccatccttc ctgtctgcat ctgtaggaga cagagtcacc 60

atcacttgca gggccagctc aagtataagt tacatacact ggtatcagca aaaaccaggg 120

aaagccccta agctcctgat ctatgccaca tccaacctgg cttctggggt cccatcaagg 180

ttcagcggca gtggatctgg gacagaattc actctcacaa tcagcagcct gcagcctgaa 240

gattttgcaa cttattactg tcagcagtgg agtagtgacc cactcacgtt cggcggaggg 300

accaaggtgg agatcaaa 318

<210> 390
<211> 121
<212> PRT
<213> Mus musculus

<400> 390

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

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

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Arg Val Asp Pro Asp Asn Gly Glu Thr Glu Phe Ala Pro Lys Phe
50 55 60

Pro Gly Lys Val Thr Met Thr Thr Asp Thr Ser Ile Ser Thr Ala Tyr
65 70 75 80

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

Ala Arg Glu Asp Tyr Asp Gly Thr Tyr Thr Trp Phe Pro Tyr Trp Gly
100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 391
<211> 363
<212> DNA
<213> Mus musculus

<400> 391
gaggtgcagc tggtgcagtc tggggctgag gtgaagaagc ctggggcctc agtgaaggtc 60

tcctgcaagg cttctggatt cgacattaag gactactata tacactgggt gcgacaggcc 120

cctggacaag ggcttgagtg gatcggaagg gttgatcctg acaatggtga gactgaattt 180

gccccgaagt tcccgggcaa ggtcaccatg accacagaca cgtccatcag cacagcctac 240

atggagctga gcaggctgag atctgacgac acggccgtgt attactgtgc gagagaagac 300

tacgatggta cctacacctg gtttccttat tggggccaag ggactctggt caccgtctct 360

agt 363

<210> 392

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

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 392

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

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

Asn Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

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

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

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

Ala Arg Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
100 105 110

Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys Gly
115 120 125

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

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

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

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

Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val
195 200 205

Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys
210 215 220

```
Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala 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 Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
        275                 280                 285

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

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

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

Thr Ile Ser Lys Thr 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 Met 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
```

<210> 393
<211> 446
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>

<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 393

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

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

Tyr Met Asn Trp Val Arg Gln Ala Pro Gly Gln Arg Leu Glu Trp Met
        35                  40                  45

Gly Asp Ile Asn Pro Tyr Asn Asp Asp Thr Thr Tyr Asn His Lys Phe
    50                  55                  60

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

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

Ala Arg Glu Thr Ala Val Ile Thr Thr Asn Ala Met Asp Tyr Trp Gly
            100                 105                 110

Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser
        115                 120                 125

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

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

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

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

Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His
        195                 200                 205

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

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

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

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

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

Ser Lys Thr 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 Met 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 Leu Ser Pro Gly
        435                 440                 445


<210>  394
<211>  450
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Polypeptide


<220>
<221>  MISC_FEATURE
<223>  Humanized Antibody Sequence

<400>  394

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

```
Ser Val Lys Val Ser Cys Lys Ala Ser Asp Phe Asn Ile Lys Asp Phe
            20                  25                  30

Tyr Leu His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Arg Ile Asp Pro Glu Asn Gly Asp Thr Leu Tyr Asp Pro Lys Phe
    50                  55                  60

Gln Asp Lys Val Thr Met Thr Thr Asp Thr Ser Thr Ser Thr Ala Tyr
65                  70                  75                  80

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

Ala Arg Glu Ala Asp Tyr Phe His Asp Gly Thr Ser Tyr Trp Tyr Phe
            100                 105                 110

Asp Val Trp Gly Arg Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr
        115                 120                 125

Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser
    130                 135                 140

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

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

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

Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys
        195                 200                 205

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

Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala
225                 230                 235                 240

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

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

Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val
        275                 280                 285
```

```
His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe
    290                 295                 300

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

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

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

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

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

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

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

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
            420                 425                 430

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
        435                 440                 445

Pro Gly
    450
```

<210> 395
<211> 446
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 395

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

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

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
```

```
        35                  40                  45

Gly Arg Val Asp Pro Asp Asn Gly Glu Thr Glu Phe Ala Pro Lys Phe
    50                  55                  60

Pro Gly Lys Val Thr Met Thr Thr Asp Thr Ser Ile Ser Thr Ala Tyr
65                  70                  75                  80

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

Ala Arg Glu Asp Tyr Asp Gly Thr Tyr Thr Trp Phe Pro Tyr Trp Gly
            100                 105                 110

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

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

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

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

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

Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His
        195                 200                 205

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

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

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

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

305 310 315 320

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

Ser Lys Thr 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 Met 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 Leu Ser Pro Gly
435 440 445

<210> 396
<211> 445
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Polypeptide

<220>
<221> MISC_FEATURE
<223> Humanized Antibody Sequence

<400> 396

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

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

Ile Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe
50 55 60

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

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

Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

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

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

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

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

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

Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys
        195                 200                 205

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

Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe
225                 230                 235                 240

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

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

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

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

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

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

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

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

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

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

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

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

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


<210>  397
<211>  213
<212>  PRT
<213>  Homo sapiens

<400>  397

Met Gln Leu Pro Leu Ala Leu Cys Leu Val Cys Leu Leu Val His Thr
1               5                   10                  15

Ala Phe Arg Val Val Glu Gly Gln Gly Trp Gln Ala Phe Lys Asn Asp
            20                  25                  30

Ala Thr Glu Ile Ile Pro Glu Leu Gly Glu Tyr Pro Glu Pro Pro Pro
        35                  40                  45

Glu Leu Glu Asn Asn Lys Thr Met Asn Arg Ala Glu Asn Gly Gly Arg
    50                  55                  60

Pro Pro His His Pro Phe Glu Thr Lys Asp Val Ser Glu Tyr Ser Cys
65                  70                  75                  80

Arg Glu Leu His Phe Thr Arg Tyr Val Thr Asp Gly Pro Cys Arg Ser
                85                  90                  95

Ala Lys Pro Val Thr Glu Leu Val Cys Ser Gly Gln Cys Gly Pro Ala
            100                 105                 110

Arg Leu Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp Trp Arg Pro Ser
        115                 120                 125

Gly Pro Asp Phe Arg Cys Ile Pro Asp Arg Tyr Arg Ala Gln Arg Val
    130                 135                 140
```

```
Gln Leu Leu Cys Pro Gly Gly Glu Ala Pro Arg Ala Arg Lys Val Arg
145                 150                 155                 160

Leu Val Ala Ser Cys Lys Cys Lys Arg Leu Thr Arg Phe His Asn Gln
                165                 170                 175

Ser Glu Leu Lys Asp Phe Gly Thr Glu Ala Ala Arg Pro Gln Lys Gly
            180                 185                 190

Arg Lys Pro Arg Pro Arg Ala Arg Ser Ala Lys Ala Asn Gln Ala Glu
        195                 200                 205

Leu Glu Asn Ala Tyr
    210
```

<210> 398
<211> 444
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 398

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

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

Phe Leu Asn Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
        35                  40                  45

Gly Thr Ile Tyr Pro Tyr His Asp Gly Thr Thr Tyr Ser Gln Lys Phe
    50                  55                  60

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

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

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

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

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

Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn
```

```
145                 150                 155                 160

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
```

420 425 430

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly
435 440

<210> 399
<211> 444
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 399

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

Ser Val Lys Val Ser Cys Lys Val Ser Gly Phe Pro Ile Lys Asp Thr
20 25 30

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

Gly Trp Ser Asp Pro Glu Ile Gly Asp Thr Glu Tyr Ala Ser Lys Phe
50 55 60

Gln Gly Arg Val Thr Met Thr Glu Asp Thr Ser Thr Asp Thr Ala Tyr
65 70 75 80

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

Ala Thr Gly Asp Thr Thr Tyr Lys Phe Asp Phe Trp Gly Gln Gly Thr
100 105 110

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

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

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

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

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

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

```
Asn Thr Lys Val Asp Lys Arg Val Glu Ser Lys Tyr Gly Pro Pro Cys
    210                 215                 220

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

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

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

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

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

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

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

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

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

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

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

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

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

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly
        435                 440
```

<210> 400
<211> 450
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 400

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Asp Phe Glu Ile Lys Asp Tyr
            20                  25                  30

Tyr Ile His Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met
        35                  40                  45

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

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

Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Met Tyr Tyr Cys
                85                  90                  95

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

Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys
        115                 120                 125

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

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

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
                165                 170                 175

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
            180                 185                 190

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

Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser
    210                 215                 220

Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Leu Gly
225                 230                 235                 240

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

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln
```

```
            260                 265                 270

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

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

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

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

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

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

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

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

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

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

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
        435                 440                 445

Leu Gly
    450


<210>  401
<211>  214
<212>  PRT
<213>  Artificial

<220>
<223>  Miscellaneous construct

<400>  401

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 Ser Ala Ser Gln Gly Ile Gln Trp Tyr
            20                  25                  30
```

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

Tyr Tyr Thr Ser Ser Leu His Ser 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 Gln Gln His Ser Lys Leu Pro Arg
                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


<210>  402
<211>  214
<212>  PRT
<213>  Artificial

<220>
<223>  Miscellaneous construct

<400>  402

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 Asp Val His Thr Ala
            20                  25                  30

Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
```

```
        35                  40                  45

Tyr Trp Ala Ser Thr Arg Trp 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 Gln Gln Tyr Ser Asp Tyr Pro Trp
                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


<210>  403
<211>  213
<212>  PRT
<213>  Artificial

<220>
<223>  Miscellaneous construct

<400>  403

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

Glu Arg Ala Thr Leu Ser Cys Ser Ala Ser Ser Ser Val Ser Tyr Ile
            20                  25                  30

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

Ser Thr Ser Glu Leu Ala Ser Gly Ile Pro Ala Arg Phe Ser Gly Ser
50 55 60

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

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

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

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

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

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

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

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

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

Asn Arg Gly Glu Cys
210

<210> 404
<211> 1332
<212> DNA
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 404
caggtgcagc tggtgcagtc tggggctgag gtgaagaagc ctgggtcctc agtgaaggtt 60

tcctgcaagg catctggata cacattcact gactactttc tgaactgggt gcgacaggcc 120

cctggacaag ggcttgagtg gatgggaact atttatcctt accatgatgg tactacctac 180

tctcagaagt tcaagggcag agtcaccatt accgcggaca aatccacgag cacagcctac 240

atggagctga gcagcctgag atctgaggac acggccgtgt attactgtgc gagagaggaa 300

gaggatggtc agttcgacta ctggggccaa ggaaccacgg tcaccgtctc ctcagcctcc 360

accaagggcc catcggtctt cccgctagcg ccctgctcca ggagcacctc cgagagcaca 420

gccgccctgg gctgcctggt caaggactac ttccccgaac cggtgacggt gtcgtggaac 480

tcaggcgccc tgaccagcgg cgtgcacacc ttcccggctg tcctacagtc ctcaggactc 540

tactccctca gcagcgtggt gaccgtgccc tccagcagct tgggcacgaa gacctacacc 600

tgcaacgtag atcacaagcc cagcaacacc aaggtggaca agagagttga gtccaaatat 660

ggtcccccat gcccaccctg cccagcacct gagttcctgg ggggaccatc agtcttcctg 720

ttcccccaa aacccaagga cactctcatg atctcccgga cccctgaggt cacgtgcgtg 780

gtggtggacg tgagccagga agaccccgag gtccagttca actggtacgt ggatggcgtg 840

gaggtgcata atgccaagac aaagccgcgg gaggagcagt tcaacagcac gtaccgtgtg 900

gtcagcgtcc tcaccgtcct gcaccaggac tggctgaacg gcaaggagta caagtgcaag 960

gtctccaaca aaggcctccc gtcctccatc gagaaaacca tctccaaagc caaagggcag 1020

ccccgagagc cacaggtgta caccctgccc ccatcccagg aggagatgac caagaaccag 1080

gtcagcctga cctgcctggt caaaggcttc taccccagcg acatcgccgt ggagtgggaa 1140

agcaatgggc agccggagaa caactacaag accacgcctc ccgtgctgga ctccgacggc 1200

tccttcttcc tctacagcag gctaaccgtg gacaagagca ggtggcagga ggggaatgtc 1260

ttctcatgct ccgtgatgca tgaggctctg cacaaccact acacacagaa gagcctctcc 1320

ctgtctctgg gt 1332

<210> 405
<211> 1332
<212> DNA
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 405
caggttcagc tggtgcagtc tggggctgag gtgaagaagc ctggggcctc agtgaaggtc 60

tcctgcaagg tttccggctt ccccattaag gacacctttc agcactgggt gcgacaggct 120

cctggaaaag ggcttgagtg gatgggatgg agcgatcctg agatcggtga tactgaatat 180

gcctcgaagt tccagggcag agtcaccatg accgaggaca catctacaga cacagcctac 240

atggagctga gcagcctgag atctgaggac acggccgtgt attactgtgc aacaggcgac 300

accacataca agtttgactt ctgggggcaa gggaccacgg tcaccgtctc ctcagcctcc 360

accaagggcc catcggtctt cccgctagcg ccctgctcca ggagcacctc cgagagcaca 420

gccgccctgg gctgcctggt caaggactac ttccccgaac cggtgacggt gtcgtggaac 480

tcaggcgccc tgaccagcgg cgtgcacacc ttcccggctg tcctacagtc ctcaggactc 540

tactccctca gcagcgtggt gaccgtgccc tccagcagct tgggcacgaa gacctacacc 600

tgcaacgtag atcacaagcc cagcaacacc aaggtggaca agagagttga gtccaaatat 660

ggtcccccat gcccaccctg cccagcacct gagttcctgg ggggaccatc agtcttcctg 720

ttcccccaa aacccaagga cactctcatg atctcccgga cccctgaggt cacgtgcgtg 780

gtggtggacg tgagccagga agaccccgag gtccagttca actggtacgt ggatggcgtg 840

gaggtgcata atgccaagac aaagccgcgg gaggagcagt tcaacagcac gtaccgtgtg 900

gtcagcgtcc tcaccgtcct gcaccaggac tggctgaacg gcaaggagta caagtgcaag 960

gtctccaaca aaggcctccc gtcctccatc gagaaaacca tctccaaagc caaagggcag 1020

ccccgagagc cacaggtgta caccctgccc ccatcccagg aggagatgac caagaaccag 1080

gtcagcctga cctgcctggt caaaggcttc taccccagcg acatcgccgt ggagtgggaa 1140

agcaatgggc agccggagaa caactacaag accacgcctc ccgtgctgga ctccgacggc 1200

tccttcttcc tctacagcag gctaaccgtg gacaagagca ggtggcagga ggggaatgtc 1260

ttctcatgct ccgtgatgca tgaggctctg cacaaccact acacacagaa gagcctctcc 1320

ctgtctctgg gt 1332

<210> 406
<211> 1350
<212> DNA
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 406
gaggtgcagc tggtgcagtc tggagcagag gtgaaaaagc ccggggagtc tctgaagatc 60

tcctgtaagg gttctgactt cgagattaaa gactactata tacattgggt gcgccagatg 120

cccgggaaag gcctggagtg gatggggcag attgatgctg aggatggtga aactgaatat 180

gccccgaggt tccagggcca ggtcaccatc tcagccgaca agtccatcag caccgcctac 240

ctgcagtgga gcagcctgaa ggcctcggac accgccatgt attactgtgc gagagagggt 300

tattactacg atgggcgcga ctactggtac ttcgatgtct ggggccaagg gaccacggtc 360

accgtctcct cagcctccac caagggccca tcggtcttcc cgctagcgcc ctgctccagg 420

agcacctccg agagcacagc cgccctgggc tgcctggtca aggactactt ccccgaaccg 480

gtgacggtgt cgtggaactc aggcgccctg accagcggcg tgcacacctt cccggctgtc 540

ctacagtcct caggactcta ctccctcagc agcgtggtga ccgtgccctc cagcagcttg 600

ggcacgaaga cctacacctg caacgtagat cacaagccca gcaacaccaa ggtggacaag 660

agagttgagt ccaaatatgg tccccatgc ccaccctgcc cagcacctga gttcctgggg 720

ggaccatcag tcttcctgtt cccccaaaa cccaaggaca ctctcatgat ctcccggacc 780

cctgaggtca cgtgcgtggt ggtggacgtg agccaggaag accccgaggt ccagttcaac 840

tggtacgtgg atggcgtgga ggtgcataat gccaagacaa agccgcggga ggagcagttc 900

aacagcacgt accgtgtggt cagcgtcctc accgtcctgc accaggactg gctgaacggc 960

aaggagtaca agtgcaaggt ctccaacaaa ggcctcccgt cctccatcga gaaaaccatc 1020

tccaaagcca aagggcagcc ccgagagcca caggtgtaca ccctgccccc atcccaggag 1080

gagatgacca agaaccaggt cagcctgacc tgcctggtca aaggcttcta ccccagcgac 1140

atcgccgtgg agtgggaaag caatgggcag ccggagaaca actacaagac cacgcctccc 1200

gtgctggact ccgacggctc cttcttcctc tacagcaggc taaccgtgga caagagcagg 1260

tggcaggagg ggaatgtctt ctcatgctcc gtgatgcatg aggctctgca caaccactac 1320

acacagaaga gcctctccct gtctctgggt 1350

<210> 407
<211> 642
<212> DNA
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 407
gacatccaga tgacccagtc tccatcctct ctgtctgcat ctgtaggaga cagagtcacc 60

atcacttgca gtgcaagtca gggcattcag tggtatttaa actggtatca gcagaaacca 120

gggaaagccc ctaagctcct gatctattac acatcaagtt tacactcagg ggtcccatca 180

aggttcagtg gcagtggatc tgggacagat ttcactctca ccatcagcag tctgcaacct 240

gaagattttg caacttacta ctgtcagcag catagtaaac ttcctcggac gttcggcgga 300

gggaccaagg tggagatcaa acggactgtg 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

ctgagcaaag cagactacga gaaacacaaa gtctacgcct gcgaagtcac ccatcagggc 600

ctgagctcgc ccgtcacaaa gagcttcaac aggggagagt gc 642

<210> 408
<211> 642
<212> DNA
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 408
gacatccaga tgacccagtc tccatcctcc ctgtctgcat ctgtaggaga cagagtcacc 60

atcacttgca aggccagtca ggatgtgcac actgctgtag cctggtatca gcagaaacca 120

gggaaagccc ctaagctcct gatctattgg gcatccaccc ggtggactgg agtcccatca 180

aggttcagtg gcagtggatc tgggacagat ttcactctca ccatcagcag tctgcaacct 240

gaagattttg caacttacta ctgtcagcaa tatagcgatt atccgtggac gttcggcgga 300

gggaccaagg tggagatcaa acggactgtg 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

ctgagcaaag cagactacga gaaacacaaa gtctacgcct gcgaagtcac ccatcagggc 600

ctgagctcgc ccgtcacaaa gagcttcaac aggggagagt gc 642

<210> 409
<211> 639
<212> DNA
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 409
gaaattgtgt tgacacagtc tccagccacc ctgtctttgt ctccagggga aagagccacc 60

ctctcctgca gtgccagctc aagtgtaagt tacatccact ggtaccaaca gaaacctggc 120

caggctccca ggctcctcat ctatagcaca tccgagctgg cttctggcat cccagccagg 180

ttcagtggca gtgggtctgg gacagacttc actctcacca tcagcagcct agagcctgaa 240

gattttgcag tttattactg tcagcagctt agtcatctcc cgctcacgtt cggcggaggg 300

accaaggtgg agatcaaacg aactgtggct gcaccatctg tcttcatctt cccgccatct 360

gatgagcagt tgaaatctgg aactgcctct gttgtgtgcc tgctgaataa cttctatccc 420

agagaggcca aagtacagtg gaaggtggat aacgccctcc aatcgggtaa ctcccaggag 480

agtgtcacag agcaggacag caaggacagc acctacagcc tcagcagcac cctgacgctg 540

agcaaagcag actacgagaa acacaaagtc tacgcctgcg aagtcaccca tcagggcctg 600

agctcgcccg tcacaaagag cttcaacagg ggagagtgc 639

<210> 410
<211> 118
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 410

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

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

Phe Leu Asn Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Thr Ile Tyr Pro Tyr His Asp Gly Thr Thr Tyr Ser Gln Lys Phe
50 55 60

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

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys

85 90 95

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

Thr Val Thr Val Ser Ser
115

<210> 411
<211> 118
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 411

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

Ser Val Lys Val Ser Cys Lys Val Ser Gly Phe Pro Ile Lys Asp Thr
20 25 30

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

Gly Trp Ser Asp Pro Glu Ile Gly Asp Thr Glu Tyr Ala Ser Lys Phe
50 55 60

Gln Gly Arg Val Thr Met Thr Glu Asp Thr Ser Thr Asp Thr Ala Tyr
65 70 75 80

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

Ala Thr Gly Asp Thr Thr Tyr Lys Phe Asp Phe Trp Gly Gln Gly Thr
100 105 110

Thr Val Thr Val Ser Ser
115

<210> 412
<211> 124
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 412

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Asp Phe Glu Ile Lys Asp Tyr

```
            20                  25                  30

Tyr Ile His Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met
        35                  40                  45

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

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

Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Met Tyr Tyr Cys
                85                  90                  95

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

Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
        115                 120


<210>  413
<211>  107
<212>  PRT
<213>  Artificial

<220>
<223>  Miscellaneous construct

<400>  413

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 Ser Ala Ser Gln Gly Ile Gln Trp Tyr
            20                  25                  30

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

Tyr Tyr Thr Ser Ser Leu His Ser 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 Gln Gln His Ser Lys Leu Pro Arg
                85                  90                  95

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


<210>  414
<211>  107
<212>  PRT
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<213> Artificial

<220>
<223> Miscellaneous construct

<400> 414

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 Asp Val His Thr Ala
20 25 30

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

Tyr Trp Ala Ser Thr Arg Trp 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 Gln Gln Tyr Ser Asp Tyr Pro Trp
85 90 95

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

<210> 415
<211> 106
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 415

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

Glu Arg Ala Thr Leu Ser Cys Ser Ala Ser Ser Ser Val Ser Tyr Ile
20 25 30

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

Ser Thr Ser Glu Leu Ala Ser Gly Ile Pro Ala Arg Phe Ser Gly Ser
50 55 60

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

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

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

<210> 416
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 416

Gly Tyr Thr Phe Thr Asp Tyr Phe Leu Asn
1 5 10

<210> 417
<211> 17
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 417

Thr Ile Tyr Pro Tyr His Asp Gly Thr Thr Tyr Ser Gln Lys Phe Lys
1 5 10 15

Gly

<210> 418
<211> 9
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 418

Glu Glu Glu Asp Gly Gln Phe Asp Tyr
1 5

<210> 419
<211> 11
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 419

Ser Ala Ser Gln Gly Ile Gln Trp Tyr Leu Asn
1 5 10

<210> 420
<211> 7
<212> PRT

<213> Artificial

<220>
<223> Miscellaneous construct

<400> 420

Tyr Thr Ser Ser Leu His Ser
1 5

<210> 421
<211> 9
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 421

Gln Gln His Ser Lys Leu Pro Arg Thr
1 5

<210> 422
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 422

Gly Phe Pro Ile Lys Asp Thr Phe Gln His
1 5 10

<210> 423
<211> 17
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 423

Trp Ser Asp Pro Glu Ile Gly Asp Thr Glu Tyr Ala Ser Lys Phe Gln
1 5 10 15

Gly

<210> 424
<211> 9
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 424

Gly Asp Thr Thr Tyr Lys Phe Asp Phe

1 5

<210> 425
<211> 11
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 425

Lys Ala Ser Gln Asp Val His Thr Ala Val Ala
1 5 10

<210> 426
<211> 7
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 426

Trp Ala Ser Thr Arg Trp Thr
1 5

<210> 427
<211> 9
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 427

Gln Gln Tyr Ser Asp Tyr Pro Trp Thr
1 5

<210> 428
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 428

Asp Phe Glu Ile Lys Asp Tyr Tyr Ile His
1 5 10

<210> 429
<211> 17
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 429

Gln Ile Asp Ala Glu Asp Gly Glu Thr Glu Tyr Ala Pro Arg Phe Gln
1 5 10 15

Gly

<210> 430
<211> 17
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 430

Gln Ile Asp Ala Glu Asp Gly Glu Thr Glu Tyr Ala Pro Arg Phe Gln
1 5 10 15

Gly

<210> 431
<211> 17
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 431

Gln Ile Asp Ala Glu Asp Gly Glu Thr Glu Tyr Ala Pro Arg Phe Gln
1 5 10 15

Gly

<210> 432
<211> 7
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 432

Ser Thr Ser Glu Leu Ala Ser
1 5

<210> 433
<211> 9
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 433

Gln Gln Leu Ser His Leu Pro Leu Thr
1 5

<210> 434
<211> 322
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 434

Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu
1 5 10 15

Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
20 25 30

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
35 40 45

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

Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn
65 70 75 80

Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser
85 90 95

Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Leu Gly
100 105 110

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
115 120 125

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln
130 135 140

Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val
145 150 155 160

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr
165 170 175

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
180 185 190

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile
195 200 205

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val

```
    210                 215                 220

Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser
225                 230                 235                 240

Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
                245                 250                 255

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
            260                 265                 270

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val
        275                 280                 285

Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met
    290                 295                 300

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
305                 310                 315                 320

Leu Gly
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<210> 435
<211> 970
<212> DNA
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 435
ggcccatcgg tcttcccgct agcgccctgc tccaggagca cctccgagag cacagccgcc 60

ctgggctgcc tggtcaagga ctacttcccc gaaccggtga cggtgtcgtg gaactcaggc 120

gccctgacca gcggcgtgca caccttcccg gctgtcctac agtcctcagg actctactcc 180

gctcagcagc gtggtgaccg tgccctccag cagcttgggc acgaagacct acacctgcaa 240

cgtagatcac aagcccagca acaccaaggt ggacaagaga gttgagtcca aatatggtcc 300

cccatgccca ccctgcccag cacctgagtt cctgggggga ccatcagtct tcctgttccc 360

cccaaaaccc aaggacactc tcatgatctc ccggacccct gaggtcacgt gcgtggtggt 420

ggacgtgagc caggaagacc ccgaggtcca gttcaactgg tacgtggatg gcgtggaggt 480

gcataatgcc aagacaaagc cgcgggagga gcagttcaac agcacgtacc gtgtggtcag 540

cgtcctcacc gtcctgcacc aggactggct gaacggcaag gagtacaagt gcaaggtctc 600

caacaaaggc ctcccgtcct ccatcgagaa aaccatctcc aaagccaaag ggcagccccg 660

agagccacag gtgtacaccc tgcccccatc ccaggaggag atgaccaaga accaggtcag 720

cctgacctgc ctggtcaaag gcttctaccc cagcgacatc gccgtggagt gggaaagcaa 780

tgggcagccg gagaacaact acaagaccac gcctcccgtg ctggactccg acggctcctt 840

cttcctctac agcaggctaa ccgtggacaa gagcaggtgg caggagggga atgtcttctc 900

atgctccgtg atgcatgagg ctctgcacaa ccactacaca cagaagagcc tctccctgtc 960

tctgggttga 970

<210> 436
<211> 444
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 436

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

Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Ile Lys Ser Thr
20 25 30

Phe Met His Trp Val Lys Gln Arg Pro Asp Gln Gly Leu Glu Trp Ile
35 40 45

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

Gln Gly Lys Ala Thr Met Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr
65 70 75 80

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

Thr Thr Gly Glu Ser Asn Tyr Asp Phe Asp Phe Trp Gly Leu Gly Thr
100 105 110

Thr Leu Thr Val Ser Ser Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro
115 120 125

Leu Ala Pro Gly Thr Ala Leu Lys Ser Asn Ser Met Val Thr Leu Gly
130 135 140

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

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

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

Trp Pro Ser Gln Thr Val Thr Cys Asn Val Ala His Pro Ala Ser Ser
195 200 205

```
Thr Lys Val Asp Lys Lys Ile Val Pro Arg Asn Cys Gly Gly Asp Cys
    210                 215                 220

Lys Pro Cys Ile Cys Thr Gly Ser Glu Val Ser Ser Val Phe Ile Phe
225                 230                 235                 240

Pro Pro Lys Pro Lys Asp Val Leu Thr Ile Thr Leu Thr Pro Lys Val
                245                 250                 255

Thr Cys Val Val Val Asp Ile Ser Gln Asp Asp Pro Glu Val His Phe
            260                 265                 270

Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Gln Thr Arg Pro
        275                 280                 285

Pro Glu Glu Gln Phe Asn Ser Thr Phe Arg Ser Val Ser Glu Leu Pro
    290                 295                 300

Ile Leu His Gln Asp Trp Leu Asn Gly Arg Thr Phe Arg Cys Lys Val
305                 310                 315                 320

Thr Ser Ala Ala Phe Pro Ser Pro Ile Glu Lys Thr Ile Ser Lys Pro
                325                 330                 335

Glu Gly Arg Thr Gln Val Pro His Val Tyr Thr Met Ser Pro Thr Lys
            340                 345                 350

Glu Glu Met Thr Gln Asn Glu Val Ser Ile Thr Cys Met Val Lys Gly
        355                 360                 365

Phe Tyr Pro Pro Asp Ile Tyr Val Glu Trp Gln Met Asn Gly Gln Pro
    370                 375                 380

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

Tyr Phe Leu Tyr Ser Lys Leu Asn Val Lys Lys Glu Lys Trp Gln Gln
                405                 410                 415

Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His Asn His
            420                 425                 430

His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
        435                 440
```

<210> 437
<211> 214
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 437

Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly
1 5 10 15

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

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

Tyr Trp Ala Ser Thr Arg His Thr Gly Val Pro Asp Arg Phe Thr Gly
50 55 60

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

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

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

Pro Thr Val Ser Ile Phe Pro Pro Ser Thr Glu Gln Leu Ala Thr Gly
115 120 125

Gly Ala Ser Val Val Cys Leu Met Asn Asn Phe Tyr Pro Arg Asp Ile
130 135 140

Ser Val Lys Trp Lys Ile Asp Gly Thr Glu Arg Arg Asp Gly Val Leu
145 150 155 160

Asp Ser Val Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser
165 170 175

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

Thr Cys Glu Val Val His Lys Thr Ser Ser Ser Pro Val Val Lys Ser
195 200 205

Phe Asn Arg Asn Glu Cys
210

<210> 438
<211> 450
<212> PRT
<213> Artificial

<220>
<223> Miscellaneous construct

<400> 438

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

Ser Val Lys Leu Ser Cys Thr Ala Ser Asp Phe Asn Ile Lys Asp Tyr
            20                  25                  30

Tyr Ile His Trp Val Lys Gln Arg Thr Ala Gln Gly Leu Glu Trp Ile
        35                  40                  45

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

Gln Gly Lys Ala Thr Ile Ile Ala Asp Thr Ser Ser Asn Thr Ala Tyr
65                  70                  75                  80

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

Ala Arg Glu Gly Tyr Tyr Tyr Asp Ser Arg Asp Tyr Trp Tyr Phe Asp
            100                 105                 110

Val Trp Gly Thr Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr Thr
        115                 120                 125

Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Thr Ala Leu Lys Ser Asn
    130                 135                 140

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

Val Thr Val Thr Trp Asn Ser Gly Ala Leu Ser Ser Gly Val His Thr
                165                 170                 175

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

Thr Val Pro Ser Ser Thr Trp Pro Ser Gln Thr Val Thr Cys Asn Val
        195                 200                 205

Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg
    210                 215                 220

Asn Cys Gly Gly Asp Cys Lys Pro Cys Ile Cys Thr Gly Ser Glu Val
225                 230                 235                 240

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

Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Gln Asp
            260                 265                 270
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Asp Pro Glu Val His Phe Ser Trp Phe Val Asp Asp Val Glu Val His
        275                 280                 285

Thr Ala Gln Thr Arg Pro Pro Glu Glu Gln Phe Asn Ser Thr Phe Arg
    290                 295                 300

Ser Val Ser Glu Leu Pro Ile Leu His Gln Asp Trp Leu Asn Gly Arg
305                 310                 315                 320

Thr Phe Arg Cys Lys Val Thr Ser Ala Ala Phe Pro Ser Pro Ile Glu
                325                 330                 335

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

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

Thr Cys Met Val Lys Gly Phe Tyr Pro Pro Asp Ile Tyr Val Glu Trp
    370                 375                 380

Gln Met Asn Gly Gln Pro Gln Glu Asn Tyr Lys Asn Thr Pro Pro Thr
385                 390                 395                 400

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

Lys Glu Lys Trp Gln Gln Gly Asn Thr Phe Thr Cys Ser Val Leu His
            420                 425                 430

Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro
        435                 440                 445

Gly Lys
    450


<210>  439
<211>  213
<212>  PRT
<213>  Artificial

<220>
<223>  Miscellaneous construct

<400>  439

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

Glu Lys Val Thr Met Thr Cys Ser Ala Ser Ser Ser Val Ser Tyr Met
            20                  25                  30

His Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys Leu Trp Ile Tyr
```

```
        35                  40                  45

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

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu Ala Glu
65                  70                  75                  80

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Asn Pro Leu Thr
                85                  90                  95

Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg Ala Asp Ala Ala Pro
            100                 105                 110

Thr Val Ser Ile Phe Pro Pro Ser Thr Glu Gln Leu Ala Thr Gly Gly
        115                 120                 125

Ala Ser Val Val Cys Leu Met Asn Asn Phe Tyr Pro Arg Asp Ile Ser
    130                 135                 140

Val Lys Trp Lys Ile Asp Gly Thr Glu Arg Arg Asp Gly Val Leu Asp
145                 150                 155                 160

Ser Val Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser Ser
                165                 170                 175

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

Cys Glu Val Val His Lys Thr Ser Ser Ser Pro Val Val Lys Ser Phe
        195                 200                 205

Asn Arg Asn Glu Cys
    210


<210>  440
<211>  10
<212>  PRT
<213>  Homo sapiens

<400>  440

Gly Phe Thr Phe Ser Ser Tyr Val Met Asn
1               5                   10


<210>  441
<211>  10
<212>  PRT
<213>  Homo sapiens

<400>  441

Gly Phe Thr Phe Arg Ser His Trp Leu Ser
1               5                   10
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<210> 442
<211> 10
<212> PRT
<213> Homo sapiens

<400> 442

Gly Phe Thr Phe Ser Ser Tyr Val Met Asn
1 5 10

<210> 443
<211> 10
<212> PRT
<213> Homo sapiens

<400> 443

Gly Phe Thr Phe Arg Ser His Trp Leu Ser
1 5 10

<210> 444
<211> 10
<212> PRT
<213> Homo sapiens

<400> 444

Gly Phe Thr Phe Arg Ser His Trp Leu Ser
1 5 10

<210> 445
<211> 10
<212> PRT
<213> Homo sapiens

<400> 445

Gly Phe Thr Phe Arg Ser His Trp Leu Ser
1 5 10

<210> 446
<211> 10
<212> PRT
<213> Homo sapiens

<400> 446

Gly Phe Thr Phe Arg Ser His Trp Leu Ser
1 5 10

<210> 447
<211> 10
<212> PRT
<213> Homo sapiens

<400> 447

Gly Phe Thr Phe Arg Ser His Trp Leu Ser
1 5 10

<210> 448

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

<400> 448

Gly Phe Thr Phe Arg Ser His Trp Leu Ser
1 5 10

<210> 449
<211> 10
<212> PRT
<213> Homo sapiens

<400> 449

Gly Phe Thr Phe Arg Ser His Trp Leu Ser
1 5 10

<210> 450
<211> 10
<212> PRT
<213> Homo sapiens

<400> 450

Gly Phe Thr Phe Arg Ser His Trp Leu Ser
1 5 10

<210> 451
<211> 20
<212> PRT
<213> Homo sapiens

<400> 451

Trp Val Ser Phe Ile Ser Gly Asp Ser Ser Asn Thr Tyr Tyr Ala Asp
1 5 10 15

Ser Val Lys Gly
20

<210> 452
<211> 20
<212> PRT
<213> Homo sapiens

<400> 452

Trp Val Ser Asn Ile Asn Tyr Asp Gly Ser Ser Thr Tyr Tyr Ala Asp
1 5 10 15

Ser Val Lys Gly
20

<210> 453
<211> 20
<212> PRT
<213> Homo sapiens

<400> 453

Trp Val Ser Phe Ile Ser Gly Asp Ser Ser Asn Thr Tyr Tyr Ala Asp
1 5 10 15

Ser Val Lys Gly
20

<210> 454
<211> 20
<212> PRT
<213> Homo sapiens

<400> 454

Trp Val Ser Asn Ile Asn Tyr Asp Gly Ser Ser Thr Tyr Tyr Ala Asp
1 5 10 15

Ser Val Lys Gly
20

<210> 455
<211> 19
<212> PRT
<213> Homo sapiens

<400> 455

Trp Val Ser Val Thr Gly Val His Gly Asp Thr Tyr Tyr Ala Asp Ser
1 5 10 15

Val Lys Gly

<210> 456
<211> 19
<212> PRT
<213> Homo sapiens

<400> 456

Trp Val Ser Val Ile Gly Asn Trp Gly Asp Thr Tyr Tyr Ala Asp Ser
1 5 10 15

Val Lys Gly

<210> 457
<211> 19
<212> PRT
<213> Homo sapiens

<400> 457

Trp Val Ser Val Thr Thr His Gln Gly Tyr Thr Tyr Tyr Ala Asp Ser
1 5 10 15

Val Lys Gly

<210> 458
<211> 19
<212> PRT
<213> Homo sapiens

<400> 458

Trp Val Ser Ala Thr Asn Arg Tyr Gly Tyr Thr Tyr Tyr Ala Asp Ser
1 5 10 15

Val Lys Gly

<210> 459
<211> 20
<212> PRT
<213> Homo sapiens

<400> 459

Trp Val Ser Asn Ile Asn Tyr Asp Gly Ser Ser Thr Tyr Tyr Ala Asp
1 5 10 15

Ser Val Lys Gly
20

<210> 460
<211> 19
<212> PRT
<213> Homo sapiens

<400> 460

Trp Val Ser Val Ile Thr Pro Tyr Gly Asp Thr Tyr Tyr Ala Asp Ser
1 5 10 15

Val Lys Gly

<210> 461
<211> 19
<212> PRT
<213> Homo sapiens

<400> 461

Trp Val Ser Val Ile Thr Pro Tyr Gly Asp Thr Tyr Tyr Ala Asp Ser
1 5 10 15

Val Lys Gly

<210> 462
<211> 15
<212> PRT
<213> Homo sapiens

<400> 462

Thr Phe Met His Gly His Leu Gly Gly Gly Leu Ser Met Asp Phe
1 5 10 15

<210> 463
<211> 8
<212> PRT
<213> Homo sapiens

<400> 463

Asp Thr Tyr Leu His Phe Asp Tyr
1 5

<210> 464
<211> 15
<212> PRT
<213> Homo sapiens

<400> 464

Thr Phe Met His Gly His Leu Gly Gly Gly Leu Ser Met Asp Phe
1 5 10 15

<210> 465
<211> 8
<212> PRT
<213> Homo sapiens

<400> 465

Asp Thr Tyr Leu His Phe Asp Tyr
1 5

<210> 466
<211> 8
<212> PRT
<213> Homo sapiens

<400> 466

Asp Thr Tyr Leu His Phe Asp Tyr
1 5

<210> 467
<211> 8
<212> PRT
<213> Homo sapiens

<400> 467

Asp Thr Tyr Leu His Phe Asp Tyr
1 5

<210> 468
<211> 8
<212> PRT
<213> Homo sapiens

<400> 468

Asp Thr Tyr Leu His Phe Asp Tyr
1 5

<210> 469
<211> 8
<212> PRT
<213> Homo sapiens

<400> 469

Asp Thr Tyr Leu His Phe Asp Tyr
1   5

<210> 470
<211> 8
<212> PRT
<213> Homo sapiens

<400> 470

Asp Thr Tyr Leu His Phe Asp Tyr
1   5

<210> 471
<211> 8
<212> PRT
<213> Homo sapiens

<400> 471

Asp Thr Tyr Leu His Phe Asp Tyr
1   5

<210> 472
<211> 8
<212> PRT
<213> Homo sapiens

<400> 472

Asp Thr Tyr Leu His Phe Asp Tyr
1   5

<210> 473
<211> 11
<212> PRT
<213> Homo sapiens

<400> 473

Ser Gly Asp Asn Ile Gly Ser Phe Tyr Val His
1   5   10

<210> 474
<211> 20
<212> PRT
<213> Homo sapiens

<400> 474

Trp Val Ser Asn Ile Asn Tyr Asp Gly Ser Ser Thr Tyr Tyr Ala Asp
1   5   10   15

Ser Val Lys Gly
            20

<210> 475
<211> 20
<212> PRT
<213> Homo sapiens

<400> 475

Trp Val Ser Asn Ile Asn Tyr Asp Gly Ser Ser Thr Tyr Tyr Ala Asp
1   5   10   15

Ser Val Lys Gly
            20

<210> 476
<211> 11
<212> PRT
<213> Homo sapiens

<400> 476

Ser Gly Asp Asn Ile Gly Ser Phe Tyr Val His
1   5   10

<210> 477
<211> 14
<212> PRT
<213> Homo sapiens

<400> 477

Thr Gly Thr Ser Ser Asp Val Gly Asp Ile Asn Asp Val Ser
1   5   10

<210> 478
<211> 14
<212> PRT
<213> Homo sapiens

<400> 478

Thr Gly Thr Ser Ser Asp Val Gly Asp Ile Asn Asp Val Ser
1   5   10

<210> 479
<211> 14
<212> PRT
<213> Homo sapiens

<400> 479

Thr Gly Thr Ser Ser Asp Val Gly Asp Ile Asn Asp Val Ser
1   5   10

<210> 480
<211> 14
<212> PRT
<213> Homo sapiens

<400> 480

Thr Gly Thr Ser Ser Asp Val Gly Asp Ile Asn Asp Val Ser
1 5 10

<210> 481
<211> 14
<212> PRT
<213> Homo sapiens

<400> 481

Thr Gly Thr Ser Ser Asp Val Gly Asp Ile Asn Asp Val Ser
1 5 10

<210> 482
<211> 14
<212> PRT
<213> Homo sapiens

<400> 482

Thr Gly Thr Ser Ser Asp Val Gly Asp Ile Asn Asp Val Ser
1 5 10

<210> 483
<211> 14
<212> PRT
<213> Homo sapiens

<400> 483

Thr Gly Thr Ser Ser Asp Val Gly Asp Ile Asn Asp Val Ser
1 5 10

<210> 484
<211> 11
<212> PRT
<213> Homo sapiens

<400> 484

Leu Val Ile Tyr Asp Asp Asn Asn Arg Pro Ser
1 5 10

<210> 485
<211> 11
<212> PRT
<213> Homo sapiens

<400> 485

Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser
1 5 10

<210> 486
<211> 11
<212> PRT
<213> Homo sapiens

<400> 486

Leu Val Ile Tyr Asp Asp Asn Asn Arg Pro Ser
1 5 10

<210> 487
<211> 11
<212> PRT
<213> Homo sapiens

<400> 487

Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser
1 5 10

<210> 488
<211> 11
<212> PRT
<213> Homo sapiens

<400> 488

Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser
1 5 10

<210> 489
<211> 11
<212> PRT
<213> Homo sapiens

<400> 489

Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser
1 5 10

<210> 490
<211> 11
<212> PRT
<213> Homo sapiens

<400> 490

Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser
1 5 10

<210> 491
<211> 11
<212> PRT
<213> Homo sapiens

<400> 491

Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser
1 5 10

<210> 492
<211> 11
<212> PRT
<213> Homo sapiens

<400> 492

Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser
1 5 10

<210> 493
<211> 11
<212> PRT
<213> Homo sapiens

<400> 493

Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser
1   5   10

<210> 494
<211> 11
<212> PRT
<213> Homo sapiens

<400> 494

Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser
1   5   10

<210> 495
<211> 10
<212> PRT
<213> Homo sapiens

<400> 495

Gly Ser Trp Ala Gly Ser Ser Gly Ser Tyr
1   5   10

<210> 496
<211> 10
<212> PRT
<213> Homo sapiens

<400> 496

Ser Ser Tyr Gly Glu Ser Leu Thr Ser Tyr
1   5   10

<210> 497
<211> 10
<212> PRT
<213> Homo sapiens

<400> 497

Ala Ser Trp Thr Gly Val Glu Pro Asp Tyr
1   5   10

<210> 498
<211> 10
<212> PRT
<213> Homo sapiens

<400> 498

Gln Ser Tyr Ala Gly Ser Tyr Leu Ser Glu
1   5   10

<210> 499
<211> 10
<212> PRT
<213> Homo sapiens

<400> 499

Ser Ser Tyr Gly Glu Ser Leu Thr Ser Tyr
1 5 10

<210> 500
<211> 10
<212> PRT
<213> Homo sapiens

<400> 500

Ser Ser Tyr Gly Glu Ser Leu Thr Ser Tyr
1 5 10

<210> 501
<211> 10
<212> PRT
<213> Homo sapiens

<400> 501

Ser Ser Tyr Gly Glu Ser Leu Thr Ser Tyr
1 5 10

<210> 502
<211> 10
<212> PRT
<213> Homo sapiens

<400> 502

Ser Ser Tyr Gly Glu Ser Leu Thr Ser Tyr
1 5 10

<210> 503
<211> 10
<212> PRT
<213> Homo sapiens

<400> 503

Ser Thr Tyr Asp Gly Pro Gly Leu Ser Glu
1 5 10

<210> 504
<211> 10
<212> PRT
<213> Homo sapiens

<400> 504

Ser Ser Tyr Gly Glu Ser Leu Thr Ser Tyr
1 5 10

<210> 505
<211> 10

<212> PRT
<213> Homo sapiens

<400> 505

Ser Ser Tyr Gly Glu Ser Leu Thr Ser Tyr
1 5 10

<210> 506
<211> 124
<212> PRT
<213> Homo sapiens

<400> 506

Gln 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 Ser Tyr
20 25 30

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

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

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Thr Phe Met His Gly His Leu Gly Gly Gly Leu Ser Met Asp
100 105 110

Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 507
<211> 117
<212> PRT
<213> Homo sapiens

<400> 507

Gln 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 Ser His
20 25 30

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

Ser Asn Ile Asn Tyr Asp Gly Ser Ser Thr Tyr Tyr Ala Asp Ser Val

```
    50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly Thr Leu
            100                 105                 110

Val Thr Val Ser Ser
        115
```

<210> 508
<211> 124
<212> PRT
<213> Homo sapiens

<400> 508

```
Gln 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 Ser Tyr
            20                  25                  30

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

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

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Thr Phe Met His Gly His Leu Gly Gly Gly Leu Ser Met Asp
            100                 105                 110

Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 509
<211> 117
<212> PRT
<213> Homo sapiens

<400> 509

```
Gln 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 Ser His
            20                  25                  30

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

Ser Asn Ile Asn Tyr Asp Gly Ser Ser Thr Tyr Tyr Ala Asp Ser Val
    50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly Thr Leu
            100                 105                 110

Val Thr Val Ser Ser
        115


<210>  510
<211>  116
<212>  PRT
<213>  Homo sapiens

<400>  510

Gln 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 Ser His
            20                  25                  30

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

Ser Val Thr Gly Val His Gly Asp Thr Tyr Tyr Ala Asp Ser Val Lys
    50                  55                  60

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

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

Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val
            100                 105                 110

Thr Val Ser Ser
        115
```

<210> 511
<211> 116
<212> PRT
<213> Homo sapiens

<400> 511

Gln 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 Ser His
20 25 30

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

Ser Val Ile Gly Asn Trp Gly Asp Thr Tyr Tyr Ala Asp Ser Val Lys
50 55 60

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

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

Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val
100 105 110

Thr Val Ser Ser
115

<210> 512
<211> 116
<212> PRT
<213> Homo sapiens

<400> 512

Gln 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 Ser His
20 25 30

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

Ser Val Thr Thr His Gln Gly Tyr Thr Tyr Tyr Ala Asp Ser Val Lys
50 55 60

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

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

```
Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val
            100                 105                 110


Thr Val Ser Ser
        115


<210>  513
<211>  116
<212>  PRT
<213>  Homo sapiens

<400>  513

Gln 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 Ser His
            20                  25                  30


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


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


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


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


Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val
            100                 105                 110


Thr Val Ser Ser
        115


<210>  514
<211>  117
<212>  PRT
<213>  Homo sapiens

<400>  514

Gln 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 Ser His
            20                  25                  30


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

```
Ser Asn Ile Asn Tyr Asp Gly Ser Ser Thr Tyr Tyr Ala Asp Ser Val
    50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly Thr Leu
            100                 105                 110

Val Thr Val Ser Ser
        115
```

<210> 515
<211> 116
<212> PRT
<213> Homo sapiens

<400> 515

```
Gln 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 Ser His
            20                  25                  30

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

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

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

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

Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val
            100                 105                 110

Thr Val Ser Ser
        115
```

<210> 516
<211> 116
<212> PRT
<213> Homo sapiens

<400> 516

```
Gln 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 Ser His
            20                  25                  30

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

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

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

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

Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val
            100                 105                 110

Thr Val Ser Ser
        115


<210>  517
<211>  110
<212>  PRT
<213>  Homo sapiens

<400>  517

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

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

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

Asp Asp Asn Asn Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser
    50                  55                  60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly Thr Gln Ala Glu
65                  70                  75                  80

Asp Glu Ala Asp Tyr Tyr Cys Gly Ser Trp Ala Gly Ser Ser Gly Ser
                85                  90                  95

Tyr Val Phe Gly Gly Arg Thr Lys Leu Thr Val Leu Gly Gln
            100                 105                 110


<210>  518
<211>  113
<212>  PRT
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<213> Homo sapiens

<400> 518

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

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Asp Ile
20 25 30

Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
35 40 45

Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
50 55 60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Tyr Gly Glu Ser
85 90 95

Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105 110

Gln

<210> 519
<211> 110
<212> PRT
<213> Homo sapiens

<400> 519

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

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

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

Asp Asp Asn Asn Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser
50 55 60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly Thr Gln Ala Glu
65 70 75 80

Asp Glu Ala Asp Tyr Tyr Cys Ala Ser Trp Thr Gly Val Glu Pro Asp
85 90 95

Tyr Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln

100 105 110

<210> 520
<211> 113
<212> PRT
<213> Homo sapiens

<400> 520

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

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Asp Ile
20 25 30

Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
35 40 45

Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
50 55 60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Ala Gly Ser
85 90 95

Tyr Leu Ser Glu Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105 110

Gln

<210> 521
<211> 113
<212> PRT
<213> Homo sapiens

<400> 521

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

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Asp Ile
20 25 30

Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
35 40 45

Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
50 55 60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Tyr Gly Glu Ser
85 90 95

Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105 110

Gln

<210> 522
<211> 113
<212> PRT
<213> Homo sapiens

<400> 522

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

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Asp Ile
20 25 30

Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
35 40 45

Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
50 55 60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Tyr Gly Glu Ser
85 90 95

Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105 110

Gln

<210> 523
<211> 113
<212> PRT
<213> Homo sapiens

<400> 523

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

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Asp Ile
20 25 30

Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu

```
        35                  40                  45

Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
    50                  55                  60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65                  70                  75                  80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Tyr Gly Glu Ser
                85                  90                  95

Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
            100                 105                 110

Gln
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<210> 524
<211> 113
<212> PRT
<213> Homo sapiens

<400> 524

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

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Asp Ile
            20                  25                  30

Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
        35                  40                  45

Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
    50                  55                  60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65                  70                  75                  80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Tyr Gly Glu Ser
                85                  90                  95

Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
            100                 105                 110

Gln
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<210> 525
<211> 113
<212> PRT
<213> Homo sapiens

<400> 525

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

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Asp Ile
20 25 30

Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
35 40 45

Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
50 55 60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80

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

Gly Leu Ser Glu Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105 110

Gln

<210> 526
<211> 113
<212> PRT
<213> Homo sapiens

<400> 526

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

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Asp Ile
20 25 30

Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
35 40 45

Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
50 55 60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Tyr Gly Glu Ser
85 90 95

Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105 110

Gln

<210> 527
<211> 113
<212> PRT
<213> Homo sapiens

<400> 527

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

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Asp Ile
20 25 30

Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
35 40 45

Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
50 55 60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80

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

Gly Leu Ser Glu Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105 110

Gln

<210> 528
<211> 372
<212> DNA
<213> Homo sapiens

<400> 528
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agctgcgcgg cctccggatt tacctttttct tcttatgtta tgaattgggt gcgccaagcc 120

cctgggaagg gtctcgagtg ggtgagcttt atctctggtg attctagcaa tacctattat 180

gcggatagcg tgaaaggccg ttttaccatt tcacgtgata attcgaaaaa caccctgtat 240

ctgcaaatga acagcctgcg tgcggaagat acggccgtgt attattgcgc gcgtactttt 300

atgcatggtc atcttggtgg tggtctttct atggattttt ggggccaagg caccctggtg 360

acggttagct ca 372

<210> 529
<211> 350
<212> DNA
<213> Homo sapiens

<400> 529
caggtgcaat tggtggaaag cggcggcggc ctggtgcaac cgggcggcag cctgcgtcta 60

gctgcgcggc ctccggattt acctttcgtt ctcattggct ttcttgggtg cgccaagccc 120

ctgggaaggg tctcgagtgg gtgagcaata tcaattatga tggtagctct acctattatg 180

cggatagcgt gaaaggccgt ttaccattt cacgtgataa ttcgaaaaac accctgtatc 240

tgcaaatgaa cagcctgcgt gcggaagata cggccgtgta ttattgcgcg cgtgatactt 300

atcttcattt tgattattgg ggccaaggca ccctggtgac ggttagctca 350

<210> 530
<211> 372
<212> DNA
<213> Homo sapiens

<400> 530
caggtgcaat tggtggaaag cggcggcggc ctggtgcaac cgggcggcag cctgcgtctg 60

agctgcgcgg cctccggatt tacctttct tcttatgtta tgaattgggt gcgccaagcc 120

cctgggaagg gtctcgagtg ggtgagcttt atctctggtg attctagcaa tacctattat 180

gcggatagcg tgaaaggccg ttttaccatt tcacgtgata attcgaaaaa caccctgtat 240

ctgcaaatga acagcctgcg tgcggaagat acggccgtgt attattgcgc gcgtactttt 300

atgcatggtc atcttggtgg tggtctttct atggattttt ggggccaagg caccctggtg 360

acggttagct ca 372

<210> 531
<211> 351
<212> DNA
<213> Homo sapiens

<400> 531
caggtgcaat tggtggaaag cggcggcggc ctggtgcaac cgggcggcag cctgcgtctg 60

agctgcgcgg cctccggatt tacctttcgt tctcattggc tttcttgggt gcgccaagcc 120

cctgggaagg gtctcgagtg ggtgagcaat atcaattatg atggtagctc tacctattat 180

gcggatagcg tgaaaggccg ttttaccatt tcacgtgata attcgaaaaa caccctgtat 240

ctgcaaatga acagcctgcg tgcggaagat acggccgtgt attattgcgc gcgtgatact 300

tatcttcatt ttgattattg gggccaaggc accctggtga cggttagctc a 351

<210> 532
<211> 348
<212> DNA
<213> Homo sapiens

<400> 532
caggtgcaat tggtggaaag cggcggcggc ctggtgcaac cgggcggcag cctgcgtctg 60

agctgcgcgg cctccggatt tacctttcgt tctcattggc tttcttgggt gcgccaagcc 120

cctgggaagg gtctcgagtg ggtgagcgtt actggtgttc atggtgatac ttattatgct 180

gattctgtta agggtcgttt taccatttca cgtgataatt cgaaaaacac cctgtatctg 240

caaatgaaca gcctgcgtgc ggaagatacg gccgtgtatt attgcgcgcg tgatacttat 300

cttcattttg attattgggg ccaaggcacc ctggtgacgg ttagctca 348

<210> 533
<211> 348
<212> DNA
<213> Homo sapiens

<400> 533
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agctgcgcgg cctccggatt tacctttcgt tctcattggc tttcttgggt gcgccaagcc 120

cctgggaagg gtctcgagtg ggtgagcgtt attggtaatt ggggtgatac ttattatgct 180

gattctgtta agggtcgttt taccatttca cgtgataatt cgaaaaacac cctgtatctg 240

caaatgaaca gcctgcgtgc ggaagatacg gccgtgtatt attgcgcgcg tgatacttat 300

cttcattttg attattgggg ccaaggcacc ctggtgacgg ttagctca 348

<210> 534
<211> 348
<212> DNA
<213> Homo sapiens

<400> 534
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agctgcgcgg cctccggatt tacctttcgt tctcattggc tttcttgggt gcgccaagcc 120

cctgggaagg gtctcgagtg ggtgagcgtt actactcatc agggttatac ttattatgct 180

gattctgtta agggtcgttt taccatttca cgtgataatt cgaaaaacac cctgtatctg 240

caaatgaaca gcctgcgtgc ggaagatacg gccgtgtatt attgcgcgcg tgatacttat 300

cttcattttg attattgggg ccaaggcacc ctggtgacgg ttagctca 348

<210> 535
<211> 348
<212> DNA
<213> Homo sapiens

<400> 535
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agctgcgcgg cctccggatt tacctttcgt tctcattggc tttcttgggt gcgccaagcc 120

cctgggaagg gtctcgagtg ggtgagcgct actaatcgtt atggttatac ttattatgct 180

gattctgtta agggtcgttt taccatttca cgtgataatt cgaaaaacac cctgtatctg 240

caaatgaaca gcctgcgtgc ggaagatacg gccgtgtatt attgcgcgcg tgatacttat 300

cttcattttg attattgggg ccaaggcacc ctggtgacgg ttagctca 348

<210> 536
<211> 351
<212> DNA
<213> Homo sapiens

<400> 536
caggtgcaat tggtggaaag cggcggcggc ctggtgcaac cgggcggcag cctgcgtctg 60

agctgcgcgg cctccggatt tacctttcgt tctcattggc tttcttgggt gcgccaagcc 120

cctgggaagg gtctcgagtg ggtgagcaat atcaattatg atggtagctc tacctattat 180

gcggatagcg tgaaaggccg ttttaccatt tcacgtgata attcgaaaaa caccctgtat 240

ctgcaaatga acagcctgcg tgcggaagat acggccgtgt attattgcgc gcgtgatact 300

tatcttcatt ttgattattg gggccaaggc accctggtga cggttagctc a 351

<210> 537
<211> 348
<212> DNA
<213> Homo sapiens

<400> 537
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agctgcgcgg cctccggatt tacctttcgt tctcattggc tttcttgggt gcgccaagcc 120

cctgggaagg gtctcgagtg ggtgagcgtt attactcctt atggtgatac ttattatgct 180

gattctgtta agggtcgttt taccatttca cgtgataatt cgaaaaacac cctgtatctg 240

caaatgaaca gcctgcgtgc ggaagatacg gccgtgtatt attgcgcgcg tgatacttat 300

cttcattttg attattgggg ccaaggcacc ctggtgacgg ttagctca 348

<210> 538
<211> 348
<212> DNA
<213> Homo sapiens

<400> 538
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agctgcgcgg cctccggatt tacctttcgt tctcattggc tttcttgggt gcgccaagcc 120

cctgggaagg gtctcgagtg ggtgagcgtt attactcctt atggtgatac ttattatgct 180

gattctgtta agggtcgttt taccatttca cgtgataatt cgaaaaacac cctgtatctg 240

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cttcattttg attattgggg ccaaggcacc ctggtgacgg ttagctca 348

<210> 539
<211> 330
<212> DNA
<213> Homo sapiens

<400> 539
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tcgtgtagcg gcgataatat tggttctttt tatgttcatt ggtaccagca gaaacccggg 120

caggcgccag ttcttgtgat ttatgatgat aataatcgtc cctcaggcat cccggaacgc 180

tttagcggat ccaacagcgg caacaccgcg accctgacca ttagcggcac tcaggcggaa 240

gacgaagcgg attattattg cggttcttgg gctggttctt ctggttctta tgtgtttggc 300

ggccgcacga agttaaccgt tcttggccag 330

<210> 540
<211> 339
<212> DNA
<213> Homo sapiens

<400> 540
gatatcgcac tgacccagcc agcttcagtg agcggctcac caggtcagag cattaccatc 60

tcgtgtacgg gtactagcag cgatgttggt gatattaatg atgtgtcttg gtaccagcag 120

catcccggga aggcgccgaa acttatgatt tatgatgtta ataatcgtcc ctcaggcgtg 180

agcaaccgtt ttagcggatc caaaagcggc aacaccgcga gcctgaccat tagcggcctg 240

caagcggaag acgaagcgga ttattattgc tcttcttatg gtgagtctct tacttcttat 300

gtgtttggcg gcggcacgaa gttaaccgtt cttggccag 339

<210> 541
<211> 330
<212> DNA
<213> Homo sapiens

<400> 541
gatatcgaac tgacccagcc gccttcagtg agcgttgcac caggtcagac cgcgcgtatc 60

tcgtgtagcg gcgataatat tggttctttt tatgttcatt ggtaccagca gaaacccggg 120

caggcgccag ttcttgtgat ttatgatgat aataatcgtc cctcaggcat cccggaacgc 180

tttagcggat ccaacagcgg caacaccgcg accctgacca ttagcggcac tcaggcggaa 240

gacgaagcgg attattattg cgcttcttgg actggtgttg agcctgatta tgtgtttggc 300

ggcggcacga agttaaccgt tcttggccag 330

<210> 542
<211> 339
<212> DNA
<213> Homo sapiens

<400> 542
gatatcgcac tgacccagcc agcttcagtg agcggctcac caggtcagag cattaccatc 60

tcgtgtacgg gtactagcag cgatgttggt gatattaatg atgtgtcttg gtaccagcag 120

catcccggga aggcgccgaa acttatgatt tatgatgtta ataatcgtcc ctcaggcgtg 180

agcaaccgtt ttagcggatc caaaagcggc aacaccgcga gcctgaccat tagcggcctg 240

caagcggaag acgaagcgga ttattattgc cagtcttatg ctggttctta tctttctgag 300

gtgtttggcg gcggcacgaa gttaaccgtt cttggccag 339

<210> 543
<211> 339
<212> DNA
<213> Homo sapiens

<400> 543
gatatcgcac tgacccagcc agcttcagtg agcggctcac caggtcagag cattaccatc 60

tcgtgtacgg gtactagcag cgatgttggt gatattaatg atgtgtcttg gtaccagcag 120

catcccggga aggcgccgaa acttatgatt tatgatgtta ataatcgtcc ctcaggcgtg 180

agcaaccgtt ttagcggatc caaaagcggc aacaccgcga gcctgaccat tagcggcctg 240

caagcggaag acgaagcgga ttattattgc tcttcttatg gtgagtctct tacttcttat 300

gtgtttggcg gcggcacgaa gttaaccgtt cttggccag 339

<210> 544
<211> 339
<212> DNA
<213> Homo sapiens

<400> 544
gatatcgcac tgacccagcc agcttcagtg agcggctcac caggtcagag cattaccatc 60

tcgtgtacgg gtactagcag cgatgttggt gatattaatg atgtgtcttg gtaccagcag 120

catcccggga aggcgccgaa acttatgatt tatgatgtta ataatcgtcc ctcaggcgtg 180

agcaaccgtt ttagcggatc caaaagcggc aacaccgcga gcctgaccat tagcggcctg 240

caagcggaag acgaagcgga ttattattgc tcttcttatg gtgagtctct tacttcttat 300

gtgtttggcg gcggcacgaa gttaaccgtt cttggccag 339

<210> 545
<211> 339
<212> DNA
<213> Homo sapiens

<400> 545
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tcgtgtacgg gtactagcag cgatgttggt gatattaatg atgtgtcttg gtaccagcag 120

catcccggga aggcgccgaa acttatgatt tatgatgtta ataatcgtcc ctcaggcgtg 180

agcaaccgtt ttagcggatc caaaagcggc aacaccgcga gcctgaccat tagcggcctg 240

caagcggaag acgaagcgga ttattattgc tcttcttatg gtgagtctct tacttcttat 300

gtgtttggcg gcggcacgaa gttaaccgtt cttggccag 339

<210> 546
<211> 339
<212> DNA
<213> Homo sapiens

<400> 546
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tcgtgtacgg gtactagcag cgatgttggt gatattaatg atgtgtcttg gtaccagcag 120

catcccggga aggcgccgaa acttatgatt tatgatgtta ataatcgtcc ctcaggcgtg 180

agcaaccgtt ttagcggatc caaaagcggc aacaccgcga gcctgaccat tagcggcctg 240

caagcggaag acgaagcgga ttattattgc tcttcttatg gtgagtctct tacttcttat 300

gtgtttggcg gcggcacgaa gttaaccgtt cttggccag 339

<210> 547
<211> 339
<212> DNA
<213> Homo sapiens

<400> 547
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tcgtgtacgg gtactagcag cgatgttggt gatattaatg atgtgtcttg gtaccagcag 120

catcccggga aggcgccgaa acttatgatt tatgatgtta ataatcgtcc ctcaggcgtg 180

agcaaccgtt ttagcggatc caaaagcggc aacaccgcga gcctgaccat tagcggcctg 240

caagcggaag acgaagcgga ttattattgc tctacttatg atggtcctgg tctttctgag 300

gtgtttggcg gcggcacgaa gttaaccgtt cttggccag 339

<210> 548
<211> 339
<212> DNA
<213> Homo sapiens

<400> 548
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tcgtgtacgg gtactagcag cgatgttggt gatattaatg atgtgtcttg gtaccagcag 120

catcccggga aggcgccgaa acttatgatt tatgatgtta ataatcgtcc ctcaggcgtg 180

agcaaccgtt ttagcggatc caaaagcggc aacaccgcga gcctgaccat tagcggcctg 240

caagcggaag acgaagcgga ttattattgc tcttcttatg gtgagtctct tacttcttat 300

gtgtttggcg gcggcacgaa gttaaccgtt cttggccag 339

<210> 549
<211> 339
<212> DNA
<213> Homo sapiens

<400> 549
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tcgtgtacgg gtactagcag cgatgttggt gatattaatg atgtgtcttg gtaccagcag 120

catcccggga aggcgccgaa acttatgatt tatgatgtta ataatcgtcc ctcaggcgtg 180

agcaaccgtt ttagcggatc caaaagcggc aacaccgcga gcctgaccat tagcggcctg 240

caagcggaag acgaagcgga ttattattgc tctacttatg atggtcctgg tctttctgag 300

gtgtttggcg gcggcacgaa gttaaccgtt cttggccag 339

<210> 550
<211> 469
<212> PRT
<213> Homo sapiens

<400> 550

Met Ala Trp Val Trp Thr Leu Pro Phe Leu Met Ala Ala Ala Gln Ser
1 5 10 15

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Val Gln Ala Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Ser Ser Tyr Val Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
    50                  55                  60

Glu Trp Val Ser Phe Ile Ser Gly Asp Ser Ser Asn Thr Tyr Tyr Ala
65                  70                  75                  80

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn
                85                  90                  95

Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Thr Phe Met His Gly His Leu Gly Gly Gly Leu
        115                 120                 125

Ser Met Asp Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala
    130                 135                 140

Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser
145                 150                 155                 160

Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe
                165                 170                 175

Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly
            180                 185                 190

Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu
        195                 200                 205

Ser Ser Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr
    210                 215                 220

Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr
225                 230                 235                 240

Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro
                245                 250                 255

Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
            260                 265                 270

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
        275                 280                 285
```

```
Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val
    290                 295                 300

Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser
305                 310                 315                 320

Thr Phe Arg Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu
                325                 330                 335

Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala
            340                 345                 350

Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro
        355                 360                 365

Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln
    370                 375                 380

Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
385                 390                 395                 400

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
                405                 410                 415

Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
            420                 425                 430

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
        435                 440                 445

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
    450                 455                 460

Leu Ser Pro Gly Lys
465
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<210> 551
<211> 462
<212> PRT
<213> Homo sapiens

<400> 551

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Met Ala Trp Val Trp Thr Leu Pro Phe Leu Met Ala Ala Ala Gln Ser
1               5                   10                  15

Val Gln Ala Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Arg Ser His Trp Leu Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
```

```
    50                  55                  60

Glu Trp Val Ser Asn Ile Asn Tyr Asp Gly Ser Ser Thr Tyr Tyr Ala
65                  70                  75                  80

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn
                85                  90                  95

Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln
        115                 120                 125

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

Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
145                 150                 155                 160

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
                165                 170                 175

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
            180                 185                 190

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
        195                 200                 205

Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys
    210                 215                 220

Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val
225                 230                 235                 240

Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe
                245                 250                 255

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
            260                 265                 270

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
        275                 280                 285

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
    290                 295                 300

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val
305                 310                 315                 320

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

```
                325                 330                 335

Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
            340                 345                 350

Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
        355                 360                 365

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
    370                 375                 380

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
385                 390                 395                 400

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp
                405                 410                 415

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
            420                 425                 430

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
        435                 440                 445

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
    450                 455                 460


<210>  552
<211>  469
<212>  PRT
<213>  Homo sapiens

<400>  552

Met Ala Trp Val Trp Thr Leu Pro Phe Leu Met Ala Ala Ala Gln Ser
1               5                   10                  15

Val Gln Ala Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Ser Ser Tyr Val Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
    50                  55                  60

Glu Trp Val Ser Phe Ile Ser Gly Asp Ser Ser Asn Thr Tyr Tyr Ala
65                  70                  75                  80

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn
                85                  90                  95

Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
            100                 105                 110
```

```
Tyr Tyr Cys Ala Arg Thr Phe Met His Gly His Leu Gly Gly Gly Leu
        115                 120                 125

Ser Met Asp Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala
    130                 135                 140

Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser
145                 150                 155                 160

Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe
                165                 170                 175

Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly
            180                 185                 190

Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu
        195                 200                 205

Ser Ser Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr
    210                 215                 220

Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr
225                 230                 235                 240

Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro
                245                 250                 255

Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
            260                 265                 270

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
        275                 280                 285

Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val
    290                 295                 300

Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser
305                 310                 315                 320

Thr Phe Arg Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu
                325                 330                 335

Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala
            340                 345                 350

Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro
        355                 360                 365

Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln
    370                 375                 380
```

```
Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
385                 390                 395                 400

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
                405                 410                 415

Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
            420                 425                 430

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
        435                 440                 445

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
    450                 455                 460

Leu Ser Pro Gly Lys
465
```

<210> 553
<211> 462
<212> PRT
<213> Homo sapiens

<400> 553

```
Met Ala Trp Val Trp Thr Leu Pro Phe Leu Met Ala Ala Ala Gln Ser
1               5                   10                  15

Val Gln Ala Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Arg Ser His Trp Leu Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
    50                  55                  60

Glu Trp Val Ser Asn Ile Asn Tyr Asp Gly Ser Ser Thr Tyr Tyr Ala
65                  70                  75                  80

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn
                85                  90                  95

Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln
        115                 120                 125

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

```
Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
145                 150                 155                 160

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
                165                 170                 175

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
            180                 185                 190

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
        195                 200                 205

Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys
    210                 215                 220

Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val
225                 230                 235                 240

Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe
                245                 250                 255

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
            260                 265                 270

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
        275                 280                 285

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
    290                 295                 300

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val
305                 310                 315                 320

Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
                325                 330                 335

Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
            340                 345                 350

Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
        355                 360                 365

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
    370                 375                 380

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
385                 390                 395                 400

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp
                405                 410                 415
```

```
Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
            420                 425                 430

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
        435                 440                 445

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
    450                 455                 460
```

<210> 554
<211> 461
<212> PRT
<213> Homo sapiens

<400> 554

```
Met Ala Trp Val Trp Thr Leu Pro Phe Leu Met Ala Ala Ala Gln Ser
1               5                   10                  15

Val Gln Ala Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Arg Ser His Trp Leu Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
    50                  55                  60

Glu Trp Val Ser Val Thr Gly Val His Gly Asp Thr Tyr Tyr Ala Asp
65                  70                  75                  80

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr
                85                  90                  95

Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr
            100                 105                 110

Tyr Cys Ala Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly
        115                 120                 125

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

Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
145                 150                 155                 160

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
                165                 170                 175

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
            180                 185                 190
```

```
Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
        195                 200                 205

Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro
    210                 215                 220

Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu
225                 230                 235                 240

Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu
                245                 250                 255

Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu
            260                 265                 270

Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln
        275                 280                 285

Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys
    290                 295                 300

Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu
305                 310                 315                 320

Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
                325                 330                 335

Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
            340                 345                 350

Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
        355                 360                 365

Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
    370                 375                 380

Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
385                 390                 395                 400

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp Gly
                405                 410                 415

Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln
            420                 425                 430

Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
        435                 440                 445

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
    450                 455                 460
```

<210> 555
<211> 461
<212> PRT
<213> Homo sapiens

<400> 555

Met Ala Trp Val Trp Thr Leu Pro Phe Leu Met Ala Ala Ala Gln Ser
1 5 10 15

Val Gln Ala Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
20 25 30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
35 40 45

Arg Ser His Trp Leu Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
50 55 60

Glu Trp Val Ser Val Ile Gly Asn Trp Gly Asp Thr Tyr Tyr Ala Asp
65 70 75 80

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr
85 90 95

Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr
100 105 110

Tyr Cys Ala Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly
115 120 125

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

Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
145 150 155 160

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
165 170 175

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
180 185 190

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
195 200 205

Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro
210 215 220

Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu
225 230 235 240

Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu

```
                245                 250                 255

Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu
            260                 265                 270

Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln
        275                 280                 285

Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys
    290                 295                 300

Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu
305                 310                 315                 320

Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
                325                 330                 335

Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
            340                 345                 350

Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
        355                 360                 365

Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
    370                 375                 380

Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
385                 390                 395                 400

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp Gly
                405                 410                 415

Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln
            420                 425                 430

Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
        435                 440                 445

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
    450                 455                 460


<210>  556
<211>  461
<212>  PRT
<213>  Homo sapiens

<400>  556

Met Ala Trp Val Trp Thr Leu Pro Phe Leu Met Ala Ala Ala Gln Ser
1               5                   10                  15

Val Gln Ala Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30
```

```
Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Arg Ser His Trp Leu Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
    50                  55                  60

Glu Trp Val Ser Val Thr Thr His Gln Gly Tyr Thr Tyr Tyr Ala Asp
65                  70                  75                  80

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr
                85                  90                  95

Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr
            100                 105                 110

Tyr Cys Ala Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly
        115                 120                 125

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

Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
145                 150                 155                 160

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
                165                 170                 175

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
            180                 185                 190

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
        195                 200                 205

Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro
    210                 215                 220

Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu
225                 230                 235                 240

Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu
                245                 250                 255

Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu
            260                 265                 270

Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln
        275                 280                 285

Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys
    290                 295                 300
```

```
Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu
305                 310                 315                 320

Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
                325                 330                 335

Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
            340                 345                 350

Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
        355                 360                 365

Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
    370                 375                 380

Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
385                 390                 395                 400

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp Gly
                405                 410                 415

Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln
            420                 425                 430

Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
        435                 440                 445

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
    450                 455                 460
```

<210> 557
<211> 465
<212> PRT
<213> Homo sapiens

<400> 557

```
Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
1               5                   10                  15

Val Leu Ser Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Arg Ser His Trp Leu Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
    50                  55                  60

Glu Trp Val Ser Ala Thr Asn Arg Tyr Gly Tyr Thr Tyr Tyr Ala Asp
65                  70                  75                  80
```

```
Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr
                85                  90                  95

Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr
            100                 105                 110

Tyr Cys Ala Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly
        115                 120                 125

Thr Leu Val Thr Val Ser Ser Ala Lys Thr Thr Ala Pro Ser Val Tyr
    130                 135                 140

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

Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro Val Thr Leu Thr Trp
                165                 170                 175

Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr Phe Pro Ala Val Leu
            180                 185                 190

Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val Thr Val Thr Ser Ser
        195                 200                 205

Thr Trp Pro Ser Gln Ser Ile Thr Cys Asn Val Ala His Pro Ala Ser
    210                 215                 220

Ser Thr Lys Val Asp Lys Lys Ile Glu Pro Arg Gly Pro Thr Ile Lys
225                 230                 235                 240

Pro Cys Pro Pro Cys Lys Cys Pro Ala Pro Asn Leu Leu Gly Gly Pro
                245                 250                 255

Ser Val Phe Ile Phe Pro Pro Lys Ile Lys Asp Val Leu Met Ile Ser
            260                 265                 270

Leu Ser Pro Ile Val Thr Cys Val Val Val Asp Val Ser Glu Asp Asp
        275                 280                 285

Pro Asp Val Gln Ile Ser Trp Phe Val Asn Asn Val Glu Val His Thr
    290                 295                 300

Ala Gln Thr Gln Thr His Arg Glu Asp Tyr Asn Ser Thr Leu Arg Val
305                 310                 315                 320

Val Ser Ala Leu Pro Ile Gln His Gln Asp Trp Met Ser Gly Lys Glu
                325                 330                 335

Phe Lys Cys Lys Val Asn Asn Lys Asp Leu Pro Ala Pro Ile Glu Arg
            340                 345                 350
```

```
Thr Ile Ser Lys Pro Lys Gly Ser Val Arg Ala Pro Gln Val Tyr Val
        355                 360                 365

Leu Pro Pro Pro Glu Glu Glu Met Thr Lys Lys Gln Val Thr Leu Thr
    370                 375                 380

Cys Met Val Thr Asp Phe Met Pro Glu Asp Ile Tyr Val Glu Trp Thr
385                 390                 395                 400

Asn Asn Gly Lys Thr Glu Leu Asn Tyr Lys Asn Thr Glu Pro Val Leu
                405                 410                 415

Asp Ser Asp Gly Ser Tyr Phe Met Tyr Ser Lys Leu Arg Val Glu Lys
            420                 425                 430

Lys Asn Trp Val Glu Arg Asn Ser Tyr Ser Cys Ser Val Val His Glu
        435                 440                 445

Gly Leu His Asn His His Thr Thr Lys Ser Phe Ser Arg Thr Pro Gly
    450                 455                 460

Lys
465
```

<210> 558
<211> 462
<212> PRT
<213> Homo sapiens

<400> 558

```
Met Ala Trp Val Trp Thr Leu Pro Phe Leu Met Ala Ala Ala Gln Ser
1               5                   10                  15

Val Gln Ala Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Arg Ser His Trp Leu Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
    50                  55                  60

Glu Trp Val Ser Asn Ile Asn Tyr Asp Gly Ser Ser Thr Tyr Tyr Ala
65                  70                  75                  80

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn
                85                  90                  95

Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
            100                 105                 110
```

```
Tyr Tyr Cys Ala Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln
        115                 120                 125

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

Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
145                 150                 155                 160

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
                165                 170                 175

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
            180                 185                 190

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
        195                 200                 205

Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys
    210                 215                 220

Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val
225                 230                 235                 240

Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe
                245                 250                 255

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
            260                 265                 270

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
        275                 280                 285

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
    290                 295                 300

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val
305                 310                 315                 320

Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
                325                 330                 335

Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
            340                 345                 350

Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
        355                 360                 365

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
    370                 375                 380
```

```
Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
385                 390                 395                 400

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp
                405                 410                 415

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
            420                 425                 430

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
        435                 440                 445

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
    450                 455                 460
```

<210> 559
<211> 461
<212> PRT
<213> Homo sapiens

<400> 559

```
Met Ala Trp Val Trp Thr Leu Pro Phe Leu Met Ala Ala Ala Gln Ser
1               5                   10                  15

Val Gln Ala Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Arg Ser His Trp Leu Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
    50                  55                  60

Glu Trp Val Ser Val Ile Thr Pro Tyr Gly Asp Thr Tyr Tyr Ala Asp
65                  70                  75                  80

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr
                85                  90                  95

Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr
            100                 105                 110

Tyr Cys Ala Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly
        115                 120                 125

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

Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
145                 150                 155                 160

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
```

```
                165                 170                 175

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
            180                 185                 190

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
        195                 200                 205

Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro
    210                 215                 220

Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu
225                 230                 235                 240

Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu
                245                 250                 255

Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu
            260                 265                 270

Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln
        275                 280                 285

Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys
    290                 295                 300

Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu
305                 310                 315                 320

Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
                325                 330                 335

Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
            340                 345                 350

Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
        355                 360                 365

Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
    370                 375                 380

Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
385                 390                 395                 400

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp Gly
                405                 410                 415

Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln
            420                 425                 430

Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
```

```
        435                 440                 445

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
    450                 455                 460


<210>  560
<211>  461
<212>  PRT
<213>  Homo sapiens

<400>  560

Met Ala Trp Val Trp Thr Leu Pro Phe Leu Met Ala Ala Ala Gln Ser
1               5                   10                  15


Val Gln Ala Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30


Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45


Arg Ser His Trp Leu Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
    50                  55                  60


Glu Trp Val Ser Val Ile Thr Pro Tyr Gly Asp Thr Tyr Tyr Ala Asp
65                  70                  75                  80


Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr
                85                  90                  95


Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr
            100                 105                 110


Tyr Cys Ala Arg Asp Thr Tyr Leu His Phe Asp Tyr Trp Gly Gln Gly
        115                 120                 125


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


Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
145                 150                 155                 160


Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
                165                 170                 175


Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
            180                 185                 190


Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
        195                 200                 205


Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro
    210                 215                 220
```

```
Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu
225                 230                 235                 240

Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu
                245                 250                 255

Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu
            260                 265                 270

Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln
        275                 280                 285

Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys
    290                 295                 300

Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu
305                 310                 315                 320

Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
                325                 330                 335

Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
            340                 345                 350

Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
        355                 360                 365

Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
    370                 375                 380

Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
385                 390                 395                 400

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp Gly
                405                 410                 415

Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln
            420                 425                 430

Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
        435                 440                 445

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
    450                 455                 460
```

<210> 561
<211> 130
<212> PRT
<213> Homo sapiens

<400> 561

```
Met Ser Val Leu Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr
1               5                   10                  15

Gly Thr Arg Cys Asp Ile Glu Leu Thr Gln Pro Pro Ser Val Ser Val
            20                  25                  30

Ala Pro Gly Gln Thr Ala Arg Ile Ser Cys Ser Gly Asp Asn Ile Gly
        35                  40                  45

Ser Phe Tyr Val His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val
    50                  55                  60

Leu Val Ile Tyr Asp Asp Asn Asn Arg Pro Ser Gly Ile Pro Glu Arg
65                  70                  75                  80

Phe Ser Gly Ser Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly
                85                  90                  95

Thr Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gly Ser Trp Ala Gly
            100                 105                 110

Ser Ser Gly Ser Tyr Val Phe Gly Gly Arg Thr Lys Leu Thr Val Leu
        115                 120                 125

Gly Gln
    130
```

<210> 562
<211> 237
<212> PRT
<213> Homo sapiens

<400> 562

```
Met Ser Val Leu Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr
1               5                   10                  15

Gly Thr Arg Cys Asp Ile Ala Leu Thr Gln Pro Ala Ser Val Ser Gly
            20                  25                  30

Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp
        35                  40                  45

Val Gly Asp Ile Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys
    50                  55                  60

Ala Pro Lys Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val
65                  70                  75                  80

Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr
                85                  90                  95
```

Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser
100 105 110

Tyr Gly Glu Ser Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu
115 120 125

Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro
130 135 140

Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu
145 150 155 160

Ile Ser Asp Phe Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp
165 170 175

Ser Ser Pro Val Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln
180 185 190

Ser Asn Asn Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu
195 200 205

Gln Trp Lys Ser His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly
210 215 220

Ser Thr Val Glu Lys Thr Val Ala Pro Thr Glu Cys Ser
225 230 235

<210> 563
<211> 234
<212> PRT
<213> Homo sapiens

<400> 563

Met Ser Val Leu Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr
1 5 10 15

Gly Thr Arg Cys Asp Ile Glu Leu Thr Gln Pro Pro Ser Val Ser Val
20 25 30

Ala Pro Gly Gln Thr Ala Arg Ile Ser Cys Ser Gly Asp Asn Ile Gly
35 40 45

Ser Phe Tyr Val His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val
50 55 60

Leu Val Ile Tyr Asp Asp Asn Asn Arg Pro Ser Gly Ile Pro Glu Arg
65 70 75 80

Phe Ser Gly Ser Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly
85 90 95

Thr Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Ser Trp Thr Gly

100 105 110

Val Glu Pro Asp Tyr Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
115 120 125

Gly Gln Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser
130 135 140

Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp
145 150 155 160

Phe Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro
165 170 175

Val Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn
180 185 190

Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys
195 200 205

Ser His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly Ser Thr Val
210 215 220

Glu Lys Thr Val Ala Pro Thr Glu Cys Ser
225 230

<210> 564
<211> 237
<212> PRT
<213> Homo sapiens

<400> 564

Met Ser Val Leu Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr
1 5 10 15

Gly Thr Arg Cys Asp Ile Ala Leu Thr Gln Pro Ala Ser Val Ser Gly
20 25 30

Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp
35 40 45

Val Gly Asp Ile Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys
50 55 60

Ala Pro Lys Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val
65 70 75 80

Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr
85 90 95

Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser
100 105 110

```
Tyr Ala Gly Ser Tyr Leu Ser Glu Val Phe Gly Gly Gly Thr Lys Leu
        115                 120                 125

Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro
    130                 135                 140

Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu
145                 150                 155                 160

Ile Ser Asp Phe Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp
                165                 170                 175

Ser Ser Pro Val Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln
            180                 185                 190

Ser Asn Asn Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu
        195                 200                 205

Gln Trp Lys Ser His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly
    210                 215                 220

Ser Thr Val Glu Lys Thr Val Ala Pro Thr Glu Cys Ser
225                 230                 235


<210>  565
<211>  237
<212>  PRT
<213>  Homo sapiens

<400>  565

Met Ser Val Leu Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr
1               5                   10                  15

Gly Thr Arg Cys Asp Ile Ala Leu Thr Gln Pro Ala Ser Val Ser Gly
            20                  25                  30

Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp
        35                  40                  45

Val Gly Asp Ile Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys
    50                  55                  60

Ala Pro Lys Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val
65                  70                  75                  80

Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr
                85                  90                  95

Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser
            100                 105                 110
```

Tyr Gly Glu Ser Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu
115 120 125

Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro
130 135 140

Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu
145 150 155 160

Ile Ser Asp Phe Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp
165 170 175

Ser Ser Pro Val Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln
180 185 190

Ser Asn Asn Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu
195 200 205

Gln Trp Lys Ser His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly
210 215 220

Ser Thr Val Glu Lys Thr Val Ala Pro Thr Glu Cys Ser
225 230 235

<210> 566
<211> 237
<212> PRT
<213> Homo sapiens

<400> 566

Met Ser Val Leu Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr
1 5 10 15

Gly Thr Arg Cys Asp Ile Ala Leu Thr Gln Pro Ala Ser Val Ser Gly
20 25 30

Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp
35 40 45

Val Gly Asp Ile Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys
50 55 60

Ala Pro Lys Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val
65 70 75 80

Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr
85 90 95

Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser
100 105 110

Tyr Gly Glu Ser Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu
115 120 125

Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro
130 135 140

Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu
145 150 155 160

Ile Ser Asp Phe Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp
165 170 175

Ser Ser Pro Val Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln
180 185 190

Ser Asn Asn Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu
195 200 205

Gln Trp Lys Ser His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly
210 215 220

Ser Thr Val Glu Lys Thr Val Ala Pro Thr Glu Cys Ser
225 230 235

<210> 567
<211> 237
<212> PRT
<213> Homo sapiens

<400> 567

Met Ser Val Leu Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr
1 5 10 15

Gly Thr Arg Cys Asp Ile Ala Leu Thr Gln Pro Ala Ser Val Ser Gly
20 25 30

Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp
35 40 45

Val Gly Asp Ile Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys
50 55 60

Ala Pro Lys Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val
65 70 75 80

Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr
85 90 95

Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser
100 105 110

Tyr Gly Glu Ser Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu

```
        115                 120                 125

Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro
    130                 135                 140

Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu
145                 150                 155                 160

Ile Ser Asp Phe Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp
                165                 170                 175

Ser Ser Pro Val Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln
            180                 185                 190

Ser Asn Asn Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu
        195                 200                 205

Gln Trp Lys Ser His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly
    210                 215                 220

Ser Thr Val Glu Lys Thr Val Ala Pro Thr Glu Cys Ser
225                 230                 235


<210>  568
<211>  237
<212>  PRT
<213>  Homo sapiens

<400>  568

Met Ser Val Leu Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr
1               5                   10                  15

Gly Thr Arg Cys Asp Ile Ala Leu Thr Gln Pro Ala Ser Val Ser Gly
            20                  25                  30

Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp
        35                  40                  45

Val Gly Asp Ile Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys
    50                  55                  60

Ala Pro Lys Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val
65                  70                  75                  80

Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr
                85                  90                  95

Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser
            100                 105                 110

Tyr Gly Glu Ser Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu
        115                 120                 125
```

```
Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro
    130                 135                 140

Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu
145                 150                 155                 160

Ile Ser Asp Phe Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp
                165                 170                 175

Ser Ser Pro Val Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln
            180                 185                 190

Ser Asn Asn Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu
        195                 200                 205

Gln Trp Lys Ser His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly
    210                 215                 220

Ser Thr Val Glu Lys Thr Val Ala Pro Thr Glu Cys Ser
225                 230                 235


<210>  569
<211>  237
<212>  PRT
<213>  Homo sapiens

<400>  569

Met Ser Val Leu Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr
1               5                   10                  15

Gly Thr Arg Cys Asp Ile Ala Leu Thr Gln Pro Ala Ser Val Ser Gly
            20                  25                  30

Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp
        35                  40                  45

Val Gly Asp Ile Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys
    50                  55                  60

Ala Pro Lys Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val
65                  70                  75                  80

Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr
                85                  90                  95

Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Thr
            100                 105                 110

Tyr Asp Gly Pro Gly Leu Ser Glu Val Phe Gly Gly Gly Thr Lys Leu
        115                 120                 125
```

```
Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro
    130                 135                 140

Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu
145                 150                 155                 160

Ile Ser Asp Phe Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp
                165                 170                 175

Ser Ser Pro Val Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln
            180                 185                 190

Ser Asn Asn Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu
        195                 200                 205

Gln Trp Lys Ser His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly
    210                 215                 220

Ser Thr Val Glu Lys Thr Val Ala Pro Thr Glu Cys Ser
225                 230                 235


<210>  570
<211>  237
<212>  PRT
<213>  Homo sapiens

<400>  570

Met Ser Val Leu Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr
1               5                   10                  15

Gly Thr Arg Cys Asp Ile Ala Leu Thr Gln Pro Ala Ser Val Ser Gly
            20                  25                  30

Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp
        35                  40                  45

Val Gly Asp Ile Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys
    50                  55                  60

Ala Pro Lys Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val
65                  70                  75                  80

Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr
                85                  90                  95

Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser
            100                 105                 110

Tyr Gly Glu Ser Leu Thr Ser Tyr Val Phe Gly Gly Gly Thr Lys Leu
        115                 120                 125
```

```
Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro
    130                 135                 140

Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu
145                 150                 155                 160

Ile Ser Asp Phe Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp
                165                 170                 175

Ser Ser Pro Val Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln
            180                 185                 190

Ser Asn Asn Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu
        195                 200                 205

Gln Trp Lys Ser His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly
    210                 215                 220

Ser Thr Val Glu Lys Thr Val Ala Pro Thr Glu Cys Ser
225                 230                 235
```

<210> 571
<211> 237
<212> PRT
<213> Homo sapiens

<400> 571

```
Met Ser Val Leu Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr
1               5                   10                  15

Gly Thr Arg Cys Asp Ile Ala Leu Thr Gln Pro Ala Ser Val Ser Gly
            20                  25                  30

Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp
        35                  40                  45

Val Gly Asp Ile Asn Asp Val Ser Trp Tyr Gln Gln His Pro Gly Lys
    50                  55                  60

Ala Pro Lys Leu Met Ile Tyr Asp Val Asn Asn Arg Pro Ser Gly Val
65                  70                  75                  80

Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr
                85                  90                  95

Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Thr
            100                 105                 110

Tyr Asp Gly Pro Gly Leu Ser Glu Val Phe Gly Gly Gly Thr Lys Leu
        115                 120                 125

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

130 135 140

Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu
145 150 155 160

Ile Ser Asp Phe Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp
165 170 175

Ser Ser Pro Val Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln
180 185 190

Ser Asn Asn Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu
195 200 205

Gln Trp Lys Ser His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly
210 215 220

Ser Thr Val Glu Lys Thr Val Ala Pro Thr Glu Cys Ser
225 230 235

<210> 572
<211> 1410
<212> DNA
<213> Homo sapiens

<400> 572
atggcttggg tgtggacctt gccattcctg atggcagctg cccaaagcgt gcaggcccag 60

gtgcagctgg tcgagtctgg cggcggactg gtgcagcctg gcggcagcct gagactgagc 120

tgcgccgcca gcggcttcac cttcagcagc tacgtgatga actgggtgcg gcaggcccct 180

ggcaagggcc tggagtgggt gtccttcatc agcggcgaca gcagcaacac ctactacgcc 240

gacagcgtga agggccggtt caccatcagc cgggacaaca gcaagaacac cctgtacctg 300

cagatgaaca gcctgcgggc cgaggacacc gccgtgtact actgcgcccg gaccttcatg 360

cacggccacc tgggcggagg actgagcatg gatttctggg gccagggcac cctggtcacc 420

gtctcctcag cttccaccaa gggcccatcc gtcttccccc tggcgccctg ctccaggagc 480

acctccgaga gcacagcggc cctgggctgc ctggtcaagg actacttccc cgaaccggtg 540

acggtgtcgt ggaactcagg cgctctgacc agcggcgtgc acaccttccc agctgtccta 600

cagtcctcag gactctactc cctcagcagc gtggtgacag tgccctccag caacttcggc 660

acccagacct acacctgcaa cgtagatcac aagcccagca acaccaaggt ggacaagaca 720

gttgagcgca aatgttgtgt cgagtgccca ccgtgcccag caccacctgt ggcaggaccg 780

tcagtcttcc tcttcccccc aaaacccaag gacaccctca tgatctcccg gaccctgag 840

gtcacgtgcg tggtggtgga cgtgagccac gaagaccccg aggtccagtt caactggtac 900

gtggacggcg tggaggtgca taatgccaag acaaagccac gggaggagca gttcaacagc 960

acgttccgtg tggtcagcgt cctcaccgtt gtgcaccagg actggctgaa cggcaaggag 1020

tacaagtgca aggtctccaa caaaggcctc ccagccccca tcgagaaaac catctccaaa 1080

accaaagggc agccccgaga accacaggtg tacaccctgc ccccatcccg ggaggagatg 1140

accaagaacc aggtcagcct gacctgcctg gtcaaaggct tctaccccag cgacatcgcc 1200

gtggagtggg agagcaatgg gcagccggag aacaactaca agaccacacc tcccatgctg 1260

gactccgacg gctccttctt cctctacagc aagctcaccg tggacaagag caggtggcag 1320

caggggaacg tcttctcatg ctccgtgatg catgaggctc tgcacaacca ctacacgcag 1380

aagagcctct ccctgtctcc gggtaaatga 1410

<210> 573
<211> 1389
<212> DNA
<213> Homo sapiens

<400> 573
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gtgcagctgg tcgagagcgg cggagggctg gtgcagcctg gcggcagcct gagactgagc 120

tgcgccgcca gcggcttcac cttcagaagc cactggctgt cctgggtgcg gcaggccct 180

ggcaagggcc tggaatgggt gtccaacatc aactacgacg gcagcagcac ctactacgcc 240

gacagcgtga agggccggtt caccatcagc cgggacaaca gcaagaacac cctgtacctg 300

cagatgaaca gcctgcgggc cgaggacacc gccgtgtact actgcgccag ggacacctac 360

ctgcacttcg actactgggg ccagggcacc ctggtcaccg tctcctcagc ttccaccaag 420

ggcccatccg tcttccccct ggcgccctgc tccaggagca cctccgagag cacagcggcc 480

ctgggctgcc tggtcaagga ctacttcccc gaaccggtga cggtgtcgtg gaactcaggc 540

gctctgacca gcggcgtgca caccttccca gctgtcctac agtcctcagg actctactcc 600

ctcagcagcg tggtgacagt gccctccagc aacttcggca cccagaccta cacctgcaac 660

gtagatcaca agcccagcaa caccaaggtg gacaagacag ttgagcgcaa atgttgtgtc 720

gagtgcccac cgtgcccagc accacctgtg gcaggaccgt cagtcttcct cttccccca 780

aaacccaagg acaccctcat gatctcccgg acccctgagg tcacgtgcgt ggtggtggac 840

gtgagccacg aagaccccga ggtccagttc aactggtacg tggacggcgt ggaggtgcat 900

aatgccaaga caaagccacg ggaggagcag ttcaacagca cgttccgtgt ggtcagcgtc 960

ctcaccgttg tgcaccagga ctggctgaac ggcaaggagt acaagtgcaa ggtctccaac 1020

aaaggcctcc cagcccccat cgagaaaacc atctccaaaa ccaaagggca gccccgagaa 1080

ccacaggtgt acaccctgcc cccatcccgg gaggagatga ccaagaacca ggtcagcctg 1140

acctgcctgg tcaaaggctt ctaccccagc gacatcgccg tggagtggga gagcaatggg 1200

cagccggaga acaactacaa gaccacacct cccatgctgg actccgacgg ctccttcttc 1260

ctctacagca agctcaccgt ggacaagagc aggtggcagc aggggaacgt cttctcatgc 1320

tccgtgatgc atgaggctct gcacaaccac tacacgcaga agagcctctc cctgtctccg 1380

ggtaaatga 1389

<210> 574
<211> 1410
<212> DNA
<213> Homo sapiens

<400> 574
atggcttggg tgtggacctt gccattcctg atggcagctg cccaaagcgt gcaggcccag 60

gtgcagctgg tcgagtctgg cggcggactg gtgcagcctg gcggcagcct gagactgagc 120

tgcgccgcca gcggcttcac cttcagcagc tacgtgatga actgggtgcg gcaggcccct 180

ggcaagggcc tggagtgggt gtccttcatc agcggcgaca gcagcaacac ctactacgcc 240

gacagcgtga agggccggtt caccatcagc cgggacaaca gcaagaacac cctgtacctg 300

cagatgaaca gcctgcgggc cgaggacacc gccgtgtact actgcgcccg gaccttcatg 360

cacggccacc tgggcggagg actgagcatg gatttctggg gccagggcac cctggtcacc 420

gtctcctcag cttccaccaa gggcccatcc gtcttccccc tggcgccctg ctccaggagc 480

acctccgaga gcacagcggc cctgggctgc ctggtcaagg actacttccc cgaaccggtg 540

acggtgtcgt ggaactcagg cgctctgacc agcggcgtgc acaccttccc agctgtccta 600

cagtcctcag gactctactc cctcagcagc gtggtgacag tgccctccag caacttcggc 660

acccagacct acacctgcaa cgtagatcac aagcccagca acaccaaggt ggacaagaca 720

gttgagcgca aatgttgtgt cgagtgccca ccgtgcccag caccacctgt ggcaggaccg 780

tcagtcttcc tcttcccccc aaaacccaag gacaccctca tgatctcccg gacccctgag 840

gtcacgtgcg tggtggtgga cgtgagccac gaagaccccg aggtccagtt caactggtac 900

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ccgccctcct ctgaggagct tcaagccaac aaggccacac tggtgtgtct cataagtgac 480

ttctacccgg gagccgtgac agtggcctgg aaggcagata gcagccccgt caaggcggga 540

gtggagacaa ccacaccctc caaacaaagc aacaacaagt acgcggccag cagctatctg 600

agcctgacgc ctgagcagtg gaagtcccac agaagctaca gctgccaggt cacgcatgaa 660

gggagcaccg tggaaaagac agtggcccct acagaatgtt catag 705

<210> 586
<211> 714
<212> DNA
<213> Homo sapiens

<400> 586
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agctgcaccg gcaccagcag cgacgtgggc gacatcaacg acgtgagctg gtatcagcag 180

caccccggca aggcccccaa gctgatgatc tacgacgtga acaaccggcc cagcggcgtg 240

agcaaccggt tcagcggcag caagagcggc aacaccgcca gcctgaccat cagcggcctc 300

caggccgagg acgaggccga ctactactgc cagagctacg ccggcagcta cctgagcgag 360

gtgttcggcg gagggaccaa gcttaccgtc ctaggtcagc ccaaggctgc cccctcggtc 420

actctgttcc cgccctcctc tgaggagctt caagccaaca aggccacact ggtgtgtctc 480

ataagtgact tctacccggg agccgtgaca gtggcctgga aggcagatag cagccccgtc 540

aaggcgggag tggagacaac cacaccctcc aaacaaagca acaacaagta cgcggccagc 600

agctatctga gcctgacgcc tgagcagtgg aagtcccaca gaagctacag ctgccaggtc 660

acgcatgaag ggagcaccgt ggaaaagaca gtggccccta cagaatgttc atag 714

<210> 587
<211> 714

<212> DNA
<213> Homo sapiens

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agctgcaccg gcaccagcag cgacgtgggc gacatcaacg acgtgagctg gtatcagcag 180

caccccggca aggcccccaa gctgatgatc tacgacgtga acaaccggcc cagcggcgtg 240

agcaaccggt tcagcggcag caagagcggc aacaccgcca gcctgaccat cagcggcctc 300

caggccgagg acgaggccga ctactactgc agcagctacg gcgagagcct gaccagctac 360

gtgtttggcg gcggaaccaa gcttaccgtc ctaggtcagc ccaaggctgc cccctcggtc 420

actctgttcc cgccctcctc tgaggagctt caagccaaca aggccacact ggtgtgtctc 480

ataagtgact tctacccggg agccgtgaca gtggcctgga aggcagatag cagccccgtc 540

aaggcgggag tggagacaac cacaccctcc aaacaaagca acaacaagta cgcggccagc 600

agctatctga gcctgacgcc tgagcagtgg aagtcccaca gaagctacag ctgccaggtc 660

acgcatgaag ggagcaccgt ggaaaagaca gtggccccta cagaatgttc atag 714

<210> 588
<211> 714
<212> DNA
<213> Homo sapiens

<400> 588
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gacatcgccc tgacccagcc cgccagcgtg agcggcagcc ctggccagag catcaccatc 120

agctgcaccg gcaccagcag cgacgtgggc gacatcaacg acgtgagctg gtatcagcag 180

caccccggca aggcccccaa gctgatgatc tacgacgtga acaaccggcc cagcggcgtg 240

agcaaccggt tcagcggcag caagagcggc aacaccgcca gcctgaccat cagcggcctc 300

caggccgagg acgaggccga ctactactgc agcagctacg gcgagagcct gaccagctac 360

gtgtttggcg gcggaaccaa gcttaccgtc ctaggtcagc ccaaggctgc cccctcggtc 420

actctgttcc cgccctcctc tgaggagctt caagccaaca aggccacact ggtgtgtctc 480

ataagtgact tctacccggg agccgtgaca gtggcctgga aggcagatag cagccccgtc 540

aaggcgggag tggagacaac cacaccctcc aaacaaagca acaacaagta cgcggccagc 600

agctatctga gcctgacgcc tgagcagtgg aagtcccaca gaagctacag ctgccaggtc 660

acgcatgaag ggagcaccgt ggaaaagaca gtggccccta cagaatgttc atag 714

<210> 589
<211> 714
<212> DNA
<213> Homo sapiens

<400> 589
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gacatcgccc tgacccagcc cgccagcgtg agcggcagcc ctggccagag catcaccatc 120

agctgcaccg gcaccagcag cgacgtgggc gacatcaacg acgtgagctg gtatcagcag 180

caccccggca aggcccccaa gctgatgatc tacgacgtga acaaccggcc cagcggcgtg 240

agcaaccggt tcagcggcag caagagcggc aacaccgcca gcctgaccat cagcggcctc 300

caggccgagg acgaggccga ctactactgc agcagctacg gcgagagcct gaccagctac 360

gtgtttggcg gcggaaccaa gcttaccgtc ctaggtcagc ccaaggctgc cccctcggtc 420

actctgttcc cgccctcctc tgaggagctt caagccaaca aggccacact ggtgtgtctc 480

ataagtgact tctacccggg agccgtgaca gtggcctgga aggcagatag cagccccgtc 540

aaggcgggag tggagacaac cacaccctcc aaacaaagca acaacaagta cgcggccagc 600

agctatctga gcctgacgcc tgagcagtgg aagtcccaca gaagctacag ctgccaggtc 660

acgcatgaag ggagcaccgt ggaaaagaca gtggccccta cagaatgttc atag 714

<210> 590
<211> 714
<212> DNA
<213> Homo sapiens

<400> 590
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gacatcgccc tgacccagcc cgccagcgtg agcggcagcc ctggccagag catcaccatc 120

agctgcaccg gcaccagcag cgacgtgggc gacatcaacg acgtgagctg gtatcagcag 180

caccccggca aggcccccaa gctgatgatc tacgacgtga acaaccggcc cagcggcgtg 240

agcaaccggt tcagcggcag caagagcggc aacaccgcca gcctgaccat cagcggcctc 300

caggccgagg acgaggccga ctactactgc agcagctacg gcgagagcct gaccagctac 360

gtgtttggcg gcggaaccaa gcttaccgtc ctaggtcagc ccaaggctgc cccctcggtc 420

actctgttcc cgccctcctc tgaggagctt caagccaaca aggccacact ggtgtgtctc 480

ataagtgact tctacccggg agccgtgaca gtggcctgga aggcagatag cagccccgtc 540

aaggcgggag tggagacaac cacaccctcc aaacaaagca acaacaagta cgcggccagc 600

agctatctga gcctgacgcc tgagcagtgg aagtcccaca gaagctacag ctgccaggtc 660

acgcatgaag ggagcaccgt ggaaaagaca gtggccccta cagaatgttc atag 714

<210> 591
<211> 714
<212> DNA
<213> Homo sapiens

<400> 591
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gacatcgccc tgacccagcc cgccagcgtg agcggcagcc ctggccagag catcaccatc 120

agctgcaccg gcaccagcag cgacgtgggc gacatcaacg acgtgagctg gtatcagcag 180

caccccggca aggcccccaa gctgatgatc tacgacgtga acaaccggcc cagcggcgtg 240

agcaaccggt tcagcggcag caagagcggc aacaccgcca gcctgaccat cagcggcctc 300

caggccgagg acgaggccga ctactactgc agcacctacg acggccctgg cctgagcgag 360

gtgttcggcg gagggaccaa gcttaccgtc ctaggtcagc ccaaggctgc cccctcggtc 420

actctgttcc cgccctcctc tgaggagctt caagccaaca aggccacact ggtgtgtctc 480

ataagtgact tctacccggg agccgtgaca gtggcctgga aggcagatag cagccccgtc 540

aaggcgggag tggagacaac cacaccctcc aaacaaagca acaacaagta cgcggccagc 600

agctatctga gcctgacgcc tgagcagtgg aagtcccaca gaagctacag ctgccaggtc 660

acgcatgaag ggagcaccgt ggaaaagaca gtggccccta cagaatgttc atag 714

<210> 592
<211> 714
<212> DNA
<213> Homo sapiens

<400> 592
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gacatcgccc tgacccagcc cgccagcgtg agcggcagcc ctggccagag catcaccatc 120

agctgcaccg gcaccagcag cgacgtgggc gacatcaacg acgtgagctg gtatcagcag 180

caccccggca aggcccccaa gctgatgatc tacgacgtga acaaccggcc cagcggcgtg 240

agcaaccggt tcagcggcag caagagcggc aacaccgcca gcctgaccat cagcggcctc 300

caggccgagg acgaggccga ctactactgc agcacctacg acggccctgg cctgagcgag 360

gtgttcggcg gagggaccaa gcttaccgtc ctaggtcagc ccaaggctgc cccctcggtc 420

actctgttcc cgccctcctc tgaggagctt caagccaaca aggccacact ggtgtgtctc 480

ataagtgact tctacccggg agccgtgaca gtggcctgga aggcagatag cagccccgtc 540

aaggcgggag tggagacaac cacaccctcc aaacaaagca acaacaagta cgcggccagc 600

agctatctga gcctgacgcc tgagcagtgg aagtcccaca gaagctacag ctgccaggtc 660

acgcatgaag ggagcaccgt ggaaaagaca gtggccccta cagaatgttc atag 714

<210> 593
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<400> 593
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gacatcgccc tgacccagcc cgccagcgtg agcggcagcc ctggccagag catcaccatc 120

agctgcaccg gcaccagcag cgacgtgggc gacatcaacg acgtgagctg gtatcagcag 180

caccccggca aggcccccaa gctgatgatc tacgacgtga acaaccggcc cagcggcgtg 240

agcaaccggt tcagcggcag caagagcggc aacaccgcca gcctgaccat cagcggcctc 300

caggccgagg acgaggccga ctactactgc agcacctacg acggccctgg cctgagcgag 360

gtgttcggcg gagggaccaa gcttaccgtc ctaggtcagc ccaaggctgc cccctcggtc 420

actctgttcc cgccctcctc tgaggagctt caagccaaca aggccacact ggtgtgtctc 480

ataagtgact tctacccggg agccgtgaca gtggcctgga aggcagatag cagccccgtc 540

aaggcgggag tggagacaac cacaccctcc aaacaaagca acaacaagta cgcggccagc 600

agctatctga gcctgacgcc tgagcagtgg aagtcccaca gaagctacag ctgccaggtc 660

acgcatgaag ggagcaccgt ggaaaagaca gtggccccta cagaatgttc atag 714

<210> 594
<211> 213
<212> PRT
<213> Homo sapiens

<400> 594

Met Gln Leu Pro Leu Ala Leu Cys Leu Val Cys Leu Leu Val His Thr
1 5 10 15

Ala Phe Arg Val Val Glu Gly Gln Gly Trp Gln Ala Phe Lys Asn Asp
20 25 30

Ala Thr Glu Ile Ile Pro Glu Leu Gly Glu Tyr Pro Glu Pro Pro Pro
35 40 45

Glu Leu Glu Asn Asn Lys Thr Met Asn Arg Ala Glu Asn Gly Gly Arg
50 55 60

Pro Pro His His Pro Phe Glu Thr Lys Asp Val Ser Glu Tyr Ser Cys
65 70 75 80

Arg Glu Leu His Phe Thr Arg Tyr Val Thr Asp Gly Pro Cys Arg Ser
85 90 95

Ala Lys Pro Val Thr Glu Leu Val Cys Ser Gly Gln Cys Gly Pro Ala
100 105 110

Arg Leu Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp Trp Arg Pro Ser
115 120 125

Gly Pro Asp Phe Arg Cys Ile Pro Asp Arg Tyr Arg Ala Gln Arg Val
130 135 140

Gln Leu Leu Cys Pro Gly Gly Glu Ala Pro Arg Ala Arg Lys Val Arg
145 150 155 160

Leu Val Ala Ser Cys Lys Cys Lys Arg Leu Thr Arg Phe His Asn Gln
165 170 175

Ser Glu Leu Lys Asp Phe Gly Thr Glu Ala Ala Arg Pro Gln Lys Gly
180 185 190

Arg Lys Pro Arg Pro Arg Ala Arg Ser Ala Lys Ala Asn Gln Ala Glu
195 200 205

Leu Glu Asn Ala Tyr
    210

<210> 595
<211> 14
<212> PRT
<213> Homo sapiens

<400> 595

Ala Arg Leu Leu Asn Ala Ile Gly Arg Gly Lys Trp Trp Arg
1   5   10

<210> 596
<211> 15
<212> PRT
<213> Homo sapiens

<400> 596

Arg Leu Val Ala Ser Cys Lys Cys Lys Arg Leu Thr Arg Phe His
1   5   10   15

<210> 597
<211> 13
<212> PRT
<213> Homo sapiens

<400> 597

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
1   5   10

<210> 598
<211> 19
<212> PRT
<213> Homo sapiens

<400> 598

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
1   5   10   15

Gly Gly Gly

<210> 599
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<213> Artificial

<220>
<223> siRNA

<400> 599
taaattatca taaagtccta a   21

<210> 600
<211> 21

<212> DNA
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<220>
<223> siRNA

<400> 600
aggactttat gataatttat t 21

<210> 601
<211> 21
<212> DNA
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<220>
<223> siRNA

<400> 601
atagtggtta aataactcca g 21

<210> 602
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<220>
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<400> 602
ggagttattt aaccactatt t 21

<210> 603
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<400> 603
taaattctcg tgatgtgcca t 21

<210> 604
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<400> 604
ggcacatcac gagaatttat t 21

<210> 605
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<220>
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<400> 605
tttcttatag cacagctggt t 21

<210> 606
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<400> 606
ccagctgtgc tataagaaat t 21

<210> 607
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<400> 607
tagacctttc catccacgct g 21

<210> 608
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<220>
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<400> 608
gcgtggatgg aaaggtctat t 21

<210> 609
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<212> DNA
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<220>
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<400> 609
atgcagctcc cactggccct gtgtcttgt 29

<210> 610
<211> 30
<212> DNA
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<220>
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<400> 610
aatcaggccg agctggagaa cgcctactag 30

<210> 611
<211> 102
<212> PRT
<213> Artificial Sequence

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<221> misc_feature
<222> (50)..(54)
<223> CDR

<220>
<221> misc_feature
<222> (87)..(91)
<223> CDR

<400> 611

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 Ile Pro Phe Ser Xaa Xaa
20 25 30

Xaa Xaa Xaa Trp Phe Arg Gln Ala Pro Gly Lys Gln Arg Asp Ser Val
35 40 45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys
50 55 60

Asn Thr Val Tyr Leu Gln Met Asn Ser Leu Lys Pro Glu Asp Thr Ala
65 70 75 80

Val Tyr Arg Cys Tyr Phe Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
85 90 95

Gln Val Thr Val Ser Ser
100

<210> 612
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
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<222> (50)..(54)
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<221> misc_feature
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<223> CDR

<400> 612

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

Ser Leu Arg Leu Ser Cys Val Gly Ser Gly Arg Thr Phe Ser Xaa Xaa
20 25 30

Xaa Xaa Xaa Trp Phe Arg Leu Ala Pro Gly Lys Glu Arg Glu Phe Val
35 40 45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Arg Asp Thr Ala Ser
50 55 60

Asn Arg Gly Tyr Leu His Met Asn Asn Leu Thr Pro Glu Asp Thr Ala
65 70 75 80

Val Tyr Tyr Cys Ala Ala Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
85 90 95

Gln Val Thr Val Ser Ser
100

<210> 613
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
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<222> (87)..(91)
<223> CDR

<400> 613

Ala Val Gln Leu Val Asp Ser Gly Gly Gly Leu Val Gln Ala Gly Asp
1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Leu Thr Gly Gly Ala Phe Thr Xaa Xaa
20 25 30

Xaa Xaa Xaa Trp Phe Arg Gln Thr Pro Gly Arg Glu Arg Glu Phe Val
        35   40   45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys
    50   55   60

Asn Met Val Tyr Leu Arg Met Asn Ser Leu Ile Pro Glu Asp Ala Ala
65   70   75   80

Val Tyr Ser Cys Ala Ala Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
                85   90   95

Leu Val Thr Val Ser Ser
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<210> 614
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<212> PRT
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<222> (50)..(54)
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<220>
<221> misc_feature
<222> (87)..(91)
<223> CDR

<400> 614

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

Ser Leu Arg Leu Ser Cys Thr Ala Ser Glu Ser Pro Phe Arg Xaa Xaa
            20   25   30

Xaa Xaa Xaa Trp Phe Arg Gln Thr Ser Gly Gln Glu Arg Glu Phe Val
        35   40   45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Arg Asp Asp Ala Lys
    50   55   60

Asn Thr Val Trp Leu His Gly Ser Thr Leu Lys Pro Glu Asp Thr Ala
65   70   75   80

Val Tyr Tyr Cys Ala Ala Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
                85   90   95

Gln Val Thr Val Ser Ser
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<212> PRT
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<222> (87)..(91)
<223> CDR

<400> 615

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

Ser Leu Arg Leu Ala Cys Ala Ala Ser Glu Arg Ile Phe Asp Xaa Xaa
20 25 30

Xaa Xaa Xaa Trp Tyr Arg Gln Gly Pro Gly Asn Glu Arg Glu Leu Val
35 40 45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Met Asp Tyr Thr Lys
50 55 60

Gln Thr Val Tyr Leu His Met Asn Ser Leu Arg Pro Glu Asp Thr Gly
65 70 75 80

Leu Tyr Tyr Cys Lys Ile Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
85 90 95

Gln Val Thr Val Ser Ser
100

<210> 616
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<223> CDR

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<222> (87)..(91)
<223> CDR

<400> 616

Asp Val Lys Phe Val Glu Ser Gly Gly Gly Leu Val Gln Ala Gly Gly
1   5   10   15

Ser Leu Arg Leu Ser Cys Val Ala Ser Gly Phe Asn Phe Asp Xaa Xaa
            20   25   30

Xaa Xaa Xaa Trp Phe Arg Gln Ala Pro Gly Lys Glu Arg Glu Glu Val
        35   40   45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Ser Glu Lys Asp Lys
    50   55   60

Asn Ser Val Tyr Leu Gln Met Asn Ser Leu Lys Pro Glu Asp Thr Ala
65   70   75   80

Leu Tyr Ile Cys Ala Gly Xaa Xaa Xaa Xaa Xaa Trp Gly Arg Gly Thr
                85   90   95

Gln Val Thr Val Ser Ser
            100

<210> 617
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<222> (87)..(91)

<223> CDR

<400> 617

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

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

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

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ala Arg Asp Ser Thr Lys
50 55 60

Asp Thr Phe Cys Leu Gln Met Asn Asn Leu Lys Pro Glu Asp Thr Ala
65 70 75 80

Val Tyr Tyr Cys Tyr Ala Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
85 90 95

Gln Val Thr Val Ser Ser
100

<210> 618
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
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<223> CDR

<400> 618

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

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

Xaa Xaa Xaa Trp Phe Arg Gln Ala Pro Gly Lys Pro Arg Glu Gly Val
35 40 45

Ser Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Thr Asp Asn Ala Lys
    50   55   60

Asn Thr Val His Leu Leu Met Asn Arg Val Asn Ala Glu Asp Thr Ala
65   70   75   80

Leu Tyr Tyr Cys Ala Val Xaa Xaa Xaa Xaa Xaa Trp Gly Arg Gly Thr
                85   90   95

Arg Val Thr Val Ser Ser
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<210> 619
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody

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<221> misc_feature
<222> (50)..(54)
<223> CDR

<220>
<221> misc_feature
<222> (87)..(91)
<223> CDR

<400> 619

Gln 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 Gln Ala Ser Gly Asp Ile Ser Thr Xaa Xaa
            20   25   30

Xaa Xaa Xaa Trp Tyr Arg Gln Val Pro Gly Lys Leu Arg Glu Phe Val
        35   40   45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Gly Asp Asn Ala Lys
    50   55   60

Arg Ala Ile Tyr Leu Gln Met Asn Asn Leu Lys Pro Asp Asp Thr Ala
65   70   75   80

Val Tyr Tyr Cys Asn Arg Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
                85   90   95

Gln Val Thr Val Ser Pro
100

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<400> 620

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

Ser Leu Arg Leu Phe Cys Ala Val Pro Ser Phe Thr Ser Thr Xaa Xaa
20 25 30

Xaa Xaa Xaa Trp Phe Arg Gln Ala Pro Gly Lys Glu Arg Glu Phe Val
35 40 45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Arg Asn Ala Thr Lys
50 55 60

Asn Thr Leu Thr Leu Arg Met Asp Ser Leu Lys Pro Glu Asp Thr Ala
65 70 75 80

Val Tyr Tyr Cys Ala Ala Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
85 90 95

Gln Val Thr Val Ser Ser
100

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<222> (87)..(91)
<223> CDR

<400> 621

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Ala Gly Asp
1 5 10 15

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

Xaa Xaa Xaa Trp Phe Arg Gln Ala Pro Gly Glu Lys Arg Glu Phe Val
35 40 45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ala Arg Glu Asn Ala Gly
50 55 60

Asn Met Val Tyr Leu Gln Met Asn Asn Leu Lys Pro Asp Asp Thr Ala
65 70 75 80

Leu Tyr Thr Cys Ala Ala Xaa Xaa Xaa Xaa Xaa Trp Gly Arg Gly Thr
85 90 95

Gln Val Thr Val Ser Ser
100

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<222> (87)..(91)
<223> CDR

<400> 622

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

Ser Gln Thr Leu Ser Cys Ala Ala Ser Gly Arg Thr Asn Ser Xaa Xaa
20 25 30

Xaa Xaa Xaa Trp Phe Arg Gln Ala Pro Gly Lys Glu Arg Val Phe Leu
35 40 45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Arg Asp Ser Ala Lys
50 55 60

Asn Met Met Tyr Leu Gln Met Asn Asn Leu Lys Pro Gln Asp Thr Ala
65 70 75 80

Val Tyr Tyr Cys Ala Ala Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
85 90 95

Gln Val Thr Val Ser Ser
100

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<223> CDR

<400> 623

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

Ser Leu Arg Leu Ser Cys Val Val Ser Gly Leu Thr Ser Ser Xaa Xaa
20 25 30

Xaa Xaa Xaa Trp Phe Arg Gln Thr Pro Trp Gln Glu Arg Asp Phe Val
35 40 45

```
Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Arg Asp Asn Tyr Lys
    50                  55                  60

Asp Thr Val Leu Leu Glu Met Asn Phe Leu Lys Pro Glu Asp Thr Ala
65                  70                  75                  80

Ile Tyr Tyr Cys Ala Ala Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
                85                  90                  95

Gln Val Thr Val Ser Ser
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<223> CDR

<400> 624

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

Ser Leu Arg Leu Ser Cys Ala Thr Ser Thr Arg Thr Leu Asp Xaa Xaa
            20                  25                  30

Xaa Xaa Xaa Trp Phe Arg Gln Ala Pro Gly Arg Asp Arg Glu Phe Val
        35                  40                  45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Val Ser Arg Asp Ser Ala Glu
    50                  55                  60

Asn Thr Val Ala Leu Gln Met Asn Ser Leu Lys Pro Glu Asp Thr Ala
65                  70                  75                  80

Val Tyr Tyr Cys Ala Ala Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
                85                  90                  95

Arg Val Thr Val Ser Ser
            100
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<222> (87)..(91)
<223> CDR

<400> 625

Gln 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 Thr Val Ser Arg Leu Thr Ala His Xaa Xaa
20 25 30

Xaa Xaa Xaa Trp Phe Arg Gln Ala Pro Gly Lys Glu Arg Glu Ala Val
35 40 45

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

Asn Thr Ala Phe Leu Gln Met Asp Ser Leu Lys Pro Glu Asp Thr Gly
65 70 75 80

Val Tyr Tyr Cys Ala Thr Xaa Xaa Xaa Xaa Xaa Trp Gly Gln Gly Thr
85 90 95

Gln Val Thr Val Ser Ser
100

<210> 626
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<212> PRT
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<220>
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<222> (50)..(54)
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<222> (87)..(91)
<223> CDR

<400> 626

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

Ser Leu Lys Leu Ser Cys Thr Ala Ser Gly Arg Asn Phe Val Xaa Xaa
20 25 30

Xaa Xaa Xaa Trp Phe Arg Arg Ala Pro Gly Lys Glu Arg Glu Phe Val
35 40 45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Val Ser Arg Asp Asn Gly Lys
50 55 60

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

Asp Tyr Tyr Cys Ala Val Xaa Xaa Xaa Xaa Xaa Leu Gly Ser Gly Thr
85 90 95

Gln Val Thr Val Ser Ser
100

<210> 627
<211> 102
<212> PRT
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<220>
<223> GLEW-class Nanobody

<220>
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<222> (50)..(54)
<223> CDR

<220>
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<222> (87)..(91)
<223> CDR

<400> 627

Ala 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 Xaa Xaa
            20   25   30

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

Ser Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys
    50   55   60

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

Val Tyr Tyr Cys Val Lys Xaa Xaa Xaa Xaa Xaa Gly Ser Gln Gly Thr
                85   90   95

Gln Val Thr Val Ser Ser
            100

<210> 628
<211> 102
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody

<220>
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<221> misc_feature
<222> (50)..(54)
<223> CDR

<220>
<221> misc_feature
<222> (87)..(91)
<223> CDR

<400> 628

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 Val Cys Val Ser Ser Gly Cys Thr Xaa Xaa
            20   25   30

Xaa Xaa Xaa Trp Val Arg Gln Ala Pro Gly Lys Ala Glu Glu Trp Val
        35   40   45

Ser Xaa Xaa Xaa Xaa Xaa Arg Phe Lys Ile Ser Arg Asp Asn Ala Lys
    50   55   60

```
Lys Thr Leu Tyr Leu Gln Met Asn Ser Leu Gly Pro Glu Asp Thr Ala
65                  70                  75                  80


Met Tyr Tyr Cys Gln Arg Xaa Xaa Xaa Xaa Xaa Arg Gly Gln Gly Thr
                85                  90                  95


Gln Val Thr Val Ser Ser
            100


<210>  629
<211>  102
<212>  PRT
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<220>
<223>  GLEW-class Nanobody


<220>
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<222>  (50)..(54)
<223>  CDR

<220>
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<222>  (87)..(91)
<223>  CDR

<400>  629

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


Ser Leu Thr Leu Ser Cys Val Phe Ser Gly Ser Thr Phe Ser Xaa Xaa
            20                  25                  30


Xaa Xaa Xaa Trp Val Arg His Thr Pro Gly Lys Ala Glu Glu Trp Val
        35                  40                  45


Ser Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys
    50                  55                  60


Asn Thr Leu Tyr Leu Glu Met Asn Ser Leu Ser Pro Glu Asp Thr Ala
65                  70                  75                  80


Met Tyr Tyr Cys Gly Arg Xaa Xaa Xaa Xaa Xaa Arg Ser Lys Gly Ile
                85                  90                  95


Gln Val Thr Val Ser Ser
            100
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<210> 630
<211> 102
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<220>
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<222> (87)..(91)
<223> CDR

<400> 630

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

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

Xaa Xaa Xaa Trp Phe Arg Gln Ala Pro Gly Lys Glu Arg Glu Phe Val
35 40 45

Ala Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys
50 55 60

Asn Thr Val Tyr Leu Gln Met Asn Ser Leu Lys Pro Glu Asp Thr Ala
65 70 75 80

Val Tyr Tyr Cys Ala Ala Xaa Xaa Xaa Xaa Xaa Arg Gly Gln Gly Thr
85 90 95

Gln Val Thr Val Ser Ser
100

<210> 631
<211> 102
<212> PRT
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<220>
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<220>
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<222> (50)..(54)
<223> CDR

<220>
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<222> (87)..(91)
<223> CDR

<400> 631

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

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Phe Asp Xaa Xaa
            20   25   30

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

Gly Xaa Xaa Xaa Xaa Xaa Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys
    50   55   60

Asn Met Leu Tyr Leu His Leu Asn Asn Leu Lys Ser Glu Asp Thr Ala
65   70   75   80

Val Tyr Tyr Cys Arg Arg Xaa Xaa Xaa Xaa Xaa Leu Gly Gln Gly Thr
                85   90   95

Gln Val Thr Val Ser Ser
            100

<210> 632
<211> 102
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<220>
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<220>
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<222> (50)..(54)
<223> CDR

<220>
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<222> (87)..(91)
<223> CDR

<400> 632

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 Val Cys Val Ser Ser Gly Cys Thr Xaa Xaa
            20   25   30

Xaa Xaa Xaa Trp Val Arg Gln Ala Pro Gly Lys Ala Glu Glu Trp Val
        35   40   45

Ser Xaa Xaa Xaa Xaa Xaa Arg Phe Lys Ile Ser Arg Asp Asn Ala Lys
    50   55   60

Lys Thr Leu Tyr Leu Gln Met Asn Ser Leu Gly Pro Glu Asp Thr Ala
65   70   75   80

Met Tyr Tyr Cys Gln Arg Xaa Xaa Xaa Xaa Xaa Arg Gly Gln Gly Thr
                85   90   95

Gln Val Thr Val Ser Ser
            100

<210> 633
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<220>
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<400> 633

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

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

<210> 634
<211> 30
<212> PRT
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<220>
<223> KERE-class Nanobody FW1 sequence

<400> 634

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Thr Gly Asp
1   5   10   15

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

<210> 635
<211> 30
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<220>

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<400> 635

Gln Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Ala Gly Asp
1 5 10 15

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

<210> 636
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<212> PRT
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<220>
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<400> 636

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

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

<210> 637
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW1 sequence

<400> 637

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

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

<210> 638
<211> 30
<212> PRT
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<220>
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<400> 638

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

Ser Leu Arg Leu Ser Cys Ala Ala Ser Glu Thr Ile Leu Ser
20 25 30

<210> 639
<211> 30

<212> PRT
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<220>
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<400> 639

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

Ser Leu Asn Leu Ser Cys Val Ala Ser Gly Asn Thr Phe Asn
20 25 30

<210> 640
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
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<400> 640

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

Ser Leu Gln Leu Ser Cys Ser Ala Pro Gly Phe Thr Leu Asp
20 25 30

<210> 641
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW1 sequence

<400> 641

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

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

<210> 642
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW1 sequence

<400> 642

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

Ser Cys Ala Ala Ser Gly
20

<210> 643
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW1 sequence

<400> 643

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

Ser Cys Ala Leu Thr Gly
20

<210> 644
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW1 sequence

<400> 644

Val Asp Ser Gly Gly Gly Leu Val Gln Ala Gly Asp Ser Leu Arg Leu
1 5 10 15

Ser Cys Ala Ala Ser Gly
20

<210> 645
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
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<400> 645

Val Asp Ser Gly Gly Gly Leu Val Glu Ala Gly Gly Ser Leu Arg Leu
1 5 10 15

Ser Cys Gln Val Ser Glu
20

<210> 646
<211> 22
<212> PRT
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<220>
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<400> 646

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

Ser Cys Ala Ala Ser Gly
            20

<210> 647
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW1 sequence

<400> 647

Val Gln Ser Gly Gly Arg Leu Val Gln Ala Gly Asp Ser Leu Arg Leu
1   5   10   15

Ser Cys Ala Ala Ser Glu
            20

<210> 648
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW1 sequence

<400> 648

Val Glu Ser Gly Gly Thr Leu Val Gln Ser Gly Asp Ser Leu Lys Leu
1   5   10   15

Ser Cys Ala Ser Ser Thr
            20

<210> 649
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW1 sequence

<400> 649

Met Glu Ser Gly Gly Asp Ser Val Gln Ser Gly Gly Ser Leu Thr Leu
1   5   10   15

Ser Cys Val Ala Ser Gly
            20

<210> 650
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW1 sequence

<400> 650

Gln Ala Ser Gly Gly Gly Leu Val Gln Ala Gly Gly Ser Leu Arg Leu
1 5 10 15

Ser Cys Ser Ala Ser Val
20

<210> 651
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW2 sequence

<400> 651

Trp Phe Arg Gln Ala Pro Gly Lys Glu Arg Glu Phe Val Ala
1 5 10

<210> 652
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW2 sequence

<400> 652

Trp Phe Arg Gln Thr Pro Gly Arg Glu Arg Glu Phe Val Ala
1 5 10

<210> 653
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW2 sequence

<400> 653

Trp Tyr Arg Gln Ala Pro Gly Lys Gln Arg Glu Met Val Ala
1 5 10

<210> 654
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW2 sequence

<400> 654

Trp Tyr Arg Gln Gly Pro Gly Lys Gln Arg Glu Leu Val Ala
1 5 10

<210> 655
<211> 14

<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW2 sequence

<400> 655

Trp Ile Arg Gln Ala Pro Gly Lys Glu Arg Glu Gly Val Ser
1   5   10

<210> 656
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW2 sequence

<400> 656

Trp Phe Arg Glu Ala Pro Gly Lys Glu Arg Glu Gly Ile Ser
1   5   10

<210> 657
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW2 sequence

<400> 657

Trp Tyr Arg Gln Ala Pro Gly Lys Glu Arg Asp Leu Val Ala
1   5   10

<210> 658
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW2 sequence

<400> 658

Trp Phe Arg Gln Ala Pro Gly Lys Gln Arg Glu Glu Val Ser
1   5   10

<210> 659
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW2 sequence

<400> 659

Trp Phe Arg Gln Pro Pro Gly Lys Val Arg Glu Phe Val Gly
1   5   10

<210> 660
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW3 sequence

<400> 660

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Arg Cys Tyr Phe
20 25 30

<210> 661
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW3 sequence

<400> 661

Arg Phe Ala Ile Ser Arg Asp Asn Asn Lys Asn Thr Gly Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Glu Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala
20 25 30

<210> 662
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW3 sequence

<400> 662

Arg Phe Thr Val Ala Arg Asn Asn Ala Lys Asn Thr Val Asn Leu Glu
1 5 10 15

Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala
20 25 30

<210> 663
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW3 sequence

<400> 663

Arg Phe Thr Ile Ser Arg Asp Ile Ala Lys Asn Thr Val Asp Leu Leu
1 5 10 15

Met Asn Asn Leu Glu Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala
20 25 30

<210> 664
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW3 sequence

<400> 664

Arg Leu Thr Ile Ser Arg Asp Asn Ala Val Asp Thr Met Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala
20 25 30

<210> 665
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW3 sequence

<400> 665

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val Tyr Leu Gln
1 5 10 15

Met Asp Asn Val Lys Pro Glu Asp Thr Ala Ile Tyr Tyr Cys Ala Ala
20 25 30

<210> 666
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW3 sequence

<400> 666

Arg Phe Thr Ile Ser Lys Asp Ser Gly Lys Asn Thr Val Tyr Leu Gln
1 5 10 15

Met Thr Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Thr
20 25 30

<210> 667
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW3 sequence

<400> 667

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Arg Phe Thr Ile Ser Arg Asp Ser Ala Lys Asn Met Met Tyr Leu Gln
1               5                   10                  15

Met Asn Asn Leu Lys Pro Gln Asp Thr Ala Val Tyr Tyr Cys Ala Ala
            20                  25                  30
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<210> 668
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW3 sequence

<400> 668

```
Arg Phe Thr Ile Ser Arg Glu Asn Asp Lys Ser Thr Val Tyr Leu Gln
1               5                   10                  15

Leu Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala
            20                  25                  30
```

<210> 669
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW3 sequence

<400> 669

```
Arg Phe Thr Ile Ser Arg Asp Tyr Ala Gly Asn Thr Ala Tyr Leu Gln
1               5                   10                  15

Met Asn Ser Leu Lys Pro Glu Asp Thr Gly Val Tyr Tyr Cys Ala Thr
            20                  25                  30
```

<210> 670
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW4 sequence

<400> 670

```
Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1               5                   10
```

<210> 671
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW4 sequence

<400> 671

Trp Gly Lys Gly Thr Leu Val Thr Val Ser Ser
1 5 10

<210> 672
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW4 sequence

<400> 672

Arg Gly Gln Gly Thr Arg Val Thr Val Ser Ser
1 5 10

<210> 673
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> KERE-class Nanobody FW4 sequence

<400> 673

Trp Gly Leu Gly Thr Gln Val Thr Ile Ser Ser
1 5 10

<210> 674
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW1 sequence

<400> 674

Gln 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
20 25 30

<210> 675
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW1 sequence

<400> 675

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

Ser Leu Arg Leu Ser Cys Ala Ala Phe Gly Phe Ile Phe Lys
20 25 30

<210> 676
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW1 sequence

<400> 676

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

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

<210> 677
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW1 sequence

<400> 677

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 Val Cys Val Ser Ser Gly Cys Thr
20 25 30

<210> 678
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW1 sequence

<400> 678

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

Ser Leu Thr Leu Ser Cys Val Phe Ser Gly Ser Thr Phe Ser
20 25 30

<210> 679
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW1 sequence

<400> 679

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

Ser Cys Ala Ala Ser Gly
            20

<210> 680
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW1 sequence

<400> 680

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

Ser Cys Val Ala Ser Gly
            20

<210> 681
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW1 sequence

<400> 681

Val Glu Ser Gly Gly Gly Leu Ala Leu Pro Gly Gly Ser Leu Thr Leu
1   5   10   15

Ser Cys Val Phe Ser Gly
            20

<210> 682
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW2 sequence

<400> 682

Trp Val Arg Gln Ala Pro Gly Lys Val Leu Glu Trp Val Ser
1   5   10

<210> 683
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW2 sequence

<400> 683

Trp Val Arg Arg Pro Pro Gly Lys Gly Leu Glu Trp Val Ser
1   5   10

<210> 684
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW2 sequence

<400> 684

Trp Val Arg Gln Ala Pro Gly Met Gly Leu Glu Trp Val Ser
1 5 10

<210> 685
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW2 sequence

<400> 685

Trp Val Arg Gln Ala Pro Gly Lys Glu Pro Glu Trp Val Ser
1 5 10

<210> 686
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW2 sequence

<400> 686

Trp Val Arg Gln Ala Pro Gly Lys Asp Gln Glu Trp Val Ser
1 5 10

<210> 687
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW2 sequence

<400> 687

Trp Val Arg Gln Ala Pro Gly Lys Ala Glu Glu Trp Val Ser
1 5 10

<210> 688
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW2 sequence

<400> 688

Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala
1 5 10

<210> 689
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW2 sequence

<400> 689

Trp Val Arg Gln Ala Pro Gly Arg Ala Thr Glu Trp Val Ser
1 5 10

<210> 690
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW3 sequence

<400> 690

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys Val Lys
20 25 30

<210> 691
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW3 sequence

<400> 691

Arg Phe Thr Ile Ser Arg Asp Asn Ala Arg Asn Thr Leu Tyr Leu Gln
1 5 10 15

Met Asp Ser Leu Ile Pro Glu Asp Thr Ala Leu Tyr Tyr Cys Ala Arg
20 25 30

<210> 692
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW3 sequence

<400> 692

Arg Phe Thr Ser Ser Arg Asp Asn Ala Lys Ser Thr Leu Tyr Leu Gln
1 5 10 15

Met Asn Asp Leu Lys Pro Glu Asp Thr Ala Leu Tyr Tyr Cys Ala Arg
20 25 30

<210> 693
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW3 sequence

<400> 693

Arg Phe Ile Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Gly Pro Glu Asp Thr Ala Met Tyr Tyr Cys Gln Arg
20 25 30

<210> 694
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW3 sequence

<400> 694

Arg Phe Thr Ala Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Lys Ser Glu Asp Thr Ala Arg Tyr Tyr Cys Ala Arg
20 25 30

<210> 695
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW3 sequence

<400> 695

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr Leu Gln
1 5 10 15

Met Asp Asp Leu Gln Ser Glu Asp Thr Ala Met Tyr Tyr Cys Gly Arg
20 25 30

<210> 696
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW4 sequence

<400> 696

Gly Ser Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 697
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW4 sequence

<400> 697

Leu Arg Gly Gly Thr Gln Val Thr Val Ser Ser
1   5   10

<210> 698
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW4 sequence

<400> 698

Arg Gly Gln Gly Thr Leu Val Thr Val Ser Ser
1   5   10

<210> 699
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW4 sequence

<400> 699

Arg Ser Arg Gly Ile Gln Val Thr Val Ser Ser
1   5   10

<210> 700
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW4 sequence

<400> 700

Trp Gly Lys Gly Thr Gln Val Thr Val Ser Ser
1   5   10

<210> 701
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> GLEW-class Nanobody FW4 sequence

<400> 701

Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 702
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW1 sequence

<400> 702

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

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

<210> 703
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW1 sequence

<400> 703

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

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asp Phe Gly
20 25 30

<210> 704
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW1 sequence

<400> 704

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

Ser Leu Arg Leu Ser Cys Ala Ala Phe Gly Phe Ile Phe Lys
20 25 30

<210> 705
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW1 sequence

<400> 705

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


Ser Leu Lys Leu Ser Cys Ala Ala Ser Arg Thr Ile Val Ser
            20                  25                  30


<210>  706
<211>  30
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  P,R,S 103-class Nanobody FW1 sequence

<400>  706

Gln Glu His Leu Val Glu Ser Gly Gly Gly Leu Val Asp Ile Gly Gly
1               5                   10                  15


Ser Leu Arg Leu Ser Cys Ala Ala Ser Glu Arg Ile Phe Ser
            20                  25                  30


<210>  707
<211>  30
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  P,R,S 103-class Nanobody FW1 sequence

<400>  707

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


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


<210>  708
<211>  30
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  P,R,S 103-class Nanobody FW1 sequence

<400>  708

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 Val Cys Val Ser Ser Gly Cys Thr
            20                  25                  30


<210>  709
<211>  30
<212>  PRT
<213>  Artificial Sequence

<220>
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<223> P,R,S 103-class Nanobody FW1 sequence

<400> 709

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

Ser Leu Thr Leu Ser Cys Val Phe Ser Gly Ser Thr Phe Ser
            20   25   30

<210> 710
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW1 sequence

<400> 710

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

Ser Cys Ala Ala Ser Gly
            20

<210> 711
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW1 sequence

<400> 711

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

Ser Cys Ala Ala Ser Arg
            20

<210> 712
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW2 sequence

<400> 712

Trp Phe Arg Gln Ala Pro Gly Lys Glu Arg Glu Phe Val Ala
1   5   10

<210> 713
<211> 14
<212> PRT
<213> Artificial Sequence

<220>

<223> P,R,S 103-class Nanobody FW2 sequence

<400> 713

Trp Val Arg Gln Ala Pro Gly Lys Val Leu Glu Trp Val Ser
1   5   10

<210> 714
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW2 sequence

<400> 714

Trp Val Arg Arg Pro Pro Gly Lys Gly Leu Glu Trp Val Ser
1   5   10

<210> 715
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW2 sequence

<400> 715

Trp Ile Arg Gln Ala Pro Gly Lys Glu Arg Glu Gly Val Ser
1   5   10

<210> 716
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW2 sequence

<400> 716

Trp Val Arg Gln Tyr Pro Gly Lys Glu Pro Glu Trp Val Ser
1   5   10

<210> 717
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW2 sequence

<400> 717

Trp Phe Arg Gln Pro Pro Gly Lys Glu His Glu Phe Val Ala
1   5   10

<210> 718
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW2 sequence

<400> 718

Trp Tyr Arg Gln Ala Pro Gly Lys Arg Thr Glu Leu Val Ala
1   5   10

<210> 719
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW2 sequence

<400> 719

Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Val Ser
1   5   10

<210> 720
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW2 sequence

<400> 720

Trp Leu Arg Gln Thr Pro Gly Lys Gly Leu Glu Trp Val Gly
1   5   10

<210> 721
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW2 sequence

<400> 721

Trp Val Arg Gln Ala Pro Gly Lys Ala Glu Glu Phe Val Ser
1   5   10

<210> 722
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW3 sequence

<400> 722

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val Tyr Leu Gln
1   5   10   15

Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala
            20   25   30

<210> 723
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW3 sequence

<400> 723

Arg Phe Thr Ile Ser Arg Asp Asn Ala Arg Asn Thr Leu Tyr Leu Gln
1 5 10 15

Met Asp Ser Leu Ile Pro Glu Asp Thr Ala Leu Tyr Tyr Cys Ala Arg
20 25 30

<210> 724
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW3 sequence

<400> 724

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Glu Met Tyr Leu Gln
1 5 10 15

Met Asn Asn Leu Lys Thr Glu Asp Thr Gly Val Tyr Trp Cys Gly Ala
20 25 30

<210> 725
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW3 sequence

<400> 725

Arg Phe Thr Ile Ser Ser Asp Ser Asn Arg Asn Met Ile Tyr Leu Gln
1 5 10 15

Met Asn Asn Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala
20 25 30

<210> 726
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW3 sequence

<400> 726

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Met Leu Tyr Leu His
1 5 10 15

```
Leu Asn Asn Leu Lys Ser Glu Asp Thr Ala Val Tyr Tyr Cys Arg Arg
            20                  25                  30


<210>  727
<211>  32
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  P,R,S 103-class Nanobody FW3 sequence

<400>  727

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Lys Thr Val Tyr Leu Arg
1               5                   10                  15


Leu Asn Ser Leu Asn Pro Glu Asp Thr Ala Val Tyr Ser Cys Asn Leu
            20                  25                  30


<210>  728
<211>  32
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  P,R,S 103-class Nanobody FW3 sequence

<400>  728

Arg Phe Lys Ile Ser Arg Asp Asn Ala Lys Lys Thr Leu Tyr Leu Gln
1               5                   10                  15


Met Asn Ser Leu Gly Pro Glu Asp Thr Ala Met Tyr Tyr Cys Gln Arg
            20                  25                  30


<210>  729
<211>  32
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  P,R,S 103-class Nanobody FW3 sequence

<400>  729

Arg Phe Thr Val Ser Arg Asp Asn Gly Lys Asn Thr Ala Tyr Leu Arg
1               5                   10                  15


Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Asp Tyr Tyr Cys Ala Val
            20                  25                  30


<210>  730
<211>  11
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  P,R,S 103-class Nanobody FW4 sequence
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<400> 730

Arg Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 731
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW4 sequence

<400> 731

Leu Arg Gly Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 732
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW4 sequence

<400> 732

Gly Asn Lys Gly Thr Leu Val Thr Val Ser Ser
1 5 10

<210> 733
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW4 sequence

<400> 733

Ser Ser Pro Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 734
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> P,R,S 103-class Nanobody FW4 sequence

<400> 734

Ser Ser Gln Gly Thr Leu Val Thr Val Ser Ser
1 5 10

<210> 735
<211> 11
<212> PRT
<213> Artificial Sequence

<220>

<223> P,R,S 103-class Nanobody FW4 sequence

<400> 735

Arg Ser Arg Gly Ile Gln Val Thr Val Ser Ser
1   5   10

<210> 736
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> FR1 sequence

<400> 736

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 Ser Ile Phe Ser
            20   25   30

<210> 737
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> FR1 sequence

<400> 737

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Ala Gly Asp
1   5   10   15

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

<210> 738
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> FR1 sequence

<400> 738

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

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

<210> 739
<211> 30
<212> PRT
<213> Artificial Sequence

<220>

<223> FR1 sequence

<400> 739

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

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

<210> 740
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> FR1 sequence

<400> 740

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Ala Gly Asp
1 5 10 15

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

<210> 741
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> FR1 sequence

<400> 741

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

Ser Leu Arg Leu Ser Cys Val Ala Ser Gly Arg Thr Leu Arg
20 25 30

<210> 742
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> FR1 sequence

<400> 742

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

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

<210> 743
<211> 30

<212> PRT
<213> Artificial Sequence

<220>
<223> FR1 sequence

<400> 743

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

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

<210> 744
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> FR1 sequence

<400> 744

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Ala Gly Asp
1 5 10 15

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

<210> 745
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 745

Asp Asn Val Met Gly
1 5

<210> 746
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 746

Ile Tyr Asn Met Asp
1 5

<210> 747
<211> 5
<212> PRT
<213> Artificial Sequence

<220>

<223> CDR sequence

<400> 747

Arg Phe Asp Met Ser
1 5

<210> 748
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 748

Ser Tyr Phe Met Gly
1 5

<210> 749
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 749

Ile Tyr Asn Met Asp
1 5

<210> 750
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 750

Arg Tyr Val Thr Gly
1 5

<210> 751
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 751

Ser Phe Val Ile Gly
1 5

<210> 752
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 752

Gln Tyr Thr Ile Thr
1   5

<210> 753
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 753

Ile Tyr Asn Met Asp
1   5

<210> 754
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> FR2 sequence

<400> 754

Trp Tyr Arg Gln Ala Pro Gly Lys Gln Arg Glu Leu Val Ala
1   5   10

<210> 755
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> FR2 sequence

<400> 755

Trp Phe Arg Gln Thr Pro Gly Lys Glu Arg Glu Leu Ile Ala
1   5   10

<210> 756
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> FR2 sequence

<400> 756

Trp Phe Arg Gln Ala Pro Gly Lys Gln Arg Glu Phe Ile Ala
1   5   10

<210> 757
<211> 14

<212> PRT
<213> Artificial Sequence

<220>
<223> FR2 sequence

<400> 757

Trp Phe Arg Gln Ala Pro Gly Lys Glu Arg Glu Val Val Ala
1 5 10

<210> 758
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> FR2 sequence

<400> 758

Trp Phe Leu Gln Ala Pro Gly Lys Glu Arg Glu Leu Ile Ala
1 5 10

<210> 759
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> FR2 sequence

<400> 759

Trp Phe Arg Gln Ala Pro Gly Lys Glu Arg Glu Val Val Ala
1 5 10

<210> 760
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> FR2 sequence

<400> 760

Trp Phe Arg Gln Ala Pro Gly Lys Gln Arg Glu Val Val Ala
1 5 10

<210> 761
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> FR2 sequence

<400> 761

Trp Phe Arg Gln Ala Pro Gly Lys Glu Arg Glu Phe Val Ala
1 5 10

<210> 762
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> FR2 sequence

<400> 762

Trp Phe Arg Gln Gly Ser Gly Lys Gly Arg Glu Leu Ile Ala
1 5 10

<210> 763
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 763

Thr Ile Trp Ser Ser Gly His Thr Asn Tyr Ala Asp Ser Val Lys Gly
1 5 10 15

<210> 764
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 764

Arg Leu Trp Trp Arg Ser Gly Ser Thr Tyr Tyr Ala Asp Ser Val Lys
1 5 10 15

Gly

<210> 765
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 765

Thr Ile Phe Ser Gly Gly Asp Thr Asp Tyr Ile Asp Ser Val Lys Gly
1 5 10 15

<210> 766
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 766

Thr Ile Arg Trp Ser Asp Gly Ser Thr Tyr Tyr Glu Asp Ser Val Lys
1 5 10 15

Gly

<210> 767
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 767

Arg Ile Trp Trp Arg Ser Gly Ala Thr Tyr Tyr Ala Asp Ser Val Lys
1 5 10 15

Gly

<210> 768
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 768

Ser Ile Ser Trp Ser Gly Glu Ser Thr Tyr Tyr Ala Asp Ser Val Lys
1 5 10 15

Gly

<210> 769
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 769

Ser Ile Thr Ser Gly Gly Ser Thr Tyr Tyr Glu Asp Ser Gly Lys Gly
1 5 10 15

<210> 770
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 770

Ala Val Ser Trp Ser Gly Ser Ser Glu Ser Val Ser Asn Ser Val Lys
1 5 10 15

Gly

<210> 771
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 771

Arg Ile Trp Trp Arg Ser Gly Glu Thr Tyr Tyr Ala Asp Ser Val Lys
1 5 10 15

Gly

<210> 772
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> FR3 sequence

<400> 772

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys Asn Leu
20 25 30

<210> 773
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> FR3 sequence

<400> 773

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Lys Pro Glu Asp Thr Ser Val Tyr Ile Cys Thr Ala
20 25 30

<210> 774
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> FR3 sequence

<400> 774

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val Tyr Leu Gln
1   5   10   15

Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys Cys Pro
            20   25   30

<210> 775
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> FR3 sequence

<400> 775

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val Tyr Leu Gln
1   5   10   15

Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala
            20   25   30

<210> 776
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> FR3 sequence

<400> 776

Arg Phe Thr Ile Ser Arg Gly Asn Ala Lys Asn Thr Val Tyr Leu Gln
1   5   10   15

Met Asn Ser Leu Lys Pro Glu Asp Thr Gly Val Tyr His Cys Thr Ala
            20   25   30

<210> 777
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> FR3 sequence

<400> 777

Arg Phe Ala Ile Ser Arg Asp Asn Ala Lys Asn Ala Val Tyr Leu Gln
1   5   10   15

Met Asn Ser Leu Asn Leu Glu Asp Thr Gly Val Tyr Tyr Cys Ala Glu
            20   25   30

<210> 778
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> FR3 sequence

<400> 778

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Arg Val Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Arg Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala
20 25 30

<210> 779
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> FR3 sequence

<400> 779

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Ala Tyr Leu Ala
1 5 10 15

Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala
20 25 30

<210> 780
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> FR3 sequence

<400> 780

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Lys Pro Glu Asp Thr Asn Val Tyr His Cys Ala Ala
20 25 30

<210> 781
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 781

Gly Thr Ile Val Thr Gly Thr Trp Arg Ser Asp Tyr
1 5 10

<210> 782
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 782

Gly Asp Thr Gly Gly Ala Ala Tyr Gly Tyr
1 5 10

<210> 783
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 783

Leu Gly Ile Glu Tyr Ala
1 5

<210> 784
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 784

Ala Lys Gly Ile Gly Val Tyr Gly Tyr
1 5

<210> 785
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 785

Gly Val Thr Gly Gly Ala Ala Tyr Gly Tyr
1 5 10

<210> 786
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 786

Ala Glu Leu Pro Gly Thr Tyr Asp Tyr
1 5

<210> 787
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 787

Ala Glu Pro Ala Gly Val Tyr Asp Val
1 5

<210> 788
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 788

Asp Arg Arg Gly Leu Ala Ser Thr Arg Ala Ala Asp Tyr Asp Tyr
1 5 10 15

<210> 789
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR sequence

<400> 789

Gly Asp Thr Gly Gly Ala Ser Tyr Gly Tyr
1 5 10

<210> 790
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> FR4 sequence

<400> 790

Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 791
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> FR4 sequence

<400> 791

Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 792
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> FR4 sequence

<400> 792

Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 793
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> FR4 sequence

<400> 793

Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 794
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> FR4 sequence

<400> 794

Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 795
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> FR4 sequence

<400> 795

Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 796
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> FR4 sequence

<400> 796

Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 797
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> FR4 sequence

<400> 797

Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 798
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> FR4 sequence

<400> 798

Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
1 5 10

<210> 799
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> Nanobody

<400> 799

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 Ser Ile Phe Ser Asp Asn
20 25 30

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

Ala Thr Ile Trp Ser Ser Gly His Thr Asn Tyr Ala Asp Ser Val Lys
50 55 60

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

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

```
Leu Gly Thr Ile Val Thr Gly Thr Trp Arg Ser Asp Tyr Trp Gly Gln
            100                 105                 110


Gly Thr Gln Val Thr Val Ser Ser
        115                 120


<210>  800
<211>  119
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Nanobody

<400>  800

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Ala Gly Asp
1               5                   10                  15


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


Asn Met Asp Trp Phe Arg Gln Thr Pro Gly Lys Glu Arg Glu Leu Ile
        35                  40                  45


Ala Arg Leu Trp Trp Arg Ser Gly Ser Thr Tyr Tyr Ala Asp Ser Val
    50                  55                  60


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


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


Thr Ala Gly Asp Thr Gly Gly Ala Ala Tyr Gly Tyr Trp Gly Gln Gly
            100                 105                 110


Thr Gln Val Thr Val Ser Ser
        115


<210>  801
<211>  114
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Nanobody

<400>  801

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


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

Asp Met Ser Trp Phe Arg Gln Ala Pro Gly Lys Gln Arg Glu Phe Ile
35 40 45

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

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

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

Pro Leu Gly Ile Glu Tyr Ala Trp Gly Gln Gly Thr Gln Val Thr Val
100 105 110

Ser Ser

<210> 802
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Nanobody

<400> 802

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

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

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

Ala Thr Ile Arg Trp Ser Asp Gly Ser Thr Tyr Tyr Glu Asp Ser Val
50 55 60

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

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

Ala Ala Ala Lys Gly Ile Gly Val Tyr Gly Tyr Trp Gly Gln Gly Thr
100 105 110

Gln Val Thr Val Ser Ser
115

<210> 803
<211> 119

<212> PRT
<213> Artificial Sequence

<220>
<223> Nanobody

<400> 803

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Ala Gly Asp
1 5 10 15

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

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

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

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

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

Thr Ala Gly Val Thr Gly Gly Ala Ala Tyr Gly Tyr Trp Gly Gln Gly
100 105 110

Thr Gln Val Thr Val Ser Ser
115

<210> 804
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Nanobody

<400> 804

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

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

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

Ala Ser Ile Ser Trp Ser Gly Glu Ser Thr Tyr Tyr Ala Asp Ser Val
50 55 60

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

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


Ala Glu Ala Glu Leu Pro Gly Thr Tyr Asp Tyr Trp Gly Gln Gly Thr
            100                 105                 110


Gln Val Thr Val Ser Ser
        115


<210>  805
<211>  117
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Nanobody

<400>  805

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


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


Val Ile Gly Trp Phe Arg Gln Ala Pro Gly Lys Gln Arg Glu Val Val
        35                  40                  45


Ala Ser Ile Thr Ser Gly Gly Ser Thr Tyr Tyr Glu Asp Ser Gly Lys
    50                  55                  60


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


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


Ala Ala Glu Pro Ala Gly Val Tyr Asp Val Trp Gly Gln Gly Thr Gln
            100                 105                 110


Val Thr Val Ser Ser
        115


<210>  806
<211>  124
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Nanobody

<400>  806

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Ala Gly Gly
1               5                   10                  15
```

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

Thr Ile Thr Trp Phe Arg Gln Ala Pro Gly Lys Glu Arg Glu Phe Val
35 40 45

Ala Ala Val Ser Trp Ser Gly Ser Ser Glu Ser Val Ser Asn Ser Val
50 55 60

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

Leu Ala Met Asn Ser Leu Lys Pro Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Ala Asp Arg Arg Gly Leu Ala Ser Thr Arg Ala Ala Asp Tyr Asp
100 105 110

Tyr Trp Gly Gln Gly Thr Gln Val Thr Val Ser Ser
115 120

<210> 807
<211> 119
<212> PRT
<213> Artificial Sequence

<220>
<223> Nanobody

<400> 807

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Ala Gly Asp
1 5 10 15

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

Asn Met Asp Trp Phe Arg Gln Gly Ser Gly Lys Gly Arg Glu Leu Ile
35 40 45

Ala Arg Ile Trp Trp Arg Ser Gly Glu Thr Tyr Tyr Ala Asp Ser Val
50 55 60

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

Leu Gln Met Asn Ser Leu Lys Pro Glu Asp Thr Asn Val Tyr His Cys
85 90 95

Ala Ala Gly Asp Thr Gly Gly Ala Ser Tyr Gly Tyr Trp Gly Gln Gly
100 105 110

Thr Gln Val Thr Val Ser Ser
        115

<210> 808
<211> 213
<212> PRT
<213> Homo sapiens

<400> 808

Met Gln Leu Pro Leu Ala Leu Cys Leu Val Cys Leu Leu Val His Thr
1   5   10   15

Ala Phe Arg Val Val Glu Gly Gln Gly Trp Gln Ala Phe Lys Asn Asp
            20   25   30

Ala Thr Glu Ile Ile Pro Glu Leu Gly Glu Tyr Pro Glu Pro Pro Pro
        35   40   45

Glu Leu Glu Asn Asn Lys Thr Met Asn Arg Ala Glu Asn Gly Gly Arg
    50   55   60

Pro Pro His His Pro Phe Glu Thr Lys Asp Val Ser Glu Tyr Ser Cys
65   70   75   80

Arg Glu Leu His Phe Thr Arg Tyr Val Thr Asp Gly Pro Cys Arg Ser
                85   90   95

Ala Lys Pro Val Thr Glu Leu Val Cys Ser Gly Gln Cys Gly Pro Ala
            100   105   110

Arg Leu Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp Trp Arg Pro Ser
        115   120   125

Gly Pro Asp Phe Arg Cys Ile Pro Asp Arg Tyr Arg Ala Gln Thr Val
    130   135   140

Gln Leu Leu Cys Pro Gly Gly Glu Ala Pro Arg Ala Arg Lys Val Arg
145   150   155   160

Leu Val Ala Ser Cys Lys Cys Lys Arg Leu Thr Arg Phe His Asn Gln
                165   170   175

Ser Glu Leu Lys Asp Phe Gly Thr Glu Ala Ala Arg Pro Gln Lys Gly
            180   185   190

Arg Lys Pro Arg Pro Arg Ala Arg Ser Ala Lys Ala Asn Gln Ala Glu
        195   200   205

Leu Glu Asn Ala Tyr
    210

<210> 809

<211> 213
<212> PRT
<213> Artificial Sequence

<220>
<223> Recombinant sclerostin

<400> 809

Met Pro Leu Leu Leu Leu Leu Pro Leu Leu Trp Ala Gly Ala Leu Ala
1 5 10 15

His His His His His His His Gln Gly Trp Gln Ala Phe Lys Asn Asp
20 25 30

Ala Thr Glu Ile Ile Pro Glu Leu Gly Glu Tyr Pro Glu Pro Pro Pro
35 40 45

Glu Leu Glu Asn Asn Lys Thr Met Asn Arg Ala Glu Asn Gly Gly Arg
50 55 60

Pro Pro His His Pro Phe Glu Thr Lys Asp Val Ser Glu Tyr Ser Cys
65 70 75 80

Arg Glu Leu His Phe Thr Arg Tyr Val Thr Asp Gly Pro Cys Arg Ser
85 90 95

Ala Lys Pro Val Thr Glu Leu Val Cys Ser Gly Gln Cys Gly Pro Ala
100 105 110

Arg Leu Leu Pro Asn Ala Ile Gly Arg Gly Lys Trp Trp Arg Pro Ser
115 120 125

Gly Pro Asp Phe Arg Cys Ile Pro Asp Arg Tyr Arg Ala Gln Arg Val
130 135 140

Gln Leu Leu Cys Pro Gly Gly Glu Ala Pro Arg Ala Arg Lys Val Arg
145 150 155 160

Leu Val Ala Ser Cys Lys Cys Lys Arg Leu Thr Arg Phe His Asn Gln
165 170 175

Ser Glu Leu Lys Asp Phe Gly Thr Glu Ala Ala Arg Pro Gln Lys Gly
180 185 190

Arg Lys Pro Arg Pro Arg Ala Arg Ser Ala Lys Ala Asn Gln Ala Glu
195 200 205

Leu Glu Asn Ala Tyr
210

<210> 810
<211> 798
<212> DNA

<213> Homo sapiens

<400> 810
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ctcggcggcc accctctgct gggagtgagc gccaccttga actcggttct caattccaac 120

gctatcaaga acctgccccc accgctgggc ggcgctgcgg ggcacccagg ctctgcagtc 180

agcgccgcgc cgggaatcct gtacccgggc gggaataagt accagaccat tgacaactac 240

cagccgtacc cgtgcgcaga ggacgaggag tgcggcactg atgagtactg cgctagtccc 300

acccgcggag gggacgcagg cgtgcaaatc tgtctcgcct gcaggaagcg ccgaaaacgc 360

tgcatgcgtc acgctatgtg ctgccccggg aattactgca aaaatggaat atgtgtgtct 420

tctgatcaaa atcatttccg aggagaaatt gaggaaacca tcactgaaag ctttggtaat 480

gatcatagca ccttggatgg gtattccaga agaaccacct tgtcttcaaa aatgtatcac 540

accaaaggac aagaaggttc tgtttgtctc aggtcatcag actgtgcctc aggattgtgt 600

tgtgatagac acttctggtc caagatctgt aaacctgtcc tgaaagaagg tcaagtgtgt 660

accaagcata ggagaaaagg ctctcatgga ctagaaatat tccagcgttg ttactgtgga 720

gaaggtctgt cttgccggat acagaaagat caccatcaag ccagtaattc ttctaggctt 780

cacacttgtc agagacac 798

<210> 811
<211> 266
<212> PRT
<213> Homo sapiens

<400> 811

Met Met Ala Leu Gly Ala Ala Gly Ala Thr Arg Val Phe Val Ala Met
1 5 10 15

Val Ala Ala Ala Leu Gly Gly His Pro Leu Leu Gly Val Ser Ala Thr
20 25 30

Leu Asn Ser Val Leu Asn Ser Asn Ala Ile Lys Asn Leu Pro Pro Pro
35 40 45

Leu Gly Gly Ala Ala Gly His Pro Gly Ser Ala Val Ser Ala Ala Pro
50 55 60

Gly Ile Leu Tyr Pro Gly Gly Asn Lys Tyr Gln Thr Ile Asp Asn Tyr
65 70 75 80

Gln Pro Tyr Pro Cys Ala Glu Asp Glu Glu Cys Gly Thr Asp Glu Tyr
85 90 95

Cys Ala Ser Pro Thr Arg Gly Gly Asp Ala Gly Val Gln Ile Cys Leu
100 105 110

Ala Cys Arg Lys Arg Arg Lys Arg Cys Met Arg His Ala Met Cys Cys

```
        115                 120                 125

Pro Gly Asn Tyr Cys Lys Asn Gly Ile Cys Val Ser Ser Asp Gln Asn
    130                 135                 140

His Phe Arg Gly Glu Ile Glu Glu Thr Ile Thr Glu Ser Phe Gly Asn
145                 150                 155                 160

Asp His Ser Thr Leu Asp Gly Tyr Ser Arg Arg Thr Thr Leu Ser Ser
                165                 170                 175

Lys Met Tyr His Thr Lys Gly Gln Glu Gly Ser Val Cys Leu Arg Ser
            180                 185                 190

Ser Asp Cys Ala Ser Gly Leu Cys Cys Asp Arg His Phe Trp Ser Lys
        195                 200                 205

Ile Cys Lys Pro Val Leu Lys Glu Gly Gln Val Cys Thr Lys His Arg
    210                 215                 220

Arg Lys Gly Ser His Gly Leu Glu Ile Phe Gln Arg Cys Tyr Cys Gly
225                 230                 235                 240

Glu Gly Leu Ser Cys Arg Ile Gln Lys Asp His His Gln Ala Ser Asn
                245                 250                 255

Ser Ser Arg Leu His Thr Cys Gln Arg His
            260                 265
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<210> 812
<211> 816
<212> DNA
<213> Mus musculus

<400> 812

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ctctgcagcc tccctctgct aggagccagt gccaccttga actcagttct catcaattcc      120

aacgcgatca agaacctgcc cccaccgctg ggtggtgctg gggggcagcc gggctctgct      180

gtcagtgtgg cgccgggagt tctctatgag ggcgggaaca agtaccagac tcttgacaac      240

taccagccct acccttgcgc tgaagatgag gagtgcggct ctgacgagta ctgctccagc      300

cccagccgcg gggcagccgg cgtcggaggt gtacagatct gtctggcttg ccgaaagcgc      360

aggaagcgct gcatgaggca cgctatgtgc tgccccggga actactgcaa aaatggaata      420

tgcatgccct ctgaccacag ccattttcct cgaggggaga ttgaggaaag catcattgaa      480

aaccttggta atgaccacaa cgccgccgcg ggggatggat atcccagaag aaccacactg      540

acttcaaaaa tatatcacac caaaggacaa gaaggctccg tctgcctccg atcatcagac      600

tgtgccgcag ggctgtgttg tgcaagacac ttctggtcca agatctgtaa acctgtcctt      660

aaagaaggtc aggtgtgcac caagcacaaa cggaaaggct cccacgggct ggagatattc      720
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cagcgctgtt actgcgggga aggcctggct tgcaggatac agaaagatca ccatcaagcc 780

agcaattctt ctaggctcca cacctgccag agacac 816

<210> 813
<211> 272
<212> PRT
<213> Mus musculus

<400> 813

Met Met Val Val Cys Ala Ala Ala Ala Val Arg Phe Leu Ala Val Phe
1 5 10 15

Thr Met Met Ala Leu Cys Ser Leu Pro Leu Leu Gly Ala Ser Ala Thr
20 25 30

Leu Asn Ser Val Leu Ile Asn Ser Asn Ala Ile Lys Asn Leu Pro Pro
35 40 45

Pro Leu Gly Gly Ala Gly Gly Gln Pro Gly Ser Ala Val Ser Val Ala
50 55 60

Pro Gly Val Leu Tyr Glu Gly Gly Asn Lys Tyr Gln Thr Leu Asp Asn
65 70 75 80

Tyr Gln Pro Tyr Pro Cys Ala Glu Asp Glu Glu Cys Gly Ser Asp Glu
85 90 95

Tyr Cys Ser Ser Pro Ser Arg Gly Ala Ala Gly Val Gly Gly Val Gln
100 105 110

Ile Cys Leu Ala Cys Arg Lys Arg Arg Lys Arg Cys Met Arg His Ala
115 120 125

Met Cys Cys Pro Gly Asn Tyr Cys Lys Asn Gly Ile Cys Met Pro Ser
130 135 140

Asp His Ser His Phe Pro Arg Gly Glu Ile Glu Glu Ser Ile Ile Glu
145 150 155 160

Asn Leu Gly Asn Asp His Asn Ala Ala Ala Gly Asp Gly Tyr Pro Arg
165 170 175

Arg Thr Thr Leu Thr Ser Lys Ile Tyr His Thr Lys Gly Gln Glu Gly
180 185 190

Ser Val Cys Leu Arg Ser Ser Asp Cys Ala Ala Gly Leu Cys Cys Ala
195 200 205

Arg His Phe Trp Ser Lys Ile Cys Lys Pro Val Leu Lys Glu Gly Gln
210 215 220

```
Val Cys Thr Lys His Lys Arg Lys Gly Ser His Gly Leu Glu Ile Phe
225                 230                 235                 240

Gln Arg Cys Tyr Cys Gly Glu Gly Leu Ala Cys Arg Ile Gln Lys Asp
                245                 250                 255

His His Gln Ala Ser Asn Ser Ser Arg Leu His Thr Cys Gln Arg His
            260                 265                 270
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<210> 814
<211> 810
<212> DNA
<213> Rattus rattus

<400> 814

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atgacggttg tgcgtgcagt ggcagctgtc cggttcttgg tcgtgcttac aacgatggct       60

ctctgcagcc tccctccgct cggagtcagc gccactttga actcagttct catcaattcc      120

aacgcgatca agaacctgcc cccaccgctg ggtggtgctg gggggcagcc gggctctgct      180

gtcagcgtgg cgcccggagt cctctatgag ggcgggaaca agtaccagac tcttgacaac      240

taccagccct acccttgcgc ggaggatgag gagtgcggca ctgacgagta ctgctccagt      300

cccagccgcg gggcagccgg cgtgggaggt gtacaaatct gcctggcttg ccgaaagcgc      360

aggaaacgct gcatgaggca cgctatgtgc tgccccggga attactgcaa aaacggaata      420

tgcatgccct ctgaccacag ccatttacct cgaggggaaa tcgaggaagg catcattgaa      480

aaccttggca atgaccacgg tgccggggat ggatatccca gaagaaccac actgacttca      540

aaaatatatc acaccaaagg gcaagaaggc tctgtctgcc tccgatcatc agactgcgcc      600

acagggctgt gttgtgcaag acatttctgg tccaagatct gtaaacctgt ccttaaagaa      660

ggtcaggtat gcaccaagca cagaaggaaa ggctcccacg ggctggagat attccagcgc      720

tgttactgtg gggaaggtct ggcttgcagg atacagaaag atcaccatca aaccagcaat      780

tcttccaggc tccacacctg ccagagacac                                       810
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<210> 815
<211> 270
<212> PRT
<213> Rattus rattus

<400> 815

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Met Thr Val Val Arg Ala Val Ala Ala Val Arg Phe Leu Val Val Leu
1               5                   10                  15

Thr Thr Met Ala Leu Cys Ser Leu Pro Pro Leu Gly Val Ser Ala Thr
            20                  25                  30

Leu Asn Ser Val Leu Ile Asn Ser Asn Ala Ile Lys Asn Leu Pro Pro
        35                  40                  45

Pro Leu Gly Gly Ala Gly Gly Gln Pro Gly Ser Ala Val Ser Val Ala
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    50                  55                  60

Pro Gly Val Leu Tyr Glu Gly Gly Asn Lys Tyr Gln Thr Leu Asp Asn
65                  70                  75                  80

Tyr Gln Pro Tyr Pro Cys Ala Glu Asp Glu Glu Cys Gly Thr Asp Glu
                85                  90                  95

Tyr Cys Ser Ser Pro Ser Arg Gly Ala Ala Gly Val Gly Gly Val Gln
            100                 105                 110

Ile Cys Leu Ala Cys Arg Lys Arg Arg Lys Arg Cys Met Arg His Ala
        115                 120                 125

Met Cys Cys Pro Gly Asn Tyr Cys Lys Asn Gly Ile Cys Met Pro Ser
    130                 135                 140

Asp His Ser His Leu Pro Arg Gly Glu Ile Glu Glu Gly Ile Ile Glu
145                 150                 155                 160

Asn Leu Gly Asn Asp His Gly Ala Gly Asp Gly Tyr Pro Arg Arg Thr
                165                 170                 175

Thr Leu Thr Ser Lys Ile Tyr His Thr Lys Gly Gln Glu Gly Ser Val
            180                 185                 190

Cys Leu Arg Ser Ser Asp Cys Ala Thr Gly Leu Cys Cys Ala Arg His
        195                 200                 205

Phe Trp Ser Lys Ile Cys Lys Pro Val Leu Lys Glu Gly Gln Val Cys
    210                 215                 220

Thr Lys His Arg Arg Lys Gly Ser His Gly Leu Glu Ile Phe Gln Arg
225                 230                 235                 240

Cys Tyr Cys Gly Glu Gly Leu Ala Cys Arg Ile Gln Lys Asp His His
                245                 250                 255

Gln Thr Ser Asn Ser Ser Arg Leu His Thr Cys Gln Arg His
            260                 265                 270


<210>  816
<211>  798
<212>  DNA
<213>  ARTIFICIAL SEQUENCE

<220>
<223>  Cyno DKK-1


<220>
<221>  CDS
<222>  (1)..(798)
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<400> 816
atg atg gct ctg ggc gca gca gga gct gcc cgg gtc ttg gtc gcg ctg 48
Met Met Ala Leu Gly Ala Ala Gly Ala Ala Arg Val Leu Val Ala Leu
1 5 10 15

gta gcg gcg gct ctt ggc ggc cac cct ctg ctg gga gtg agc gcc acc 96
Val Ala Ala Ala Leu Gly Gly His Pro Leu Leu Gly Val Ser Ala Thr
20 25 30

ttg aac tcg gtt ctc aat tcc aac gcg atc aag aac ctg ccc cca ccg 144
Leu Asn Ser Val Leu Asn Ser Asn Ala Ile Lys Asn Leu Pro Pro Pro
35 40 45

ctg ggc ggc gct gcg ggg cac cca ggc tct gca gtc agc gcc gcg cca 192
Leu Gly Gly Ala Ala Gly His Pro Gly Ser Ala Val Ser Ala Ala Pro
50 55 60

gga att ctg tac ccg ggc ggg aat aag tac cag acc att gac aac tac 240
Gly Ile Leu Tyr Pro Gly Gly Asn Lys Tyr Gln Thr Ile Asp Asn Tyr
65 70 75 80

cag ccg tac cct tgc gca gag gat gag gag tgc ggc act gat gag tac 288
Gln Pro Tyr Pro Cys Ala Glu Asp Glu Glu Cys Gly Thr Asp Glu Tyr
85 90 95

tgc gct agt ccc acc cgc gga ggg gac gcg ggc gtg caa atc tgt ctc 336
Cys Ala Ser Pro Thr Arg Gly Gly Asp Ala Gly Val Gln Ile Cys Leu
100 105 110

gcc tgc agg aag cgc cga aaa cgc tgc atg cgt cac gct atg tgc tgc 384
Ala Cys Arg Lys Arg Arg Lys Arg Cys Met Arg His Ala Met Cys Cys
115 120 125

ccc ggg aat tac tgc aaa aat gga ata tgt gtg tct tct gat caa aat 432
Pro Gly Asn Tyr Cys Lys Asn Gly Ile Cys Val Ser Ser Asp Gln Asn
130 135 140

aat ttc cga ggg gaa att gag gaa acc att act gaa agc ttt ggt aat 480
Asn Phe Arg Gly Glu Ile Glu Glu Thr Ile Thr Glu Ser Phe Gly Asn
145 150 155 160

gat cat agc act ttg gat ggg tat tcc aga aga aca aca ttg tct tca 528
Asp His Ser Thr Leu Asp Gly Tyr Ser Arg Arg Thr Thr Leu Ser Ser
165 170 175

aaa atg tat cac agc aaa gga caa gaa ggt tct gtg tgt ctc cgg tca 576
Lys Met Tyr His Ser Lys Gly Gln Glu Gly Ser Val Cys Leu Arg Ser
180 185 190

tca gac tgt gcc aca gga ctg tgt tgt gct aga cac ttc tgg tcc aag 624
Ser Asp Cys Ala Thr Gly Leu Cys Cys Ala Arg His Phe Trp Ser Lys
195 200 205

atc tgt aaa cct gtc ctc aaa gaa ggt caa gtg tgt acc aag cat aga 672
Ile Cys Lys Pro Val Leu Lys Glu Gly Gln Val Cys Thr Lys His Arg
210 215 220

aga aaa ggc tct cat ggg cta gaa ata ttc cag cgt tgt tac tgc gga 720
Arg Lys Gly Ser His Gly Leu Glu Ile Phe Gln Arg Cys Tyr Cys Gly
225 230 235 240

gaa ggt ctg tct tgc cgg ata cag aaa gat cac cat caa gcc agt aat 768
Glu Gly Leu Ser Cys Arg Ile Gln Lys Asp His His Gln Ala Ser Asn
245 250 255

tct tct agg ctt cac act tgt cag aga cac 798
Ser Ser Arg Leu His Thr Cys Gln Arg His
260 265

<210> 817
<211> 266
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> Synthetic Construct

<400> 817

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Met Met Ala Leu Gly Ala Ala Gly Ala Ala Arg Val Leu Val Ala Leu
1               5                  10                  15

Val Ala Ala Ala Leu Gly Gly His Pro Leu Leu Gly Val Ser Ala Thr
            20                  25                  30

Leu Asn Ser Val Leu Asn Ser Asn Ala Ile Lys Asn Leu Pro Pro Pro
        35                  40                  45

Leu Gly Gly Ala Ala Gly His Pro Gly Ser Ala Val Ser Ala Ala Pro
    50                  55                  60

Gly Ile Leu Tyr Pro Gly Gly Asn Lys Tyr Gln Thr Ile Asp Asn Tyr
65                  70                  75                  80

Gln Pro Tyr Pro Cys Ala Glu Asp Glu Glu Cys Gly Thr Asp Glu Tyr
                85                  90                  95

Cys Ala Ser Pro Thr Arg Gly Gly Asp Ala Gly Val Gln Ile Cys Leu
            100                 105                 110

Ala Cys Arg Lys Arg Arg Lys Arg Cys Met Arg His Ala Met Cys Cys
        115                 120                 125

Pro Gly Asn Tyr Cys Lys Asn Gly Ile Cys Val Ser Ser Asp Gln Asn
    130                 135                 140

Asn Phe Arg Gly Glu Ile Glu Glu Thr Ile Thr Glu Ser Phe Gly Asn
145                 150                 155                 160

Asp His Ser Thr Leu Asp Gly Tyr Ser Arg Arg Thr Thr Leu Ser Ser
                165                 170                 175

Lys Met Tyr His Ser Lys Gly Gln Glu Gly Ser Val Cys Leu Arg Ser
            180                 185                 190

Ser Asp Cys Ala Thr Gly Leu Cys Cys Ala Arg His Phe Trp Ser Lys
        195                 200                 205

Ile Cys Lys Pro Val Leu Lys Glu Gly Gln Val Cys Thr Lys His Arg
    210                 215                 220
```

Arg Lys Gly Ser His Gly Leu Glu Ile Phe Gln Arg Cys Tyr Cys Gly
225 230 235 240

Glu Gly Leu Ser Cys Arg Ile Gln Lys Asp His His Gln Ala Ser Asn
245 250 255

Ser Ser Arg Leu His Thr Cys Gln Arg His
260 265

<210> 818
<211> 103
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Hu VH

<400> 818

Glu Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly
1 5 10 15

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Trp Val Ser Ser Tyr
20 25 30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile
35 40 45

Tyr Asp Ala Ser Asn Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
65 70 75 80

Glu Asp Phe Ala Val Tyr Tyr Cys Ala Trp Gln Glu Phe Phe Gly Gln
85 90 95

Gly Thr Lys Leu Glu Ile Lys
100

<210> 819
<211> 120
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Hu VL CDR1

<400> 819

Glu Val Gln Leu Val Gln Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

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Ser Leu Arg Leu Ser Cys Thr Ala Ser Gly Phe Thr Phe Ser Asn His
            20                  25                  30

Trp Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35                  40                  45

Ser Gly Ile Asn Trp Asn Ser Gly Ser Arg Gly Tyr Ser 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 Arg Pro Val Ala Thr Gly Ala Phe Asp Ile Trp Gly Gln
            100                 105                 110

Gly Thr Thr Val Thr Val Ser Ser
        115                 120


<210>  820
<211>  11
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 11H10Hu VL CDR2

<400>  820

Arg Ala Ser Gln Trp Val Ser Ser Tyr Leu Ala
1               5                   10


<210>  821
<211>  7
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 11H10Hu VL CDR3

<400>  821

Asp Ala Ser Asn Arg Ala Thr
1               5


<210>  822
<211>  5
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
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<223> DKK-1 mAbs 11H10Hu VH CDR1

<400> 822

Ala Trp Gln Glu Phe
1   5

<210> 823
<211> 5
<212> PRT
<213> Homo sapiens

<400> 823

Asn His Trp Ile His
1   5

<210> 824
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Hu VH CDR2

<400> 824

Gly Ile Asn Trp Asn Ser Gly Ser Arg Gly Tyr Ser Asp Ser Val Lys
1   5   10   15

Gly

<210> 825
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Hu VH CDR3

<400> 825

Glu Arg Pro Val Ala Thr Gly Ala Phe Asp Ile
1   5   10

<210> 826
<211> 107
<212> PRT
<213> Rattus norvegicus

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Rat VL

<400> 826

Asp Ile Arg Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Leu Gly

1 5 10 15

Glu Thr Val Asn Ile Glu Cys Leu Ala Ser Glu Asp Ile Tyr Ser Asp
20 25 30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ser Pro Gln Leu Leu Ile
35 40 45

Tyr Asn Ala Asn Ser Leu Gln Asn Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Gln Tyr Ser Leu Lys Ile Asn Ser Leu Gln Ser
65 70 75 80

Glu Asp Val Ala Thr Tyr Phe Cys Gln Gln Tyr Asn Asn Tyr Pro Pro
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys
100 105

<210> 827
<211> 120
<212> PRT
<213> Rattus norvegicus

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Rat VH

<400> 827

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Ala Asn
1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Asp Tyr
20 25 30

Ala Met Ala Trp Val Arg Gln Ser Pro Lys Lys Gly Leu Glu Trp Val
35 40 45

Ala Thr Ile Ile Tyr Asp Gly Ser Ser Thr Tyr Tyr Arg Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Ser Thr Leu Tyr
65 70 75 80

Leu Gln Met Asp Ser Leu Arg Ser Glu Asp Thr Ala Thr Tyr Tyr Cys
85 90 95

Ala Thr Gly Leu Gly Ile Ala Thr Asp Tyr Phe Asp Tyr Trp Gly Gln
100 105 110

Gly Val Leu Val Thr Val Ser Ser

115 120

<210> 828
<211> 11
<212> PRT
<213> Rattus norvegicus

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Rat VL CDR1

<400> 828

Leu Ala Ser Glu Asp Ile Tyr Ser Asp Leu Ala
1 5 10

<210> 829
<211> 7
<212> PRT
<213> Rattus norvegicus

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Rat VL CDR2

<400> 829

Asn Ala Asn Ser Leu Gln Asn
1 5

<210> 830
<211> 9
<212> PRT
<213> Rattus norvegicus

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Rat VL CDR3

<400> 830

Gln Gln Tyr Asn Asn Tyr Pro Pro Thr
1 5

<210> 831
<211> 5
<212> PRT
<213> Rattus norvegicus

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Rat VH CDR1

<400> 831

Asp Tyr Ala Met Ala
1 5

<210> 832

<211> 17
<212> PRT
<213> Rattus norvegicus

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Rat VH CDR2

<400> 832

Thr Ile Ile Tyr Asp Gly Ser Ser Thr Tyr Tyr Arg Asp Ser Val Lys
1 5 10 15

Gly

<210> 833
<211> 11
<212> PRT
<213> Rattus norvegicus

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 11H10Rat VH CDR3

<400> 833

Gly Leu Gly Ile Ala Thr Asp Tyr Phe Asp Tyr
1 5 10

<210> 834
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.4.1 VL

<400> 834

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 Gly Ile Arg Asp Asp
20 25 30

Leu Gly Trp Phe Gln Gln Lys Pro Gly Lys Ala Pro Lys Arg Leu Ile
35 40 45

Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Glu 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 Ser Tyr Pro Cys

85 90 95

Ser Phe Gly Gln Gly Thr Lys Leu Glu Phe Lys
100 105

<210> 835
<211> 124
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.4.1 VH

<400> 835

Gln Val Gln Leu Met Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Gly Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Trp Ile Ser Ala Asp Asn Gly His Thr Asn Tyr Ala Gln Lys Leu
50 55 60

Gln Gly Arg Val Thr Met Thr Thr Asp Thr Ser Thr Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Arg Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Asp Gly Glu Leu Leu Asn Tyr Tyr Tyr Tyr Tyr Gly Met Asp
100 105 110

Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120

<210> 836
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.4.1 VL CDR1

<400> 836

Arg Ala Ser Gln Gly Ile Arg Asp Asp Leu Gly
1 5 10

<210> 837

<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.4.1 VL CDR2

<400> 837

Ala Ala Ser Ser Leu Gln Ser
1 5

<210> 838
<211> 9
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.4.1 VL CDR3

<400> 838

Leu Gln His Asn Ser Tyr Pro Cys Ser
1 5

<210> 839
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.4.1 VH CDR1

<400> 839

Ser Tyr Gly Ile Ser
1 5

<210> 840
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.4.1 VH CDR2

<400> 840

Trp Ile Ser Ala Asp Asn Gly His Thr Asn Tyr Ala Gln Lys Leu Gln
1 5 10 15

Gly

<210> 841

<211> 15
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.4.1 VH CDR3

<400> 841

Asp Gly Glu Leu Leu Asn Tyr Tyr Tyr Tyr Tyr Gly Met Asp Val
1 5 10 15

<210> 842
<211> 112
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.20.1 VL

<400> 842

Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Ser Val Ile Pro Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu His Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Tyr Trp Tyr Leu Gln Arg Pro Gly Gln Pro
35 40 45

Pro Gln Leu Leu Ile Tyr Glu Val Ser Asn Arg Phe Ser Gly Val Pro
50 55 60

His Arg Leu Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln Ser
85 90 95

Ile Gln Val Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105 110

<210> 843
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.20.1 VH

<400> 843

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg

1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
20 25 30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ala Val Ile Ser Tyr Asp Gly Ser Asp Lys Tyr Tyr Ala Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Asp Gln Trp Gly Gly Ser Pro Ala Gly Pro Trp Gly Gln Gly
100 105 110

Thr Leu Val Thr Val Ser Ser
115

<210> 844
<211> 16
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.20.1 VL CDR1

<400> 844

Lys Ser Ser Gln Ser Leu Leu His Ser Asp Gly Lys Thr Tyr Leu Tyr
1 5 10 15

<210> 845
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.20.1 VL CDR2

<400> 845

Glu Val Ser Asn Arg Phe Ser
1 5

<210> 846
<211> 9
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.20.1 VL CDR3

<400> 846

Met Gln Ser Ile Gln Val Pro Trp Thr
1   5

<210> 847
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.20.1 VH CDR1

<400> 847

Ser Tyr Gly Met His
1   5

<210> 848
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.20.1 VH CDR2

<400> 848

Val Ile Ser Tyr Asp Gly Ser Asp Lys Tyr Tyr Ala Asp Ser Val Lys
1   5   10   15

Gly

<210> 849
<211> 10
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.20.1 VH CDR3

<400> 849

Asp Gln Trp Gly Gly Ser Pro Ala Gly Pro
1   5   10

<210> 850
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.37.1 VL

<400> 850

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 Ser Val Ser Ser Asn
            20   25   30

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
        35   40   45

Ile Tyr Gly 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 Ser Pro
                85   90   95

Ile Thr Phe Gly Gln Gly Thr Arg Leu Glu Ile Lys
            100   105

<210> 851
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.37.1 VH

<400> 851

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1   5   10   15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
            20   25   30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35   40   45

Ala Val Ile Ser Tyr Asp Gly Ser Asp Lys Tyr Tyr Ala Asp Ser Val
    50   55   60

Lys Gly Arg Phe Thr Phe Ser Arg Asp Asn Ser Lys Asn Thr 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 Leu Gly Ile Ala Ala Ser Phe Asp Tyr Trp Gly Gln Gly
100 105 110

Thr Leu Val Thr Val Ser Ser
115

<210> 852
<211> 12
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 2.37.1 VL CDR1

<400> 852

Arg Ala Ser Gln Ser Val Ser Ser Asn Tyr Leu Ala
1 5 10

<210> 853
<211> 7
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 2.37.1 VL CDR2

<400> 853

Gly Ala Ser Ser Arg Ala Thr
1 5

<210> 854
<211> 9
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 2.37.1 VL CDR3

<400> 854

Gln Gln Tyr Gly Ser Ser Pro Ile Thr
1 5

<210> 855
<211> 5
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 2.37.1 VH CDR1

<400> 855

Ser Tyr Gly Met His
1 5

<210> 856
<211> 17
<212> PRT
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<223> DKK-1 mAbs 2.37.1 VH CDR2

<400> 856

Val Ile Ser Tyr Asp Gly Ser Asp Lys Tyr Tyr Ala Asp Ser Val Lys
1 5 10 15

Gly

<210> 857
<211> 10
<212> PRT
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<220>
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<223> DKK-1 mAbs 2.37.1 VH CDR3

<400> 857

Glu Leu Gly Ile Ala Ala Ser Phe Asp Tyr
1 5 10

<210> 858
<211> 112
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 2.40.1 VL

<400> 858

Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Ser Val Thr Pro Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu His Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Tyr Trp Tyr Leu Gln Lys Pro Gly Gln Pro
35 40 45

Pro Gln Leu Leu Ile Tyr Glu Val Ser Asn Arg Phe Ser Gly Val Pro

50 55 60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln Ser
85 90 95

Ile Gln Val Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105 110

<210> 859
<211> 117
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 2.40.1 VH

<400> 859

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
20 25 30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Gly Trp Val
35 40 45

Ala Val Ile Ser Tyr Asp Gly Ser Asp Lys Tyr Tyr Ala Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Asp Leu Val Asp Thr Ala Met Pro Trp Gly Gln Gly Thr Thr
100 105 110

Val Thr Val Ser Ser
115

<210> 860
<211> 16
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.40.1 VL CDR1

<400> 860

Lys Ser Ser Gln Ser Leu Leu His Ser Asp Gly Lys Thr Tyr Leu Tyr
1 5 10 15

<210> 861
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.40.1 VL CDR2

<400> 861

Glu Val Ser Asn Arg Phe Ser
1 5

<210> 862
<211> 9
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.40.1 VL CDR3

<400> 862

Met Gln Ser Ile Gln Val Pro Trp Thr
1 5

<210> 863
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.40.1 VH CDR1

<400> 863

Ser Tyr Gly Met His
1 5

<210> 864
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.40.1 VH CDR2

<400> 864

Val Ile Ser Tyr Asp Gly Ser Asp Lys Tyr Tyr Ala Asp Ser Val Lys

1 5 10 15

Gly

<210> 865
<211> 8
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.40.1 VH CDR3

<400> 865

Asp Leu Val Asp Thr Ala Met Pro
1 5

<210> 866
<211> 112
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.41.1 VL

<400> 866

Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Ser Val Thr Pro Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu His Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Tyr Trp Tyr Leu Gln Lys Pro Gly Gln Pro
35 40 45

Pro Gln Leu Leu Ile Tyr Glu Val Ser Asn Arg Phe Ser Gly Val Pro
50 55 60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln Ser
85 90 95

Lys Gln Leu Pro Phe Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
100 105 110

<210> 867
<211> 122
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.41.1 VH

<400> 867

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1   5   10   15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
            20   25   30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35   40   45

Ala Val Ile Ser Tyr Asp Gly Ser Asp Lys Tyr Tyr Ala Asp Ser Val
    50   55   60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Ala Gly Tyr Ser Leu Tyr Tyr Tyr Tyr Gly Met Asp Val Trp
            100   105   110

Gly Gln Gly Thr Thr Val Thr Val Ser Ser
        115   120

<210> 868
<211> 16
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.41.1 VL CDR1

<400> 868

Lys Ser Ser Gln Ser Leu Leu His Ser Asp Gly Lys Thr Tyr Leu Tyr
1   5   10   15

<210> 869
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.41.1 VL CDR2

<400> 869

Glu Val Ser Asn Arg Phe Ser

1 5

<210> 870
<211> 9
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 2.41.1 VL CDR3

<400> 870

Met Gln Ser Lys Gln Leu Pro Phe Thr
1 5

<210> 871
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.41.1 VH CDR1

<400> 871

Ser Tyr Gly Met His
1 5

<210> 872
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.41.1 VH CDR2

<400> 872

Val Ile Ser Tyr Asp Gly Ser Asp Lys Tyr Tyr Ala Asp Ser Val Lys
1 5 10 15

Gly

<210> 873
<211> 13
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.41.1 VH CDR3

<400> 873

Ala Gly Tyr Ser Leu Tyr Tyr Tyr Tyr Gly Met Asp Val

1 5 10

<210> 874
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.47.1 VL

<400> 874

Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val Thr Pro Gly
1 5 10 15

Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30

Asp Asp Gly Asp Thr Tyr Leu Asp Trp Tyr Leu Gln Lys Pro Gly Gln
35 40 45

Ser Pro Gln Leu Leu Ile Tyr Thr Leu Ser Tyr Arg Ala Ser Gly Val
50 55 60

Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys
65 70 75 80

Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln
85 90 95

Arg Ile Glu Phe Pro Phe Thr Phe Gly Pro Gly Thr Lys Val Asp Ile
100 105 110

Lys

<210> 875
<211> 127
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.47.1 VH

<400> 875

Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
1 5 10 15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Gly
20 25 30

Gly Tyr Tyr Trp Ser Trp Ile Arg Gln His Pro Gly Lys Gly Leu Glu

```
        35                  40                  45

Trp Ile Gly Asp Ile Tyr Tyr Ser Gly Ser Thr Tyr Tyr Asn Pro Ser
    50                  55                  60

Leu Lys Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe
65                  70                  75                  80

Ser Leu Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr
                85                  90                  95

Cys Ala Arg Asp Arg Ala Tyr Gly Asp Tyr Gly Gly Asp Tyr Tyr Tyr
            100                 105                 110

Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
        115                 120                 125


<210>  876
<211>  17
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 2.47.1 VL CDR1

<400>  876

Arg Ser Ser Gln Ser Leu Leu Asp Ser Asp Asp Gly Asp Thr Tyr Leu
1               5                   10                  15

Asp



<210>  877
<211>  7
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 2.47.1 VL CDR2

<400>  877

Thr Leu Ser Tyr Arg Ala Ser
1               5


<210>  878
<211>  14
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 2.47.1 VL CDR3
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<400> 878

Met Gln Arg Ile Glu Phe Pro Met Gln Arg Ile Glu Phe Pro
1 5 10

<210> 879
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.47.1 VH CDR1

<400> 879

Ser Gly Gly Tyr Tyr Trp Ser
1 5

<210> 880
<211> 16
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.47.1 VH CDR2

<400> 880

Asp Ile Tyr Tyr Ser Gly Ser Thr Tyr Tyr Asn Pro Ser Leu Lys Ser
1 5 10 15

<210> 881
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 2.47.1 VH CDR3

<400> 881

Asp Arg Ala Tyr Gly Asp Tyr Gly Gly Asp Tyr Tyr Tyr Gly Met Asp
1 5 10 15

Val

<210> 882
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.17.1 VL

<400> 882

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 Gln Ala Ser Gln Asp Ile Asn Asn Tyr
            20   25   30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Asn Leu Leu Ile
        35   40   45

Tyr Asp Ala Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly
    50   55   60

Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro
65   70   75   80

Ala Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Asp Asp Phe Pro Leu
                85   90   95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
            100   105

<210> 883
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.17.1 VH

<400> 883

Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
1   5   10   15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr
            20   25   30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
        35   40   45

Gly Tyr Ile Tyr Tyr Ser Gly Asn Thr Asn Tyr Asn Pro Ser Leu Lys
    50   55   60

Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
65   70   75   80

Lys Leu Arg Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
                85   90   95

Arg Tyr Asn Trp Asn Asn Asp Leu Phe Asp Tyr Trp Gly Gln Gly Thr

100 105 110

Leu Val Thr Val Ser Ser
115

<210> 884
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.17.1 VL CDR1

<400> 884

Gln Ala Ser Gln Asp Ile Asn Asn Tyr Leu Asn
1 5 10

<210> 885
<211> 7
<212> PRT
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<220>
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<223> DKK-1 mAbs 5.17.1 VL CDR2

<400> 885

Asp Ala Ser Asn Leu Glu Thr
1 5

<210> 886
<211> 9
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.17.1 VL CDR3

<400> 886

Gln Gln Tyr Asp Asp Phe Pro Leu Thr
1 5

<210> 887
<211> 5
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 5.17.1 VH CDR1

<400> 887

Ser Tyr Tyr Trp Ser

1 5

<210> 888
<211> 16
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.17.1 VH CDR2

<400> 888

Tyr Ile Tyr Tyr Ser Gly Asn Thr Asn Tyr Asn Pro Ser Leu Lys Ser
1 5 10 15

<210> 889
<211> 10
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.17.1 VH CDR3

<400> 889

Tyr Asn Trp Asn Asn Asp Leu Phe Asp Tyr
1 5 10

<210> 890
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.23.1 VL

<400> 890

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 Gln Ala Ser Gln Asp Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Asp Ala Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Asp Asn Leu Pro Leu

85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
100 105

<210> 891
<211> 126
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.23.1 VH

<400> 891

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
20 25 30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ala Val Ile Trp Cys Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Ser Ser Lys Asn Thr 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 Gly Gly Tyr Gly Ser Gly Ser Tyr Glu Asp Tyr Tyr Tyr Gly
100 105 110

Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120 125

<210> 892
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.23.1 VL CDR1

<400> 892

Gln Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 893

<211> 7
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 5.23.1 VL CDR2

<400> 893

Asp Ala Ser Asn Leu Glu Thr
1 5

<210> 894
<211> 9
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.23.1 VL CDR3

<400> 894

Gln Gln Tyr Asp Asn Leu Pro Leu Thr
1 5

<210> 895
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.23.1 VH CDR1

<400> 895

Ser Tyr Gly Met His
1 5

<210> 896
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.23.1 VH CDR2

<400> 896

Val Ile Trp Cys Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val Lys
1 5 10 15

Gly

<210> 897

<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.23.1 VH CDR3

<400> 897

Gly Gly Tyr Gly Ser Gly Ser Tyr Glu Asp Tyr Tyr Tyr Gly Met Asp
1 5 10 15

Val

<210> 898
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.25.1 VL

<400> 898

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 Gln Ala Ser Gln Asp Ile Ser Lys Asp
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Arg Leu Leu Ile
35 40 45

Tyr Asp Ala Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Ile Ala Thr Phe Tyr Cys Gln Gln Tyr Asp His Leu Pro Ile
85 90 95

Ala Phe Gly Gln Gly Thr Arg Leu Glu Ile Lys
100 105

<210> 899
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.25.1 VH

<400> 899

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Asp Ile Asn Trp Val Arg Gln Ala Thr Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Trp Met Asp Pro Asn Ser Gly Asn Thr Gly Tyr Ala Gln Lys Phe
50 55 60

Gln Gly Arg Val Thr Met Thr Arg Asn Thr Ser Ile Ser Thr Ala Phe
65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Thr Asp Tyr Phe Tyr Phe Gly Met Asp Val Trp Gly Gln Gly
100 105 110

Thr Thr Val Thr Val Ser Ser
115

<210> 900
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAps 5.25.1 VL CDR1

<400> 900

Gln Ala Ser Gln Asp Ile Ser Lys Asp Leu Asn
1 5 10

<210> 901
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.25.1 VL CDR2

<400> 901

Asp Ala Ser Asn Leu Glu Thr
1 5

<210> 902

<211> 9
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.25.1 VL CDR3

<400> 902

Gln Gln Tyr Asp Asn Leu Pro Leu Thr
1 5

<210> 903
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.25.1 VH CDR1

<400> 903

Ser Tyr Gly Met His
1 5

<210> 904
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.25.1 VH CDR2

<400> 904

Trp Met Asp Pro Asn Ser Gly Asn Thr Gly Tyr Ala Gln Lys Phe Gln
1 5 10 15

Gly

<210> 905
<211> 10
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs VH CDR3

<400> 905

Thr Asp Tyr Phe Tyr Phe Gly Met Asp Val
1 5 10

<210> 906

<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.31.1 VL

<400> 906

Asp Ile Gln Val Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Phe Leu Ile
35 40 45

Tyr Asp Ala Ser Asn Leu Glu Ala Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Asp Asn Leu Pro Leu
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
100 105

<210> 907
<211> 125
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.31.1 VH

<400> 907

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
20 25 30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ala Val Ile Trp Tyr Asp Gly Arg Asn Lys Tyr Tyr Ala Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Gly Gly Gly Ala Val Ala Asp Tyr Asn Tyr Tyr Tyr Gly Met
100 105 110

Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120 125

<210> 908
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.31.1 VL CDR1

<400> 908

Gln Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 909
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.31.1 VL CDR2

<400> 909

Asp Ala Ser Asn Leu Glu Ala
1 5

<210> 910
<211> 9
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.31.1 VL CDR3

<400> 910

Gln Gln Tyr Asp Asn Leu Pro Leu Thr
1 5

<210> 911
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.31.1 VH CDR1

<400> 911

Ser Tyr Gly Met His
1   5

<210> 912
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.31.1 VH CDR2

<400> 912

Val Ile Trp Tyr Asp Gly Arg Asn Lys Tyr Tyr Ala Asp Ser Val Lys
1   5   10   15

Gly

<210> 913
<211> 16
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.31.1 VH CDR3

<400> 913

Gly Gly Gly Ala Val Ala Asp Tyr Asn Tyr Tyr Tyr Gly Met Asp Val
1   5   10   15

<210> 914
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.32.1 VL

<400> 914

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 Gln Ala Ser Gln Asp Ile Ser Lys Asp
            20   25   30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile

```
        35                  40                  45

Tyr Asp Ala Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro
65                  70                  75                  80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Asp Asp Leu Pro Ile
                85                  90                  95

Thr Phe Gly Gln Gly Thr Arg Leu Glu Ile Lys
            100                 105

<210>  915
<211>  119
<212>  PRT
<213>  Homo sapiens

<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 5.32.1 VH

<400>  915

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                   10                  15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Thr Phe Thr Ser Tyr
            20                  25                  30

Asp Ile Ser Trp Val Arg Gln Ala Thr Gly Leu Gly Leu Glu Trp Met
        35                  40                  45

Gly Trp Met Asn Pro Ser Ser Gly Tyr Thr Gly Tyr Ala Gln Asn Phe
    50                  55                  60

Gln Gly Arg Val Thr Met Thr Trp Asn Thr Ser Ile Ser Thr Val Tyr
65                  70                  75                  80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Thr Asp Tyr Tyr Tyr Tyr Gly Met Asp Val Trp Gly Arg Gly
            100                 105                 110

Thr Thr Val Thr Val Ser Ser
        115

<210>  916
<211>  11
<212>  PRT
<213>  Homo sapiens
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<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.32.1 VL CDR1

<400> 916

Gln Ala Ser Gln Asp Ile Ser Lys Asp Leu Asn
1   5   10

<210> 917
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.32.1 VL CDR2

<400> 917

Asp Ala Ser Asn Leu Glu Thr
1   5

<210> 918
<211> 9
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.32.1 VL CDR3

<400> 918

Gln Gln Tyr Asp Asp Leu Pro Ile Thr
1   5

<210> 919
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.32.1 VH CDR1

<400> 919

Ser Tyr Asp Ile Ser
1   5

<210> 920
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.32.1 VH CDR2

<400> 920

Trp Met Asn Pro Ser Ser Gly Tyr Thr Gly Tyr Ala Gln Asn Phe Gln
1 5 10 15

Gly

<210> 921
<211> 10
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.32.1 VH CDR3

<400> 921

Thr Asp Tyr Tyr Tyr Tyr Gly Met Asp Val
1 5 10

<210> 922
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.40.1 VL

<400> 922

Asp Ile Arg Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Glu Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Asp Ala Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Asp Asn Phe Pro Leu
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
100 105

<210> 923

<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.40.1 VH

<400> 923

Gln Val Leu Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
1 5 10 15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr
20 25 30

Tyr Trp Ser Trp Ile Arg Gln Thr Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45

Gly Tyr Val Tyr Tyr Ser Gly Ser Thr Ser Tyr Asn Pro Ser Leu Lys
50 55 60

Ser Arg Val Thr Ile Ser Met Tyr Thr Ser Lys Thr Glu Phe Ser Leu
65 70 75 80

Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95

Arg Tyr Asn Trp Asn Asn Asp Leu Phe Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 924
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.40.1 VL CDR1

<400> 924

Gln Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 925
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.40.1 VL CDR2

<400> 925

Asp Ala Ser Asn Leu Glu Thr
1 5

<210> 926
<211> 9
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.40.1 VL CDR3

<400> 926

Gln Gln Tyr Asp Asn Phe Pro Leu Thr
1 5

<210> 927
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.40.1 VH CDR1

<400> 927

Ser Tyr Tyr Trp Ser
1 5

<210> 928
<211> 16
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.40.1 VH CDR2

<400> 928

Tyr Val Tyr Tyr Ser Gly Ser Thr Ser Tyr Asn Pro Ser Leu Lys Ser
1 5 10 15

<210> 929
<211> 10
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.40.1 VH CDR3

<400> 929

Tyr Asn Trp Asn Asn Asp Leu Phe Asp Tyr

1 5 10

<210> 930
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.65.1 VL

<400> 930

Ser Tyr Val Leu Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Gln
1 5 10 15

Thr Ala Arg Ile Thr Cys Gly Gly Asn Asn Ile Gly Ser Lys Ser Val
20 25 30

His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Leu Val Val Tyr
35 40 45

Asp Asp Ser Asp Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser
50 55 60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly
65 70 75 80

Asp Glu Ala Asp Tyr Tyr Cys Gln Val Leu Asp Ser Ser Ser Asp His
85 90 95

Val Ile Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
100 105

<210> 931
<211> 120
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.65.1 VH

<400> 931

Glu Val Gln Leu Leu 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 Ser Gly Asn Tyr
20 25 30

Ala Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ser Ala Ile Ser Gly Gly Gly Gly Thr Thr Tyr Tyr Ala Asp Ser Val

```
    50                  55                  60

Glu Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65                  70                  75                  80

Leu Gln Leu Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Lys Glu Phe Gly Glu Leu Glu Pro Arg Phe Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>  932
<211>  11
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 5.65.1 VL CDR1

<400>  932

Gly Gly Asn Asn Ile Gly Ser Lys Ser Val His
1               5                   10


<210>  933
<211>  7
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 5.65.1 VL CDR2

<400>  933

Asp Asp Ser Asp Arg Pro Ser
1               5


<210>  934
<211>  11
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 5.65.1 VL CDR3

<400>  934

Gln Val Leu Asp Ser Ser Ser Asp His Val Ile
1               5                   10


<210>  935
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<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.65.1 VH CDR1

<400> 935

Asn Tyr Ala Met Ser
1 5

<210> 936
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.65.1 VH CDR2

<400> 936

Ala Ile Ser Gly Gly Gly Gly Thr Thr Tyr Tyr Ala Asp Ser Val Glu
1 5 10 15

Gly

<210> 937
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.65.1 VH CDR3

<400> 937

Glu Phe Gly Glu Leu Glu Pro Arg Phe Asp Tyr
1 5 10

<210> 938
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.76.1 VL

<400> 938

Ser Tyr Val Leu Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Gln
1 5 10 15

Thr Ala Arg Ile Thr Cys Gly Gly Asn Asn Ile Gly Ser Glu Ser Val

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            20                  25                  30

His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Leu Val Val Tyr
        35                  40                  45

Asp Asp Ser Asp Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser
    50                  55                  60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly
65                  70                  75                  80

Asp Glu Ala Asp Tyr Tyr Cys Gln Val Trp Asp Ser Ser Asn Asp His
                85                  90                  95

Val Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
            100                 105


<210>  939
<211>  124
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mABs 5.76.1 VH

<400>  939

Gln Leu Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
1               5                   10                  15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Ser
            20                  25                  30

Asn Tyr Tyr Trp Gly Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu
        35                  40                  45

Trp Ile Gly Thr Ile Tyr Tyr Ser Gly Ser Thr Tyr Tyr Thr Pro Ser
    50                  55                  60

Leu Lys Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe
65                  70                  75                  80

Ser Leu Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr
                85                  90                  95

Cys Ala Arg Glu Arg Ala Ile Ala Val Ala Ala Ile Val Phe Phe Asp
            100                 105                 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>  940
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<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.76.1 VL CDR1

<400> 940

Gly Gly Asn Asn Ile Gly Ser Glu Ser Val His
1 5 10

<210> 941
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.76.1 VL CDR2

<400> 941

Asp Asp Ser Asp Arg Pro Ser
1 5

<210> 942
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.76.1 VL CDR3

<400> 942

Gln Val Trp Asp Ser Ser Asn Asp His Val Val
1 5 10

<210> 943
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.76.1 VH CDR1

<400> 943

Ser Ser Asn Tyr Tyr Trp Gly
1 5

<210> 944
<211> 16
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.76.1 VH CDR2

<400> 944

Thr Ile Tyr Tyr Ser Gly Ser Thr Tyr Tyr Thr Pro Ser Leu Lys Ser
1   5   10   15

<210> 945
<211> 14
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.76.1 VH CDR3

<400> 945

Glu Arg Ala Ile Ala Val Ala Ala Ile Val Phe Phe Asp Tyr
1   5   10

<210> 946
<211> 103
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.77.1 VL

<400> 946

Gln Ser Pro Ser Val Ser Val Ala Pro Gly Gln Thr Ala Arg Ile Thr
1   5   10   15

Cys Gly Gly Asn Asn Ile Gly Ser Lys Ser Val His Trp Tyr Gln Gln
            20   25   30

Lys Pro Gly Gln Ala Pro Val Leu Val Val Tyr Asp Asp Ser Asp Arg
        35   40   45

Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser Asn Ser Gly Asn Thr
    50   55   60

Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly Asp Glu Ala Asp Tyr
65   70   75   80

Tyr Cys Gln Val Trp Asp Ser Ser Ser Asp His Trp Val Phe Gly Gly
                85   90   95

Gly Thr Lys Leu Thr Val Leu
            100

<210> 947

<211> 123
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.77.1 VH

<400> 947

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Asp Ile Asn Trp Val Arg Gln Ala Thr Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Trp Met Asn Leu Asn Ser Asp Asn Thr Gly Tyr Ala Gln Lys Phe
50 55 60

Gln Gly Arg Val Thr Met Thr Arg Asn Thr Ser Ile Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Ser Ile Ala Ala Arg Arg Asp Tyr Asn Tyr Tyr Gly Met Asp Val
100 105 110

Trp Gly Gln Gly Thr Lys Val Thr Val Ser Ser
115 120

<210> 948
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.77.1 VL CDR1

<400> 948

Gly Gly Asn Asn Ile Gly Ser Lys Ser Val His
1 5 10

<210> 949
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.77.1 VL CDR2

<400> 949

Asp Asp Ser Asp Arg Pro Ser
1 5

<210> 950
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.77.1 VL CDR3

<400> 950

Gln Val Trp Asp Ser Ser Ser Asp His Trp Val
1 5 10

<210> 951
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.77.1 VH CDR1

<400> 951

Ser Tyr Asp Ile Asn
1 5

<210> 952
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.77.1 VH CDR2

<400> 952

Trp Met Asn Leu Asn Ser Asp Asn Thr Gly Tyr Ala Gln Lys Phe Gln
1 5 10 15

Gly

<210> 953
<211> 14
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.77.1 VH CDR3

<400> 953

Ile Ala Ala Arg Arg Asp Tyr Asn Tyr Tyr Gly Met Asp Val
1 5 10

<210> 954
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.78.1 VL

<400> 954

Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Val Ser Pro Gly
1 5 10 15

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser 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 Gly Ala Ser Gly Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser
50 55 60

Gly Ser Gly Ser Gly Thr Asp Phe Ile 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 Ser Phe
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
100 105

<210> 955
<211> 125
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.78.1 VH

<400> 955

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
20 25 30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val

```
        35                  40                  45

Ala Val Ile Leu Tyr Asp Gly Ser Asp Asn Tyr Tyr Ala Asp Ser Val
    50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Ile Ala Val Ala Gly Asp Tyr Tyr Tyr Tyr Gly Met
            100                 105                 110

Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
        115                 120                 125


<210>  956
<211>  12
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 5.78.1 VL CDR1

<400>  956

Arg Ala Ser Gln Ser Val Ser Ser Ser Tyr Leu Ala
1               5                   10


<210>  957
<211>  7
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 5.78.1 VL CDR2

<400>  957

Gly Ala Ser Gly Arg Ala Thr
1               5


<210>  958
<211>  8
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 5.78.1 VL CDR3

<400>  958

Gln Gln Tyr Gly Ser Ser Phe Thr
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1 5

<210> 959
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.78.1 VH CDR1

<400> 959

Ser Tyr Gly Met His
1 5

<210> 960
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.78.1 VH CDR2

<400> 960

Val Ile Leu Tyr Asp Gly Ser Asp Asn Tyr Tyr Ala Asp Ser Val Lys
1 5 10 15

Gly

<210> 961
<211> 16
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.78.1 VH CDR3

<400> 961

Glu Gly Ile Ala Val Ala Gly Asp Tyr Tyr Tyr Tyr Gly Met Asp Val
1 5 10 15

<210> 962
<211> 112
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.80.1 VL

<400> 962

Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln

1 5 10 15

Arg Val Thr Ile Ser Cys Thr Gly Ser Ser Ser Asn Ile Gly Ala Asp
20 25 30

Tyr Asp Val His Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu
35 40 45

Leu Ile Tyr Asp Tyr Ser Asn Arg Pro Ser Gly Val Pro Asp Arg Phe
50 55 60

Ser Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu Ala Ile Thr Gly Leu
65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Asn Ser
85 90 95

Leu Ser Gly Tyr Val Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
100 105 110

<210> 963
<211> 116
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.80.1 VH

<400> 963

Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Glu
1 5 10 15

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
20 25 30

Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met
35 40 45

Gly Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
50 55 60

Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Ser Thr Ala Tyr
65 70 75 80

Leu Gln Trp Ser Ser Leu Thr Ala Ser Asp Thr Ala Met Tyr Tyr Cys
85 90 95

Ala Arg Gln Gly Glu Ser Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val
100 105 110

Thr Val Ser Ser

115

<210> 964
<211> 14
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.80.1 VL CDR1

<400> 964

Thr Gly Ser Ser Ser Asn Ile Gly Ala Asp Tyr Asp Val His
1 5 10

<210> 965
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.80.1 VL CDR2

<400> 965

Asp Tyr Ser Asn Arg Pro Ser
1 5

<210> 966
<211> 12
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.80.1 VL CDR3

<400> 966

Gln Ser Tyr Asp Asn Ser Leu Ser Gly Tyr Val Val
1 5 10

<210> 967
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.80.1 VH CDR1

<400> 967

Ser Tyr Trp Ile Gly
1 5

<210> 968

<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.80.1 VH CDR2

<400> 968

Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe Gln
1 5 10 15

Gly

<210> 969
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.80.1 VH CDR3

<400> 969

Gln Gly Glu Ser Phe Asp Tyr
1 5

<210> 970
<211> 110
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 5.85.1 VL

<400> 970

Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln
1 5 10 15

Arg Val Thr Ile Ser Cys Thr Gly Ser Ser Ser Asn Ile Gly Ala Gly
20 25 30

Tyr Asp Val His Trp Tyr Gln Gln Leu Pro Arg Thr Ala Pro Lys Leu
35 40 45

Leu Ile Tyr Gly Asn Ser Asn Arg Pro Ser Gly Val Pro Asp Arg Phe
50 55 60

Ser Asp Ser Lys Ser Gly Thr Ser Ala Ser Leu Ala Ile Thr Gly Leu
65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Ser Ser

85 90 95

Leu Ser Val Ile Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
100 105 110

<210> 971
<211> 116
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 5.85.1 VH

<400> 971

Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Glu
1 5 10 15

Ser Leu Lys Ile Ser Cys Lys Val Ser Gly Tyr Ser Phe Thr Thr Tyr
20 25 30

Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu Asp Trp Met
35 40 45

Gly Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
50 55 60

Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Ser Thr Ala Tyr
65 70 75 80

Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Met Tyr Tyr Cys
85 90 95

Ala Arg Gln Gly Ile Ala Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val
100 105 110

Thr Val Ser Ser
115

<210> 972
<211> 14
<212> PRT
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<220>
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<223> DKK-1 mAbs 5.85.1 VL CDR1

<400> 972

Thr Gly Ser Ser Ser Asn Ile Gly Ala Gly Tyr Asp Val His
1 5 10

<210> 973

<211> 7
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 5.85.1 VL CDR2

<400> 973

Gly Asn Ser Asn Arg Pro Ser
1 5

<210> 974
<211> 10
<212> PRT
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<220>
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<223> DKK-1 mAbs 5.85.1 VL CDR3

<400> 974

Gln Ser Tyr Asp Ser Ser Leu Ser Val Ile
1 5 10

<210> 975
<211> 5
<212> PRT
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<220>
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<223> DKK-1 mAbs 5.85.1 VH CDR1

<400> 975

Thr Tyr Trp Ile Gly
1 5

<210> 976
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<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 5.85.1 VH CDR2

<400> 976

Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe Gln
1 5 10 15

Gly

<210> 977

<211> 7
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 5.85.1 VH CDR3

<400> 977

Gln Gly Ile Ala Phe Asp Tyr
1 5

<210> 978
<211> 112
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.37.5 VL

<400> 978

Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Ser Val Thr Pro Gly
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Gly Gln Ser Leu Leu His Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Tyr Trp Tyr Leu Gln Lys Pro Gly Gln Pro
35 40 45

Pro Gln Phe Leu Ile Tyr Glu Val Ser Asn Arg Phe Ser Arg Val Pro
50 55 60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Arg Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Val Gly Ile Tyr Tyr Cys Met Gln Ser
85 90 95

Ile Gln Leu Pro Trp Thr Phe Gly Gln Gly Thr Gln Val Glu Ile Lys
100 105 110

<210> 979
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.37.5 VH

<400> 979

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg

1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Gly Tyr
20 25 30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ala Val Ile Ser Tyr Asp Gly Asn Asp Lys Tyr Tyr Ala Asp Ser Val
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 Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Glu Leu Arg Val Leu Trp Gly Gln Gly Thr Leu Val Thr Val
100 105 110

Ser Ser

<210> 980
<211> 16
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.37.5 VL CDR1

<400> 980

Lys Ser Gly Gln Ser Leu Leu His Ser Asp Gly Lys Thr Tyr Leu Tyr
1 5 10 15

<210> 981
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.37.5 VL CDR2

<400> 981

Glu Val Ser Asn Arg Phe Ser
1 5

<210> 982
<211> 9
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.37.5 VL CDR3

<400> 982

Met Gln Ser Ile Gln Leu Pro Trp Thr
1   5

<210> 983
<211> 5
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.37.5 VH CDR1

<400> 983

Gly Tyr Gly Met His
1   5

<210> 984
<211> 17
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.37.5 VH CDR2

<400> 984

Val Ile Ser Tyr Asp Gly Asn Asp Lys Tyr Tyr Ala Asp Ser Val Lys
1   5   10   15

Gly

<210> 985
<211> 5
<212> PRT
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<220>
<221> MISC_FEATURE
<223> DDK-1 mAbs 6.37.5 VH CDR3

<400> 985

Glu Leu Arg Val Leu
1   5

<210> 986
<211> 112
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DDK-1 mAbs 6.116.6 VL

<400> 986

Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Ser Val Thr Pro Gly
1   5   10   15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Gly Gln Ser Leu Leu His Asn
            20   25   30

Asp Gly Lys Thr Tyr Leu Tyr Trp Tyr Leu Gln Lys Pro Gly Gln Pro
        35   40   45

Pro Gln Phe Leu Ile Tyr Glu Val Ser Asn Arg Phe Ser Arg Val Pro
    50   55   60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65   70   75   80

Ser Arg Val Glu Ala Glu Asp Val Gly Ile Tyr Tyr Cys Met Gln Ser
                85   90   95

Ile Gln Leu Pro Trp Thr Phe Gly Gln Gly Thr Gln Val Glu Ile Lys
            100   105   110

<210> 987
<211> 114
<212> PRT
<213> Homo sapiens

<220>
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<223> DDK-1 mAbs 6.116.6 VH

<400> 987

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1   5   10   15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Gly Tyr
            20   25   30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35   40   45

Ala Val Ile Ser Tyr Asp Gly Asn Asp Lys Tyr Tyr Ala Asp Ser Val
    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 Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys

85 90 95

Ala Arg Glu Leu Arg Val Leu Trp Gly Gln Gly Thr Leu Val Thr Val
100 105 110

Ser Ser

<210> 988
<211> 16
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.116.6 VL CDR1

<400> 988

Lys Ser Gly Gln Ser Leu Leu His Asn Asp Gly Lys Thr Tyr Leu Tyr
1 5 10 15

<210> 989
<211> 7
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.116.6 VL CDR2

<400> 989

Glu Val Ser Asn Arg Phe Ser
1 5

<210> 990
<211> 9
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.116.6 VL CDR3

<400> 990

Met Gln Ser Ile Gln Leu Pro Trp Thr
1 5

<210> 991
<211> 5
<212> PRT
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<220>
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<223> DKK-1 mAbs 6.116.6 VH CDR1

<400> 991

Gly Tyr Gly Met His
1 5

<210> 992
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<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.116.6 VH CDR2

<400> 992

Val Ile Ser Tyr Asp Gly Asn Asp Lys Tyr Tyr Ala Asp Ser Val Lys
1 5 10 15

Gly

<210> 993
<211> 5
<212> PRT
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<220>
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<223> DKK-1 mAbs 6.116.6 VH CDR3

<400> 993

Glu Leu Arg Val Leu
1 5

<210> 994
<211> 112
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.139.5 VL

<400> 994

Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Ser Val Thr Pro Arg
1 5 10 15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser Leu Leu His Ser
20 25 30

Asp Gly Lys Thr Tyr Leu Tyr Trp Tyr Leu Gln Lys Pro Gly Gln Pro
35 40 45

Pro Gln Phe Leu Ile Tyr Glu Val Ser Asn Arg Phe Ser Gly Val Pro

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    50                  55                  60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65                  70                  75                  80

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln Ser
                85                  90                  95

Ile Gln Leu Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100                 105                 110


<210>  995
<211>  114
<212>  PRT
<213>  Homo sapiens


<220>
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<223>  DKK-1 mAbs 6.139.5 VH

<400>  995

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1               5                   10                  15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
            20                  25                  30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35                  40                  45

Ala Val Ile Ser Tyr Asp Gly Gly Asp Gln Tyr Tyr Ala Asp Ser Val
    50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65                  70                  75                  80

Leu Gln Met Asn Ser Leu Arg Thr Glu Asp Thr Ala Glu Tyr Tyr Cys
                85                  90                  95

Ala Arg Glu Leu Arg Val Leu Trp Gly Gln Gly Thr Leu Val Thr Val
            100                 105                 110

Ser Ser


<210>  996
<211>  13
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  DKK-1 mAbs 6.139.5 VL CDR1
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<400> 996

Ala Ala Ser Gly Phe Thr Phe Ser Arg Tyr Asp Met His
1 5 10

<210> 997
<211> 12
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.139.5 VL CDR2

<400> 997

Ile Phe Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp
1 5 10

<210> 998
<211> 9
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.139.5 VL CDR3

<400> 998

Ala Thr Leu Ala Ala Ala Phe Asp Tyr
1 5

<210> 999
<211> 5
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.139.5 VH CDR1

<400> 999

Ser Tyr Gly Met His
1 5

<210> 1000
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<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.139.5 VH CDR2

<400> 1000

Val Ile Ser Tyr Asp Gly Gly Asp Gln Tyr Tyr Ala Asp Ser Val Lys

1 5 10 15

Gly

<210> 1001
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.139.5 VH CDR3

<400> 1001

Glu Leu Arg Val Leu
1 5

<210> 1002
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.147.4 VL

<400> 1002

Tyr Val Leu Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Gln Thr
1 5 10 15

Ala Arg Ile Thr Cys Gly Gly Asn Asn Ile Gly Ser Lys Ser Val His
20 25 30

Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Leu Val Val Tyr Asp
35 40 45

Asp Ser Asp Arg Pro Ser Glu Ile Pro Glu Arg Phe Ser Gly Ser Asn
50 55 60

Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly Asp
65 70 75 80

Glu Ala Asp Tyr Tyr Cys Gln Val Trp Asp Ser Ser Ser Asp His Val
85 90 95

Val Phe Gly Gly Gly Thr Arg Leu Thr Val Leu
100 105

<210> 1003
<211> 116
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.147.4 VH

<400> 1003

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1   5   10   15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Arg Tyr
            20   25   30

Asp Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35   40   45

Ala Ile Ile Phe Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Pro Val
    50   55   60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Thr Leu Ala Ala Ala Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val
            100   105   110

Thr Val Ser Ser
        115

<210> 1004
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.147.4 VL CDR1

<400> 1004

Gly Gly Asn Asn Ile Gly Ser Lys Ser Val His
1   5   10

<210> 1005
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.147.4 VL CDR2

<400> 1005

Asp Asp Ser Asp Arg Pro Ser

1 5

<210> 1006
<211> 11
<212> PRT
<213> Homo sapiens

<220>
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<223> DKK-1 mAbs 6.147.4 VL CDR3

<400> 1006

Gln Val Trp Asp Ser Ser Ser Asp His Val Val
1 5 10

<210> 1007
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.147.4 VH CDR1

<400> 1007

Arg Tyr Asp Met His
1 5

<210> 1008
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.147.4 VH CDR2

<400> 1008

Ile Ile Phe Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Pro Val Lys
1 5 10 15

Gly

<210> 1009
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> DKK-1 mAbs 6.147.4 VH CDR3

<400> 1009

Leu Ala Ala Ala Phe Asp Tyr

1 5

<210> 1010
<211> 110
<212> PRT
<213> Homo sapiens

<400> 1010

Ser Tyr Val Leu Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Gln
1 5 10 15

Thr Ala Arg Ile Thr Cys Gly Gly Asp Asn Ile Gly Ser Ile Ser Val
20 25 30

His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Leu Val Val Tyr
35 40 45

Asp Asp Ser Asp Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser
50 55 60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Trp Val Glu Ala Gly
65 70 75 80

Asp Glu Ala Asp Tyr Tyr Cys Gln Val Trp Asp Ser Ser Ile Asp His
85 90 95

Pro Val Leu Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105 110

<210> 1011
<211> 123
<212> PRT
<213> Homo sapiens

<400> 1011

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 Ser Tyr
20 25 30

Asp Met His Trp Val Arg Gln Ala Thr Gly Lys Gly Leu Glu Trp Val
35 40 45

Ser Ala Ile Gly Thr Ala Gly Asp Thr Tyr Tyr Ala Gly Ser Val Lys
50 55 60

Gly Arg Phe Thr Ile Ser Arg Glu Asn Ala Lys Asn Ser Leu Tyr Leu
65 70 75 80

Gln Met Asn Ser Leu Arg Val Gly Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95

Arg Ser Trp Gly Glu Gly Asn Tyr Tyr Phe Tyr Tyr Gly Met Asp Val
100 105 110

Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120

<210> 1012
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> 19D11 VL CDR1

<400> 1012

Gly Gly Asp Asn Ile Gly Ser Ile Ser Val His
1 5 10

<210> 1013
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> 19D11 VL CDR2

<400> 1013

Asp Asp Ser Asp Arg Pro Ser
1 5

<210> 1014
<211> 12
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> 19D11 VL CDR3

<400> 1014

Gln Val Trp Asp Ser Ser Ile Asp His Pro Val Leu
1 5 10

<210> 1015
<211> 5
<212> PRT
<213> Homo sapiens

<220>
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<223> 19D11 VH CDR1

<400> 1015

Ser Tyr Asp Met His
1 5

<210> 1016
<211> 16
<212> PRT
<213> Homo sapiens

<220>
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<223> 19D11 VH CDR2

<400> 1016

Ala Ile Gly Thr Ala Gly Asp Thr Tyr Tyr Ala Gly Ser Val Lys Gly
1 5 10 15

<210> 1017
<211> 15
<212> PRT
<213> Homo sapiens

<220>
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<223> 19D11 VH CDR3

<400> 1017

Ser Trp Gly Glu Gly Asn Tyr Tyr Phe Tyr Tyr Gly Met Asp Val
1 5 10 15

<210> 1018
<211> 111
<212> PRT
<213> Homo sapiens

<400> 1018

Gln Ser Ala Leu Thr Gln Pro Ala Ser Val Ser Gly Ser Pro Gly Gln
1 5 10 15

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Gly Tyr
20 25 30

Asn Tyr Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
35 40 45

Met Ile Tyr Glu Val Ser Tyr Arg Pro Ser Gly Val Ser Asn Arg Phe
50 55 60

Ser Gly Ser Lys Ser Gly Ser Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80

Gln Pro Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Tyr Ala Ile Ser
85 90 95

Ser Thr Leu Val Phe Gly Gly Gly Thr Lys Met Thr Val Leu Gly
100 105 110

<210> 1019
<211> 118
<212> PRT
<213> Homo sapiens

<400> 1019

Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
1 5 10 15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr
20 25 30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45

Gly Tyr Ile Ser Asp Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
50 55 60

Ser Arg Ile Pro Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
65 70 75 80

Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95

Arg Trp Gln Leu Ala His Asp Ala Phe Asp Ile Trp Gly Gln Gly Thr
100 105 110

Met Val Thr Val Ser Ser
115

<210> 1020
<211> 14
<212> PRT
<213> Homo sapiens

<220>
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<223> 20C3 VL CDR1

<400> 1020

Thr Gly Thr Ser Ser Asp Val Gly Gly Tyr Asn Tyr Val Ser
1 5 10

<210> 1021
<211> 7
<212> PRT
<213> Homo sapiens

<220>
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<223> 20C3 VL CDR2

<400> 1021

Glu Val Ser Tyr Arg Pro Ser
1 5

<210> 1022
<211> 10
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> 20C3 VL CDR3

<400> 1022

Ser Ser Tyr Ala Ile Ser Ser Thr Leu Val
1 5 10

<210> 1023
<211> 5
<212> PRT
<213> Homo sapiens

<220>
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<223> 20C3 VH CDR1

<400> 1023

Ser Tyr Tyr Trp Ser
1 5

<210> 1024
<211> 16
<212> PRT
<213> Homo sapiens

<220>
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<223> 20C3 VH CDR2

<400> 1024

Tyr Ile Ser Asp Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys Ser
1 5 10 15

<210> 1025
<211> 10
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> 20C3 VH CDR3

<400> 1025

Trp Gln Leu Ala His Asp Ala Phe Asp Ile

1 5 10

<210> 1026
<211> 114
<212> PRT
<213> Homo sapiens

<400> 1026

Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val Thr Pro Gly
1 5 10 15

Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

Val Asp Gly Ser Thr Asn Leu Asp Trp Tyr Leu Gln Lys Pro Gly Gln
35 40 45

Ser Pro Gln Leu Leu Ile Tyr Thr Leu Ser Tyr Arg Ala Ser Gly Val
50 55 60

Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys
65 70 75 80

Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln
85 90 95

Arg Ile Glu Phe Pro Leu Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
100 105 110

Lys Arg

<210> 1027
<211> 120
<212> PRT
<213> Homo sapiens

<400> 1027

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 Ser Tyr
20 25 30

Ser Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ser Tyr Ile Ser Ser Ser Gly Ser Ser Ile Tyr Tyr Ala 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

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Leu Gln Met Asn Ser Leu Arg Asp Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95


Ala Arg Glu Arg Tyr Tyr Gly Asp Thr Pro Phe Asp Tyr Trp Gly Gln
            100                 105                 110


Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>  1028
<211>  17
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  27H6 VL CDR1

<400>  1028

Arg Ser Ser Gln Ser Leu Leu Asn Ser Val Asp Gly Ser Thr Asn Leu
1               5                   10                  15


Asp



<210>  1029
<211>  7
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  27H6 VL CDR2

<400>  1029

Thr Leu Ser Tyr Arg Ala Ser
1               5


<210>  1030
<211>  9
<212>  PRT
<213>  Homo sapiens


<220>
<221>  MISC_FEATURE
<223>  27H6 VL CDR3

<400>  1030

Met Gln Arg Ile Glu Phe Pro Leu Thr
1               5


<210>  1031
<211>  5
<212>  PRT
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<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> 27H6 VH CDR1

<400> 1031

Ser Tyr Ser Met Asn
1 5

<210> 1032
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> 27H6 VH CDR2

<400> 1032

Tyr Ile Ser Ser Ser Gly Ser Ser Ile Tyr Tyr Ala Asp Ser Val Lys
1 5 10 15

Gly

<210> 1033
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> 27H6 VH CDR3

<400> 1033

Glu Arg Tyr Tyr Gly Asp Thr Pro Phe Asp Tyr
1 5 10

<210> 1034
<211> 442
<212> PRT
<213> Homo sapiens

<400> 1034

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Arg Tyr
20 25 30

Asp Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

```
Ala Ile Ile Phe Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Pro Val
    50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Thr Leu Ala Ala Ala Phe Asp Tyr Trp Gly Gln Gly Thr Leu 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 Thr Phe Pro Ala Val Leu Gln Ser Ser
                165                 170                 175

Gly Leu Tyr Ser Leu Lys Ser Val Val Thr Val Pro Ser Ser Asn Phe
            180                 185                 190

Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr
        195                 200                 205

Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro
    210                 215                 220

Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro
225                 230                 235                 240

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
                245                 250                 255

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp
            260                 265                 270

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
        275                 280                 285

Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu Thr Val Val
    290                 295                 300

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
305                 310                 315                 320
```

```
Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly
                325                 330                 335

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu
            340                 345                 350

Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr
        355                 360                 365

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
    370                 375                 380

Asn Tyr Asp Thr Thr Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe
385                 390                 395                 400

Leu Tyr Ser Asp Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
                405                 410                 415

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
            420                 425                 430

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
        435                 440
```

<210> 1035
<211> 214
<212> PRT
<213> Homo sapiens

<400> 1035

```
Ser Tyr Val Leu Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Gln
1               5                   10                  15

Thr Ala Arg Ile Thr Cys Gly Gly Asn Asn Ile Gly Ser Lys Ser Val
            20                  25                  30

His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Leu Val Val Tyr
        35                  40                  45

Asp Asp Ser Asp Arg Pro Ser Glu Ile Pro Glu Arg Phe Ser Gly Ser
    50                  55                  60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly
65                  70                  75                  80

Asp Glu Ala Asp Tyr Tyr Cys Gln Val Trp Asp Ser Ser Ser Asp His
                85                  90                  95

Val Val Phe Gly Gly Gly Thr Arg Leu Thr Val Leu Gly Gln Pro Lys
            100                 105                 110

Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu Leu Gln
```

```
        115                 120                 125

Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe Tyr Pro Gly
    130                 135                 140

Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys Ala Gly
145                 150                 155                 160

Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr Ala Ala
                165                 170                 175

Glu Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His Arg Ser
            180                 185                 190

Tyr Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu Lys Thr Val
        195                 200                 205

Ala Pro Thr Glu Cys Ser
    210
```

<210> 1036
<211> 440
<212> PRT
<213> Homo sapiens

<400> 1036

```
Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1               5                   10                  15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Gly Tyr
            20                  25                  30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35                  40                  45

Ala Val Ile Ser Tyr Asp Gly Asn Asp Lys Tyr Tyr Ala Asp Ser Val
    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 Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Glu Leu Arg Val Leu Trp Gly Gln Gly Thr Leu Val Thr Val
            100                 105                 110

Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys
        115                 120                 125

Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys
    130                 135                 140
```

```
Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu
145                 150                 155                 160

Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu
                165                 170                 175

Tyr Ser Leu Lys Ser Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr
            180                 185                 190

Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val
        195                 200                 205

Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro
    210                 215                 220

Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
225                 230                 235                 240

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
                245                 250                 255

Val Asp Val Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val
            260                 265                 270

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
        275                 280                 285

Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu Thr Val Val His Gln
    290                 295                 300

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly
305                 310                 315                 320

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro
                325                 330                 335

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
            340                 345                 350

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
        355                 360                 365

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
    370                 375                 380

Asp Thr Thr Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
385                 390                 395                 400

Ser Asp Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
                405                 410                 415
```

```
Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
            420                 425                 430

Ser Leu Ser Leu Ser Pro Gly Lys
        435                 440
```

<210> 1037
<211> 219
<212> PRT
<213> Homo sapiens

<400> 1037

```
Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Ser Val Thr Pro Gly
1               5                   10                  15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Gly Gln Ser Leu Leu His Ser
            20                  25                  30

Asp Gly Lys Thr Tyr Leu Tyr Trp Tyr Leu Gln Lys Pro Gly Gln Pro
        35                  40                  45

Pro Gln Phe Leu Ile Tyr Glu Val Ser Asn Arg Phe Ser Arg Val Pro
    50                  55                  60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Arg Ile
65                  70                  75                  80

Ser Arg Val Glu Ala Glu Asp Val Gly Ile Tyr Tyr Cys Met Gln Ser
                85                  90                  95

Ile Gln Leu Pro Trp Thr Phe Gly Gln Gly Thr Gln Val Glu Ile Lys
            100                 105                 110

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
        115                 120                 125

Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe
    130                 135                 140

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
145                 150                 155                 160

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
                165                 170                 175

Thr Tyr Ser Leu Glu Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
            180                 185                 190

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
        195                 200                 205
```

```
Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
    210                 215


<210>  1038
<211>  449
<212>  PRT
<213>  Homo sapiens

<400>  1038

Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                   10                  15


Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asp Tyr
            20                  25                  30


Asn Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
        35                  40                  45


Gly Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn Gln Lys Phe
    50                  55                  60


Lys Gly Arg Val Thr Met Thr Thr Asp Thr Ser Thr Ser Thr Ala Tyr
65                  70                  75                  80


Met Glu Leu Arg Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95


Ala Arg Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
            100                 105                 110


Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys Gly
        115                 120                 125


Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser
    130                 135                 140


Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val
145                 150                 155                 160


Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe
                165                 170                 175


Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Glu Ser Val Val
            180                 185                 190


Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val
        195                 200                 205


Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys
    210                 215                 220
```

```
Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala 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 Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
        275                 280                 285

Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val
    290                 295                 300

Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu
305                 310                 315                 320

Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys
                325                 330                 335

Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
            340                 345                 350

Leu Pro Pro Ser Arg Lys 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 Met Leu
385                 390                 395                 400

Lys 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

Lys
```

<210> 1039
<211> 214
<212> PRT
<213> Homo sapiens

<400> 1039

```
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 Asp Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Arg Leu Leu Ser 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 Gln Gln Gly Asp Thr Leu Pro Tyr
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 Lys
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

<210> 1040
<211> 446
<212> PRT
<213> Homo sapiens

<400> 1040

Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Thr Phe Thr Asp Tyr
20 25 30

```
Ile Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
        35                  40                  45

Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe
    50                  55                  60

Lys Gly Arg Val Thr Ile Thr Ala Asp Lys Ser Thr Ser Thr Ala Tyr
65                  70                  75                  80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
        115                 120                 125

Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
    130                 135                 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145                 150                 155                 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
                165                 170                 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Glu Ser Val Val Thr Val Pro
            180                 185                 190

Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys
        195                 200                 205

Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val
    210                 215                 220

Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe
225                 230                 235                 240

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
                245                 250                 255

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
            260                 265                 270

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
        275                 280                 285

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val
    290                 295                 300
```

```
Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
305                 310                 315                 320

Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
                325                 330                 335

Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
            340                 345                 350

Ser Arg Lys Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
        355                 360                 365

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
    370                 375                 380

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Lys Ser Asp
385                 390                 395                 400

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
                405                 410                 415

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
            420                 425                 430

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
        435                 440                 445
```

<210> 1041
<211> 213
<212> PRT
<213> Homo sapiens

<400> 1041

```
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 Asp 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 Ser Thr Ser Arg Leu Asn Ser 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 Gln Gln Asp Ile Lys His Pro Thr
                85                  90                  95
```

Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala Pro
100 105 110

Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr
115 120 125

Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys
130 135 140

Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu
145 150 155 160

Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Lys Ser
165 170 175

Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala
180 185 190

Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser Phe
195 200 205

Asn Arg Gly Glu Cys
210

<210> 1042
<211> 442
<212> PRT
<213> Homo sapiens

<400> 1042

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Arg Tyr
20 25 30

Asp Met His Trp Val Arg Lys Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ala Ile Ile Phe Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Pro Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr 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 Thr Leu Ala Ala Ala Phe Asp Tyr Trp Gly Gln Gly Thr Leu 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 Thr Phe Pro Ala Val Leu Gln Ser Ser
                165                 170                 175

Gly Leu Tyr Ser Leu Lys Ser Val Val Thr Val Pro Ser Ser Asn Phe
            180                 185                 190

Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr
        195                 200                 205

Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro
    210                 215                 220

Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro
225                 230                 235                 240

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
                245                 250                 255

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp
            260                 265                 270

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
        275                 280                 285

Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu Thr Val Val
    290                 295                 300

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
305                 310                 315                 320

Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly
                325                 330                 335

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu
            340                 345                 350

Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr
        355                 360                 365

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
    370                 375                 380
```

```
Asn Tyr Asp Thr Thr Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe
385                 390                 395                 400

Leu Tyr Ser Asp Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
                405                 410                 415

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
            420                 425                 430

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
        435                 440
```

<210> 1043
<211> 214
<212> PRT
<213> Homo sapiens

<400> 1043

```
Ser Tyr Val Leu Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Gln
1               5                   10                  15

Thr Ala Arg Ile Thr Cys Gly Gly Asn Asn Ile Gly Ser Lys Ser Val
            20                  25                  30

His Trp Tyr Gln Glu Lys Pro Gly Gln Ala Pro Val Leu Val Val Tyr
        35                  40                  45

Asp Asp Ser Asp Arg Pro Ser Glu Ile Pro Glu Arg Phe Ser Gly Ser
    50                  55                  60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly
65                  70                  75                  80

Asp Glu Ala Asp Tyr Tyr Cys Gln Val Trp Asp Ser Ser Ser Asp His
                85                  90                  95

Val Val Phe Gly Gly Gly Thr Arg Leu Thr Val Leu Gly Gln Pro Lys
            100                 105                 110

Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu Leu Gln
        115                 120                 125

Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe Tyr Pro Gly
    130                 135                 140

Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys Ala Gly
145                 150                 155                 160

Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr Ala Ala
                165                 170                 175

Glu Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His Arg Ser
```

```
            180                 185                 190

Tyr Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu Lys Thr Val
        195                 200                 205

Ala Pro Thr Glu Cys Ser
    210
```

<210> 1044
<211> 440
<212> PRT
<213> Homo sapiens

<400> 1044

```
Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1               5                   10                  15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Gly Tyr
            20                  25                  30

Gly Met His Trp Val Arg Lys Ala Pro Gly Lys Gly Leu Glu Trp Val
        35                  40                  45

Ala Val Ile Ser Tyr Asp Gly Asn Asp Lys Tyr Tyr Ala Asp Ser Val
    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 Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Glu Leu Arg Val Leu Trp Gly Gln Gly Thr Leu Val Thr Val
            100                 105                 110

Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys
        115                 120                 125

Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys
    130                 135                 140

Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu
145                 150                 155                 160

Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu
                165                 170                 175

Tyr Ser Leu Lys Ser Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr
            180                 185                 190

Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val
        195                 200                 205
```

```
Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro
    210                 215                 220

Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
225                 230                 235                 240

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
                245                 250                 255

Val Asp Val Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val
            260                 265                 270

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
        275                 280                 285

Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu Thr Val Val His Gln
    290                 295                 300

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly
305                 310                 315                 320

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro
                325                 330                 335

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
            340                 345                 350

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
        355                 360                 365

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
    370                 375                 380

Asp Thr Thr Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
385                 390                 395                 400

Ser Asp Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
                405                 410                 415

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
            420                 425                 430

Ser Leu Ser Leu Ser Pro Gly Lys
        435                 440
```

<210> 1045
<211> 219
<212> PRT
<213> Homo sapiens

<400> 1045

```
Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Ser Val Thr Pro Gly
1               5                  10                  15

Gln Pro Ala Ser Ile Ser Cys Lys Ser Gly Gln Ser Leu Leu His Ser
            20                  25                  30

Asp Gly Lys Thr Tyr Leu Tyr Trp Tyr Leu Glu Lys Pro Gly Gln Pro
        35                  40                  45

Pro Gln Phe Leu Ile Tyr Glu Val Ser Asn Arg Phe Ser Arg Val Pro
    50                  55                  60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Arg Ile
65                  70                  75                  80

Ser Arg Val Glu Ala Glu Asp Val Gly Ile Tyr Tyr Cys Met Gln Ser
                85                  90                  95

Ile Gln Leu Pro Trp Thr Phe Gly Gln Gly Thr Gln Val Glu Ile Lys
            100                 105                 110

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
        115                 120                 125

Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe
    130                 135                 140

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
145                 150                 155                 160

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
                165                 170                 175

Thr Tyr Ser Leu Glu Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
            180                 185                 190

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
        195                 200                 205

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
    210                 215
```

<210> 1046
<211> 449
<212> PRT
<213> Homo sapiens

<400> 1046

```
Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                  10                  15
```

```
Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asp Tyr
            20                  25                  30

Asn Met His Trp Val Arg Glu Ala Pro Gly Gln Gly Leu Glu Trp Met
        35                  40                  45

Gly Glu Ile Asn Pro Asn Ser Gly Gly Ala Gly Tyr Asn Gln Lys Phe
    50                  55                  60

Lys Gly Arg Val Thr Met Thr Thr Asp Thr Ser Thr Ser Thr Ala Tyr
65                  70                  75                  80

Met Glu Leu Arg Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Leu Gly Tyr Asp Asp Ile Tyr Asp Asp Trp Tyr Phe Asp Val
            100                 105                 110

Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys Gly
        115                 120                 125

Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser
    130                 135                 140

Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val
145                 150                 155                 160

Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe
                165                 170                 175

Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Glu Ser Val Val
            180                 185                 190

Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val
        195                 200                 205

Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys
    210                 215                 220

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala 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 Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
        275                 280                 285
```

```
Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val
    290                 295                 300

Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu
305                 310                 315                 320

Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys
                325                 330                 335

Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
            340                 345                 350

Leu Pro Pro Ser Arg Lys 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 Met Leu
385                 390                 395                 400

Lys 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

Lys
```

<210> 1047
<211> 214
<212> PRT
<213> Homo sapiens

<400> 1047

```
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 Asp Ile Ser Asn Tyr
            20                  25                  30

Leu Asn Trp Tyr Gln Lys Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
        35                  40                  45

Tyr Tyr Thr Ser Arg Leu Leu Ser 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 Gln Gln Gly Asp Thr Leu Pro Tyr
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 Lys
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

<210> 1048
<211> 446
<212> PRT
<213> Homo sapiens

<400> 1048

Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Thr Phe Thr Asp Tyr
20 25 30

Ile Met His Trp Val Arg Glu Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Tyr Ile Asn Pro Tyr Asn Asp Asp Thr Glu Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Arg Val Thr Ile Thr Ala Asp Lys Ser Thr Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

```
Ala Arg Ser Ile Tyr Tyr Tyr Asp Ala Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
        115                 120                 125

Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
    130                 135                 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145                 150                 155                 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
                165                 170                 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Glu Ser Val Val Thr Val Pro
            180                 185                 190

Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys
        195                 200                 205

Pro Ser Asn Thr Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val
    210                 215                 220

Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe
225                 230                 235                 240

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
                245                 250                 255

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
            260                 265                 270

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
        275                 280                 285

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val
    290                 295                 300

Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
305                 310                 315                 320

Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
                325                 330                 335

Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
            340                 345                 350

Ser Arg Lys Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
        355                 360                 365
```

```
Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
    370                 375                 380

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Lys Ser Asp
385                 390                 395                 400

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
                405                 410                 415

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
            420                 425                 430

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
        435                 440                 445
```

<210> 1049
<211> 214
<212> PRT
<213> Homo sapiens

<400> 1049

```
Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val
1               5                   10                  15

Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Ile Ser Ser
            20                  25                  30

Tyr Leu Asn Trp Tyr Gln Lys Lys Pro Gly Lys Ala Pro Lys Leu Leu
        35                  40                  45

Ile Tyr Ser Thr Ser Arg Leu Asn Ser Gly Val Pro Ser Arg Phe Ser
    50                  55                  60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln
65                  70                  75                  80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Asp Ile Lys His Pro
                85                  90                  95

Thr Phe Gly Gln 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 Lys
                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
```