SEQUENCE LISTING

<110> Ganymed Pharmaceuticals AG
Johannes Gutenberg-Universität Mainz, Vertreten Durch Den Präsidenten

<120> Monoclonal antibodies against claudin-18 for treatment of cancer

<130> SP100917SGC

<150> EP 05 025 657.7
<151> 2005-11-24

<160> 150

<170> PatentIn version 3.3

<210> 1
<211> 786
<212> DNA
<213> Homo sapiens

<400> 1
atggccgtga ctgcctgtca gggcttgggg ttcgtggttt cactgattgg gattgcgggc 60

atcattgctg ccacctgcat ggaccagtgg agcacccaag acttgtacaa caaccccgta 120

acagctgttt tcaactacca ggggctgtgg cgctcctgtg tccgagagag ctctggcttc 180

accgagtgcc ggggctactt caccctgctg gggctgccag ccatgctgca ggcagtgcga 240

gccctgatga tcgtaggcat cgtcctgggt gccattggcc tcctggtatc catctttgcc 300

ctgaaatgca tccgcattgg cagcatggag gactctgcca aagccaacat gacactgacc 360

tccgggatca tgttcattgt ctcaggtctt tgtgcaattg ctggagtgtc tgtgtttgcc 420

aacatgctgg tgactaactt ctggatgtcc acagctaaca tgtacaccgg catgggtggg 480

atggtgcaga ctgttcagac caggtacaca tttggtgcgg ctctgttcgt gggctgggtc 540

gctggaggcc tcacactaat tgggggtgtg atgatgtgca tcgcctgccg gggcctggca 600

ccagaagaaa ccaactacaa agccgtttct tatcatgcct cgggccacag tgttgcctac 660

aagcctggag gcttcaaggc cagcactggc tttgggtcca acaccaaaaa caagaagata 720

tacgatggag gtgcccgcac agaggacgag gtacaatctt atccttccaa gcacgactat 780

gtgtaa 786

<210> 2
<211> 261
<212> PRT
<213> Homo sapiens

<400> 2

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

Gly Ile Ala Gly Ile Ile Ala Ala Thr Cys Met Asp Gln Trp Ser Thr
20 25 30

Gln Asp Leu Tyr Asn Asn Pro Val Thr Ala Val Phe Asn Tyr Gln Gly
35 40 45

Leu Trp Arg Ser Cys Val Arg Glu Ser Ser Gly Phe Thr Glu Cys Arg
50 55 60

Gly Tyr Phe Thr Leu Leu Gly Leu Pro Ala Met Leu Gln Ala Val Arg
65 70 75 80

Ala Leu Met Ile Val Gly Ile Val Leu Gly Ala Ile Gly Leu Leu Val
85 90 95

Ser Ile Phe Ala Leu Lys Cys Ile Arg Ile Gly Ser Met Glu Asp Ser
100 105 110

Ala Lys Ala Asn Met Thr Leu Thr Ser Gly Ile Met Phe Ile Val Ser
115 120 125

Gly Leu Cys Ala Ile Ala Gly Val Ser Val Phe Ala Asn Met Leu Val
130 135 140

Thr Asn Phe Trp Met Ser Thr Ala Asn Met Tyr Thr Gly Met Gly Gly
145 150 155 160

Met Val Gln Thr Val Gln Thr Arg Tyr Thr Phe Gly Ala Ala Leu Phe
165 170 175

Val Gly Trp Val Ala Gly Gly Leu Thr Leu Ile Gly Gly Val Met Met
180 185 190

Cys Ile Ala Cys Arg Gly Leu Ala Pro Glu Glu Thr Asn Tyr Lys Ala
195 200 205

Val Ser Tyr His Ala Ser Gly His Ser Val Ala Tyr Lys Pro Gly Gly
210 215 220

Phe Lys Ala Ser Thr Gly Phe Gly Ser Asn Thr Lys Asn Lys Lys Ile
225 230 235 240

Tyr Asp Gly Gly Ala Arg Thr Glu Asp Glu Val Gln Ser Tyr Pro Ser
245 250 255

Lys His Asp Tyr Val
260

<210> 3
<211> 816
<212> DNA

<213> Homo sapiens

<400> 3
atggccgtga ctgcctgtca gggcttgggg ttcgtggttt cactgattgg gattgcgggc 60

atcattgctg ccacctgcat ggaccagtgg agcacccaag acttgtacaa caaccccgta 120

acagctgttt tcaactacca ggggctgtgg cgctcctgtg tccgagagag ctctggcttc 180

accgagtgcc ggggctactt caccctgctg gggctgccag ccatgctgca ggcagtgcga 240

gccctgatga tcgtaggcat cgtcctgggt gccattggcc tcctggtatc catctttgcc 300

ctgaaatgca tccgcattgg cagcatggag gactctgcca aagccaacat gacactgacc 360

tccgggatca tgttcattgt ctcaggtctt tgtgcaattg ctggagtgtc tgtgtttgcc 420

aacatgctgg tgactaactt ctggatgtcc acagctaaca tgtacaccgg catgggtgaa 480

caaaaactca tctcagaaga ggatctgggg atggtgcaga ctgttcagac caggtacaca 540

tttggtgcgg ctctgttcgt gggctgggtc gctggaggcc tcacactaat tgggggtgtg 600

atgatgtgca tcgcctgccg gggcctggca ccagaagaaa ccaactacaa agccgtttct 660

tatcatgcct cgggccacag tgttgcctac aagcctggag gcttcaaggc cagcactggc 720

tttgggtcca acaccaaaaa caagaagata tacgatggag gtgcccgcac agaggacgag 780

gtacaatctt atccttccaa gcacgactat gtgtaa 816

<210> 4
<211> 271
<212> PRT
<213> Homo sapiens

<400> 4

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

Gly Ile Ala Gly Ile Ile Ala Ala Thr Cys Met Asp Gln Trp Ser Thr
20 25 30

Gln Asp Leu Tyr Asn Asn Pro Val Thr Ala Val Phe Asn Tyr Gln Gly
35 40 45

Leu Trp Arg Ser Cys Val Arg Glu Ser Ser Gly Phe Thr Glu Cys Arg
50 55 60

Gly Tyr Phe Thr Leu Leu Gly Leu Pro Ala Met Leu Gln Ala Val Arg
65 70 75 80

Ala Leu Met Ile Val Gly Ile Val Leu Gly Ala Ile Gly Leu Leu Val
85 90 95

Ser Ile Phe Ala Leu Lys Cys Ile Arg Ile Gly Ser Met Glu Asp Ser

100 105 110

Ala Lys Ala Asn Met Thr Leu Thr Ser Gly Ile Met Phe Ile Val Ser
115 120 125

Gly Leu Cys Ala Ile Ala Gly Val Ser Val Phe Ala Asn Met Leu Val
130 135 140

Thr Asn Phe Trp Met Ser Thr Ala Asn Met Tyr Thr Gly Met Gly Glu
145 150 155 160

Gln Lys Leu Ile Ser Glu Glu Asp Leu Gly Met Val Gln Thr Val Gln
165 170 175

Thr Arg Tyr Thr Phe Gly Ala Ala Leu Phe Val Gly Trp Val Ala Gly
180 185 190

Gly Leu Thr Leu Ile Gly Gly Val Met Met Cys Ile Ala Cys Arg Gly
195 200 205

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

Gly His Ser Val Ala Tyr Lys Pro Gly Gly Phe Lys Ala Ser Thr Gly
225 230 235 240

Phe Gly Ser Asn Thr Lys Asn Lys Lys Ile Tyr Asp Gly Gly Ala Arg
245 250 255

Thr Glu Asp Glu Val Gln Ser Tyr Pro Ser Lys His Asp Tyr Val
260 265 270

<210> 5
<211> 813
<212> DNA
<213> Homo sapiens

<400> 5
atggccgtga ctgcctgtca gggcttgggg ttcgtggttt cactgattgg gattgcgggc 60

atcattgctg ccacctgcat ggaccagtgg agcacccaag acttgtacaa caaccccgta 120

acagctgttt tcaactacca ggggctgtgg cgctcctgtg tccgagagag ctctggcttc 180

accgagtgcc ggggctactt caccctgtac ccatacgacg tgccagacta cgcactgggg 240

ctgccagcca tgctgcaggc agtgcgagcc ctgatgatcg taggcatcgt cctgggtgcc 300

attggcctcc tggtatccat ctttgccctg aaatgcatcc gcattggcag catggaggac 360

tctgccaaag ccaacatgac actgacctcc gggatcatgt tcattgtctc aggtctttgt 420

gcaattgctg gagtgtctgt gtttgccaac atgctggtga ctaacttctg gatgtccaca 480

gctaacatgt acaccggcat gggtgggatg gtgcagactg ttcagaccag gtacacattt 540

ggtgcggctc tgttcgtggg ctgggtcgct ggaggcctca cactaattgg gggtgtgatg 600

atgtgcatcg cctgccgggg cctggcacca gaagaaacca actacaaagc cgtttcttat 660

catgcctcgg gccacagtgt tgcctacaag cctggaggct tcaaggccag cactggcttt 720

gggtccaaca ccaaaaacaa gaagatatac gatggaggtg cccgcacaga ggacgaggta 780

caatcttatc cttccaagca cgactatgtg taa 813

<210> 6
<211> 270
<212> PRT
<213> Homo sapiens

<400> 6

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

Gly Ile Ala Gly Ile Ile Ala Ala Thr Cys Met Asp Gln Trp Ser Thr
20 25 30

Gln Asp Leu Tyr Asn Asn Pro Val Thr Ala Val Phe Asn Tyr Gln Gly
35 40 45

Leu Trp Arg Ser Cys Val Arg Glu Ser Ser Gly Phe Thr Glu Cys Arg
50 55 60

Gly Tyr Phe Thr Leu Tyr Pro Tyr Asp Val Pro Asp Tyr Ala Leu Gly
65 70 75 80

Leu Pro Ala Met Leu Gln Ala Val Arg Ala Leu Met Ile Val Gly Ile
85 90 95

Val Leu Gly Ala Ile Gly Leu Leu Val Ser Ile Phe Ala Leu Lys Cys
100 105 110

Ile Arg Ile Gly Ser Met Glu Asp Ser Ala Lys Ala Asn Met Thr Leu
115 120 125

Thr Ser Gly Ile Met Phe Ile Val Ser Gly Leu Cys Ala Ile Ala Gly
130 135 140

Val Ser Val Phe Ala Asn Met Leu Val Thr Asn Phe Trp Met Ser Thr
145 150 155 160

Ala Asn Met Tyr Thr Gly Met Gly Gly Met Val Gln Thr Val Gln Thr
165 170 175

```
Arg Tyr Thr Phe Gly Ala Ala Leu Phe Val Gly Trp Val Ala Gly Gly
            180                 185                 190

Leu Thr Leu Ile Gly Gly Val Met Met Cys Ile Ala Cys Arg Gly Leu
        195                 200                 205

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

His Ser Val Ala Tyr Lys Pro Gly Gly Phe Lys Ala Ser Thr Gly Phe
225                 230                 235                 240

Gly Ser Asn Thr Lys Asn Lys Lys Ile Tyr Asp Gly Gly Ala Arg Thr
                245                 250                 255

Glu Asp Glu Val Gln Ser Tyr Pro Ser Lys His Asp Tyr Val
            260                 265                 270
```

<210> 7
<211> 786
<212> DNA
<213> Homo sapiens

<400> 7
atgtccacca ccacatgcca agtggtggcg ttcctcctgt ccatcctggg gctggccggc 60

tgcatcgcgg ccaccgggat ggacatgtgg agcacccagg acctgtacga caaccccgtc 120

acctccgtgt tccagtacga agggctctgg aggagctgcg tgaggcagag ttcaggcttc 180

accgaatgca ggccctattt caccatcctg ggacttccag ccatgctgca ggcagtgcga 240

gccctgatga tcgtaggcat cgtcctgggt gccattggcc tcctggtatc catctttgcc 300

ctgaaatgca tccgcattgg cagcatggag gactctgcca aagccaacat gacactgacc 360

tccgggatca tgttcattgt ctcaggtctt tgtgcaattg ctggagtgtc tgtgtttgcc 420

aacatgctgg tgactaactt ctggatgtcc acagctaaca tgtacaccgg catgggtggg 480

atggtgcaga ctgttcagac caggtacaca tttggtgcgg ctctgttcgt gggctgggtc 540

gctggaggcc tcacactaat tgggggtgtg atgatgtgca tcgcctgccg gggcctggca 600

ccagaagaaa ccaactacaa agccgtttct tatcatgcct caggccacag tgttgcctac 660

aagcctggag gcttcaaggc cagcactggc tttgggtcca acaccaaaaa caagaagata 720

tacgatggag gtgcccgcac agaggacgag gtacaatctt atccttccaa gcacgactat 780

gtgtaa 786

<210> 8
<211> 261
<212> PRT
<213> Homo sapiens

<400> 8

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

Gly Leu Ala Gly Cys Ile Ala Ala Thr Gly Met Asp Met Trp Ser Thr
20 25 30

Gln Asp Leu Tyr Asp Asn Pro Val Thr Ser Val Phe Gln Tyr Glu Gly
35 40 45

Leu Trp Arg Ser Cys Val Arg Gln Ser Ser Gly Phe Thr Glu Cys Arg
50 55 60

Pro Tyr Phe Thr Ile Leu Gly Leu Pro Ala Met Leu Gln Ala Val Arg
65 70 75 80

Ala Leu Met Ile Val Gly Ile Val Leu Gly Ala Ile Gly Leu Leu Val
85 90 95

Ser Ile Phe Ala Leu Lys Cys Ile Arg Ile Gly Ser Met Glu Asp Ser
100 105 110

Ala Lys Ala Asn Met Thr Leu Thr Ser Gly Ile Met Phe Ile Val Ser
115 120 125

Gly Leu Cys Ala Ile Ala Gly Val Ser Val Phe Ala Asn Met Leu Val
130 135 140

Thr Asn Phe Trp Met Ser Thr Ala Asn Met Tyr Thr Gly Met Gly Gly
145 150 155 160

Met Val Gln Thr Val Gln Thr Arg Tyr Thr Phe Gly Ala Ala Leu Phe
165 170 175

Val Gly Trp Val Ala Gly Gly Leu Thr Leu Ile Gly Gly Val Met Met
180 185 190

Cys Ile Ala Cys Arg Gly Leu Ala Pro Glu Glu Thr Asn Tyr Lys Ala
195 200 205

Val Ser Tyr His Ala Ser Gly His Ser Val Ala Tyr Lys Pro Gly Gly
210 215 220

Phe Lys Ala Ser Thr Gly Phe Gly Ser Asn Thr Lys Asn Lys Lys Ile
225 230 235 240

Tyr Asp Gly Gly Ala Arg Thr Glu Asp Glu Val Gln Ser Tyr Pro Ser

245 250 255

Lys His Asp Tyr Val
260

<210> 9
<211> 795
<212> DNA
<213> Mus musculus

<400> 9
atggccacca ccacgtgcca ggtggtaggg cttctcctgt ccctcctggg tctggccggc 60

tgcatagccg ccactgggat ggacatgtgg agcactcaag acctgtatga caacccagtc 120

accgccgtgt tccagtatga agggctctgg aggagttgcg tgcaacagag ctcggggttc 180

accgagtgcc ggccatactt caccatcctg ggccttccag ccatgctgca agctgtacga 240

gccctgatga tcgtgggcat tgttctgggg gtcatcggta tcctcgtgtc catcttcgcc 300

ctgaagtgca ttcgcattgg tagcatggat gactctgcca aggccaagat gactctgact 360

tctgggatct tgttcatcat ctccggcatc tgtgcaatca ttggtgtgtc tgtgtttgcc 420

aacatgctgg tgaccaactt ctggatgtcc acagctaaca tgtacagcgg catgggcggc 480

atgggtggca tggtgcagac cgttcagacc aggtacacct ttggtgcagc tctgttcgtg 540

ggctgggttg ctggaggcct caccctgatt gggggagtga tgatgtgcat cgcctgccgt 600

ggcctgacac cagatgacag caacttcaaa gctgtgtctt accatgcctc tggccaaaat 660

gttgcctaca ggcctggagg ctttaaggcc agcactggct ttgggtccaa caccagaaac 720

aagaagatct acgatggggg tgcccgcaca gaagacgatg aacagtctca tcctaccaag 780

tatgactatg tgtag 795

<210> 10
<211> 795
<212> DNA
<213> Mus musculus

<400> 10
atgtcggtga ccgcctgcca gggcttgggg tttgtggtgt cactgatcgg gtttgcgggc 60

atcattgcag ccacttgtat ggaccagtgg agcacccagg atttatacaa caacccggtg 120

accgctgtat tcaactacca agggctatgg cgttcatgcg tccgagagag ctctggcttc 180

accgagtgcc gaggctactt caccctgttg gggttgccag ccatgctgca agctgtacga 240

gccctgatga tcgtgggcat tgttctgggg gtcatcggta tcctcgtgtc catcttcgcc 300

ctgaagtgca ttcgcattgg tagcatggat gactctgcca aggccaagat gactctgact 360

tctgggatct tgttcatcat ctccggcatc tgtgcaatca ttggtgtgtc tgtgtttgcc 420

aacatgctgg tgaccaactt ctggatgtcc acagctaaca tgtacagcgg catgggcggc 480

atgggtggca tggtgcagac cgttcagacc aggtacacct ttggtgcagc tctgttcgtg 540

ggctgggttg ctggaggcct caccctgatt gggggagtga tgatgtgcat cgcctgccgt 600

ggcctgacac cagatgacag caacttcaaa gctgtgtctt accatgcctc tggccaaaat 660

gttgcctaca ggcctggagg ctttaaggcc agcactggct ttgggtccaa caccagaaac 720

aagaagatct acgatggggg tgcccgcaca gaagacgatg aacagtctca tcctaccaag 780

tatgactatg tgtag 795

<210> 11
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 11
tggctctgtg tcgacactgt g 21

<210> 12
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 12
gtgtacatgt tagctgtgga c 21

<210> 13
<211> 55
<212> PRT
<213> Homo sapiens

<400> 13

Met Asp Met Trp Ser Thr Gln Asp Leu Tyr Asp Asn Pro Val Thr Ser
1 5 10 15

Val Phe Gln Tyr Glu Gly Leu Trp Arg Ser Cys Val Arg Gln Ser Ser
20 25 30

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

Met Leu Gln Ala Val Arg Ala
50 55

<210> 14
<211> 153
<212> PRT
<213> Homo sapiens

<400> 14

Met Asp Met Trp Ser Thr Gln Asp Leu Tyr Asp Asn Pro Val Thr Ser
1 5 10 15

Val Phe Gln Tyr Glu Gly Leu Trp Arg Ser Cys Val Arg Gln Ser Ser
20 25 30

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

Met Leu Gln Ala Val Arg Ala Leu Met Ile Val Gly Ile Val Leu Gly
50 55 60

Ala Ile Gly Leu Leu Val Ser Ile Phe Ala Leu Lys Cys Ile Arg Ile
65 70 75 80

Gly Ser Met Glu Asp Ser Ala Lys Ala Asn Met Thr Leu Thr Ser Gly
85 90 95

Ile Met Phe Ile Val Ser Gly Leu Cys Ala Ile Ala Gly Val Ser Val
100 105 110

Phe Ala Asn Met Leu Val Thr Asn Phe Trp Met Ser Thr Ala Asn Met
115 120 125

Tyr Thr Gly Met Gly Gly Met Val Gln Thr Val Gln Thr Arg Tyr Thr
130 135 140

Phe Gly Ala Ala Leu Phe Val Gly Trp
145 150

<210> 15
<211> 390
<212> DNA
<213> Homo sapiens

<400> 15
atggagacag acacactcct gctatgggta ctgctgctct gggttccagg ttccactggt 60

gacgcggccc agccggccag gcgcgcgcgc cgtacgaagc ttggtaccga gctcggatcc 120

actccagtgt ggtggaattc tgcagatggc cgcatggacc agtggagcac ccaagacttg 180

tacaacaacc ccgtaacagc tgttttcaac taccaggggc tgtggcgctc ctgtgtccga 240

gagagctctg gcttcaccga gtgccggggc tacttcaccc tgctggggct gccagccatg 300

ctgcaggcag tgcgagcggc catccagcac agtggcggcc gctcgaggag ggcccgaaca 360

aaaactcatc tcagaagagg atctgaatag 390

<210> 16
<211> 129
<212> PRT
<213> Homo sapiens

<400> 16

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

Gly Ser Thr Gly Asp Ala Ala Gln Pro Ala Arg Arg Ala Arg Arg Thr
20 25 30

Lys Leu Gly Thr Glu Leu Gly Ser Thr Pro Val Trp Trp Asn Ser Ala
35 40 45

Asp Gly Arg Met Asp Gln Trp Ser Thr Gln Asp Leu Tyr Asn Asn Pro
50 55 60

Val Thr Ala Val Phe Asn Tyr Gln Gly Leu Trp Arg Ser Cys Val Arg
65 70 75 80

Glu Ser Ser Gly Phe Thr Glu Cys Arg Gly Tyr Phe Thr Leu Leu Gly
85 90 95

Leu Pro Ala Met Leu Gln Ala Val Arg Ala Ala Ile Gln His Ser Gly
100 105 110

Gly Arg Ser Arg Arg Ala Arg Thr Lys Thr His Leu Arg Arg Gly Ser
115 120 125

Glu

<210> 17
<211> 411
<212> DNA
<213> Homo sapiens

<400> 17
atggagacag acacactcct gctatgggta ctgctgctct gggttccagg ttccactggt 60

gacgcggccc agccggccag gcgcgcgcgc cgtacgaagc ttggtaccga gctcggatcc 120

actccagtgt ggtggaattc tgcagatggc cgcgccctga tgatcgtagg catcgtcctg 180

ggtgccattg gcctcctggt atccatcttt gccctgaaat gcatccgcat tggcagcatg 240

gaggactctg ccaaagccaa catgacactg acatccggga tcatgttcat tgtctcaggt 300

ctttgtgcaa ttgctggagt gtctgtgttt gccaacgcgg ccatccagca cagtggcggc 360

cgctcgagga gggcccgaac aaaaactcat ctcagaagag gatctgaata g 411

<210> 18
<211> 136
<212> PRT
<213> Homo sapiens

<400> 18

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

Gly Ser Thr Gly Asp Ala Ala Gln Pro Ala Arg Arg Ala Arg Arg Thr
20 25 30

Lys Leu Gly Thr Glu Leu Gly Ser Thr Pro Val Trp Trp Asn Ser Ala
35 40 45

Asp Gly Arg Ala Leu Met Ile Val Gly Ile Val Leu Gly Ala Ile Gly
50 55 60

Leu Leu Val Ser Ile Phe Ala Leu Lys Cys Ile Arg Ile Gly Ser Met
65 70 75 80

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

Ile Val Ser Gly Leu Cys Ala Ile Ala Gly Val Ser Val Phe Ala Asn
100 105 110

Ala Ala Ile Gln His Ser Gly Gly Arg Ser Arg Arg Ala Arg Thr Lys
115 120 125

Thr His Leu Arg Arg Gly Ser Glu
130 135

<210> 19
<211> 531
<212> DNA
<213> Homo sapiens

<400> 19
atggagacag acacactcct gctatgggta ctgctgctct gggttccagg ttccactggt 60

gacgcggccc agccggccag gcgcgccatg gaccagtgga gcacccaaga cttgtacaac 120

aaccccgtaa cagctgtttt caactaccag gggctgtggc gctcctgtgt ccgagagagc 180

tctggcttca ccgagtgccg gggctacttc accctgctgg ggctgccagc catgctgcag 240

gcagtgcgag ccctgatgat cgtaggcatc gtcctgggtg ccattggcct cctggtatcc 300

atctttgccc tgaaatgcat ccgcattggc agcatggagg actctgccaa agccaacatg 360

acactgacct ccgggatcat gttcattgtc tcaggtcttt gtgcaattgc tggagtgtct 420

gtgtttgcca acatgctggt gactaacttc tggatgtcca cagctaacat gtacaccggc 480

atgggtggga tggtgcagac tgttcagacc aggtacacat ttggtgcgta g 531

<210> 20
<211> 176
<212> PRT
<213> Homo sapiens

<400> 20

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

Gly Ser Thr Gly Asp Ala Ala Gln Pro Ala Arg Arg Ala Met Asp Gln
20 25 30

Trp Ser Thr Gln Asp Leu Tyr Asn Asn Pro Val Thr Ala Val Phe Asn
35 40 45

Tyr Gln Gly Leu Trp Arg Ser Cys Val Arg Glu Ser Ser Gly Phe Thr
50 55 60

Glu Cys Arg Gly Tyr Phe Thr Leu Leu Gly Leu Pro Ala Met Leu Gln
65 70 75 80

Ala Val Arg Ala Leu Met Ile Val Gly Ile Val Leu Gly Ala Ile Gly
85 90 95

Leu Leu Val Ser Ile Phe Ala Leu Lys Cys Ile Arg Ile Gly Ser Met
100 105 110

Glu Asp Ser Ala Lys Ala Asn Met Thr Leu Thr Ser Gly Ile Met Phe
115 120 125

Ile Val Ser Gly Leu Cys Ala Ile Ala Gly Val Ser Val Phe Ala Asn
130 135 140

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

Met Gly Gly Met Val Gln Thr Val Gln Thr Arg Tyr Thr Phe Gly Ala
165 170 175

<210> 21
<211> 10
<212> PRT
<213> Homo sapiens

<400> 21

Asp Gln Trp Ser Thr Gln Asp Leu Tyr Asn
1 5 10

<210> 22
<211> 11
<212> PRT
<213> Homo sapiens

<400> 22

Asn Asn Pro Val Thr Ala Val Phe Asn Tyr Gln
1 5 10

<210> 23
<211> 14
<212> PRT
<213> Homo sapiens

<400> 23

Ser Thr Gln Asp Leu Tyr Asn Asn Pro Val Thr Ala Val Phe
1 5 10

<210> 24
<211> 12
<212> PRT
<213> Homo sapiens

<400> 24

Asp Met Trp Ser Thr Gln Asp Leu Tyr Asp Asn Pro
1 5 10

<210> 25
<211> 12
<212> PRT
<213> Homo sapiens

<400> 25

Cys Arg Pro Tyr Phe Thr Ile Leu Gly Leu Pro Ala
1 5 10

<210> 26
<211> 13
<212> PRT
<213> Homo sapiens

<400> 26

Thr Asn Phe Trp Met Ser Thr Ala Asn Met Tyr Thr Gly
1 5 10

<210> 27
<211> 13
<212> PRT
<213> Homo sapiens

<400> 27

Asp Ser Ala Lys Ala Asn Met Thr Leu Thr Ser Gly Ile
1 5 10

<210> 28
<211> 55
<212> PRT
<213> Homo sapiens

<400> 28

Met Asp Gln Trp Ser Thr Gln Asp Leu Tyr Asn Asn Pro Val Thr Ala
1 5 10 15

Val Phe Asn Tyr Gln Gly Leu Trp Arg Ser Cys Val Arg Glu Ser Ser
20 25 30

Gly Phe Thr Glu Cys Arg Gly Tyr Phe Thr Leu Leu Gly Leu Pro Ala
35 40 45

Met Leu Gln Ala Val Arg Ala
50 55

<210> 29
<211> 24
<212> PRT
<213> Homo sapiens

<400> 29

Phe Ala Leu Lys Cys Ile Arg Ile Gly Ser Met Glu Asp Ser Ala Lys
1 5 10 15

Ala Asn Met Thr Leu Thr Ser Gly
20

<210> 30
<211> 40
<212> PRT
<213> Homo sapiens

<400> 30

Ala Asn Met Leu Val Thr Asn Phe Trp Met Ser Thr Ala Asn Met Tyr
1 5 10 15

Thr Gly Met Gly Gly Met Val Gln Thr Val Gln Thr Arg Tyr Thr Phe
20 25 30

Gly Ala Ala Leu Phe Val Gly Trp
35 40

<210> 31
<211> 153
<212> PRT

<213> Homo sapiens

<400> 31

Met Asp Gln Trp Ser Thr Gln Asp Leu Tyr Asn Asn Pro Val Thr Ala
1 5 10 15

Val Phe Asn Tyr Gln Gly Leu Trp Arg Ser Cys Val Arg Glu Ser Ser
20 25 30

Gly Phe Thr Glu Cys Arg Gly Tyr Phe Thr Leu Leu Gly Leu Pro Ala
35 40 45

Met Leu Gln Ala Val Arg Ala Leu Met Ile Val Gly Ile Val Leu Gly
50 55 60

Ala Ile Gly Leu Leu Val Ser Ile Phe Ala Leu Lys Cys Ile Arg Ile
65 70 75 80

Gly Ser Met Glu Asp Ser Ala Lys Ala Asn Met Thr Leu Thr Ser Gly
85 90 95

Ile Met Phe Ile Val Ser Gly Leu Cys Ala Ile Ala Gly Val Ser Val
100 105 110

Phe Ala Asn Met Leu Val Thr Asn Phe Trp Met Ser Thr Ala Asn Met
115 120 125

Tyr Thr Gly Met Gly Gly Met Val Gln Thr Val Gln Thr Arg Tyr Thr
130 135 140

Phe Gly Ala Ala Leu Phe Val Gly Trp
145 150

<210> 32
<211> 3359
<212> DNA
<213> Homo sapiens

<400> 32
cacaccttcg gcagcaggag ggcggcagct tctcgcaggc ggcagggcgg gcggccagga 60

tcatgtccac caccacatgc caagtggtgg cgttcctcct gtccatcctg gggctggccg 120

gctgcatcgc ggccaccggg atggacatgt ggagcaccca ggacctgtac gacaaccccg 180

tcacctccgt gttccagtac gaagggctct ggaggagctg cgtgaggcag agttcaggct 240

tcaccgaatg caggccctat ttcaccatcc tgggacttcc agccatgctg caggcagtgc 300

gagccctgat gatcgtaggc atcgtcctgg gtgccattgg cctcctggta tccatctttg 360

ccctgaaatg catccgcatt ggcagcatgg aggactctgc caaagccaac atgacactga 420

cctccgggat catgttcatt gtctcaggtc tttgtgcaat tgctggagtg tctgtgtttg 480

ccaacatgct ggtgactaac ttctggatgt ccacagctaa catgtacacc ggcatgggtg 540

ggatggtgca gactgttcag accaggtaca catttggtgc ggctctgttc gtgggctggg 600

tcgctggagg cctcacacta attgggggtg tgatgatgtg catcgcctgc cggggcctgg 660

caccagaaga aaccaactac aaagccgttt cttatcatgc ctcaggccac agtgttgcct 720

acaagcctgg aggcttcaag gccagcactg gctttgggtc caacaccaaa aacaagaaga 780

tatacgatgg aggtgcccgc acagaggacg aggtacaatc ttatccttcc aagcacgact 840

atgtgtaatg ctctaagacc tctcagcacg ggcggaagaa actcccggag agctcaccca 900

aaaaacaagg agatcccatc tagatttctt cttgcttttg actcacagct ggaagttaga 960

aaagcctcga tttcatcttt ggagaggcca aatggtctta gcctcagtct ctgtctctaa 1020

atattccacc ataaaacagc tgagttattt atgaattaga ggctatagct cacattttca 1080

atcctctatt tctttttta aatataactt tctactctga tgagagaatg tggttttaat 1140

ctctctctca cattttgatg atttagacag actccccctc ttcctcctag tcaataaacc 1200

cattgatgat ctatttccca gcttatcccc aagaaaactt ttgaaaggaa agagtagacc 1260

caaagatgtt attttctgct gtttgaattt tgtctccccа ccccaactt ggctagtaat 1320

aaacacttac tgaagaagaa gcaataagag aaagatattt gtaatctctc cagcccatga 1380

tctcggtttt cttacactgt gatcttaaaa gttaccaaac caaagtcatt ttcagtttga 1440

ggcaaccaaa cctttctact gctgttgaca tcttcttatt acagcaacac cattctagga 1500

gtttcctgag ctctccactg gagtcctctt tctgtcgcgg gtcagaaatt gtccctagat 1560

gaatgagaaa attatttttt ttaatttaag tcctaaatat agttaaaata aataatgttt 1620

tagtaaaatg atacactatc tctgtgaaat agcctcaccc ctacatgtgg atagaaggaa 1680

atgaaaaaat aattgctttg acattgtcta tatggtactt tgtaaagtca tgcttaagta 1740

caaattccat gaaaagctca ctgatcctaa ttctttccct ttgaggtctc tatggctctg 1800

attgtacatg atagtaagtg taagccatgt aaaaagtaaa taatgtctgg gcacagtggc 1860

tcacgcctgt aatcctagca ctttgggagg ctgaggagga aggatcactt gagcccagaa 1920

gttcgagact agcctgggca acatggagaa gccctgtctc tacaaaatac agagagaaaa 1980

aatcagccag tcatggtggc ctacacctgt agtcccagca ttccgggagg ctgaggtggg 2040

aggatcactt gagcccaggg aggttggggc tgcagtgagc catgatcaca ccactgcact 2100

ccagccaggt gacatagcga gatcctgtct aaaaaaataa aaaataaata atggaacaca 2160

gcaagtccta ggaagtaggt taaaactaat tctttaaaaa aaaaaaaaag ttgagcctga 2220

attaaatgta atgtttccaa gtgacaggta tccacatttg catggttaca agccactgcc 2280

agttagcagt agcactttcc tggcactgtg gtcggttttg ttttgttttg ctttgtttag 2340

agacggggtc tcactttcca ggctggcctc aaactcctgc actcaagcaa ttcttctacc 2400

ctggcctccc aagtagctgg aattacaggt gtgcgccatc acaactagct ggtggtcagt 2460

tttgttactc tgagagctgt tcacttctct gaattcacct agagtggttg gaccatcaga 2520

tgtttgggca aaactgaaag ctctttgcaa ccacacacct tccctgagct tacatcactg 2580

ccctttgag cagaaagtct aaattccttc caagacagta gaattccatc ccagtaccaa 2640

agccagatag gccccctagg aaactgaggt aagagcagtc tctaaaaact acccacagca 2700

gcattggtgc aggggaactt ggccattagg ttattatttg agaggaaagt cctcacatca 2760

atagtacata tgaaagtgac ctccaagggg attggtgaat actcataagg atcttcaggc 2820

tgaacagact atgtctgggg aaagaacgga ttatgcccca ttaaataaca agttgtgttc 2880

aagagtcaga gcagtgagct cagaggccct tctcactgag acagcaacat ttaaaccaaa 2940

ccagaggaag tatttgtgga actcactgcc tcagtttggg taaaggatga gcagacaagt 3000

caactaaaga aaaaagaaaa gcaaggagga gggttgagca atctagagca tggagtttgt 3060

taagtgctct ctggatttga gttgaagagc atccatttga gttgaaggcc acagggcaca 3120

atgagctctc ccttctacca ccagaaagtc cctggtcagg tctcaggtag tgcggtgtgg 3180

ctcagctggg tttttaatta gcgcattctc tatccaacat ttaattgttt gaaagcctcc 3240

atatagttag attgtgcttt gtaattttgt tgttgttgct ctatcttatt gtatatgcat 3300

tgagtattaa cctgaatgtt ttgttactta aatattaaaa acactgttat cctacagtt 3359

<210> 33
<211> 849
<212> DNA
<213> Mus musculus

<400> 33
gagaacctgc ctgtctcttg tcctctccat ttgtgtggac tctgtgctcc atcatgtcgg 60

tgaccgcctg ccagggcttg gggtttgtgg tgtcactgat cgggtttgcg ggcatcattg 120

cagccacttg tatggaccag tggagcaccc aggatttata caacaacccg gtgaccgctg 180

tattcaacta ccaagggcta tggcgttcat gcgtccgaga gagctctggc ttcaccgagt 240

gccgaggcta cttcaccctg ttggggttgc cagccatgct gcaagctgta cgagccctga 300

tgatcgtggg cattgttctg ggggtcatcg gtatcctcgt gtccatcttc gccctgaagt 360

gcattcgcat tggtagcatg gatgactctg ccaaggccaa gatgactctg acttctggga 420

tcttgttcat catctccggc atctgtgcaa tcattggtgt gtctgtgttt gccaacatgc 480

tggtgaccaa cttctggatg tccacagcta acatgtacag cggcatgggc ggcatgggtg 540

gcatggtgca gaccgttcag accaggtaca ccttcggtgc agctctgttc gtgggctggg 600

ttgctggagg cctcaccctg attgggggag tgatgatgtg catcgcctgc cgtggcctga 660

caccagatga cagcaacttc aaagctgtgt cttaccatgc ctctggccaa aatgttgcct 720

acaggcctgg aggctttaag gccagcactg gctttgggtc caacaccaga aacaagaaga 780

tctacgatgg gggtgcccgc acagaagacg atgaacagtc tcatcctacc aagtatgact 840

atgtgtagt 849

<210> 34
<211> 3350
<212> DNA
<213> Homo sapiens

<400> 34
agaattgcgc tgtccacttg tcgtgtggct ctgtgtcgac actgtgcgcc accatggccg 60

tgactgcctg tcagggcttg gggttcgtgg tttcactgat tgggattgcg ggcatcattg 120

ctgccacctg catggaccag tggagcaccc aagacttgta caacaacccc gtaacagctg 180

ttttcaacta ccaggggctg tggcgctcct gtgtccgaga gagctctggc ttcaccgagt 240

gccggggcta cttcaccctg ctggggctgc cagccatgct gcaggcagtg cgagccctga 300

tgatcgtagg catcgtcctg ggtgccattg gcctcctggt atccatcttt gccctgaaat 360

gcatccgcat tggcagcatg gaggactctg ccaaagccaa catgacactg acctccggga 420

tcatgttcat tgtctcaggt ctttgtgcaa ttgctggagt gtctgtgttt gccaacatgc 480

tggtgactaa cttctggatg tccacagcta acatgtacac cggcatgggt gggatggtgc 540

agactgttca gaccaggtac acatttggtg cggctctgtt cgtgggctgg gtcgctggag 600

gcctcacact aattgggggt gtgatgatgt gcatcgcctg ccggggcctg gcaccagaag 660

aaaccaacta caaagccgtt tcttatcatg cctcaggcca cagtgttgcc tacaagcctg 720

gaggcttcaa ggccagcact ggctttgggt ccaacaccaa aaacaagaag atatacgatg 780

gaggtgcccg cacagaggac gaggtacaat cttatccttc caagcacgac tatgtgtaat 840

gctctaagac ctctcagcac gggcggaaga aactcccgga gagctcaccc aaaaaacaag 900

gagatcccat ctagatttct tcttgctttt gactcacagc tggaagttag aaaagcctcg 960

atttcatctt tggagaggcc aaatggtctt agcctcagtc tctgtctcta aatattccac 1020

cataaaacag ctgagttatt tatgaattag aggctatagc tcacattttc aatcctctat 1080

ttctttttt aaatataact ttctactctg atgagagaat gtggttttaa tctctctctc 1140

acattttgat gatttagaca gactcccct cttcctccta gtcaataaac ccattgatga 1200

tctatttccc agcttatccc caagaaaact tttgaaagga aagagtagac ccaaagatgt 1260

tattttctgc tgtttgaatt ttgtctcccc acccccaact tggctagtaa taaacactta 1320

ctgaagaaga agcaataaga gaaagatatt tgtaatctct ccagcccatg atctcggttt 1380

tcttacactg tgatcttaaa agttaccaaa ccaaagtcat tttcagtttg aggcaaccaa 1440

acctttctac tgctgttgac atcttcttat tacagcaaca ccattctagg agtttcctga 1500

gctctccact ggagtcctct ttctgtcgcg ggtcagaaat tgtccctaga tgaatgagaa 1560

aattattttt tttaatttaa gtcctaaata tagttaaaat aaataatgtt ttagtaaaat 1620

gatacactat ctctgtgaaa tagcctcacc cctacatgtg gatagaagga aatgaaaaaa 1680

taattgcttt gacattgtct atatggtact ttgtaaagtc atgcttaagt acaaattcca 1740

tgaaaagctc actgatccta attctttccc tttgaggtct ctatggctct gattgtacat 1800

gatagtaagt gtaagccatg taaaaagtaa ataatgtctg ggcacagtgg ctcacgcctg 1860

taatcctagc actttgggag gctgaggagg aaggatcact tgagcccaga agttcgagac 1920

tagcctgggc aacatggaga agccctgtct ctacaaaata cagagagaaa aaatcagcca 1980

gtcatggtgg cctacacctg tagtcccagc attccgggag gctgaggtgg gaggatcact 2040

tgagcccagg gaggttgggg ctgcagtgag ccatgatcac accactgcac tccagccagg 2100

tgacatagcg agatcctgtc taaaaaaata aaaaataaat aatggaacac agcaagtcct 2160

aggaagtagg ttaaaactaa ttctttaaaa aaaaaaaaaa gttgagcctg aattaaatgt 2220

aatgtttcca agtgacaggt atccacattt gcatggttac aagccactgc cagttagcag 2280

tagcactttc ctggcactgt ggtcggtttt gttttgtttt gctttgttta gagacggggt 2340

ctcactttcc aggctggcct caaactcctg cactcaagca attcttctac cctggcctcc 2400

caagtagctg gaattacagg tgtgcgccat cacaactagc tggtggtcag ttttgttact 2460

ctgagagctg ttcacttctc tgaattcacc tagagtggtt ggaccatcag atgtttgggc 2520

aaaactgaaa gctctttgca accacacacc ttccctgagc ttacatcact gccctttga 2580

gcagaaagtc taaattcctt ccaagacagt agaattccat cccagtacca aagccagata 2640

ggcccctag gaaactgagg taagagcagt ctctaaaaac tacccacagc agcattggtg 2700

caggggaact tggccattag gttattattt gagaggaaag tcctcacatc aatagtacat 2760

atgaaagtga cctccaaggg gattggtgaa tactcataag gatcttcagg ctgaacagac 2820

tatgtctggg gaaagaacgg attatgcccc attaaataac aagttgtgtt caagagtcag 2880

agcagtgagc tcagaggccc ttctcactga gacagcaaca tttaaaccaa accagaggaa 2940

gtatttgtgg aactcactgc ctcagtttgg gtaaaggatg agcagacaag tcaactaaag 3000

aaaaaagaaa agcaaggagg agggttgagc aatctagagc atggagtttg ttaagtgctc 3060

tctggatttg agttgaagag catccatttg agttgaaggc cacagggcac aatgagctct 3120

cccttctacc accagaaagt ccctggtcag gtctcaggta gtgcggtgtg gctcagctgg 3180

gtttttaatt agcgcattct ctatccaaca tttaattgtt tgaaagcctc catatagtta 3240

gattgtgctt tgtaattttg ttgttgttgc tctatcttat tgtatatgca ttgagtatta 3300

acctgaatgt tttgttactt aaatattaaa aacactgtta tcctacagtt 3350

<210> 35

<211> 264
<212> PRT
<213> Mus musculus

<400> 35

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

Gly Phe Ala Gly Ile Ile Ala Ala Thr Cys Met Asp Gln Trp Ser Thr
20 25 30

Gln Asp Leu Tyr Asn Asn Pro Val Thr Ala Val Phe Asn Tyr Gln Gly
35 40 45

Leu Trp Arg Ser Cys Val Arg Glu Ser Ser Gly Phe Thr Glu Cys Arg
50 55 60

Gly Tyr Phe Thr Leu Leu Gly Leu Pro Ala Met Leu Gln Ala Val Arg
65 70 75 80

Ala Leu Met Ile Val Gly Ile Val Leu Gly Val Ile Gly Ile Leu Val
85 90 95

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

Ala Lys Ala Lys Met Thr Leu Thr Ser Gly Ile Leu Phe Ile Ile Ser
115 120 125

Gly Ile Cys Ala Ile Ile Gly Val Ser Val Phe Ala Asn Met Leu Val
130 135 140

Thr Asn Phe Trp Met Ser Thr Ala Asn Met Tyr Ser Gly Met Gly Gly
145 150 155 160

Met Gly Gly Met Val Gln Thr Val Gln Thr Arg Tyr Thr Phe Gly Ala
165 170 175

Ala Leu Phe Val Gly Trp Val Ala Gly Gly Leu Thr Leu Ile Gly Gly
180 185 190

Val Met Met Cys Ile Ala Cys Arg Gly Leu Thr Pro Asp Asp Ser Asn
195 200 205

Phe Lys Ala Val Ser Tyr His Ala Ser Gly Gln Asn Val Ala Tyr Arg
210 215 220

Pro Gly Gly Phe Lys Ala Ser Thr Gly Phe Gly Ser Asn Thr Arg Asn
225 230 235 240

Lys Lys Ile Tyr Asp Gly Gly Ala Arg Thr Glu Asp Asp Glu Gln Ser
245 250 255

His Pro Thr Lys Tyr Asp Tyr Val
260

<210> 36
<211> 2786
<212> DNA
<213> Mus musculus

<400> 36
ggccgggaac cttcccagca agagggtggt ggttgctcct ggaagcctgc gcccagcagc 60

tgaagccatg gccaccacca cgtgccaggt ggtagggctt ctcctgtccc tcctgggtct 120

ggccggctgc atagccgcca ctgggatgga catgtggagc actcaagacc tgtatgacaa 180

cccagtcacc gccgtgttcc agtatgaagg gctctggagg agttgcgtgc aacagagctc 240

ggggttcacc gagtgccggc catacttcac catcctgggc cttccagcca tgctgcaagc 300

tgtacgagcc ctgatgatcg tgggcattgt tctgggggtc atcggtatcc tcgtgtccat 360

cttcgccctg aagtgcattc gcattggtag catggatgac tctgccaagg ccaagatgac 420

tctgacttct gggatcttgt tcatcatctc cggcatctgt gcaatcattg gtgtgtctgt 480

gtttgccaac atgctggtga ccaacttctg gatgtccaca gctaacatgt acagcggcat 540

gggcggcatg ggtggcatgg tgcagaccgt tcagaccagg tacaccttcg gtgcagctct 600

gttcgtgggc tgggttgctg gaggcctcac cctgattggg ggagtgatga tgtgcatcgc 660

ctgccgtggc ctgacaccag atgacagcaa cttcaaagct gtgtcttacc atgcctctgg 720

ccaaaatgtt gcctacaggc ctggaggctt taaggccagc actggctttg ggtccaacac 780

cagaaacaag aagatctacg atgggggtgc ccgcacagaa gacgatgaac agtctcatcc 840

taccaagtat gactatgtgt agtgctctaa gacccgccaa cctgtgtgca ggaggaaccc 900

ttccccaaga agagctcacc ccaaagcaac gggagtctac cttgttccct tgttgatttc 960

aactgacatc tgaaagttgg taaagcctga ttttcatcca tagggaggct agacagtctt 1020

ggccacatgt gtctgcctct aaatatccca tcacaaaaca gctgagttat cgtttatgag 1080

ttagaggcca taacactcac tttagcccaa ccctctgctt tttaccgtag actttctttt 1140

catctggtga tggaatggaa tttgactcac agactaatac tttaatggtt tagagaaact 1200

ttccttcctc gtacttaata agcctgctga tggtcgattt tccagcttga ccaccaaggg 1260

aaattttaaa aggaaaaaaa aatacattaa aaggcattat ttcctactca attgtgcctt 1320

acccaccccc aacttgactg ataataataa tgaacaccac ttaaagaaag aatgccagag 1380

gaaagatagt tgtgtttccc cccagccagt catctgagtc cccctatgtg gtgatctaga 1440

acattactcg ccacagtgat tttcaaagaa ggcaagcgag cctgttcgct ctgctcagca 1500

tctgctgatt ccagcaaggc ccttccagag ctttccacta gaagtcctcc ttctctcgga 1560

agtcagaaat tccccctaga agagtaagaa atagattctt ttgggtaacc tgagtcctag 1620

gtatagttat aataaatagt atattagcaa aacggtttgg tatctcagtg aattagtttc 1680

agccttacat atagaaaaag ctggggaaaa aaaaagcatc ccttgacatt gtctatagcg 1740

taagatccta tataaatcca agcttcaaca aaagctcact gagtctaata gttttctttt 1800

gaggtctcca cggccttagt actcatagat gcagcccctg tttaaaagta aaaaaattaa 1860

agtagcttaa aacgggttct ttttttttt ttttttttca aaaaatccaa tagagacctg 1920

tgtgtctggc atagctacag ttactgccaa tcgacagggc cacttctttg gtcctgtagg 1980

cagttttgca gttctgacag ctgcgccggg catcaatatg cagaccacac ccttctctgt 2040

gcttgtagga cgacccgttc aaggagaaag catgaactcc atctccatgt gagcctgaat 2100

gctcccagga aatggagata gggtgctctc caaaacccac ctgaacctga aacagctgta 2160

gcgctatgct gtaagagcct ggccatcaag ttcctatgga gaaaaagggc agtccttgca 2220

ttaatagtgc atatataagt ggcctctggg gggcagggat gaatattcag tggtggctcc 2280

gagtatgtac agaccgtcta aggagctgtg ttgaccaaga gccaggttaa tacgcagagt 2340

ttttcccact gggactacag tgattttaga ctatactgaa gaaggccctc tggaaaatca 2400

ttatctgaaa tggcataaag aatgaacaga ccaaacaatt taaggggagg gggcaggtgg 2460

aaggaggggg aaggaggtag aaataagaat ctagggcatg aagattgtta aggttcttgg 2520

ggtccaaatg gaaggtcacc cctttgaggc catggacaca atgcacccca cccctacccc 2580

cacctgccca cccaccagaa agtccctggt cggactggag gcagtgagaa tcagctgttt 2640

tcagttagtg ggtctcggtg tagcacctgg ctgtttcaaa gcttcccctt gctttgccgt 2700

tttttccgcc attgctgtct tgttttctgt gttattaacc tccatgtttt gtacgttaaa 2760

tattaaaaca ctgttaacat ccattc 2786

<210> 37
<211> 264
<212> PRT
<213> Mus musculus

<400> 37

Met Ala Thr Thr Thr Cys Gln Val Val Gly Leu Leu Leu Ser Leu Leu
1 5 10 15

Gly Leu Ala Gly Cys Ile Ala Ala Thr Gly Met Asp Met Trp Ser Thr
20 25 30

Gln Asp Leu Tyr Asp Asn Pro Val Thr Ala Val Phe Gln Tyr Glu Gly
35 40 45

Leu Trp Arg Ser Cys Val Gln Gln Ser Ser Gly Phe Thr Glu Cys Arg
50 55 60

Pro Tyr Phe Thr Ile Leu Gly Leu Pro Ala Met Leu Gln Ala Val Arg
65 70 75 80

Ala Leu Met Ile Val Gly Ile Val Leu Gly Val Ile Gly Ile Leu Val
85 90 95

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

Ala Lys Ala Lys Met Thr Leu Thr Ser Gly Ile Leu Phe Ile Ile Ser
115 120 125

Gly Ile Cys Ala Ile Ile Gly Val Ser Val Phe Ala Asn Met Leu Val
130 135 140

Thr Asn Phe Trp Met Ser Thr Ala Asn Met Tyr Ser Gly Met Gly Gly
145 150 155 160

Met Gly Gly Met Val Gln Thr Val Gln Thr Arg Tyr Thr Phe Gly Ala
165 170 175

Ala Leu Phe Val Gly Trp Val Ala Gly Gly Leu Thr Leu Ile Gly Gly
180 185 190

Val Met Met Cys Ile Ala Cys Arg Gly Leu Thr Pro Asp Asp Ser Asn
195 200 205

Phe Lys Ala Val Ser Tyr His Ala Ser Gly Gln Asn Val Ala Tyr Arg
210 215 220

Pro Gly Gly Phe Lys Ala Ser Thr Gly Phe Gly Ser Asn Thr Arg Asn
225 230 235 240

Lys Lys Ile Tyr Asp Gly Gly Ala Arg Thr Glu Asp Asp Glu Gln Ser
245 250 255

His Pro Thr Lys Tyr Asp Tyr Val
260

<210> 38
<211> 40
<212> DNA
<213> Artificial

<220>

<223> Description of artificial sequence: Oligonucleotide

<400> 38
gagaggatcc cgtacggtgg ctgcaccatc tgtcttcatc 40

<210> 39
<211> 37
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 39
gagagcggcc gcctaacact ctcccctgtt gaagctc 37

<210> 40
<211> 324
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 40
cgtacggtgg ctgcaccatc tgtcttcatc ttcccgccat ctgatgagca gttgaaatct 60

ggaactgcct ctgttgtgtg cctgctgaat aacttctatc ccagagaggc caaagtacag 120

tggaaggtgg ataacgccct ccaatcgggt aactcccagg agagtgtcac agagcaggac 180

agcaaggaca gcacctacag cctcagcagc accctgacgc tgagcaaagc agactacgag 240

aaacacaaag tctacgcctg cgaagtcacc catcagggcc tgagctcgcc cgtcacaaag 300

agcttcaaca ggggagagtg ttag 324

<210> 41
<211> 107
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 41

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
1 5 10 15

Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe
20 25 30

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
35 40 45

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
50 55 60

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
65 70 75 80

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

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
100 105

<210> 42
<211> 34
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 42
gagaaagctt tccaccaagg gcccatcggt cttc 34

<210> 43
<211> 36
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 43
gagagcggcc gctcatttac ccggagacag ggagag 36

<210> 44
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 44
taccagttga acttgacctc a 21

<210> 45
<211> 981
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 45
ggcccatcgg tcttcccccc ggcaccctcc tccaagagca cctctggggg cacagcggcc 60

ctgggctgcc tggtcaagga ctacttcccc gaaccggtga cggtgtcgtg gaactcaggc 120

gccctgacca gcggcgtgca caccttcccg gctgtcctac agtcctcagg actctactcc 180

ctcagcagcg tggtgaccgt gccctccagc agcttgggca cccagaccta catctgcaac 240

gtgaatcaca agcccagcaa caccaaggtg gacaagaaag ttgagcccaa atcttgtgac 300

aaaactcaca catgcccacc gtgcccagca cctgaactcc tgggggggacc gtcagtcttc 360

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggaccccctga ggtcacatgc 420

gtggtggtgg acgtgagcca cgaagaccct gaggtcaagt tcaactggta cgtggacggc 480

gtggaggtgc ataatgccaa gacaaagccg cgggaggagc agtacaacag cacgtaccgt 540

gtggtcagcg tcctcaccgt cctgcaccag gactggctga atggcaagga gtacaagtgc 600

aaggtctcca acaaagccct cccagccccc atcgagaaaa ccatctccaa agccaaaggg 660

cagccccgag aaccacaggt gtacaccctg cccccatccc gggatgagct gaccaagaac 720

caggtcagcc tgacctgcct ggtcaaaggc ttctatccca gcgacatcgc cgtggagtgg 780

gagagcaatg ggcagccgga gaacaactac aagaccacgc ctcccgtgct ggactccgac 840

ggctccttct tcctctatag caagctcacc gtggacaaga gcaggtggca gcaggggaac 900

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacacgca gaagagcctc 960

tccctgtctc cgggtaaatg a 981

<210> 46
<211> 326
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 46

Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly
1 5 10 15

Gly 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 Gln Thr Tyr Ile Cys Asn
65 70 75 80

Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro
85 90 95

```
Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
            100                 105                 110

Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
        115                 120                 125

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
    130                 135                 140

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

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
                165                 170                 175

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

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
        195                 200                 205

Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
    210                 215                 220

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn
225                 230                 235                 240

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
                245                 250                 255

Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
            260                 265                 270

Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
        275                 280                 285

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
    290                 295                 300

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
305                 310                 315                 320

Ser Leu Ser Pro Gly Lys
                325
```

<210> 47
<211> 32
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<220>
<221> misc_feature
<222> (31)..(32)
<223> n is a, c, g, or t

<400> 47
ttttttttttt ttttttttttt ttttttttttt nn 32

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

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 48
aagcagtggt atcaacgcag agtacgcggg 30

<210> 49
<211> 26
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 49
ctgctcactg gatggtggga agatgg 26

<210> 50
<211> 25
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 50
gggacagtca ctgagctgct cagag 25

<210> 51
<211> 25
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 51
acaggggcca gtggatagac cgatg 25

<210> 52
<211> 27

<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 52
agccagggac caagggatag acagatg 27

<210> 53
<211> 45
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 53
gtaatacgac tcactatagg gcaagcagtg gtatcaacgc agagt 45

<210> 54
<211> 22
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 54
gtaatacgac tcactatagg gc 22

<210> 55
<211> 351
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 55
caggttcagc tgcagcagtc tggagctgag ctgatgaagc ctggggcctc agtgaagata 60

tcctgcaagg ctactggcta cacattcagt agctactgga tagagtgggt aaagcagagg 120

cctggacatg gccttgagtg gattggagag attttacctg gaagtggtag tactaactac 180

aatgagaagt tcaagggcaa ggccacattc actgcagata catcctccaa cacagcctac 240

atgcaactca gcagcctgac atctgaggac tctgccgtct attactgtgc aagatatgat 300

taccccctggt ttgcttactg gggccaaggg actctggtca ctgtctctgc a 351

<210> 56
<211> 354
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 56
cagatccagt tggtgcagtc tggacctgag ctgaagaagc ctggagagac agtcaagatc 60

tcctgcaagg cttctgggta taccttcaca aactatggaa tgaactgggt gaagcaggct 120

ccaggaaagg gtttaaagtg gatgggctgg ataaacacca acactggaga gccaacatat 180

gctgaagagt tcaagggacg gtttgccttc tctttggaaa cctctgccag cactgcctat 240

ttgcagatca acaacctcaa aaatgaggac acggctacat atttctgtgc aagactgggt 300

tttggtaatg ctatggacta ctggggtcaa ggaacctcag tcaccgtctc ctca 354

<210> 57
<211> 348
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 57
caggttcagc tgcagcagtc tggagctgag ctggcgaggc ccggggcttc agtgaagctg 60

tcctgcaagg cttctggcta caccttcact gactactata taaactgggt gaagcagagg 120

actggacagg gccttgagtg gattggagag atttatcctg gaagtggtaa tacttactac 180

aatgagaagt tcaagggcaa ggccacactg actgcagaca aatcctccag cacagcctac 240

atgcagctca gcagcctgac atctgaggac tctgcagtct atttctgtgc aagatcgtat 300

ggtgcctttg actactgggg ccaaggcacc actctcacag tctcctca 348

<210> 58
<211> 354
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 58
caggtccaac tgcagcagcc tggggctgag ctggtgaggc ctggggcttc agtgaagctg 60

tcctgcaagg cttctggcta caccttcacc agctactgga taaactgggt gaagcagagg 120

cctggacaag gccttgagtg gatcggaaat atttatcctt ctgatagtta tactaactac 180

aatcaaaagt tcaaggacaa ggccacattg actgtagaca aatcctccag cacagcctac 240

atgcagctca gcagcccgac atctgaggac tctgcggtct attactgtac aagatcgtgg 300

aggggtaact cctttgacta ctggggccaa ggcaccactc tcacagtctc ctca 354

<210> 59
<211> 354
<212> DNA
<213> Artificial

<220>

<223> Description of artificial sequence: PCR product

<400> 59
caggttcagc tgcagcagtc tggacctgag ctggtgaagc ctggggcttc agtgaagatg 60

tcctgcaagg cttctggata cacattcact gactatgtta taagctgggt gaagcagaga 120

actggacagg gccttgagtg gattggagag atttatcctg gaagtggtag tacttactac 180

aatgagaagt tcaagggcaa ggccacactg actgcagaca aatcctccaa cacagcctac 240

atgcagctca gcagcctgac atctgaggac tctgcggtct atttctgtgc aagaggggta 300

ttactacggg ctatggacta ctggggtcaa ggaacctcag tcaccgtctc ctca 354

<210> 60
<211> 360
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 60
caggttcacc tacaacagtc tggttctgaa ctgaggagtc ctgggtcttc agtaaagctt 60

tcatgcaagg attttgattc agaagtcttc ccttttgctt atatgagttg gattaggcag 120

aagcctgggc atggatttga atggattgga gacatactcc caagtattgg tagaacaatc 180

tatggagaga agtttgagga caaagccaca ctggatgcag acacagtgtc caacacagcc 240

tacttggagc tcaacagtct gacatctgag gactctgcta tctactactg tgcaaggggg 300

gagggctacg gtgcctggtt tgcttactgg ggccaaggga ctctggtcac tgtctctgca 360

<210> 61
<211> 339
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 61
gacattgtga tgacacagtc tccatcctcc ctgactgtga cagcaggaga gaaggtcact 60

atgagctgca agtccagtca gagtctgtta aacagtggaa atcaaaagaa ctacttgacc 120

tggtaccagc agaaaccagg gcagcctcct aaactgttga tctactgggc atccactagg 180

gaatctgggg tccctgatcg cttcacaggc agtggatctg gaacagattt cactctcacc 240

atcagcagtg tgcaggctga agacctggca gtttattact gtcagaatga ttatagttat 300

ccgctcacgt tcggtgctgg gaccaagctg gagctgaaa 339

<210> 62
<211> 318
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 62
caaattgttc tcacccagtc tccagcaatc atgtctgcat ctccagggga gaaggtcacc 60

ataacctgca gtgccagctc aagtgtaagt tacatgcact ggttccagca gaagccaggc 120

acttctccca aactctggat ttatagcaca tccaacctgg cttctggagt ccctgctcgc 180

ttcagtggca gtggatctgg gacctcttac tctctcacaa tcagccgaat ggaggctgaa 240

gatgctgcca cttattactg ccagcaaagg agtagttacc cacccacgtt cggaggggg 300

accaagctgg aaataaaa 318

<210> 63
<211> 321
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 63
gacattgtga tgacccagtc tcaaaaattc atgtccacat cagtaggaga cagggtcagc 60

atcacctgca aggccagtca gaatgttcgt actgctgtag cctggtatca acagaaacca 120

gggcagtctc ctaaagcact gatttacttg gcatccaacc ggcacactgg agtccctgat 180

cgcttcacag gcagtggatc tgggacagat ttcactctca ccattagcaa tgtgcaatct 240

gaagacctgg cagattattt ctgtctgcaa cattggaatt atcctctgac gttcggtgga 300

ggcaccaagc tggaaatcaa a 321

<210> 64
<211> 339
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 64
gacattgtga tgtcacagtc tccatcctcc ctagctgtgt cagttggaga gaaggttact 60

atgagctgca agtccagtca gagcctttta tatagtagca atcaaaagaa ctacttggcc 120

tggtaccagc agaaaccagg gcagtctcct aaactgctga tttactgggc atccactagg 180

gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc 240

atcagcagtg tgaaggctga agacctggca gtttattact gtcagcaata ttatagctat 300

ccgctcacgt tcggtgctgg gaccaagctg gagctgaaa 339

<210> 65
<211> 339

<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 65
gacattgtga tgacacagtc tccatcctcc ctgactgtga cagcaggaga gaaggtcact 60

atgagctgca agtccagtca gagtctgtta aacagtggaa atcaaaagaa ctacttgacc 120

tggtaccagc agaaaccagg gcagcctcct aaactgttga tctactgggc atccactagg 180

gaatctgggg tccctgatcg cttcacaggc agtggatctg gaacagattt cactctcacc 240

atcagcagtg tgcaggctga agacctggca gtttattact gtcagaatga ttatagttat 300

ccattcacgt tcggctcggg gacaaagttg gaaataaaa 339

<210> 66
<211> 336
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 66
gacattgtga tgtcacagtc tccatcctcc ctggctgtgt cagcaggaga gaaggtcact 60

atgagctgca aatccagtca gagtctgctc aacagtagaa cccgaaagaa ctacttggct 120

tggtaccagc agaaaccagg gcagtctcct aaactgctga tctactgggc atccactagg 180

gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc 240

atcagcagtg tgcaggctga agacctggca gtttattact gcaagcaatc ttataatctg 300

tacacgttcg gaggggggac caagctggaa ataaaa 336

<210> 67
<211> 339
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 67
gacatcgtga tgtcacagtc tccatcctcc ctagctgtgt cagttggaga gaaggttact 60

atgagctgca agtccagtca gagcctttta tatagtagca atcaaaagaa ctacttggcc 120

tggtaccagc agaaaccagg gcagtctcct aaactgctga tttactgggc atccactagg 180

gaatctgggg tccctgatcg cttcacaggc agtggatctg caacagattt cactctgacc 240

atcagcagtg tgcaggctga agaccttgca gattatcact gtggacaggg ttacagctat 300

ccgtacacgt tcggaggggg gaccaagctg gaaataaaa 339

<210> 68
<211> 339
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 68
gacattgtga tgtcacagtc tccatcctcc ctagctgtgt cagttggaga gaaggttact 60

atgagctgca agtccagtca gagcctttta tatagtagca atcaaaagaa ctacttggcc 120

tggtaccagc agaaaccagg gcagtctcct aaactgctga tttactgggc atccactagg 180

gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc 240

atcagcagtg tgaaggctga agacctggca gtttattact gtcagcaata ttatagctat 300

ccgctcacgt tcggtgctgg gaccaagctg gagctgaaa 339

<210> 69
<211> 321
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: PCR product

<400> 69
aacattgtaa tgacccaatc tcccaaatcc atgtccatgt cagtaggaga gagggtcacc 60

ttgacctgca aggccagtga gaatgtggtt acttatgttt cctggtatca acagaaacca 120

gagcagtctc ctaaactgct gatatacggg gcatccaacc ggtacactgg ggtccccgat 180

cgcttcacag gcagtggatc tgcaacagat ttcactctca ccatcagcag tgtgaaggct 240

gaagacctgg cagtttatta ctgtcagcaa tattatagct atccgctcac gttcggtgct 300

gggaccaagc tggagctgaa a 321

<210> 70
<211> 43
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 70
gagaaagctt gccgccacca tggaatggac ctgggtcttt ctc 43

<210> 71
<211> 43
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 71
gagagggccc ttggtggagg ctgcagagac agtgaccaga gtc 43

<210> 72
<211> 47
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 72
gagaaagctt gccgccacca tggattggct gtggaacttg ctattcc 47

<210> 73
<211> 44
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 73
gagagggccc ttggtggagg ctgaggagac ggtgactgag gttc 44

<210> 74
<211> 46
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 74
gagaaagctt gccgccacca tggaatggat ctggatcttt ctcttc 46

<210> 75
<211> 44
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 75
gagagggccc ttggtggagg ctgaggagac tgtgagagtg gtgc 44

<210> 76
<211> 46
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 76
gagaaagctt gccgccacca tgggatggag ctgtatcatc ctcttc 46

<210> 77
<211> 43
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 77
gagagggccc ttggtggagg ctgaggagac tgtgagagtg gtg 43

<210> 78
<211> 47
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 78
gagaaagctt gccgccacca tggaatggag gatctttctc ttcatcc 47

<210> 79
<211> 44
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 79
gagagggccc ttggtggagg ctgaggagac ggtgactgag gttc 44

<210> 80
<211> 51
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 80
gagaggtctc aagcttagcc accatggact ggatttggat catgctccat c 51

<210> 81
<211> 44
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 81
gagagggccc ttggtggagg ctgcagagac agtgaccaga gtcc 44

<210> 82
<211> 43
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 82
gagaaagctt gccgccacca tggaatcaca gactcaggtc ctc 43

<210> 83
<211> 34
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 83
cacacgtacg tttcagctcc agcttggtcc cagc 34

<210> 84
<211> 46
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 84
gagaaagctt gccgccacca tgcattttca agtgcagatt ttcagc 46

<210> 85
<211> 30
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 85
cacacgtacg ttttatttcc agcttggtcc 30

<210> 86
<211> 44
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 86
gagaaagctt gccgccacca tggagtttca gacccaggtc tttg 44

<210> 87
<211> 33
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 87
cacacgtacg tttgatttcc agcttggtgc ctc 33

<210> 88
<211> 46
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 88
gagaaagctt gccgccacca tggattcaca ggcccaggtt cttatg 46

<210> 89
<211> 30
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 89
cacacgtacg tttcagctcc agcttggtcc 30

<210> 90
<211> 46
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 90
gagaaagctt gccgccacca tggaatcaca gactcaggtc ctcatg 46

<210> 91
<211> 30
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 91
cacacgtacg ttttatttcc aactttgtcc 30

<210> 92
<211> 49
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 92
gagaaagctt gccgccacca tggattcaca ggcccaggtt cttatattg 49

<210> 93
<211> 30
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 93
cacacgtacg ttttatttcc agcttggtcc 30

<210> 94
<211> 46
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 94
gagaaagctt gccgccacca tggattcaca ggcccaggtt cttatg 46

<210> 95
<211> 30
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 95
cacacgtacg ttttatttcc agcttggtcc 30

<210> 96
<211> 46
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 96
gagaaagctt gccgccacca tggattcaca ggctcaggtt cttatg 46

<210> 97
<211> 33
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 97
cacacgtacg tttcagctcc agcttggtcc cag 33

<210> 98
<211> 41
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 98
gagaaagctt agccaccatg gaatcacaga ctctggtctt c 41

<210> 99
<211> 30
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 99
cacacgtacg tttcagctcc agcttggtcc 30

<210> 100
<211> 1401
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 100
atggaatgga cctgggtctt tctcttcctc ctgtcagtaa ctgcaggtgt ccactcccag 60

gttcagctgc agcagtctgg agctgagctg atgaagcctg gggcctcagt gaagatatcc 120

tgcaaggcta ctggctacac attcagtagc tactggatag agtgggtaaa gcagaggcct 180

ggacatggcc ttgagtggat tggagagatt ttacctggaa gtggtagtac taactacaat 240

gagaagttca agggcaaggc cacattcact gcagatacat cctccaacac agcctacatg 300

caactcagca gcctgacatc tgaggactct gccgtctatt actgtgcaag atatgattac 360

ccctggtttg cttactgggg ccaagggact ctggtcactg tctctgcagc ctccaccaag 420

ggcccatcgg tcttcccccc ggcaccctcc tccaagagca cctctggggg cacagcggcc 480

ctgggctgcc tggtcaagga ctacttcccc gaaccggtga cggtgtcgtg gaactcaggc 540

gccctgacca gcggcgtgca caccttcccg gctgtcctac agtcctcagg actctactcc 600

ctcagcagcg tggtgaccgt gccctccagc agcttgggca cccagaccta catctgcaac 660

gtgaatcaca agcccagcaa caccaaggtg gacaagaaag ttgagcccaa atcttgtgac 720

aaaactcaca catgcccacc gtgcccagca cctgaactcc tgggggggacc gtcagtcttc 780

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggacccctga ggtcacatgc 840

gtggtggtgg acgtgagcca cgaagaccct gaggtcaagt tcaactggta cgtggacggc 900

gtggaggtgc ataatgccaa gacaaagccg cgggaggagc agtacaacag cacgtaccgt 960

gtggtcagcg tcctcaccgt cctgcaccag gactggctga atggcaagga gtacaagtgc 1020

aaggtctcca acaaagccct cccagccccc atcgagaaaa ccatctccaa agccaaaggg 1080

cagccccgag aaccacaggt gtacaccctg cccccatccc gggatgagct gaccaagaac 1140

caggtcagcc tgacctgcct ggtcaaaggc ttctatccca gcgacatcgc cgtggagtgg 1200

gagagcaatg ggcagccgga gaacaactac aagaccacgc ctcccgtgct ggactccgac 1260

ggctccttct tcctctatag caagctcacc gtggacaaga gcaggtggca gcaggggaac 1320

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacacgca gaagagcctc 1380

tccctgtctc cgggtaaatg a 1401

<210> 101
<211> 1404
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 101
atggattggc tgtggaactt gctattcctg atggcagctg cccaaagtat ccaagcacag 60

atccagttgg tgcagtctgg acctgagctg aagaagcctg gagagacagt caagatctcc 120

tgcaaggctt ctgggtatac cttcacaaac tatggaatga actgggtgaa gcaggctcca 180

ggaaagggtt taaagtggat gggctggata aacaccaaca ctggagagcc aacatatgct 240

gaagagttca agggacggtt tgccttctct ttggaaacct ctgccagcac tgcctatttg 300

cagatcaaca acctcaaaaa tgaggacacg gctacatatt tctgtgcaag actgggtttt 360

ggtaatgcta tggactactg gggtcaagga acctcagtca ccgtctcctc agcctccacc 420

aagggcccat cggtcttccc cctggcaccc tcctccaaga gcacctctgg gggcacagcg 480

gccctgggct gcctggtcaa ggactacttc cccgaaccgg tgacggtgtc gtggaactca 540

ggcgccctga ccagcggcgt gcacaccttc ccggctgtcc tacagtcctc aggactctac 600

tccctcagca gcgtggtgac cgtgccctcc agcagcttgg gcacccagac ctacatctgc 660

aacgtgaatc acaagcccag caacaccaag gtggacaaga aagttgagcc caaatcttgt 720

gacaaaactc acacatgccc accgtgccca gcacctgaac tcctgggggg accgtcagtc 780

ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcaca 840

tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac 900

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac 960

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag 1020

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 1080

gggcagcccc gagaaccaca ggtgtacacc ctgccccccat cccgggatga gctgaccaag 1140

aaccaggtca gcctgacctg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 1200

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 1260

gacggctcct tcttcctcta tagcaagctc accgtggaca agagcaggtg gcagcagggg 1320

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 1380

ctctccctgt ctccgggtaa atga 1404

<210> 102
<211> 1398
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 102
atggaatgga tctggatctt tctcttcatc ctctcaggaa ctgcaggtgt ccactcccag 60

gttcagctgc agcagtctgg agctgagctg gcgaggcccg gggcttcagt gaagctgtcc 120

tgcaaggctt ctggctacac cttcactgac tactatataa actgggtgaa gcagaggact 180

ggacagggcc ttgagtggat tggagagatt tatcctggaa gtggtaatac ttactacaat 240

gagaagttca agggcaaggc cacactgact gcagacaaat cctccagcac agcctacatg 300

cagctcagca gcctgacatc tgaggactct gcagtctatt tctgtgcaag atcgtatggt 360

gcctttgact actggggcca aggcaccact ctcacagtct cctcagcctc caccaagggc 420

ccatcggtct tccccctggc accctcctcc aagagcacct ctgggggcac agcggccctg 480

ggctgcctgg tcaaggacta cttccccgaa ccggtgacgg tgtcgtggaa ctcaggcgcc 540

ctgaccagcg gcgtgcacac cttcccggct gtcctacagt cctcaggact ctactccctc 600

agcagcgtgg tgaccgtgcc ctccagcagc ttgggcaccc agacctacat ctgcaacgtg 660

aatcacaagc ccagcaacac caaggtggac aagaaagttg agcccaaatc ttgtgacaaa 720

actcacacat gcccaccgtg cccagcacct gaactcctgg ggggaccgtc agtcttcctc 780

ttccccccaa aacccaagga caccctcatg atctcccgga cccctgaggt cacatgcgtg 840

gtggtggacg tgagccacga agaccctgag gtcaagttca actggtacgt ggacggcgtg 900

gaggtgcata atgccaagac aaagccgcgg gaggagcagt acaacagcac gtaccgtgtg 960

gtcagcgtcc tcaccgtcct gcaccaggac tggctgaatg gcaaggagta caagtgcaag 1020

gtctccaaca aagccctccc agcccccatc gagaaaacca tctccaaagc caaagggcag 1080

ccccgagaac cacaggtgta caccctgccc ccatcccggg atgagctgac caagaaccag 1140

gtcagcctga cctgcctggt caaaggcttc tatcccagcg acatcgccgt ggagtgggag 1200

agcaatgggc agccggagaa caactacaag accacgcctc ccgtgctgga ctccgacggc 1260

tccttcttcc tctatagcaa gctcaccgtg gacaagagca ggtggcagca ggggaacgtc 1320

ttctcatgct ccgtgatgca tgaggctctg cacaaccact acacgcagaa gagcctctcc 1380

ctgtctccgg gtaaatga 1398

<210> 103
<211> 1404
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 103
atgggatgga gctgtatcat cctcttcttg gtagcaacag ctacaggtgt ccactcccag 60

gtccaactgc agcagcctgg ggctgagctg gtgaggcctg gggcttcagt gaagctgtcc 120

tgcaaggctt ctggctacac cttcaccagc tactggataa actgggtgaa gcagaggcct 180

ggacaaggcc ttgagtggat cggaaatatt tatccttctg atagttatac taactacaat 240

caaaagttca aggacaaggc cacattgact gtagacaaat cctccagcac agcctacatg 300

cagctcagca gcccgacatc tgaggactct gcggtctatt actgtacaag atcgtggagg 360

ggtaactcct ttgactactg gggccaaggc accactctca cagtctcctc agcctccacc 420

aagggcccat cggtcttccc cctggcaccc tcctccaaga gcacctctgg gggcacagcg 480

gccctgggct gcctggtcaa ggactacttc cccgaaccgg tgacggtgtc gtggaactca 540

ggcgccctga ccagcggcgt gcacaccttc ccggctgtcc tacagtcctc aggactctac 600

tccctcagca gcgtggtgac cgtgccctcc agcagcttgg gcacccagac ctacatctgc 660

aacgtgaatc acaagcccag caacaccaag gtggacaaga aagttgagcc caaatcttgt 720

gacaaaactc acacatgccc accgtgccca gcacctgaac tcctgggggg accgtcagtc 780

ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcaca 840

tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac 900

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac 960

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag 1020

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 1080

gggcagcccc gagaaccaca ggtgtacacc ctgccccat cccgggatga gctgaccaag 1140

aaccaggtca gcctgacctg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 1200

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 1260

gacggctcct tcttcctcta tagcaagctc accgtggaca agagcaggtg gcagcagggg 1320

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 1380

ctctccctgt ctccgggtaa atga 1404

<210> 104
<211> 1401
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 104
atggaatgga ggatctttct cttcatcctg tcaggaactg caggtgtcca ctcccaggtt 60

cagctgcagc agtctggacc tgagctggtg aagcctgggg cttcagtgaa gatgtcctgc 120

aaggcttctg gatacacatt cactgactat gttataagct gggtgaagca gagaactgga 180

cagggccttg agtggattgg agagatttat cctggaagtg gtagtactta ctacaatgag 240

aagttcaagg gcaaggccac actgactgca gacaaatcct ccaacacagc ctacatgcag 300

ctcagcagcc tgacatctga ggactctgcg gtctatttct gtgcaagagg ggtattacta 360

cgggctatgg actactgggg tcaaggaacc tcagtcaccg tctcctcagc ctccaccaag 420

ggcccatcgg tcttcccccc ggcaccctcc tccaagagca cctctggggg cacagcggcc 480

ctgggctgcc tggtcaagga ctacttcccc gaaccggtga cggtgtcgtg gaactcaggc 540

gccctgacca gcggcgtgca caccttcccg gctgtcctac agtcctcagg actctactcc 600

ctcagcagcg tggtgaccgt gccctccagc agcttgggca cccagaccta catctgcaac 660

gtgaatcaca agcccagcaa caccaaggtg gacaagaaag ttgagcccaa atcttgtgac 720

aaaactcaca catgcccacc gtgcccagca cctgaactcc tgggggggacc gtcagtcttc 780

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggacccctga ggtcacatgc 840

gtggtggtgg acgtgagcca cgaagaccct gaggtcaagt tcaactggta cgtggacggc 900

gtggaggtgc ataatgccaa gacaaagccg cgggaggagc agtacaacag cacgtaccgt 960

gtggtcagcg tcctcaccgt cctgcaccag gactggctga atggcaagga gtacaagtgc 1020

aaggtctcca acaaagccct cccagccccc atcgagaaaa ccatctccaa agccaaaggg 1080

cagccccgag aaccacaggt gtacaccctg cccccatccc gggatgagct gaccaagaac 1140

caggtcagcc tgacctgcct ggtcaaaggc ttctatccca gcgacatcgc cgtggagtgg 1200

gagagcaatg ggcagccgga gaacaactac aagaccacgc ctcccgtgct ggactccgac 1260

ggctccttct tcctctatag caagctcacc gtggacaaga gcaggtggca gcaggggaac 1320

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacacgca gaagagcctc 1380

tccctgtctc cgggtaaatg a 1401

<210> 105
<211> 1410
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 105
atggactgga tttggatcat gctccatctg ctggcagcag ctacaggtat ccaatcccag 60

gttcacctac aacagtctgg ttctgaactg aggagtcctg ggtcttcagt aaagctttca 120

tgcaaggatt ttgattcaga agtcttccct tttgcttata tgagttggat taggcagaag 180

cctgggcatg gatttgaatg gattggagac atactcccaa gtattggtag aacaatctat 240

ggagagaagt ttgaggacaa agccacactg gatgcagaca cagtgtccaa cacagcctac 300

ttggagctca acagtctgac atctgaggac tctgctatct actactgtgc aaggggggag 360

ggctacggtg cctggtttgc ttactggggc caagggactc tggtcactgt ctctgcagcc 420

tccaccaagg gcccatcggt cttccccctg gcaccctcct ccaagagcac ctctgggggc 480

acagcggccc tgggctgcct ggtcaaggac tacttccccg aaccggtgac ggtgtcgtgg 540

aactcaggcg ccctgaccag cggcgtgcac accttcccgg ctgtcctaca gtcctcagga 600

ctctactccc tcagcagcgt ggtgaccgtg ccctccagca gcttgggcac ccagacctac 660

atctgcaacg tgaatcacaa gcccagcaac accaaggtgg acaagaaagt tgagcccaaa 720

tcttgtgaca aaactcacac atgcccaccg tgcccagcac ctgaactcct gggggggaccg 780

tcagtcttcc tcttcccccc aaaacccaag gacaccctca tgatctcccg gacccctgag 840

gtcacatgcg tggtggtgga cgtgagccac gaagaccctg aggtcaagtt caactggtac 900

gtggacggcg tggaggtgca taatgccaag acaaagccgc gggaggagca gtacaacagc 960

acgtaccgtg tggtcagcgt cctcaccgtc ctgcaccagg actggctgaa tggcaaggag 1020

tacaagtgca aggtctccaa caaagccctc ccagccccca tcgagaaaac catctccaaa 1080

gccaaagggc agccccgaga accacaggtg tacaccctgc ccccatcccg ggatgagctg 1140

accaagaacc aggtcagcct gacctgcctg gtcaaaggct tctatcccag cgacatcgcc 1200

gtggagtggg agagcaatgg gcagccggag aacaactaca agaccacgcc tcccgtgctg 1260

gactccgacg gctccttctt cctctatagc aagctcaccg tggacaagag caggtggcag 1320

caggggaacg tcttctcatg ctccgtgatg catgaggctc tgcacaacca ctacacgcag 1380

aagagcctct ccctgtctcc gggtaaatga 1410

<210> 106
<211> 723
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 106
atggaatcac agactcaggt cctcatgtcc ctgctgttct gggtatctgg tacctgtggg 60

gacattgtga tgacacagtc tccatcctcc ctgactgtga cagcaggaga gaaggtcact 120

atgagctgca agtccagtca gagtctgtta aacagtggaa atcaaaagaa ctacttgacc 180

tggtaccagc agaaaccagg gcagcctcct aaactgttga tctactgggc atccactagg 240

gaatctgggg tccctgatcg cttcacaggc agtggatctg gaacagattt cactctcacc 300

atcagcagtg tgcaggctga agacctggca gtttattact gtcagaatga ttatagttat 360

ccgctcacgt tcggtgctgg gaccaagctg gagctgaaac gtacggtggc tgcaccatct 420

gtcttcatct tcccgccatc tgatgagcag ttgaaatctg gaactgcctc tgttgtgtgc 480

ctgctgaata acttctatcc cagagaggcc aaagtacagt ggaaggtgga taacgccctc 540

caatcgggta actcccagga gagtgtcaca gagcaggaca gcaaggacag cacctacagc 600

ctcagcagca ccctgacgct gagcaaagca gactacgaga aacacaaagt ctacgcctgc 660

gaagtcaccc atcagggcct gagctcgccc gtcacaaaga gcttcaacag gggagagtgt 720

tag 723

<210> 107
<211> 708
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 107
atgcattttc aagtgcagat tttcagcttc ctgctaatca gtgcctcagt cataatgtcc 60

agaggacaaa ttgttctcac ccagtctcca gcaatcatgt ctgcatctcc aggggagaag 120

gtcaccataa cctgcagtgc cagctcaagt gtaagttaca tgcactggtt ccagcagaag 180

ccaggcactt ctcccaaact ctggatttat agcacatcca acctggcttc tggagtccct 240

gctcgcttca gtggcagtgg atctgggacc tcttactctc tcacaatcag ccgaatggag 300

gctgaagatg ctgccactta ttactgccag caaaggagta gttacccacc cacgttcgga 360

gggggggacca agctggaaat aaaacgtacg 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 agtgttag 708

<210> 108
<211> 705
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 108
atggagtttc agacccaggt ctttgtattc gtgttgctct ggttgtctgg tgttgatgga 60

gacattgtga tgacccagtc tcaaaaattc atgtccacat cagtaggaga cagggtcagc 120

atcacctgca aggccagtca gaatgttcgt actgctgtag cctggtatca acagaaacca 180

gggcagtctc ctaaagcact gatttacttg gcatccaacc ggcacactgg agtccctgat 240

cgcttcacag gcagtggatc tgggacagat ttcactctca ccattagcaa tgtgcaatct 300

gaagacctgg cagattattt ctgtctgcaa cattggaatt atcctctgac gttcggtgga 360

ggcaccaagc tggaaatcaa acgtacggtg gctgcaccat ctgtcttcat cttcccgcca 420

tctgatgagc agttgaaatc tggaactgcc tctgttgtgt gcctgctgaa taacttctat 480

cccagagagg ccaaagtaca gtggaaggtg gataacgccc tccaatcggg taactcccag 540

gagagtgtca cagagcagga cagcaaggac agcacctaca gcctcagcag caccctgacg 600

ctgagcaaag cagactacga gaaacacaaa gtctacgcct gcgaagtcac ccatcagggc 660

ctgagctcgc ccgtcacaaa gagcttcaac aggggagagt gttag 705

<210> 109
<211> 723
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 109
atggattcac aggcccaggt tcttatgtta ctgctgctat gggtatctgg tacctgtggg 60

gacattgtga tgtcacagtc tccatcctcc ctagctgtgt cagttggaga gaaggttact 120

atgagctgca agtccagtca gagcctttta tatagtagca atcaaaagaa ctacttggcc 180

tggtaccagc agaaaccagg gcagtctcct aaactgctga tttactgggc atccactagg 240

gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc 300

atcagcagtg tgaaggctga agacctggca gtttattact gtcagcaata ttatagctat 360

ccgctcacgt tcggtgctgg gaccaagctg gagctgaaac gtacggtggc tgcaccatct 420

gtcttcatct tcccgccatc tgatgagcag ttgaaatctg gaactgcctc tgttgtgtgc 480

ctgctgaata acttctatcc cagagaggcc aaagtacagt ggaaggtgga taacgccctc 540

caatcgggta actcccagga gagtgtcaca gagcaggaca gcaaggacag cacctacagc 600

ctcagcagca ccctgacgct gagcaaagca gactacgaga aacacaaagt ctacgcctgc 660

gaagtcaccc atcagggcct gagctcgccc gtcacaaaga gcttcaacag gggagagtgt 720

tag 723

<210> 110
<211> 723
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 110
atggaatcac agactcaggt cctcatgtcc ctgctgttct gggtatctgg tacctgtggg 60

gacattgtga tgacacagtc tccatcctcc ctgactgtga cagcaggaga gaaggtcact 120

atgagctgca agtccagtca gagtctgtta aacagtggaa atcaaaagaa ctacttgacc 180

tggtaccagc agaaaccagg gcagcctcct aaactgttga tctactgggc atccactagg 240

gaatctgggg tccctgatcg cttcacaggc agtggatctg gaacagattt cactctcacc 300

atcagcagtg tgcaggctga agacctggca gtttattact gtcagaatga ttatagttat 360

ccattcacgt tcggctcggg gacaaagttg gaaataaaac gtacggtggc tgcaccatct 420

gtcttcatct tcccgccatc tgatgagcag ttgaaatctg gaactgcctc tgttgtgtgc 480

ctgctgaata acttctatcc cagagaggcc aaagtacagt ggaaggtgga taacgccctc 540

caatcgggta actcccagga gagtgtcaca gagcaggaca gcaaggacag cacctacagc 600

ctcagcagca ccctgacgct gagcaaagca gactacgaga aacacaaagt ctacgcctgc 660

gaagtcaccc atcagggcct gagctcgccc gtcacaaaga gcttcaacag gggagagtgt 720

tag 723

<210> 111
<211> 720
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 111
atggattcac aggcccaggt tcttatattg ctgctgctat gggtatctgg tacctgtggg 60

gacattgtga tgtcacagtc tccatcctcc ctggctgtgt cagcaggaga gaaggtcact 120

atgagctgca aatccagtca gagtctgctc aacagtagaa cccgaaagaa ctacttggct 180

tggtaccagc agaaaccagg gcagtctcct aaactgctga tctactgggc atccactagg 240

gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc 300

atcagcagtg tgcaggctga agacctggca gtttattact gcaagcaatc ttataatctg 360

tacacgttcg gaggggggac caagctggaa ataaaacgta cggtggctgc accatctgtc 420

ttcatcttcc cgccatctga tgagcagttg aaatctggaa ctgcctctgt tgtgtgcctg 480

ctgaataact tctatcccag agaggccaaa gtacagtgga aggtggataa cgccctccaa 540

tcgggtaact cccaggagag tgtcacagag caggacagca aggacagcac ctacagcctc 600

agcagcaccc tgacgctgag caaagcagac tacgagaaac acaaagtcta cgcctgcgaa 660

gtcacccatc agggcctgag ctcgcccgtc acaaagagct tcaacagggg agagtgttag 720

<210> 112
<211> 723
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 112
atggattcac aggcccaggt tcttatgtta ctgctgctat gggtatctgg tacctgtggg 60

gacatcgtga tgtcacagtc tccatcctcc ctagctgtgt cagttggaga gaaggttact 120

atgagctgca agtccagtca gagcctttta tatagtagca atcaaaagaa ctacttggcc 180

tggtaccagc agaaaccagg gcagtctcct aaactgctga tttactgggc atccactagg 240

gaatctgggg tccctgatcg cttcacaggc agtggatctg caacagattt cactctgacc 300

atcagcagtg tgcaggctga agaccttgca gattatcact gtggacaggg ttacagctat 360

ccgtacacgt tcggaggggg gaccaagctg gaaataaaac gtacggtggc tgcaccatct 420

gtcttcatct tcccgccatc tgatgagcag ttgaaatctg gaactgcctc tgttgtgtgc 480

ctgctgaata acttctatcc cagagaggcc aaagtacagt ggaaggtgga taacgccctc 540

caatcgggta actcccagga gagtgtcaca gagcaggaca gcaaggacag cacctacagc 600

ctcagcagca ccctgacgct gagcaaagca gactacgaga aacacaaagt ctacgcctgc 660

gaagtcaccc atcagggcct gagctcgccc gtcacaaaga gcttcaacag gggagagtgt 720

tag 723

<210> 113
<211> 723
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 113
atggattcac aggctcaggt tcttatgtta ctgctgctat gggtatctgg tacctgtggg 60

gacattgtga tgtcacagtc tccatcctcc ctagctgtgt cagttggaga gaaggttact 120

atgagctgca agtccagtca gagcctttta tatagtagca atcaaaagaa ctacttggcc 180

tggtaccagc agaaaccagg gcagtctcct aaactgctga tttactgggc atccactagg 240

gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc 300

atcagcagtg tgaaggctga agacctggca gtttattact gtcagcaata ttatagctat 360

ccgctcacgt tcggtgctgg gaccaagctg gagctgaaac gtacggtggc tgcaccatct 420

gtcttcatct tcccgccatc tgatgagcag ttgaaatctg gaactgcctc tgttgtgtgc 480

ctgctgaata acttctatcc cagagaggcc aaagtacagt ggaaggtgga taacgccctc 540

caatcgggta actcccagga gagtgtcaca gagcaggaca gcaaggacag cacctacagc 600

ctcagcagca ccctgacgct gagcaaagca gactacgaga aacacaaagt ctacgcctgc 660

gaagtcaccc atcagggcct gagctcgccc gtcacaaaga gcttcaacag gggagagtgt 720

tag 723

<210> 114
<211> 705
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 114
atggaatcac agactctggt cttcatatcc atactgctct ggttatatgg agctgatggg 60

aacattgtaa tgacccaatc tcccaaatcc atgtccatgt cagtaggaga gagggtcacc 120

ttgacctgca aggccagtga gaatgtggtt acttatgttt cctggtatca acagaaacca 180

gagcagtctc ctaaactgct gatatacggg gcatccaacc ggtacactgg ggtccccgat 240

cgcttcacag gcagtggatc tgcaacagat ttcactctca ccatcagcag tgtgaaggct 300

gaagacctgg cagtttatta ctgtcagcaa tattatagct atccgctcac gttcggtgct 360

gggaccaagc tggagctgaa acgtacggtg gctgcaccat ctgtcttcat cttcccgcca 420

tctgatgagc agttgaaatc tggaactgcc tctgttgtgt gcctgctgaa taacttctat 480

cccagagagg ccaaagtaca gtggaaggtg gataacgccc tccaatcggg taactcccag 540

gagagtgtca cagagcagga cagcaaggac agcacctaca gcctcagcag caccctgacg 600

ctgagcaaag cagactacga gaaacacaaa gtctacgcct gcgaagtcac ccatcagggc 660

ctgagctcgc ccgtcacaaa gagcttcaac aggggagagt gttag 705

<210> 115
<211> 466
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 115

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

Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Met Lys
20 25 30

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

```
Ser Ser Tyr Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu
    50                  55                  60

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

Glu Lys Phe Lys Gly Lys Ala Thr Phe Thr Ala Asp Thr Ser Ser Asn
                85                  90                  95

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

Tyr Tyr Cys Ala Arg Tyr Asp Tyr Pro Trp Phe Ala Tyr Trp Gly Gln
        115                 120                 125

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

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly 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 Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys
    210                 215                 220

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

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly 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 Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
    290                 295                 300
```

```
Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
305                 310                 315                 320

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
            340                 345                 350

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

Thr Leu Pro Pro Ser Arg Asp Glu Leu 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 Val
                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> 116
<211> 467
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 116

```
Met Asp Trp Leu Trp Asn Leu Leu Phe Leu Met Ala Ala Ala Gln Ser
1               5                   10                  15

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

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

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

Lys Trp Met Gly Trp Ile Asn Thr Asn Thr Gly Glu Pro Thr Tyr Ala
65                  70                  75                  80

Glu Glu Phe Lys Gly Arg Phe Ala Phe Ser Leu Glu Thr Ser Ala Ser
                85                  90                  95

Thr Ala Tyr Leu Gln Ile Asn Asn Leu Lys Asn Glu Asp Thr Ala Thr
            100                 105                 110

Tyr Phe Cys Ala Arg Leu Gly Phe Gly Asn Ala Met Asp Tyr Trp Gly
        115                 120                 125

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

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

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

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

Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val
        195                 200                 205

Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His
    210                 215                 220

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

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
                245                 250                 255

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
            260                 265                 270

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
        275                 280                 285
```

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
290 295 300

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
305 310 315 320

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
325 330 335

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
340 345 350

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

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
370 375 380

Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
385 390 395 400

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

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

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
435 440 445

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
450 455 460

Pro Gly Lys
465

<210> 117
<211> 465
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 117

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

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

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

Thr Asp Tyr Tyr Ile Asn Trp Val Lys Gln Arg Thr Gly Gln Gly Leu
    50                  55                  60

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

Glu Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser
                85                  90                  95

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

Tyr Phe Cys Ala Arg Ser Tyr Gly Ala Phe Asp Tyr Trp Gly Gln Gly
        115                 120                 125

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

Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly 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 Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro
    210                 215                 220

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

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly 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 Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
    290                 295                 300

Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
305                 310                 315                 320

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
                325                 330                 335

Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys
            340                 345                 350

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

Leu Pro Pro Ser Arg Asp Glu Leu 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 Val 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> 118
<211> 467
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 118

```
Met Gly Trp Ser Cys 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 Ala Glu Leu Val Arg
            20                  25                  30

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

Thr Ser Tyr Trp Ile Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu
    50                  55                  60

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

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

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

Tyr Tyr Cys Thr Arg Ser Trp Arg Gly Asn Ser Phe Asp Tyr Trp Gly
        115                 120                 125

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

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

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

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

Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val
        195                 200                 205

Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His
    210                 215                 220

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

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
                245                 250                 255

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
            260                 265                 270
```

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
275 280 285

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
290 295 300

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
305 310 315 320

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
325 330 335

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
340 345 350

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

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
370 375 380

Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
385 390 395 400

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

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

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
435 440 445

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
450 455 460

Pro Gly Lys
465

<210> 119
<211> 466
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 119

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

```
His Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro
            20                  25                  30

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

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

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

Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Asn Thr
                85                  90                  95

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

Phe Cys Ala Arg Gly Val Leu Leu Arg Ala Met Asp Tyr Trp Gly Gln
        115                 120                 125

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

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly 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 Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys
    210                 215                 220

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

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly 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 Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
290 295 300

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
305 310 315 320

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
325 330 335

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
340 345 350

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

Thr Leu Pro Pro Ser Arg Asp Glu Leu 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 Val
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> 120
<211> 469
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 120

```
Met Asp Trp Ile Trp Ile Met Leu His Leu Leu Ala Ala Ala Thr Gly
1               5                  10                  15

Ile Gln Ser Gln Val His Leu Gln Gln Ser Gly Ser Glu Leu Arg Ser
            20                  25                  30

Pro Gly Ser Ser Val Lys Leu Ser Cys Lys Asp Phe Asp Ser Glu Val
        35                  40                  45

Phe Pro Phe Ala Tyr Met Ser Trp Ile Arg Gln Lys Pro Gly His Gly
    50                  55                  60

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

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

Asn Thr Ala Tyr Leu Glu Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala
            100                 105                 110

Ile Tyr Tyr Cys Ala Arg Gly Glu Gly Tyr Gly Ala Trp Phe Ala Tyr
        115                 120                 125

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

Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly
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 Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val
    210                 215                 220

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

Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
                245                 250                 255
```

```
Leu Gly 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 Lys Phe Asn Trp Tyr Val Asp Gly Val
    290                 295                 300

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

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
                325                 330                 335

Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala
            340                 345                 350

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

Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu 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 Val 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> 121
<211> 240
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 121

Met Glu Ser Gln Thr Gln Val Leu Met Ser Leu Leu Phe Trp Val Ser
1 5 10 15

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

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

Leu Leu Asn Ser Gly Asn Gln Lys Asn Tyr Leu Thr Trp Tyr Gln Gln
50 55 60

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

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

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

Tyr Cys Gln Asn Asp Tyr Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr
115 120 125

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

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

Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val
165 170 175

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

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

Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His
210 215 220

Gln Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225 230 235 240

<210> 122
<211> 235

<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 122

Met His 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 Thr Gln Ser Pro Ala Ile
20 25 30

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

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

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

Ala Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr 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 Ser Tyr Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu 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> 123
<211> 234
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 123

Met Glu Phe Gln Thr Gln Val Phe Val Phe Val Leu Leu Trp Leu Ser
1 5 10 15

Gly Val Asp Gly Asp Ile Val Met Thr Gln Ser Gln Lys Phe Met Ser
20 25 30

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

Val Arg Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro
50 55 60

Lys Ala Leu Ile Tyr Leu Ala Ser Asn 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 Leu Gln His Trp
100 105 110

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

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

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

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser
165 170 175

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

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

His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro
210 215 220

Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225 230

<210> 124
<211> 240
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 124

Met Asp Ser Gln Ala Gln Val Leu Met Leu Leu Leu Trp Val Ser
1 5 10 15

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

Val Ser Val Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
35 40 45

Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln
50 55 60

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

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

Phe Thr Leu Thr Ile Ser Ser Val Lys Ala Glu Asp Leu Ala Val Tyr
100 105 110

Tyr Cys Gln Gln Tyr Tyr Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr
115 120 125

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

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

Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val
165 170 175

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

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

Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His
210 215 220

Gln Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225 230 235 240

<210> 125
<211> 240
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 125

Met Glu Ser Gln Thr Gln Val Leu Met Ser Leu Leu Phe Trp Val Ser
1 5 10 15

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

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

Leu Leu Asn Ser Gly Asn Gln Lys Asn Tyr Leu Thr Trp Tyr Gln Gln
50 55 60

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

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

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

Tyr Cys Gln Asn Asp Tyr Ser Tyr Pro Phe Thr Phe Gly Ser Gly Thr
115 120 125

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

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

Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val
165 170 175

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

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

Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His
210 215 220

Gln Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225 230 235 240

<210> 126
<211> 239
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 126

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

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

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

Leu Leu Asn Ser Arg Thr Arg Lys Asn Tyr Leu Ala Trp Tyr Gln Gln
50 55 60

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

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

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

Tyr Cys Lys Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gly Gly Thr Lys
115 120 125

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

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

Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp
165 170 175

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

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

Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln
210 215 220

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

<210> 127
<211> 240
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 127

Met Asp Ser Gln Ala Gln Val Leu Met Leu Leu Leu Leu Trp Val Ser
1 5 10 15

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

Val Ser Val Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
35 40 45

Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln
50 55 60

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

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

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

```
His Cys Gly Gln Gly Tyr Ser Tyr Pro Tyr Thr Phe Gly Gly Gly Thr
        115                 120                 125

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

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

Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val
                165                 170                 175

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

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

Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His
    210                 215                 220

Gln Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225                 230                 235                 240
```

<210> 128
<211> 240
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 128

```
Met Asp Ser Gln Ala Gln Val Leu Met Leu Leu Leu Leu Trp Val Ser
1               5                   10                  15

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

Val Ser Val Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
        35                  40                  45

Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln
    50                  55                  60

Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65                  70                  75                  80
```

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

Phe Thr Leu Thr Ile Ser Ser Val Lys Ala Glu Asp Leu Ala Val Tyr
100 105 110

Tyr Cys Gln Gln Tyr Tyr Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr
115 120 125

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

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

Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val
165 170 175

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

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

Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His
210 215 220

Gln Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225 230 235 240

<210> 129
<211> 234
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: chimeric monoclonal antibody

<400> 129

Met Glu Ser Gln Thr Leu Val Phe Ile Ser Ile Leu Leu Trp Leu Tyr
1 5 10 15

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

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

Val Val Thr Tyr Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro
50 55 60

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

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

Ser Val Lys Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln Tyr Tyr
100 105 110

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

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

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

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser
165 170 175

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

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

His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro
210 215 220

Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225 230

<210> 130
<211> 18
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: Oligonucleotide

<400> 130
ccaagggcta tggcgttc 18

<210> 131
<211> 18
<212> DNA
<213> Artificial

<220>

<223> Description of artificial sequence: Oligonucleotide

<400> 131
ccgaaggtgt acctggtc 18

<210> 132
<211> 117
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 132

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

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

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

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

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

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

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

Val Thr Val Ser Ala
115

<210> 133
<211> 118
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 133

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

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

```
Gly Met Asn Trp Val Lys Gln Ala Pro Gly Lys Gly Leu Lys Trp Met
        35                  40                  45

Gly Trp Ile Asn Thr Asn Thr Gly Glu Pro Thr Tyr Ala Glu Glu Phe
    50                  55                  60

Lys Gly Arg Phe Ala Phe Ser Leu Glu Thr Ser Ala Ser Thr Ala Tyr
65                  70                  75                  80

Leu Gln Ile Asn Asn Leu Lys Asn Glu Asp Thr Ala Thr Tyr Phe Cys
                85                  90                  95

Ala Arg Leu Gly Phe Gly Asn Ala Met Asp Tyr Trp Gly Gln Gly Thr
            100                 105                 110

Ser Val Thr Val Ser Ser
        115
```

<210> 134
<211> 116
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 134

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

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

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

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

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

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

Ala Arg Ser Tyr Gly Ala Phe Asp Tyr Trp Gly Gln Gly Thr Thr Leu
            100                 105                 110
```

Thr Val Ser Ser
115

<210> 135
<211> 118
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 135

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

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

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

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

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

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

Thr Arg Ser Trp Arg Gly Asn Ser Phe Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Thr Leu Thr Val Ser Ser
115

<210> 136
<211> 118
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 136

Gln 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

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

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

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

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

Ala Arg Gly Val Leu Leu Arg Ala Met Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Ser Val Thr Val Ser Ser
115

<210> 137
<211> 120
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 137

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

Ser Val Lys Leu Ser Cys Lys Asp Phe Asp Ser Glu Val Phe Pro Phe
20 25 30

Ala Tyr Met Ser Trp Ile Arg Gln Lys Pro Gly His Gly Phe Glu Trp
35 40 45

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

Phe Glu Asp Lys Ala Thr Leu Asp Ala Asp Thr Val Ser Asn Thr Ala
65 70 75 80

Tyr Leu Glu Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala Ile Tyr Tyr
85 90 95

Cys Ala Arg Gly Glu Gly Tyr Gly Ala Trp Phe Ala Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ala
115 120

<210> 138
<211> 113
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 138

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

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

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

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn
85 90 95

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

Lys

<210> 139
<211> 106
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 139

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

Glu Lys Val Thr Ile 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 Arg Met Glu Ala Glu
65 70 75 80

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

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

<210> 140
<211> 107
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 140

Asp Ile Val Met Thr Gln Ser Gln Lys Phe Met Ser Thr Ser Val Gly
1 5 10 15

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

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

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

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

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

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

<210> 141
<211> 113
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 141

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

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Tyr Ser
20 25 30

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

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Lys Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln
85 90 95

Tyr Tyr Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu
100 105 110

Lys

<210> 142
<211> 113
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 142

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

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

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

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn
85 90 95

Asp Tyr Ser Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile
100 105 110

Lys

<210> 143
<211> 112
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 143

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

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

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

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Lys Gln
85 90 95

Ser Tyr Asn Leu Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

<210> 144
<211> 113
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 144

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

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Tyr Ser
20 25 30

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

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Ala Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Asp Tyr His Cys Gly Gln
85 90 95

Gly Tyr Ser Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
100 105 110

Lys

<210> 145
<211> 113
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 145

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

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Tyr Ser
20 25 30

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

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Lys Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln
85 90 95

Tyr Tyr Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu
100 105 110

Lys

<210> 146
<211> 107
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: Translation of PCR product

<400> 146

Asn Ile Val Met Thr Gln Ser Pro Lys Ser Met Ser Met Ser Val Gly
1 5 10 15

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

Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro Lys Leu Leu Ile
35 40 45

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

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

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

Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
100 105

<210> 147
<211> 324
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: codon optimized nucleic acid

<400> 147
cgtacggtgg ccgctcccag cgtgttcatc ttcccccccа gcgacgagca gctgaagtcc 60

ggcaccgcca gcgtggtgtg cctgctgaac aacttctacc ccgggaggc caaggtgcag 120

tggaaggtgg acaacgccct gcagagcggc aacagccagg agagcgtcac cgagcaggac 180

agcaaggact ccacctacag cctgagcagc accctgaccc tgagcaaggc cgactacgag 240

aagcacaagg tgtacgcctg cgaggtgacc caccagggcc tgtccagccc cgtgaccaag 300

agcttcaaca ggggcgagtg ctag 324

<210> 148
<211> 107
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: codon optimized protein

<400> 148

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
1 5 10 15

Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe
20 25 30

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
35 40 45

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
50 55 60

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
65 70 75 80

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

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
100 105

<210> 149
<211> 981
<212> DNA
<213> Artificial

<220>
<223> Description of artificial sequence: codon optimized nucleic acid

<400> 149
ggcccaagcg tgttcccccc ggcccccagc agcaagagca ccagcggcgg cacagccgcc 60

ctgggctgcc tggtgaagga ctacttcccc gagcccgtga ccgtgagctg gaacagcgga 120

gccctgacct ccggcgtgca caccttcccc gccgtgctgc agagcagcgg cctgtacagc 180

ctgagcagcg tggtgaccgt gcccagcagc agcctgggca cccagaccta catctgcaac 240

gtgaaccaca agcccagcaa caccaaggtg gacaagagag tggagcccaa gagctgcgac 300

aagacccaca cctgcccccc ctgcccagcc ccagagctgc tgggcggacc cagcgtgttc 360

ctgttccccc ccaagcccaa ggacaccctg atgatcagca ggacccccga ggtgacctgc 420

gtggtggtgg acgtgagcca cgaggaccca gaggtgaagt tcaactggta cgtggacggc 480

gtggaggtgc acaacgccaa gaccaagccc agagaggagc agtacaacag cacctacagg 540

gtggtgtccg tgctgaccgt gctgcaccag gactggctga acggcaagga atacaagtgc 600

aaggtctcca acaaggccct gccagccccc atcgaaaaga ccatcagcaa ggccaagggc 660

cagccacggg agccccaggt gtacaccctg ccccccagcc gggaggagat gaccaagaac 720

caggtgtccc tgacctgtct ggtgaagggc ttctacccca gcgacatcgc cgtggagtgg 780

gagagcaacg gccagcccga gaacaactac aagaccaccc ccccagtgct ggacagcgac 840

ggcagcttct tcctgtacag caagctgacc gtggacaagt ccaggtggca gcagggcaac 900

gtgttcagct gcagcgtgat gcacgaggcc ctgcacaacc actacaccca gaagtccctg 960

agcctgagcc ccggcaagta g 981

<210> 150
<211> 326
<212> PRT
<213> Artificial

<220>
<223> Description of artificial sequence: codon optimized protein

<400> 150

Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly
1 5 10 15

Gly 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 Gln Thr Tyr Ile Cys Asn
65 70 75 80

Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro
85 90 95

Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
100 105 110

Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
115 120 125

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
130 135 140

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

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
                165                 170                 175

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

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
        195                 200                 205

Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
    210                 215                 220

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn
225                 230                 235                 240

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
                245                 250                 255

Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
            260                 265                 270

Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
        275                 280                 285

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
    290                 295                 300

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
305                 310                 315                 320

Ser Leu Ser Pro Gly Lys
                325
```