SEQUENCE LISTING

<110> DAIICHI SANKYO CO. LTD.

<120> ANTI-GARP ANTIBODY

<130> SP102052SGM

<150> JP2015-187488
<151> 2015-09-24

<160> 45

<170> PatentIn version 3.5

<210> 1
<211> 662
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<213> Human

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            20                  25                  30

Val Ser Cys Gln Val Leu Gly Leu Leu Gln Val Pro Ser Val Leu Pro
        35                  40                  45

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

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

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

Thr His Leu Glu His Leu Ser Leu Ala His Asn Arg Leu Ala Met Ala
            100                 105                 110

Thr Ala Leu Ser Ala Gly Gly Leu Gly Pro Leu Pro Arg Val Thr Ser
        115                 120                 125

Leu Asp Leu Ser Gly Asn Ser Leu Tyr Ser Gly Leu Leu Glu Arg Leu
    130                 135                 140

Leu Gly Glu Ala Pro Ser Leu His Thr Leu Ser Leu Ala Glu Asn Ser
145                 150                 155                 160

Leu Thr Arg Leu Thr Arg His Thr Phe Arg Asp Met Pro Ala Leu Glu
                165                 170                 175

Gln Leu Asp Leu His Ser Asn Val Leu Met Asp Ile Glu Asp Gly Ala
            180                 185                 190
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Phe Glu Gly Leu Pro Arg Leu Thr His Leu Asn Leu Ser Arg Asn Ser
        195                 200                 205

Leu Thr Cys Ile Ser Asp Phe Ser Leu Gln Gln Leu Arg Val Leu Asp
    210                 215                 220

Leu Ser Cys Asn Ser Ile Glu Ala Phe Gln Thr Ala Ser Gln Pro Gln
225                 230                 235                 240

Ala Glu Phe Gln Leu Thr Trp Leu Asp Leu Arg Glu Asn Lys Leu Leu
                245                 250                 255

His Phe Pro Asp Leu Ala Ala Leu Pro Arg Leu Ile Tyr Leu Asn Leu
            260                 265                 270

Ser Asn Asn Leu Ile Arg Leu Pro Thr Gly Pro Pro Gln Asp Ser Lys
        275                 280                 285

Gly Ile His Ala Pro Ser Glu Gly Trp Ser Ala Leu Pro Leu Ser Ala
    290                 295                 300

Pro Ser Gly Asn Ala Ser Gly Arg Pro Leu Ser Gln Leu Leu Asn Leu
305                 310                 315                 320

Asp Leu Ser Tyr Asn Glu Ile Glu Leu Ile Pro Asp Ser Phe Leu Glu
                325                 330                 335

His Leu Thr Ser Leu Cys Phe Leu Asn Leu Ser Arg Asn Cys Leu Arg
            340                 345                 350

Thr Phe Glu Ala Arg Arg Leu Gly Ser Leu Pro Cys Leu Met Leu Leu
        355                 360                 365

Asp Leu Ser His Asn Ala Leu Glu Thr Leu Glu Leu Gly Ala Arg Ala
    370                 375                 380

Leu Gly Ser Leu Arg Thr Leu Leu Leu Gln Gly Asn Ala Leu Arg Asp
385                 390                 395                 400

Leu Pro Pro Tyr Thr Phe Ala Asn Leu Ala Ser Leu Gln Arg Leu Asn
                405                 410                 415

Leu Gln Gly Asn Arg Val Ser Pro Cys Gly Gly Pro Asp Glu Pro Gly
            420                 425                 430

Pro Ser Gly Cys Val Ala Phe Ser Gly Ile Thr Ser Leu Arg Ser Leu
        435                 440                 445

Ser Leu Val Asp Asn Glu Ile Glu Leu Leu Arg Ala Gly Ala Phe Leu
    450                 455                 460
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His Thr Pro Leu Thr Glu Leu Asp Leu Ser Ser Asn Pro Gly Leu Glu
465                 470                 475                 480

Val Ala Thr Gly Ala Leu Gly Gly Leu Glu Ala Ser Leu Glu Val Leu
                485                 490                 495

Ala Leu Gln Gly Asn Gly Leu Met Val Leu Gln Val Asp Leu Pro Cys
            500                 505                 510

Phe Ile Cys Leu Lys Arg Leu Asn Leu Ala Glu Asn Arg Leu Ser His
        515                 520                 525

Leu Pro Ala Trp Thr Gln Ala Val Ser Leu Glu Val Leu Asp Leu Arg
    530                 535                 540

Asn Asn Ser Phe Ser Leu Leu Pro Gly Ser Ala Met Gly Gly Leu Glu
545                 550                 555                 560

Thr Ser Leu Arg Arg Leu Tyr Leu Gln Gly Asn Pro Leu Ser Cys Cys
                565                 570                 575

Gly Asn Gly Trp Leu Ala Ala Gln Leu His Gln Gly Arg Val Asp Val
            580                 585                 590

Asp Ala Thr Gln Asp Leu Ile Cys Arg Phe Ser Ser Gln Glu Glu Val
        595                 600                 605

Ser Leu Ser His Val Arg Pro Glu Asp Cys Glu Lys Gly Gly Leu Lys
    610                 615                 620

Asn Ile Asn Leu Ile Ile Ile Leu Thr Phe Ile Leu Val Ser Ala Ile
625                 630                 635                 640

Leu Leu Thr Thr Leu Ala Ala Cys Cys Cys Val Arg Arg Gln Lys Phe
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Asn Gln Gln Tyr Lys Ala
            660
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Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Asp Tyr
            20                  25                  30
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Tyr Met Ser Trp Ile Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35                  40                  45

Ser Gly Val Ser Trp Asn Gly Ser Arg Thr His Tyr Ala Asp Ser Val
    50                  55                  60

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
        435                 440                 445
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<212> PRT
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<400> 3

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

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

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

Ser Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu Ala Ile Ser Gly Leu
65                  70                  75                  80

Arg Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Ser Ser
                85                  90                  95
```

```
Leu Arg Gly Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
            100                 105                 110

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

Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe
    130                 135                 140

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

Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys
                165                 170                 175

Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser
            180                 185                 190

His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu
        195                 200                 205

Lys Thr Val Ala Pro Thr Glu Cys Ser
    210                 215


<210>  4
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<400>  4

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

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

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

Ala Gly Ile Ser Trp Asn Ser Ala Ile Thr Val Tyr Ala Asp Ser Val
    50                  55                  60

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

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

Ala Lys Asp Ala Gly Gly Arg Tyr Ser Gly Ser Tyr Tyr Phe Asp Tyr
            100                 105                 110

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

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

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

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

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

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

Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro Lys
210 215 220

Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
225 230 235 240

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

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
260 265 270

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

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

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
305 310 315 320

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

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

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

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

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr

385 390 395 400

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

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
420 425 430

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
435 440 445

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

Tyr Asp Val His Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu
35 40 45

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

Ser Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu Ala Ile Ser Gly Leu
65 70 75 80

Arg Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Arg Ser
85 90 95

Leu Asn Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln
100 105 110

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

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

Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys
145 150 155 160

Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr
165 170 175

Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His
180 185 190

Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu Lys
195 200 205

Thr Val Ala Pro Thr Glu Cys Ser
210 215

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<212> DNA
<213> Human

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ccaggcaagg ggctggagtg ggtatcgggt gttagttgga atggcagtag gacgcactat 180

gcagactctg tgaagggccg attcaccatc tccagagaca attccaagaa cacgctgtat 240

ctgcaaatga acagcctgag agccgaggac actgccgtgt attactgtgc cagacagagg 300

cagctggctg aatttgacta ctggggccaa ggtaccctgg tcaccgtgag ctcagcctcc 360

accaagggcc caagcgtctt ccccctggca ccctcctcca agagcacctc tggcggcaca 420

gccgccctgg gctgcctggt caaggactac ttccccgaac ccgtgaccgt gagctggaac 480

tcaggcgccc tgaccagcgg cgtgcacacc ttccccgctg tcctgcagtc ctcaggactc 540

tactccctca gcagcgtggt gaccgtgccc tccagcagct tgggcaccca gacctacatc 600

tgcaacgtga atcacaagcc cagcaacacc aaggtggaca agagagttga gcccaaatct 660

tgtgacaaaa ctcacacatg cccaccctgc ccagcacctg aactcctggg gggaccctca 720

gtcttcctct tccccccaaa acccaaggac accctcatga tctcccggac ccctgaggtc 780

acatgcgtgg tggtggacgt gagccacgaa gaccctgagg tcaagttcaa ctggtacgtg 840

gacggcgtgg aggtgcataa tgccaagaca aagccccggg aggagcagta caacagcacg 900

taccgggtgg tcagcgtcct caccgtcctg caccaggact ggctgaatgg caaggagtac 960

aagtgcaagg tctccaacaa agccctccca gcccccatcg agaaaaccat ctccaaagcc 1020

aaaggccagc cccgggaacc acaggtgtac accctgcccc catcccggga ggagatgacc 1080

aagaaccagg tcagcctgac ctgcctggtc aaaggcttct atcccagcga catcgccgtg 1140

gagtgggaga gcaatggcca gcccgagaac aactacaaga ccacccctcc cgtgctggac 1200

tccgacggct ccttcttcct ctacagcaag ctcaccgtgg acaagagcag gtggcagcag 1260

ggcaacgtct tctcatgctc cgtgatgcat gaggctctgc acaaccacta cacccagaag 1320

agcctctccc tgtctcccgg caaa 1344

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<211> 651
<212> DNA
<213> Human

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tcctgcactg ggagcagctc caacattggg gcgggttatg ttgtacattg gtatcagcag 120

ctcccaggaa cggcccccaa actcctcatc tatgctgaca ccaatcggcc ctcaggggtc 180

cctgaccgat tctctggctc caagtctggc acctcagcct ccctggccat cagtgggctc 240

cggtccgagg atgaggctga ttattactgc cagtcctatg acagcagcct gagaggttgg 300

gtgttcggcg gaggaaccaa gctgacggtc ctaggtcagc ctaaggctgc ccctagcgtg 360

accctgttcc ctccttccag cgaggagctt caagctaaca aggccaccct ggtgtgtctt 420

atctctgact tctaccctgg cgctgtgacc gtggcctgga aggctgacag ctcccctgtg 480

aaggccggag tggagaccac cacacctagc aagcagtcta acaacaagta cgctgccagc 540

tcctacctga gccttacccc tgagcagtgg aagtctcaca gaagctactc ctgtcaagtg 600

acccacgagg gcagcaccgt ggagaagacc gtggctccta ccgagtgttc c 651

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<213> Human

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ccaggcaagg ggctggagtg ggtcgccgga attagttgga acagtgccat cacagtctat 180

gcggactctg tgaagggccg gttcaccatc tccagagaca attccaagaa cacgctgtat 240

ctgcaaatga acagcctgag agccgaggac actgccgtgt attactgtgc aaaagatgcc 300

gggggccggt atagtgggag ctactacttt gactactggg gccaaggtac cctggtcacc 360

gtgagctcag cctccaccaa gggcccaagc gtcttccccc tggcaccctc ctccaagagc 420

acctctggcg gcacagccgc cctgggctgc ctggtcaagg actacttccc cgaacccgtg 480

accgtgagct ggaactcagg cgccctgacc agcggcgtgc acaccttccc cgctgtcctg 540

cagtcctcag gactctactc cctcagcagc gtggtgaccg tgccctccag cagcttgggc 600

acccagacct acatctgcaa cgtgaatcac aagcccagca acaccaaggt ggacaagaga 660

gttgagccca aatcttgtga caaaactcac acatgcccac cctgcccagc acctgaactc 720

ctgggggGac cctcagtctt cctcttcccc ccaaaaccca aggacaccct catgatctcc 780

cggacccctg aggtcacatg cgtggtggtg gacgtgagcc acgaagaccc tgaggtcaag 840

ttcaactggt acgtggacgg cgtggaggtg cataatgcca agacaaagcc ccgggaggag 900

cagtacaaca gcacgtaccg ggtggtcagc gtcctcaccg tcctgcacca ggactggctg 960

aatggcaagg agtacaagtg caaggtctcc aacaaagccc tcccagcccc catcgagaaa 1020

accatctcca aagccaaagg ccagccccgg gaaccacagg tgtacaccct gcccccatcc 1080

cgggaggaga tgaccaagaa ccaggtcagc ctgacctgcc tggtcaaagg cttctatccc 1140

agcgacatcg ccgtggagtg ggagagcaat ggccagcccg agaacaacta caagaccacc 1200

cctcccgtgc tggactccga cggctccttc ttcctctaca gcaagctcac cgtggacaag 1260

agcaggtggc agcagggcaa cgtcttctca tgctccgtga tgcatgaggc tctgcacaac 1320

cactacaccc agaagagcct ctccctgtct cccggcaaa 1359

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<212> DNA
<213> Human

<400> 9
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tcctgcactg ggagcagctc caacatcggg gcaggttatg atgtacactg gtatcagcag 120

ctcccaggaa cggcccccaa actcctcatc tatggtaaca gcaatcggcc ctcaggggtc 180

cctgaccgat tctctggctc caagtctggc acctcagcct ccctggccat cagtgggctc 240

cggtccgagg atgaggctga ttattactgc cagtcctatg acagaagcct gaattgggtg 300

ttcggcggag gaaccaagct gacggtccta ggtcagccta aggctgcccc tagcgtgacc 360

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tacctgagcc ttaccctga gcagtggaag tctcacagaa gctactcctg tcaagtgacc 600

cacgagggca gcaccgtgga gaagaccgtg gctcctaccg agtgttcc 648

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<212> DNA
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<220>
<223> Primer A

<400> 10
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<210> 11
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer B

<400> 11
gcctgagcag tggaagtcc 19

<210> 12
<211> 24

<212> DNA
<213> Artificial Sequence

<220>
<223> Primer C

<400> 12
taggtatttc attatgactg tctc 24

<210> 13
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer D

<400> 13
cccagtcacg acgttgtaaa acg 23

<210> 14
<211> 351
<212> DNA
<213> Rat

<400> 14
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ccaacgcagg gtctggagtg ggtcgcatcc attggtactg ttggtggtaa cacttactat 180

cgagactccg tgaagggccg attcactatc tccagagatg atgcaaaaag caccctatac 240

ctgcaaatgg acagtctgag gtctgaggac acggccactt attactgtgc aagagaggat 300

tacggagggt ttccccactg gggccaagga gtcatggtca cagtctcctc a 351

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<211> 117
<212> PRT
<213> Rat

<400> 15

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Arg
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Ser Lys Lys Leu Ser Cys Ser Ala Ser Gly Phe Thr Phe Ser Asn Tyr
20 25 30

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

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

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

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

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

Val Thr Val Ser Ser
115

<210> 16
<211> 327
<212> DNA
<213> Rat

<400> 16
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gggcagtctc ctaaactgct tatctatggg gcgtccaacc gctacactgg agtccctgat 180

cgcttcacag gcagtggatc tggaacagat ttcactctca ccatcagcaa catgcaggct 240

gaagacctgg ctgtttatga ctgtctacag tataagtaca atccatacac gtttggaact 300

gggaccaagc tggaactgaa ccgggct 327

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<400> 17

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

Val Asp Trp Tyr Gln Gln Lys Thr Gly 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 Gly Thr Asp Phe Thr Leu Thr Ile Ser Asn Met Gln Ala
65 70 75 80

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

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

<210> 18
<211> 360

<212> DNA
<213> Rat

<400> 18
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ccagagaagg gtctggagtg gattgcaaca atttcaagtg gtggaggtac atattataat 180

tcagctctca aatcccgact gagcatcagc agggacacct ccaagagcca agttttctta 240

aagatgagca ctctgcaaac tgaagacaca gccatgtact tctgtgcccg gatttcgggc 300

tggggccatt actatgttat ggatgtctgg ggtcaaggag cttcagtcac tgtctcctca 360

<210> 19
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<212> PRT
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<400> 19

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

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Ser Phe
20 25 30

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

Ala Thr Ile Ser Ser Gly Gly Gly Thr Tyr Tyr Asn Ser Ala Leu Lys
50 55 60

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

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

Arg Ile Ser Gly Trp Gly His Tyr Tyr Val Met Asp Val Trp Gly Gln
100 105 110

Gly Ala Ser Val Thr Val Ser Ser
115 120

<210> 20
<211> 327
<212> DNA
<213> Rat

<400> 20
gacatccaga tgacacagtc tccagcttcc ctgtctggat ctctgggaga aactgtcacc 60

atccaatgtc aagcaagtga ggacatttac agtggtttag cgtggtatca gcagaagcca 120

gggaaatctc ctcagctcct gatctatggt gcaggtagct tacaagacgg cgtcccatca 180

cgattcagtg gcggtggatc tggcacacat tattctctca agatcagcag catgcaaact 240

gaagatgaag gggtttattt ctgtcaacag ggtttaaagt ttccgctcac gttcggttct 300

gggaccaagc tggagatcaa acgggct 327

<210> 21
<211> 109
<212> PRT
<213> Rat

<400> 21

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

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

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

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

Gly Gly Ser Gly Thr His Tyr Ser Leu Lys Ile Ser Ser Met Gln Thr
65 70 75 80

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

Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys Arg Ala
100 105

<210> 22
<211> 449
<212> DNA
<213> Human

<400> 22
gcctccggac tctagagcca ccatggtgct gcagacccag gtgttcatct ccctgctgct 60

gtggatctcc ggcgcgtacg gcgatatcgt gatgattaaa cgtacggtgg ccgccccctc 120

cgtgttcatc ttcccccccct ccgacgagca gctgaagtcc ggcaccgcct ccgtggtgtg 180

cctgctgaat aacttctacc ccagagaggc caaggtgcag tggaaggtgg acaacgccct 240

gcagtccggg aactcccagg agagcgtgac cgagcaggac agcaaggaca gcacctacag 300

cctgagcagc accctgaccc tgagcaaagc cgactacgag aagcacaagg tgtacgcctg 360

cgaggtgacc caccagggcc tgagctcccc cgtcaccaag agcttcaaca gggggggagtg 420

ttaggggccc gtttaaacgg gggaggcta 449

<210> 23
<211> 1132
<212> DNA

<213> Human

<400> 23
gcctccggac tctagagcca ccatgaaaca cctgtggttc ttcctcctgc tggtggcagc 60

tcccagatgg gtgctgagcc aggtgcaatt gtgcaggcgg ttagctcagc ctccaccaag 120

ggcccaagcg tcttcccccc ggcaccctcc tccaagagca cctctggcgg cacagccgcc 180

ctgggctgcc tggtcaagga ctacttcccc gaacccgtga ccgtgagctg gaactcaggc 240

gccctgacca gcggcgtgca caccttcccc gctgtcctgc agtcctcagg actctactcc 300

ctcagcagcg tggtgaccgt gccctccagc agcttgggca cccagaccta catctgcaac 360

gtgaatcaca agcccagcaa caccaaggtg gacaagagag ttgagcccaa atcttgtgac 420

aaaactcaca catgcccacc ctgcccagca cctgaactcc tgggggggacc ctcagtcttc 480

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggacccctga ggtcacatgc 540

gtggtggtgg acgtgagcca cgaagaccct gaggtcaagt tcaactggta cgtggacggc 600

gtggaggtgc ataatgccaa gacaaagccc cgggaggagc agtacaacag cacgtaccgg 660

gtggtcagcg tcctcaccgt cctgcaccag gactggctga atggcaagga gtacaagtgc 720

aaggtctcca acaaagccct cccagccccc atcgagaaaa ccatctccaa agccaaaggc 780

cagccccggg aaccacaggt gtacaccctg cccccatccc gggaggagat gaccaagaac 840

caggtcagcc tgacctgcct ggtcaaaggc ttctatccca gcgacatcgc cgtggagtgg 900

gagagcaatg gccagcccga gaacaactac aagaccaccc ctcccgtgct ggactccgac 960

ggctccttct tcctctacag caagctcacc gtggacaaga gcaggtggca gcagggcaac 1020

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacaccca gaagagcctc 1080

tccctgtctc ccggcaaatg agatatcggg cccgtttaaa cgggggaggc ta 1132

<210> 24
<211> 1398
<212> DNA
<213> Artificial Sequence

<220>
<223> Chimeric Antibody

<400> 24
atgaaacacc tgtggttctt cctcctgctg gtggcagctc ccagatgggt gctgagcgag 60

gtgcagctgg tggagtctgg gggaggctta gtgcagcctg gaaggtccaa gaaactctcc 120

tgttcagcct caggattcac tttcagtaac tattacatgg cctgggtccg ccaggctcca 180

acgcagggtc tggagtgggt cgcatccatt ggtactgttg gtggtaacac ttactatcga 240

gactccgtga agggccgatt cactatctcc agagatgatg caaaaagcac cctatacctg 300

caaatggaca gtctgaggtc tgaggacacg gccacttatt actgtgcaag agaggattac 360

ggagggtttc cccactgggg ccaaggagtc atggtcacag tcagctcagc ctccaccaag 420

ggcccaagcg tcttcccccc ggcaccctcc tccaagagca cctctggcgg cacagccgcc 480

ctgggctgcc tggtcaagga ctacttcccc gaacccgtga ccgtgagctg gaactcaggc 540

gccctgacca gcggcgtgca caccttcccc gctgtcctgc agtcctcagg actctactcc 600

ctcagcagcg tggtgaccgt gccctccagc agcttgggca cccagaccta catctgcaac 660

gtgaatcaca agcccagcaa caccaaggtg gacaagagag ttgagcccaa atcttgtgac 720

aaaactcaca catgcccacc ctgcccagca cctgaactcc tgggggggacc ctcagtcttc 780

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggacccctga ggtcacatgc 840

gtggtggtgg acgtgagcca cgaagaccct gaggtcaagt tcaactggta cgtggacggc 900

gtggaggtgc ataatgccaa gacaaagccc cgggaggagc agtacaacag cacgtaccgg 960

gtggtcagcg tcctcaccgt cctgcaccag gactggctga atggcaagga gtacaagtgc 1020

aaggtctcca acaaagccct cccagccccc atcgagaaaa ccatctccaa agccaaaggc 1080

cagccccggg aaccacaggt gtacaccctg cccccatccc gggaggagat gaccaagaac 1140

caggtcagcc tgacctgcct ggtcaaaggc ttctatccca gcgacatcgc cgtggagtgg 1200

gagagcaatg gccagcccga gaacaactac aagaccaccc ctcccgtgct ggactccgac 1260

ggctccttct tcctctacag caagctcacc gtggacaaga gcaggtggca gcagggcaac 1320

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacaccca gaagagcctc 1380

tccctgtctc ccggcaaa 1398

<210> 25
<211> 466
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric Antibody

<400> 25

Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
1 5 10 15

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

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

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

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

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

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

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

Gly Val Met 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 Arg 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 Glu Glu Met Thr Lys Asn Gln Val Ser Leu
    370                 375                 380
```

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

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro 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> 26
<211> 702
<212> DNA
<213> Artificial Sequence

<220>
<223> Chimeric Antibody

<400> 26

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atggtgctgc agacccaggt gttcatctcc ctgctgctgt ggatctccgg cgcgtacggc       60

aatattgtga tgactcagtc tcccacatcc atgttcatat cagtcggaga cagggtcacc      120

atgaactgta aggccagtca gaatgtggga actaatgtag actggtacca gcagaaaaca      180

gggcagtctc ctaaactgct tatctatggg gcgtccaacc gctacactgg agtccctgat      240

cgcttcacag gcagtggatc tggaacagat ttcactctca ccatcagcaa catgcaggct      300

gaagacctgg ctgtttatga ctgtctacag tataagtaca atccatacac gtttggaact      360

gggaccaagc tggaactgaa ccgggctgtg gccgcccccc ccgtgttcat cttccccccc      420

tccgacgagc agctgaagtc cggcaccgcc tccgtggtgt gcctgctgaa taacttctac      480

cccagagagg ccaaggtgca gtggaaggtg gacaacgccc tgcagtccgg gaactcccag      540

gagagcgtga ccgagcagga cagcaaggac agcacctaca gcctgagcag caccctgacc      600

ctgagcaaag ccgactacga gaagcacaag gtgtacgcct gcgaggtgac ccaccagggc      660

ctgagctccc ccgtcaccaa gagcttcaac aggggggagt gt                         702
```

<210> 27
<211> 234
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric Antibody

<400> 27

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

Gly Ala Tyr Gly Asn Ile Val Met Thr Gln Ser Pro Thr Ser Met Phe
20 25 30

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

Val Gly Thr Asn Val Asp Trp Tyr Gln Gln Lys Thr Gly 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 Gly Thr Asp Phe Thr Leu Thr Ile Ser
85 90 95

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

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

Ala 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> 28
<211> 1407
<212> DNA
<213> Artificial Sequence

<220>

<223> Chimeric Antibody

<400> 28
atgaaacacc tgtggttctt cctcctgctg gtggcagctc ccagatgggt gctgagccag 60

gtgcagctga gggagtcagg acctggtctg gtgcagccct cacagaccct gtccctcacc 120

tgcactgtct ctgggttctc actaaccagc tttcatgtaa gctgggttcg ccagcctcca 180

gagaagggtc tggagtggat tgcaacaatt tcaagtggtg gaggtacata ttataattca 240

gctctcaaat cccgactgag catcagcagg gacacctcca agagccaagt tttcttaaag 300

atgagcactc tgcaaactga agacacagcc atgtacttct gtgcccggat ttcgggctgg 360

ggccattact atgttatgga tgtctggggt caaggagctt cagtcactgt cagctcagcc 420

tccaccaagg gcccaagcgt cttccccctg gcaccctcct ccaagagcac ctctggcggc 480

acagccgccc tgggctgcct ggtcaaggac tacttccccg aacccgtgac cgtgagctgg 540

aactcaggcg ccctgaccag cggcgtgcac accttccccg ctgtcctgca gtcctcagga 600

ctctactccc tcagcagcgt ggtgaccgtg ccctccagca gcttgggcac ccagacctac 660

atctgcaacg tgaatcacaa gcccagcaac accaaggtgg acaagagagt tgagcccaaa 720

tcttgtgaca aaactcacac atgcccaccc tgcccagcac ctgaactcct gggggggaccc 780

tcagtcttcc tcttcccccc aaaacccaag gacaccctca tgatctcccg gacccctgag 840

gtcacatgcg tggtggtgga cgtgagccac gaagaccctg aggtcaagtt caactggtac 900

gtggacggcg tggaggtgca taatgccaag acaaagcccc gggaggagca gtacaacagc 960

acgtaccggg tggtcagcgt cctcaccgtc ctgcaccagg actggctgaa tggcaaggag 1020

tacaagtgca aggtctccaa caaagccctc ccagccccca tcgagaaaac catctccaaa 1080

gccaaaggcc agccccggga accacaggtg tacaccctgc ccccatcccg ggaggagatg 1140

accaagaacc aggtcagcct gacctgcctg gtcaaaggct tctatcccag cgacatcgcc 1200

gtggagtggg agagcaatgg ccagcccgag aacaactaca agaccacccc tcccgtgctg 1260

gactccgacg gctccttctt cctctacagc aagctcaccg tggacaagag caggtggcag 1320

cagggcaacg tcttctcatg ctccgtgatg catgaggctc tgcacaacca ctacacccag 1380

aagagcctct ccctgtctcc cggcaaa 1407

<210> 29
<211> 469
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric Antibody

<400> 29

Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
1 5 10 15

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

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

Thr Ser Phe His Val Ser Trp Val Arg Gln Pro Pro Glu Lys Gly Leu
    50                  55                  60

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

Ala Leu Lys Ser Arg Leu Ser Ile Ser Arg Asp Thr Ser Lys Ser Gln
                85                  90                  95

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

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

Trp Gly Gln Gly Ala Ser Val Thr Val Ser Ser 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 Arg 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 Glu Glu Met Thr Lys Asn Gln
370 375 380

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

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

Pro Pro 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> 30
<211> 702
<212> DNA
<213> Artificial Sequence

<220>
<223> Chimeric Antibody

<400> 30
atggtgctgc agacccaggt gttcatctcc ctgctgctgt ggatctccgg cgcgtacggc 60

gacatccaga tgacacagtc tccagcttcc ctgtctggat ctctgggaga aactgtcacc 120

atccaatgtc aagcaagtga ggacatttac agtggtttag cgtggtatca gcagaagcca 180

gggaaatctc ctcagctcct gatctatggt gcaggtagct tacaagacgg cgtcccatca 240

cgattcagtg gcggtggatc tggcacacat tattctctca agatcagcag catgcaaact 300

gaagatgaag gggtttattt ctgtcaacag ggtttaaagt ttccgctcac gttcggttct 360

gggaccaagc tggagatcaa acgggctgtg gccgcccccc ccgtgttcat cttccccccc 420

tccgacgagc agctgaagtc cggcaccgcc tccgtggtgt gcctgctgaa taacttctac 480

cccagagagg ccaaggtgca gtggaaggtg gacaacgccc tgcagtccgg gaactcccag 540

gagagcgtga ccgagcagga cagcaaggac agcacctaca gcctgagcag caccctgacc 600

ctgagcaaag ccgactacga gaagcacaag gtgtacgcct gcgaggtgac ccaccagggc 660

ctgagctccc ccgtcaccaa gagcttcaac aggggggagt gt 702

<210> 31
<211> 234
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric Antibody

<400> 31

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

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

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

Ile Tyr Ser Gly Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ser Pro
50 55 60

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

Arg Phe Ser Gly Gly Gly Ser Gly Thr His Tyr Ser Leu Lys Ile Ser
85 90 95

Ser Met Gln Thr Glu Asp Glu Gly Val Tyr Phe Cys Gln Gln Gly Leu
100 105 110

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

Ala 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> 32
<211> 1398
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanized Antibody

<400> 32
atgaagcacc tgtggttctt tctgctgctg gtggccgctc ccagatgggt gctgtctgaa 60

gtgcagctgg tggaatccgg cggaggcctg gtgcagcctg gcggatctct gagactgtct 120

tgtgccgcct ccggcttcac cttctccaac tactacatgg cctgggtgcg acaggcccct 180

ggcaagggac tggaatgggt gtcctctatc ggcaccgtgg gcggcaacac ctactacgcc 240

gattctgtga agggccggtt caccatctcc cgggacgact ccaagaacac cctgtacctg 300

cagatgaact ccctgcgggc cgaggacacc gccgtgtact actgtgccag agaggactac 360

ggcggcttcc ctcattgggg ccagggcaca ctcgtgaccg tgtcctctgc ttccaccaag 420

ggcccctccg tgtttcctct ggcccccttcc agcaagtcca cctctggcgg aacagccgct 480

ctgggctgcc tcgtgaagga ctacttcccc gagcccgtga cagtgtcttg gaactctggc 540

gccctgacct ccggcgtgca cacctttcca gctgtgctgc agtcctccgg cctgtactcc 600

ctgtcctccg tcgtgactgt gccctccagc tctctgggca cccagaccta catctgcaac 660

gtgaaccaca agccctccaa caccaaggtg gacaagcggg tggaacccaa gtcctgcgac 720

aagacccaca cctgtccccc ttgtcctgcc cctgaactgc tgggcggacc ttccgtgttc 780

ctgttccccc caaagcctaa ggacaccctg atgatctccc ggacccccga agtgacctgc 840

gtggtggtgg atgtgtccca cgaggaccct gaagtgaagt tcaattggta cgtggacggc 900

gtggaagtgc acaacgccaa gaccaagcct agagaggaac agtacaactc cacctaccgg 960

gtggtgtccg tgctgaccgt gctgcatcag gactggctga acggcaaaga gtacaagtgc 1020

aaggtgtcca acaaggccct gcctgccccc atcgaaaaga ccatctccaa ggccaagggc 1080

cagccccggg aaccccaggt gtacacactg ccccctagcc gggaagagat gaccaagaac 1140

caggtgtccc tgacctgtct cgtgaaaggc ttctaccccct ccgatatcgc cgtggaatgg 1200

gagagcaacg gccagcccga gaacaactac aagaccaccc cccctgtgct ggactccgac 1260

ggctcattct tcctgtacag caagctgaca gtggacaagt cccggtggca gcagggcaac 1320

gtgttctcct gctccgtgat gcacgaggcc ctgcacaacc actacaccca gaagtccctg 1380

tccctgagcc ccggcaaa 1398

<210> 33
<211> 466
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized Antibody

<400> 33

Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
1 5 10 15

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

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

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

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

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

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

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

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

Phe Pro Leu Ala Pro 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 Arg 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 Glu Glu Met Thr Lys Asn Gln Val Ser Leu
    370                 375                 380

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

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro 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> 34
<211> 1398

<212> DNA
<213> Artificial Sequence

<220>
<223> Humanized Antibody

<400> 34
atgaagcacc tgtggttctt tctgctgctg gtggccgctc ccagatgggt gctgtctgaa 60

gtgcagctgg tggaatccgg cggaggcctg gtgcagcctg gcggatctct gagactgtct 120

tgtgccgcct ccggcttcac cttctccaac tactacatgg cctgggtgcg acaggcccct 180

ggcaagggac tggaatgggt ggcctctatc ggcaccgtgg gcggcaacac ctactaccgg 240

gattctgtga agggccggtt caccatctcc cgggacgact ccaagtccac cctgtacctg 300

cagatgaact ccctgcgggc cgaggacacc gccgtgtact actgtgccag agaggactac 360

ggcggcttcc ctcattgggg ccagggcaca ctcgtgaccg tgtcctctgc ttccaccaag 420

ggcccctccg tgtttcctct ggcccccttcc agcaagtcta cctccggcgg aacagccgct 480

ctgggctgcc tcgtgaagga ctacttcccc gagcccgtga cagtgtcttg gaactctggc 540

gccctgacca gcggcgtgca cacctttcca gctgtgctgc agtcctccgg cctgtactcc 600

ctgtcctccg tcgtgactgt gccctccagc tctctgggca cccagaccta catctgcaac 660

gtgaaccaca agccctccaa caccaaggtg gacaagcggg tggaacccaa gtcctgcgac 720

aagacccaca cctgtccccc ttgtcctgcc cctgaactgc tgggcggacc ttccgtgttc 780

ctgttccccc caaagcccaa ggacaccctg atgatctccc ggacccccga agtgacctgc 840

gtggtggtgg atgtgtccca cgaggaccct gaagtgaagt tcaattggta cgtggacggc 900

gtggaagtgc acaacgccaa gaccaagcct agagaggaac agtacaactc cacctaccgg 960

gtggtgtccg tgctgaccgt gctgcatcag gactggctga acggcaaaga gtacaagtgc 1020

aaggtgtcca acaaggccct gcctgccccc atcgaaaaga ccatctccaa ggccaagggc 1080

cagccccggg aaccccaggt gtacacactg ccccctagcc gggaagagat gaccaagaac 1140

caggtgtccc tgacctgtct cgtgaaaggc ttctaccccct ccgatatcgc cgtggaatgg 1200

gagtccaacg gccagcctga gaacaactac aagaccaccc cccctgtgct ggactccgac 1260

ggctcattct tcctgtacag caagctgaca gtggacaagt cccggtggca gcagggcaac 1320

gtgttctcct gctccgtgat gcacgaggcc ctgcacaacc actacaccca gaagtccctg 1380

tccctgagcc ccggcaaa 1398

<210> 35
<211> 466
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized Antibody

<400> 35

Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
1 5 10 15

```
Val Leu Ser Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

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

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

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

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser
                85                  90                  95

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

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

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

Phe Pro Leu Ala Pro 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 Arg 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 Glu Glu Met Thr Lys Asn Gln Val Ser Leu
370 375 380

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

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro 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> 36
<211> 702
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanized Antibody

<400> 36
atggtgctgc agacccaggt gttcatctcc ctgctgctgt ggatctccgg cgcctacggc 60

aacatcgtga tgacccagtc ccccgactcc ctggctgtgt ctctgggcga gagagccacc 120

atcaactgca aggcctccca gaacgtgggc accaacgtgg actggtatca gcagaagccc 180

ggccagtccc ctaagctgct gatctacggc gccagcaacc ggtacaccgg cgtgcccgat 240

agattctccg gctctggctc tggcaccgac tttaccctga caatcagctc tctgcaggcc 300

gaggacgtgg ccgtgtacga ctgcctgcag tacaagtaca acccctacac cttcggccag 360

ggcacaaagg tggaaatcaa gcggaccgtg gccgctccct ccgtgtttat cttcccaccc 420

tccgacgagc agctgaagtc cggcacagct tccgtcgtgt gcctgctgaa caacttctac 480

ccccgcgagg ccaaggtgca gtggaaggtg gacaacgccc tgcagtccgg caactcccag 540

gaatccgtga ccgagcagga ctccaaggac agcacctact ccctgtcctc caccctgacc 600

ctgtccaagg ccgactacga gaagcacaag gtgtacgcct gcgaagtgac ccaccagggc 660

ctgtctagcc ccgtgaccaa gtctttcaac cggggcgagt gc 702

<210> 37
<211> 234
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized Antibody

<400> 37

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

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

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

Val Gly Thr Asn Val Asp Trp Tyr Gln Gln Lys Pro Gly 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 Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
85 90 95

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

Tyr Asn Pro Tyr Thr Phe Gly Gln Gly Thr Lys Val 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> 38
<211> 702
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanized Antibod

<400> 38
atggtgctgc agacccaggt gttcatctcc ctgctgctgt ggatctccgg cgcctacggc 60

aacatcgtga tgacccagtc cccctccagc ctgtctgctt ccgtgggcga cagagtgacc 120

atcaactgca aggcctccca gaacgtgggc accaacgtgg actggtatca gcagaagccc 180

ggcaagtccc ccaagctgct gatctacggc gccagcaaca gatacaccgg cgtgcccgac 240

agattctccg gctctggctc tggcaccgac tttaccctga ccatcagctc cctgcagccc 300

gaggacttcg ccacctacga ctgcctgcag tacaagtaca acccctacac cttcggccag 360

ggcacaaagg tggaaatcaa gcggaccgtg gccgctccct ccgtgtttat cttcccaccc 420

tccgacgagc agctgaagtc cggcacagct tctgtcgtgt gcctgctgaa caacttctac 480

ccccgcgagg ccaaggtgca gtggaaggtg gacaacgccc tgcagtccgg caactcccag 540

gaatccgtga ccgagcagga ctccaaggac agcacctact ccctgtcctc caccctgacc 600

ctgtccaagg ccgactacga gaagcacaag gtgtacgcct gcgaagtgac ccaccagggc 660

ctgtctagcc ccgtgaccaa gtctttcaac cggggcgagt gc 702

<210> 39
<211> 234
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized Antibody

<400> 39

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

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

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

Val Gly Thr Asn Val Asp Trp Tyr Gln Gln Lys Pro Gly Lys 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 Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
85 90 95

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

Tyr Asn Pro Tyr Thr Phe Gly Gln Gly Thr Lys Val 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> 40
<211> 1407
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanized Antibody

<400> 40
atgaagcacc tgtggttctt tctgctgctg gtggccgctc ccagatgggt gctgtctgaa 60

gtgcagctgg tggaatccgg cggaggcctc gtgaagcctt cccagaccct gtctctgacc 120

tgcaccgtgt ccggcttctc cctgacctcc ttccacgtgt catgggtgcg acagcctcca 180

ggcaagggcc tggaatggat cgccaccatc tcctctggcg gcggaaccta ctacaacccc 240

agcctgaagt ccagagtgac catctcccgg gacacctcca agaaccaggt gtccctgaag 300

ctgtcctccg tgaccgccgc tgataccgcc gtgtactact gcgccagaat ctccggctgg 360

ggccactact acgtgatgga cgtgtggggc cagggcaccc tcgtgacagt gtcctctgct 420

tccaccaagg gcccctccgt gtttcctctg gcccccttcca gcaagtctac ctccggcgga 480

acagccgctc tgggctgcct cgtgaaagac tacttccccg agcccgtgac cgtgtcttgg 540

aactctggcg ctctgaccag cggcgtgcac acctttccag ctgtgctgca gtcctccggc 600

ctgtactccc tgtccagcgt cgtgactgtg ccctccagct ctctgggcac ccagacctac 660

atctgcaacg tgaaccacaa gccctccaac accaaggtgg acaagcgggt ggaacccaag 720

tcctgcgaca agacccacac ctgtcccccct tgtcctgccc ctgaactgct gggcggacct 780

tccgtgttcc tgttcccccc aaagcccaag gacaccctga tgatctcccg gacccccgaa 840

gtgacctgcg tggtggtgga tgtgtcccac gaggaccctg aagtgaagtt caattggtac 900

gtggacggcg tggaagtgca caacgccaag accaagccta gagaggaaca gtacaactcc 960

acctaccggg tggtgtccgt gctgaccgtg ctgcaccagg attggctgaa cggcaaagag 1020

tacaagtgca aggtgtccaa caaggccctg cctgccccca tcgaaaagac catcagcaag 1080

gccaagggcc agccccggga accccaggtg tacacactgc cccctagccg ggaagagatg 1140

acaaaaaatc aggtgtcact gacctgtctc gtgaagggct tctacccctc cgatatcgcc 1200

gtggaatggg agtccaacgg ccagcctgag aacaactaca agaccacccc ccctgtgctg 1260

gactccgacg gctcattctt cctgtacagc aagctgacag tggacaagtc ccggtggcag 1320

cagggcaacg tgttctcctg ctccgtgatg cacgaggccc tgcacaacca ctacacccag 1380

aagtccctgt ccctgagccc cggcaaa 1407

<210> 41
<211> 469
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized Antibody

<400> 41

Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
1 5 10 15

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

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

Thr Ser Phe His Val Ser Trp Val Arg Gln Pro Pro Gly Lys Gly Leu
50 55 60

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

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

Val Ser Leu Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr
            100                 105                 110

Tyr Cys Ala Arg Ile Ser Gly Trp Gly His Tyr Tyr Val Met Asp Val
        115                 120                 125

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

Pro Ser Val Phe Pro Leu Ala Pro 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 Arg 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 Glu Glu Met Thr Lys Asn Gln
370 375 380

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

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

Pro Pro 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> 42
<211> 702
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanized Antibody

<400> 42
atggtgctgc agacccaggt gttcatctcc ctgctgctgt ggatctccgg cgcctacggc 60

gacatccaga tgacccagag cccttccagc ctgtccgctt ccgtgggcga cagagtgacc 120

atcacctgtc aggcctccga ggacatctac tccggcctgg cctggtatca gcagaagccc 180

ggcaagtccc ccaagctgct gatctacggc gctggatctc tgcaggacgg cgtgccctct 240

agattctccg gctctggatc cggcacccac tacaccctga ccatctccag cctgcagccc 300

gaggacttcg ctacctactt ctgtcagcaa ggcctgaagt tccccctgac cttcggccag 360

ggcaccaagg tggaaatcaa gcggaccgtg gccgctccct ccgtgtttat cttcccaccc 420

tccgacgagc agctgaagtc cggcacagct tctgtcgtgt gcctgctgaa caacttctac 480

ccccgcgagg ccaaggtgca gtggaaggtg gacaacgccc tgcagtccgg caactcccag 540

gaatccgtga ccgagcagga ctccaaggac agcacctact ccctgtcctc taccctgacc 600

ctgtccaagg ccgactacga gaagcacaag gtgtacgcct gcgaagtgac ccaccagggc 660

ctgtctagcc ccgtgaccaa gtctttcaac cggggcgagt gc 702

<210> 43
<211> 234
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized Antibody

<400> 43

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

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

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

Ile Tyr Ser Gly Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ser Pro
50 55 60

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

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

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

Lys Phe Pro Leu Thr Phe Gly Gln Gly Thr Lys Val 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> 44
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer F

<400> 44
cacggcaacc tgctggagcg gctgctgggg gagg 34

<210> 45
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer R

<400> 45
caggctgttc ccagacaggt ccag 24