SEQUENCE LISTING

<110> Transgene S.A.

<120> Antibody against the CSF-1R

<130> U1109 PCT S3

<150> 13/026,944
<151> 2011-02-14

<160> 47

<170> PatentIn version 3.5

<210> 1
<211> 1404
<212> DNA
<213> Mus musculus

<400> 1
atgtacttgg gactgaacta tgtattcata gtttttctcc taaatggtgt ccagagtgaa 60

gtgaagcttg aggagtctgg aggaggcttg gtgcagcctg gaggatccat gaaactctct 120

tgtgctgcct ctggattcac ttttagtgac gcctggatgg actgggtccg ccagtctcca 180

gagatgggac ttgagtgggt tgctgaaatt agaagcaaag ctaataatca tgcaacattc 240

tatgctgagt ctgtgaaagg gaggttcacc atctcaagag atgattccaa aagtagtgtc 300

tacctgcaaa tgaacagctt aagacctgaa gacactggca tttattactg taccagggta 360

aaggtaggct ttgacaactg gggccaaggc accactctca cagtctcctc agccaaaaca 420

acagccccat cggtctatcc actggccccc gtgtgtggag atacaactgg ctcctcggtg 480

actctaggat gcctggtcaa gggttatttc cctgagccag tgaccttgac ctggaactct 540

ggatccctgt ccagtggtgt gcacaccttc ccagctgtcc tgcagtctga cctctacacc 600

ctcagcagct cagtgactgt aacctcgagc acctggccca gccagtccat cacctgcaat 660

gtggcccacc cggcaagcag caccaaggtg gacaagaaaa ttgagcccag agggcccaca 720

atcaagccct gtcctccatg caaatgccca gcacctaacc tcttgggtgg accatccgtc 780

ttcatcttcc ctccaaagat caaggatgta ctcatgatct ccctgagccc catagtcaca 840

tgtgtggtgg tggatgtgag cgaggatgac ccagatgtcc agatcagctg gtttgtgaac 900

aacgtggaag tacacacagc tcagacacaa acccatagag aggattacaa cagtactctc 960

cgggtggtca gtgccctccc catccagcac caggactgga tgagtggcaa ggagttcaaa 1020

tgcaaggtca acaacaaaga cctcccagcg cccatcgaga gaaccatctc aaaacccaaa 1080

gggtcagtaa gagctccaca ggtatatgtc ttgcctccac cagaagaaga gatgactaag 1140

aaacaggtca ctctgacctg catggtcaca gacttcatgc ctgaagacat ttacgtggag 1200

tggaccaaca acgggaaaac agagctaaac tacaagaaca ctgaaccagt cctggactct 1260

gatggttctt acttcatgta cagcaagctg agagtggaaa agaagaactg ggtggaaaga 1320

aatagctact cctgttcagt ggtccacgag ggtctgcaca atcaccacac gactaagagc 1380

ttctcccgga ctccgggtaa atga 1404

<210> 2
<211> 467
<212> PRT
<213> Mus musculus

<400> 2

```
Met Tyr Leu Gly Leu Asn Tyr Val Phe Ile Val Phe Leu Leu Asn Gly
1               5                  10                  15

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

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

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

Glu Trp Val Ala Glu Ile Arg Ser Lys Ala Asn Asn His Ala Thr Phe
65                  70                  75                  80

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

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

Gly Ile Tyr Tyr Cys Thr Arg Val Lys Val Gly Phe Asp Asn Trp Gly
        115                 120                 125

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

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

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

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

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

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

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

```
Ile Lys Pro Cys Pro Pro Cys Lys Cys Pro Ala Pro Asn Leu Leu Gly
                245                 250                 255

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

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

Asp Asp Pro Asp Val Gln Ile Ser Trp Phe Val Asn Asn Val Glu Val
    290                 295                 300

His Thr Ala Gln Thr Gln Thr His Arg Glu Asp Tyr Asn Ser Thr Leu
305                 310                 315                 320

Arg Val Val Ser Ala Leu Pro Ile Gln His Gln Asp Trp Met Ser Gly
                325                 330                 335

Lys Glu Phe Lys Cys Lys Val Asn Asn Lys Asp Leu Pro Ala Pro Ile
            340                 345                 350

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

Tyr Val Leu Pro Pro Pro Glu Glu Glu Met Thr Lys Lys Gln Val Thr
    370                 375                 380

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

Trp Thr Asn Asn Gly Lys Thr Glu Leu Asn Tyr Lys Asn Thr Glu Pro
                405                 410                 415

Val Leu Asp Ser Asp Gly Ser Tyr Phe Met Tyr Ser Lys Leu Arg Val
            420                 425                 430

Glu Lys Lys Asn Trp Val Glu Arg Asn Ser Tyr Ser Cys Ser Val Val
        435                 440                 445

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

Pro Gly Lys
465
```

<210> 3
<211> 705
<212> DNA
<213> Mus musculus

<400> 3
atgagtgtgc ccactcaggt cctggggttg ctgctgctgt ggcttacaga tgccagatgt 60

gacatccaga tgactcagtc tccagcctcc ctatctgtat ctgtgggaga aactgtcacc 120

atcacatgtc gagcaagtga gaatatttac agtaatttag catggtatca gcagaaacag 180

ggaaaatctc ctcagctcct ggtccatgct gcaacaaact tagcagatgg tgtgccatca 240

aggttcagtg gcagtggatc aggcacacag tattccctca agatcaacag cctgcagtct 300

gaagattttg ggagttatta ctgtcaacat ttttggggta ctcctcggac gttcggtgga 360

ggcaccaagt tggaaatcaa acgggctgat gctgcaccaa ctgtatccat cttcccacca 420

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac 480

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg 540

aacagttgga ctgatcagga cagcaaagac agcacctaca gcatgagcag caccctcacg 600

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca 660

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gttag 705

<210> 4
<211> 234
<212> PRT
<213> Mus musculus

<400> 4

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

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

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

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

Gln Leu Leu Val His Ala Ala Thr Asn Leu Ala Asp Gly Val Pro Ser
65 70 75 80

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

Ser Leu Gln Ser Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp
100 105 110

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

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

Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr

145 150 155 160

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

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

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

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

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

<210> 5
<211> 19
<212> PRT
<213> Mus musculus

<400> 5

Met Tyr Leu Gly Leu Asn Tyr Val Phe Ile Val Phe Leu Leu Asn Gly
1 5 10 15

Val Gln Ser

<210> 6
<211> 118
<212> PRT
<213> Mus musculus

<400> 6

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

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

Trp Met Asp Trp Val Arg Gln Ser Pro Glu Met Gly Leu Glu Trp Val
35 40 45

Ala Glu Ile Arg Ser Lys Ala Asn Asn His Ala Thr Phe Tyr Ala Glu
50 55 60

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

Val Tyr Leu Gln Met Asn Ser Leu Arg Pro Glu Asp Thr Gly Ile Tyr
85 90 95

```
Tyr Cys Thr Arg Val Lys Val Gly Phe Asp Asn Trp Gly Gln Gly Thr
            100                 105                 110

Thr Leu Thr Val Ser Ser
        115
```

<210> 7
<211> 330
<212> PRT
<213> Mus musculus

<400> 7

```
Ala Lys Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Val Cys Gly
1               5                   10                  15

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

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

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

Ser Ser Ser Val Thr Val Thr Ser Ser Thr Trp Pro Ser Gln Ser Ile
65                  70                  75                  80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys
                85                  90                  95

Ile Glu Pro Arg Gly Pro Thr Ile Lys Pro Cys Pro Pro Cys Lys Cys
            100                 105                 110

Pro Ala Pro Asn Leu Leu Gly Gly Pro Ser Val Phe Ile Phe Pro Pro
        115                 120                 125

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

Val Val Val Asp Val Ser Glu Asp Asp Pro Asp Val Gln Ile Ser Trp
145                 150                 155                 160

Phe Val Asn Asn Val Glu Val His Thr Ala Gln Thr Gln Thr His Arg
                165                 170                 175

Glu Asp Tyr Asn Ser Thr Leu Arg Val Val Ser Ala Leu Pro Ile Gln
            180                 185                 190

His Gln Asp Trp Met Ser Gly Lys Glu Phe Lys Cys Lys Val Asn Asn
        195                 200                 205
```

```
Lys Asp Leu Pro Ala Pro Ile Glu Arg Thr Ile Ser Lys Pro Lys Gly
    210                 215                 220

Ser Val Arg Ala Pro Gln Val Tyr Val Leu Pro Pro Pro Glu Glu Glu
225                 230                 235                 240

Met Thr Lys Lys Gln Val Thr Leu Thr Cys Met Val Thr Asp Phe Met
                245                 250                 255

Pro Glu Asp Ile Tyr Val Glu Trp Thr Asn Asn Gly Lys Thr Glu Leu
            260                 265                 270

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

Met Tyr Ser Lys Leu Arg Val Glu Lys Lys Asn Trp Val Glu Arg Asn
    290                 295                 300

Ser Tyr Ser Cys Ser Val Val His Glu Gly Leu His Asn His His Thr
305                 310                 315                 320

Thr Lys Ser Phe Ser Arg Thr Pro Gly Lys
                325                 330
```

<210> 8
<211> 20
<212> PRT
<213> Mus musculus

<400> 8

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

Asp Ala Arg Cys
            20
```

<210> 9
<211> 107
<212> PRT
<213> Mus musculus

<400> 9

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

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

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

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

```
Ser Gly Ser Gly Thr Gln Tyr Ser Leu Lys Ile Asn Ser Leu Gln Ser
65                  70                  75                  80

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp Gly Thr Pro Arg
                85                  90                  95

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

<210> 10
<211> 107
<212> PRT
<213> Mus musculus

<400> 10

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

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

Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg
        35                  40                  45

Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser
    50                  55                  60

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

Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser
                85                  90                  95

Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
            100                 105
```

<210> 11
<211> 8
<212> PRT
<213> Mus musculus

<400> 11

```
Gly Phe Thr Phe Ser Asp Ala Trp
1               5
```

<210> 12
<211> 10
<212> PRT
<213> Mus musculus

<400> 12

```
Ile Arg Ser Lys Ala Asn Asn His Ala Thr
```

eolf-seql
1 5 10

<210> 13
<211> 9
<212> PRT
<213> Mus musculus

<400> 13

Thr Arg Val Lys Val Gly Phe Asp Asn
1 5

<210> 14
<211> 6
<212> PRT
<213> Mus musculus

<400> 14

Glu Asn Ile Tyr Ser Asn
1 5

<210> 15
<211> 3
<212> PRT
<213> Mus musculus

<400> 15

Ala Ala Thr
1

<210> 16
<211> 9
<212> PRT
<213> Mus musculus

<400> 16

Gln His Phe Trp Gly Thr Pro Arg Thr
1 5

<210> 17
<211> 5
<212> PRT
<213> Mus musculus

<400> 17

Asp Ala Trp Met Asp
1 5

<210> 18
<211> 19
<212> PRT
<213> Mus musculus

<400> 18

Glu Ile Arg Ser Lys Ala Asn Asn His Ala Thr Phe Tyr Ala Glu Ser
1 5 10 15

Val Lys Gly

<210> 19
<211> 7
<212> PRT
<213> Mus musculus

<400> 19

Val Lys Val Gly Phe Asp Asn
1 5

<210> 20
<211> 11
<212> PRT
<213> Mus musculus

<400> 20

Arg Ala Ser Glu Asn Ile Tyr Ser Asn Leu Ala
1 5 10

<210> 21
<211> 7
<212> PRT
<213> Mus musculus

<400> 21

Ala Ala Thr Asn Leu Ala Asp
1 5

<210> 22
<211> 9
<212> PRT
<213> Mus musculus

<400> 22

Gln His Phe Trp Gly Thr Pro Arg Thr
1 5

<210> 23
<211> 7
<212> PRT
<213> Mus musculus

<400> 23

Gly Phe Thr Phe Ser Asp Ala
1 5

<210> 24
<211> 8
<212> PRT
<213> Mus musculus

<400> 24

Arg Ser Lys Ala Asn Asn His Ala

1 5

<210> 25
<211> 7
<212> PRT
<213> Mus musculus

<400> 25

Val Lys Val Gly Phe Asp Asn
1 5

<210> 26
<211> 11
<212> PRT
<213> Mus musculus

<400> 26

Arg Ala Ser Glu Asn Ile Tyr Ser Asn Leu Ala
1 5 10

<210> 27
<211> 7
<212> PRT
<213> Mus musculus

<400> 27

Ala Ala Thr Asn Leu Ala Asp
1 5

<210> 28
<211> 9
<212> PRT
<213> Mus musculus

<400> 28

Gln His Phe Trp Gly Thr Pro Arg Thr
1 5

<210> 29
<211> 972
<212> PRT
<213> Homo sapiens

<400> 29

Met Gly Pro Gly Val Leu Leu Leu Leu Leu Val Ala Thr Ala Trp His
1 5 10 15

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

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

Glu Trp Asp Gly Pro Pro Ser Pro His Trp Thr Leu Tyr Ser Asp Gly
50 55 60

```
Ser Ser Ser Ile Leu Ser Thr Asn Asn Ala Thr Phe Gln Asn Thr Gly
65                  70                  75                  80

Thr Tyr Arg Cys Thr Glu Pro Gly Asp Pro Leu Gly Gly Ser Ala Ala
                85                  90                  95

Ile His Leu Tyr Val Lys Asp Pro Ala Arg Pro Trp Asn Val Leu Ala
            100                 105                 110

Gln Glu Val Val Val Phe Glu Asp Gln Asp Ala Leu Leu Pro Cys Leu
        115                 120                 125

Leu Thr Asp Pro Val Leu Glu Ala Gly Val Ser Leu Val Arg Val Arg
    130                 135                 140

Gly Arg Pro Leu Met Arg His Thr Asn Tyr Ser Phe Ser Pro Trp His
145                 150                 155                 160

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

Cys Ser Ala Leu Met Gly Gly Arg Lys Val Met Ser Ile Ser Ile Arg
            180                 185                 190

Leu Lys Val Gln Lys Val Ile Pro Gly Pro Pro Ala Leu Thr Leu Val
        195                 200                 205

Pro Ala Glu Leu Val Arg Ile Arg Gly Glu Ala Ala Gln Ile Val Cys
    210                 215                 220

Ser Ala Ser Ser Val Asp Val Asn Phe Asp Val Phe Leu Gln His Asn
225                 230                 235                 240

Asn Thr Lys Leu Ala Ile Pro Gln Gln Ser Asp Phe His Asn Asn Arg
                245                 250                 255

Tyr Gln Lys Val Leu Thr Leu Asn Leu Asp Gln Val Asp Phe Gln His
            260                 265                 270

Ala Gly Asn Tyr Ser Cys Val Ala Ser Asn Val Gln Gly Lys His Ser
        275                 280                 285

Thr Ser Met Phe Phe Arg Val Val Glu Ser Ala Tyr Leu Asn Leu Ser
    290                 295                 300

Ser Glu Gln Asn Leu Ile Gln Glu Val Thr Val Gly Glu Gly Leu Asn
305                 310                 315                 320

Leu Lys Val Met Val Glu Ala Tyr Pro Gly Leu Gln Gly Phe Asn Trp
                325                 330                 335
```

Thr Tyr Leu Gly Pro Phe Ser Asp His Gln Pro Glu Pro Lys Leu Ala
340 345 350

Asn Ala Thr Thr Lys Asp Thr Tyr Arg His Thr Phe Thr Leu Ser Leu
355 360 365

Pro Arg Leu Lys Pro Ser Glu Ala Gly Arg Tyr Ser Phe Leu Ala Arg
370 375 380

Asn Pro Gly Gly Trp Arg Ala Leu Thr Phe Glu Leu Thr Leu Arg Tyr
385 390 395 400

Pro Pro Glu Val Ser Val Ile Trp Thr Phe Ile Asn Gly Ser Gly Thr
405 410 415

Leu Leu Cys Ala Ala Ser Gly Tyr Pro Gln Pro Asn Val Thr Trp Leu
420 425 430

Gln Cys Ser Gly His Thr Asp Arg Cys Asp Glu Ala Gln Val Leu Gln
435 440 445

Val Trp Asp Asp Pro Tyr Pro Glu Val Leu Ser Gln Glu Pro Phe His
450 455 460

Lys Val Thr Val Gln Ser Leu Leu Thr Val Glu Thr Leu Glu His Asn
465 470 475 480

Gln Thr Tyr Glu Cys Arg Ala His Asn Ser Val Gly Ser Gly Ser Trp
485 490 495

Ala Phe Ile Pro Ile Ser Ala Gly Ala His Thr His Pro Pro Asp Glu
500 505 510

Phe Leu Phe Thr Pro Val Val Val Ala Cys Met Ser Ile Met Ala Leu
515 520 525

Leu Leu Leu Leu Leu Leu Leu Leu Leu Tyr Lys Tyr Lys Gln Lys Pro
530 535 540

Lys Tyr Gln Val Arg Trp Lys Ile Ile Glu Ser Tyr Glu Gly Asn Ser
545 550 555 560

Tyr Thr Phe Ile Asp Pro Thr Gln Leu Pro Tyr Asn Glu Lys Trp Glu
565 570 575

Phe Pro Arg Asn Asn Leu Gln Phe Gly Lys Thr Leu Gly Ala Gly Ala
580 585 590

Phe Gly Lys Val Val Glu Ala Thr Ala Phe Gly Leu Gly Lys Glu Asp
595 600 605

Ala Val Leu Lys Val Ala Val Lys Met Leu Lys Ser Thr Ala His Ala
610 615 620

Asp Glu Lys Glu Ala Leu Met Ser Glu Leu Lys Ile Met Ser His Leu
625 630 635 640

Gly Gln His Glu Asn Ile Val Asn Leu Leu Gly Ala Cys Thr His Gly
645 650 655

Gly Pro Val Leu Val Ile Thr Glu Tyr Cys Cys Tyr Gly Asp Leu Leu
660 665 670

Asn Phe Leu Arg Arg Lys Ala Glu Ala Met Leu Gly Pro Ser Leu Ser
675 680 685

Pro Gly Gln Asp Pro Glu Gly Gly Val Asp Tyr Lys Asn Ile His Leu
690 695 700

Glu Lys Lys Tyr Val Arg Arg Asp Ser Gly Phe Ser Ser Gln Gly Val
705 710 715 720

Asp Thr Tyr Val Glu Met Arg Pro Val Ser Thr Ser Ser Asn Asp Ser
725 730 735

Phe Ser Glu Gln Asp Leu Asp Lys Glu Asp Gly Arg Pro Leu Glu Leu
740 745 750

Arg Asp Leu Leu His Phe Ser Ser Gln Val Ala Gln Gly Met Ala Phe
755 760 765

Leu Ala Ser Lys Asn Cys Ile His Arg Asp Val Ala Ala Arg Asn Val
770 775 780

Leu Leu Thr Asn Gly His Val Ala Lys Ile Gly Asp Phe Gly Leu Ala
785 790 795 800

Arg Asp Ile Met Asn Asp Ser Asn Tyr Ile Val Lys Gly Asn Ala Arg
805 810 815

Leu Pro Val Lys Trp Met Ala Pro Glu Ser Ile Phe Asp Cys Val Tyr
820 825 830

Thr Val Gln Ser Asp Val Trp Ser Tyr Gly Ile Leu Leu Trp Glu Ile
835 840 845

Phe Ser Leu Gly Leu Asn Pro Tyr Pro Gly Ile Leu Val Asn Ser Lys
850 855 860

Phe Tyr Lys Leu Val Lys Asp Gly Tyr Gln Met Ala Gln Pro Ala Phe
865 870 875 880

Ala Pro Lys Asn Ile Tyr Ser Ile Met Gln Ala Cys Trp Ala Leu Glu
885 890 895

Pro Thr His Arg Pro Thr Phe Gln Gln Ile Cys Ser Phe Leu Gln Glu
900 905 910

Gln Ala Gln Glu Asp Arg Arg Glu Arg Asp Tyr Thr Asn Leu Pro Ser
915 920 925

Ser Ser Arg Ser Gly Gly Ser Gly Ser Ser Ser Ser Glu Leu Glu Glu
930 935 940

Glu Ser Ser Ser Glu His Leu Thr Cys Cys Glu Gln Gly Asp Ile Ala
945 950 955 960

Gln Pro Leu Leu Gln Pro Asn Asn Tyr Gln Phe Cys
965 970

<210> 30
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> primer sequence

<400> 30
gccgccacca tgtacttggg actgaactat gtattc 36

<210> 31
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> primer sequence

<400> 31
ggagatcttc atttacccgg agtccggga 29

<210> 32
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> primer sequence

<400> 32
gccgccacca tgagtgtgcc cactcaggtc ctg 33

<210> 33
<211> 32
<212> DNA
<213> Artificial Sequence

<220>

<223> primer sequence

<400> 33
gcccgggcta acactcattc ctgttgaagc tc 32

<210> 34
<211> 705
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleic acid sequence of an antibody light chain

<400> 34
atgagcgtgc ccacccaggt gctgggcctg ctgctgctgt ggctgaccga cgccagatgc 60

gacatccaga tgacccagag ccccgccagc ctgagcgtga gcgtgggcga gaccgtgacc 120

atcacctgca gggccagcga gaacatctac agcaacctgg cctggtatca gcagaagcag 180

ggcaagagcc cccagctgct ggtgcacgct gccaccaacc tggccgacgg cgtgccctcc 240

aggttcagcg gcagcggctc cggcacccag tacagcctga agatcaacag cctgcagagc 300

gaggacttcg gcagctacta ctgccagcac ttctggggca ccccaaggac cttcggcggc 360

ggcaccaagc tggagatcaa gaggaccgtg gccgccccca gcgtgttcat cttcccccc 420

agcgacgagc agctgaagag cggcaccgcc tccgtggtgt gcctgctgaa caacttctac 480

ccccgggagg ccaaggtgca gtggaaggtg gacaacgccc tgcagagcgg caacagccag 540

gaaagcgtca ccgagcagga cagcaaggac tccacctaca gcctgagcag caccctgacc 600

ctgagcaagg ccgactacga gaagcacaag gtgtacgcct gcgaggtgac ccaccagggc 660

ctgtccagcc ccgtgaccaa gagcttcaac aggggcgagt gttga 705

<210> 35
<211> 1404
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleic acid sequence of an antibody heavy chain

<400> 35
atgtacctgg gcctgaacta cgtgttcatc gtgtttctgc tgaacggcgt gcagagcgag 60

gtgaagctgg aggaaagcgg cggagggctg gtgcagccag gcgggagcat gaaactgtcc 120

tgcgccgcca gcggcttcac cttcagcgac gcctggatgg actgggtgcg ccagagcccc 180

gagatgggcc tggagtgggt ggccgagatc aggtccaagg ccaacaacca cgccaccttc 240

tacgccgaga gcgtgaaggg caggttcacc atcagcaggg acgacagcaa gagcagcgtg 300

tacctgcaga tgaacagcct gaggcccgag gacaccggca tctactactg caccagagtg 360

aaagtgggct tcgacaactg gggccagggc accacactga ccgtgtccag cgccagcacc 420

aagggcccca gcgtgttccc cctggccccc agctccaaga gcaccagcgg aggaacagct 480

gctctgggct gcctggtgaa ggactacttc cccgagcccg tgaccgtgtc ttggaacagc 540

ggagccctga cctccggcgt gcacaccttc cccgccgtgc tgcagagcag cggcctgtac 600

agcctgagca gcgtggtgac agtgcccagc agcagcctgg gcacccagac ctacatctgc 660

aacgtgaacc acaagcccag caacaccaag gtggacaaga aggtggagcc caagagctgc 720

gacaagaccc acacctgtcc tccctgccca gccccagagc tgctgggcgg accctccgtg 780

ttcctgttcc cccccaagcc caaggacacc ctgatgatca gcaggacccc cgaggtgacc 840

tgcgtggtgg tggacgtgtc ccacgaggac ccagaggtga agttcaactg gtacgtggac 900

ggcgtggagg tgcacaacgc caagaccaag cccagagagg aacagtacaa cagcacctac 960

agggtggtgt ccgtgctgac cgtgctgcac caggactggc tgaacggcaa ggaatacaag 1020

tgcaaggtct ccaacaaggc cctgccagcc cccatcgaaa agaccatcag caaggccaag 1080

ggccagccac gggagcccca ggtgtacacc ctgccccccct cccgggacga gctgaccaag 1140

aaccaggtgt ccctgacctg tctggtgaag ggcttctacc ccagcgacat cgccgtggag 1200

tgggagagca acggccagcc cgagaacaac tacaagacca ccccccccagt gctggacagc 1260

gacggcagct tcttcctgta cagcaagctg accgtggaca agagcaggtg gcagcagggc 1320

aacgtgttca gctgcagcgt gatgcacgag gccctgcaca accactacac ccagaagagc 1380

ctgagcctgt cccccggcaa gtga 1404

<210> 36
<211> 1395
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleic acid sequence of an antibody heavy chain

<400> 36
atgtacctgg gcctgaacta cgtgttcatc gtgtttctgc tgaacggcgt gcagagcgag 60

gtgaagctgg aggaaagcgg cggagggctg gtgcagcctg gaggaagcat gaagctgtcc 120

tgcgctgcca gcggcttcac cttcagcgac gcctggatgg actgggtgcg ccagagcccc 180

gagatgggcc tggagtgggt ggccgagatc aggtccaagg ccaacaacca cgccaccttc 240

tacgccgaga gcgtgaaggg caggttcacc atcagcaggg acgacagcaa gagcagcgtg 300

tacctgcaga tgaacagcct gaggcccgag gacaccggca tctactactg caccagagtg 360

aaggtgggct tcgacaactg gggccagggc accacactga ccgtgtccag cgccagcacc 420

aagggcccaa gcgtgttccc cctggccccc tgcagcagaa gcaccagcga gagcacagcc 480

gccctgggct gcctggtgaa ggactacttc cccgagcccg tgaccgtgtc ttggaacagc 540

ggagccctga ccagcggcgt gcacaccttc cccgccgtgc tgcagagcag cggcctgtac 600

agcctgagca gcgtggtgac cgtgcccagc agcagcctgg gcaccaagac ctacacctgc 660

aacgtggacc acaagcccag caacaccaag gtggacaaga gggtggagag caagtacggc 720

ccaccctgcc cctcttgccc agcccccgag ttcctgggcg gacccagcgt gttcctgttc 780

ccccccaagc ccaaggacac cctgatgatc agcaggaccc ccgaggtgac ctgcgtggtg 840

gtggacgtgt cccaggaaga tccagaggtc cagttcaact ggtacgtgga cggcgtggag 900

gtgcacaacg ccaagaccaa gcccagagag gaacagttta acagcaccta cagggtggtg 960

tccgtgctga ccgtgctgca ccaggactgg ctgaacggca aggaatacaa gtgcaaggtc 1020

tccaacaagg gcctgcccag ctccatcgaa aagaccatca gcaaggccaa gggccagcca 1080

cgggagcccc aggtgtacac cctgccaccc agccaagagg aaatgaccaa gaaccaggtg 1140

tccctgacct gtctggtgaa gggcttctac cccagcgaca tcgccgtgga gtgggagagc 1200

aacggccagc ccgagaacaa ctacaagacc acccccccag tgctggacag cgacggcagc 1260

ttcttcctgt acagcaggct gaccgtggac aagtccaggt ggcaggaagg caacgtcttt 1320

agctgcagcg tgatgcacga ggccctgcac aaccactaca cccagaagag cctgagcctg 1380

tccctgggca agtga 1395

<210> 37
<211> 467
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of antibody heavy chain

<400> 37

Met Tyr Leu Gly Leu Asn Tyr Val Phe Ile Val Phe Leu Leu Asn Gly
1 5 10 15

Val Gln 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 Asp Ala Trp Met Asp Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
50 55 60

Glu Trp Val Ala Glu Ile Arg Ser Lys Ala Asn Asn His Ala Thr Phe
65 70 75 80

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

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

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

Gln Gly Thr Leu 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> 38
<211> 467
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of antibody heavy chain

<400> 38

Met Tyr Leu Gly Leu Asn Tyr Val Phe Ile Val Phe Leu Leu Asn Gly
1 5 10 15

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

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

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

Glu Trp Val Ala Glu Ile Arg Ser Lys Ala Asn Asn His Ala Thr Phe
65 70 75 80

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

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

Gly Ile Tyr Tyr Cys Thr Arg Val Lys Val Gly Phe Asp Asn 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> 39
<211> 234
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of antibody light chain

<400> 39

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

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

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

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

Lys Leu Leu Val His Ala Ala Thr Asn Leu Glu Ser Gly Val Pro Ser
65 70 75 80

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

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

Gly Thr Pro Arg Thr Phe Gly Gln 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> 40
<211> 234
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of antibody light chain

<400> 40

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

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

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

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

Gln Leu Leu Val His Ala Ala Thr Asn Leu Ala Asp Gly Val Pro Ser
65                  70                  75                  80

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

Ser Leu Gln Pro Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp
            100                 105                 110

Gly Thr Pro Arg 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> 41
<211> 234
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of antibody light chain

<400> 41

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

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

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

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

Lys Leu Leu Leu His Ala Ala Thr Asn Leu Ala Ser Gly Val Pro Ser
65 70 75 80

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

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

Gly Thr Pro Arg Thr Phe Gly Gln 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> 42
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of antibody variable region

<400> 42

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

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

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

Ala Glu Ile Arg Ser Lys Ala Asn Asn His Ala Thr Phe Tyr Ala Glu
50 55 60

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

Val Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Gly Val Tyr
85 90 95

Tyr Cys Thr Arg Val Lys Val Gly Phe Asp Asn Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 43
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of antibody variable region

<400> 43

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

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

Trp Met Asp Trp Val Arg Gln Ser Pro Glu Met Gly Leu Glu Trp Val
        35                  40                  45

Ala Glu Ile Arg Ser Lys Ala Asn Asn His Ala Thr Phe Tyr Ala Glu
    50                  55                  60

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

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

Tyr Cys Thr Arg Val Lys Val Gly Phe Asp Asn Trp Gly Gln Gly Thr
            100                 105                 110

Thr Leu Thr Val Ser Ser
        115
```

<210> 44
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of antibody variable region

<400> 44

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

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

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

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

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

Glu Asp Phe Gly Thr Tyr Tyr Cys Gln His Phe Trp Gly Thr Pro Arg
                85                  90                  95

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

<210> 45
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of antibody variable region

<400> 45

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

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

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

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

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp Gly Thr Pro Arg
                85                  90                  95

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

<210> 46
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of antibody variable region

<400> 46

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

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

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

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

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

eolf-seql

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln His Phe Trp Gly Thr Pro Arg
85 90 95

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

<210> 47
<211> 444
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of human CSF1

<400> 47

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

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

Glu Glu Val Ser Glu Tyr Cys Ser His Met Ile Gly Ser Gly His Leu
35 40 45

Gln Ser Leu Gln Arg Leu Ile Asp Ser Gln Met Glu Thr Ser Cys Gln
50 55 60

Ile Thr Phe Glu Phe Val Asp Gln Glu Gln Leu Lys Asp Pro Val Cys
65 70 75 80

Tyr Leu Lys Lys Ala Phe Leu Leu Val Gln Asp Ile Met Glu Asp Thr
85 90 95

Met Arg Phe Arg Asp Asn Thr Pro Asn Ala Ile Ala Ile Val Gln Leu
100 105 110

Gln Glu Leu Ser Leu Arg Leu Lys Ser Cys Phe Thr Lys Asp Tyr Glu
115 120 125

Glu His Asp Lys Ala Cys Val Arg Thr Phe Tyr Glu Thr Pro Leu Gln
130 135 140

Leu Leu Glu Lys Val Lys Asn Val Phe Asn Glu Thr Lys Asn Leu Leu
145 150 155 160

Asp Lys Asp Trp Asn Ile Phe Ser Lys Asn Cys Asn Asn Ser Phe Ala
165 170 175

Glu Cys Ser Ser Gln Asp Val Val Thr Lys Pro Asp Cys Asn Cys Leu
180 185 190

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

```
Gln Pro Leu Ala Pro Ser Met Ala Pro Val Ala Gly Leu Thr Trp Glu
    210                 215                 220

Asp Ser Glu Gly Thr Glu Gly Ser Ser Leu Leu Pro Gly Glu Gln Pro
225                 230                 235                 240

Leu His Thr Val Asp Pro Gly Ser Ala Lys Gln Ala Pro Pro Arg Ser
                245                 250                 255

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

Thr Ile Gly Gly Ser Pro Gln Pro Arg Pro Ser Val Gly Ala Phe Asn
        275                 280                 285

Pro Gly Met Glu Asp Ile Leu Asp Ser Ala Met Gly Thr Asn Trp Val
    290                 295                 300

Pro Glu Glu Ala Ser Gly Glu Ala Ser Glu Ile Pro Val Pro Gln Gly
305                 310                 315                 320

Thr Glu Leu Ser Pro Ser Arg Pro Gly Gly Gly Ser Met Gln Thr Glu
                325                 330                 335

Pro Ala Arg Pro Ser Asn Phe Leu Ser Ala Ser Ser Pro Leu Pro Ala
            340                 345                 350

Ser Ala Lys Gly Gln Gln Pro Ala Asp Val Thr Gly Thr Ala Leu Pro
        355                 360                 365

Arg Val Gly Pro Val Arg Pro Thr Gly Gln Asp Trp Asn His Thr Pro
    370                 375                 380

Gln Lys Thr Asp His Pro Ser Ala Leu Leu Arg Asp Pro Pro Glu Pro
385                 390                 395                 400

Gly Ser Pro Arg Ile Ser Ser Leu Arg Pro Gln Gly Leu Ser Asn Pro
                405                 410                 415

Ser Thr Leu Ser Ala Gln Pro Gln Leu Ser Arg Ser His Ser Ser Gly
            420                 425                 430

Ser Val Leu Pro Leu Gly Glu Leu Glu Gly Arg Arg
        435                 440
```