SEQUENCE LISTING

<110> SANOFI-AVENTIS

<120> HUMANIZED ANTI-CXCR5 ANTIBODIES, DERIVATIVES THEREOF
AND THEIR USE

<130> 190809-14330601

<140>
<141>

<150> 60/968,792
<151> 2007-08-29

<160> 57

<170> PatentIn Ver. 3.3

<210> 1
<211> 36
<212> PRT
<213> Homo sapiens

<400> 1
Met Asn Tyr Pro Thr Leu Glu Met Asp Leu Glu Asn Leu Glu Asp Leu
1 5 10 15

Phe Trp Glu Leu Asp Arg Leu Asp Asn Tyr Asn Thr Ser Leu Val Glu
20 25 30

Asn His Leu Cys
35

<210> 2
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<220>
<221> modified_base
<222> (18)
<223> a, c, g or t

<400> 2
cttccggaat tcsargtnma gctgsagsag tc 32

<210> 3
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<220>
<221> modified_base
<222> (18)
<223> a, c, g or t

<400> 3

cttccggaat tcsargtnma gctgsagsag tcwgg 35

<210> 4
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 4
ggaggatcca tagacagatg ggggtgtcgt tttggc 36

<210> 5
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 5
ggagctcgay attgtgmtsa cmcarwctmc a 31

<210> 6
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 6
tatagagctc aagcttggat ggtgggaaga tggatacagt tggtgc 46

<210> 7
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 7
ccaagctgtg tcctrtcc 18

<210> 8
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 8
cgacaagtcg actagccctt gaccaggcat cc 32

<210> 9
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 9
wtctctrgag tcagtggg 18

<210> 10
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 10
cgactagtcg actggtggga agatggatac ag 32

<210> 11
<211> 112
<212> PRT
<213> Mus sp.

<400> 11
Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Ala Val Thr Pro Arg
1 5 10 15

Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
20 25 30

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

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

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

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln His
85 90 95

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

<210> 12
<211> 111
<212> PRT
<213> Mus sp.

<400> 12
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln
1 5 10 15

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

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

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

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

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

Arg Ile Val Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala
            100                 105                 110


<210> 13
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polypeptide

<400> 13
Asp Ile Val Met Thr Gln Ser Ala Leu Ser Val Ala Val Thr Pro Gly
  1               5                  10                  15

Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
             20                  25                  30

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

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

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

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln His
                 85                  90                  95

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


<210> 14
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polypeptide

<400> 14
Asp Ile Val Met Thr Gln Ser Ala Leu Ser Val Ala Val Thr Pro Gly
  1               5                  10                  15

Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
             20                  25                  30

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

Pro Gln Leu Leu Ile Tyr Arg Leu Ser Asn Leu Ala Ser Gly Val Pro
     50                  55                  60
```

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

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln His
85 90 95

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

<210> 15
<211> 113
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 15
Asp Ile Val Met Thr Gln Ser Ala Leu Ser Val Ala Val Thr Pro Gly
1 5 10 15

Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
20 25 30

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

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

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

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

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

Lys

<210> 16
<211> 111
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 16
Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Glu
1 5 10 15

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

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

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

Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Val Phe Leu

65 70 75 80

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

Arg Ile Val Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
100 105 110

<210> 17
<211> 238
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 17
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

Val His Ser Asp Ile Val Met Thr Gln Ser Ala Leu Ser Val Ala Val
20 25 30

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

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

Gly Gln Ser Pro Gln Leu Leu Ile Tyr Arg Met Ser Asn Leu Ala Ser
65 70 75 80

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

Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys
100 105 110

Met Gln His Leu Glu Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125

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

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

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

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

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

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

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

<210> 18
<211> 731
<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 18
gctagcacca tgggctggag ctgcatcatc ctgttcctgg tggccaccgc caccggcgtg 60
cacagcgaca tcgtgatgac ccagagcgcc ctcagcgtgg ccgtgacccc cggcgagagc 120
gtgagcatca gctgccgcag cagcaagagc ctgctgcaca gcagcggcaa gacctacctg 180
tactggttcc tgcagcgccc cggccagagc ccccagctgc tgatctaccg catgagcaac 240
ctggccagcg gcgtgcccga ccgcttcagc ggcagcggca gcggcaccgc cttcaccctg 300
aagatcagcc gcgtggaggc cgaggacgtg ggcgtgtact actgcatgca gcacctggag 360
taccctaca ccttcggcgg cggcaccaag ctggagatca agcgtacggt ggccgctcct 420
tccgtgttca tcttccctcc ctccgacgag cagctgaagt ccggcaccgc ctccgtggtg 480
tgtctgctga acaacttcta ccctcgggag gccaaggtgc agtggaaggt ggacaacgcc 540
ctgcagtccg gcaactccca ggagtccgtc accgagcagg actccaagga cagcacctac 600
tccctgtcct ccaccctgac cctgtccaag gccgactacg agaagcacaa ggtgtacgcc 660
tgtgaggtga cccaccaggg cctgtccagc cctgtgacca agtccttcaa ccggggcgag 720
tgctgaagct t 731

<210> 19
<211> 238
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 19
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

Val His Ser Asp Ile Val Met Thr Gln Ser Ala Leu Ser Val Ala Val
20 25 30

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

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

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

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

Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys
100 105 110

Met Gln His Leu Glu Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125

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

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

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

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

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

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

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

<210> 20
<211> 731
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 20

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gctagcacca tgggctggag ctgcatcatc ctgttcctgg tggccaccgc caccggcgtg 60
cacagcgaca tcgtgatgac ccagagcgcc ctcagcgtgg ccgtgacccc cggcgagagc 120
gtgagcatca gctgccgcag cagcaagagc ctgctgcaca gcagcggcaa gacctacctg 180
tactggttcc tgcagcgccc cggccagagc ccccagctgc tgatctaccg cctgagcaac 240
ctggccagcg gcgtgcccga ccgcttcagc ggcagcggca gcggcaccgc cttcaccctg 300
aagatcagcc gcgtggaggc cgaggacgtg ggcgtgtact actgcatgca gcacctggag 360
tacccctaca ccttcggcgg cggcaccaag ctggagatca agcgtacggt ggccgctcct 420
tccgtgttca tcttccctcc ctccgacgag cagctgaagt ccggcaccgc ctccgtggtg 480
tgtctgctga acaacttcta ccctcgggag gccaaggtgc agtggaaggt ggacaacgcc 540
ctgcagtccg gcaactccca ggagtccgtc accgagcagg actccaagga cagcacctac 600
tccctgtcct ccaccctgac cctgtccaag gccgactacg agaagcacaa ggtgtacgcc 660
tgtgaggtga cccaccaggg cctgtccagc cctgtgacca agtccttcaa ccggggcgag 720
tgctgaagct t                                                      731
```

<210> 21
<211> 238
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 21

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

Val His Ser Asp Ile Val Met Thr Gln Ser Ala Leu Ser Val Ala Val
             20                  25                  30

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

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

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

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

Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys
            100                 105                 110

Met Gln His Leu Glu Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu
        115                 120                 125
```

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

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

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

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

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

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

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

<210> 22
<211> 731
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 22
gctagcacca tgggctggag ctgcatcatc ctgttcctgg tggccaccgc caccggcgtg 60
cacagcgaca tcgtgatgac ccagagcgcc ctcagcgtgg ccgtgacccc cggcgagagc 120
gtgagcatca gctgccgcag cagcaagagc ctgctgcaca gcagcggcaa gacctacctg 180
tactggttcc tgcagcgccc cggccagagc ccccagctgc tgatctaccg cctgagcagc 240
ctggccagcg gcgtgcccga ccgcttcagc ggcagcggca gcggcaccgc cttcaccctg 300
aagatcagcc gcgtggaggc cgaggacgtg ggcgtgtact actgcatgca gcacctggag 360
taccccctaca ccttcggcgg cggcaccaag ctggagatca agcgtacggt ggccgctcct 420
tccgtgttca tcttccctcc ctccgacgag cagctgaagt ccggcaccgc ctccgtggtg 480
tgtctgctga acaacttcta ccctcgggag gccaaggtgc agtggaaggt ggacaacgcc 540
ctgcagtccg gcaactccca ggagtccgtc accgagcagg actccaagga cagcacctac 600
tccctgtcct ccaccctgac cctgtccaag gccgactacg agaagcacaa ggtgtacgcc 660
tgtgaggtga cccaccaggg cctgtccagc cctgtgacca agtccttcaa ccggggcgag 720
tgctgaagct t   731

<210> 23
<211> 456
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 23
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Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
  1               5                  10                  15

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

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

Ile Asp Tyr Gly Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu
```

```
     50                  55                  60

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

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

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

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

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

Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys
145                 150                 155                 160

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

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

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

Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val
    210                 215                 220

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

Ala Pro Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
                245                 250                 255

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

Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr
        275                 280                 285

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
    290                 295                 300

Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
305                 310                 315                 320

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
                325                 330                 335

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

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

Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
    370                 375                 380

Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn
385                 390                 395                 400

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

Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val
420 425 430

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

Lys Ser Leu Ser Leu Ser Leu Gly
450 455

<210> 24
<211> 1385
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 24
gctagcacca tgggctggag ctgcatcatc ctgttcctgg tggccaccgc caccggcgtg 60
cacagccagg tgcagctgca ggagagcggc cccggcctgg tggccccag cgagagcctg 120
agcatcacct gcaccgtgag cggcttcagc ctgatcgact acggcgtgaa ctggatccgc 180
cagccccccg gcaagggcct ggagtggctg ggcgtgatct ggggcgacgg caccacctac 240
tacaacccca gcctgaagag ccgcctgagc atctccaagg acaacagcaa gagccaggtg 300
ttcctgaaga tgaacagcct gaccgccgcc gacaccgcca tgtactactg cgcccgcatc 360
gtgtactggg gccagggcac cctggtgacc gtgagcagcg ccagcaccaa gggcccttcc 420
gtgttccctc tggccccttg ctcccggtcc acctccgagt ccaccgccgc tctgggctgc 480
ctggtgaagg actacttccc tgagcctgtg accgtgtcct ggaactctgg cgccctgacc 540
tccggcgtgc acaccttccc tgccgtgctg cagtcctccg gcctgtactc cctgtcctcc 600
gtggtgaccg tgccttcctc ctccctgggc accaagacct acacctgtaa cgtggaccac 660
aagccttcca acaccaaggt ggacaagcgg gtggagtcca agtacggccc tccttgccct 720
tcctgccctg cccctgagtt cctgggcgga cctagcgtgt tcctgttccc tcctaagcct 780
aaggacaccc tgatgatctc ccggacccct gaggtgacct gtgtggtggt ggacgtgtcc 840
caggaggacc ctgaggtcca gttcaactgg tacgtggacg gcgtggaggt gcacaacgcc 900
aagaccaagc ctcgggagga gcagttcaat tccacctacc gggtggtgtc tgtgctgacc 960
gtgctgcacc aggactggct gaacggcaaa gaatacaagt gtaaggtctc caacaagggc 1020
ctgccctcct ccatcgagaa aaccatctcc aaggccaagg gccagcctag ggagcctcag 1080
gtgtacaccc tgcctcctag ccaggaagag atgaccaaga accaggtgtc cctgacctgt 1140
ctggtgaagg gcttctaccc ttccgacatc gccgtggagt gggagtccaa cggccagcct 1200
gagaacaact acaagaccac ccctcctgtg ctggactccg acggctcctt cttcctgtac 1260
tccaggctga ccgtggacaa gtcccggtgg caggagggca acgtctttc ctgctccgtg 1320
atgcacgagg ccctgcacaa ccactacacc cagaagtccc tgtccctgtc tctgggctga 1380
agctt 1385

<210> 25
<211> 22
<212> PRT
<213> Homo sapiens

<400> 25
Lys Pro Gly Gln Pro Pro Arg Leu Leu Ile Tyr Asp Ala Ser Asn Arg
1 5 10 15

Ala Thr Gly Ile Pro Ala
20

<210> 26
<211> 12
<212> PRT
<213> Mus musculus

<400> 26
Thr Asp Asp Thr Ala Met Tyr Tyr Cys Ala Arg Ile
1 5 10

<210> 27
<211> 12
<212> PRT
<213> Homo sapiens

<400> 27
Ser Glu Asp Ser Ala Leu Tyr Tyr Cys Ala Arg Asp
1 5 10

<210> 28
<211> 112
<212> PRT
<213> Mus musculus

<400> 28
Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Ala Val Thr Pro Arg
1 5 10 15

Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
20 25 30

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

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

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

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln His
85 90 95

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

<210> 29
<211> 111
<212> PRT
<213> Mus musculus

<400> 29
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln
1 5 10 15

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

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

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

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

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

Arg Ile Val Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala
100 105 110

<210> 30

<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 30
Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Ala Val Thr Pro Gly
1 5 10 15

Ala Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
20 25 30

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

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

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

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln His
85 90 95

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

<210> 31
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 31
Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Ala Val Thr Pro Gly
1 5 10 15

Ala Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
20 25 30

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

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

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

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln His
85 90 95

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

<210> 32
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 32
Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Ala Val Thr Pro Gly
1 5 10 15

Ala Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
20 25 30

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

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

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

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln His
85 90 95

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

<210> 33
<211> 111
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 33
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Glu
1 5 10 15

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

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

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

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

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

Arg Ile Val Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala
100 105 110

<210> 34
<211> 111
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 34
Glu Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Gly Gly
1 5 10 15

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

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

Gly Val Ile Trp Gly Asp Gly Thr Thr Tyr Tyr Asn Ala Pro Leu Lys
50 55 60

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

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

Arg Ile Val Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
100 105 110

<210> 35
<211> 238
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 35
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

Val His Ser Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Ala Val
20 25 30

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

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

Gly Gln Ser Pro Gln Leu Leu Ile Tyr Arg Met Ser Asn Leu Ala Ser
65 70 75 80

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

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

Met Gln His Leu Glu Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125

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

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

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

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

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

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

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

<210> 36
<211> 731
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 36
gctagcacca tgggctggag ctgcatcatc ctgttcctgg tggccaccgc caccggcgtg 60
cacagcgaca tcgtgatgac ccaggccgcc cccagcgtgg ccgtgacccc ccgcgagagc 120
gtgagcatca gctgccgcag cagcaagagc ctgctgcaca gcagcggcaa gacctacctg 180
tactggttcc tgcagcgccc cggccagagc ccccagctgc tgatctaccg catgagcaac 240
ctggccagcg gcgtgcccga ccgcttcagc ggcagcggca gcggcaccgc cttcaccctg 300
cgcatcagcc gcgtggaggc cgaggacgtg ggcgtgtact actgcatgca gcacctggag 360
taccctaca ccttcggcgg cggcaccaag ctggagatca agcgtacggt ggccgctcct 420
tccgtgttca tcttccctcc ctccgacgag cagctgaagt ccggcaccgc ctccgtggtg 480
tgtctgctga acaacttcta ccctcgggag gccaaggtgc agtggaaggt ggacaacgcc 540
ctgcagtccg gcaactccca ggagtccgtc accgagcagg actccaagga cagcacctac 600
tccctgtcct ccaccctgac cctgtccaag gccgactacg agaagcacaa ggtgtacgcc 660
tgtgaggtga cccaccaggg cctgtccagc cctgtgacca agtccttcaa ccggggcgag 720
tgctgaagct t   731

<210> 37
<211> 456
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 37
```
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
  1               5                  10                  15

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

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

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

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

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

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

Tyr Cys Ala Arg Ile Val Tyr Trp Gly Gln Gly Thr Leu Val Thr Val
```

```
        115                 120                 125

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

Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys
145                 150                 155                 160

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

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

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

Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val
    210                 215                 220

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

Ala Pro Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
                245                 250                 255

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

Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr
        275                 280                 285

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
    290                 295                 300

Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
305                 310                 315                 320

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
                325                 330                 335

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

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

Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
    370                 375                 380

Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn
385                 390                 395                 400

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

Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val
            420                 425                 430

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

Lys Ser Leu Ser Leu Ser Leu Gly
    450                 455
```

<210> 38
<211> 1385

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polynucleotide

<400> 38
gctagcacca tgggctggag ctgcatcatc ctgttcctgg tggccaccgc caccggcgtg 60
cacagccagg tgcagctgaa ggagagcggc cccggcctgg tggccccag ccagagcctg 120
agcatcacct gcaccgtgag cggcttcagc ctgatcgact acggcgtgaa ctggatccgc 180
cagccccccg gcaagggcct ggagtggctg ggcgtgatct ggggcgacgg caccacctac 240
tacaacagcg ccctgaagag ccgcctgagc atccgcaagg acaacagcca gagccaggtg 300
ttcctgaaga tgaacagcct gcagaccgac gacaccgcca tgtactactg cgcccgcatc 360
gtgtactggg gccagggcac cctggtgacc gtgagcgccg ccagcaccaa gggcccttcc 420
gtgttccctc tggcccctg ctcccggtcc acctccgagt ccaccgccgc tctgggctgc 480
ctggtgaagg actacttccc tgagcctgtg accgtgtcct ggaactctgg cgccctgacc 540
tccggcgtgc acaccttccc tgccgtgctg cagtcctccg gcctgtactc cctgtcctcc 600
gtggtgaccg tgccttcctc ctccctgggc accaagacct acacctgtaa cgtggaccac 660
aagccttcca acaccaaggt ggacaagcgg gtggagtcca agtacggccc tccttgccct 720
tcctgccctg cccctgagtt cctgggcgga cctagcgtgt tcctgttccc tcctaagcct 780
aaggacaccc tgatgatctc ccggacccct gaggtgacct gtgtggtggt ggacgtgtcc 840
caggaggacc ctgaggtcca gttcaactgg tacgtggacg gcgtggaggt gcacaacgcc 900
aagaccaagc ctcgggagga gcagttcaat tccacctacc gggtggtgtc tgtgctgacc 960
gtgctgcacc aggactggct gaacggcaaa gaatacaagt gtaaggtctc caacaagggc 1020
ctgccctcct ccatcgagaa aaccatctcc aaggccaagg gccagcctag ggagcctcag 1080
gtgtacaccc tgcctcctag ccaggaagag atgaccaaga accaggtgtc cctgacctgt 1140
ctggtgaagg gcttctaccc ttccgacatc gccgtggagt gggagtccaa cggccagcct 1200
gagaacaact acaagaccac ccctcctgtg ctggactccg acggctcctt cttcctgtac 1260
tccaggctga ccgtggacaa gtcccggtgg caggagggca acgtcttttc ctgctccgtg 1320
atgcacgagg ccctgcacaa ccactacacc cagaagtccc tgtccctgtc tctgggctga 1380
agctt 1385

<210> 39
<211> 238
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 39
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

Val His Ser Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Ala Val
20 25 30

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

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

Gly Gln Ser Pro Gln Leu Leu Ile Tyr Arg Met Ser Asn Leu Ala Ser
65 70 75 80

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

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

Met Gln His Leu Glu Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125

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

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

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

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

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

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

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

<210> 40
<211> 731
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 40

```
gctagcacca tgggctggag ctgcatcatc ctgttcctgg tggccaccgc caccggcgtg 60
cacagcgaca tcgtgatgac ccaggccgcc cccagcgtgg ccgtgacccc cggcgccagc 120
gtgagcatca gctgccgcag cagcaagagc ctgctgcaca gcagcggcaa gacctacctg 180
tactggttcc tgcagcgccc cggccagagc ccccagctgc tgatctaccg catgagcaac 240
ctggccagcg gcgtgcccga ccgcttcagc ggcagcggca gcggcaccgc cttcaccctg 300
cgcatcagcc gcgtggaggc cgaggacgtg ggcgtgtact actgcatgca gcacctggag 360
tacccctaca ccttcggcgg cggcaccaag ctggagatca agcgtacggt ggccgctcct 420
tccgtgttca tcttccctcc ctccgacgag cagctgaagt ccggcaccgc ctccgtggtg 480
tgtctgctga acaacttcta ccctcgggag gccaaggtgc agtggaaggt ggacaacgcc 540
ctgcagtccg gcaactccca ggagtccgtc accgagcagg actccaagga cagcacctac 600
tccctgtcct ccaccctgac cctgtccaag gccgactacg agaagcacaa ggtgtacgcc 660
tgtgaggtga cccaccaggg cctgtccagc cctgtgacca agtccttcaa ccggggcgag 720
tgctgaagct t                                                      731
```

<210> 41
<211> 238
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 41

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

Val His Ser Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Ala Val
             20                  25                  30

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

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

```
Gly Gln Ser Pro Gln Leu Leu Ile Tyr Arg Leu Ser Asn Leu Ala Ser
 65                  70                  75                  80

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

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

Met Gln His Leu Glu Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu
        115                 120                 125

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

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

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

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

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

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

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


<210> 42
<211> 731
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polynucleotide

<400> 42
gctagcacca tgggctggag ctgcatcatc ctgttcctgg tggccaccgc caccggcgtg 60
cacagcgaca tcgtgatgac ccaggccgcc cccagcgtgg ccgtgacccc cggcgccagc 120
gtgagcatca gctgccgcag cagcaagagc ctgctgcaca gcagcggcaa gacctacctg 180
tactggttcc tgcagcgccc cggccagagc ccccagctgc tgatctaccg cctgagcaac 240
ctggccagcg gcgtgcccga ccgcttcagc ggcagcggca gcggcaccgc cttcaccctg 300
cgcatcagcc gcgtggaggc cgaggacgtg ggcgtgtact actgcatgca gcacctggag 360
taccctaca ccttcggcgg cggcaccaag ctggagatca agcgtacggt ggccgctcct 420
tccgtgttca tcttccctcc ctccgacgag cagctgaagt ccggcaccgc ctccgtggtg 480
tgtctgctga acaacttcta ccctcgggag gccaaggtgc agtggaaggt ggacaacgcc 540
ctgcagtccg gcaactccca ggagtccgtc accgagcagg actccaagga cagcacctac 600
tccctgtcct ccaccctgac cctgtccaag gccgactacg agaagcacaa ggtgtacgcc 660
tgtgaggtga cccaccaggg cctgtccagc cctgtgacca agtccttcaa ccggggcgag 720
tgctgaagct t                                                      731


<210> 43
<211> 238
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      polypeptide
```

<400> 43
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

Val His Ser Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Ala Val
20 25 30

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

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

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

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

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

Met Gln His Leu Glu Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125

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

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

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

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

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

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

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

<210> 44
<211> 731
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 44
gctagcacca tgggctggag ctgcatcatc ctgttcctgg tggccaccgc caccggcgtg 60
cacagcgaca tcgtgatgac ccaggccgcc cccagcgtgg ccgtgacccc cggcgccagc 120
gtgagcatca gctgccgcag cagcaagagc ctgctgcaca gcagcggcaa gacctacctg 180
tactggttcc tgcagcgccc cggccagagc ccccagctgc tgatctaccg cctgagcagc 240
ctggccagcg gcgtgcccga ccgcttcagc ggcagcggca gcggcaccgc cttcaccctg 300
cgcatcagcc gcgtggaggc cgaggacgtg ggcgtgtact actgcatgca gcacctggag 360
tacccctaca ccttcggcgg cggcaccaag ctggagatca agcgtacggt ggccgctcct 420
tccgtgttca tcttccctcc ctccgacgag cagctgaagt ccggcaccgc ctccgtggtg 480
tgtctgctga acaacttcta ccctcgggag gccaaggtgc agtggaaggt ggacaacgcc 540
ctgcagtccg gcaactccca ggagtccgtc accgagcagg actccaagga cagcacctac 600

tccctgtcct ccaccctgac cctgtccaag gccgactacg agaagcacaa ggtgtacgcc 660
tgtgaggtga cccaccaggg cctgtccagc cctgtgacca agtccttcaa ccggggcgag 720
tgctgaagct t 731

<210> 45
<211> 456
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 45
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

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

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

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

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

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

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

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

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

Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys
145 150 155 160

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

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

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

Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val
210 215 220

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

Ala Pro Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
245 250 255

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

Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr
275 280 285

```
Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
    290                 295                 300

Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
305                 310                 315                 320

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
                325                 330                 335

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

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

Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
    370                 375                 380

Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn
385                 390                 395                 400

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

Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val
            420                 425                 430

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

Lys Ser Leu Ser Leu Ser Leu Gly
    450                 455
```

<210> 46
<211> 1385
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 46

```
gctagcacca tgggctggag ctgcatcatc ctgttcctgg tggccaccgc caccggcgtg 60
cacagccagg tgcagctgaa ggagagcggc cccggcctgg tggccccag cgagagcctg 120
agcatcacct gcaccgtgag cggcttcagc ctgatcgact acggcgtgaa ctggatccgc 180
cagccccccg gcaagggcct ggagtggctg ggcgtgatct ggggcgacgg caccacctac 240
tacaacccca gcctgaagag ccgcctgagc atcagcaagg acaacagcaa gagccaggtg 300
ttcctgaagg tgaccagcct gaccaccgac gacaccgcca tgtactactg cgcccgcatc 360
gtgtactggg gccagggcac cctggtgacc gtgagcgccg ccagcaccaa gggcccttcc 420
gtgttccctc tggcccctg ctcccggtcc acctccgagt ccaccgccgc tctgggctgc 480
ctggtgaagg actacttccc tgagcctgtg accgtgtcct ggaactctgg cgccctgacc 540
tccggcgtgc acaccttccc tgccgtgctg cagtcctccg gcctgtactc cctgtcctcc 600
gtggtgaccg tgccttcctc ctccctgggc accaagacct acacctgtaa cgtggaccac 660
aagccttcca acaccaaggt ggacaagcgg gtggagtcca agtacggccc tccttgccct 720
tcctgccctg cccctgagtt cctgggcgga cctagcgtgt tcctgttccc tcctaagcct 780
aaggacaccc tgatgatctc ccggacccct gaggtgacct gtgtggtggt ggacgtgtcc 840
caggaggacc ctgaggtcca gttcaactgg tacgtggacg gcgtggaggt gcacaacgcc 900
aagaccaagc ctcgggagga gcagttcaat tccacctacc gggtggtgtc tgtgctgacc 960
gtgctgcacc aggactggct gaacggcaaa gaatacaagt gtaaggtctc caacaagggc 1020
ctgccctcct ccatcgagaa aaccatctcc aaggccaagg gccagcctag ggagcctcag 1080
gtgtacaccc tgcctcctag ccaggaagag atgaccaaga accaggtgtc cctgacctgt 1140
ctggtgaagg gcttctaccc ttccgacatc gccgtggagt gggagtccaa cggccagcct 1200
gagaacaact acaagaccac ccctcctgtg ctggactccg acggctcctt cttcctgtac 1260
tccaggctga ccgtggacaa gtcccggtgg caggagggca acgtctttc ctgctccgtg 1320
atgcacgagg ccctgcacaa ccactacacc cagaagtccc tgtccctgtc tctgggctga 1380
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agctt 1385

<210> 47
<211> 456
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 47
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

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

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

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

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

Pro Leu Lys Gly Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln
85 90 95

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

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

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

Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys
145 150 155 160

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

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

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

Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val
210 215 220

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

Ala Pro Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
245 250 255

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

Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr
275 280 285

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu

290 295 300

Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
305 310 315 320

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
325 330 335

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

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

Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
370 375 380

Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn
385 390 395 400

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

Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val
420 425 430

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

Lys Ser Leu Ser Leu Ser Leu Gly
450 455

<210> 48
<211> 1385
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 48
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cacagcgagg tgcagctgaa ggagagcggc cccggcctgg tggcccccgg cggcagcctg 120
agcatcacct gcaccgtgag cggcttcagc ctgatcgact acggcgtgaa ctggatccgc 180
cagccccccg gcaagggcct ggagtggctg ggcgtgatct ggggcgacgg caccacctac 240
tacaacgccc ccctgaaggg ccgcctgagc atcagcaagg acaacagcaa gagccaggtg 300
ttcctgcaga tgaacagcct gaagaccgac gacaccgcca tgtactactg cgcccgcatc 360
gtgtactggg gccagggcac cctggtgacc gtgagcagcg ccagcaccaa gggcccttcc 420
gtgttccctc tggcccctg ctcccggtcc acctccgagt ccaccgccgc tctgggctgc 480
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tccggcgtgc acaccttccc tgccgtgctg cagtcctccg gcctgtactc cctgtcctcc 600
gtggtgaccg tgccttcctc ctccctgggc accaagacct acacctgtaa cgtggaccac 660
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aagaccaagc ctcgggagga gcagttcaat tccacctacc gggtggtgtc tgtgctgacc 960
gtgctgcacc aggactggct gaacggcaaa gaatacaagt gtaaggtctc caacaagggc 1020
ctgccctcct ccatcgagaa aaccatctcc aaggccaagg gccagcctag ggagcctcag 1080
gtgtacaccc tgcctcctag ccaggaagag atgaccaaga accaggtgtc cctgacctgt 1140
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gagaacaact acaagaccac ccctcctgtg ctggactccg acggctcctt cttcctgtac 1260
tccaggctga ccgtggacaa gtcccggtgg caggagggca acgtctttc ctgctccgtg 1320
atgcacgagg ccctgcacaa ccactacacc cagaagtccc tgtccctgtc tctgggctga 1380
agctt 1385

<210> 49
<211> 5
<212> PRT
<213> Homo sapiens

<400> 49
Glu Leu Leu Gly Gly
1 5

<210> 50
<211> 5
<212> PRT
<213> Homo sapiens

<400> 50
Met Ile Ser Arg Thr
1 5

<210> 51
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
6x His tag

<400> 51
His His His His His His
1 5

<210> 52
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 52
Pro Gly Lys Ala Pro Gln Leu Leu Ile Tyr Arg Met Ser Asn Leu
1 5 10 15

<210> 53
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 53
Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr Ala Ala Ser Ser Leu
1 5 10 15

<210> 54
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 54
Ser Leu Ile Asp Tyr Gly Val Asn Trp Ile Arg Gln Pro Pro Gly
1 5 10 15

<210> 55
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 55
Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Ala Val Thr Pro Gly
1 5 10 15

Gln Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
20 25 30

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

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

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

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

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

<210> 56
<211> 113
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 56
Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln
1 5 10 15

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

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

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

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

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

```
Arg Ile Val Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala Ala
            100                 105                 110

Lys
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<210> 57
<211> 113
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 57

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

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

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

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

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

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

Arg Ile Val Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala Ala
            100                 105                 110

Lys
```