SEQUENCE LISTING

<110> AMGEN INC.
HSU, Hailing
FOLTZ, Ian
ARORA, Taruna
JACOBSEN, Frederick W.

<120> ALPHA4BETA7 HETERODIMER-SPECIFIC ANTIBODIES

<130> A-1459-WO-PCT

<140> PCT/US2010/027422
<141> 2010-03-16

<150> 61/306,829
<151> 2010-02-25

<150> 61/162,154
<151> 2009-03-20

<160> 72

<170> PatentIn version 3.5

<210> 1
<211> 107
<212> PRT
<213> Homo sapiens

<400> 1

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

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

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

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

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

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

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

<210> 2
<211> 108
<212> PRT
<213> Homo sapiens

<400> 2

Glu Ile Val Met Thr Gln Ser Pro Ala Thr Leu Ser Val Ser Pro Gly

1 5 10 15

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

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

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

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

Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Asp Tyr Trp Pro Pro
85 90 95

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

<210> 3
<211> 107
<212> PRT
<213> Homo sapiens

<400> 3

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

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

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

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

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

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

Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
100 105

<210> 4
<211> 107
<212> PRT
<213> Homo sapiens

<400> 4

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

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

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

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

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

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

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

<210> 5
<211> 111
<212> PRT
<213> Homo sapiens

<400> 5

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

Lys Val Thr Ile Ser Cys Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn
            20                  25                  30

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

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

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

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

Ser Ala Gly Arg Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
            100                 105                 110
```

<210> 6
<211> 107
<212> PRT
<213> Homo sapiens

<400> 6

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

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

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

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

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

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

Thr Phe Gly Gln Gly Thr Asn Val Glu Ile Lys
            100                 105
```

<210> 7
<211> 107
<212> PRT
<213> Homo sapiens

<400> 7

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

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

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

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

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

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

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

<210> 8
<211> 106

<212> PRT
<213> Homo sapiens

<400> 8

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

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

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

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

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

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

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

<210> 9
<211> 107
<212> PRT
<213> Homo sapiens

<400> 9

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

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

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

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

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

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

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

<210> 10
<211> 108
<212> PRT
<213> Homo sapiens

<400> 10

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

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser
20 25 30

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

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

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

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

Pro Thr Phe Gly Gly Gly Thr Lys Val Ala Ile Lys
100 105

<210> 11
<211> 108
<212> PRT
<213> Homo sapiens

<400> 11

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

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

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

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

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

Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Asp Asp Trp Pro Pro
85 90 95

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

<210> 12
<211> 110
<212> PRT
<213> Homo sapiens

<400> 12

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

Arg Val Thr Ile Ser Cys Ser Gly Ser Asn Ser Asn Ile Gly Asn Asn
20 25 30

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

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

Gly Ser Arg Ser Gly Thr Ser Ala Ser Leu Ala Ile Ser Gly Leu Gln
65 70 75 80

Ser Glu Asp Glu Thr Asp Tyr Tyr Cys Thr Ala Trp Asp Asp Ser Leu
85 90 95

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

<210> 13
<211> 106
<212> PRT
<213> Homo sapiens

<400> 13

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

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Asp Asn
20 25 30

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

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

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

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

Phe Gly Gly Gly Thr Arg Val Glu Ile Lys
100 105

<210> 14
<211> 107
<212> PRT
<213> Homo sapiens

<400> 14

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

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

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

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

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

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

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

<210> 15
<211> 107
<212> PRT
<213> Homo sapiens

<400> 15

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 Ser Cys Gln Ala Ser Gln Asp Ile Asn Thr Tyr
20 25 30

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

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

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

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

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

<210> 16
<211> 107
<212> PRT
<213> Homo sapiens

<400> 16

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

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

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

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

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

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

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

<210> 17
<211> 106
<212> PRT
<213> Homo sapiens

<400> 17

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

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

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

Phe Gly Ala Ser Thr Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly
50 55 60

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

```
Glu Asp Phe Ala Val Tyr Cys Cys Gln Gln Tyr Asp Asp Trp Pro Thr
                85                  90                  95

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


<210>  18
<211>  108
<212>  PRT
<213>  Homo sapiens

<400>  18

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

Glu Arg Ala Thr Val Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Asp
            20                  25                  30

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

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

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

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

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


<210>  19
<211>  108
<212>  PRT
<213>  Homo sapiens

<400>  19

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

Glu Gly Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Asp
            20                  25                  30

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

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

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

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

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

<210> 20
<211> 108
<212> PRT
<213> Homo sapiens

<400> 20

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

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

Tyr Leu Ala Trp Tyr Gln Gln Ser Pro Ser Gln Ser Pro Arg Leu Leu
35 40 45

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

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

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

Pro Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
100 105

<210> 21
<211> 108
<212> PRT
<213> Homo sapiens

<400> 21

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

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

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

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

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

Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Asp Asp Trp Pro Pro
85 90 95

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

<210> 22
<211> 107
<212> PRT
<213> Homo sapiens

<400> 22

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

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

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

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

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

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

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

<210> 23
<211> 106
<212> PRT
<213> Homo sapiens

<400> 23

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

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

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

Gln Asp Ser Lys Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser
50 55 60

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

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

Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
            100                 105
```

<210> 24
<211> 107
<212> PRT
<213> Homo sapiens

<400> 24

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

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

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

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

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

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

Thr Phe Gly Arg Gly Thr Lys Val Glu Ile Lys
            100                 105
```

<210> 25
<211> 110
<212> PRT
<213> Homo sapiens

<400> 25

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

Arg Val Thr Ile Ser Cys Ser Gly Ser Asn Ser Asn Ile Gly Asn Asn
            20                  25                  30

Pro Val Asn Trp Tyr Gln Leu Phe Pro Gly Arg Ala Pro Lys Leu Leu
        35                  40                  45
```

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

Gly Ser Arg Ser Gly Thr Ser Ala Ser Leu Ala Ile Ser Gly Leu Gln
65                  70                  75                  80

Ser Ala Asp Glu Thr Asp Tyr Tyr Cys Thr Ala Trp Asp Asp Ser Leu
                85                  90                  95

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

<210> 26
<211> 110
<212> PRT
<213> Homo sapiens

<400> 26

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

Arg Val Thr Ile Ser Cys Ser Gly Ser Asn Ser Asn Ile Gly Asn Asn
            20                  25                  30

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

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

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

Ser Ala Asp Glu Thr Asp Tyr Tyr Cys Thr Ala Trp Asp Asp Ser Leu
                85                  90                  95

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

<210> 27
<211> 107
<212> PRT
<213> Homo sapiens

<400> 27

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

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

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

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

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

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

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

<210> 28
<211> 107
<212> PRT
<213> Homo sapiens

<400> 28

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

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

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

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

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

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

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

<210> 29
<211> 118
<212> PRT
<213> Homo sapiens

<400> 29

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

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

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

Gly Gly Phe Asp Pro Ala Glu Gly Lys Ile Ile Ser Ala Gln Lys Phe
50 55 60

Gln Asp Arg Val Thr Met Thr Asp Asp Thr Ser Thr Asp Thr Ala Tyr
65 70 75 80

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

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

Leu Val Thr Val Ser Ser
115

<210> 30
<211> 120
<212> PRT
<213> Homo sapiens

<400> 30

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

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

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

Ser Tyr Ile Ser Ser Ser Gly Ser Ala Ile Tyr Tyr Ala Asp Ser Val
50 55 60

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

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

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

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 31
<211> 118
<212> PRT
<213> Homo sapiens

<400> 31

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

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

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

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

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

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

Ala Arg Glu His Trp Asn Tyr Ala Phe Asp Ile Trp Gly Gln Gly Thr
100 105 110

Met Val Thr Val Ser Ser
115

<210> 32
<211> 118
<212> PRT
<213> Homo sapiens

<400> 32

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

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

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

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

Gln Gly Arg Val Thr Met Thr Glu Asp Thr Ser Thr Asp Thr Ala Tyr
65 70 75 80

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

Thr Thr Glu Ser Ser Ser Ala Trp Phe Asp Pro Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 33
<211> 121
<212> PRT
<213> Homo sapiens

<400> 33

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

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

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

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

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

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

Ala Arg Asp Arg Ser Ser Ala Trp Asp Glu Ala Phe Asp Ile Trp Gly
100 105 110

Gln Gly Thr Met Val Thr Val Ser Ser
115 120

<210> 34
<211> 118
<212> PRT
<213> Homo sapiens

<400> 34

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

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

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

Gly Gly Phe Asp Pro Ala Glu Gly Lys Ile Ile Ser Ala Gln Lys Phe
50 55 60

Gln Asp Arg Val Thr Met Thr Asp Asp Thr Ser Thr Asp Thr Ala Tyr

65 70 75 80

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

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

Leu Val Thr Val Ser Ser
115

<210> 35
<211> 120
<212> PRT
<213> Homo sapiens

<400> 35

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

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

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

Ser Tyr Ile Ser Ser Thr Gly Ser Ala Met Tyr Asp Ala Asp Ser Val
50 55 60

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

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

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

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 36
<211> 120
<212> PRT
<213> Homo sapiens

<400> 36

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

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

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

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

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

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

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

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 37
<211> 118
<212> PRT
<213> Homo sapiens

<400> 37

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

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

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

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

Gln Gly Arg Val Thr Met Thr Glu Asp Thr Ser Thr Asp Thr Ala Tyr
65 70 75 80

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

Ala Thr Gly Ser Ser Ser Ser Trp Phe Asp Pro Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 38
<211> 120
<212> PRT
<213> Homo sapiens

<400> 38

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

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

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

Ser Tyr Ile Ser Ser Ser Gly Ser Ala Ile Tyr Tyr Ala Asp Ser Val
50 55 60

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

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

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

Gly Ala Leu Val Thr Val Ser Ser
115 120

<210> 39
<211> 120
<212> PRT
<213> Homo sapiens

<400> 39

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

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

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

Ser Tyr Ile Ser Ser Ser Gly Ser Ala Met Tyr Ser Ala Asp Ser Val
50 55 60

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

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

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

```
Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>  40
<211>  120
<212>  PRT
<213>  Homo sapiens

<400>  40

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


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


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


Ser Tyr Ile Ser Ser Ile Gly Ser Ala Ile His Tyr Ala Asp Ser Val
    50                  55                  60


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


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


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


Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>  41
<211>  125
<212>  PRT
<213>  Homo sapiens

<400>  41

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


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


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


Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val
    50                  55                  60
```

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

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

Ala Arg Glu Gly Gly Tyr Asp Trp Asn Tyr Ala Asp Tyr Tyr Gly Met
100 105 110

Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120 125

<210> 42
<211> 120
<212> PRT
<213> Homo sapiens

<400> 42

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

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

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

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

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

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

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

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 43
<211> 123
<212> PRT
<213> Homo sapiens

<400> 43

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Gly Tyr
20 25 30

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

Gly Ile Ile Tyr Pro Tyr Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
    50                  55                  60

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

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

Ala Ser His Arg Leu Trp Leu Gly Glu Phe Pro Gly Pro Leu Asn Ile
            100                 105                 110

Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser
        115                 120
```

<210> 44
<211> 120
<212> PRT
<213> Homo sapiens

<400> 44

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

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

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

Ser Tyr Ile Ser Ser Ser Gly Ser Thr Met Tyr Tyr Ala Asp Ser Val
    50                  55                  60

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

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

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

Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 45
<211> 123
<212> PRT

<213> Homo sapiens

<400> 45

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ile Phe Thr Ser Tyr
            20                  25                  30

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

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

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

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

Ala Thr His Arg Leu Trp Leu Gly Thr Leu Pro Gly Gly Phe Tyr Ile
            100                 105                 110

Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser
        115                 120
```

<210> 46
<211> 120
<212> PRT
<213> Homo sapiens

<400> 46

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

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

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

Ser Tyr Ile Ser Ser Ser Gly Ser Ala Ile Tyr Tyr Ala Asp Ser Val
    50                  55                  60

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

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

Ala Arg Asp Phe Ser Ser Gly Tyr Tyr Tyr Phe Asp Tyr Trp Gly His
```

100 105 110

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 47
<211> 120
<212> PRT
<213> Homo sapiens

<400> 47

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

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

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

Ser Tyr Ile Ser Ser Ser Gly Ser Thr Ser Tyr Cys Ala Asp Ser Val
50 55 60

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

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

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

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 48
<211> 124
<212> PRT
<213> Homo sapiens

<400> 48

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

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

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

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

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

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

Ala Lys Ala Pro Tyr Ser Ser Ser Trp Ala Leu Gly Leu Gly Met Asp
100 105 110

Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120

<210> 49
<211> 120
<212> PRT
<213> Homo sapiens

<400> 49

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

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

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

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

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

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

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

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 50
<211> 120
<212> PRT
<213> Homo sapiens

<400> 50

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

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asn Asp Tyr

20 25 30

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

Ser Tyr Ile Ser Ser Ser Gly Ser Ala Ile His Tyr Ala Asp Ser Val
50 55 60

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

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

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

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 51
<211> 120
<212> PRT
<213> Homo sapiens

<400> 51

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

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

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

Ser Tyr Ile Ser Ser Ser Gly Ser Ala Ile His Tyr Ala Asp Ser Val
50 55 60

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

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

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

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 52
<211> 120

<212> PRT
<213> Homo sapiens

<400> 52

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

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

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

Ser Tyr Ile Ser Asn Ser Gly Ser Ala Met Tyr Tyr Ala Asp Ser Val
50 55 60

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

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

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

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 53
<211> 118
<212> PRT
<213> Homo sapiens

<400> 53

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

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

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

Gly Gly Phe Asp Pro Ala Glu Gly Lys Ile Ile Ser Ala Gln Lys Phe
50 55 60

Gln Asp Arg Val Thr Met Thr Arg Asp Thr Ser Thr Ser Thr Val Tyr
65 70 75 80

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

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


Leu Val Thr Val Ser Ser
        115


<210>  54
<211>  125
<212>  PRT
<213>  Homo sapiens

<400>  54

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


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


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


Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val
    50                  55                  60


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


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


Ala Arg Glu Gly Gly Tyr Asp Trp Asn Tyr Ala Asp Tyr Tyr Gly Met
            100                 105                 110


Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
        115                 120                 125


<210>  55
<211>  109
<212>  PRT
<213>  Artificial

<220>
<223>  Light chain consensus


<220>
<221>  MISC_FEATURE
<222>  (2)..(2)
<223>  X can be Val, Leu or Ile

<220>
<221>  MISC_FEATURE
<222>  (3)..(3)
<223>  X can be Met or Val

<220>
<221>  MISC_FEATURE
```

<222> (4)..(4)
<223> X can be Met or Leu

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> X can be Met or Thr

<220>
<221> MISC_FEATURE
<222> (9)..(9)
<223> X can be Ala or Gly

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> X can be Leu or Val

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> X can be Phe or Ser

<220>
<221> MISC_FEATURE
<222> (18)..(18)
<223> X can be Gly, Arg or Thr

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> X can be Val or Leu

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> X can be Thr or Ser

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> X can be thr, Asn or Ser

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> X can be Thr, Asn or Ser

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> X can be Thr, Asp or Ser

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> X can be Asn, Asp or Ser

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> X can be Tyr or none

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> X can be Val or Ala

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> X can be Ser or Lys

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> X can be Ser or Gly

<220>
<221> MISC_FEATURE
<222> (44)..(44)
<223> X can be Ser, Pro or Ala

<220>
<221> MISC_FEATURE
<222> (50)..(50)
<223> X can be Phe or Tyr

<220>
<221> MISC_FEATURE
<222> (54)..(54)
<223> X can be Thr, Ala or Ser

<220>
<221> MISC_FEATURE
<222> (61)..(61)
<223> X can be Ala or Asp

<220>
<221> MISC_FEATURE
<222> (71)..(71)
<223> X can be Glu or Asp

<220>
<221> MISC_FEATURE
<222> (78)..(78)
<223> X can be Ser or Arg

<220>
<221> MISC_FEATURE
<222> (80)..(80)
<223> X can be Gln or Glu

<220>
<221> MISC_FEATURE
<222> (81)..(81)
<223> X can be Pro or Ser

<220>
<221> MISC_FEATURE
<222> (88)..(88)
<223> X can be Phe, Cys or Tyr

<220>
<221> MISC_FEATURE
<222> (93)..(93)
<223> X can be His, Asn or Asp

<220>
<221> MISC_FEATURE
<222> (94)..(94)
<223> X can be Asp, Asn, Tyr or Ser

<220>
<221> MISC_FEATURE
<222> (95)..(95)

<223> X can be Trp or Ser

<220>
<221> MISC_FEATURE
<222> (97)..(97)
<223> X can be Pro or none

<220>
<221> MISC_FEATURE
<222> (98)..(98)
<223> X can be Val, Leu or none

<220>
<221> MISC_FEATURE
<222> (99)..(99)
<223> X can be Thr or Ser

<220>
<221> MISC_FEATURE
<222> (102)..(102)
<223> X can be Gln or Glu

<220>
<221> MISC_FEATURE
<222> (105)..(105)
<223> X can be Arg, Thr or Lys

<220>
<221> MISC_FEATURE
<222> (106)..(106)
<223> X can be Leu or Val

<220>
<221> MISC_FEATURE
<222> (107)..(107)
<223> X can be Glu or Ala

<400> 55

Glu Xaa Xaa Xaa Xaa Gln Ser Pro Xaa Thr Leu Ser Xaa Xaa Pro Gly
1 5 10 15

Glu Xaa Ala Thr Xaa Ser Cys Arg Ala Ser Gln Xaa Val Xaa Xaa Xaa
20 25 30

Xaa Leu Xaa Trp Tyr Gln Gln Xaa Pro Xaa Gln Xaa Pro Arg Leu Leu
35 40 45

Ile Xaa Gly Ala Ser Xaa Arg Ala Thr Gly Ile Pro Xaa Arg Phe Ser
50 55 60

Gly Ser Gly Ser Gly Thr Xaa Phe Thr Leu Thr Ile Ser Xaa Leu Xaa
65 70 75 80

Xaa Glu Asp Phe Ala Val Tyr Xaa Cys Gln Gln Tyr Xaa Xaa Xaa Pro
85 90 95

Xaa Xaa Xaa Phe Gly Xaa Gly Thr Xaa Xaa Xaa Ile Lys
100 105

<210> 56

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

<220>
<223> Light chain consensus

<220>
<221> MISC_FEATURE
<222> (11)..(11)
<223> X can be Val or Leu

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> X can be Ser or Phe

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> X can be Val or Ile

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> X can be Asp or Gly

<220>
<221> MISC_FEATURE
<222> (29)..(29)
<223> X can be Ile or Val

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> X can be Ser, Ile, Asn or Arg

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> X can be Ser or Asn

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> X can be Trp or Tyr

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> X can be Arg or Gln

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> X can be Lys, Met or Thr

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> X can be Ala or Val

<220>
<221> MISC_FEATURE
<222> (45)..(45)
<223> X can be Lys or Asn

<220>
<221> MISC_FEATURE
<222> (46)..(46)
<223> X can be Val or Leu

<220>
<221> MISC_FEATURE
<222> (49)..(49)
<223> X can be Tyr or Phe

<220>
<221> MISC_FEATURE
<222> (50)..(50)
<223> X can be Ser, Ala or Gly

<220>
<221> MISC_FEATURE
<222> (51)..(51)
<223> X can be Ala or Thr

<220>
<221> MISC_FEATURE
<222> (53)..(53)
<223> X can be Ser, Ile, Asn or Thr

<220>
<221> MISC_FEATURE
<222> (55)..(55)
<223> X can be Gln or Glu

<220>
<221> MISC_FEATURE
<222> (56)..(56)
<223> X can be Ser or Asn

<220>
<221> MISC_FEATURE
<222> (60)..(60)
<223> X can be Ser or Leu

<220>
<221> MISC_FEATURE
<222> (65)..(65)
<223> X can be Ser or Arg

<220>
<221> MISC_FEATURE
<222> (72)..(72)
<223> X can be Ala or Thr

<220>
<221> MISC_FEATURE
<222> (76)..(76)
<223> X can be Ser or Asn

<220>
<221> MISC_FEATURE
<222> (83)..(83)
<223> X can be Phe or Val

<220>
<221> MISC_FEATURE
<222> (85)..(85)
<223> X can be Thr or Asn

<220>
<221> MISC_FEATURE
<222> (87)..(87)

<223> X can be Tyr or Cys

<220>
<221> MISC_FEATURE
<222> (90)..(90)
<223> X can be Gln or Lys

<220>
<221> MISC_FEATURE
<222> (91)..(91)
<223> X can be Ala, Val or Tyr

<220>
<221> MISC_FEATURE
<222> (92)..(92)
<223> X can be Asp or Asn

<220>
<221> MISC_FEATURE
<222> (94)..(94)
<223> X can be Phe or Ala

<220>
<221> MISC_FEATURE
<222> (96)..(96)
<223> X can be Trp, Gly or Phe

<220>
<221> MISC_FEATURE
<222> (100)..(100)
<223> X can be Gln, Arg or Pro

<220>
<221> MISC_FEATURE
<222> (103)..(103)
<223> X can be Lys or Asn

<220>
<221> MISC_FEATURE
<222> (105)..(105)
<223> X can be Glu or Asp

<400> 56

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

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

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

Xaa Xaa Xaa Ser Xaa Leu Xaa Xaa Gly Val Pro Xaa Arg Phe Ser Gly
    50                  55                  60

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

Glu Asp Xaa Ala Xaa Tyr Xaa Cys Gln Xaa Xaa Xaa Ser Xaa Pro Xaa
                85                  90                  95
```

Thr Phe Gly Xaa Gly Thr Xaa Val Xaa Ile Lys
100 105

<210> 57
<211> 107
<212> PRT
<213> Artificial

<220>
<223> Light chain consensus

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> X can be Ile or Val

<220>
<221> MISC_FEATURE
<222> (22)..(22)
<223> X can be Ser or Thr

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> X can be Ser, Asn or Thr

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> X can be Asn, Thr or Asp

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> X can be Ala or Val

<220>
<221> MISC_FEATURE
<222> (51)..(51)
<223> X can be Ala or Thr

<220>
<221> MISC_FEATURE
<222> (56)..(56)
<223> X can be Thr or Ala

<220>
<221> MISC_FEATURE
<222> (76)..(76)
<223> X can be Asn or Ser

<220>
<221> MISC_FEATURE
<222> (77)..(77)
<223> X can be Gly or Ser

<220>
<221> MISC_FEATURE
<222> (87)..(87)
<223> X can be Phe or Tyr

<220>
<221> MISC_FEATURE
<222> (91)..(91)
<223> X can be Phe or Tyr

<220>
<221> MISC_FEATURE
<222> (93)..(93)
<223> X can be Asn or Ile

<220>
<221> MISC_FEATURE
<222> (96)..(96)
<223> X can be Cys, Ser, Ile or Tyr

<220>
<221> MISC_FEATURE
<222> (97)..(97)
<223> X can be Ser or Thr

<220>
<221> MISC_FEATURE
<222> (103)..(103)
<223> X can be Lys, Arg or Asp

<400> 57

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

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

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Xaa Pro Lys Leu Leu Ile
35 40 45

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

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

Glu Asp Ile Ala Thr Tyr Xaa Cys Gln Gln Xaa Asp Xaa Leu Pro Xaa
85 90 95

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

<210> 58
<211> 121
<212> PRT
<213> Artificial

<220>
<223> Heavy chain consensus

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> X can be Gly or Asp

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> X can be Lys or Glu

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> X can be Thr, Val or Ala

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> X can be Ser, Arg or Asn

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> X can be Tyr or Asn

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> X can be Ala or Thr

<220>
<221> MISC_FEATURE
<222> (48)..(48)
<223> X can be Val, Ile or Leu

<220>
<221> MISC_FEATURE
<222> (53)..(53)
<223> X can be Ser, Arg or Asn

<220>
<221> MISC_FEATURE
<222> (54)..(54)
<223> X can be Ser, Thr, Val or Ile

<220>
<221> MISC_FEATURE
<222> (57)..(57)
<223> X can be Ala, Thr or Val

<220>
<221> MISC_FEATURE
<222> (58)..(58)
<223> X can be thr, Val, Met, Ile, Leu or Ser

<220>
<221> MISC_FEATURE
<222> (59)..(59)
<223> X can be Tyr or His

<220>
<221> MISC_FEATURE
<222> (60)..(60)
<223> X can be Tyr, Ser, Asp or Cys

<220>
<221> MISC_FEATURE
<222> (73)..(73)
<223> X can be Asp, Val or His

<220>
<221> MISC_FEATURE
<222> (75)..(75)
<223> X can be Ala or Pro

<220>
<221> MISC_FEATURE

<222> (76)..(76)
<223> X can be Lys or Arg

<220>
<221> MISC_FEATURE
<222> (83)..(83)
<223> X can be Met or Leu

<220>
<221> MISC_FEATURE
<222> (84)..(84)
<223> X can be Asp, Asn or Ser

<220>
<221> MISC_FEATURE
<222> (89)..(89)
<223> X can be Glu or Asp

<220>
<221> MISC_FEATURE
<222> (91)..(91)
<223> X can be Thr or Ala

<220>
<221> MISC_FEATURE
<222> (94)..(94)
<223> X can be Phe or Tyr

<220>
<221> MISC_FEATURE
<222> (97)..(97)
<223> X can be Ala or Thr

<220>
<221> MISC_FEATURE
<222> (99)..(99)
<223> X can be Glu or Asp

<220>
<221> MISC_FEATURE
<222> (100)..(100)
<223> X can be His, Tyr, Phe or Arg

<220>
<221> MISC_FEATURE
<222> (103)..(103)
<223> X can be Gly or Ala

<220>
<221> MISC_FEATURE
<222> (104)..(104)
<223> X can be Tyr, Trp or Leu

<220>
<221> MISC_FEATURE
<222> (105)..(105)
<223> X can be Asp or none

<220>
<221> MISC_FEATURE
<222> (106)..(106)
<223> X can be Trp, Ala, Phe, Tyr, Ser, Val or Glu

<220>
<221> MISC_FEATURE
<222> (107)..(107)
<223> X can be Tyr, Phe, Ser or Ala

<220>
<221> MISC_FEATURE
<222> (109)..(109)
<223> X can be Asp or Glu

<220>
<221> MISC_FEATURE
<222> (110)..(110)
<223> X can be Leu, Tyr, Ser or Ile

<220>
<221> MISC_FEATURE
<222> (113)..(113)
<223> X can be Arg, Gln or His

<220>
<221> MISC_FEATURE
<222> (115)..(115)
<223> X can be Ala or Thr

<220>
<221> MISC_FEATURE
<222> (116)..(116)
<223> X can be Leu or Met

<400> 58

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

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

Tyr Met Ser Trp Ile Arg Gln Xaa Pro Gly Lys Gly Leu Glu Trp Xaa
        35                  40                  45

Ser Tyr Ile Ser Xaa Xaa Gly Ser Xaa Xaa Xaa Xaa Ala Asp Ser Val
    50                  55                  60

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

Leu Gln Xaa Xaa Ser Leu Arg Ala Xaa Asp Xaa Ala Val Xaa Tyr Cys
                85                  90                  95

Xaa Arg Xaa Xaa Ser Ser Xaa Xaa Xaa Xaa Xaa Phe Xaa Xaa Trp Gly
            100                 105                 110

Xaa Gly Xaa Xaa Val Thr Val Ser Ser
        115                 120
```

<210> 59
<211> 118
<212> PRT
<213> Artificial

<220>
<223> Heavy chain consensus

<220>
<221> MISC_FEATURE
<222> (29)..(29)
<223> X can be Leu or Val

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> X can be Asn, Thr or Ser

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> X can be Met or Ile

<220>
<221> MISC_FEATURE
<222> (54)..(54)
<223> X can be Ala or Gln

<220>
<221> MISC_FEATURE
<222> (55)..(55)
<223> X can be Glu or Asp

<220>
<221> MISC_FEATURE
<222> (57)..(57)
<223> X can be Lys or Glu

<220>
<221> MISC_FEATURE
<222> (58)..(58)
<223> X can be Ile or Thr

<220>
<221> MISC_FEATURE
<222> (60)..(60)
<223> X can be Ser or Tyr

<220>
<221> MISC_FEATURE
<222> (66)..(66)
<223> X can be Asp or Gly

<220>
<221> MISC_FEATURE
<222> (72)..(72)
<223> X can be Asp, Arg or Glu

<220>
<221> MISC_FEATURE
<222> (77)..(77)
<223> X can be Asp or Ser

<220>
<221> MISC_FEATURE
<222> (79)..(79)
<223> X can be Ala or Val

<220>
<221> MISC_FEATURE
<222> (84)..(84)
<223> X can be Ser or Arg

<220>
<221> MISC_FEATURE
<222> (87)..(87)

<223> X can be Arg or Lys

<220>
<221> MISC_FEATURE
<222> (91)..(91)
<223> X can be Ser or Thr

<220>
<221> MISC_FEATURE
<222> (97)..(97)
<223> X can be Ala or Thr

<220>
<221> MISC_FEATURE
<222> (98)..(98)
<223> X can be Thr or Arg

<220>
<221> MISC_FEATURE
<222> (99)..(99)
<223> X can be Leu, Glu or Gly

<220>
<221> MISC_FEATURE
<222> (100)..(100)
<223> X can be Asp or Ser

<220>
<221> MISC_FEATURE
<222> (101)..(101)
<223> X can be Phe or Ser

<220>
<221> MISC_FEATURE
<222> (103)..(103)
<223> X can be Ser or Ala

<400> 59

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

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

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

Gly Gly Phe Asp Pro Xaa Xaa Gly Xaa Xaa Ile Xaa Ala Gln Lys Phe
    50                  55                  60

Gln Xaa Arg Val Thr Met Thr Xaa Asp Thr Ser Thr Xaa Thr Xaa Tyr
65                  70                  75                  80

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

Xaa Xaa Xaa Xaa Xaa Ser Xaa Trp Phe Asp Pro Trp Gly Gln Gly Thr
            100                 105                 110

Leu Val Thr Val Ser Ser
```

115

<210> 60
<211> 125
<212> PRT
<213> Artificial

<220>
<223> Heavy chain consensus

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> X can be Gln or Lys

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> X can be Gly or Arg

<220>
<221> MISC_FEATURE
<222> (89)..(89)
<223> X can be Glu or Asp

<400> 60

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

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

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

Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val
    50                  55                  60

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

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

Ala Arg Glu Gly Gly Tyr Asp Trp Asn Tyr Ala Asp Tyr Tyr Gly Met
            100                 105                 110

Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
        115                 120                 125
```

<210> 61
<211> 123
<212> PRT
<213> Artificial

<220>
<223> Heavy chain consensus

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> X can be Lys or Glu

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> X can be Ser or Ile

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> X can be Gly or Ser

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> X can be Gly or Ala

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> X can be Met or Leu

<220>
<221> MISC_FEATURE
<222> (52)..(52)
<223> X can be Tyr or Asp

<220>
<221> MISC_FEATURE
<222> (54)..(54)
<223> X can be Tyr or Asn

<220>
<221> MISC_FEATURE
<222> (77)..(77)
<223> X can be Asn or His

<220>
<221> MISC_FEATURE
<222> (94)..(94)
<223> X can be Phe or Tyr

<220>
<221> MISC_FEATURE
<222> (98)..(98)
<223> X can be Ser or Thr

<220>
<221> MISC_FEATURE
<222> (105)..(105)
<223> X can be Glu or Thr

<220>
<221> MISC_FEATURE
<222> (106)..(106)
<223> X can be Phe or Leu

<220>
<221> MISC_FEATURE
<222> (109)..(109)
<223> X can be Pro or Gly

<220>

<221> MISC_FEATURE
<222> (110)..(110)
<223> X can be Leu or Phe

<220>
<221> MISC_FEATURE
<222> (111)..(111)
<223> X can be Asn or Tyr

<400> 61

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Xaa Phe Thr Xaa Tyr
20 25 30

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

Gly Ile Ile Xaa Pro Xaa Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
50 55 60

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

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

Ala Xaa His Arg Leu Trp Leu Gly Xaa Xaa Pro Gly Xaa Xaa Xaa Ile
100 105 110

Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser
115 120

<210> 62
<211> 8
<212> PRT
<213> Artificial

<220>
<223> FLAG (registered trademark) Peptide

<400> 62

Asp Tyr Lys Asp Asp Asp Asp Lys
1 5

<210> 63
<211> 321
<212> DNA
<213> Homo sapiens

<400> 63
gacatccaga tgacccagtc tccatcttcc gtgtctgcat ctgtaggaga cagagtcacc 60

atcacttgtc gggcgagtca gggtattagc agctggttag cctggtatca acagaaacca 120

gggaaagccc ctaagctcct gatctatggt gcatccaatt tggaaagtgg ggtcccatca 180

aggttcagcg gcagtggatc tgggacagat ttcactctca ccatcagcag cctgcagcct 240

gaagattttg caaattacta ttgtcaacag gctaacagtt tcccgtggac gttcggccaa 300

gggaccaagg tggaaatcaa a 321

<210> 64
<211> 354
<212> DNA
<213> Homo sapiens

<400> 64
caggtccagc tggtacagtc tggggctgag gtgaagaagc ctggggcctc agtgaaggtc 60

tcctgcaagg tttccggata caccctcagt gatttatcca tccactgggt gcgacaggct 120

cctggaaaag ggcttgagtg gatgggaggt tttgatcctc aagatggtga aacaatctac 180

gcacagaagt tccagggcag agtcaccatg accgaggaca catctacaga cacagcctac 240

atggagctga gcagcctgaa atctgaggac acggccgtgt attactgcgc aacggggagc 300

agctcgtcct ggttcgaccc ctggggccag ggaaccctgg tcaccgtctc tagt 354

<210> 65
<211> 324
<212> DNA
<213> Homo sapiens

<400> 65
gaaatagtga tgacgcagtc tccagccacc ctgtctgtgt ctcccgggga aagagccacc 60

ctctcctgca gggccagtca gagtgttagt agcaacttag tctggtatca gcagaaacct 120

ggccaggctc ccaggctcct catttatggt gcatccacca gggccactgg tatcccagcc 180

aggttcagtg gcagtgggtc tgggacagac ttcactctca ccatcagcag cctgcagtct 240

gaagattttg cagtttatta ctgtcagcaa tatgatgact ggcctccgct cactttcggc 300

ggagggacca cggtggagat caaa 324

<210> 66
<211> 360
<212> DNA
<213> Homo sapiens

<400> 66
caggtgcagc tggtggagtc tgggggaggc ttggtcaagc ctggagggtc cctgagactc 60

tcctgtgcag cctctggatt caccttcagt gactactaca tgagctggat ccgccaggct 120

ccagggaagg ggctggagtg gctttcatac attagtaata gtggtagtgc catgtactac 180

gcagactctg tgaagggccg attcaccatc tccagggaca acgccaggaa ctcactgtat 240

ctgcaaatga acagcctgag agccgaggac acggccgtgt actactgtgc gagagagtat 300

agcagtggct ggttcttctt tgagtcctgg ggccagggaa ccctggtcac cgtctctagt 360

<210> 67
<211> 321
<212> DNA

<213> Homo sapiens

<400> 67
gacatccaga tgacccagtc tccatcttcc gtgtttgcat ctgtaggaga cagagtcacc 60

atcacttgtc gggcgagtca gggtattagc agctggttag cctggtatca gcagaaacca 120

gggaaagccc ctaatctcct gatctatggt gcatccagtt tacaaaatgg ggtcccatta 180

aggttcagcg gcagtggatc tgggacagat ttcactctca ccatcagcag cctgcagcct 240

gaagattttg caacttacta ttgtcaacag gctaacagtt tcccgtggac gttcggccaa 300

gggaccaagg tggaaatcaa a 321

<210> 68
<211> 354
<212> DNA
<213> Homo sapiens

<400> 68
caggtccagc tggtacagtc tggggctgag gtgaagaagc ctggggcctc agtgaaggtc 60

tcctgcaagg tttccggata caccgtcact gatttatcca tgcactgggt gcgacaggct 120

cctggaaaag ggcttgagtg gatgggaggt tttgatcctc aagatggtga aacaatctac 180

gcacagaagt tccagggcag agtcaccatg accgaggaca catctacaga cacagcctac 240

atggagctga gaagcctgag atctgaggac acggccgtat attactgtac aacagaaagc 300

agctcggcct ggttcgaccc ctggggccag ggaaccctgg tcaccgtctc tagt 354

<210> 69
<211> 324
<212> DNA
<213> Homo sapiens

<400> 69
cgtacggtgg ctgcaccatc tgtcttcatc ttcccgccat ctgatgagca gttgaaatct 60

ggaactgcct ctgttgtgtg cctgctgaat aacttctatc ccagagaggc caaagtacag 120

tggaaggtgg ataacgccct ccaatcgggt aactcccagg agagtgtcac agagcaggac 180

agcaaggaca gcacctacag cctcagcagc accctgacgc tgagcaaagc agactacgag 240

aaacacaaag tctacgcctg cgaagtcacc catcagggcc tgagctcgcc cgtcacaaag 300

agcttcaaca ggggagagtg ttga 324

<210> 70
<211> 107
<212> PRT
<213> Homo sapiens

<400> 70

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

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

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

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

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

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

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

<210> 71
<211> 981
<212> DNA
<213> Homo sapiens

<400> 71
gcctccacca agggcccatc ggtcttcccc ctggcgccct gctccaggag cacctccgag 60

agcacagcgg ccctgggctg cctggtcaag gactacttcc ccgaaccggt gacggtgtcg 120

tggaactcag gcgctctgac cagcggcgtg cacaccttcc cagctgtcct acagtcctca 180

ggactctact ccctcagcag cgtggtgacc gtgccctcca gcaacttcgg cacccagacc 240

tacacctgca acgtagatca caagcccagc aacaccaagg tggacaagac agttgagcgc 300

aaatgttgtg tcgagtgccc accgtgccca gcaccacctg tggcaggacc gtcagtcttc 360

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggacccctga ggtcacgtgc 420

gtggtggtgg acgtgagcca cgaagacccc gaggtccagt tcaactggta cgtggacggc 480

gtggaggtgc ataatgccaa gacaaagcca cgggaggagc agttcaacag cacgttccgt 540

gtggtcagcg tcctcaccgt tgtgcaccag gactggctga acggcaagga gtacaagtgc 600

aaggtctcca acaaaggcct cccagccccc atcgagaaaa ccatctccaa aaccaaaggg 660

cagccccgag aaccacaggt gtacaccctg cccccatccc gggaggagat gaccaagaac 720

caggtcagcc tgacctgcct ggtcaaaggc ttctacccca gcgacatcgc cgtggagtgg 780

gagagcaatg ggcagccgga gaacaactac aagaccacac ctcccatgct ggactccgac 840

ggctccttct tcctctacag caagctcacc gtggacaaga gcaggtggca gcaggggaac 900

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacacgca gaagagcctc 960

tccctgtctc cgggtaaatg a 981

<210> 72
<211> 326
<212> PRT
<213> Homo sapiens

<400> 72

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

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

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

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

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

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

Thr Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro
            100                 105                 110

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

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

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

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

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

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

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

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

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

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

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

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

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

Ser Leu Ser Pro Gly Lys
                325
```