Sequence listing (3) (2)
SEQUENCE LISTING

<110> DA SILVA, FREDERICO NUNO CASTANHEIRA AIRES
CORTE-REAL, SOFIA VOLKER
DA SILVA ALBUQUERQUE E FREITAS, RUI PEDRO
FERREIRA LLORENTE GRANCHO LOURENCO, SARA

<120> ANTI-TUMOR NECROSIS FACTOR-ALPHA AGENTS AND USES THEREOF

<130> 14116-105011P1

<140>
<141>

<160> 61

<170> PatentIn version 3.5

<210> 1
<211> 111
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

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

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

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

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

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
85 90 95

Tyr Val Gly Gly Ala Phe Gly Gly Gly Thr Glu Leu Glu Ile Leu
100 105 110

<210> 2
<211> 110
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

Sequence listing (3) (2)

<400> 2
Glu Leu Val Met Thr Gln Thr Pro Ala Ser Val Glu Ala Ala Val Gly
1 5 10 15

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

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

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

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

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

Ser Val Ala Ala Phe Gly Gly Gly Thr Glu Val Val Val Lys
100 105 110

<210> 3
<211> 107
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 3
Glu Leu Val Leu Thr Gln Thr Pro Ser Ser Val Ser Ala Ala Val Gly
1 5 10 15

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

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

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

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Gly Met Lys Ala
65 70 75 80

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

Thr Phe Gly Ala Gly Thr Asn Val Glu Ile Lys

Sequence listing (3) (2)

100 105

<210> 4
<211> 111
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 4
Glu Leu Asp Met Thr Gln Thr Pro Ala Ser Val Ser Ala Ala Val Gly
1 5 10 15

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

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

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

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

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

Arg Tyr Gly Asn Gly Phe Gly Gly Gly Thr Glu Leu Glu Ile Leu
100 105 110

<210> 5
<211> 110
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

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

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

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

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

Sequence listing (3) (2)

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

Asp Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Thr Tyr Thr Tyr Thr Asn
85 90 95

Ile Glu Asn Ala Phe Gly Gly Gly Thr Glu Leu Glu Ile Leu
100 105 110

<210> 6
<211> 108
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 6
Glu Leu Val Met Thr Gln Thr Pro Ala Ser Val Ser Glu Pro Val Gly
1 5 10 15

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

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

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

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

Asp Asp Ala Ala Thr Tyr Ala Cys Gln Cys Thr Gly Tyr Gly Ser Asp
85 90 95

Trp Ala Phe Gly Gly Gly Thr Glu Val Val Val Lys
100 105

<210> 7
<211> 108
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 7
Glu Leu Val Leu Thr Gln Thr Pro Ser Ser Val Ser Ala Ala Val Gly
1 5 10 15

Sequence listing (3) (2)

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

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

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

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Gly Met Lys Ala
65 70 75 80

Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Gly Tyr Tyr Ser Ala Gly
85 90 95

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

<210> 8
<211> 107
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 8
Glu Leu Asp Leu Thr Gln Thr Pro Ser Ser Val Ser Ala Ala Val Gly
1 5 10 15

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

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

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

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Gly Met Lys Ala
65 70 75 80

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

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

<210> 9

Sequence listing (3) (2)

<211> 111
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 9
Glu Leu Val Met Thr Gln Thr Pro Ser Ser Val Ser Ala Ala Val Gly
1 5 10 15

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

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

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

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

Cys Asp Asp Ala Ala Thr Tyr Tyr Cys Leu Gly Gly Tyr Gly Asp Ile
85 90 95

Asp Asp Thr His Thr Phe Gly Gly Gly Thr Glu Leu Glu Ile Leu
100 105 110

<210> 10
<211> 106
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

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

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

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

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

Gly Ser Gly Thr Gly Ile Asn Leu Thr Ile Thr Gly Met Lys Ala Glu
65 70 75 80

Sequence listing (3) (2)

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

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

<210> 11
<211> 109
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 11
Glu Leu Asp Leu Thr Gln Thr Pro Pro Ser Leu Ser Ala Ser Val Gly
1 5 10 15

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

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

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

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

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

Gly Met Thr Phe Gly Ala Gly Thr Asn Val Glu Ile Lys
100 105

<210> 12
<211> 109
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

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

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

Sequence listing (3) (2)

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

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

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

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

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

<210> 13
<211> 111
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

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

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

Tyr Leu Cys Trp Tyr Gln Lys Lys Arg Gly Pro Pro Pro Met Leu Leu
35 40 45

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

Gly Gly Gly Ser Gly Thr Glu Tyr Pro Leu Thr Ile Gly Gly Val Arg
65 70 75 80

Gly Asp Asp Ala Ala Ser Tyr Cys Cys Gln Gly Tyr Ile Gly Tyr Asn
85 90 95

Asn Asp Asp His Ala Phe Gly Gly Gly Thr Glu Val Val Val Lys
100 105 110

<210> 14
<211> 112
<212> PRT
<213> Unknown

Sequence listing (3) (2)

<220>
<223> Description of Unknown: Rabbit polypeptide

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

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

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

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

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Cys Thr Val Ala Ile Ser Gly
85 90 95

Asn Ser Tyr Gly Asn Ala Phe Gly Gly Gly Thr Glu Val Val Val Lys
100 105 110

<210> 15
<211> 108
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

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

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

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

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

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Gly Met Lys Ala
65 70 75 80

Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Gly Tyr Tyr Ser Ala Gly
85 90 95

Sequence listing (3) (2)

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

<210> 16
<211> 107
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

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

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

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

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

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Tyr Ser Gly Gly Ser Ile Tyr
85 90 95

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

<210> 17
<211> 110
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 17
Glu Leu Asp Leu Thr Gln Thr Pro Ala Ser Val Glu Ala Ala Val Gly
1 5 10 15

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

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

Sequence listing (3) (2)

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

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Cys Thr Tyr Ala Gly Ser Ser
                85                  90                  95

Tyr Gly Asn Thr Phe Gly Gly Gly Thr Glu Val Val Val Lys
            100                 105                 110
```

<210> 18
<211> 109
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 18

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

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

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

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

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

Asp Asp Ala Ala Thr Tyr Tyr Cys Ala Gly Asp Tyr Thr Asp Asn Ser
                85                  90                  95

Asp Asn Ala Phe Gly Gly Gly Thr Glu Val Val Val Lys
            100                 105
```

<210> 19
<211> 111
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 19

Sequence listing (3) (2)

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

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

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

Tyr Lys Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Ala Tyr Leu Gly Gly Thr
85 90 95

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

<210> 20
<211> 111
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 20
Glu Leu Val Leu Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

Tyr Lys Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Ala Tyr Leu Gly Gly Thr
85 90 95

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

Sequence listing (3) (2)

<210> 21
<211> 111
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 21
Glu Leu Val Leu Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

Tyr Lys Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
85 90 95

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

<210> 22
<211> 111
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 22
Glu Leu Val Leu Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

Tyr Lys Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

Sequence listing (3) (2)

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
                85                  90                  95

Tyr Val Gly Gly Ala Phe Gly Gly Gly Thr Glu Leu Glu Ile Lys
            100                 105                 110
```

<210> 23
<211> 111
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 23

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

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

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

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

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
                85                  90                  95

Tyr Val Gly Gly Ala Phe Gly Gly Gly Thr Glu Leu Glu Ile Lys
            100                 105                 110
```

<210> 24
<211> 110
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 24

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

Sequence listing (3) (2)

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

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

Tyr Arg Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

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

Ser Val Ala Ser Phe Gly Gly Gly Thr Lys Val Val Val Lys
100 105 110

<210> 25
<211> 110
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 25
Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

Tyr Arg Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

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

Ser Val Ala Ser Phe Gly Gly Gly Thr Lys Val Val Val Lys
100 105 110

<210> 26
<211> 110

Sequence listing (3) (2)

<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 26
Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

Tyr Arg Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

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

Ser Val Ala Ala Phe Gly Gly Gly Thr Lys Val Val Val Lys
100 105 110

<210> 27
<211> 110
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 27
Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

Tyr Arg Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

Sequence listing (3) (2)

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

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

<210> 28
<211> 110
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown: Rabbit polypeptide

<400> 28

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

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

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

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

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

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

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

<210> 29
<211> 18
<212> PRT
<213> Artificial Sequence

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

<400> 29

```
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1               5                   10                  15

Ser Gly
```

Sequence listing (3) (2)

<210> 30
<211> 52
<212> PRT
<213> Streptococcus zooepidemicus

<400> 30
Asp Ile Thr Gly Ala Ala Leu Leu Glu Ala Lys Glu Ala Ala Ile Asn
1 5 10 15

Glu Leu Lys Gln Tyr Gly Ile Ser Asp Tyr Tyr Val Thr Leu Ile Asn
20 25 30

Lys Ala Lys Thr Val Glu Gly Val Asn Ala Leu Lys Ala Glu Ile Leu
35 40 45

Ser Ala Leu Pro
50

<210> 31
<211> 52
<212> PRT
<213> Streptococcus zooepidemicus

<400> 31
Asp Ile Thr Gly Ala Ala Leu Leu Glu Ala Lys Asp Ala Ala Ile Asn
1 5 10 15

Glu Leu Lys Gln Tyr Gly Ile Ser Asp Tyr Tyr Val His Leu Ile Asn
20 25 30

Lys Ala Asp Thr Val Glu Gly Val Asn Ala Leu Lys Asp Glu Ile Leu
35 40 45

Ser Ala Leu Pro
50

<210> 32
<211> 239
<212> PRT
<213> Artificial Sequence

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

<400> 32
Glu Leu Val Leu Thr Gln Thr Pro Ala Ser Val Glu Ala Ala Val Gly
1 5 10 15

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

Sequence listing (3) (2)

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

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

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
85 90 95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
115 120 125

Gly Glu Leu Val Met Thr Gln Thr Pro Ala Ser Val Glu Ala Ala Val
130 135 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Arg
145 150 155 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
165 170 175

Ile Tyr Arg Ala Ser Thr Leu Ala Ser Gly Val Ser Ser Arg Phe Lys
180 185 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Glu
195 200 205

Cys Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Val Asn Arg
210 215 220

Gly Ser Val Ala Ala Phe Gly Gly Gly Thr Glu Val Val Val Lys
225 230 235

<210> 33
<211> 309
<212> PRT
<213> Artificial Sequence

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

<400> 33
Glu Leu Val Leu Thr Gln Thr Pro Ala Ser Val Glu Ala Ala Val Gly

Sequence listing (3) (2)

```
1               5                  10                  15

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

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

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

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
                85                  90                  95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
        115                 120                 125

Gly Glu Leu Val Met Thr Gln Thr Pro Ala Ser Val Glu Ala Ala Val
    130                 135                 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Arg
145                 150                 155                 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
                165                 170                 175

Ile Tyr Arg Ala Ser Thr Leu Ala Ser Gly Val Ser Ser Arg Phe Lys
            180                 185                 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Glu
        195                 200                 205

Cys Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Val Asn Arg
    210                 215                 220

Gly Ser Val Ala Ala Phe Gly Gly Gly Thr Glu Val Val Val Lys Ser
225                 230                 235                 240

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
                245                 250                 255
```

Sequence listing (3) (2)

Gly Asp Ile Thr Gly Ala Ala Leu Leu Glu Ala Lys Asp Ala Ala Ile
260 265 270

Asn Glu Leu Lys Gln Tyr Gly Ile Ser Asp Tyr Tyr Val His Leu Ile
275 280 285

Asn Lys Ala Asp Thr Val Glu Gly Val Asn Ala Leu Lys Asp Glu Ile
290 295 300

Leu Ser Ala Leu Pro
305

<210> 34
<211> 309
<212> PRT
<213> Artificial Sequence

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

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

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

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

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

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
85 90 95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
115 120 125

Gly Glu Leu Val Met Thr Gln Thr Pro Ala Ser Val Glu Ala Ala Val
130 135 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Arg

145 150 155 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
165 170 175

Ile Tyr Arg Ala Ser Thr Leu Ala Ser Gly Val Ser Ser Arg Phe Lys
180 185 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Glu
195 200 205

Cys Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Val Asn Arg
210 215 220

Gly Ser Val Ala Ala Phe Gly Gly Gly Thr Glu Val Val Val Lys Ser
225 230 235 240

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
245 250 255

Gly Asp Ile Thr Gly Ala Ala Leu Leu Glu Ala Lys Asp Ala Ala Ile
260 265 270

Asn Glu Leu Lys Gln Tyr Gly Ile Ser Asp Tyr Tyr Val His Leu Ile
275 280 285

Asn Lys Ala Asp Thr Val Glu Gly Val Asn Ala Leu Lys Asp Glu Ile
290 295 300

Leu Ser Ala Leu Pro
305

<210> 35
<211> 239
<212> PRT
<213> Artificial Sequence

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

<400> 35
Glu Leu Val Leu Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

Sequence listing (3) (2)

Tyr Lys Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Ala Tyr Leu Gly Gly Thr
85 90 95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
115 120 125

Gly Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro
130 135 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Ser
145 150 155 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
165 170 175

Ile Tyr Arg Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser
180 185 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Lys
195 200 205

Ser Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Ala Tyr Val Asn Arg
210 215 220

Gly Ser Val Ala Ser Phe Gly Gly Gly Thr Lys Val Val Val Lys
225 230 235

<210> 36
<211> 239
<212> PRT
<213> *Artificial Sequence*

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

<400> 36
Glu Leu Val Leu Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

Sequence listing (3) (2)

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

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

Tyr Lys Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
    50                  55                  60

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Ala Tyr Leu Gly Gly Thr
                85                  90                  95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
        115                 120                 125

Gly Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro
    130                 135                 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Ser
145                 150                 155                 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
                165                 170                 175

Ile Tyr Arg Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser
            180                 185                 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Lys
        195                 200                 205

Ser Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Ala Tyr Val Asn Arg
    210                 215                 220

Gly Ser Val Ala Ser Phe Gly Gly Gly Thr Lys Val Val Val Lys
225                 230                 235
```

<210> 37
<211> 239
<212> PRT
<213> Artificial Sequence

<220>

Sequence listing (3) (2)

<223> Description of Artificial Sequence: Synthetic polypeptide

<400> 37

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

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

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

Tyr Lys Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
85 90 95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
115 120 125

Gly Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro
130 135 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Ser
145 150 155 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
165 170 175

Ile Tyr Arg Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser
180 185 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Lys
195 200 205

Ser Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Val Asn Arg
210 215 220

Gly Ser Val Ala Ala Phe Gly Gly Gly Thr Lys Val Val Val Lys
225 230 235

Sequence listing (3) (2)

<210> 38
<211> 239
<212> PRT
<213> Artificial Sequence

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

<400> 38

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

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

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

Tyr Lys Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
    50                  55                  60

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
                85                  90                  95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
        115                 120                 125

Gly Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro
    130                 135                 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Ser
145                 150                 155                 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
                165                 170                 175

Ile Tyr Arg Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser
            180                 185                 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Lys
        195                 200                 205
```

Sequence listing (3) (2)

Ser Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Val Asn Arg
210 215 220

Gly Ser Val Ala Ala Phe Gly Gly Gly Thr Lys Val Val Val Lys
225 230 235

<210> 39
<211> 239
<212> PRT
<213> Artificial Sequence

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

<400> 39
Glu Leu Val Leu Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

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

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
85 90 95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
115 120 125

Gly Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro
130 135 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Ser
145 150 155 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
165 170 175

Ile Tyr Arg Ala Ser Thr Leu Ala Ser Gly Val Ser Ser Arg Phe Ser

Sequence listing (3) (2)

180 185 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Lys
195 200 205

Ser Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Val Asn Arg
210 215 220

Gly Ser Val Ala Ala Phe Gly Gly Gly Thr Lys Val Val Val Lys
225 230 235

<210> 40
<211> 309
<212> PRT
<213> Artificial Sequence

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

<400> 40
Glu Leu Val Leu Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

Tyr Lys Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Ala Tyr Leu Gly Gly Thr
85 90 95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
115 120 125

Gly Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro
130 135 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Ser
145 150 155 160

Sequence listing (3) (2)

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
165 170 175

Ile Tyr Arg Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser
180 185 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Lys
195 200 205

Ser Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Ala Tyr Val Asn Arg
210 215 220

Gly Ser Val Ala Ser Phe Gly Gly Gly Thr Lys Val Val Val Lys Ser
225 230 235 240

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
245 250 255

Gly Asp Ile Thr Gly Ala Ala Leu Leu Glu Ala Lys Asp Ala Ala Ile
260 265 270

Asn Glu Leu Lys Gln Tyr Gly Ile Ser Asp Tyr Tyr Val His Leu Ile
275 280 285

Asn Lys Ala Asp Thr Val Glu Gly Val Asn Ala Leu Lys Asp Glu Ile
290 295 300

Leu Ser Ala Leu Pro
305

<210> 41
<211> 309
<212> PRT
<213> Artificial Sequence

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

<400> 41
Glu Leu Val Leu Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

Sequence listing (3) (2)

Tyr Lys Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Ala Tyr Leu Gly Gly Thr
85 90 95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
115 120 125

Gly Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro
130 135 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Ser
145 150 155 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
165 170 175

Ile Tyr Arg Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser
180 185 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Lys
195 200 205

Ser Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Ala Tyr Val Asn Arg
210 215 220

Gly Ser Val Ala Ser Phe Gly Gly Gly Thr Lys Val Val Val Lys Ser
225 230 235 240

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
245 250 255

Gly Asp Ile Thr Gly Ala Ala Leu Leu Glu Ala Lys Asp Ala Ala Ile
260 265 270

Asn Glu Leu Lys Gln Tyr Gly Ile Ser Asp Tyr Tyr Val His Leu Ile
275 280 285

Asn Lys Ala Asp Thr Val Glu Gly Val Asn Ala Leu Lys Asp Glu Ile
290 295 300

Sequence listing (3) (2)

Leu Ser Ala Leu Pro
305

<210> 42
<211> 309
<212> PRT
<213> Artificial Sequence

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

<400> 42
Glu Leu Val Leu Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

Tyr Lys Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
85 90 95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
115 120 125

Gly Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro
130 135 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Ser
145 150 155 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
165 170 175

Ile Tyr Arg Val Ser Thr Arg Ala Ser Gly Val Ser Ser Arg Phe Ser
180 185 190

Sequence listing (3) (2)

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Lys
195 200 205

Ser Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Val Asn Arg
210 215 220

Gly Ser Val Ala Ala Phe Gly Gly Gly Thr Lys Val Val Val Lys Ser
225 230 235 240

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
245 250 255

Gly Asp Ile Thr Gly Ala Ala Leu Leu Glu Ala Lys Asp Ala Ala Ile
260 265 270

Asn Glu Leu Lys Gln Tyr Gly Ile Ser Asp Tyr Tyr Val His Leu Ile
275 280 285

Asn Lys Ala Asp Thr Val Glu Gly Val Asn Ala Leu Lys Asp Glu Ile
290 295 300

Leu Ser Ala Leu Pro
305

<210> 43
<211> 309
<212> PRT
<213> Artificial Sequence

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

<400> 43
Glu Leu Val Leu Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro Gly
1 5 10 15

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

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

Tyr Lys Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser Gly
50 55 60

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

Sequence listing (3) (2)

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
85 90 95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
115 120 125

Gly Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro
130 135 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Ser
145 150 155 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
165 170 175

Ile Tyr Arg Val Ser Thr Glu Ala Ser Gly Val Ser Ser Arg Phe Ser
180 185 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Lys
195 200 205

Ser Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Val Asn Arg
210 215 220

Gly Ser Val Ala Ala Phe Gly Gly Gly Thr Lys Val Val Val Lys Ser
225 230 235 240

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
245 250 255

Gly Asp Ile Thr Gly Ala Ala Leu Leu Glu Ala Lys Asp Ala Ala Ile
260 265 270

Asn Glu Leu Lys Gln Tyr Gly Ile Ser Asp Tyr Tyr Val His Leu Ile
275 280 285

Asn Lys Ala Asp Thr Val Glu Gly Val Asn Ala Leu Lys Asp Glu Ile
290 295 300

Leu Ser Ala Leu Pro
305

<210> 44
<211> 309
<212> PRT

Sequence listing (3) (2)

<213> Artificial Sequence

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

<400> 44

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

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

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

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

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

Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Leu Gly Gly Thr
                85                  90                  95

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
        115                 120                 125

Gly Glu Leu Val Met Thr Gln Gln Pro Ala Ser Val Glu Ala Ala Pro
    130                 135                 140

Gly Gly Thr Val Thr Ile Lys Cys Gln Ala Ser Gln Ser Ile Ser Ser
145                 150                 155                 160

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
                165                 170                 175

Ile Tyr Arg Ala Ser Thr Leu Ala Ser Gly Val Ser Ser Arg Phe Ser
            180                 185                 190

Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Asp Leu Lys
        195                 200                 205

Ser Ala Asp Ala Ala Thr Tyr Tyr Cys Gln Ser Thr Tyr Val Asn Arg
    210                 215                 220
```

Sequence listing (3) (2)

Gly Ser Val Ala Ala Phe Gly Gly Gly Thr Lys Val Val Val Lys Ser
225 230 235 240

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser
245 250 255

Gly Asp Ile Thr Gly Ala Ala Leu Leu Glu Ala Lys Asp Ala Ala Ile
260 265 270

Asn Glu Leu Lys Gln Tyr Gly Ile Ser Asp Tyr Tyr Val His Leu Ile
275 280 285

Asn Lys Ala Asp Thr Val Glu Gly Val Asn Ala Leu Lys Asp Glu Ile
290 295 300

Leu Ser Ala Leu Pro
305

<210> 45
<211> 5
<212> PRT
<213> Artificial Sequence

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

<400> 45
Gly Gly Gly Gly Ser
1 5

<210> 46
<211> 4
<212> PRT
<213> Artificial Sequence

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

<400> 46
Gly Gly Ser Gly
1

<210> 47
<211> 6
<212> PRT
<213> Artificial Sequence

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

<400> 47
Gly Gly Ser Gly Gly Ser

Sequence listing (3) (2)

1 5

<210> 48
<211> 9
<212> PRT
<213> Artificial Sequence

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

<400> 48
Gly Gly Gly Gly Ser Gly Gly Gly Ser
1 5

<210> 49
<211> 10
<212> PRT
<213> Artificial Sequence

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

<400> 49
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10

<210> 50
<211> 15
<212> PRT
<213> Artificial Sequence

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

<400> 50
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

<210> 51
<211> 20
<212> PRT
<213> Artificial Sequence

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

<400> 51
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
1 5 10 15

Gly Gly Gly Ser
20

Sequence listing (3) (2)

<210> 52
<211> 25
<212> PRT
<213> Artificial Sequence

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

<400> 52
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
1 5 10 15

Gly Gly Gly Ser Gly Gly Gly Gly Ser
20 25

<210> 53
<211> 30
<212> PRT
<213> Artificial Sequence

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

<400> 53
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
1 5 10 15

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
20 25 30

<210> 54
<211> 8
<212> PRT
<213> Artificial Sequence

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

<400> 54
Ser Gly Gly Gly Gly Ser Ser Gly
1 5

<210> 55
<211> 18
<212> PRT
<213> Artificial Sequence

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

<400> 55
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

Sequence listing (3) (2)

Ser Gly

<210> 56
<211> 23
<212> PRT
<213> Artificial Sequence

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

<400> 56
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

Gly Gly Gly Gly Ser Ser Gly
20

<210> 57
<211> 28
<212> PRT
<213> Artificial Sequence

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

<400> 57
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ser Gly
20 25

<210> 58
<211> 38
<212> PRT
<213> Artificial Sequence

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

<400> 58
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
20 25 30

Gly Gly Gly Ser Ser Gly
35

Sequence listing (3) (2)

<210> 59
<211> 21
<212> PRT
<213> Artificial Sequence

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

<400> 59
Pro Thr Pro Thr Pro Thr Thr Pro Thr Pro Thr Pro Thr Thr Pro Thr
1 5 10 15

Pro Thr Pro Thr Ser
20

<210> 60
<211> 6
<212> PRT
<213> Artificial Sequence

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

<400> 60
His His His His His His
1 5

<210> 61
<211> 9
<212> PRT
<213> Artificial Sequence

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

<400> 61
Tyr Pro Tyr Asp Val Pro Asp Tyr Ala
1 5