eolf-seql

SEQUENCE LISTING

<110> Pfizer Inc.
Root, Adam

<120> BISPECIFIC HETERODIMERIC DIABODIES AND USES THEREOF

<130> PC72054A

<160> 239

<170> PatentIn version 3.5

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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 Thr Leu Gly 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 Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu

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100 105 110

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<400> 2

Gln Met 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 Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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

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

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

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

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

Met Val Thr Val Ser Ser
115

<210> 3
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<400> 3

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Gln Ser Val Val 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 Thr Leu Gly 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 Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
            100                 105                 110
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<400> 4

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Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                  10                  15
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Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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

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

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

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

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

Met Val Thr Val Ser Ser
115

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

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<400> 6

Glu 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 Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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

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

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

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


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


Met Val Thr Val Ser Ser
        115


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<400>  7

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 Thr Leu Gly 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 Gly Val Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
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<400> 8

Glu 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 Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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

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

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

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

Ala Thr Ile Asp Thr Ala Asn Ala Phe Gly Ile Trp Gly Gln Gly Thr
100 105 110

Met Val Thr Val Ser Ser
115

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<400> 9

```
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 Thr Leu Gly 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 Ser Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu
            100                 105                 110
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<210> 10
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<400> 10

```
Glu 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 Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
            20   25   30

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

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

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

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

Ala Thr Ile Asp Thr Ala Thr Ala Phe Asp Ile Trp Gly Gln Gly Thr
            100   105   110

Met Val Thr Val Ser Ser
        115

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<223> Synthetic peptide sequence

<400> 11

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 Thr Leu Gly 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 Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu
100 105 110

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<213> Artificial Sequence

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<223> Synthetic peptide sequence

<400> 12

Glu 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 Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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

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

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

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


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


Met Val Thr Val Ser Ser
        115


<210>  13
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<220>
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<400>  13

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 Thr Leu Gly Ile Thr Gly Leu Gln
65                  70                  75                  80


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


Ser Ala Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu
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<212> PRT
<213> Artificial Sequence

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<223> Synthetic peptide sequence

<400> 14

Glu 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 Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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

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

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

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

Ala Thr Ile Asp Thr Ala Asn Ala Phe Asp Ile Trp Gly Gln Gly Thr
100 105 110

Met Val Thr Val Ser Ser
115

<210> 15
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<400> 15

```
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 Thr Leu Gly 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 Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu
            100                 105                 110
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<210> 16
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<212> PRT
<213> Artificial Sequence

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<223> Synthetic peptide sequence

<400> 16

```
Glu 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 Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
            20                  25                  30

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

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

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

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

Ala Thr Ile Asp Thr Ala Asn Ala Phe Asp Ile Trp Gly Gln Gly Thr
            100                 105                 110

Met Val Thr Val Ser Ser
        115
```

<210> 17
<211> 110
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<213> Artificial Sequence

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<400> 17

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

<210> 18
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<400> 18

Glu 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 Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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

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

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

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


Ala Thr Ile Asp Thr Ala Asn Ala Phe Asp Ile Trp Gly Gln Gly Thr
            100                 105                 110


Met Val Thr Val Ser Ser
        115


<210>  19
<211>  110
<212>  PRT
<213>  Artificial Sequence

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<223>  Synthetic peptide sequence

<400>  19

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


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

<210> 20
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<212> PRT
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<400> 20

Glu 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 Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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

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

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

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

Ala Thr Ile Asp Thr Ala Asn Ala Phe Asp Ile Trp Gly Gln Gly Thr
100 105 110

Met Val Thr Val Ser Ser
115

<210> 21
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<400> 21

```
Gln Ser Val Val 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 Thr Leu Gly 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 Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu
            100                 105                 110
```

<210> 22
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<400> 22

```
Glu 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 Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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

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

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

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

Ala Thr Ile Asp Thr Ala Asn Ala Phe Asp Ile Trp Gly Gln Gly Thr
100 105 110

Met Val Thr Val Ser Ser
115

<210> 23
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<213> Artificial Sequence

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<400> 23

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

<210> 24
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<400> 24

Glu 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 Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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

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

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

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

Ala Thr Ile Asn Ala Pro Asn Asn Phe Asp Ile Trp Gly Gln Gly Thr
100 105 110

Met Val Thr Val Ser Ser
115

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<400> 25

Ser Tyr Gly Ile Ser
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<400> 26

Trp Ile Ser Ala Tyr Asn Gly Asn Thr Asn Tyr Ala Gln Lys Leu Gln
1 5 10 15

Gly

<210> 27
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<220>
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<400> 27

Ile Gly Ser Gly Val Ala Phe Asp Ile
1 5

<210> 28
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<400> 28

Ile Asp Thr Ala Ser Ala Phe Asp Ile
1 5

<210> 29
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 29

Ile Asp Thr Ala Asn Ala Phe Gly Ile
1 5

<210> 30
<211> 9
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<400> 30

Ile Asp Thr Ala Thr Ala Phe Asp Ile
1 5

<210> 31
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<212> PRT
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<220>
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<400> 31

Ile Asp Thr Ala Asn Ala Phe Asp Ile
1 5

<210> 32
<211> 9
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<213> Artificial Sequence

<220>
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<400> 32

Ile Asn Ala Pro Asn Asn Phe Asp Ile
1 5

<210> 33
<211> 10
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<400> 33

Gly Tyr Thr Phe Thr Ser Tyr Gly Ile Ser
1 5 10

<210> 34

<211> 10
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<400> 34

Trp Ile Ser Ala Tyr Asn Gly Asn Thr Asn
1 5 10

<210> 35
<211> 13
<212> PRT
<213> Artificial Sequence

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<223> Synthetic peptide sequence

<400> 35

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser
1 5 10

<210> 36
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<400> 36

Ser Gly Ser Arg Ser Asn Ile Gly Asn Asn Tyr Val Ser
1 5 10

<210> 37
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<400> 37

Asp Asn Asn Lys Arg Pro Ser
1 5

<210> 38
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<400> 38

Asp Ser Asn Lys Arg Pro Ser
1 5

<210> 39
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<400> 39

Gly Thr Trp Asp Ser Ser Leu Ser Ala Tyr Val
1 5 10

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<400> 40

Gly Thr Trp Asp Ser Ser Leu Ser Ala Trp Val
1 5 10

<210> 41
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<400> 41

Gly Thr Trp Asp Ser Ser Leu Ser Ala Val Val
1 5 10

<210> 42
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<400> 42

Gly Thr Trp Asp Ser Ser Leu Ser Gly Val Val
1 5 10

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<400> 43

Gly Thr Trp Asp Ser Ser Leu Ser Ser Tyr Val
1 5 10

<210> 44
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<400> 44

Gly Thr Trp Asp Ser Ser Leu Ser Ser Trp Val
1   5   10

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<223> Synthetic peptide sequence

<400> 45

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 Thr Tyr
            20   25   30

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

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

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

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

Tyr Cys Val Arg His Gly Asn Phe Gly Asn Ser Tyr Val Ser Trp Phe
            100   105   110

Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser

115 120 125

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<400> 46

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 Asn Thr Tyr
20 25 30

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

Ala Arg Ile Arg Ser Lys Tyr Asn Asn Tyr Ala Thr Tyr Tyr Ala Asp
50 55 60

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

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

Tyr Cys Val Arg His Gly Asn Phe Gly Asn Ser Tyr Val Ser Trp Phe
100 105 110

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

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<220>
<223> Synthetic peptide sequence

<400> 47

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


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


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


Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
    50                  55                  60


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


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


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

<210> 48
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 48

```
Thr Tyr Ala Met Asn
1               5
```

<210> 49
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 49

Arg Ile Arg Ser Lys Tyr Asn Asn Tyr Ala Thr Tyr Tyr Ala Asp Ser
1 5 10 15

Val Lys Gly

<210> 50
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 50

Arg Ile Arg Ser Lys Tyr Asn Asn Tyr Ala Thr Tyr Tyr Ala Asp Ser
1 5 10 15

Val Lys Asp

<210> 51
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 51

His Gly Asn Phe Gly Asn Ser Tyr Val Ser Trp Phe Ala Tyr

1 5 10

<210> 52
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 52

Gly Phe Thr Phe Ser Thr Tyr Ala Met Asn
1 5 10

<210> 53
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 53

Gly Phe Thr Phe Asn Thr Tyr Ala Met Asn
1 5 10

<210> 54
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 54

Arg Ile Arg Ser Lys Tyr Asn Asn Tyr Ala Thr Tyr
1 5 10

<210> 55
<211> 14
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 55

Arg Ser Ser Thr Gly Ala Val Thr Thr Ser Asn Tyr Ala Asn
1 5 10

<210> 56
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 56

Gly Thr Asn Lys Arg Ala Pro
1 5

<210> 57
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 57

Ala Leu Trp Tyr Ser Asn Leu Trp Val
1 5

<210> 58
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 58

ggagattttc aacgtgaa 18

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

<220>
<223> Synthetic nucleotide sequence

<400> 59
ctcttctgag atgagttttt g 21

<210> 60
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 60

Cys Pro Pro Cys Pro
1 5

<210> 61
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 61

Glu Val Ala Ala Leu Glu Lys Glu Val Ala Ala Leu Glu Lys Glu Val
1 5 10 15

Ala Ala Leu Glu Lys Glu Val Ala Ala Leu Glu Lys
20 25

<210> 62

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

<220>
<223> Synthetic peptide sequence

<400> 62

Lys Val Ala Ala Leu Lys Glu Lys Val Ala Ala Leu Lys Glu Lys Val
1 5 10 15

Ala Ala Leu Lys Glu Lys Val Ala Ala Leu Lys Glu
20 25

<210> 63
<211> 216
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 63

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

Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
20 25 30

Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr
35 40 45

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
50 55 60

Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
65 70 75 80

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

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85 90 95

Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
100 105 110

Pro Arg Glu Pro Gln Val Cys Thr Leu Pro Pro Ser Arg Glu Glu Met
115 120 125

Thr Lys Asn Gln Val Ser Leu Trp Cys Leu Val Lys Gly Phe Tyr Pro
130 135 140

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

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
165 170 175

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

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
195 200 205

Lys Ser Leu Ser Leu Ser Pro Gly
210 215

<210> 64
<211> 216
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 64

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

```
Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
            20                  25                  30

Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr
        35                  40                  45

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
    50                  55                  60

Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
65                  70                  75                  80

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
                85                  90                  95

Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
            100                 105                 110

Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Cys Arg Glu Glu Met
        115                 120                 125

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

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

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
                165                 170                 175

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

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
        195                 200                 205
```

Lys Ser Leu Ser Leu Ser Pro Gly
    210   215

<210> 65
<211> 217
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 65

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

Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
            20   25   30

Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr
        35   40   45

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
    50   55   60

Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
65   70   75   80

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
                85   90   95

Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
            100   105   110

Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met
        115   120   125

Thr Lys Asn Gln Val Ser Leu Ser Cys Ala Val Lys Gly Phe Tyr Pro

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130 135 140

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

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
165 170 175

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

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn Arg Tyr Thr Gln
195 200 205

Lys Ser Leu Ser Leu Ser Pro Gly Lys
210 215

<210> 66
<211> 217
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 66

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

Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
20 25 30

Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr
35 40 45

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
50 55 60

```
Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
65                  70                  75                  80


Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
                85                  90                  95


Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
            100                 105                 110


Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met
        115                 120                 125


Thr Lys Asn Gln Val Ser Leu Trp Cys Leu Val Lys Gly Phe Tyr Pro
    130                 135                 140


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


Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
                165                 170                 175


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


Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
        195                 200                 205


Lys Ser Leu Ser Leu Ser Pro Gly Lys
    210                 215


<210>  67
<211>  6
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Synthetic nucleotide sequence
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<400> 67
tccgga 6

<210> 68
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 68

Gly Gly Gly Ser Gly Gly Gly Gly
1 5

<210> 69
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 69

Gly Gly Gly Gly Ser Gly Gly Gly Gly
1 5

<210> 70
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 70

Gly Phe Asn Arg Gly Glu Cys
1 5

<210> 71

<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 71

Gly Val Glu Pro Lys Ser Cys
1 5

<210> 72
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 72

Gly Gly Cys Gly Gly Gly
1 5

<210> 73
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 73

Gly Cys Pro Pro Cys Pro
1 5

<210> 74
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 74

Gly Gly Thr Gly Gly Cys Pro Pro Cys Pro
1 5 10

<210> 75
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 75

Gly Glu Pro Lys Ser Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro
1 5 10 15

<210> 76
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 76

Gly Gly Thr Gly Gly Gly Glu Pro Lys Ser Ser Asp Lys Thr His Thr
1 5 10 15

Cys Pro Pro Cys Pro
20

<210> 77
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 77

Lys Ala Pro Ser Ser Ser Pro Met Glu
1 5

<210> 78
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 78

His His His His His His
1 5

<210> 79
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 79

Gly Gly Cys Gly Gly Asp Tyr Lys Asp Asp Asp Asp Lys
1 5 10

<210> 80
<211> 277
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 80

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly
        115                 120                 125

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
    130                 135                 140

Phe Thr Phe Ser Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Lys Gly Leu Glu Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn Tyr
                165                 170                 175

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

Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr
        195                 200                 205

Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn
```

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210 215 220

Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr
225 230 235 240

Val Ser Ser Gly Gly Cys Gly Gly Gly Lys Val Ala Ala Leu Lys Glu
245 250 255

Lys Val Ala Ala Leu Lys Glu Lys Val Ala Ala Leu Lys Glu Lys Val
260 265 270

Ala Ala Leu Lys Glu
275

<210> 81
<211> 270
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 81

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
50 55 60

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

```
Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Leu Trp Tyr Ser Asn
                85                  90                  95

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190

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

Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Ser Ala Phe Asp
    210                 215                 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Gly Cys Gly
225                 230                 235                 240

Gly Gly Glu Val Ala Ala Leu Glu Lys Glu Val Ala Ala Leu Glu Lys
                245                 250                 255

Glu Val Ala Ala Leu Glu Lys Glu Val Ala Ala Leu Glu Lys
            260                 265                 270
```

<210> 82
<211> 277
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 82

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


Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly
        115                 120                 125


Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
    130                 135                 140


Phe Thr Phe Asn Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly
```

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145 150 155 160

Lys Gly Leu Glu Trp Val Ala Arg Ile Arg Ser Lys Tyr Asn Asn Tyr
165 170 175

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

Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr
195 200 205

Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn
210 215 220

Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr
225 230 235 240

Val Ser Ser Gly Gly Cys Gly Gly Gly Lys Val Ala Ala Leu Lys Glu
245 250 255

Lys Val Ala Ala Leu Lys Glu Lys Val Ala Ala Leu Lys Glu Lys Val
260 265 270

Ala Ala Leu Lys Glu
275

<210> 83
<211> 270
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 83

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
    50                  55                  60

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

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

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190

Ser Thr Ser Thr Ala Tyr Met Glu Leu Arg Ser Leu Arg Ser Asp Asp
        195                 200                 205
```

```
Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Asn Ala Phe Gly
    210                 215                 220


Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Gly Cys Gly
225                 230                 235                 240


Gly Gly Glu Val Ala Ala Leu Glu Lys Glu Val Ala Ala Leu Glu Lys
                245                 250                 255


Glu Val Ala Ala Leu Glu Lys Glu Val Ala Ala Leu Glu Lys
            260                 265                 270


<210>  84
<211>  277
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic peptide sequence

<400>  84

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 Thr Leu Gly 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 Ser Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly Gly
            100                 105                 110

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly
        115                 120                 125

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
    130                 135                 140

Phe Thr Phe Asn Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Lys Gly Leu Glu Trp Val Ala Arg Ile Arg Ser Lys Tyr Asn Asn Tyr
                165                 170                 175

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

Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr
        195                 200                 205

Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn
    210                 215                 220

Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr
225                 230                 235                 240

Val Ser Ser Gly Gly Cys Gly Gly Gly Lys Val Ala Ala Leu Lys Glu
                245                 250                 255

Lys Val Ala Ala Leu Lys Glu Lys Val Ala Ala Leu Lys Glu Lys Val
            260                 265                 270

Ala Ala Leu Lys Glu
```

275

<210> 85
<211> 270
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 85

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
50 55 60

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

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

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
115 120 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
130 135 140

```
Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160


Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175


Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190


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


Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Thr Ala Phe Asp
    210                 215                 220


Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Gly Cys Gly
225                 230                 235                 240


Gly Gly Glu Val Ala Ala Leu Glu Lys Glu Val Ala Ala Leu Glu Lys
                245                 250                 255


Glu Val Ala Ala Leu Glu Lys Glu Val Ala Ala Leu Glu Lys
            260                 265                 270


<210>  86
<211>  277
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic peptide sequence

<400>  86

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 Thr Leu Gly 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 Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly Gly
            100                 105                 110

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly
        115                 120                 125

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
    130                 135                 140

Phe Thr Phe Ser Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Lys Gly Leu Glu Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn Tyr
                165                 170                 175

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

Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr
        195                 200                 205

Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn
```

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210 215 220

Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr
225 230 235 240

Val Ser Ser Gly Gly Cys Gly Gly Gly Lys Val Ala Ala Leu Lys Glu
245 250 255

Lys Val Ala Ala Leu Lys Glu Lys Val Ala Ala Leu Lys Glu Lys Val
260 265 270

Ala Ala Leu Lys Glu
275

<210> 87
<211> 270
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 87

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
50 55 60

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

```
Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Leu Trp Tyr Ser Asn
                85                  90                  95

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190

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

Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Asn Ala Phe Asp
    210                 215                 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Gly Cys Gly
225                 230                 235                 240

Gly Gly Glu Val Ala Ala Leu Glu Lys Glu Val Ala Ala Leu Glu Lys
                245                 250                 255

Glu Val Ala Ala Leu Glu Lys Glu Val Ala Ala Leu Glu Lys
            260                 265                 270
```

<210> 88
<211> 465
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 88

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


Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly
        115                 120                 125


Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
    130                 135                 140


Phe Thr Phe Ser Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly
```

```
145                 150                 155                 160

Lys Gly Leu Glu Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn Tyr
                165                 170                 175

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

Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr
        195                 200                 205

Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn
    210                 215                 220

Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr
225                 230                 235                 240

Val Ser Ser Gly Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Ala
                245                 250                 255

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

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
        275                 280                 285

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
    290                 295                 300

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
305                 310                 315                 320

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
```

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340 345 350

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

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

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

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

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
420 425 430

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
435 440 445

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
450 455 460

Gly
465

<210> 89
<211> 458
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 89

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
    50                  55                  60

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

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

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190

Ser Thr Ser Thr Ala Tyr Met Glu Leu Arg Ser Leu Arg Ser Asp Asp
        195                 200                 205
```

```
Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Ser Ala Phe Asp
    210                 215                 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Cys Pro Pro
225                 230                 235                 240

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

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

Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn
        275                 280                 285

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

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

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

Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys
            340                 345                 350

Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Cys Arg Glu
        355                 360                 365

Glu Met Thr Lys Asn Gln Val Ser Leu Ser Cys Ala Val Lys Gly Phe
    370                 375                 380

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

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


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


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


Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
    450                 455
```

<210> 90
<211> 465
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 90

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly
        115                 120                 125

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
    130                 135                 140

Phe Thr Phe Ser Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Lys Gly Leu Glu Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn Tyr
                165                 170                 175

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

Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr
        195                 200                 205

Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn
    210                 215                 220

Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr
225                 230                 235                 240

Val Ser Ser Gly Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Ala
                245                 250                 255

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

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
```

```
        275                 280                 285

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
    290                 295                 300

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
305                 310                 315                 320

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
            340                 345                 350

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

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

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

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

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
            420                 425                 430

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
        435                 440                 445

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
    450                 455                 460

Gly
```

465

<210> 91
<211> 458
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 91

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
50 55 60

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

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

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
115 120 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
130 135 140

```
Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160


Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175


Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190


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


Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Asn Ala Phe Gly
    210                 215                 220


Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Cys Pro Pro
225                 230                 235                 240


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


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


Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn
        275                 280                 285


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


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


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

```
Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys
            340                 345                 350


Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Cys Arg Glu
        355                 360                 365


Glu Met Thr Lys Asn Gln Val Ser Leu Ser Cys Ala Val Lys Gly Phe
    370                 375                 380


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


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


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


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


Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
    450                 455


<210>  92
<211>  465
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic peptide sequence

<400>  92

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 Thr Leu Gly 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 Ser Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly Gly
            100                 105                 110

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly
        115                 120                 125

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
    130                 135                 140

Phe Thr Phe Ser Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Lys Gly Leu Glu Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn Tyr
                165                 170                 175

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

Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr
        195                 200                 205

Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn
```

```
    210                 215                 220

Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr
225                 230                 235                 240

Val Ser Ser Gly Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Ala
                245                 250                 255

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

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
        275                 280                 285

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
    290                 295                 300

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
305                 310                 315                 320

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
            340                 345                 350

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

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

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

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

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405 410 415

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
420 425 430

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
435 440 445

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
450 455 460

Gly
465

<210> 93
<211> 458
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 93

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
50 55 60

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

```
Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Leu Trp Tyr Ser Asn
                85                  90                  95

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190

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

Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Thr Ala Phe Asp
    210                 215                 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Cys Pro Pro
225                 230                 235                 240

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

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

```
Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn
        275                 280                 285

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

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

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

Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys
            340                 345                 350

Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Cys Arg Glu
        355                 360                 365

Glu Met Thr Lys Asn Gln Val Ser Leu Ser Cys Ala Val Lys Gly Phe
    370                 375                 380

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

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

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

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

Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
    450                 455
```

<210> 94
<211> 465
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 94

```
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 Thr Leu Gly 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 Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly Gly
            100                 105                 110


Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly
        115                 120                 125


Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
    130                 135                 140


Phe Thr Phe Ser Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly
```

```
145                 150                 155                 160

Lys Gly Leu Glu Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn Tyr
                165                 170                 175

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

Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr
        195                 200                 205

Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn
    210                 215                 220

Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr
225                 230                 235                 240

Val Ser Ser Gly Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Ala
                245                 250                 255

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

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
        275                 280                 285

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
    290                 295                 300

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
305                 310                 315                 320

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
                325                 330                 335

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
```

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340 345 350

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

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

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

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

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
420 425 430

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
435 440 445

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
450 455 460

Gly
465

<210> 95
<211> 458
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 95

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
    50                  55                  60

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

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

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190

Ser Thr Ser Thr Ala Tyr Met Glu Leu Arg Ser Leu Arg Ser Asp Asp
        195                 200                 205
```

```
Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Asn Ala Phe Asp
    210                 215                 220


Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Cys Pro Pro
225                 230                 235                 240


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


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


Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn
        275                 280                 285


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


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


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


Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys
            340                 345                 350


Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Cys Arg Glu
        355                 360                 365


Glu Met Thr Lys Asn Gln Val Ser Leu Ser Cys Ala Val Lys Gly Phe
    370                 375                 380


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

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

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

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

Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
450 455

<210> 96
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 96

Asp Lys Thr His Thr Cys Pro Pro Cys Pro
1 5 10

<210> 97
<211> 330
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 97
cagtctgtgc tgacgcagcc gccctcagtg tctgcggccc caggacagaa ggtcaccatc 60

tcctgctctg gaagcagctc caacattggg aataattatg tatcctggta ccagcagctc 120

ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

actggggacg aggccgatta ttactgcgga acatgggata gcagcctgag tgctgtggta 300

ttcggcggag ggaccaagct gaccgtccta 330

<210> 98
<211> 354
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 98
gaggtccagc tggtgcagtc tggagctgag gtgaagaagc ctggggcctc agtgaaggtc 60

tcctgcaagg cttctggtta cacctttacc agctacggta tcagctgggt gcgacaggcc 120

cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180

gcacagaagc tccagggcag agtcaccatg accacagaca catccacgag cacagcctac 240

atggagctga ggagcctgag atctgacgac acggccgtgt attactgtgc gactatcgat 300

acagctagtg cttttgatat ctggggccaa gggacaatgg tcaccgtctc ttcc 354

<210> 99
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<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

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ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

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ttcggcggag ggaccaagct gaccgtccta 330

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<220>
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<400> 100
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tcctgcaagg cttctggtta cacctttacc agctacggta tcagctgggt gcgacaggcc 120

cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180

gcacagaagc tccagggcag agtcaccatg accacagaca catccacgag cacagcctac 240

atggagctga ggagcctgag atctgacgac acggccgtgt attactgtgc gactatcgat 300

acagctaatg cttttggtat ctggggccaa gggacaatgg tcaccgtctc gtcc 354

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ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

actggggacg aggccgatta ttactgcgga acatgggata gcagcctgag ttcttatgtc 300

ttcggaactg ggaccaaggt caccgtccta 330

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<212> DNA

<213> Artificial Sequence

<220>
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tcctgcaagg cttctggtta cacctttacc agctacggta tcagctgggt gcgacaggcc 120

cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180

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acagctactg cttttgatat ctggggccaa gggacaatgg tcaccgtctc gtcc 354

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ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

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ttcggaactg ggaccaaggt caccgtccta 330

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tcctgcaagg cttctggtta cacctttacc agctacggtt tcagctggat gcgacaggcc 120

cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180

gcacagaagc tccagggcag agtcaccatg accacagaca catccacgag cacagcctac 240

atggagctga ggagcctgag atctgacgac acggccgtgt attactgtgc gactatcgat 300

acagctagtg cttttgatat ctggggccaa gggacaatgg tcaccgtctc gagc 354

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ccaggtacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

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ttcggaactg ggaccaaggt caccgtccta 330

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cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180

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acagctaatg cttttgatat ctggggccaa gggacaatgg tcaccgtctc gagc 354

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ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

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ttcggaactg ggaccaaggt caccgtccta 330

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tcctgcaagg cttctggtta cacctttacc agctacggta tcagctgggt gcgacaggcc 120

cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180

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acagctaatg cttttgatat ctggggccaa gggacaatgg tcaccgtctc gagc 354

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ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

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ttcggcggag ggaccaagct gaccgtccta 330

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cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180

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atggagctga ggagcctgag atctgacgac acggccgtgt attactgtgc gactatcgat 300

acagctaatg cttttgatat ctggggccaa gggacaatgg tcaccgtctc gagc 354

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ccaggaacag cccccaaact cctcatttat gacagtaata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

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ttcggcggag ggaccaagct gaccgtccta 330

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<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

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tcctgcaagg cttctggtta cacctttacc agctacggta tcagctgggt gcgacaggcc 120

cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180

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atggagctga ggagcctgag atctgacgac acggccgtgt attactgtgc gactatcgat 300

acagctaatg cttttgatat ctggggccaa gggacaatgg tcaccgtctc gagc 354

<210> 113

<211> 330
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

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ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

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ttcggaactg ggaccaaggt caccgtccta 330

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<213> Artificial Sequence

<220>
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tcctgcaagg cttctggtta cacctttacc agctacggta tcagctgggt gcgacaggcc 120

cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180

gcacagaagc tccagggcag agtcaccatg accacagaca catccacgag cacagcctac 240

atggagctga ggagcctgag atctgacgac acggccgtgt attactgtgc gactatcgat 300

acagctaatg cttttgatat ctggggccaa gggacaatgg tcaccgtctc gagc 354

<210> 115
<211> 330
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

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tcctgctctg gaagcagctc caacattggg aataattatg tatcctggta ccagcagctc 120

ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

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ttcggcggag ggaccaagct gaccgtccta 330

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<220>
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<400> 116
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cctggacaag ggcttgagtg gatgggatgg atcagcgctt acaatggtaa cacaaactat 180

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gcgcctaata attttgatat ctggggccaa gggacaatgg tcaccgtctc gtcc 354

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<212> DNA
<213> Artificial Sequence

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<400> 117

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ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct      180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag      240

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gccgactctg tgaagggcag attcaccatc tcaagagatg attcaaagaa ctcactgtat      600

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caggtcagcc tgtggtgcct ggtcaaaggc ttctatccca gcgacatcgc cgtggagtgg     1200

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<223> Synthetic nucleotide sequence

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aagccaggac aggcaccaag gggcctgatc gggggtacaa acaaaagggc tccctggacc 180

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catgaggctc tgcacaacca ctacacgcag aagagcctct ccctgtcccc gggt 1374

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ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

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tcctgctctg gaagcagctc caacattggg aataattatg tatcctggta ccagcagctc 120

ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

actggggacg aggccgatta ttactgcgga acatgggata gcagcctgag ttcttatgtc 300

ttcggaactg ggaccaaggt caccgtccta ggtggcggat ccggcggcgg aggcgaggtg 360

cagctggtgg agtctggggg aggcttggtc cagcctggag ggtccctgag actctcctgt 420

gcagcctctg gattcacctt cagcacatac gctatgaatt gggtccgcca ggctccaggg 480

aaggggctgg agtgggttgg caggatcagg tccaagtaca acaattatgc aacctactat 540

gccgactctg tgaagggcag attcaccatc tcaagagatg attcaaagaa ctcactgtat 600

ctgcaaatga acagcctgaa aaccgaggac acggccgtgt attactgtgt gagacacggt 660

aacttcggca attcttacgt gtcttggttt gcttattggg gacaggggac actggtgact 720

gtgtcttccg gatgcccacc gtgcccagca cctgaagccg ctggggcacc gtcagtcttc 780

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggacccctga ggtcacatgc 840

gtggtggtgg acgtgagcca cgaagaccct gaggtcaagt tcaactggta cgtggacggc 900

gtggaggtgc ataatgccaa gacaaagccg cgggaggagc agtacaacag cacgtaccgt 960

gtggtcagcg tcctcaccgt cctgcaccag gactggctga atggcaagga gtacaagtgc 1020

aaggtctcca acaaagccct cccagccccc atcgagaaaa ccatctccaa agccaaaggg 1080

cagccccgag aaccacaggt gtgcaccctg cccccatccc gggaggagat gaccaagaac 1140

caggtcagcc tgtggtgcct ggtcaaaggc ttctatccca gcgacatcgc cgtggagtgg 1200

gagagcaatg ggcagccgga gaacaactac aagaccacgc ctcccgtgct ggactccgac 1260

ggctccttct tcctctatag caagctcacc gtggacaaga gcaggtggca gcaggggaac 1320

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacacgca gaagagcctc 1380

tccctgtccc cgggt 1395

<210> 122
<211> 1374
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 122
caggctgtgg tgactcagga gccttcactg accgtgtccc caggcggaac tgtgaccctg 60

acatgcagat ccagcacagg cgcagtgacc acatctaact acgccaattg ggtgcagcag 120

aagccaggac aggcaccaag gggcctgatc gggggtacaa acaaaagggc tccctggacc 180

cctgcacggt tttctggaag tctgctgggc ggaaaggccg ctctgactat taccggggca 240

caggccgagg acgaagccga ttactattgt gctctgtggt atagcaatct gtgggtgttc 300

gggggtggca caaaactgac tgtgctggga gggggtggat ccggtggagg tggcgaggtc 360

cagctggtgc agtctggagc tgaggtgaag aagcctgggg cctcagtgaa ggtctcctgc 420

aaggcttctg gttacacctt taccagctac ggtatcagct gggtgcgaca ggcccctgga 480

caagggcttg agtggatggg atggatcagc gcttacaatg gtaacacaaa ctatgcacag 540

aagctccagg gcagagtcac catgaccaca gacacatcca cgagcactgc ctacatggag 600

ctgaggagcc tgagatctga cgacacggcc gtgtattact gtgcgactat cgatacagct 660

actgcttttg atatctgggg ccaagggaca atggtcaccg tctcgtccgg atgtccaccg 720

tgcccagcac ctgaagccgc tggggcaccg tcagtcttcc tcttcccccc aaaacccaag 780

gacaccctca tgatctcccg gacccctgag gtcacatgcg tggtggtgga cgtgagccac 840

gaagaccctg aggtcaagtt caactggtac gtggacggcg tggaggtgca taatgccaag 900

acaaagccgc gggaggagca gtacaacagc acgtaccgtg tggtcagcgt cctcaccgtc 960

ctgcaccagg actggctgaa tggcaaggag tacaagtgca aggtctccaa caaagccctc 1020

ccagccccca tcgagaaaac catctccaaa gccaaagggc agccccgaga accacaggtg 1080

tacaccctgc ccccatgccg ggaggagatg accaagaacc aggtcagcct gtcctgcgcg 1140

gtcaaaggct tctatcccag cgacatcgcc gtggagtggg agagcaatgg gcagccggag 1200

aacaactaca agaccacgcc tcccgtgctg gactccgacg gctccttctt cctcgttagc 1260

aagctcaccg tggacaagag caggtggcag caggggaacg tcttctcatg ctccgtgatg 1320

catgaggctc tgcacaacca ctacacgcag aagagcctct ccctgtcccc gggt 1374

<210> 123
<211> 1395
<212> DNA

<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 123
cagtctgtct tgacgcagcc gccctcagtg tctgcggccc caggacagaa ggtcaccatc 60

tcctgctctg gaagcagctc caacattggg aataattatg tatcctggta ccagcagctc 120

ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180

gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240

actggggacg aggccgatta ttactgcgga acatgggata gcagcctgag tgcttatgtc 300

ttcggaactg ggaccaaggt caccgtccta ggtggcggat ccggcggcgg aggcgaggtg 360

cagctggtgg agtctggggg aggcttggtc cagcctggag ggtccctgag actctcctgt 420

gcagcctctg gattcacctt cagcacatac gctatgaatt gggtccgcca ggctccaggg 480

aaggggctgg agtgggttgg caggatcagg tccaagtaca acaattatgc aacctactat 540

gccgactctg tgaagggcag attcaccatc tcaagagatg attcaaagaa ctcactgtat 600

ctgcaaatga acagcctgaa aaccgaggac acggccgtgt attactgtgt gagacacggt 660

aacttcggca attcttacgt gtcttggttt gcttattggg gacaggggac actggtgact 720

gtgtcttccg gatgcccacc gtgcccagca cctgaagccg ctggggcacc gtcagtcttc 780

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggacccctga ggtcacatgc 840

gtggtggtgg acgtgagcca cgaagaccct gaggtcaagt tcaactggta cgtggacggc 900

gtggaggtgc ataatgccaa gacaaagccg cgggaggagc agtacaacag cacgtaccgt 960

gtggtcagcg tcctcaccgt cctgcaccag gactggctga atggcaagga gtacaagtgc 1020

aaggtctcca acaaagccct cccagccccc atcgagaaaa ccatctccaa agccaaaggg 1080

cagccccgag aaccacaggt gtgcaccctg cccccatccc gggaggagat gaccaagaac 1140

caggtcagcc tgtggtgcct ggtcaaaggc ttctatccca gcgacatcgc cgtggagtgg 1200

gagagcaatg ggcagccgga gaacaactac aagaccacgc ctcccgtgct ggactccgac 1260

ggctccttct tcctctatag caagctcacc gtggacaaga gcaggtggca gcaggggaac 1320

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacacgca gaagagcctc 1380

tccctgtccc cgggt 1395

<210> 124
<211> 1374
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 124
caggctgtgg tgactcagga gccttcactg accgtgtccc caggcggaac tgtgaccctg 60

acatgcagat ccagcacagg cgcagtgacc acatctaact acgccaattg ggtgcagcag 120

aagccaggac aggcaccaag gggcctgatc gggggtacaa acaaaagggc tccctggacc 180

cctgcacggt tttctggaag tctgctgggc ggaaaggccg ctctgactat taccggggca 240

caggccgagg acgaagccga ttactattgt gctctgtggt atagcaatct gtgggtgttc 300

gggggtggca caaaactgac tgtgctggga gggggtggat ccggtggagg tggcgaggtc 360

cagctggtgc agtctggagc tgaggtgaag aagcctgggg cctcagtgaa ggtctcctgc 420

aaggcttctg gttacacctt taccagctac ggtatcagct gggtgcgaca ggcccctgga 480

caagggcttg agtggatggg atggatcagc gcttacaatg gtaacacaaa ctatgcacag 540

aagctccagg gcagagtcac catgaccaca gacacatcca cgagcacagc ctacatggag 600

ctgaggagcc tgagatctga cgacacggcc gtgtattact gtgcgactat cgatacagct 660

aatgcttttg atatctgggg ccaagggaca atggtcaccg tctcgtccgg atgtccaccg 720

tgcccagcac ctgaagccgc tggggcaccg tcagtcttcc tcttcccccc aaaacccaag 780

gacaccctca tgatctcccg gacccctgag gtcacatgcg tggtggtgga cgtgagccac 840

gaagaccctg aggtcaagtt caactggtac gtggacggcg tggaggtgca taatgccaag 900

acaaagccgc gggaggagca gtacaacagc acgtaccgtg tggtcagcgt cctcaccgtc 960

ctgcaccagg actggctgaa tggcaaggag tacaagtgca aggtctccaa caaagccctc 1020

ccagccccca tcgagaaaac catctccaaa gccaaagggc agccccgaga accacaggtg 1080

tacaccctgc ccccatgccg ggaggagatg accaagaacc aggtcagcct gtcctgcgcg 1140

gtcaaaggct tctatcccag cgacatcgcc gtggagtggg agagcaatgg gcagccggag 1200

aacaactaca agaccacgcc tcccgtgctg gactccgacg gctccttctt cctcgttagc 1260

aagctcaccg tggacaagag caggtggcag caggggaacg tcttctcatg ctccgtgatg 1320

catgaggctc tgcacaacca ctacacgcag aagagcctct ccctgtcccc gggt 1374

<210> 125
<211> 227
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 125

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly
1 5 10 15

Ala Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
20 25 30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
35 40 45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
50 55 60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
65 70 75 80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
85 90 95

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Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
            100                 105                 110


Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
        115                 120                 125


Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser
    130                 135                 140


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


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


Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Val Ser Lys Leu Thr Val
            180                 185                 190


Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
        195                 200                 205


His Glu Ala Leu His Asn Arg Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220


Pro Gly Lys
225
```

<210> 126
<211> 681
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 126
gacaaaactc acacatgccc accgtgccca gcacctgaag ccgcgggggc accgtcagtc 60

ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcaca 120

tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac 180

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac 240

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag 300

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 360

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggagga gatgaccaag 420

aaccaggtca gcctgagttg cgcagtcaaa ggcttctatc ccagcgacat cgccgtggag 480

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 540

gacggctcct tcttcctcgt cagcaagctc accgtggaca agagcaggtg gcagcagggg 600

aacgtcttct catgctccgt gatgcatgag gctctgcaca accgctacac gcagaagagc 660

ctctccctgt ctccgggtaa a 681

<210> 127
<211> 486
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 127

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly
1 5 10 15

Ala Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
20 25 30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
35 40 45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
50 55 60

```
His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
65                  70                  75                  80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
                85                  90                  95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
            100                 105                 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
        115                 120                 125

Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser
    130                 135                 140

Leu Trp Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
145                 150                 155                 160

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

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
            180                 185                 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
        195                 200                 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220

Pro Gly Lys Ala Pro Ser Ser Ser Pro Met Glu Gln Ser Val Leu Thr
225                 230                 235                 240

Gln Pro Pro Ser Val Ser Ala Ala Pro Gly Gln Lys Val Thr Ile Ser
                245                 250                 255
```

```
Cys Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser Trp Tyr
            260                 265                 270

Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu Ile Tyr Asp Asn Asn
        275                 280                 285

Lys Arg Pro Ser Gly Ile Pro Asp Arg Phe Ser Gly Ser Lys Ser Gly
    290                 295                 300

Thr Ser Ala Thr Leu Gly Ile Thr Gly Leu Gln Thr Gly Asp Glu Ala
305                 310                 315                 320

Asp Tyr Tyr Cys Gly Thr Trp Asp Ser Ser Leu Ser Ala Val Val Phe
                325                 330                 335

Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gly Gly Gly Ser Gly Gly
            340                 345                 350

Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro
        355                 360                 365

Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser
    370                 375                 380

Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu
385                 390                 395                 400

Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn Tyr Ala Thr Tyr Tyr
                405                 410                 415

Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys
            420                 425                 430

Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala
        435                 440                 445
```

Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn Ser Tyr Val Ser
450 455 460

Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly
465 470 475 480

Val Glu Pro Lys Ser Cys
485

<210> 128
<211> 1458
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 128
gacaaaactc acacatgccc accgtgccca gcacctgaag ccgcgggggc accgtcagtc 60

ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcaca 120

tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac 180

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac 240

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag 300

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 360

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggagga gatgaccaag 420

aaccaggtca gcctgtggtg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 480

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 540

gacggctcct tcttcctcta cagcaagctc accgtggaca agagcaggtg gcagcagggg 600

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 660

ctctccctgt ctccgggtaa agcccccttcc agctccccta tggaacagtc cgtcctgact 720

cagcctccct ccgtgtccgc agctcctggg cagaaggtca caatcagttg ctctgggtca 780

tcctcaaaca ttggcaacaa ttacgtgtct tggtatcagc agctgcccgg gacagcccct 840

aagctgctga tctacgacaa caacaagcgg ccaagtggca ttcccgatcg gttcagcggc 900

agcaagtctg gcaccagcgc cacactgggc atcactgggc tgcagaccgg ggacgaggct 960

gattactatt gcggaacctg ggactcttca ctgtctgccg tcgtcttcgg agggggaacc 1020

aaactgaccg tgctgggtgg aggcggatcc ggcggcggag gcgaggtgca gctggtggag 1080

tctgggggag gcttggtcca gcctggaggg tccctgagac tctcctgtgc agcctctgga 1140

ttcaccttca gcacatacgc tatgaattgg gtccgccagg ctccagggaa ggggctggag 1200

tgggttggaa ggatcaggtc caagtacaac aattatgcaa cctactatgc cgactctgtg 1260

aagggtagat tcaccatctc aagagatgat tcaaagaact cactgtatct gcaaatgaac 1320

agcctgaaaa ccgaggacac ggccgtgtat tactgtgtga gacacggtaa cttcggcaat 1380

tcttacgtgt cttggtttgc ttattgggga caggggacac tggtgactgt gtcttccgga 1440

gttgagccca aatcttgt 1458

<210> 129
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 129

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe

```
    50                  55                  60

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

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

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190

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

Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Ser Ala Phe Asp
    210                 215                 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Phe Asn Arg
225                 230                 235                 240

Gly Glu Cys
```

<210> 130
<211> 729
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 130
caggctgtgg tgactcagga gccttcactg accgtgtccc caggcggaac tgtgaccctg 60

acatgcagat ccagcacagg cgcagtgacc acatctaact acgccaattg ggtgcagcag 120

aagccaggac aggcaccaag gggcctgatc gggggtacaa acaaaagggc tccctggacc 180

cctgcacggt tttctggaag tctgctgggc ggaaaggccg ctctgactat taccggggca 240

caggccgagg acgaagccga ttactattgt gctctgtggt atagcaatct gtgggtgttc 300

gggggtggca caaaactgac tgtgctggga gggggtggat ccggcggagg tggagaagtc 360

cagctggtgc agagtggggc agaagtcaag aaacccggcg catcagtgaa agtctcatgt 420

aaagcatcag gctatacctt tacatcatac ggaatcagct gggtgaggca ggctccagga 480

cagggactgg agtggatggg atggatttct gcatacaacg gcaatacaaa ctatgcccag 540

aagctgcagg gccgggtgac tatgaccaca gacactagca cctccacagc ctatatggaa 600

ctgcggtctc tgagaagtga cgatactgcc gtctactatt gcgctaccat tgataccgct 660

tcagccttcg acatttgggg gcaggggact atggtgacag tgagctccgg attcaacagg 720

ggagagtgt 729

<210> 131
<211> 486
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 131

```
Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly
1               5                   10                  15

Ala Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
            20                  25                  30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
        35                  40                  45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
    50                  55                  60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
65                  70                  75                  80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
                85                  90                  95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
            100                 105                 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
        115                 120                 125

Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser
    130                 135                 140

Leu Trp Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
145                 150                 155                 160

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

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
            180                 185                 190
```

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

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220

Pro Gly Lys Ala Pro Ser Ser Ser Pro Met Glu Gln Ser Val Leu Thr
225                 230                 235                 240

Gln Pro Pro Ser Val Ser Ala Ala Pro Gly Gln Lys Val Thr Ile Ser
                245                 250                 255

Cys Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser Trp Tyr
            260                 265                 270

Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu Ile Tyr Asp Asn Asn
        275                 280                 285

Lys Arg Pro Ser Gly Ile Pro Asp Arg Phe Ser Gly Ser Lys Ser Gly
    290                 295                 300

Thr Ser Ala Thr Leu Gly Ile Thr Gly Leu Gln Thr Gly Asp Glu Ala
305                 310                 315                 320

Asp Tyr Tyr Cys Gly Thr Trp Asp Ser Ser Leu Ser Gly Val Val Phe
                325                 330                 335

Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gly Gly Gly Ser Gly Gly
            340                 345                 350

Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro
        355                 360                 365

Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser
    370                 375                 380
```

```
Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu
385                 390                 395                 400


Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn Tyr Ala Thr Tyr Tyr
                405                 410                 415


Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys
            420                 425                 430


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


Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn Ser Tyr Val Ser
    450                 455                 460


Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly
465                 470                 475                 480


Val Glu Pro Lys Ser Cys
                485
```

<210> 132
<211> 1458
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 132

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gacaaaactc acacatgccc accgtgccca gcacctgaag ccgcgggggc accgtcagtc       60

ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcaca      120

tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac      180

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac      240

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag      300
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tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 360

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggagga gatgaccaag 420

aaccaggtca gcctgtggtg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 480

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 540

gacggctcct tcttcctcta cagcaagctc accgtggaca agagcaggtg gcagcagggg 600

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 660

ctctccctgt ctccgggtaa agcccccttcc agctccccta tggaacagtc cgtcctgact 720

cagcctccct ccgtgtccgc agctcctggg cagaaggtca caatcagttg ctctgggtca 780

tcctcaaaca ttggcaacaa ttacgtgtct tggtatcagc agctgcccgg gacagcccct 840

aagctgctga tctacgacaa caacaagcgg ccaagtggca ttcccgatcg gttcagcggc 900

agcaagtctg gcaccagcgc cacactgggc atcactgggc tgcagaccgg ggacgaggct 960

gattactatt gcggaacctg ggactcttca ctgtctggcg tcgtcttcgg agggggaacc 1020

aaactgaccg tgctgggtgg aggcggatcc ggcggcggag gcgaggtgca gctggtggag 1080

tctgggggag gcttggtcca gcctggaggg tccctgagac tctcctgtgc agcctctgga 1140

ttcaccttca gcacatacgc tatgaattgg gtccgccagg ctccagggaa ggggctggag 1200

tgggttggaa ggatcaggtc caagtacaac aattatgcaa cctactatgc cgactctgtg 1260

aagggtagat tcaccatctc aagagatgat tcaaagaact cactgtatct gcaaatgaac 1320

agcctgaaaa ccgaggacac ggccgtgtat tactgtgtga gacacggtaa cttcggcaat 1380

tcttacgtgt cttggtttgc ttattgggga caggggacac tggtgactgt gtcttccgga 1440

gttgagccca aatcttgt 1458

<210> 133
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 133

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


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


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


Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
    50                  55                  60


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


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


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


Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125


Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140


Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160


Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175


Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
```

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180 185 190

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

Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Asn Ala Phe Gly
210 215 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Phe Asn Arg
225 230 235 240

Gly Glu Cys

<210> 134
<211> 729
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 134
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acatgcagat ccagcacagg cgcagtgacc acatctaact acgccaattg ggtgcagcag 120

aagccaggac aggcaccaag gggcctgatc gggggtacaa acaaaagggc tccctggacc 180

cctgcacggt tttctggaag tctgctgggc ggaaaggccg ctctgactat taccggggca 240

caggccgagg acgaagccga ttactattgt gctctgtggt atagcaatct gtgggtgttc 300

gggggtggca caaaactgac tgtgctggga gggggtggat ccggcggagg tggagaagtc 360

cagctggtgc agagtggggc agaagtcaag aaacccggcg catcagtgaa agtctcatgt 420

aaagcatcag gctatacctt tacatcatac ggaatcagct gggtgaggca ggctccagga 480

cagggactgg agtggatggg atggatttct gcatacaacg gcaatacaaa ctatgcccag 540

aagctgcagg gccgggtgac tatgaccaca gacactagca cctccacagc ctatatggaa 600

ctgcggtctc tgagaagtga cgatactgcc gtctactatt gcgctaccat tgataccgct 660

aacgccttcg gcatttgggg gcaggggact atggtgacag tgagctccgg attcaacagg 720

ggagagtgt 729

<210> 135
<211> 486
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 135

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly
1 5 10 15

Ala Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
20 25 30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
35 40 45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
50 55 60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
65 70 75 80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
85 90 95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
100 105 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
115 120 125

```
Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser
    130                 135                 140

Leu Trp Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
145                 150                 155                 160

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

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
            180                 185                 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
        195                 200                 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220

Pro Gly Lys Ala Pro Ser Ser Ser Pro Met Glu Gln Ser Val Leu Thr
225                 230                 235                 240

Gln Pro Pro Ser Val Ser Ala Ala Pro Gly Gln Lys Val Thr Ile Ser
                245                 250                 255

Cys Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser Trp Tyr
            260                 265                 270

Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu Ile Tyr Asp Asn Asn
        275                 280                 285

Lys Arg Pro Ser Gly Ile Pro Asp Arg Phe Ser Gly Ser Lys Ser Gly
    290                 295                 300

Thr Ser Ala Thr Leu Gly Ile Thr Gly Leu Gln Thr Gly Asp Glu Ala
305                 310                 315                 320
```

```
Asp Tyr Tyr Cys Gly Thr Trp Asp Ser Ser Leu Ser Ser Tyr Val Phe
                325                 330                 335

Gly Thr Gly Thr Lys Val Thr Val Leu Gly Gly Gly Gly Ser Gly Gly
            340                 345                 350

Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro
        355                 360                 365

Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser
    370                 375                 380

Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu
385                 390                 395                 400

Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn Tyr Ala Thr Tyr Tyr
                405                 410                 415

Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys
            420                 425                 430

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

Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn Ser Tyr Val Ser
    450                 455                 460

Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly
465                 470                 475                 480

Val Glu Pro Lys Ser Cys
                485
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<210> 136
<211> 1458
<212> DNA

<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 136
gacaaaactc acacatgccc accgtgccca gcacctgaag ccgcgggggc accgtcagtc 60

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tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac 180

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac 240

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag 300

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 360

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggagga gatgaccaag 420

aaccaggtca gcctgtggtg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 480

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 540

gacggctcct tcttcctcta cagcaagctc accgtggaca agagcaggtg gcagcagggg 600

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 660

ctctccctgt ctccgggtaa agcccccttcc agctccccta tggaacagtc cgtcctgact 720

cagcctccct ccgtgtccgc agctcctggg cagaaggtca caatcagttg ctctgggtca 780

tcctcaaaca ttggcaacaa ttacgtgtct tggtatcagc agctgcccgg gacagcccct 840

aagctgctga tctacgacaa caacaagcgg ccaagtggca ttcccgatcg gttcagcggc 900

agcaagtctg gcaccagcgc cacactgggc atcactgggc tgcagaccgg ggacgaggct 960

gattactatt gcggaacctg ggactcttca ctgtcttcct acgtcttcgg aacgggaacc 1020

aaagtgaccg tgctgggtgg aggcggatcc ggcggcggag gcgaggtgca gctggtggag 1080

tctgggggag gcttggtcca gcctggaggg tccctgagac tctcctgtgc agcctctgga 1140

ttcaccttca gcacatacgc tatgaattgg gtccgccagg ctccagggaa ggggctggag 1200

tgggttggaa ggatcaggtc caagtacaac aattatgcaa cctactatgc cgactctgtg 1260

aagggtagat tcaccatctc aagagatgat tcaaagaact cactgtatct gcaaatgaac 1320

agcctgaaaa ccgaggacac ggccgtgtat tactgtgtga gacacggtaa cttcggcaat 1380

tcttacgtgt cttggtttgc ttattgggga caggggacac tggtgactgt gtcttccgga 1440

gttgagccca aatcttgt 1458

<210> 137
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 137

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
50 55 60

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

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

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu

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115 120 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
130 135 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145 150 155 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
165 170 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
180 185 190

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

Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Thr Ala Phe Asp
210 215 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Phe Asn Arg
225 230 235 240

Gly Glu Cys

<210> 138
<211> 729
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 138
caggctgtgg tgactcagga gccttcactg accgtgtccc caggcggaac tgtgaccctg 60

acatgcagat ccagcacagg cgcagtgacc acatctaact acgccaattg ggtgcagcag 120

aagccaggac aggcaccaag gggcctgatc gggggtacaa acaaaagggc tccctggacc 180

cctgcacggt tttctggaag tctgctgggc ggaaaggccg ctctgactat taccggggca 240

caggccgagg acgaagccga ttactattgt gctctgtggt atagcaatct gtgggtgttc 300

gggggtggca caaaactgac tgtgctggga gggggtggat ccggcggagg tggagaagtc 360

cagctggtgc agagtggggc agaagtcaag aaacccggcg catcagtgaa agtctcatgt 420

aaagcatcag gctatacctt tacatcatac ggaatcagct gggtgaggca ggctccagga 480

cagggactgg agtggatggg atggatttct gcatacaacg gcaatacaaa ctatgcccag 540

aagctgcagg gccgggtgac tatgaccaca gacactagca cctccacagc ctatatggaa 600

ctgcggtctc tgagaagtga cgatactgcc gtctactatt gcgctaccat tgataccgct 660

acagccttcg acatttgggg gcaggggact atggtgacag tgagctccgg attcaacagg 720

ggagagtgt 729

<210> 139
<211> 486
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 139

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly
1 5 10 15

Ala Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
20 25 30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
35 40 45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
50 55 60

```
His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
65                  70                  75                  80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
                85                  90                  95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
            100                 105                 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
        115                 120                 125

Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser
    130                 135                 140

Leu Trp Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
145                 150                 155                 160

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

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
            180                 185                 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
        195                 200                 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220

Pro Gly Lys Ala Pro Ser Ser Ser Pro Met Glu Gln Ser Val Leu Thr
225                 230                 235                 240

Gln Pro Pro Ser Val Ser Ala Ala Pro Gly Gln Lys Val Thr Ile Ser
                245                 250                 255
```

```
Cys Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser Trp Tyr
            260                 265                 270

Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu Ile Tyr Asp Asn Asn
        275                 280                 285

Lys Arg Pro Ser Gly Ile Pro Asp Arg Phe Ser Gly Ser Lys Ser Gly
    290                 295                 300

Thr Ser Ala Thr Leu Gly Ile Thr Gly Leu Gln Thr Gly Asp Glu Ala
305                 310                 315                 320

Asp Tyr Tyr Cys Gly Thr Trp Asp Ser Ser Leu Ser Ala Tyr Val Phe
                325                 330                 335

Gly Thr Gly Thr Lys Val Thr Val Leu Gly Gly Gly Gly Ser Gly Gly
            340                 345                 350

Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro
        355                 360                 365

Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser
    370                 375                 380

Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu
385                 390                 395                 400

Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn Tyr Ala Thr Tyr Tyr
                405                 410                 415

Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys
            420                 425                 430

Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala
        435                 440                 445
```

Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly Asn Ser Tyr Val Ser
450 455 460

Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly
465 470 475 480

Val Glu Pro Lys Ser Cys
485

<210> 140
<211> 1458
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 140
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ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcaca 120

tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac 180

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac 240

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag 300

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 360

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggagga gatgaccaag 420

aaccaggtca gcctgtggtg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 480

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 540

gacggctcct tcttcctcta cagcaagctc accgtggaca agagcaggtg gcagcagggg 600

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 660

ctctccctgt ctccgggtaa agcccccttcc agctccccta tggaacagtc cgtcctgact 720

cagcctccct ccgtgtccgc agctcctggg cagaaggtca caatcagttg ctctgggtca 780

tcctcaaaca ttggcaacaa ttacgtgtct tggtatcagc agctgcccgg gacagcccct 840

aagctgctga tctacgacaa caacaagcgg ccaagtggca ttcccgatcg gttcagcggc 900

agcaagtctg gcaccagcgc cacactgggc atcactgggc tgcagaccgg ggacgaggct 960

gattactatt gcggaacctg ggactcttca ctgtctgcct acgtcttcgg aacgggaacc 1020

aaagtgaccg tgctgggtgg aggcggatcc ggcggcggag gcgaggtgca gctggtggag 1080

tctgggggag gcttggtcca gcctggaggg tccctgagac tctcctgtgc agcctctgga 1140

ttcaccttca gcacatacgc tatgaattgg gtccgccagg ctccagggaa ggggctggag 1200

tgggttggaa ggatcaggtc caagtacaac aattatgcaa cctactatgc cgactctgtg 1260

aagggtagat tcaccatctc aagagatgat tcaaagaact cactgtatct gcaaatgaac 1320

agcctgaaaa ccgaggacac ggccgtgtat tactgtgtga gacacggtaa cttcggcaat 1380

tcttacgtgt cttggtttgc ttattgggga caggggacac tggtgactgt gtcttccgga 1440

gttgagccca aatcttgt 1458

<210> 141
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 141

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe

```
    50                  55                  60

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

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

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190

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

Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Asn Ala Phe Asp
    210                 215                 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Phe Asn Arg
225                 230                 235                 240

Gly Glu Cys
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<210> 142
<211> 729
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 142
caggctgtgg tgactcagga gccttcactg accgtgtccc caggcggaac tgtgaccctg 60

acatgcagat ccagcacagg cgcagtgacc acatctaact acgccaattg ggtgcagcag 120

aagccaggac aggcaccaag gggcctgatc gggggtacaa acaaaagggc tccctggacc 180

cctgcacggt tttctggaag tctgctgggc ggaaaggccg ctctgactat taccggggca 240

caggccgagg acgaagccga ttactattgt gctctgtggt atagcaatct gtgggtgttc 300

gggggtggca caaaactgac tgtgctggga gggggtggat ccggcggagg tggagaagtc 360

cagctggtgc agagtggggc agaagtcaag aaacccggcg catcagtgaa agtctcatgt 420

aaagcatcag gctatacctt tacatcatac ggaatcagct gggtgaggca ggctccagga 480

cagggactgg agtggatggg atggatttct gcatacaacg gcaatacaaa ctatgcccag 540

aagctgcagg gccgggtgac tatgaccaca gacactagca cctccacagc ctatatggaa 600

ctgcggtctc tgagaagtga cgatactgcc gtctactatt gcgctaccat tgataccgct 660

aacgccttcg acatttgggg gcaggggact atggtgacag tgagctccgg attcaacagg 720

ggagagtgt 729

<210> 143
<211> 478
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 143

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

Gly Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly
        115                 120                 125

Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser
    130                 135                 140

Gly Phe Thr Phe Ser Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro
145                 150                 155                 160

Gly Lys Gly Leu Glu Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn
                165                 170                 175

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

```
Arg Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys
        195                 200                 205

Thr Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly
    210                 215                 220

Asn Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
225                 230                 235                 240

Thr Val Ser Ser Gly Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr
                245                 250                 255

Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Ala Pro Ser Val Phe
            260                 265                 270

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
        275                 280                 285

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
    290                 295                 300

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
305                 310                 315                 320

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
                325                 330                 335

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
            340                 345                 350

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
        355                 360                 365

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
    370                 375                 380
```

```
Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Trp Cys Leu Val
385                 390                 395                 400


Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
                405                 410                 415


Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
            420                 425                 430


Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
        435                 440                 445


Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
    450                 455                 460


Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
465                 470                 475


<210>  144
<211>  1434
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Synthetic nucleotide sequence

<400>  144
cagtccgtcc tgactcagcc tccctccgtg tccgcagctc ctgggcagaa ggtcacaatc       60

agttgctctg ggtcatcctc aaacattggc aacaattacg tgtcttggta tcagcagctg      120

cccgggacag cccctaagct gctgatctac gacaacaaca agcggccaag tggcattccc      180

gatcggttca gcggcagcaa gtctggcacc agcgccacac tgggcatcac tgggctgcag      240

accggggacg aggctgatta ctattgcgga acctgggact cttcactgtc tgccgtcgtc      300

ttcggagggg gaaccaaact gaccgtgctg ggtggaggcg gatccggcgg cggaggcgag      360

gtgcagctgg tggagtctgg gggaggcttg gtccagcctg gagggtccct gagactctcc      420
```

tgtgcagcct ctggattcac cttcagcaca tacgctatga attgggtccg ccaggctcca 480

gggaaggggc tggagtgggt tggaaggatc aggtccaagt acaacaatta tgcaacctac 540

tatgccgact ctgtgaaggg tagattcacc atctcaagag atgattcaaa gaactcactg 600

tatctgcaaa tgaacagcct gaaaaccgag gacacggccg tgtattactg tgtgagacac 660

ggtaacttcg gcaattctta cgtgtcttgg tttgcttatt ggggacaggg gacactggtg 720

actgtgtctt ccggagttga gcccaaatct tgtgacaaaa ctcacacatg cccaccgtgc 780

ccagcacctg aagccgcggg ggcaccgtca gtcttcctct tccccccaaa acccaaggac 840

accctcatga tctcccggac ccctgaggtc acatgcgtgg tggtggacgt gagccacgaa 900

gaccctgagg tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca 960

aagccgcggg aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg 1020

caccaggact ggctgaatgg caaggagtac aagtgcaagg tctccaacaa agccctccca 1080

gcccccatcg agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac 1140

accctgcccc catcccggga ggagatgacc aagaaccagg tcagcctgtg gtgcctggtc 1200

aaaggcttct atcccagcga catcgccgtg gagtgggaga gcaatgggca gccggagaac 1260

aactacaaga ccacgcctcc cgtgctggac tccgacggct ccttcttcct ctacagcaag 1320

ctcaccgtgg acaagagcag gtggcagcag gggaacgtct tctcatgctc cgtgatgcat 1380

gaggctctgc acaaccacta cacgcagaag agcctctccc tgtctccggg taaa 1434

<210> 145
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 145

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
    50                  55                  60

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

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

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190

Ser Thr Ser Thr Ala Tyr Met Glu Leu Arg Ser Leu Arg Ser Asp Asp
        195                 200                 205
```

Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Ser Ala Phe Asp
210 215 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Phe Asn Arg
225 230 235 240

Gly Glu Cys

<210> 146
<211> 729
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 146
caggctgtgg tgactcagga gccttcactg accgtgtccc caggcggaac tgtgaccctg 60

acatgcagat ccagcacagg cgcagtgacc acatctaact acgccaattg ggtgcagcag 120

aagccaggac aggcaccaag gggcctgatc gggggtacaa acaaaagggc tccctggacc 180

cctgcacggt tttctggaag tctgctgggc ggaaaggccg ctctgactat taccggggca 240

caggccgagg acgaagccga ttactattgt gctctgtggt atagcaatct gtgggtgttc 300

gggggtggca caaaactgac tgtgctggga gggggtggat ccggcggagg tggagaagtc 360

cagctggtgc agagtggggc agaagtcaag aaacccggcg catcagtgaa agtctcatgt 420

aaagcatcag gctatacctt tacatcatac ggaatcagct gggtgaggca ggctccagga 480

cagggactgg agtggatggg atggatttct gcatacaacg gcaatacaaa ctatgcccag 540

aagctgcagg gccgggtgac tatgaccaca gacactagca cctccacagc ctatatggaa 600

ctgcggtctc tgagaagtga cgatactgcc gtctactatt gcgctaccat tgataccgct 660

tcagccttcg acatttgggg gcaggggact atggtgacag tgagctccgg attcaacagg 720

ggagagtgt 729

<210> 147
<211> 478
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 147

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


Gly Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly
        115                 120                 125


Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser
    130                 135                 140


Gly Phe Thr Phe Ser Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro
```

```
145                 150                 155                 160

Gly Lys Gly Leu Glu Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn
                165                 170                 175

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

Arg Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys
        195                 200                 205

Thr Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly
    210                 215                 220

Asn Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
225                 230                 235                 240

Thr Val Ser Ser Gly Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr
                245                 250                 255

Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Ala Pro Ser Val Phe
            260                 265                 270

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
        275                 280                 285

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
    290                 295                 300

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
305                 310                 315                 320

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
                325                 330                 335

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
```

eolf-seql

340 345 350

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
355 360 365

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
370 375 380

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Trp Cys Leu Val
385 390 395 400

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
405 410 415

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
420 425 430

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
435 440 445

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
450 455 460

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
465 470 475

<210> 148
<211> 1434
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 148
cagtccgtcc tgactcagcc tccctccgtg tccgcagctc ctgggcagaa ggtcacaatc 60

agttgctctg ggtcatcctc aaacattggc aacaattacg tgtcttggta tcagcagctg 120

cccgggacag cccctaagct gctgatctac gacaacaaca agcggccaag tggcattccc 180

gatcggttca gcggcagcaa gtctggcacc agcgccacac tgggcatcac tgggctgcag 240

accggggacg aggctgatta ctattgcgga acctgggact cttcactgtc tggcgtcgtc 300

ttcggagggg gaaccaaact gaccgtgctg ggtggaggcg gatccggcgg cggaggcgag 360

gtgcagctgg tggagtctgg gggaggcttg gtccagcctg gagggtccct gagactctcc 420

tgtgcagcct ctggattcac cttcagcaca tacgctatga attgggtccg ccaggctcca 480

gggaaggggc tggagtgggt tggaaggatc aggtccaagt acaacaatta tgcaacctac 540

tatgccgact ctgtgaaggg tagattcacc atctcaagag atgattcaaa gaactcactg 600

tatctgcaaa tgaacagcct gaaaaccgag gacacggccg tgtattactg tgtgagacac 660

ggtaacttcg gcaattctta cgtgtcttgg tttgcttatt ggggacaggg gacactggtg 720

actgtgtctt ccggagttga gcccaaatct tgtgacaaaa ctcacacatg cccaccgtgc 780

ccagcacctg aagccgcggg ggcaccgtca gtcttcctct tccccccaaa acccaaggac 840

accctcatga tctcccggac ccctgaggtc acatgcgtgg tggtggacgt gagccacgaa 900

gaccctgagg tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca 960

aagccgcggg aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg 1020

caccaggact ggctgaatgg caaggagtac aagtgcaagg tctccaacaa agccctccca 1080

gcccccatcg agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac 1140

accctgcccc catcccggga ggagatgacc aagaaccagg tcagcctgtg gtgcctggtc 1200

aaaggcttct atcccagcga catcgccgtg gagtgggaga gcaatgggca gccggagaac 1260

aactacaaga ccacgcctcc cgtgctggac tccgacggct ccttcttcct ctacagcaag 1320

ctcaccgtgg acaagagcag gtggcagcag gggaacgtct tctcatgctc cgtgatgcat 1380

gaggctctgc acaaccacta cacgcagaag agcctctccc tgtctccggg taaa 1434

<210> 149
<211> 243
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 149

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


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


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


Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
    50                  55                  60


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


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


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


Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125


Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140


Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160


Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
```

eolf-seql

165 170 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
180 185 190

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

Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Asn Ala Phe Gly
210 215 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Phe Asn Arg
225 230 235 240

Gly Glu Cys

<210> 150
<211> 729
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 150
caggctgtgg tgactcagga gccttcactg accgtgtccc caggcggaac tgtgaccctg 60

acatgcagat ccagcacagg cgcagtgacc acatctaact acgccaattg ggtgcagcag 120

aagccaggac aggcaccaag gggcctgatc gggggtacaa acaaaagggc tccctggacc 180

cctgcacggt tttctggaag tctgctgggc ggaaaggccg ctctgactat taccggggca 240

caggccgagg acgaagccga ttactattgt gctctgtggt atagcaatct gtgggtgttc 300

gggggtggca caaaactgac tgtgctggga gggggtggat ccggcggagg tggagaagtc 360

cagctggtgc agagtggggc agaagtcaag aaacccggcg catcagtgaa agtctcatgt 420

aaagcatcag gctatacctt tacatcatac ggaatcagct gggtgaggca ggctccagga 480

cagggactgg agtggatggg atggatttct gcatacaacg gcaatacaaa ctatgcccag 540

aagctgcagg gccgggtgac tatgaccaca gacactagca cctccacagc ctatatggaa 600

ctgcggtctc tgagaagtga cgatactgcc gtctactatt gcgctaccat tgataccgct 660

aacgccttcg gcatttgggg gcaggggact atggtgacag tgagctccgg attcaacagg 720

ggagagtgt 729

<210> 151
<211> 478
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 151

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 Thr Leu Gly 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 Ser Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly Gly
100 105 110

```
Gly Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly
        115                 120                 125


Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser
    130                 135                 140


Gly Phe Thr Phe Ser Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro
145                 150                 155                 160


Gly Lys Gly Leu Glu Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn
                165                 170                 175


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


Arg Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys
        195                 200                 205


Thr Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly
    210                 215                 220


Asn Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
225                 230                 235                 240


Thr Val Ser Ser Gly Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr
                245                 250                 255


Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Ala Pro Ser Val Phe
            260                 265                 270


Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
        275                 280                 285


Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
    290                 295                 300
```

```
Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
305                 310                 315                 320

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
                325                 330                 335

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
            340                 345                 350

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
        355                 360                 365

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
    370                 375                 380

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Trp Cys Leu Val
385                 390                 395                 400

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
                405                 410                 415

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
            420                 425                 430

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
        435                 440                 445

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
    450                 455                 460

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
465                 470                 475
```

<210> 152
<211> 1434
<212> DNA

<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 152
cagtccgtcc tgactcagcc tccctccgtg tccgcagctc ctgggcagaa ggtcacaatc 60

agttgctctg ggtcatcctc aaacattggc aacaattacg tgtcttggta tcagcagctg 120

cccgggacag cccctaagct gctgatctac gacaacaaca agcggccaag tggcattccc 180

gatcggttca gcggcagcaa gtctggcacc agcgccacac tgggcatcac tgggctgcag 240

accggggacg aggctgatta ctattgcgga acctgggact cttcactgtc ttcctacgtc 300

ttcggaacgg gaaccaaagt gaccgtgctg ggtggaggcg gatccggcgg cggaggcgag 360

gtgcagctgg tggagtctgg gggaggcttg gtccagcctg gagggtccct gagactctcc 420

tgtgcagcct ctggattcac cttcagcaca tacgctatga attgggtccg ccaggctcca 480

gggaaggggc tggagtgggt tggaaggatc aggtccaagt acaacaatta tgcaacctac 540

tatgccgact ctgtgaaggg tagattcacc atctcaagag atgattcaaa gaactcactg 600

tatctgcaaa tgaacagcct gaaaaccgag gacacggccg tgtattactg tgtgagacac 660

ggtaacttcg gcaattctta cgtgtcttgg tttgcttatt ggggacaggg gacactggtg 720

actgtgtctt ccggagttga gcccaaatct tgtgacaaaa ctcacacatg cccaccgtgc 780

ccagcacctg aagccgcggg ggcaccgtca gtcttcctct tccccccaaa acccaaggac 840

accctcatga tctcccggac ccctgaggtc acatgcgtgg tggtggacgt gagccacgaa 900

gaccctgagg tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca 960

aagccgcggg aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg 1020

caccaggact ggctgaatgg caaggagtac aagtgcaagg tctccaacaa agccctccca 1080

gcccccatcg agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac 1140

accctgcccc catcccggga ggagatgacc aagaaccagg tcagcctgtg gtgcctggtc 1200

aaaggcttct atcccagcga catcgccgtg gagtgggaga gcaatgggca gccggagaac 1260

aactacaaga ccacgcctcc cgtgctggac tccgacggct ccttcttcct ctacagcaag 1320

ctcaccgtgg acaagagcag gtggcagcag gggaacgtct tctcatgctc cgtgatgcat 1380

gaggctctgc acaaccacta cacgcagaag agcctctccc tgtctccggg taaa 1434

<210> 153
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 153

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
50 55 60

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

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

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
115 120 125

```
Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190

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

Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Thr Ala Phe Asp
    210                 215                 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Phe Asn Arg
225                 230                 235                 240

Gly Glu Cys
```

<210> 154
<211> 729
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 154

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caggctgtgg tgactcagga gccttcactg accgtgtccc caggcggaac tgtgaccctg       60

acatgcagat ccagcacagg cgcagtgacc acatctaact acgccaattg ggtgcagcag      120

aagccaggac aggcaccaag gggcctgatc gggggtacaa acaaaagggc tccctggacc      180
```

cctgcacggt tttctggaag tctgctgggc ggaaaggccg ctctgactat taccggggca 240

caggccgagg acgaagccga ttactattgt gctctgtggt atagcaatct gtgggtgttc 300

gggggtggca caaaactgac tgtgctggga gggggtggat ccggcggagg tggagaagtc 360

cagctggtgc agagtggggc agaagtcaag aaacccggcg catcagtgaa agtctcatgt 420

aaagcatcag gctatacctt tacatcatac ggaatcagct gggtgaggca ggctccagga 480

cagggactgg agtggatggg atggatttct gcatacaacg gcaatacaaa ctatgcccag 540

aagctgcagg gccgggtgac tatgaccaca gacactagca cctccacagc ctatatggaa 600

ctgcggtctc tgagaagtga cgatactgcc gtctactatt gcgctaccat tgataccgct 660

acagccttcg acatttgggg gcaggggact atggtgacag tgagctccgg attcaacagg 720

ggagagtgt 729

<210> 155
<211> 478
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 155

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 Thr Leu Gly 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 Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly Gly
            100                 105                 110

Gly Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Glu Ser Gly Gly
        115                 120                 125

Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser
    130                 135                 140

Gly Phe Thr Phe Ser Thr Tyr Ala Met Asn Trp Val Arg Gln Ala Pro
145                 150                 155                 160

Gly Lys Gly Leu Glu Trp Val Gly Arg Ile Arg Ser Lys Tyr Asn Asn
                165                 170                 175

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

Arg Asp Asp Ser Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Lys
        195                 200                 205

Thr Glu Asp Thr Ala Val Tyr Tyr Cys Val Arg His Gly Asn Phe Gly
    210                 215                 220

Asn Ser Tyr Val Ser Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
225                 230                 235                 240

Thr Val Ser Ser Gly Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr
                245                 250                 255

Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Ala Pro Ser Val Phe
```

```
            260                 265                 270

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
        275                 280                 285

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
    290                 295                 300

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
305                 310                 315                 320

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
                325                 330                 335

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
            340                 345                 350

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
        355                 360                 365

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
    370                 375                 380

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Trp Cys Leu Val
385                 390                 395                 400

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
                405                 410                 415

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
            420                 425                 430

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
        435                 440                 445

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
```

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450 455 460

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
465 470 475

<210> 156
<211> 1434
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 156
cagtccgtcc tgactcagcc tccctccgtg tccgcagctc ctgggcagaa ggtcacaatc 60

agttgctctg ggtcatcctc aaacattggc aacaattacg tgtcttggta tcagcagctg 120

cccgggacag cccctaagct gctgatctac gacaacaaca agcggccaag tggcattccc 180

gatcggttca gcggcagcaa gtctggcacc agcgccacac tgggcatcac tgggctgcag 240

accggggacg aggctgatta ctattgcgga acctgggact cttcactgtc tgcctacgtc 300

ttcggaacgg gaaccaaagt gaccgtgctg ggtggaggcg gatccggcgg cggaggcgag 360

gtgcagctgg tggagtctgg gggaggcttg gtccagcctg gagggtccct gagactctcc 420

tgtgcagcct ctggattcac cttcagcaca tacgctatga attgggtccg ccaggctcca 480

gggaaggggc tggagtgggt tggaaggatc aggtccaagt acaacaatta tgcaacctac 540

tatgccgact ctgtgaaggg tagattcacc atctcaagag atgattcaaa gaactcactg 600

tatctgcaaa tgaacagcct gaaaaccgag gacacggccg tgtattactg tgtgagacac 660

ggtaacttcg gcaattctta cgtgtcttgg tttgcttatt ggggacaggg gacactggtg 720

actgtgtctt ccggagttga gcccaaatct tgtgacaaaa ctcacacatg cccaccgtgc 780

ccagcacctg aagccgcggg ggcaccgtca gtcttcctct tccccccaaa acccaaggac 840

accctcatga tctcccggac ccctgaggtc acatgcgtgg tggtggacgt gagccacgaa 900

gaccctgagg tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca 960

aagccgcggg aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg 1020

caccaggact ggctgaatgg caaggagtac aagtgcaagg tctccaacaa agccctccca 1080

gcccccatcg agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac 1140

accctgcccc catcccggga ggagatgacc aagaaccagg tcagcctgtg gtgcctggtc 1200

aaaggcttct atcccagcga catcgccgtg gagtgggaga gcaatgggca gccggagaac 1260

aactacaaga ccacgcctcc cgtgctggac tccgacggct ccttcttcct ctacagcaag 1320

ctcaccgtgg acaagagcag gtggcagcag gggaacgtct tctcatgctc cgtgatgcat 1380

gaggctctgc acaaccacta cacgcagaag agcctctccc tgtctccggg taaa 1434

<210> 157
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 157

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

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

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

Leu Ile Gly Gly Thr Asn Lys Arg Ala Pro Trp Thr Pro Ala Arg Phe
50 55 60

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

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Leu Trp Tyr Ser Asn

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```
                85                  90                  95

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

Gly Ser Gly Gly Gly Gly Glu Val Gln Leu Val Gln Ser Gly Ala Glu
        115                 120                 125

Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly
    130                 135                 140

Tyr Thr Phe Thr Ser Tyr Gly Ile Ser Trp Val Arg Gln Ala Pro Gly
145                 150                 155                 160

Gln Gly Leu Glu Trp Met Gly Trp Ile Ser Ala Tyr Asn Gly Asn Thr
                165                 170                 175

Asn Tyr Ala Gln Lys Leu Gln Gly Arg Val Thr Met Thr Thr Asp Thr
            180                 185                 190

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

Thr Ala Val Tyr Tyr Cys Ala Thr Ile Asp Thr Ala Asn Ala Phe Asp
    210                 215                 220

Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Phe Asn Arg
225                 230                 235                 240

Gly Glu Cys
```

<210> 158
<211> 729
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 158
caggctgtgg tgactcagga gccttcactg accgtgtccc caggcggaac tgtgaccctg 60

acatgcagat ccagcacagg cgcagtgacc acatctaact acgccaattg ggtgcagcag 120

aagccaggac aggcaccaag gggcctgatc gggggtacaa acaaaagggc tccctggacc 180

cctgcacggt tttctggaag tctgctgggc ggaaaggccg ctctgactat taccggggca 240

caggccgagg acgaagccga ttactattgt gctctgtggt atagcaatct gtgggtgttc 300

gggggtggca caaaactgac tgtgctggga gggggtggat ccggcggagg tggagaagtc 360

cagctggtgc agagtggggc agaagtcaag aaacccggcg catcagtgaa agtctcatgt 420

aaagcatcag gctatacctt tacatcatac ggaatcagct gggtgaggca ggctccagga 480

cagggactgg agtggatggg atggatttct gcatacaacg gcaatacaaa ctatgcccag 540

aagctgcagg gccgggtgac tatgaccaca gacactagca cctccacagc ctatatggaa 600

ctgcggtctc tgagaagtga cgatactgcc gtctactatt gcgctaccat tgataccgct 660

aacgccttcg acatttgggg gcaggggact atggtgacag tgagctccgg attcaacagg 720

ggagagtgt 729

<210> 159
<211> 829
<212> PRT
<213> Homo sapiens

<400> 159

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

Cys Trp Leu Gln Cys Ala Ala Ser Glu Pro Cys Arg Ala Val Phe Arg
            20 25 30

Glu Ala Glu Val Thr Leu Glu Ala Gly Gly Ala Glu Gln Glu Pro Gly
        35 40 45

```
Gln Ala Leu Gly Lys Val Phe Met Gly Cys Pro Gly Gln Glu Pro Ala
    50                  55                  60

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

Val Gln Glu Arg Arg Ser Leu Lys Glu Arg Asn Pro Leu Lys Ile Phe
                85                  90                  95

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

Pro Ile Ser Val Pro Glu Asn Gly Lys Gly Pro Phe Pro Gln Arg Leu
        115                 120                 125

Asn Gln Leu Lys Ser Asn Lys Asp Arg Asp Thr Lys Ile Phe Tyr Ser
    130                 135                 140

Ile Thr Gly Pro Gly Ala Asp Ser Pro Pro Glu Gly Val Phe Ala Val
145                 150                 155                 160

Glu Lys Glu Thr Gly Trp Leu Leu Leu Asn Lys Pro Leu Asp Arg Glu
                165                 170                 175

Glu Ile Ala Lys Tyr Glu Leu Phe Gly His Ala Val Ser Glu Asn Gly
            180                 185                 190

Ala Ser Val Glu Asp Pro Met Asn Ile Ser Ile Ile Val Thr Asp Gln
        195                 200                 205

Asn Asp His Lys Pro Lys Phe Thr Gln Asp Thr Phe Arg Gly Ser Val
    210                 215                 220

Leu Glu Gly Val Leu Pro Gly Thr Ser Val Met Gln Val Thr Ala Thr
225                 230                 235                 240
```

```
Asp Glu Asp Asp Ala Ile Tyr Thr Tyr Asn Gly Val Val Ala Tyr Ser
                245                 250                 255

Ile His Ser Gln Glu Pro Lys Asp Pro His Asp Leu Met Phe Thr Ile
            260                 265                 270

His Arg Ser Thr Gly Thr Ile Ser Val Ile Ser Ser Gly Leu Asp Arg
        275                 280                 285

Glu Lys Val Pro Glu Tyr Thr Leu Thr Ile Gln Ala Thr Asp Met Asp
    290                 295                 300

Gly Asp Gly Ser Thr Thr Thr Ala Val Ala Val Val Glu Ile Leu Asp
305                 310                 315                 320

Ala Asn Asp Asn Ala Pro Met Phe Asp Pro Gln Lys Tyr Glu Ala His
                325                 330                 335

Val Pro Glu Asn Ala Val Gly His Glu Val Gln Arg Leu Thr Val Thr
            340                 345                 350

Asp Leu Asp Ala Pro Asn Ser Pro Ala Trp Arg Ala Thr Tyr Leu Ile
        355                 360                 365

Met Gly Gly Asp Asp Gly Asp His Phe Thr Ile Thr Thr His Pro Glu
    370                 375                 380

Ser Asn Gln Gly Ile Leu Thr Thr Arg Lys Gly Leu Asp Phe Glu Ala
385                 390                 395                 400

Lys Asn Gln His Thr Leu Tyr Val Glu Val Thr Asn Glu Ala Pro Phe
                405                 410                 415

Val Leu Lys Leu Pro Thr Ser Thr Ala Thr Ile Val Val His Val Glu
            420                 425                 430
```

```
Asp Val Asn Glu Ala Pro Val Phe Val Pro Pro Ser Lys Val Val Glu
        435                 440                 445

Val Gln Glu Gly Ile Pro Thr Gly Glu Pro Val Cys Val Tyr Thr Ala
    450                 455                 460

Glu Asp Pro Asp Lys Glu Asn Gln Lys Ile Ser Tyr Arg Ile Leu Arg
465                 470                 475                 480

Asp Pro Ala Gly Trp Leu Ala Met Asp Pro Asp Ser Gly Gln Val Thr
                485                 490                 495

Ala Val Gly Thr Leu Asp Arg Glu Asp Glu Gln Phe Val Arg Asn Asn
            500                 505                 510

Ile Tyr Glu Val Met Val Leu Ala Met Asp Asn Gly Ser Pro Pro Thr
        515                 520                 525

Thr Gly Thr Gly Thr Leu Leu Leu Thr Leu Ile Asp Val Asn Asp His
    530                 535                 540

Gly Pro Val Pro Glu Pro Arg Gln Ile Thr Ile Cys Asn Gln Ser Pro
545                 550                 555                 560

Val Arg Gln Val Leu Asn Ile Thr Asp Lys Asp Leu Ser Pro His Thr
                565                 570                 575

Ser Pro Phe Gln Ala Gln Leu Thr Asp Asp Ser Asp Ile Tyr Trp Thr
            580                 585                 590

Ala Glu Val Asn Glu Glu Gly Asp Thr Val Val Leu Ser Leu Lys Lys
        595                 600                 605

Phe Leu Lys Gln Asp Thr Tyr Asp Val His Leu Ser Leu Ser Asp His
    610                 615                 620
```

```
Gly Asn Lys Glu Gln Leu Thr Val Ile Arg Ala Thr Val Cys Asp Cys
625                 630                 635                 640

His Gly His Val Glu Thr Cys Pro Gly Pro Trp Lys Gly Gly Phe Ile
                645                 650                 655

Leu Pro Val Leu Gly Ala Val Leu Ala Leu Leu Phe Leu Leu Leu Val
            660                 665                 670

Leu Leu Leu Leu Val Arg Lys Lys Arg Lys Ile Lys Glu Pro Leu Leu
        675                 680                 685

Leu Pro Glu Asp Asp Thr Arg Asp Asn Val Phe Tyr Tyr Gly Glu Glu
    690                 695                 700

Gly Gly Gly Glu Glu Asp Gln Asp Tyr Asp Ile Thr Gln Leu His Arg
705                 710                 715                 720

Gly Leu Glu Ala Arg Pro Glu Val Val Leu Arg Asn Asp Val Ala Pro
                725                 730                 735

Thr Ile Ile Pro Thr Pro Met Tyr Arg Pro Arg Pro Ala Asn Pro Asp
            740                 745                 750

Glu Ile Gly Asn Phe Ile Ile Glu Asn Leu Lys Ala Ala Asn Thr Asp
        755                 760                 765

Pro Thr Ala Pro Pro Tyr Asp Thr Leu Leu Val Phe Asp Tyr Glu Gly
    770                 775                 780

Ser Gly Ser Asp Ala Ala Ser Leu Ser Ser Leu Thr Ser Ser Ala Ser
785                 790                 795                 800

Asp Gln Asp Gln Asp Tyr Asp Tyr Leu Asn Glu Trp Gly Ser Arg Phe
                805                 810                 815
```

```
Lys Lys Leu Ala Asp Met Tyr Gly Gly Gly Glu Asp Asp
            820                 825


<210>  160
<211>  24
<212>  PRT
<213>  Homo sapiens

<400>  160

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


Cys Trp Leu Gln Cys Ala Ala Ser
            20


<210>  161
<211>  83
<212>  PRT
<213>  Homo sapiens

<400>  161

Glu Pro Cys Arg Ala Val Phe Arg Glu Ala Glu Val Thr Leu Glu Ala
1               5                   10                  15


Gly Gly Ala Glu Gln Glu Pro Gly Gln Ala Leu Gly Lys Val Phe Met
            20                  25                  30


Gly Cys Pro Gly Gln Glu Pro Ala Leu Phe Ser Thr Asp Asn Asp Asp
        35                  40                  45


Phe Thr Val Arg Asn Gly Glu Thr Val Gln Glu Arg Arg Ser Leu Lys
    50                  55                  60


Glu Arg Asn Pro Leu Lys Ile Phe Pro Ser Lys Arg Ile Leu Arg Arg
65                  70                  75                  80
```

His Lys Arg

<210> 162
<211> 108
<212> PRT
<213> Homo sapiens

<400> 162

Asp Trp Val Val Ala Pro Ile Ser Val Pro Glu Asn Gly Lys Gly Pro
1 5 10 15

Phe Pro Gln Arg Leu Asn Gln Leu Lys Ser Asn Lys Asp Arg Asp Thr
20 25 30

Lys Ile Phe Tyr Ser Ile Thr Gly Pro Gly Ala Asp Ser Pro Pro Glu
35 40 45

Gly Val Phe Ala Val Glu Lys Glu Thr Gly Trp Leu Leu Leu Asn Lys
50 55 60

Pro Leu Asp Arg Glu Glu Ile Ala Lys Tyr Glu Leu Phe Gly His Ala
65 70 75 80

Val Ser Glu Asn Gly Ala Ser Val Glu Asp Pro Met Asn Ile Ser Ile
85 90 95

Ile Val Thr Asp Gln Asn Asp His Lys Pro Lys Phe
100 105

<210> 163
<211> 113
<212> PRT
<213> Homo sapiens

<400> 163

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

```
Thr Ser Val Met Gln Val Thr Ala Thr Asp Glu Asp Asp Ala Ile Tyr
            20                  25                  30

Thr Tyr Asn Gly Val Val Ala Tyr Ser Ile His Ser Gln Glu Pro Lys
        35                  40                  45

Asp Pro His Asp Leu Met Phe Thr Ile His Arg Ser Thr Gly Thr Ile
    50                  55                  60

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

Leu Thr Ile Gln Ala Thr Asp Met Asp Gly Asp Gly Ser Thr Thr Thr
                85                  90                  95

Ala Val Ala Val Val Glu Ile Leu Asp Ala Asn Asp Asn Ala Pro Met
            100                 105                 110

Phe
```

<210> 164
<211> 112
<212> PRT
<213> Homo sapiens

<400> 164

```
Asp Pro Gln Lys Tyr Glu Ala His Val Pro Glu Asn Ala Val Gly His
1               5                   10                  15

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

Ala Trp Arg Ala Thr Tyr Leu Ile Met Gly Gly Asp Asp Gly Asp His
        35                  40                  45
```

```
Phe Thr Ile Thr Thr His Pro Glu Ser Asn Gln Gly Ile Leu Thr Thr
    50                  55                  60

Arg Lys Gly Leu Asp Phe Glu Ala Lys Asn Gln His Thr Leu Tyr Val
65                  70                  75                  80

Glu Val Thr Asn Glu Ala Pro Phe Val Leu Lys Leu Pro Thr Ser Thr
                85                  90                  95

Ala Thr Ile Val Val His Val Glu Asp Val Asn Glu Ala Pro Val Phe
            100                 105                 110
```

<210> 165
<211> 106
<212> PRT
<213> Homo sapiens

<400> 165

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

Glu Pro Val Cys Val Tyr Thr Ala Glu Asp Pro Asp Lys Glu Asn Gln
            20                  25                  30

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

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

Asp Glu Gln Phe Val Arg Asn Asn Ile Tyr Glu Val Met Val Leu Ala
65                  70                  75                  80

Met Asp Asn Gly Ser Pro Pro Thr Thr Gly Thr Gly Thr Leu Leu Leu
                85                  90                  95
```

Thr Leu Ile Asp Val Asn Asp His Gly Pro
100 105

<210> 166
<211> 104
<212> PRT
<213> Homo sapiens

<400> 166

Val Pro Glu Pro Arg Gln Ile Thr Ile Cys Asn Gln Ser Pro Val Arg
1 5 10 15

Gln Val Leu Asn Ile Thr Asp Lys Asp Leu Ser Pro His Thr Ser Pro
20 25 30

Phe Gln Ala Gln Leu Thr Asp Asp Ser Asp Ile Tyr Trp Thr Ala Glu
35 40 45

Val Asn Glu Glu Gly Asp Thr Val Val Leu Ser Leu Lys Lys Phe Leu
50 55 60

Lys Gln Asp Thr Tyr Asp Val His Leu Ser Leu Ser Asp His Gly Asn
65 70 75 80

Lys Glu Gln Leu Thr Val Ile Arg Ala Thr Val Cys Asp Cys His Gly
85 90 95

His Val Glu Thr Cys Pro Gly Pro
100

<210> 167
<211> 179
<212> PRT
<213> Homo sapiens

<400> 167

Trp Lys Gly Gly Phe Ile Leu Pro Val Leu Gly Ala Val Leu Ala Leu
1 5 10 15

```
Leu Phe Leu Leu Leu Val Leu Leu Leu Leu Val Arg Lys Lys Arg Lys
            20                  25                  30

Ile Lys Glu Pro Leu Leu Leu Pro Glu Asp Asp Thr Arg Asp Asn Val
        35                  40                  45

Phe Tyr Tyr Gly Glu Glu Gly Gly Gly Glu Glu Asp Gln Asp Tyr Asp
    50                  55                  60

Ile Thr Gln Leu His Arg Gly Leu Glu Ala Arg Pro Glu Val Val Leu
65                  70                  75                  80

Arg Asn Asp Val Ala Pro Thr Ile Ile Pro Thr Pro Met Tyr Arg Pro
                85                  90                  95

Arg Pro Ala Asn Pro Asp Glu Ile Gly Asn Phe Ile Ile Glu Asn Leu
            100                 105                 110

Lys Ala Ala Asn Thr Asp Pro Thr Ala Pro Pro Tyr Asp Thr Leu Leu
        115                 120                 125

Val Phe Asp Tyr Glu Gly Ser Gly Ser Asp Ala Ala Ser Leu Ser Ser
    130                 135                 140

Leu Thr Ser Ser Ala Ser Asp Gln Asp Gln Asp Tyr Asp Tyr Leu Asn
145                 150                 155                 160

Glu Trp Gly Ser Arg Phe Lys Lys Leu Ala Asp Met Tyr Gly Gly Gly
                165                 170                 175

Glu Asp Asp
```

<210> 168
<211> 221

<212> PRT
<213> Homo sapiens

<400> 168

```
Asp Trp Val Val Ala Pro Ile Ser Val Pro Glu Asn Gly Lys Gly Pro
1               5                  10                  15


Phe Pro Gln Arg Leu Asn Gln Leu Lys Ser Asn Lys Asp Arg Asp Thr
            20                  25                  30


Lys Ile Phe Tyr Ser Ile Thr Gly Pro Gly Ala Asp Ser Pro Pro Glu
        35                  40                  45


Gly Val Phe Ala Val Glu Lys Glu Thr Gly Trp Leu Leu Leu Asn Lys
    50                  55                  60


Pro Leu Asp Arg Glu Glu Ile Ala Lys Tyr Glu Leu Phe Gly His Ala
65                  70                  75                  80


Val Ser Glu Asn Gly Ala Ser Val Glu Asp Pro Met Asn Ile Ser Ile
                85                  90                  95


Ile Val Thr Asp Gln Asn Asp His Lys Pro Lys Phe Thr Gln Asp Thr
            100                 105                 110


Phe Arg Gly Ser Val Leu Glu Gly Val Leu Pro Gly Thr Ser Val Met
        115                 120                 125


Gln Val Thr Ala Thr Asp Glu Asp Asp Ala Ile Tyr Thr Tyr Asn Gly
    130                 135                 140


Val Val Ala Tyr Ser Ile His Ser Gln Glu Pro Lys Asp Pro His Asp
145                 150                 155                 160


Leu Met Phe Thr Ile His Arg Ser Thr Gly Thr Ile Ser Val Ile Ser
                165                 170                 175
```

```
Ser Gly Leu Asp Arg Glu Lys Val Pro Glu Tyr Thr Leu Thr Ile Gln
            180                 185                 190


Ala Thr Asp Met Asp Gly Asp Gly Ser Thr Thr Thr Ala Val Ala Val
        195                 200                 205


Val Glu Ile Leu Asp Ala Asn Asp Asn Ala Pro Met Phe
    210                 215                 220


<210>  169
<211>  333
<212>  PRT
<213>  Homo sapiens

<400>  169

Asp Trp Val Val Ala Pro Ile Ser Val Pro Glu Asn Gly Lys Gly Pro
1               5                   10                  15


Phe Pro Gln Arg Leu Asn Gln Leu Lys Ser Asn Lys Asp Arg Asp Thr
            20                  25                  30


Lys Ile Phe Tyr Ser Ile Thr Gly Pro Gly Ala Asp Ser Pro Pro Glu
        35                  40                  45


Gly Val Phe Ala Val Glu Lys Glu Thr Gly Trp Leu Leu Leu Asn Lys
    50                  55                  60


Pro Leu Asp Arg Glu Glu Ile Ala Lys Tyr Glu Leu Phe Gly His Ala
65                  70                  75                  80


Val Ser Glu Asn Gly Ala Ser Val Glu Asp Pro Met Asn Ile Ser Ile
                85                  90                  95


Ile Val Thr Asp Gln Asn Asp His Lys Pro Lys Phe Thr Gln Asp Thr
            100                 105                 110
```

```
Phe Arg Gly Ser Val Leu Glu Gly Val Leu Pro Gly Thr Ser Val Met
        115                 120                 125

Gln Val Thr Ala Thr Asp Glu Asp Asp Ala Ile Tyr Thr Tyr Asn Gly
    130                 135                 140

Val Val Ala Tyr Ser Ile His Ser Gln Glu Pro Lys Asp Pro His Asp
145                 150                 155                 160

Leu Met Phe Thr Ile His Arg Ser Thr Gly Thr Ile Ser Val Ile Ser
                165                 170                 175

Ser Gly Leu Asp Arg Glu Lys Val Pro Glu Tyr Thr Leu Thr Ile Gln
            180                 185                 190

Ala Thr Asp Met Asp Gly Asp Gly Ser Thr Thr Thr Ala Val Ala Val
        195                 200                 205

Val Glu Ile Leu Asp Ala Asn Asp Asn Ala Pro Met Phe Asp Pro Gln
    210                 215                 220

Lys Tyr Glu Ala His Val Pro Glu Asn Ala Val Gly His Glu Val Gln
225                 230                 235                 240

Arg Leu Thr Val Thr Asp Leu Asp Ala Pro Asn Ser Pro Ala Trp Arg
                245                 250                 255

Ala Thr Tyr Leu Ile Met Gly Gly Asp Asp Gly Asp His Phe Thr Ile
            260                 265                 270

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

Leu Asp Phe Glu Ala Lys Asn Gln His Thr Leu Tyr Val Glu Val Thr
    290                 295                 300
```

Asn Glu Ala Pro Phe Val Leu Lys Leu Pro Thr Ser Thr Ala Thr Ile
305 310 315 320

Val Val His Val Glu Asp Val Asn Glu Ala Pro Val Phe
325 330

<210> 170
<211> 439
<212> PRT
<213> Homo sapiens

<400> 170

Asp Trp Val Val Ala Pro Ile Ser Val Pro Glu Asn Gly Lys Gly Pro
1 5 10 15

Phe Pro Gln Arg Leu Asn Gln Leu Lys Ser Asn Lys Asp Arg Asp Thr
20 25 30

Lys Ile Phe Tyr Ser Ile Thr Gly Pro Gly Ala Asp Ser Pro Pro Glu
35 40 45

Gly Val Phe Ala Val Glu Lys Glu Thr Gly Trp Leu Leu Leu Asn Lys
50 55 60

Pro Leu Asp Arg Glu Glu Ile Ala Lys Tyr Glu Leu Phe Gly His Ala
65 70 75 80

Val Ser Glu Asn Gly Ala Ser Val Glu Asp Pro Met Asn Ile Ser Ile
85 90 95

Ile Val Thr Asp Gln Asn Asp His Lys Pro Lys Phe Thr Gln Asp Thr
100 105 110

Phe Arg Gly Ser Val Leu Glu Gly Val Leu Pro Gly Thr Ser Val Met
115 120 125

Gln Val Thr Ala Thr Asp Glu Asp Asp Ala Ile Tyr Thr Tyr Asn Gly

```
    130                 135                 140

Val Val Ala Tyr Ser Ile His Ser Gln Glu Pro Lys Asp Pro His Asp
145                 150                 155                 160

Leu Met Phe Thr Ile His Arg Ser Thr Gly Thr Ile Ser Val Ile Ser
                165                 170                 175

Ser Gly Leu Asp Arg Glu Lys Val Pro Glu Tyr Thr Leu Thr Ile Gln
            180                 185                 190

Ala Thr Asp Met Asp Gly Asp Gly Ser Thr Thr Thr Ala Val Ala Val
        195                 200                 205

Val Glu Ile Leu Asp Ala Asn Asp Asn Ala Pro Met Phe Asp Pro Gln
    210                 215                 220

Lys Tyr Glu Ala His Val Pro Glu Asn Ala Val Gly His Glu Val Gln
225                 230                 235                 240

Arg Leu Thr Val Thr Asp Leu Asp Ala Pro Asn Ser Pro Ala Trp Arg
                245                 250                 255

Ala Thr Tyr Leu Ile Met Gly Gly Asp Asp Gly Asp His Phe Thr Ile
            260                 265                 270

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

Leu Asp Phe Glu Ala Lys Asn Gln His Thr Leu Tyr Val Glu Val Thr
    290                 295                 300

Asn Glu Ala Pro Phe Val Leu Lys Leu Pro Thr Ser Thr Ala Thr Ile
305                 310                 315                 320

Val Val His Val Glu Asp Val Asn Glu Ala Pro Val Phe Val Pro Pro
```

325 330 335

Ser Lys Val Val Glu Val Gln Glu Gly Ile Pro Thr Gly Glu Pro Val
340 345 350

Cys Val Tyr Thr Ala Glu Asp Pro Asp Lys Glu Asn Gln Lys Ile Ser
355 360 365

Tyr Arg Ile Leu Arg Asp Pro Ala Gly Trp Leu Ala Met Asp Pro Asp
370 375 380

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

Phe Val Arg Asn Asn Ile Tyr Glu Val Met Val Leu Ala Met Asp Asn
405 410 415

Gly Ser Pro Pro Thr Thr Gly Thr Gly Thr Leu Leu Leu Thr Leu Ile
420 425 430

Asp Val Asn Asp His Gly Pro
435

<210> 171
<211> 543
<212> PRT
<213> Homo sapiens

<400> 171

Asp Trp Val Val Ala Pro Ile Ser Val Pro Glu Asn Gly Lys Gly Pro
1 5 10 15

Phe Pro Gln Arg Leu Asn Gln Leu Lys Ser Asn Lys Asp Arg Asp Thr
20 25 30

Lys Ile Phe Tyr Ser Ile Thr Gly Pro Gly Ala Asp Ser Pro Pro Glu
35 40 45

```
Gly Val Phe Ala Val Glu Lys Glu Thr Gly Trp Leu Leu Leu Asn Lys
    50                  55                  60

Pro Leu Asp Arg Glu Glu Ile Ala Lys Tyr Glu Leu Phe Gly His Ala
65                  70                  75                  80

Val Ser Glu Asn Gly Ala Ser Val Glu Asp Pro Met Asn Ile Ser Ile
                85                  90                  95

Ile Val Thr Asp Gln Asn Asp His Lys Pro Lys Phe Thr Gln Asp Thr
            100                 105                 110

Phe Arg Gly Ser Val Leu Glu Gly Val Leu Pro Gly Thr Ser Val Met
        115                 120                 125

Gln Val Thr Ala Thr Asp Glu Asp Asp Ala Ile Tyr Thr Tyr Asn Gly
    130                 135                 140

Val Val Ala Tyr Ser Ile His Ser Gln Glu Pro Lys Asp Pro His Asp
145                 150                 155                 160

Leu Met Phe Thr Ile His Arg Ser Thr Gly Thr Ile Ser Val Ile Ser
                165                 170                 175

Ser Gly Leu Asp Arg Glu Lys Val Pro Glu Tyr Thr Leu Thr Ile Gln
            180                 185                 190

Ala Thr Asp Met Asp Gly Asp Gly Ser Thr Thr Thr Ala Val Ala Val
        195                 200                 205

Val Glu Ile Leu Asp Ala Asn Asp Asn Ala Pro Met Phe Asp Pro Gln
    210                 215                 220

Lys Tyr Glu Ala His Val Pro Glu Asn Ala Val Gly His Glu Val Gln
225                 230                 235                 240
```

```
Arg Leu Thr Val Thr Asp Leu Asp Ala Pro Asn Ser Pro Ala Trp Arg
                245                 250                 255

Ala Thr Tyr Leu Ile Met Gly Gly Asp Asp Gly Asp His Phe Thr Ile
            260                 265                 270

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

Leu Asp Phe Glu Ala Lys Asn Gln His Thr Leu Tyr Val Glu Val Thr
    290                 295                 300

Asn Glu Ala Pro Phe Val Leu Lys Leu Pro Thr Ser Thr Ala Thr Ile
305                 310                 315                 320

Val Val His Val Glu Asp Val Asn Glu Ala Pro Val Phe Val Pro Pro
                325                 330                 335

Ser Lys Val Val Glu Val Gln Glu Gly Ile Pro Thr Gly Glu Pro Val
            340                 345                 350

Cys Val Tyr Thr Ala Glu Asp Pro Asp Lys Glu Asn Gln Lys Ile Ser
        355                 360                 365

Tyr Arg Ile Leu Arg Asp Pro Ala Gly Trp Leu Ala Met Asp Pro Asp
    370                 375                 380

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

Phe Val Arg Asn Asn Ile Tyr Glu Val Met Val Leu Ala Met Asp Asn
                405                 410                 415

Gly Ser Pro Pro Thr Thr Gly Thr Gly Thr Leu Leu Leu Thr Leu Ile
            420                 425                 430
```

```
Asp Val Asn Asp His Gly Pro Val Pro Glu Pro Arg Gln Ile Thr Ile
        435                 440                 445

Cys Asn Gln Ser Pro Val Arg Gln Val Leu Asn Ile Thr Asp Lys Asp
    450                 455                 460

Leu Ser Pro His Thr Ser Pro Phe Gln Ala Gln Leu Thr Asp Asp Ser
465                 470                 475                 480

Asp Ile Tyr Trp Thr Ala Glu Val Asn Glu Glu Gly Asp Thr Val Val
                485                 490                 495

Leu Ser Leu Lys Lys Phe Leu Lys Gln Asp Thr Tyr Asp Val His Leu
            500                 505                 510

Ser Leu Ser Asp His Gly Asn Lys Glu Gln Leu Thr Val Ile Arg Ala
        515                 520                 525

Thr Val Cys Asp Cys His Gly His Val Glu Thr Cys Pro Gly Pro
    530                 535                 540
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<210> 172
<211> 112
<212> PRT
<213> Mus musculus

<400> 172

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Glu Pro Gln Lys Tyr Glu Ala Trp Val Pro Glu Asn Glu Val Gly His
1               5                   10                  15

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

Ala Trp Arg Ala Thr Tyr His Ile Val Gly Gly Asp Asp Gly Asp His
        35                  40                  45
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Phe Thr Ile Thr Thr His Pro Glu Thr Asn Gln Gly Val Leu Thr Thr
50 55 60

Lys Lys Gly Leu Asp Phe Glu Ala Gln Asp Gln His Thr Leu Tyr Val
65 70 75 80

Glu Val Thr Asn Glu Ala Pro Phe Ala Val Lys Leu Pro Thr Ala Thr
85 90 95

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

<210> 173
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<220>
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<400> 173
gctggtaaag gtgtaagcag aagccttgca gga 33

<210> 174
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<400> 174
accgtagctg gtaaaggtag caccagaagc cttgcagga 39

<210> 175
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<212> DNA
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<400> 175
gataccgtag ctggtaaaag cgtaaccaga agccttgca 39

<210> 176
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<400> 176
gataccgtag ctggtagcgg tgtaaccaga agc 33

<210> 177
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<400> 177
ccagctgata ccgtagctag caaaggtgta accagaagc 39

<210> 178
<211> 39
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<220>
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<400> 178
cacccagctg ataccgtaag cggtaaaggt gtaaccaga 39

<210> 179
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<400> 179
tcgcacccag ctgataccag cgctggtaaa ggtgtaacc 39

<210> 180
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<400> 180
tcgcacccag ctgatagcgt agctggtaaa ggt 33

<210> 181
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<400> 181
ctgtcgcacc cagctagcac cgtagctggt aaa 33

<210> 182
<211> 33
<212> DNA
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<220>
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<400> 182
ggcctgtcgc acccaagcga taccgtagct ggt 33

<210> 183
<211> 39
<212> DNA
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<220>
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<400> 183
accattgtaa gcgctgatag ctcccatcca ctcaagccc 39

<210> 184
<211> 39
<212> DNA
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<220>
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<400> 184
gttaccattg taagcgctag cccatcccat ccactcaag 39

<210> 185
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<400> 185
tgtgttacca ttgtaagcag cgatccatcc catccactc 39

<210> 186
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<400> 186
tgcatagttt gtgttaccat tagcagcgct gatccatccc atcca 45

<210> 187
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<400> 187
tgcatagttt gtgttaccag cgtaagcgct gatccatcc 39

<210> 188
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<400> 188
ctgtgcatag tttgtgttag cattgtaagc gctgatcca 39

<210> 189
<211> 45
<212> DNA
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<400> 189
gagcttctgt gcatagtttg tagcaccatt gtaagcgctg atcca 45

<210> 190
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<400> 190
gagcttctgt gcatagttag cgttaccatt gtaagcgct 39

<210> 191
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<400> 191
ctggagcttc tgtgcataag ctgtgttacc attgtaagc 39

<210> 192
<211> 39
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<400> 192
gccctggagc ttctgtgcag cgtttgtgtt accattgta 39

<210> 193
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<400> 193
gactctgccc tggagcttag ctgcatagtt tgtgttacc 39

<210> 194
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<400> 194
ggtgactctg ccctggagag cctgtgcata gtttgtgtt 39

<210> 195
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<400> 195
catggtgact ctgccctgag ccttctgtgc atagtttgt 39

<210> 196
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<400> 196
ggtcatggtg actctgccag cgagcttctg tgcatagtt 39

<210> 197
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<400> 197
ggtcatggtg actctagcct ggagcttctg tgc 33

<210> 198
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<220>
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<400> 198
accaaaagca ttagctgtat cagcagtcgc acagtaatac acggc 45

<210> 199
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<220>
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<400> 199
aaaagcatta gctgtagcga tagtcgcaca gta 33

<210> 200
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<220>
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<400> 200
gataccaaaa gcattagcag catcgatagt cgcacagta 39

<210> 201
<211> 39
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<220>
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<400> 201
gccccagata ccaaaagcag cagctgtatc gatagtcgc 39

<210> 202
<211> 33
<212> DNA
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<220>
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<400> 202
ttggccccag ataccagcag cattagctgt atc 33

<210> 203
<211> 33
<212> DNA
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<220>
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<400> 203
cccttggccc cagatagcaa aagcattagc tgt 33

<210> 204
<211> 39
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<220>
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<400> 204
cattgtccct tggccccaag caccaaaagc attagctgt 39

<210> 205
<211> 33
<212> DNA
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<220>
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<400> 205
gttggagctg cttccagcgc aggagatggt gac 33

<210> 206
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<212> DNA
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<220>
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<400> 206
aatgttggag ctgctagcag agcaggagat ggt 33

<210> 207
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<400> 207
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<210> 208
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<400> 208
attattccca atgttggaag cgcttccaga gcaggagat 39

<210> 209
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<400> 209
ataattattc ccaatgttag cgctgcttcc agagcagga 39

<210> 210
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<400> 210
ggatacataa ttattcccaa tagcggagct gcttccagag cagga 45

<210> 211
<211> 39
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<220>
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<400> 211
ggatacataa ttattcccag cgttggagct gcttccaga 39

<210> 212
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
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<400> 212
ccaggataca taattattag caatgttgga gctgcttcc 39

<210> 213
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 213
gtaccaggat acataattag ccccaatgtt ggagctgct 39

<210> 214
<211> 39
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<400> 214
ctggtaccag gatacataag cattcccaat gttggagct 39

<210> 215
<211> 39
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<400> 215
ctgctggtac caggatacag cattattccc aatgttgga 39

<210> 216
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<212> DNA
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<400> 216
gagctgctgg taccaggaag cataattatt cccaatgtt 39

<210> 217
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<400> 217
tgggagctgc tggtaccaag ctacataatt attcccaat 39

<210> 218
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<400> 218
tgagggtcgc ttattattag cataaatgag gagtttggg 39

<210> 219
<211> 39
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<400> 219
ccctgagggt cgcttattag cgtcataaat gaggagttt 39

<210> 220
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<220>
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<400> 220
aatccctgag ggtcgcttag cattgtcata aatgaggag 39

<210> 221
<211> 45
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<220>
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<400> 221
gtcaggaatc cctgagggtc gagcattatt gtcataaatg aggag 45

<210> 222
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
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<400> 222
tcggtcagga atccctgagg gagccttatt attgtcataa atgag 45

<210> 223
<211> 39
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<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 223
tcggtcagga atccctgaag ctcgcttatt attgtcata 39

<210> 224
<211> 33
<212> DNA
<213> Artificial Sequence

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<400> 224
tcggtcagga atcccagcgg gtcgcttatt att 33

<210> 225
<211> 33
<212> DNA
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<400> 225
gctgctatcc catgtagcgc agtaataatc ggc 33

<210> 226
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 226
caggctgcta tcccaagctc cgcagtaata atc 33

<210> 227
<211> 39
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<213> Artificial Sequence

<220>
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<400> 227
accactcagg ctgctatcag ctgttccgca gtaataatc 39

<210> 228
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<400> 228
accactcagg ctgctagccc atgttccgca gta 33

<210> 229
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 229
cacaccactc aggctagcat cccatgttcc gca 33

<210> 230
<211> 39
<212> DNA
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<220>
<223> Synthetic nucleotide sequence

<400> 230
gaataccaca ccactcagag cgctatccca tgttccgca 39

<210> 231
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 231
gccgaatacc acaccactag cgctgctatc ccatgttcc 39

<210> 232
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 232
gccgaatacc acaccagcca ggctgctatc cca 33

<210> 233
<211> 33
<212> DNA
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<220>
<223> Synthetic nucleotide sequence

<400> 233
tccgccgaat accacagcac tcaggctgct atc 33

<210> 234
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleotide sequence

<400> 234
ccctccgccg aatacagcac cactcaggct gct 33

<210> 235
<211> 33
<212> DNA
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<220>
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<400> 235
ggtccctccg ccgaaagcca caccactcag gct 33

<210> 236
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 236

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

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

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

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

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

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

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

<210> 237
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 237

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Glu 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 Ala Ser Gly Tyr Thr Phe Thr Gly Tyr
            20                  25                  30


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


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


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


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


Ala Lys Gly Ser Gly Ser Gly Ala Phe Asp Ile Trp Gly Gln Gly Thr
            100                 105                 110


Met Val Thr Val Ser Ser
        115
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<210> 238
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 238

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

Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser
20 25 30

Asp Gly Asn Thr Tyr Leu His Trp Phe Gln Gln Arg Pro Gly Gln Ser
35 40 45

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

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

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

Thr His Trp Pro Pro Leu Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105 110

<210> 239
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide sequence

<400> 239

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


Leu Val Thr Val Ser Ser
        115
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