SEQUENCE LISTING

<110> THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE SECRETARY, DEPARTMENT OF HEALTH AND HUMAN SERVICES

<120> ANTI-KRAS-G12D T CELL RECEPTORS

<130> 728242

<150> US 62/369,883
<151> 2016-08-02

<160> 70

<170> PatentIn version 3.5

<210> 1
<211> 189
<212> PRT
<213> Homo sapiens

<400> 1

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Gly Gly Val Gly Lys
1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
65 70 75 80

Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His His Tyr
85 90 95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Glu Asp Val Pro Met Val

100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Ser Arg Thr Val Asp Thr Lys
115 120 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Phe Ile Glu Thr
130 135 140

Ser Ala Lys Thr Arg Gln Arg Val Glu Asp Ala Phe Tyr Thr Leu Val
145 150 155 160

Arg Glu Ile Arg Gln Tyr Arg Leu Lys Lys Ile Ser Lys Glu Glu Lys
165 170 175

Thr Pro Gly Cys Val Lys Ile Lys Lys Cys Ile Ile Met
180 185

<210> 2
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<213> Homo sapiens

<400> 2

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Gly Gly Val Gly Lys
1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
65 70 75 80

```
Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His His Tyr
                85                  90                  95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Glu Asp Val Pro Met Val
            100                 105                 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Ser Arg Thr Val Asp Thr Lys
        115                 120                 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Phe Ile Glu Thr
    130                 135                 140

Ser Ala Lys Thr Arg Gln Gly Val Asp Asp Ala Phe Tyr Thr Leu Val
145                 150                 155                 160

Arg Glu Ile Arg Lys His Lys Glu Lys Met Ser Lys Asp Gly Lys Lys
                165                 170                 175

Lys Lys Lys Lys Ser Lys Thr Lys Cys Val Ile Met
            180                 185
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<210> 3
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<213> Homo sapiens

<400> 3

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Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Asp Gly Val Gly Lys
1               5                   10                  15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
            20                  25                  30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
        35                  40                  45
```

```
Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
    50                  55                  60


Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
65                  70                  75                  80


Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His His Tyr
                85                  90                  95


Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Glu Asp Val Pro Met Val
            100                 105                 110


Leu Val Gly Asn Lys Cys Asp Leu Pro Ser Arg Thr Val Asp Thr Lys
        115                 120                 125


Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Phe Ile Glu Thr
    130                 135                 140


Ser Ala Lys Thr Arg Gln Arg Val Glu Asp Ala Phe Tyr Thr Leu Val
145                 150                 155                 160


Arg Glu Ile Arg Gln Tyr Arg Leu Lys Lys Ile Ser Lys Glu Glu Lys
                165                 170                 175


Thr Pro Gly Cys Val Lys Ile Lys Lys Cys Ile Ile Met
            180                 185


<210>  4
<211>  188
<212>  PRT
<213>  Homo sapiens

<400>  4

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Asp Gly Val Gly Lys
1               5                   10                  15
```

```
Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
            20                  25                  30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
        35                  40                  45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
    50                  55                  60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
65                  70                  75                  80

Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His His Tyr
                85                  90                  95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Glu Asp Val Pro Met Val
            100                 105                 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Ser Arg Thr Val Asp Thr Lys
        115                 120                 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Phe Ile Glu Thr
    130                 135                 140

Ser Ala Lys Thr Arg Gln Gly Val Asp Asp Ala Phe Tyr Thr Leu Val
145                 150                 155                 160

Arg Glu Ile Arg Lys His Lys Glu Lys Met Ser Lys Asp Gly Lys Lys
                165                 170                 175

Lys Lys Lys Lys Ser Lys Thr Lys Cys Val Ile Met
            180                 185
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<210> 5
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<400> 5

Gly Ala Gly Gly Val Gly Lys Ser Ala Leu
1 5 10

<210> 6
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<213> Homo sapiens

<400> 6

Gly Ala Asp Gly Val Gly Lys Ser Ala Leu
1 5 10

<210> 7
<211> 9
<212> PRT
<213> Homo sapiens

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Gly Ala Gly Gly Val Gly Lys Ser Ala
1 5

<210> 8
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<400> 8

Gly Ala Asp Gly Val Gly Lys Ser Ala
1 5

<210> 9
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Asn Ile Ala Thr Asn Asp Tyr

1 5

<210> 10
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<400> 10

Gly Tyr Lys Thr Lys
1 5

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

<400> 11

Cys Leu Val Gly Asp Met Asp Gln Ala Gly Thr Ala Leu Ile Phe
1 5 10 15

<210> 12
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<400> 12

Ser Gly His Asp Thr
1 5

<210> 13
<211> 6
<212> PRT
<213> Homo sapiens

<400> 13

Tyr Tyr Glu Glu Glu Glu
1 5

<210> 14

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

<400> 14

Cys Ala Ser Ser Leu Gly Glu Gly Arg Val Asp Gly Tyr Thr Phe
1 5 10 15

<210> 15
<211> 129
<212> PRT
<213> Homo sapiens

<400> 15

Met Arg Gln Val Ala Arg Val Ile Val Phe Leu Thr Leu Ser Thr Leu
1 5 10 15

Ser Leu Ala Lys Thr Thr Gln Pro Ile Ser Met Asp Ser Tyr Glu Gly
20 25 30

Gln Glu Val Asn Ile Thr Cys Ser His Asn Asn Ile Ala Thr Asn Asp
35 40 45

Tyr Ile Thr Trp Tyr Gln Gln Phe Pro Ser Gln Gly Pro Arg Phe Ile
50 55 60

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

Ile Pro Ala Asp Arg Lys Ser Ser Thr Leu Ser Leu Pro Arg Val Ser
85 90 95

Leu Ser Asp Thr Ala Val Tyr Tyr Cys Leu Val Gly Asp Met Asp Gln
100 105 110

Ala Gly Thr Ala Leu Ile Phe Gly Lys Gly Thr Thr Leu Ser Val Ser
115 120 125

Ser

<210> 16
<211> 133
<212> PRT
<213> Homo sapiens

<400> 16

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


Gly Leu Val Asp Ala Gly Val Thr Gln Ser Pro Thr His Leu Ile Lys
            20                  25                  30


Thr Arg Gly Gln Gln Val Thr Leu Arg Cys Ser Pro Lys Ser Gly His
        35                  40                  45


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


Ile Phe Gln Tyr Tyr Glu Glu Glu Glu Arg Gln Arg Gly Asn Phe Pro
65                  70                  75                  80


Asp Arg Phe Ser Gly His Gln Phe Pro Asn Tyr Ser Ser Glu Leu Asn
                85                  90                  95


Val Asn Ala Leu Leu Leu Gly Asp Ser Ala Leu Tyr Leu Cys Ala Ser
            100                 105                 110


Ser Leu Gly Glu Gly Arg Val Asp Gly Tyr Thr Phe Gly Ser Gly Thr
        115                 120                 125


Arg Leu Thr Val Val
    130
```

<210> 17
<211> 7
<212> PRT
<213> Homo sapiens

<400> 17

Asn Ile Ala Thr Asn Asp Tyr
1 5

<210> 18
<211> 5
<212> PRT
<213> Homo sapiens

<400> 18

Gly Tyr Lys Thr Lys
1 5

<210> 19
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<213> Homo sapiens

<400> 19

Cys Leu Val Gly Asp Met Asp Gln Ala Gly Thr Ala Leu Ile Phe
1 5 10 15

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<212> PRT
<213> Homo sapiens

<400> 20

Ser Gly His Asp Thr
1 5

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

<400> 21

Tyr Tyr Glu Glu Glu Glu
1 5

<210> 22
<211> 15
<212> PRT
<213> Homo sapiens

<400> 22

Cys Ala Ser Ser Leu Gly Arg Ala Ser Asn Gln Pro Gln His Phe
1 5 10 15

<210> 23
<211> 129
<212> PRT
<213> Homo sapiens

<400> 23

Met Arg Gln Val Ala Arg Val Ile Val Phe Leu Thr Leu Ser Thr Leu
1 5 10 15

Ser Leu Ala Lys Thr Thr Gln Pro Ile Ser Met Asp Ser Tyr Glu Gly
20 25 30

Gln Glu Val Asn Ile Thr Cys Ser His Asn Asn Ile Ala Thr Asn Asp
35 40 45

Tyr Ile Thr Trp Tyr Gln Gln Phe Pro Ser Gln Gly Pro Arg Phe Ile
50 55 60

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

Ile Pro Ala Asp Arg Lys Ser Ser Thr Leu Ser Leu Pro Arg Val Ser
85 90 95

```
Leu Ser Asp Thr Ala Val Tyr Tyr Cys Leu Val Gly Asp Met Asp Gln
            100                 105                 110


Ala Gly Thr Ala Leu Ile Phe Gly Lys Gly Thr Thr Leu Ser Val Ser
        115                 120                 125


Ser
```

<210> 24
<211> 133
<212> PRT
<213> Homo sapiens

<400> 24

```
Met Gly Pro Gly Leu Leu Cys Trp Ala Leu Leu Cys Leu Leu Gly Ala
1               5                   10                  15


Gly Leu Val Asp Ala Gly Val Thr Gln Ser Pro Thr His Leu Ile Lys
            20                  25                  30


Thr Arg Gly Gln Gln Val Thr Leu Arg Cys Ser Pro Lys Ser Gly His
        35                  40                  45


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


Ile Phe Gln Tyr Tyr Glu Glu Glu Glu Arg Gln Arg Gly Asn Phe Pro
65                  70                  75                  80


Asp Arg Phe Ser Gly His Gln Phe Pro Asn Tyr Ser Ser Glu Leu Asn
                85                  90                  95


Val Asn Ala Leu Leu Leu Gly Asp Ser Ala Leu Tyr Leu Cys Ala Ser
            100                 105                 110
```

Ser Leu Gly Arg Ala Ser Asn Gln Pro Gln His Phe Gly Asp Gly Thr
115 120 125

Arg Leu Ser Ile Leu
130

<210> 25
<211> 7
<212> PRT
<213> Homo sapiens

<400> 25

Asn Ile Ala Thr Asn Asp Tyr
1 5

<210> 26
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<213> Homo sapiens

<400> 26

Gly Tyr Lys Thr Lys
1 5

<210> 27
<211> 15
<212> PRT
<213> Homo sapiens

<400> 27

Cys Leu Val Gly Asp Arg Asp Gln Ala Gly Thr Ala Leu Ile Phe
1 5 10 15

<210> 28
<211> 5
<212> PRT
<213> Homo sapiens

<400> 28

```
Ser Gly His Asp Thr
1               5


<210>  29
<211>  6
<212>  PRT
<213>  Homo sapiens

<400>  29

Tyr Tyr Glu Glu Glu Glu
1               5


<210>  30
<211>  15
<212>  PRT
<213>  Homo sapiens

<400>  30

Cys Ala Ser Ser Phe Gly Gln Ser Ser Thr Tyr Gly Tyr Thr Phe
1               5                   10                  15


<210>  31
<211>  129
<212>  PRT
<213>  Homo sapiens

<400>  31

Met Arg Gln Val Ala Arg Val Ile Val Phe Leu Thr Leu Ser Thr Leu
1               5                   10                  15


Ser Leu Ala Lys Thr Thr Gln Pro Ile Ser Met Asp Ser Tyr Glu Gly
            20                  25                  30


Gln Glu Val Asn Ile Thr Cys Ser His Asn Asn Ile Ala Thr Asn Asp
        35                  40                  45


Tyr Ile Thr Trp Tyr Gln Gln Phe Pro Ser Gln Gly Pro Arg Phe Ile
    50                  55                  60
```

```
Ile Gln Gly Tyr Lys Thr Lys Val Thr Asn Glu Val Ala Ser Leu Phe
65                  70                  75                  80


Ile Pro Ala Asp Arg Lys Ser Ser Thr Leu Ser Leu Pro Arg Val Ser
                85                  90                  95


Leu Ser Asp Thr Ala Val Tyr Tyr Cys Leu Val Gly Asp Arg Asp Gln
            100                 105                 110


Ala Gly Thr Ala Leu Ile Phe Gly Lys Gly Thr Thr Leu Ser Val Ser
        115                 120                 125


Ser
```

<210> 32
<211> 133
<212> PRT
<213> Homo sapiens

<400> 32

```
Met Gly Pro Gly Leu Leu Cys Trp Ala Leu Leu Cys Leu Leu Gly Ala
1               5                   10                  15


Gly Leu Val Asp Ala Gly Val Thr Gln Ser Pro Thr His Leu Ile Lys
            20                  25                  30


Thr Arg Gly Gln Gln Val Thr Leu Arg Cys Ser Pro Lys Ser Gly His
        35                  40                  45


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


Ile Phe Gln Tyr Tyr Glu Glu Glu Glu Arg Gln Arg Gly Asn Phe Pro
65                  70                  75                  80
```

```
Asp Arg Phe Ser Gly His Gln Phe Pro Asn Tyr Ser Ser Glu Leu Asn
                85                  90                  95


Val Asn Ala Leu Leu Leu Gly Asp Ser Ala Leu Tyr Leu Cys Ala Ser
            100                 105                 110


Ser Phe Gly Gln Ser Ser Thr Tyr Gly Tyr Thr Phe Gly Ser Gly Thr
        115                 120                 125


Arg Leu Thr Val Val
    130
```

<210> 33
<211> 6
<212> PRT
<213> Homo sapiens

<400> 33

```
Asp Arg Gly Ser Gln Ser
1               5
```

<210> 34
<211> 6
<212> PRT
<213> Homo sapiens

<400> 34

```
Ile Tyr Ser Asn Gly Asp
1               5
```

<210> 35
<211> 13
<212> PRT
<213> Homo sapiens

<400> 35

```
Cys Ala Ala Ala Met Asp Ser Ser Tyr Lys Leu Ile Phe
1               5                   10
```

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

<400> 36

Trp Ser His Ser Tyr
1 5

<210> 37
<211> 6
<212> PRT
<213> Homo sapiens

<400> 37

Ser Ala Ala Ala Asp Ile
1 5

<210> 38
<211> 12
<212> PRT
<213> Homo sapiens

<400> 38

Cys Ala Ser Ser Asp Pro Gly Thr Glu Ala Phe Phe
1 5 10

<210> 39
<211> 132
<212> PRT
<213> Homo sapiens

<400> 39

Met Lys Ser Leu Arg Val Leu Leu Val Ile Leu Trp Leu Gln Leu Ser
1 5 10 15

Trp Val Trp Ser Gln Gln Lys Glu Val Glu Gln Asn Ser Gly Pro Leu
20 25 30

```
Ser Val Pro Glu Gly Ala Ile Ala Ser Leu Asn Cys Thr Tyr Ser Asp
        35                  40                  45


Arg Gly Ser Gln Ser Phe Phe Trp Tyr Arg Gln Tyr Ser Gly Lys Ser
    50                  55                  60


Pro Glu Leu Ile Met Phe Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly
65                  70                  75                  80


Arg Phe Thr Ala Gln Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu
                85                  90                  95


Ile Arg Asp Ser Gln Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Ala
            100                 105                 110


Ala Met Asp Ser Ser Tyr Lys Leu Ile Phe Gly Ser Gly Thr Arg Leu
        115                 120                 125


Leu Val Arg Pro
    130


<210>  40
<211>  130
<212>  PRT
<213>  Homo sapiens

<400>  40

Met Gly Thr Arg Leu Phe Phe Tyr Val Ala Leu Cys Leu Leu Trp Ala
1               5                   10                  15


Gly His Arg Asp Ala Gly Ile Thr Gln Ser Pro Arg Tyr Lys Ile Thr
            20                  25                  30


Glu Thr Gly Arg Gln Val Thr Leu Met Cys His Gln Thr Trp Ser His
        35                  40                  45
```

```
Ser Tyr Met Phe Trp Tyr Arg Gln Asp Leu Gly His Gly Leu Arg Leu
    50                  55                  60

Ile Tyr Tyr Ser Ala Ala Ala Asp Ile Thr Asp Lys Gly Glu Val Pro
65                  70                  75                  80

Asp Gly Tyr Val Val Ser Arg Ser Lys Thr Glu Asn Phe Pro Leu Thr
                85                  90                  95

Leu Glu Ser Ala Thr Arg Ser Gln Thr Ser Val Tyr Phe Cys Ala Ser
            100                 105                 110

Ser Asp Pro Gly Thr Glu Ala Phe Phe Gly Gln Gly Thr Arg Leu Thr
        115                 120                 125

Val Val
    130


<210>  41
<211>  141
<212>  PRT
<213>  Homo sapiens


<220>
<221>  misc_feature
<222>  (1)..(1)
<223>  Xaa can be any naturally occurring amino acid

<400>  41

Xaa Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys
1               5                   10                  15

Ser Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr
            20                  25                  30

Asn Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr
        35                  40                  45
```

```
Val Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala
    50                  55                  60

Trp Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser
65                  70                  75                  80

Ile Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser Cys Asp
                85                  90                  95

Val Lys Leu Val Glu Lys Ser Phe Glu Thr Asp Thr Asn Leu Asn Phe
            100                 105                 110

Gln Asn Leu Ser Val Ile Gly Phe Arg Ile Leu Leu Leu Lys Val Ala
        115                 120                 125

Gly Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
    130                 135                 140
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<210> 42
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<212> PRT
<213> Homo sapiens

<400> 42

```
Glu Asp Leu Asn Lys Val Phe Pro Pro Glu Val Ala Val Phe Glu Pro
1               5                   10                  15

Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr Leu Val Cys Leu
            20                  25                  30

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

Gly Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln Pro Leu Lys
    50                  55                  60
```

```
Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu Ser Ser Arg Leu
65                  70                  75                  80

Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn His Phe Arg Cys
                85                  90                  95

Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu Trp Thr Gln Asp
            100                 105                 110

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

Ala Asp Cys Gly Phe Thr Ser Val Ser Tyr Gln Gln Gly Val Leu Ser
    130                 135                 140

Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr Ala
145                 150                 155                 160

Val Leu Val Ser Ala Leu Val Leu Met Ala Met Val Lys Arg Lys Asp
                165                 170                 175

Phe
```

<210> 43
<211> 179
<212> PRT
<213> Homo sapiens

<400> 43

```
Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val Ala Val Phe Glu Pro
1               5                   10                  15

Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr Leu Val Cys Leu
            20                  25                  30

Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu Ser Trp Trp Val Asn
```

35 40 45

Gly Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln Pro Leu Lys
50 55 60

Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu Ser Ser Arg Leu
65 70 75 80

Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn His Phe Arg Cys
85 90 95

Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu Trp Thr Gln Asp
100 105 110

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

Ala Asp Cys Gly Phe Thr Ser Glu Ser Tyr Gln Gln Gly Val Leu Ser
130 135 140

Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr Ala
145 150 155 160

Val Leu Val Ser Ala Leu Val Leu Met Ala Met Val Lys Arg Lys Asp
165 170 175

Ser Arg Gly

<210> 44
<211> 137
<212> PRT
<213> Mus musculus

<400> 44

Asp Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg
1 5 10 15

```
Ser Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile
            20                  25                  30

Asn Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Thr
        35                  40                  45

Val Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala
    50                  55                  60

Trp Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr
65                  70                  75                  80

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

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

Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly Phe Asn Leu
        115                 120                 125

Leu Met Thr Leu Arg Leu Trp Ser Ser
    130                 135


<210>  45
<211>  173
<212>  PRT
<213>  Mus musculus

<400>  45

Glu Asp Leu Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro
1               5                   10                  15

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

```
Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn
        35                  40                  45


Gly Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys
    50                  55                  60


Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala
65                  70                  75                  80


Thr Phe Trp His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe
                85                  90                  95


His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro
            100                 105                 110


Val Thr Gln Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly
        115                 120                 125


Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu
    130                 135                 140


Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser
145                 150                 155                 160


Thr Leu Val Val Met Ala Met Val Lys Arg Lys Asn Ser
                165                 170
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<210> 46
<211> 137
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<220>
<221> MISC_FEATURE

<222> (48)..(48)
<223> Xaa is Thr or Cys

<220>
<221> MISC_FEATURE
<222> (112)..(112)
<223> Xaa is Ser, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp

<220>
<221> MISC_FEATURE
<222> (114)..(114)
<223> Xaa is Met, Ala, Val, Leu, Ile, Pro, Phe, or Trp

<220>
<221> MISC_FEATURE
<222> (115)..(115)
<223> Xaa is Gly, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp

<400> 46

Asp Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg
1 5 10 15

Ser Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile
20 25 30

Asn Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Xaa
35 40 45

Val Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala
50 55 60

Trp Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr
65 70 75 80

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

Glu Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu Xaa
100 105 110

Val Xaa Xaa Leu Arg Ile Leu Leu Leu Lys Val Ala Gly Phe Asn Leu
115 120 125

Leu Met Thr Leu Arg Leu Trp Ser Ser
130 135

<210> 47
<211> 173
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<220>
<221> MISC_FEATURE
<222> (57)..(57)
<223> Xaa is Ser or Cys

<400> 47

Glu Asp Leu Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro
1 5 10 15

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

Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn
35 40 45

Gly Lys Glu Val His Ser Gly Val Xaa Thr Asp Pro Gln Ala Tyr Lys
50 55 60

Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala
65 70 75 80

Thr Phe Trp His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe
85 90 95

```
His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro
            100                 105                 110


Val Thr Gln Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly
        115                 120                 125


Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu
    130                 135                 140


Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser
145                 150                 155                 160


Thr Leu Val Val Met Ala Met Val Lys Arg Lys Asn Ser
                165                 170


<210>  48
<211>  137
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic

<400>  48

Asp Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg
1               5                   10                  15


Ser Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile
            20                  25                  30


Asn Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Cys
        35                  40                  45


Val Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala
    50                  55                  60


Trp Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr
65                  70                  75                  80
```

```
Asn Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu Thr
                85                  90                  95


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


Val Ile Val Leu Arg Ile Leu Leu Leu Lys Val Ala Gly Phe Asn Leu
        115                 120                 125


Leu Met Thr Leu Arg Leu Trp Ser Ser
    130                 135


<210>  49
<211>  173
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic

<400>  49

Glu Asp Leu Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro
1               5                   10                  15


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


Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn
        35                  40                  45


Gly Lys Glu Val His Ser Gly Val Cys Thr Asp Pro Gln Ala Tyr Lys
    50                  55                  60


Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala
65                  70                  75                  80
```

Thr Phe Trp His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe
85 90 95

His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro
100 105 110

Val Thr Gln Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly
115 120 125

Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu
130 135 140

Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser
145 150 155 160

Thr Leu Val Val Met Ala Met Val Lys Arg Lys Asn Ser
165 170

<210> 50
<211> 266
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 50

Met Arg Gln Val Ala Arg Val Ile Val Phe Leu Thr Leu Ser Thr Leu
1 5 10 15

Ser Leu Ala Lys Thr Thr Gln Pro Ile Ser Met Asp Ser Tyr Glu Gly
20 25 30

Gln Glu Val Asn Ile Thr Cys Ser His Asn Asn Ile Ala Thr Asn Asp
35 40 45

Tyr Ile Thr Trp Tyr Gln Gln Phe Pro Ser Gln Gly Pro Arg Phe Ile
50 55 60

```
Ile Gln Gly Tyr Lys Thr Lys Val Thr Asn Glu Val Ala Ser Leu Phe
65                  70                  75                  80

Ile Pro Ala Asp Arg Lys Ser Ser Thr Leu Ser Leu Pro Arg Val Ser
                85                  90                  95

Leu Ser Asp Thr Ala Val Tyr Tyr Cys Leu Val Gly Asp Met Asp Gln
            100                 105                 110

Ala Gly Thr Ala Leu Ile Phe Gly Lys Gly Thr Thr Leu Ser Val Ser
        115                 120                 125

Ser Asp Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro
    130                 135                 140

Arg Ser Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln
145                 150                 155                 160

Ile Asn Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys
                165                 170                 175

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

Ala Trp Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu
        195                 200                 205

Thr Asn Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu
    210                 215                 220

Thr Glu Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu
225                 230                 235                 240

Leu Val Ile Val Leu Arg Ile Leu Leu Leu Lys Val Ala Gly Phe Asn
                245                 250                 255
```

```
Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
            260                 265


<210>  51
<211>  306
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic

<400>  51

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


Gly Leu Val Asp Ala Gly Val Thr Gln Ser Pro Thr His Leu Ile Lys
            20                  25                  30


Thr Arg Gly Gln Gln Val Thr Leu Arg Cys Ser Pro Lys Ser Gly His
        35                  40                  45


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


Ile Phe Gln Tyr Tyr Glu Glu Glu Glu Arg Gln Arg Gly Asn Phe Pro
65                  70                  75                  80


Asp Arg Phe Ser Gly His Gln Phe Pro Asn Tyr Ser Ser Glu Leu Asn
                85                  90                  95


Val Asn Ala Leu Leu Leu Gly Asp Ser Ala Leu Tyr Leu Cys Ala Ser
            100                 105                 110


Ser Leu Gly Glu Gly Arg Val Asp Gly Tyr Thr Phe Gly Ser Gly Thr
        115                 120                 125
```

```
Arg Leu Thr Val Val Glu Asp Leu Arg Asn Val Thr Pro Pro Lys Val
    130                 135                 140

Ser Leu Phe Glu Pro Ser Lys Ala Glu Ile Ala Asn Lys Gln Lys Ala
145                 150                 155                 160

Thr Leu Val Cys Leu Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu
                165                 170                 175

Ser Trp Trp Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp
            180                 185                 190

Pro Gln Ala Tyr Lys Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg
        195                 200                 205

Leu Arg Val Ser Ala Thr Phe Trp His Asn Pro Arg Asn His Phe Arg
    210                 215                 220

Cys Gln Val Gln Phe His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu
225                 230                 235                 240

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

Arg Ala Asp Cys Gly Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu
            260                 265                 270

Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr
        275                 280                 285

Ala Val Leu Val Ser Thr Leu Val Val Met Ala Met Val Lys Arg Lys
    290                 295                 300

Asn Ser
305
```

<210> 52
<211> 266
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 52

```
Met Arg Gln Val Ala Arg Val Ile Val Phe Leu Thr Leu Ser Thr Leu
1               5                   10                  15


Ser Leu Ala Lys Thr Thr Gln Pro Ile Ser Met Asp Ser Tyr Glu Gly
            20                  25                  30


Gln Glu Val Asn Ile Thr Cys Ser His Asn Asn Ile Ala Thr Asn Asp
        35                  40                  45


Tyr Ile Thr Trp Tyr Gln Gln Phe Pro Ser Gln Gly Pro Arg Phe Ile
    50                  55                  60


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


Ile Pro Ala Asp Arg Lys Ser Ser Thr Leu Ser Leu Pro Arg Val Ser
                85                  90                  95


Leu Ser Asp Thr Ala Val Tyr Tyr Cys Leu Val Gly Asp Met Asp Gln
            100                 105                 110


Ala Gly Thr Ala Leu Ile Phe Gly Lys Gly Thr Thr Leu Ser Val Ser
        115                 120                 125


Ser Asp Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro
    130                 135                 140


Arg Ser Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln
145                 150                 155                 160
```

```
Ile Asn Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys
                165                 170                 175


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


Ala Trp Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu
        195                 200                 205


Thr Asn Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu
    210                 215                 220


Thr Glu Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu
225                 230                 235                 240


Leu Val Ile Val Leu Arg Ile Leu Leu Leu Lys Val Ala Gly Phe Asn
                245                 250                 255


Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
            260                 265


<210>  53
<211>  306
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic

<400>  53

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


Gly Leu Val Asp Ala Gly Val Thr Gln Ser Pro Thr His Leu Ile Lys
            20                  25                  30
```

```
Thr Arg Gly Gln Gln Val Thr Leu Arg Cys Ser Pro Lys Ser Gly His
        35                  40                  45

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

Ile Phe Gln Tyr Tyr Glu Glu Glu Glu Arg Gln Arg Gly Asn Phe Pro
65                  70                  75                  80

Asp Arg Phe Ser Gly His Gln Phe Pro Asn Tyr Ser Ser Glu Leu Asn
                85                  90                  95

Val Asn Ala Leu Leu Leu Gly Asp Ser Ala Leu Tyr Leu Cys Ala Ser
            100                 105                 110

Ser Leu Gly Arg Ala Ser Asn Gln Pro Gln His Phe Gly Asp Gly Thr
        115                 120                 125

Arg Leu Ser Ile Leu Glu Asp Leu Arg Asn Val Thr Pro Pro Lys Val
    130                 135                 140

Ser Leu Phe Glu Pro Ser Lys Ala Glu Ile Ala Asn Lys Gln Lys Ala
145                 150                 155                 160

Thr Leu Val Cys Leu Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu
                165                 170                 175

Ser Trp Trp Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp
            180                 185                 190

Pro Gln Ala Tyr Lys Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg
        195                 200                 205

Leu Arg Val Ser Ala Thr Phe Trp His Asn Pro Arg Asn His Phe Arg
    210                 215                 220
```

```
Cys Gln Val Gln Phe His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu
225                 230                 235                 240


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


Arg Ala Asp Cys Gly Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu
            260                 265                 270


Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr
        275                 280                 285


Ala Val Leu Val Ser Thr Leu Val Val Met Ala Met Val Lys Arg Lys
    290                 295                 300


Asn Ser
305


<210>  54
<211>  266
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic

<400>  54

Met Arg Gln Val Ala Arg Val Ile Val Phe Leu Thr Leu Ser Thr Leu
1               5                   10                  15


Ser Leu Ala Lys Thr Thr Gln Pro Ile Ser Met Asp Ser Tyr Glu Gly
            20                  25                  30


Gln Glu Val Asn Ile Thr Cys Ser His Asn Asn Ile Ala Thr Asn Asp
        35                  40                  45


Tyr Ile Thr Trp Tyr Gln Gln Phe Pro Ser Gln Gly Pro Arg Phe Ile
    50                  55                  60
```

```
Ile Gln Gly Tyr Lys Thr Lys Val Thr Asn Glu Val Ala Ser Leu Phe
65                  70                  75                  80

Ile Pro Ala Asp Arg Lys Ser Ser Thr Leu Ser Leu Pro Arg Val Ser
                85                  90                  95

Leu Ser Asp Thr Ala Val Tyr Tyr Cys Leu Val Gly Asp Arg Asp Gln
            100                 105                 110

Ala Gly Thr Ala Leu Ile Phe Gly Lys Gly Thr Thr Leu Ser Val Ser
        115                 120                 125

Ser Asp Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro
    130                 135                 140

Arg Ser Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln
145                 150                 155                 160

Ile Asn Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys
                165                 170                 175

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

Ala Trp Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu
        195                 200                 205

Thr Asn Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu
    210                 215                 220

Thr Glu Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu
225                 230                 235                 240

Leu Val Ile Val Leu Arg Ile Leu Leu Leu Lys Val Ala Gly Phe Asn
                245                 250                 255
```

Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
260 265

<210> 55
<211> 306
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 55

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

Gly Leu Val Asp Ala Gly Val Thr Gln Ser Pro Thr His Leu Ile Lys
20 25 30

Thr Arg Gly Gln Gln Val Thr Leu Arg Cys Ser Pro Lys Ser Gly His
35 40 45

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

Ile Phe Gln Tyr Tyr Glu Glu Glu Glu Arg Gln Arg Gly Asn Phe Pro
65 70 75 80

Asp Arg Phe Ser Gly His Gln Phe Pro Asn Tyr Ser Ser Glu Leu Asn
85 90 95

Val Asn Ala Leu Leu Leu Gly Asp Ser Ala Leu Tyr Leu Cys Ala Ser
100 105 110

Ser Phe Gly Gln Ser Ser Thr Tyr Gly Tyr Thr Phe Gly Ser Gly Thr
115 120 125

```
Arg Leu Thr Val Val Glu Asp Leu Arg Asn Val Thr Pro Pro Lys Val
    130                 135                 140

Ser Leu Phe Glu Pro Ser Lys Ala Glu Ile Ala Asn Lys Gln Lys Ala
145                 150                 155                 160

Thr Leu Val Cys Leu Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu
                165                 170                 175

Ser Trp Trp Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp
            180                 185                 190

Pro Gln Ala Tyr Lys Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg
        195                 200                 205

Leu Arg Val Ser Ala Thr Phe Trp His Asn Pro Arg Asn His Phe Arg
    210                 215                 220

Cys Gln Val Gln Phe His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu
225                 230                 235                 240

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

Arg Ala Asp Cys Gly Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu
            260                 265                 270

Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr
        275                 280                 285

Ala Val Leu Val Ser Thr Leu Val Val Met Ala Met Val Lys Arg Lys
    290                 295                 300

Asn Ser
305
```

<210> 56
<211> 269
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 56

```
Met Lys Ser Leu Arg Val Leu Leu Val Ile Leu Trp Leu Gln Leu Ser
1               5                  10                  15


Trp Val Trp Ser Gln Gln Lys Glu Val Glu Gln Asn Ser Gly Pro Leu
            20                  25                  30


Ser Val Pro Glu Gly Ala Ile Ala Ser Leu Asn Cys Thr Tyr Ser Asp
        35                  40                  45


Arg Gly Ser Gln Ser Phe Phe Trp Tyr Arg Gln Tyr Ser Gly Lys Ser
    50                  55                  60


Pro Glu Leu Ile Met Phe Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly
65                  70                  75                  80


Arg Phe Thr Ala Gln Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu
                85                  90                  95


Ile Arg Asp Ser Gln Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Ala
            100                 105                 110


Ala Met Asp Ser Ser Tyr Lys Leu Ile Phe Gly Ser Gly Thr Arg Leu
        115                 120                 125


Leu Val Arg Pro Asp Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu
    130                 135                 140


Lys Asp Pro Arg Ser Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe
145                 150                 155                 160
```

```
Asp Ser Gln Ile Asn Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile
                165                 170                 175


Thr Asp Lys Cys Val Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn
            180                 185                 190


Gly Ala Ile Ala Trp Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile
        195                 200                 205


Phe Lys Glu Thr Asn Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp
    210                 215                 220


Ala Thr Leu Thr Glu Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe
225                 230                 235                 240


Gln Asn Leu Leu Val Ile Val Leu Arg Ile Leu Leu Leu Lys Val Ala
                245                 250                 255


Gly Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
            260                 265


<210>  57
<211>  303
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic

<400>  57

Met Gly Thr Arg Leu Phe Phe Tyr Val Ala Leu Cys Leu Leu Trp Ala
1               5                   10                  15


Gly His Arg Asp Ala Gly Ile Thr Gln Ser Pro Arg Tyr Lys Ile Thr
            20                  25                  30
```

```
Glu Thr Gly Arg Gln Val Thr Leu Met Cys His Gln Thr Trp Ser His
        35                  40                  45

Ser Tyr Met Phe Trp Tyr Arg Gln Asp Leu Gly His Gly Leu Arg Leu
    50                  55                  60

Ile Tyr Tyr Ser Ala Ala Ala Asp Ile Thr Asp Lys Gly Glu Val Pro
65                  70                  75                  80

Asp Gly Tyr Val Val Ser Arg Ser Lys Thr Glu Asn Phe Pro Leu Thr
                85                  90                  95

Leu Glu Ser Ala Thr Arg Ser Gln Thr Ser Val Tyr Phe Cys Ala Ser
            100                 105                 110

Ser Asp Pro Gly Thr Glu Ala Phe Phe Gly Gln Gly Thr Arg Leu Thr
        115                 120                 125

Val Val Glu Asp Leu Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe
    130                 135                 140

Glu Pro Ser Lys Ala Glu Ile Ala Asn Lys Gln Lys Ala Thr Leu Val
145                 150                 155                 160

Cys Leu Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp
                165                 170                 175

Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp Pro Gln Ala
            180                 185                 190

Tyr Lys Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val
        195                 200                 205

Ser Ala Thr Phe Trp His Asn Pro Arg Asn His Phe Arg Cys Gln Val
    210                 215                 220
```

Gln Phe His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro
225 230 235 240

Lys Pro Val Thr Gln Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp
245 250 255

Cys Gly Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr
260 265 270

Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu
275 280 285

Val Ser Thr Leu Val Val Met Ala Met Val Lys Arg Lys Asn Ser
290 295 300

<210> 58
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 58

Arg Ala Lys Arg Ser Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys
1 5 10 15

Gln Ala Gly Asp Val Glu Glu Asn Pro Gly Pro
20 25

<210> 59
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 59
gccacagcac tgttgctctt gaagtcc 27

<210> 60
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 60
caggcagtat ctggagtcat tgag 24

<210> 61
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 61

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Gly Gly Val Gly Lys
1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile
20

<210> 62
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 62

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Asp Gly Val Gly Lys
1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile
20

<210> 63
<211> 388
<212> DNA
<213> Homo sapiens

<400> 63
atgaggcaag tggcgagagt gatcgtgttc ctgaccctga gtactttgag ccttgctaag 60

accacccagc ccatctccat ggactcatat gaaggacaag aagtgaacat aacctgtagc 120

cacaacaaca ttgctacaaa tgattatatc acgtggtacc aacagtttcc cagccaagga 180

ccacgattta ttattcaagg atacaagaca aaagttacaa acgaagtggc ctccctgttt 240

atccctgccg acagaaagtc cagcactctg agcctgcccc gggtttccct gagcgacact 300

gctgtgtact actgcctcgt gggtgacatg gaccaggcag gaactgctct gatctttggg 360

aagggaacca ccttatcagt gagttcca 388

<210> 64
<211> 400
<212> DNA
<213> Homo sapiens

<400> 64
atgggccccg ggctcctctg ctgggcactg ctttgtctcc tgggagcagg cttagtggac 60

gctggagtca cccaaagtcc cacacacctg atcaaaacga gaggacagca agtgactctg 120

agatgctctc ctaagtctgg gcatgacact gtgtcctggt accaacaggc cctgggtcag 180

gggccccagt ttatctttca gtattatgag gaggaagaga gacagagagg caacttccct 240

gatcgattct caggtcacca gttccctaac tatagctctg agctgaatgt gaacgccttg 300

ttgctggggg actcggccct ctatctctgt gccagcagct tgggtgaggg aagagtggac 360

ggctacacct tcggttcggg gaccaggtta accgttgtag 400

<210> 65
<211> 387
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 65
atgcgccagg tggctcgcgt aatcgtgttt ctgactctga gcactctgtc actcgccaag 60

acgacccagc ccatttcaat ggactcatac gaaggtcagg aggtgaatat cacatgctcc 120

cacaataaca ttgctacaaa cgattacatt acatggtatc aacagtttcc ctctcaaggg 180

cctcgattca taatacaagg gtataagacc aaagttacga atgaggtcgc atccctcttt 240

attcccgccg accggaagag ttctactctt tccctgccta gggtgagcct gagtgatact 300

gctgtttact actgcctggt tggagacatg gaccaggcgg gaactgccct catattcggc 360

aagggcacga cactctctgt gtcatct 387

<210> 66
<211> 399
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 66
atggggccag gcctgctttg ctgggcgctg ctgtgcctcc tgggtgccgg tttggtggac 60

gctggtgtaa ctcagtcccc aacacatctg atcaagacac gcggccagca ggttacactg 120

cgctgttcac ccaagagtgg gcacgataca gtttcctggt accagcaagc tctgggtcaa 180

ggacctcagt ttatattcca atattacgaa gaggaggagc gccagcgcgg aaatttccca 240

gacagattct ccgggcacca gtttcccaac tactcatctg agctgaacgt taacgccctg 300

ctgctgggag actccgctct ctacctgtgc gcatctagcc tcgggagggc tagtaaccag 360

ccccagcact tcggcgacgg aaccaggctg tctattctg 399

<210> 67
<211> 388
<212> DNA
<213> Homo sapiens

<400> 67
atgaggcaag tggcgagagt gatcgtgttc ctgaccctga gtactttgag ccttgctaag 60

accacccagc ccatctccat ggactcatat gaaggacaag aagtgaacat aacctgtagc 120

cacaacaaca ttgctacaaa tgattatatc acgtggtacc aacagtttcc cagccaagga 180

ccacgattta ttattcaagg atacaagaca aaagttacaa acgaagtggc ctccctgttt 240

atccctgccg acagaaagtc cagcactctg agcctgcccc gggtttccct gagcgacact 300

gctgtgtact actgcctcgt gggtgacagg gaccaggcag gaactgctct gatctttggg 360

aagggaacca ccttatcagt gagttcca 388

<210> 68
<211> 400
<212> DNA
<213> Homo sapiens

<400> 68
atgggccccg ggctcctctg ctgggcactg ctttgtctcc tgggagcagg cttagtggac 60

gctggagtca cccaaagtcc cacacacctg atcaaaacga gaggacagca agtgactctg 120

agatgctctc ctaagtctgg gcatgacact gtgtcctggt accaacaggc cctgggtcag 180

gggccccagt ttatctttca gtattatgag gaggaagaga gacagagagg caacttccct 240

gatcgattct caggtcacca gttccctaac tatagctctg agctgaatgt gaacgccttg 300

ttgctggggg actcggccct ctatctctgt gccagcagct ttggacagtc aagcacatat 360

ggctacacct tcggttcggg gaccaggtta accgttgtag 400

<210> 69
<211> 397
<212> DNA
<213> Homo sapiens

<400> 69
atgaaatcct tgagagtttt actagtgatc ctgtggcttc agttgagctg ggtttggagc 60

caacagaagg aggtggagca gaattctgga cccctcagtg ttccagaggg agccattgcc 120

tctctcaact gcacttacag tgaccgaggt tcccagtcct tcttctggta cagacaatat 180

tctgggaaaa gccctgagtt gataatgttc atatactcca atggtgacaa agaagatgga 240

aggtttacag cacagctcaa taaagccagc cagtatgttt ctctgctcat cagagactcc 300

cagcccagtg attcagccac ctacctctgt gccgcggcga tggatagcag ctataaattg 360

atcttcggga gtgggaccag actgctggtc aggcctg 397

<210> 70
<211> 391
<212> DNA
<213> Homo sapiens

<400> 70
atgggcacca ggctcttctt ctatgtggcc ctttgtctgc tgtgggcagg acacagggat 60

gctggaatca cccagagccc aagatacaag atcacagaga caggaaggca ggtgaccttg 120

atgtgtcacc agacttggag ccacagctat atgttctggt atcgacaaga cctgggacat 180

gggctgaggc tgatctatta ctcagcagct gctgatatta cagataaagg agaagtcccc 240

gatggctatg ttgtctccag atccaagaca gagaatttcc ccctcactct ggagtcagct 300

acccgctccc agacatctgt gtatttctgc gccagcagtg accccggcac tgaagctttc 360

tttggacaag gcaccagact cacagttgta g 391