SEQUENCE LISTING

<110> SIGMA-ALDRICH CO. LLC
CHEN, Fuqiang
DING, Xiao
FENG, Yongmei
Davis, Gregory D.

<120> USING NUCLEOSOME INTERACTING PROTEIN DOMAINS TO ENHANCE TARGETED GENOME MODIFICATION

<130> 047497-599978

<150> US 62/531,222
<151> 2017-07-11

<160> 79

<170> PatentIn version 3.5

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Gly Gly Gly Ser
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Ala Ala Ala Lys
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Pro Ala Pro Ala Pro
1   5

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Pro Lys Lys Lys Arg Lys Val
1   5

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Pro Lys Lys Lys Arg Arg Val
1   5

<210> 12
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Lys Arg Pro Ala Ala Thr Lys Lys Ala Gly Gln Ala Lys Lys Lys Lys
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Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg
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<400> 14

Arg Lys Lys Arg Arg Gln Arg Arg Arg

1 5

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Arg Gln Arg Arg Asn Glu Leu Lys Arg Ser Pro
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<400> 17

Val Ser Arg Lys Arg Pro Arg Pro
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<400> 18

Pro Pro Lys Lys Ala Arg Glu Asp
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Pro Gln Pro Lys Lys Lys Pro Leu
1   5

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1   5   10

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<400> 21

Pro Lys Gln Lys Lys Arg Lys
1   5

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<400> 22

Arg Lys Leu Lys Lys Lys Ile Lys Lys Leu
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<400> 24

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1 5 10 15

Lys Ser Lys Lys
20

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<400> 25

Arg Lys Cys Leu Gln Ala Gly Met Asn Leu Glu Ala Arg Lys Thr Lys
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Lys

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<400> 26

Asn Gln Ser Ser Asn Phe Gly Pro Met Lys Gly Gly Asn Phe Gly Gly
1   5   10   15

Arg Ser Ser Gly Pro Tyr Gly Gly Gly Gly Gln Tyr Phe Ala Lys Pro
            20   25   30

Arg Asn Gln Gly Gly Tyr
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Arg Met Arg Ile Glx Phe Lys Asn Lys Gly Lys Asp Thr Ala Glu Leu
1   5   10   15

Arg Arg Arg Arg Val Glu Val Ser Val Glu Leu Arg Lys Ala Lys Lys
            20   25   30

Asp Glu Gln Ile Leu Lys Arg Arg Asn Val
        35   40

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<400> 28

Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Pro Lys Lys
1   5   10   15

Lys Arg Lys Val
            20

<210> 29
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<400> 29

Pro Leu Ser Ser Ile Phe Ser Arg Ile Gly Asp Pro Pro Lys Lys Lys
1   5   10   15

Arg Lys Val

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<400> 30

Gly Ala Leu Phe Leu Gly Trp Leu Gly Ala Ala Gly Ser Thr Met Gly
1   5   10   15

Ala Pro Lys Lys Lys Arg Lys Val
            20

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<212> PRT
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<220>
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<400> 31

Gly Ala Leu Phe Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly
1   5   10   15

Ala Trp Ser Gln Pro Lys Lys Lys Arg Lys Val
            20   25

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<213> Artificial Sequence

<220>
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<400> 32

Lys Glu Thr Trp Trp Glu Thr Trp Trp Thr Glu Trp Ser Gln Pro Lys
1   5   10   15

Lys Lys Arg Lys Val
            20

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<400> 33

Tyr Ala Arg Ala Ala Ala Arg Gln Ala Arg Ala
1 5 10

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<400> 34

Thr His Arg Leu Pro Arg Arg Arg Arg Arg Arg
1 5 10

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<220>
<223> SYNTHESIZED

<400> 35

Gly Gly Arg Arg Ala Arg Arg Arg Arg Arg Arg
1 5 10

<210> 36
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<400> 36

Arg Arg Gln Arg Arg Thr Ser Lys Leu Met Lys Arg
1 5 10

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<400> 37

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

Lys Ala Leu Ala Ala Leu Ala Lys Lys Ile Leu
            20   25

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<400> 38

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

Leu Ala Lys His Leu Ala Lys Ala Leu Ala Lys Ala Leu Lys Cys Glu
            20   25   30

Ala

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<212> PRT
<213> Artificial Sequence

<220>
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<400> 39

Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys Lys
1   5   10   15

<210> 40
<211> 84
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<213> Homo sapiens

<400> 40

Met Gly Lys Gly Asp Pro Lys Lys Pro Arg Gly Lys Met Ser Ser Tyr
1   5   10   15

Ala Phe Phe Val Gln Thr Cys Arg Glu Glu His Lys Lys Lys His Pro
            20   25   30

Asp Ala Ser Val Asn Phe Ser Glu Phe Ser Lys Lys Cys Ser Glu Arg
        35   40   45

Trp Lys Thr Met Ser Ala Lys Glu Lys Gly Lys Phe Glu Asp Met Ala
    50   55   60

Lys Ala Asp Lys Ala Arg Tyr Glu Arg Glu Met Lys Thr Tyr Ile Pro
65   70   75   80

Pro Lys Gly Glu

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

<400> 41

Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1   5   10   15

Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
            20   25   30

Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
        35   40   45

```
Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
    50                  55                  60

Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65                  70                  75                  80

Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
                85                  90                  95

Ala Lys Ser Asp
            100
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<213> Homo sapiens

<400> 42

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Met Pro Lys Arg Lys Ala Glu Gly Asp Ala Lys Gly Asp Lys Ala Lys
1               5                   10                  15

Val Lys Asp Glu Pro Gln Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro
            20                  25                  30

Ala Pro Pro Lys Pro Glu Pro Lys Pro Lys Lys Ala Pro Ala Lys Lys
        35                  40                  45

Gly Glu Lys Val Pro Lys Gly Lys Lys Gly Lys Ala Asp Ala Gly Lys
    50                  55                  60

Glu Gly Asn Asn Pro Ala Glu Asn Gly Asp Ala Lys Thr Asp Gln Ala
65                  70                  75                  80

Gln Lys Ala Glu Gly Ala Gly Asp Ala Lys
                85                  90
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<210> 43
<211> 99
<212> PRT
<213> Homo sapiens

<400> 43

Met Pro Lys Arg Lys Ser Pro Glu Asn Thr Glu Gly Lys Asp Gly Ser
1 5 10 15

Lys Val Thr Lys Gln Glu Pro Thr Arg Arg Ser Ala Arg Leu Ser Ala
20 25 30

Lys Pro Ala Pro Pro Lys Pro Glu Pro Lys Pro Arg Lys Thr Ser Ala
35 40 45

Lys Lys Glu Pro Gly Ala Lys Ile Ser Arg Gly Ala Lys Gly Lys Lys
50 55 60

Glu Glu Lys Gln Glu Ala Gly Lys Glu Gly Thr Ala Pro Ser Glu Asn
65 70 75 80

Gly Glu Thr Lys Ala Glu Glu Ala Gln Lys Thr Glu Ser Val Asp Asn
85 90 95

Glu Gly Glu

<210> 44
<211> 77
<212> PRT
<213> Homo sapiens

<400> 44

Met Pro Lys Arg Lys Ser Pro Glu Asn Thr Glu Gly Lys Asp Gly Ser
1 5 10 15

Lys Val Thr Lys Gln Glu Pro Thr Arg Arg Ser Ala Arg Leu Ser Ala
20 25 30

Lys Pro Ala Pro Pro Lys Pro Glu Pro Lys Pro Arg Lys Thr Ser Ala
35 40 45

Lys Lys Glu Pro Gly Ala Lys Ile Ser Arg Gly Ala Lys Gly Lys Lys

```
    50                  55                  60

Glu Glu Lys Gln Glu Ala Gly Lys Glu Gly Thr Glu Asn
65                  70                  75


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<213>  Homo sapiens

<400>  45

Ser Thr Asp His Pro Lys Tyr Ser Asp Met Ile Val Ala Ala Ile Gln
1               5                   10                  15


Ala Glu Lys Asn Arg Ala Gly Ser Ser Arg Gln Ser Ile Gln Lys Tyr
            20                  25                  30


Ile Lys Ser His Tyr Lys Val Gly Glu Asn Ala Asp Ser Gln Ile Lys
        35                  40                  45


Leu Ser Ile Lys Arg Leu Val Thr Thr Gly Val Leu Lys Gln Thr Lys
    50                  55                  60


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


<210>  46
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<213>  Saccharomyces cerevisiae

<400>  46

Leu Leu Asn Pro Thr Lys Arg Glu Arg Lys Glu Asn Tyr Ser Ile Asp
1               5                   10                  15


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


His Pro Arg Met Pro Lys Pro His Val Phe His Ser His Gln Leu Gln
        35                  40                  45
```

```
Pro Pro Gln Leu Lys Val Leu Tyr Glu Lys Glu Arg Met Trp Thr Ala
    50                  55                  60

Lys Lys Thr Gly Tyr Val Pro Thr Met Asp Asp Val Lys Ala Ala Tyr
65                  70                  75                  80

Gly Asp Ile Ser Asp Glu Glu Glu Lys Lys Gln Lys Leu Glu Leu Leu
                85                  90                  95

Lys Leu Ser Val Asn Asn Ser Gln Pro Leu Thr Glu Glu Glu Glu Lys
            100                 105                 110

Met Lys Ala Asp Trp Glu Ser Glu Gly Phe Thr Asn Trp Asn Lys Leu
        115                 120                 125

Glu Phe Arg Lys Phe Ile Thr Val Ser Gly Lys Tyr Gly Arg Asn Ser
    130                 135                 140

Ile Gln Ala Ile Ala Arg Glu Leu Ala Pro Gly Lys Thr Leu Glu Glu
145                 150                 155                 160

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

Asp Tyr Glu Lys Tyr Leu Lys Ile Ile Glu Asn Glu Glu Glu Lys Ile
            180                 185                 190

Lys Arg Val Lys Met Gln Gln Glu Ala Leu Arg Arg Lys Leu Ser Glu
        195                 200                 205

Tyr Lys Asn Pro Phe Phe Asp Leu Lys Leu Lys His Pro Pro Ser Ser
    210                 215                 220

Asn Asn Lys Arg Thr Tyr Ser Glu Glu Glu Asp Arg Phe Ile Leu Leu
225                 230                 235                 240

Met Leu Phe Lys Tyr Gly Leu Asp Arg Asp Asp Val Tyr Glu Leu Val
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                245                 250                 255

Arg Asp Glu Ile Arg Asp Cys Pro Leu Phe Glu Leu Asp Phe Tyr Phe
            260                 265                 270

Arg Ser Arg Thr Pro Val Glu Leu Ala Arg Arg Gly Asn Thr Leu Leu
        275                 280                 285

Gln Cys Leu Glu Lys Glu Phe Asn Ala Gly Ile Val Leu Asp Asp Ala
    290                 295                 300

Thr Lys Asp Arg Met Lys Lys Glu Asp Glu Asn Gly Lys Arg Ile Arg
305                 310                 315                 320

Glu Glu Phe Ala Asp Gln Thr Ala Asn Glu Lys Glu Asn Val Asp Gly
                325                 330                 335

Val Glu Ser Lys Lys Ala Lys Ile Glu Asp Thr Ser Asn Val Gly Thr
            340                 345                 350

Glu Gln Leu Val Ala Glu Lys Ile Pro Glu Asn Glu Thr Thr His
        355                 360                 365
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<213> Saccharomyces cerevisiae

<400> 47

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Asp Met Asp Ser Ile Gly Glu Ser Glu Val Arg Ala Leu Tyr Lys Ala
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Ile Leu Lys Phe Gly Asn Leu Lys Glu Ile Leu Asp Glu Leu Ile Ala
            20                  25                  30

Asp Gly Thr Leu Pro Val Lys Ser Phe Glu Lys Tyr Gly Glu Thr Tyr
        35                  40                  45

Asp Glu Met Met Glu Ala Ala Lys Asp Cys Val His Glu Glu Glu Lys
```

```
    50                  55                  60

Asn Arg Lys Glu Ile Leu Glu Lys Leu Glu Lys His Ala Thr Ala Tyr
65                  70                  75                  80

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

Asp Asn Pro Leu Thr Arg Leu Ser Leu Lys Lys Arg Glu Lys Lys Ala
            100                 105                 110

Val Leu Phe Asn Phe Lys Gly Val Lys Ser Leu Asn Ala Glu Ser Leu
        115                 120                 125

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

Asn Tyr Lys Asp Asp Pro Leu Lys Phe Ser Leu Gly Asn Asn Thr Pro
145                 150                 155                 160

Lys Pro Val Gln Asn Trp Ser Ser Asn Trp Thr Lys Glu Glu Asp Glu
                165                 170                 175

Lys Leu Leu Ile Gly Val Phe Lys Tyr Gly Tyr Gly Ser Trp Thr Gln
            180                 185                 190

Ile Arg Asp Asp Pro Phe Leu Gly Ile Thr Asp Lys Ile Phe Leu Asn
        195                 200                 205

Glu Val His Asn Pro Val Ala Lys Lys Ser Ala Ser Ser Ser Asp Thr
    210                 215                 220

Thr Pro Thr Pro Ser Lys Lys Gly Lys Gly Ile Thr Gly Ser Ser Lys
225                 230                 235                 240

Lys Val Pro Gly Ala Ile His Leu Gly Arg Arg Val Asp Tyr Leu Leu
                245                 250                 255
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Ser Phe Leu Arg Gly Gly Leu Asn Thr Lys Ser Pro Ser
260 265

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cattcgccag tacgagcttg tgg 23

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ctttaatgcg ctgacttgtg agg 23

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ttggtctccc ctttccagca ttcgcc 26

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ttccagcatt cgccagtacg agcttg 26

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gatcaacatg ggagactccc acgtggacac 30

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agatacttct tcggccaccg cctcggacac 30

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Met Asp Lys Lys Tyr Ser Ile Gly Leu Asp Ile Gly Thr Asn Ser Val
1 5 10 15

Gly Trp Ala Val Ile Thr Asp Glu Tyr Lys Val Pro Ser Lys Lys Phe
20 25 30

Lys Val Leu Gly Asn Thr Asp Arg His Ser Ile Lys Lys Asn Leu Ile
35 40 45

Gly Ala Leu Leu Phe Asp Ser Gly Glu Thr Ala Glu Ala Thr Arg Leu
50 55 60

Lys Arg Thr Ala Arg Arg Arg Tyr Thr Arg Arg Lys Asn Arg Ile Cys
65 70 75 80

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

```
Phe Phe His Arg Leu Glu Glu Ser Phe Leu Val Glu Glu Asp Lys Lys
            100                 105                 110

His Glu Arg His Pro Ile Phe Gly Asn Ile Val Asp Glu Val Ala Tyr
        115                 120                 125

His Glu Lys Tyr Pro Thr Ile Tyr His Leu Arg Lys Lys Leu Val Asp
    130                 135                 140

Ser Thr Asp Lys Ala Asp Leu Arg Leu Ile Tyr Leu Ala Leu Ala His
145                 150                 155                 160

Met Ile Lys Phe Arg Gly His Phe Leu Ile Glu Gly Asp Leu Asn Pro
                165                 170                 175

Asp Asn Ser Asp Val Asp Lys Leu Phe Ile Gln Leu Val Gln Thr Tyr
            180                 185                 190

Asn Gln Leu Phe Glu Glu Asn Pro Ile Asn Ala Ser Gly Val Asp Ala
        195                 200                 205

Lys Ala Ile Leu Ser Ala Arg Leu Ser Lys Ser Arg Arg Leu Glu Asn
    210                 215                 220

Leu Ile Ala Gln Leu Pro Gly Glu Lys Lys Asn Gly Leu Phe Gly Asn
225                 230                 235                 240

Leu Ile Ala Leu Ser Leu Gly Leu Thr Pro Asn Phe Lys Ser Asn Phe
                245                 250                 255

Asp Leu Ala Glu Asp Ala Lys Leu Gln Leu Ser Lys Asp Thr Tyr Asp
            260                 265                 270

Asp Asp Leu Asp Asn Leu Leu Ala Gln Ile Gly Asp Gln Tyr Ala Asp
        275                 280                 285

Leu Phe Leu Ala Ala Lys Asn Leu Ser Asp Ala Ile Leu Leu Ser Asp
```

```
    290                 295                 300

Ile Leu Arg Val Asn Thr Glu Ile Thr Lys Ala Pro Leu Ser Ala Ser
305                 310                 315                 320

Met Ile Lys Arg Tyr Asp Glu His His Gln Asp Leu Thr Leu Leu Lys
                325                 330                 335

Ala Leu Val Arg Gln Gln Leu Pro Glu Lys Tyr Lys Glu Ile Phe Phe
            340                 345                 350

Asp Gln Ser Lys Asn Gly Tyr Ala Gly Tyr Ile Asp Gly Gly Ala Ser
        355                 360                 365

Gln Glu Glu Phe Tyr Lys Phe Ile Lys Pro Ile Leu Glu Lys Met Asp
    370                 375                 380

Gly Thr Glu Glu Leu Leu Val Lys Leu Asn Arg Glu Asp Leu Leu Arg
385                 390                 395                 400

Lys Gln Arg Thr Phe Asp Asn Gly Ser Ile Pro His Gln Ile His Leu
                405                 410                 415

Gly Glu Leu His Ala Ile Leu Arg Arg Gln Glu Asp Phe Tyr Pro Phe
            420                 425                 430

Leu Lys Asp Asn Arg Glu Lys Ile Glu Lys Ile Leu Thr Phe Arg Ile
        435                 440                 445

Pro Tyr Tyr Val Gly Pro Leu Ala Arg Gly Asn Ser Arg Phe Ala Trp
    450                 455                 460

Met Thr Arg Lys Ser Glu Glu Thr Ile Thr Pro Trp Asn Phe Glu Glu
465                 470                 475                 480

Val Val Asp Lys Gly Ala Ser Ala Gln Ser Phe Ile Glu Arg Met Thr
                485                 490                 495
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```
Asn Phe Asp Lys Asn Leu Pro Asn Glu Lys Val Leu Pro Lys His Ser
            500                 505                 510

Leu Leu Tyr Glu Tyr Phe Thr Val Tyr Asn Glu Leu Thr Lys Val Lys
        515                 520                 525

Tyr Val Thr Glu Gly Met Arg Lys Pro Ala Phe Leu Ser Gly Glu Gln
    530                 535                 540

Lys Lys Ala Ile Val Asp Leu Leu Phe Lys Thr Asn Arg Lys Val Thr
545                 550                 555                 560

Val Lys Gln Leu Lys Glu Asp Tyr Phe Lys Lys Ile Glu Cys Phe Asp
                565                 570                 575

Ser Val Glu Ile Ser Gly Val Glu Asp Arg Phe Asn Ala Ser Leu Gly
            580                 585                 590

Thr Tyr His Asp Leu Leu Lys Ile Ile Lys Asp Lys Asp Phe Leu Asp
        595                 600                 605

Asn Glu Glu Asn Glu Asp Ile Leu Glu Asp Ile Val Leu Thr Leu Thr
    610                 615                 620

Leu Phe Glu Asp Arg Glu Met Ile Glu Glu Arg Leu Lys Thr Tyr Ala
625                 630                 635                 640

His Leu Phe Asp Asp Lys Val Met Lys Gln Leu Lys Arg Arg Arg Tyr
                645                 650                 655

Thr Gly Trp Gly Arg Leu Ser Arg Lys Leu Ile Asn Gly Ile Arg Asp
            660                 665                 670

Lys Gln Ser Gly Lys Thr Ile Leu Asp Phe Leu Lys Ser Asp Gly Phe
        675                 680                 685

Ala Asn Arg Asn Phe Met Gln Leu Ile His Asp Asp Ser Leu Thr Phe
    690                 695                 700
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```
Lys Glu Asp Ile Gln Lys Ala Gln Val Ser Gly Gln Gly Asp Ser Leu
705                 710                 715                 720

His Glu His Ile Ala Asn Leu Ala Gly Ser Pro Ala Ile Lys Lys Gly
                725                 730                 735

Ile Leu Gln Thr Val Lys Ile Val Asp Glu Leu Val Lys Val Met Gly
            740                 745                 750

His Lys Pro Glu Asn Ile Val Ile Glu Met Ala Arg Glu Asn Gln Thr
        755                 760                 765

Thr Gln Lys Gly Gln Lys Asn Ser Arg Glu Arg Met Lys Arg Ile Glu
    770                 775                 780

Glu Gly Ile Lys Glu Leu Gly Ser Gln Ile Leu Lys Glu His Pro Val
785                 790                 795                 800

Glu Asn Thr Gln Leu Gln Asn Glu Lys Leu Tyr Leu Tyr Tyr Leu Gln
                805                 810                 815

Asn Gly Arg Asp Met Tyr Val Asp Gln Glu Leu Asp Ile Asn Arg Leu
            820                 825                 830

Ser Asp Tyr Asp Val Asp His Ile Val Pro Gln Ser Phe Ile Lys Asp
        835                 840                 845

Asp Ser Ile Asp Asn Lys Val Leu Thr Arg Ser Asp Lys Asn Arg Gly
    850                 855                 860

Lys Ser Asp Asn Val Pro Ser Glu Glu Val Val Lys Lys Met Lys Asn
865                 870                 875                 880

Tyr Trp Arg Gln Leu Leu Asn Ala Lys Leu Ile Thr Gln Arg Lys Phe
                885                 890                 895

Asp Asn Leu Thr Lys Ala Glu Arg Gly Gly Leu Ser Glu Leu Asp Lys
            900                 905                 910
```

```
Ala Gly Phe Ile Lys Arg Gln Leu Val Glu Thr Arg Gln Ile Thr Lys
        915                 920                 925

His Val Ala Gln Ile Leu Asp Ser Arg Met Asn Thr Lys Tyr Asp Glu
    930                 935                 940

Asn Asp Lys Leu Ile Arg Glu Val Lys Val Ile Thr Leu Lys Ser Lys
945                 950                 955                 960

Leu Val Ser Asp Phe Arg Lys Asp Phe Gln Phe Tyr Lys Val Arg Glu
                965                 970                 975

Ile Asn Asn Tyr His His Ala His Asp Ala Tyr Leu Asn Ala Val Val
            980                 985                 990

Gly Thr Ala Leu Ile Lys Lys Tyr  Pro Lys Leu Glu Ser  Glu Phe Val
        995                 1000                1005

Tyr Gly  Asp Tyr Lys Val Tyr  Asp Val Arg Lys Met  Ile Ala Lys
    1010                1015                1020

Ser Glu  Gln Glu Ile Gly Lys  Ala Thr Ala Lys Tyr  Phe Phe Tyr
    1025                1030                1035

Ser Asn  Ile Met Asn Phe Phe  Lys Thr Glu Ile Thr  Leu Ala Asn
    1040                1045                1050

Gly Glu  Ile Arg Lys Arg Pro  Leu Ile Glu Thr Asn  Gly Glu Thr
    1055                1060                1065

Gly Glu  Ile Val Trp Asp Lys  Gly Arg Asp Phe Ala  Thr Val Arg
    1070                1075                1080

Lys Val  Leu Ser Met Pro Gln  Val Asn Ile Val Lys  Lys Thr Glu
    1085                1090                1095

Val Gln  Thr Gly Gly Phe Ser  Lys Glu Ser Ile Leu  Pro Lys Arg
```

```
    1100                1105                1110

Asn Ser  Asp Lys Leu Ile Ala  Arg Lys Lys Asp Trp  Asp Pro Lys
    1115                1120                1125

Lys Tyr  Gly Gly Phe Asp Ser  Pro Thr Val Ala Tyr  Ser Val Leu
    1130                1135                1140

Val Val  Ala Lys Val Glu Lys  Gly Lys Ser Lys Lys  Leu Lys Ser
    1145                1150                1155

Val Lys  Glu Leu Leu Gly Ile  Thr Ile Met Glu Arg  Ser Ser Phe
    1160                1165                1170

Glu Lys  Asn Pro Ile Asp Phe  Leu Glu Ala Lys Gly  Tyr Lys Glu
    1175                1180                1185

Val Lys  Lys Asp Leu Ile Ile  Lys Leu Pro Lys Tyr  Ser Leu Phe
    1190                1195                1200

Glu Leu  Glu Asn Gly Arg Lys  Arg Met Leu Ala Ser  Ala Gly Glu
    1205                1210                1215

Leu Gln  Lys Gly Asn Glu Leu  Ala Leu Pro Ser Lys  Tyr Val Asn
    1220                1225                1230

Phe Leu  Tyr Leu Ala Ser His  Tyr Glu Lys Leu Lys  Gly Ser Pro
    1235                1240                1245

Glu Asp  Asn Glu Gln Lys Gln  Leu Phe Val Glu Gln  His Lys His
    1250                1255                1260

Tyr Leu  Asp Glu Ile Ile Glu  Gln Ile Ser Glu Phe  Ser Lys Arg
    1265                1270                1275

Val Ile  Leu Ala Asp Ala Asn  Leu Asp Lys Val Leu  Ser Ala Tyr
    1280                1285                1290
```

```
Asn Lys  His Arg Asp Lys Pro  Ile Arg Glu Gln Ala  Glu Asn Ile
    1295                1300                1305

Ile His  Leu Phe Thr Leu Thr  Asn Leu Gly Ala Pro  Ala Ala Phe
    1310                1315                1320

Lys Tyr  Phe Asp Thr Thr Ile  Asp Arg Lys Arg Tyr  Thr Ser Thr
    1325                1330                1335

Lys Glu  Val Leu Asp Ala Thr  Leu Ile His Gln Ser  Ile Thr Gly
    1340                1345                1350

Leu Tyr  Glu Thr Arg Ile Asp  Leu Ser Gln Leu Gly  Gly Asp Pro
    1355                1360                1365

Lys Lys  Lys Arg Lys Val Leu  Glu Gly Gly Gly Gly  Ser Met Gly
    1370                1375                1380

Lys Gly  Asp Pro Lys Lys Pro  Arg Gly Lys Met Ser  Ser Tyr Ala
    1385                1390                1395

Phe Phe  Val Gln Thr Cys Arg  Glu Glu His Lys Lys  Lys His Pro
    1400                1405                1410

Asp Ala  Ser Val Asn Phe Ser  Glu Phe Ser Lys Lys  Cys Ser Glu
    1415                1420                1425

Arg Trp  Lys Thr Met Ser Ala  Lys Glu Lys Gly Lys  Phe Glu Asp
    1430                1435                1440

Met Ala  Lys Ala Asp Lys Ala  Arg Tyr Glu Arg Glu  Met Lys Thr
    1445                1450                1455

Tyr Ile  Pro Pro Lys Gly Glu
    1460                1465
```

<210> 62
<211> 1481
<212> PRT

<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 62

```
Met Asp Lys Lys Tyr Ser Ile Gly Leu Asp Ile Gly Thr Asn Ser Val
1               5                  10                  15


Gly Trp Ala Val Ile Thr Asp Glu Tyr Lys Val Pro Ser Lys Lys Phe
            20                  25                  30


Lys Val Leu Gly Asn Thr Asp Arg His Ser Ile Lys Lys Asn Leu Ile
        35                  40                  45


Gly Ala Leu Leu Phe Asp Ser Gly Glu Thr Ala Glu Ala Thr Arg Leu
    50                  55                  60


Lys Arg Thr Ala Arg Arg Arg Tyr Thr Arg Arg Lys Asn Arg Ile Cys
65                  70                  75                  80


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


Phe Phe His Arg Leu Glu Glu Ser Phe Leu Val Glu Glu Asp Lys Lys
            100                 105                 110


His Glu Arg His Pro Ile Phe Gly Asn Ile Val Asp Glu Val Ala Tyr
        115                 120                 125


His Glu Lys Tyr Pro Thr Ile Tyr His Leu Arg Lys Lys Leu Val Asp
    130                 135                 140


Ser Thr Asp Lys Ala Asp Leu Arg Leu Ile Tyr Leu Ala Leu Ala His
145                 150                 155                 160


Met Ile Lys Phe Arg Gly His Phe Leu Ile Glu Gly Asp Leu Asn Pro
                165                 170                 175
```

```
Asp Asn Ser Asp Val Asp Lys Leu Phe Ile Gln Leu Val Gln Thr Tyr
            180                 185                 190

Asn Gln Leu Phe Glu Glu Asn Pro Ile Asn Ala Ser Gly Val Asp Ala
        195                 200                 205

Lys Ala Ile Leu Ser Ala Arg Leu Ser Lys Ser Arg Arg Leu Glu Asn
    210                 215                 220

Leu Ile Ala Gln Leu Pro Gly Glu Lys Lys Asn Gly Leu Phe Gly Asn
225                 230                 235                 240

Leu Ile Ala Leu Ser Leu Gly Leu Thr Pro Asn Phe Lys Ser Asn Phe
                245                 250                 255

Asp Leu Ala Glu Asp Ala Lys Leu Gln Leu Ser Lys Asp Thr Tyr Asp
            260                 265                 270

Asp Asp Leu Asp Asn Leu Leu Ala Gln Ile Gly Asp Gln Tyr Ala Asp
        275                 280                 285

Leu Phe Leu Ala Ala Lys Asn Leu Ser Asp Ala Ile Leu Leu Ser Asp
    290                 295                 300

Ile Leu Arg Val Asn Thr Glu Ile Thr Lys Ala Pro Leu Ser Ala Ser
305                 310                 315                 320

Met Ile Lys Arg Tyr Asp Glu His His Gln Asp Leu Thr Leu Leu Lys
                325                 330                 335

Ala Leu Val Arg Gln Gln Leu Pro Glu Lys Tyr Lys Glu Ile Phe Phe
            340                 345                 350

Asp Gln Ser Lys Asn Gly Tyr Ala Gly Tyr Ile Asp Gly Gly Ala Ser
        355                 360                 365

Gln Glu Glu Phe Tyr Lys Phe Ile Lys Pro Ile Leu Glu Lys Met Asp
    370                 375                 380
```

```
Gly Thr Glu Glu Leu Leu Val Lys Leu Asn Arg Glu Asp Leu Leu Arg
385                 390                 395                 400

Lys Gln Arg Thr Phe Asp Asn Gly Ser Ile Pro His Gln Ile His Leu
                405                 410                 415

Gly Glu Leu His Ala Ile Leu Arg Arg Gln Glu Asp Phe Tyr Pro Phe
            420                 425                 430

Leu Lys Asp Asn Arg Glu Lys Ile Glu Lys Ile Leu Thr Phe Arg Ile
        435                 440                 445

Pro Tyr Tyr Val Gly Pro Leu Ala Arg Gly Asn Ser Arg Phe Ala Trp
    450                 455                 460

Met Thr Arg Lys Ser Glu Glu Thr Ile Thr Pro Trp Asn Phe Glu Glu
465                 470                 475                 480

Val Val Asp Lys Gly Ala Ser Ala Gln Ser Phe Ile Glu Arg Met Thr
                485                 490                 495

Asn Phe Asp Lys Asn Leu Pro Asn Glu Lys Val Leu Pro Lys His Ser
            500                 505                 510

Leu Leu Tyr Glu Tyr Phe Thr Val Tyr Asn Glu Leu Thr Lys Val Lys
        515                 520                 525

Tyr Val Thr Glu Gly Met Arg Lys Pro Ala Phe Leu Ser Gly Glu Gln
    530                 535                 540

Lys Lys Ala Ile Val Asp Leu Leu Phe Lys Thr Asn Arg Lys Val Thr
545                 550                 555                 560

Val Lys Gln Leu Lys Glu Asp Tyr Phe Lys Lys Ile Glu Cys Phe Asp
                565                 570                 575

Ser Val Glu Ile Ser Gly Val Glu Asp Arg Phe Asn Ala Ser Leu Gly
            580                 585                 590
```

```
Thr Tyr His Asp Leu Leu Lys Ile Ile Lys Asp Lys Asp Phe Leu Asp
        595                 600                 605

Asn Glu Glu Asn Glu Asp Ile Leu Glu Asp Ile Val Leu Thr Leu Thr
    610                 615                 620

Leu Phe Glu Asp Arg Glu Met Ile Glu Glu Arg Leu Lys Thr Tyr Ala
625                 630                 635                 640

His Leu Phe Asp Asp Lys Val Met Lys Gln Leu Lys Arg Arg Arg Tyr
                645                 650                 655

Thr Gly Trp Gly Arg Leu Ser Arg Lys Leu Ile Asn Gly Ile Arg Asp
            660                 665                 670

Lys Gln Ser Gly Lys Thr Ile Leu Asp Phe Leu Lys Ser Asp Gly Phe
        675                 680                 685

Ala Asn Arg Asn Phe Met Gln Leu Ile His Asp Asp Ser Leu Thr Phe
    690                 695                 700

Lys Glu Asp Ile Gln Lys Ala Gln Val Ser Gly Gln Gly Asp Ser Leu
705                 710                 715                 720

His Glu His Ile Ala Asn Leu Ala Gly Ser Pro Ala Ile Lys Lys Gly
                725                 730                 735

Ile Leu Gln Thr Val Lys Ile Val Asp Glu Leu Val Lys Val Met Gly
            740                 745                 750

His Lys Pro Glu Asn Ile Val Ile Glu Met Ala Arg Glu Asn Gln Thr
        755                 760                 765

Thr Gln Lys Gly Gln Lys Asn Ser Arg Glu Arg Met Lys Arg Ile Glu
    770                 775                 780

Glu Gly Ile Lys Glu Leu Gly Ser Gln Ile Leu Lys Glu His Pro Val
```

785 790 795 800

Glu Asn Thr Gln Leu Gln Asn Glu Lys Leu Tyr Leu Tyr Tyr Leu Gln
805 810 815

Asn Gly Arg Asp Met Tyr Val Asp Gln Glu Leu Asp Ile Asn Arg Leu
820 825 830

Ser Asp Tyr Asp Val Asp His Ile Val Pro Gln Ser Phe Ile Lys Asp
835 840 845

Asp Ser Ile Asp Asn Lys Val Leu Thr Arg Ser Asp Lys Asn Arg Gly
850 855 860

Lys Ser Asp Asn Val Pro Ser Glu Glu Val Val Lys Lys Met Lys Asn
865 870 875 880

Tyr Trp Arg Gln Leu Leu Asn Ala Lys Leu Ile Thr Gln Arg Lys Phe
885 890 895

Asp Asn Leu Thr Lys Ala Glu Arg Gly Gly Leu Ser Glu Leu Asp Lys
900 905 910

Ala Gly Phe Ile Lys Arg Gln Leu Val Glu Thr Arg Gln Ile Thr Lys
915 920 925

His Val Ala Gln Ile Leu Asp Ser Arg Met Asn Thr Lys Tyr Asp Glu
930 935 940

Asn Asp Lys Leu Ile Arg Glu Val Lys Val Ile Thr Leu Lys Ser Lys
945 950 955 960

Leu Val Ser Asp Phe Arg Lys Asp Phe Gln Phe Tyr Lys Val Arg Glu
965 970 975

Ile Asn Asn Tyr His His Ala His Asp Ala Tyr Leu Asn Ala Val Val
980 985 990

```
Gly Thr Ala Leu Ile Lys Lys Tyr  Pro Lys Leu Glu Ser  Glu Phe Val
        995                 1000                1005


Tyr Gly  Asp Tyr Lys Val Tyr  Asp Val Arg Lys Met  Ile Ala Lys
    1010                1015                1020


Ser Glu  Gln Glu Ile Gly Lys  Ala Thr Ala Lys Tyr  Phe Phe Tyr
    1025                1030                1035


Ser Asn  Ile Met Asn Phe Phe  Lys Thr Glu Ile Thr  Leu Ala Asn
    1040                1045                1050


Gly Glu  Ile Arg Lys Arg Pro  Leu Ile Glu Thr Asn  Gly Glu Thr
    1055                1060                1065


Gly Glu  Ile Val Trp Asp Lys  Gly Arg Asp Phe Ala  Thr Val Arg
    1070                1075                1080


Lys Val  Leu Ser Met Pro Gln  Val Asn Ile Val Lys  Lys Thr Glu
    1085                1090                1095


Val Gln  Thr Gly Gly Phe Ser  Lys Glu Ser Ile Leu  Pro Lys Arg
    1100                1105                1110


Asn Ser  Asp Lys Leu Ile Ala  Arg Lys Lys Asp Trp  Asp Pro Lys
    1115                1120                1125


Lys Tyr  Gly Gly Phe Asp Ser  Pro Thr Val Ala Tyr  Ser Val Leu
    1130                1135                1140


Val Val  Ala Lys Val Glu Lys  Gly Lys Ser Lys Lys  Leu Lys Ser
    1145                1150                1155


Val Lys  Glu Leu Leu Gly Ile  Thr Ile Met Glu Arg  Ser Ser Phe
    1160                1165                1170


Glu Lys  Asn Pro Ile Asp Phe  Leu Glu Ala Lys Gly  Tyr Lys Glu
    1175                1180                1185
```

```
Val Lys  Lys Asp Leu Ile Ile  Lys Leu Pro Lys Tyr  Ser Leu Phe
    1190                1195                1200

Glu Leu  Glu Asn Gly Arg Lys  Arg Met Leu Ala Ser  Ala Gly Glu
    1205                1210                1215

Leu Gln  Lys Gly Asn Glu Leu  Ala Leu Pro Ser Lys  Tyr Val Asn
    1220                1225                1230

Phe Leu  Tyr Leu Ala Ser His  Tyr Glu Lys Leu Lys  Gly Ser Pro
    1235                1240                1245

Glu Asp  Asn Glu Gln Lys Gln  Leu Phe Val Glu Gln  His Lys His
    1250                1255                1260

Tyr Leu  Asp Glu Ile Ile Glu  Gln Ile Ser Glu Phe  Ser Lys Arg
    1265                1270                1275

Val Ile  Leu Ala Asp Ala Asn  Leu Asp Lys Val Leu  Ser Ala Tyr
    1280                1285                1290

Asn Lys  His Arg Asp Lys Pro  Ile Arg Glu Gln Ala  Glu Asn Ile
    1295                1300                1305

Ile His  Leu Phe Thr Leu Thr  Asn Leu Gly Ala Pro  Ala Ala Phe
    1310                1315                1320

Lys Tyr  Phe Asp Thr Thr Ile  Asp Arg Lys Arg Tyr  Thr Ser Thr
    1325                1330                1335

Lys Glu  Val Leu Asp Ala Thr  Leu Ile His Gln Ser  Ile Thr Gly
    1340                1345                1350

Leu Tyr  Glu Thr Arg Ile Asp  Leu Ser Gln Leu Gly  Gly Asp Pro
    1355                1360                1365

Lys Lys  Lys Arg Lys Val Leu  Glu Gly Gly Gly Gly  Ser Met Pro
    1370                1375                1380
```

Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu Pro
1385 1390 1395

Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
1400 1405 1410

Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp
1415 1420 1425

Lys Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln
1430 1435 1440

Ala Glu Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu
1445 1450 1455

Asn Gly Glu Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala
1460 1465 1470

Gly Glu Lys Glu Ala Lys Ser Asp
1475 1480

<210> 63
<211> 1471
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 63

Met Asp Lys Lys Tyr Ser Ile Gly Leu Asp Ile Gly Thr Asn Ser Val
1 5 10 15

Gly Trp Ala Val Ile Thr Asp Glu Tyr Lys Val Pro Ser Lys Lys Phe
20 25 30

Lys Val Leu Gly Asn Thr Asp Arg His Ser Ile Lys Lys Asn Leu Ile
35 40 45

```
Gly Ala Leu Leu Phe Asp Ser Gly Glu Thr Ala Glu Ala Thr Arg Leu
    50                  55                  60

Lys Arg Thr Ala Arg Arg Arg Tyr Thr Arg Arg Lys Asn Arg Ile Cys
65                  70                  75                  80

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

Phe Phe His Arg Leu Glu Glu Ser Phe Leu Val Glu Glu Asp Lys Lys
            100                 105                 110

His Glu Arg His Pro Ile Phe Gly Asn Ile Val Asp Glu Val Ala Tyr
        115                 120                 125

His Glu Lys Tyr Pro Thr Ile Tyr His Leu Arg Lys Lys Leu Val Asp
    130                 135                 140

Ser Thr Asp Lys Ala Asp Leu Arg Leu Ile Tyr Leu Ala Leu Ala His
145                 150                 155                 160

Met Ile Lys Phe Arg Gly His Phe Leu Ile Glu Gly Asp Leu Asn Pro
                165                 170                 175

Asp Asn Ser Asp Val Asp Lys Leu Phe Ile Gln Leu Val Gln Thr Tyr
            180                 185                 190

Asn Gln Leu Phe Glu Glu Asn Pro Ile Asn Ala Ser Gly Val Asp Ala
        195                 200                 205

Lys Ala Ile Leu Ser Ala Arg Leu Ser Lys Ser Arg Arg Leu Glu Asn
    210                 215                 220

Leu Ile Ala Gln Leu Pro Gly Glu Lys Lys Asn Gly Leu Phe Gly Asn
225                 230                 235                 240

Leu Ile Ala Leu Ser Leu Gly Leu Thr Pro Asn Phe Lys Ser Asn Phe
                245                 250                 255
```

```
Asp Leu Ala Glu Asp Ala Lys Leu Gln Leu Ser Lys Asp Thr Tyr Asp
            260                 265                 270

Asp Asp Leu Asp Asn Leu Leu Ala Gln Ile Gly Asp Gln Tyr Ala Asp
        275                 280                 285

Leu Phe Leu Ala Ala Lys Asn Leu Ser Asp Ala Ile Leu Leu Ser Asp
    290                 295                 300

Ile Leu Arg Val Asn Thr Glu Ile Thr Lys Ala Pro Leu Ser Ala Ser
305                 310                 315                 320

Met Ile Lys Arg Tyr Asp Glu His His Gln Asp Leu Thr Leu Leu Lys
                325                 330                 335

Ala Leu Val Arg Gln Gln Leu Pro Glu Lys Tyr Lys Glu Ile Phe Phe
            340                 345                 350

Asp Gln Ser Lys Asn Gly Tyr Ala Gly Tyr Ile Asp Gly Gly Ala Ser
        355                 360                 365

Gln Glu Glu Phe Tyr Lys Phe Ile Lys Pro Ile Leu Glu Lys Met Asp
    370                 375                 380

Gly Thr Glu Glu Leu Leu Val Lys Leu Asn Arg Glu Asp Leu Leu Arg
385                 390                 395                 400

Lys Gln Arg Thr Phe Asp Asn Gly Ser Ile Pro His Gln Ile His Leu
                405                 410                 415

Gly Glu Leu His Ala Ile Leu Arg Arg Gln Glu Asp Phe Tyr Pro Phe
            420                 425                 430

Leu Lys Asp Asn Arg Glu Lys Ile Glu Lys Ile Leu Thr Phe Arg Ile
        435                 440                 445

Pro Tyr Tyr Val Gly Pro Leu Ala Arg Gly Asn Ser Arg Phe Ala Trp
```

```
    450                 455                 460

Met Thr Arg Lys Ser Glu Glu Thr Ile Thr Pro Trp Asn Phe Glu Glu
465                 470                 475                 480

Val Val Asp Lys Gly Ala Ser Ala Gln Ser Phe Ile Glu Arg Met Thr
                485                 490                 495

Asn Phe Asp Lys Asn Leu Pro Asn Glu Lys Val Leu Pro Lys His Ser
            500                 505                 510

Leu Leu Tyr Glu Tyr Phe Thr Val Tyr Asn Glu Leu Thr Lys Val Lys
        515                 520                 525

Tyr Val Thr Glu Gly Met Arg Lys Pro Ala Phe Leu Ser Gly Glu Gln
    530                 535                 540

Lys Lys Ala Ile Val Asp Leu Leu Phe Lys Thr Asn Arg Lys Val Thr
545                 550                 555                 560

Val Lys Gln Leu Lys Glu Asp Tyr Phe Lys Lys Ile Glu Cys Phe Asp
                565                 570                 575

Ser Val Glu Ile Ser Gly Val Glu Asp Arg Phe Asn Ala Ser Leu Gly
            580                 585                 590

Thr Tyr His Asp Leu Leu Lys Ile Ile Lys Asp Lys Asp Phe Leu Asp
        595                 600                 605

Asn Glu Glu Asn Glu Asp Ile Leu Glu Asp Ile Val Leu Thr Leu Thr
    610                 615                 620

Leu Phe Glu Asp Arg Glu Met Ile Glu Glu Arg Leu Lys Thr Tyr Ala
625                 630                 635                 640

His Leu Phe Asp Asp Lys Val Met Lys Gln Leu Lys Arg Arg Arg Tyr
                645                 650                 655
```

```
Thr Gly Trp Gly Arg Leu Ser Arg Lys Leu Ile Asn Gly Ile Arg Asp
            660                 665                 670

Lys Gln Ser Gly Lys Thr Ile Leu Asp Phe Leu Lys Ser Asp Gly Phe
        675                 680                 685

Ala Asn Arg Asn Phe Met Gln Leu Ile His Asp Asp Ser Leu Thr Phe
    690                 695                 700

Lys Glu Asp Ile Gln Lys Ala Gln Val Ser Gly Gln Gly Asp Ser Leu
705                 710                 715                 720

His Glu His Ile Ala Asn Leu Ala Gly Ser Pro Ala Ile Lys Lys Gly
                725                 730                 735

Ile Leu Gln Thr Val Lys Ile Val Asp Glu Leu Val Lys Val Met Gly
            740                 745                 750

His Lys Pro Glu Asn Ile Val Ile Glu Met Ala Arg Glu Asn Gln Thr
        755                 760                 765

Thr Gln Lys Gly Gln Lys Asn Ser Arg Glu Arg Met Lys Arg Ile Glu
    770                 775                 780

Glu Gly Ile Lys Glu Leu Gly Ser Gln Ile Leu Lys Glu His Pro Val
785                 790                 795                 800

Glu Asn Thr Gln Leu Gln Asn Glu Lys Leu Tyr Leu Tyr Tyr Leu Gln
                805                 810                 815

Asn Gly Arg Asp Met Tyr Val Asp Gln Glu Leu Asp Ile Asn Arg Leu
            820                 825                 830

Ser Asp Tyr Asp Val Asp His Ile Val Pro Gln Ser Phe Ile Lys Asp
        835                 840                 845

Asp Ser Ile Asp Asn Lys Val Leu Thr Arg Ser Asp Lys Asn Arg Gly
    850                 855                 860
```

```
Lys Ser Asp Asn Val Pro Ser Glu Glu Val Val Lys Lys Met Lys Asn
865                 870                 875                 880


Tyr Trp Arg Gln Leu Leu Asn Ala Lys Leu Ile Thr Gln Arg Lys Phe
                885                 890                 895


Asp Asn Leu Thr Lys Ala Glu Arg Gly Gly Leu Ser Glu Leu Asp Lys
            900                 905                 910


Ala Gly Phe Ile Lys Arg Gln Leu Val Glu Thr Arg Gln Ile Thr Lys
        915                 920                 925


His Val Ala Gln Ile Leu Asp Ser Arg Met Asn Thr Lys Tyr Asp Glu
    930                 935                 940


Asn Asp Lys Leu Ile Arg Glu Val Lys Val Ile Thr Leu Lys Ser Lys
945                 950                 955                 960


Leu Val Ser Asp Phe Arg Lys Asp Phe Gln Phe Tyr Lys Val Arg Glu
                965                 970                 975


Ile Asn Asn Tyr His His Ala His Asp Ala Tyr Leu Asn Ala Val Val
            980                 985                 990


Gly Thr Ala Leu Ile Lys Lys Tyr  Pro Lys Leu Glu Ser  Glu Phe Val
        995                 1000                1005


Tyr Gly  Asp Tyr Lys Val Tyr  Asp Val Arg Lys Met  Ile Ala Lys
    1010                1015                1020


Ser Glu  Gln Glu Ile Gly Lys  Ala Thr Ala Lys Tyr  Phe Phe Tyr
    1025                1030                1035


Ser Asn  Ile Met Asn Phe Phe  Lys Thr Glu Ile Thr  Leu Ala Asn
    1040                1045                1050


Gly Glu  Ile Arg Lys Arg Pro  Leu Ile Glu Thr Asn  Gly Glu Thr
    1055                1060                1065
```

```
Gly Glu  Ile Val Trp Asp Lys  Gly Arg Asp Phe Ala  Thr Val Arg
    1070                1075                1080

Lys Val  Leu Ser Met Pro Gln  Val Asn Ile Val Lys  Lys Thr Glu
    1085                1090                1095

Val Gln  Thr Gly Gly Phe Ser  Lys Glu Ser Ile Leu  Pro Lys Arg
    1100                1105                1110

Asn Ser  Asp Lys Leu Ile Ala  Arg Lys Lys Asp Trp  Asp Pro Lys
    1115                1120                1125

Lys Tyr  Gly Gly Phe Asp Ser  Pro Thr Val Ala Tyr  Ser Val Leu
    1130                1135                1140

Val Val  Ala Lys Val Glu Lys  Gly Lys Ser Lys Lys  Leu Lys Ser
    1145                1150                1155

Val Lys  Glu Leu Leu Gly Ile  Thr Ile Met Glu Arg  Ser Ser Phe
    1160                1165                1170

Glu Lys  Asn Pro Ile Asp Phe  Leu Glu Ala Lys Gly  Tyr Lys Glu
    1175                1180                1185

Val Lys  Lys Asp Leu Ile Ile  Lys Leu Pro Lys Tyr  Ser Leu Phe
    1190                1195                1200

Glu Leu  Glu Asn Gly Arg Lys  Arg Met Leu Ala Ser  Ala Gly Glu
    1205                1210                1215

Leu Gln  Lys Gly Asn Glu Leu  Ala Leu Pro Ser Lys  Tyr Val Asn
    1220                1225                1230

Phe Leu  Tyr Leu Ala Ser His  Tyr Glu Lys Leu Lys  Gly Ser Pro
    1235                1240                1245

Glu Asp  Asn Glu Gln Lys Gln  Leu Phe Val Glu Gln  His Lys His
```

```
    1250                1255                1260

Tyr Leu  Asp Glu Ile Ile Glu  Gln Ile Ser Glu Phe  Ser Lys Arg
    1265                1270                1275

Val Ile  Leu Ala Asp Ala Asn  Leu Asp Lys Val Leu  Ser Ala Tyr
    1280                1285                1290

Asn Lys  His Arg Asp Lys Pro  Ile Arg Glu Gln Ala  Glu Asn Ile
    1295                1300                1305

Ile His  Leu Phe Thr Leu Thr  Asn Leu Gly Ala Pro  Ala Ala Phe
    1310                1315                1320

Lys Tyr  Phe Asp Thr Thr Ile  Asp Arg Lys Arg Tyr  Thr Ser Thr
    1325                1330                1335

Lys Glu  Val Leu Asp Ala Thr  Leu Ile His Gln Ser  Ile Thr Gly
    1340                1345                1350

Leu Tyr  Glu Thr Arg Ile Asp  Leu Ser Gln Leu Gly  Gly Asp Pro
    1355                1360                1365

Lys Lys  Lys Arg Lys Val Leu  Glu Gly Gly Gly Gly  Ser Met Pro
    1370                1375                1380

Lys Arg  Lys Ala Glu Gly Asp  Ala Lys Gly Asp Lys  Ala Lys Val
    1385                1390                1395

Lys Asp  Glu Pro Gln Arg Arg  Ser Ala Arg Leu Ser  Ala Lys Pro
    1400                1405                1410

Ala Pro  Pro Lys Pro Glu Pro  Lys Pro Lys Lys Ala  Pro Ala Lys
    1415                1420                1425

Lys Gly  Glu Lys Val Pro Lys  Gly Lys Lys Gly Lys  Ala Asp Ala
    1430                1435                1440
```

Gly Lys Glu Gly Asn Asn Pro Ala Glu Asn Gly Asp Ala Lys Thr
    1445   1450   1455

Asp Gln Ala Gln Lys Ala Glu Gly Ala Gly Asp Ala Lys
    1460   1465   1470

<210> 64
<211> 1480
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 64

Met Asp Lys Lys Tyr Ser Ile Gly Leu Asp Ile Gly Thr Asn Ser Val
1   5   10   15

Gly Trp Ala Val Ile Thr Asp Glu Tyr Lys Val Pro Ser Lys Lys Phe
            20   25   30

Lys Val Leu Gly Asn Thr Asp Arg His Ser Ile Lys Lys Asn Leu Ile
        35   40   45

Gly Ala Leu Leu Phe Asp Ser Gly Glu Thr Ala Glu Ala Thr Arg Leu
    50   55   60

Lys Arg Thr Ala Arg Arg Arg Tyr Thr Arg Arg Lys Asn Arg Ile Cys
65   70   75   80

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

Phe Phe His Arg Leu Glu Glu Ser Phe Leu Val Glu Glu Asp Lys Lys
            100   105   110

His Glu Arg His Pro Ile Phe Gly Asn Ile Val Asp Glu Val Ala Tyr
        115   120   125

His Glu Lys Tyr Pro Thr Ile Tyr His Leu Arg Lys Lys Leu Val Asp

```
    130                 135                 140

Ser Thr Asp Lys Ala Asp Leu Arg Leu Ile Tyr Leu Ala Leu Ala His
145                 150                 155                 160

Met Ile Lys Phe Arg Gly His Phe Leu Ile Glu Gly Asp Leu Asn Pro
                165                 170                 175

Asp Asn Ser Asp Val Asp Lys Leu Phe Ile Gln Leu Val Gln Thr Tyr
            180                 185                 190

Asn Gln Leu Phe Glu Glu Asn Pro Ile Asn Ala Ser Gly Val Asp Ala
        195                 200                 205

Lys Ala Ile Leu Ser Ala Arg Leu Ser Lys Ser Arg Arg Leu Glu Asn
    210                 215                 220

Leu Ile Ala Gln Leu Pro Gly Glu Lys Lys Asn Gly Leu Phe Gly Asn
225                 230                 235                 240

Leu Ile Ala Leu Ser Leu Gly Leu Thr Pro Asn Phe Lys Ser Asn Phe
                245                 250                 255

Asp Leu Ala Glu Asp Ala Lys Leu Gln Leu Ser Lys Asp Thr Tyr Asp
            260                 265                 270

Asp Asp Leu Asp Asn Leu Leu Ala Gln Ile Gly Asp Gln Tyr Ala Asp
        275                 280                 285

Leu Phe Leu Ala Ala Lys Asn Leu Ser Asp Ala Ile Leu Leu Ser Asp
    290                 295                 300

Ile Leu Arg Val Asn Thr Glu Ile Thr Lys Ala Pro Leu Ser Ala Ser
305                 310                 315                 320

Met Ile Lys Arg Tyr Asp Glu His His Gln Asp Leu Thr Leu Leu Lys
                325                 330                 335
```

```
Ala Leu Val Arg Gln Gln Leu Pro Glu Lys Tyr Lys Glu Ile Phe Phe
            340                 345                 350

Asp Gln Ser Lys Asn Gly Tyr Ala Gly Tyr Ile Asp Gly Gly Ala Ser
        355                 360                 365

Gln Glu Glu Phe Tyr Lys Phe Ile Lys Pro Ile Leu Glu Lys Met Asp
    370                 375                 380

Gly Thr Glu Glu Leu Leu Val Lys Leu Asn Arg Glu Asp Leu Leu Arg
385                 390                 395                 400

Lys Gln Arg Thr Phe Asp Asn Gly Ser Ile Pro His Gln Ile His Leu
                405                 410                 415

Gly Glu Leu His Ala Ile Leu Arg Arg Gln Glu Asp Phe Tyr Pro Phe
            420                 425                 430

Leu Lys Asp Asn Arg Glu Lys Ile Glu Lys Ile Leu Thr Phe Arg Ile
        435                 440                 445

Pro Tyr Tyr Val Gly Pro Leu Ala Arg Gly Asn Ser Arg Phe Ala Trp
    450                 455                 460

Met Thr Arg Lys Ser Glu Glu Thr Ile Thr Pro Trp Asn Phe Glu Glu
465                 470                 475                 480

Val Val Asp Lys Gly Ala Ser Ala Gln Ser Phe Ile Glu Arg Met Thr
                485                 490                 495

Asn Phe Asp Lys Asn Leu Pro Asn Glu Lys Val Leu Pro Lys His Ser
            500                 505                 510

Leu Leu Tyr Glu Tyr Phe Thr Val Tyr Asn Glu Leu Thr Lys Val Lys
        515                 520                 525

Tyr Val Thr Glu Gly Met Arg Lys Pro Ala Phe Leu Ser Gly Glu Gln
    530                 535                 540
```

```
Lys Lys Ala Ile Val Asp Leu Leu Phe Lys Thr Asn Arg Lys Val Thr
545                 550                 555                 560

Val Lys Gln Leu Lys Glu Asp Tyr Phe Lys Lys Ile Glu Cys Phe Asp
                565                 570                 575

Ser Val Glu Ile Ser Gly Val Glu Asp Arg Phe Asn Ala Ser Leu Gly
            580                 585                 590

Thr Tyr His Asp Leu Leu Lys Ile Ile Lys Asp Lys Asp Phe Leu Asp
        595                 600                 605

Asn Glu Glu Asn Glu Asp Ile Leu Glu Asp Ile Val Leu Thr Leu Thr
    610                 615                 620

Leu Phe Glu Asp Arg Glu Met Ile Glu Glu Arg Leu Lys Thr Tyr Ala
625                 630                 635                 640

His Leu Phe Asp Asp Lys Val Met Lys Gln Leu Lys Arg Arg Arg Tyr
                645                 650                 655

Thr Gly Trp Gly Arg Leu Ser Arg Lys Leu Ile Asn Gly Ile Arg Asp
            660                 665                 670

Lys Gln Ser Gly Lys Thr Ile Leu Asp Phe Leu Lys Ser Asp Gly Phe
        675                 680                 685

Ala Asn Arg Asn Phe Met Gln Leu Ile His Asp Asp Ser Leu Thr Phe
    690                 695                 700

Lys Glu Asp Ile Gln Lys Ala Gln Val Ser Gly Gln Gly Asp Ser Leu
705                 710                 715                 720

His Glu His Ile Ala Asn Leu Ala Gly Ser Pro Ala Ile Lys Lys Gly
                725                 730                 735

Ile Leu Gln Thr Val Lys Ile Val Asp Glu Leu Val Lys Val Met Gly
            740                 745                 750
```

```
His Lys Pro Glu Asn Ile Val Ile Glu Met Ala Arg Glu Asn Gln Thr
        755                 760                 765

Thr Gln Lys Gly Gln Lys Asn Ser Arg Glu Arg Met Lys Arg Ile Glu
    770                 775                 780

Glu Gly Ile Lys Glu Leu Gly Ser Gln Ile Leu Lys Glu His Pro Val
785                 790                 795                 800

Glu Asn Thr Gln Leu Gln Asn Glu Lys Leu Tyr Leu Tyr Tyr Leu Gln
                805                 810                 815

Asn Gly Arg Asp Met Tyr Val Asp Gln Glu Leu Asp Ile Asn Arg Leu
            820                 825                 830

Ser Asp Tyr Asp Val Asp His Ile Val Pro Gln Ser Phe Ile Lys Asp
        835                 840                 845

Asp Ser Ile Asp Asn Lys Val Leu Thr Arg Ser Asp Lys Asn Arg Gly
    850                 855                 860

Lys Ser Asp Asn Val Pro Ser Glu Glu Val Val Lys Lys Met Lys Asn
865                 870                 875                 880

Tyr Trp Arg Gln Leu Leu Asn Ala Lys Leu Ile Thr Gln Arg Lys Phe
                885                 890                 895

Asp Asn Leu Thr Lys Ala Glu Arg Gly Gly Leu Ser Glu Leu Asp Lys
            900                 905                 910

Ala Gly Phe Ile Lys Arg Gln Leu Val Glu Thr Arg Gln Ile Thr Lys
        915                 920                 925

His Val Ala Gln Ile Leu Asp Ser Arg Met Asn Thr Lys Tyr Asp Glu
    930                 935                 940

Asn Asp Lys Leu Ile Arg Glu Val Lys Val Ile Thr Leu Lys Ser Lys
```

```
945                 950                 955                 960

Leu Val Ser Asp Phe Arg Lys Asp Phe Gln Phe Tyr Lys Val Arg Glu
                965                 970                 975

Ile Asn Asn Tyr His His Ala His Asp Ala Tyr Leu Asn Ala Val Val
            980                 985                 990

Gly Thr Ala Leu Ile Lys Lys Tyr  Pro Lys Leu Glu Ser  Glu Phe Val
        995                 1000                1005

Tyr Gly  Asp Tyr Lys Val Tyr  Asp Val Arg Lys Met  Ile Ala Lys
    1010                1015                1020

Ser Glu  Gln Glu Ile Gly Lys  Ala Thr Ala Lys Tyr  Phe Phe Tyr
    1025                1030                1035

Ser Asn  Ile Met Asn Phe Phe  Lys Thr Glu Ile Thr  Leu Ala Asn
    1040                1045                1050

Gly Glu  Ile Arg Lys Arg Pro  Leu Ile Glu Thr Asn  Gly Glu Thr
    1055                1060                1065

Gly Glu  Ile Val Trp Asp Lys  Gly Arg Asp Phe Ala  Thr Val Arg
    1070                1075                1080

Lys Val  Leu Ser Met Pro Gln  Val Asn Ile Val Lys  Lys Thr Glu
    1085                1090                1095

Val Gln  Thr Gly Gly Phe Ser  Lys Glu Ser Ile Leu  Pro Lys Arg
    1100                1105                1110

Asn Ser  Asp Lys Leu Ile Ala  Arg Lys Lys Asp Trp  Asp Pro Lys
    1115                1120                1125

Lys Tyr  Gly Gly Phe Asp Ser  Pro Thr Val Ala Tyr  Ser Val Leu
    1130                1135                1140
```

```
Val Val  Ala Lys Val Glu Lys  Gly Lys Ser Lys Lys  Leu Lys Ser
    1145                1150                1155

Val Lys  Glu Leu Leu Gly Ile  Thr Ile Met Glu Arg  Ser Ser Phe
    1160                1165                1170

Glu Lys  Asn Pro Ile Asp Phe  Leu Glu Ala Lys Gly  Tyr Lys Glu
    1175                1180                1185

Val Lys  Lys Asp Leu Ile Ile  Lys Leu Pro Lys Tyr  Ser Leu Phe
    1190                1195                1200

Glu Leu  Glu Asn Gly Arg Lys  Arg Met Leu Ala Ser  Ala Gly Glu
    1205                1210                1215

Leu Gln  Lys Gly Asn Glu Leu  Ala Leu Pro Ser Lys  Tyr Val Asn
    1220                1225                1230

Phe Leu  Tyr Leu Ala Ser His  Tyr Glu Lys Leu Lys  Gly Ser Pro
    1235                1240                1245

Glu Asp  Asn Glu Gln Lys Gln  Leu Phe Val Glu Gln  His Lys His
    1250                1255                1260

Tyr Leu  Asp Glu Ile Ile Glu  Gln Ile Ser Glu Phe  Ser Lys Arg
    1265                1270                1275

Val Ile  Leu Ala Asp Ala Asn  Leu Asp Lys Val Leu  Ser Ala Tyr
    1280                1285                1290

Asn Lys  His Arg Asp Lys Pro  Ile Arg Glu Gln Ala  Glu Asn Ile
    1295                1300                1305

Ile His  Leu Phe Thr Leu Thr  Asn Leu Gly Ala Pro  Ala Ala Phe
    1310                1315                1320

Lys Tyr  Phe Asp Thr Thr Ile  Asp Arg Lys Arg Tyr  Thr Ser Thr
    1325                1330                1335
```

```
Lys Glu  Val Leu Asp Ala Thr  Leu Ile His Gln Ser  Ile Thr Gly
    1340                1345                1350

Leu Tyr  Glu Thr Arg Ile Asp  Leu Ser Gln Leu Gly  Gly Asp Pro
    1355                1360                1365

Lys Lys  Lys Arg Lys Val Leu  Glu Gly Gly Gly Gly  Ser Met Pro
    1370                1375                1380

Lys Arg  Lys Ser Pro Glu Asn  Thr Glu Gly Lys Asp  Gly Ser Lys
    1385                1390                1395

Val Thr  Lys Gln Glu Pro Thr  Arg Arg Ser Ala Arg  Leu Ser Ala
    1400                1405                1410

Lys Pro  Ala Pro Pro Lys Pro  Glu Pro Lys Pro Arg  Lys Thr Ser
    1415                1420                1425

Ala Lys  Lys Glu Pro Gly Ala  Lys Ile Ser Arg Gly  Ala Lys Gly
    1430                1435                1440

Lys Lys  Glu Glu Lys Gln Glu  Ala Gly Lys Glu Gly  Thr Ala Pro
    1445                1450                1455

Ser Glu  Asn Gly Glu Thr Lys  Ala Glu Glu Ala Gln  Lys Thr Glu
    1460                1465                1470

Ser Val  Asp Asn Glu Gly Glu
    1475                1480
```

<210> 65
<211> 1458
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 65

```
Met Asp Lys Lys Tyr Ser Ile Gly Leu Asp Ile Gly Thr Asn Ser Val
1               5                   10                  15

Gly Trp Ala Val Ile Thr Asp Glu Tyr Lys Val Pro Ser Lys Lys Phe
            20                  25                  30

Lys Val Leu Gly Asn Thr Asp Arg His Ser Ile Lys Lys Asn Leu Ile
        35                  40                  45

Gly Ala Leu Leu Phe Asp Ser Gly Glu Thr Ala Glu Ala Thr Arg Leu
    50                  55                  60

Lys Arg Thr Ala Arg Arg Arg Tyr Thr Arg Arg Lys Asn Arg Ile Cys
65                  70                  75                  80

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

Phe Phe His Arg Leu Glu Glu Ser Phe Leu Val Glu Glu Asp Lys Lys
            100                 105                 110

His Glu Arg His Pro Ile Phe Gly Asn Ile Val Asp Glu Val Ala Tyr
        115                 120                 125

His Glu Lys Tyr Pro Thr Ile Tyr His Leu Arg Lys Lys Leu Val Asp
    130                 135                 140

Ser Thr Asp Lys Ala Asp Leu Arg Leu Ile Tyr Leu Ala Leu Ala His
145                 150                 155                 160

Met Ile Lys Phe Arg Gly His Phe Leu Ile Glu Gly Asp Leu Asn Pro
                165                 170                 175

Asp Asn Ser Asp Val Asp Lys Leu Phe Ile Gln Leu Val Gln Thr Tyr
            180                 185                 190

Asn Gln Leu Phe Glu Glu Asn Pro Ile Asn Ala Ser Gly Val Asp Ala
        195                 200                 205
```

```
Lys Ala Ile Leu Ser Ala Arg Leu Ser Lys Ser Arg Arg Leu Glu Asn
    210                 215                 220

Leu Ile Ala Gln Leu Pro Gly Glu Lys Lys Asn Gly Leu Phe Gly Asn
225                 230                 235                 240

Leu Ile Ala Leu Ser Leu Gly Leu Thr Pro Asn Phe Lys Ser Asn Phe
                245                 250                 255

Asp Leu Ala Glu Asp Ala Lys Leu Gln Leu Ser Lys Asp Thr Tyr Asp
            260                 265                 270

Asp Asp Leu Asp Asn Leu Leu Ala Gln Ile Gly Asp Gln Tyr Ala Asp
        275                 280                 285

Leu Phe Leu Ala Ala Lys Asn Leu Ser Asp Ala Ile Leu Leu Ser Asp
    290                 295                 300

Ile Leu Arg Val Asn Thr Glu Ile Thr Lys Ala Pro Leu Ser Ala Ser
305                 310                 315                 320

Met Ile Lys Arg Tyr Asp Glu His His Gln Asp Leu Thr Leu Leu Lys
                325                 330                 335

Ala Leu Val Arg Gln Gln Leu Pro Glu Lys Tyr Lys Glu Ile Phe Phe
            340                 345                 350

Asp Gln Ser Lys Asn Gly Tyr Ala Gly Tyr Ile Asp Gly Gly Ala Ser
        355                 360                 365

Gln Glu Glu Phe Tyr Lys Phe Ile Lys Pro Ile Leu Glu Lys Met Asp
    370                 375                 380

Gly Thr Glu Glu Leu Leu Val Lys Leu Asn Arg Glu Asp Leu Leu Arg
385                 390                 395                 400

Lys Gln Arg Thr Phe Asp Asn Gly Ser Ile Pro His Gln Ile His Leu
                405                 410                 415
```

```
Gly Glu Leu His Ala Ile Leu Arg Arg Gln Glu Asp Phe Tyr Pro Phe
            420                 425                 430

Leu Lys Asp Asn Arg Glu Lys Ile Glu Lys Ile Leu Thr Phe Arg Ile
        435                 440                 445

Pro Tyr Tyr Val Gly Pro Leu Ala Arg Gly Asn Ser Arg Phe Ala Trp
    450                 455                 460

Met Thr Arg Lys Ser Glu Glu Thr Ile Thr Pro Trp Asn Phe Glu Glu
465                 470                 475                 480

Val Val Asp Lys Gly Ala Ser Ala Gln Ser Phe Ile Glu Arg Met Thr
                485                 490                 495

Asn Phe Asp Lys Asn Leu Pro Asn Glu Lys Val Leu Pro Lys His Ser
            500                 505                 510

Leu Leu Tyr Glu Tyr Phe Thr Val Tyr Asn Glu Leu Thr Lys Val Lys
        515                 520                 525

Tyr Val Thr Glu Gly Met Arg Lys Pro Ala Phe Leu Ser Gly Glu Gln
    530                 535                 540

Lys Lys Ala Ile Val Asp Leu Leu Phe Lys Thr Asn Arg Lys Val Thr
545                 550                 555                 560

Val Lys Gln Leu Lys Glu Asp Tyr Phe Lys Lys Ile Glu Cys Phe Asp
                565                 570                 575

Ser Val Glu Ile Ser Gly Val Glu Asp Arg Phe Asn Ala Ser Leu Gly
            580                 585                 590

Thr Tyr His Asp Leu Leu Lys Ile Ile Lys Asp Lys Asp Phe Leu Asp
        595                 600                 605

Asn Glu Glu Asn Glu Asp Ile Leu Glu Asp Ile Val Leu Thr Leu Thr
```

```
    610                 615                 620

Leu Phe Glu Asp Arg Glu Met Ile Glu Glu Arg Leu Lys Thr Tyr Ala
625                 630                 635                 640

His Leu Phe Asp Asp Lys Val Met Lys Gln Leu Lys Arg Arg Arg Tyr
                645                 650                 655

Thr Gly Trp Gly Arg Leu Ser Arg Lys Leu Ile Asn Gly Ile Arg Asp
            660                 665                 670

Lys Gln Ser Gly Lys Thr Ile Leu Asp Phe Leu Lys Ser Asp Gly Phe
        675                 680                 685

Ala Asn Arg Asn Phe Met Gln Leu Ile His Asp Asp Ser Leu Thr Phe
    690                 695                 700

Lys Glu Asp Ile Gln Lys Ala Gln Val Ser Gly Gln Gly Asp Ser Leu
705                 710                 715                 720

His Glu His Ile Ala Asn Leu Ala Gly Ser Pro Ala Ile Lys Lys Gly
                725                 730                 735

Ile Leu Gln Thr Val Lys Ile Val Asp Glu Leu Val Lys Val Met Gly
            740                 745                 750

His Lys Pro Glu Asn Ile Val Ile Glu Met Ala Arg Glu Asn Gln Thr
        755                 760                 765

Thr Gln Lys Gly Gln Lys Asn Ser Arg Glu Arg Met Lys Arg Ile Glu
    770                 775                 780

Glu Gly Ile Lys Glu Leu Gly Ser Gln Ile Leu Lys Glu His Pro Val
785                 790                 795                 800

Glu Asn Thr Gln Leu Gln Asn Glu Lys Leu Tyr Leu Tyr Tyr Leu Gln
                805                 810                 815
```

```
Asn Gly Arg Asp Met Tyr Val Asp Gln Glu Leu Asp Ile Asn Arg Leu
            820                 825                 830

Ser Asp Tyr Asp Val Asp His Ile Val Pro Gln Ser Phe Ile Lys Asp
        835                 840                 845

Asp Ser Ile Asp Asn Lys Val Leu Thr Arg Ser Asp Lys Asn Arg Gly
    850                 855                 860

Lys Ser Asp Asn Val Pro Ser Glu Glu Val Val Lys Lys Met Lys Asn
865                 870                 875                 880

Tyr Trp Arg Gln Leu Leu Asn Ala Lys Leu Ile Thr Gln Arg Lys Phe
                885                 890                 895

Asp Asn Leu Thr Lys Ala Glu Arg Gly Gly Leu Ser Glu Leu Asp Lys
            900                 905                 910

Ala Gly Phe Ile Lys Arg Gln Leu Val Glu Thr Arg Gln Ile Thr Lys
        915                 920                 925

His Val Ala Gln Ile Leu Asp Ser Arg Met Asn Thr Lys Tyr Asp Glu
    930                 935                 940

Asn Asp Lys Leu Ile Arg Glu Val Lys Val Ile Thr Leu Lys Ser Lys
945                 950                 955                 960

Leu Val Ser Asp Phe Arg Lys Asp Phe Gln Phe Tyr Lys Val Arg Glu
                965                 970                 975

Ile Asn Asn Tyr His His Ala His Asp Ala Tyr Leu Asn Ala Val Val
            980                 985                 990

Gly Thr Ala Leu Ile Lys Lys Tyr  Pro Lys Leu Glu Ser  Glu Phe Val
        995                 1000                1005

Tyr Gly  Asp Tyr Lys Val Tyr  Asp Val Arg Lys Met  Ile Ala Lys
    1010                1015                1020
```

```
Ser Glu  Gln Glu Ile Gly Lys  Ala Thr Ala Lys Tyr  Phe Phe Tyr
    1025                1030                1035

Ser Asn  Ile Met Asn Phe Phe  Lys Thr Glu Ile Thr  Leu Ala Asn
    1040                1045                1050

Gly Glu  Ile Arg Lys Arg Pro  Leu Ile Glu Thr Asn  Gly Glu Thr
    1055                1060                1065

Gly Glu  Ile Val Trp Asp Lys  Gly Arg Asp Phe Ala  Thr Val Arg
    1070                1075                1080

Lys Val  Leu Ser Met Pro Gln  Val Asn Ile Val Lys  Lys Thr Glu
    1085                1090                1095

Val Gln  Thr Gly Gly Phe Ser  Lys Glu Ser Ile Leu  Pro Lys Arg
    1100                1105                1110

Asn Ser  Asp Lys Leu Ile Ala  Arg Lys Lys Asp Trp  Asp Pro Lys
    1115                1120                1125

Lys Tyr  Gly Gly Phe Asp Ser  Pro Thr Val Ala Tyr  Ser Val Leu
    1130                1135                1140

Val Val  Ala Lys Val Glu Lys  Gly Lys Ser Lys Lys  Leu Lys Ser
    1145                1150                1155

Val Lys  Glu Leu Leu Gly Ile  Thr Ile Met Glu Arg  Ser Ser Phe
    1160                1165                1170

Glu Lys  Asn Pro Ile Asp Phe  Leu Glu Ala Lys Gly  Tyr Lys Glu
    1175                1180                1185

Val Lys  Lys Asp Leu Ile Ile  Lys Leu Pro Lys Tyr  Ser Leu Phe
    1190                1195                1200

Glu Leu  Glu Asn Gly Arg Lys  Arg Met Leu Ala Ser  Ala Gly Glu
    1205                1210                1215
```

```
Leu Gln  Lys Gly Asn Glu Leu  Ala Leu Pro Ser Lys  Tyr Val Asn
    1220                1225                1230

Phe Leu  Tyr Leu Ala Ser His  Tyr Glu Lys Leu Lys  Gly Ser Pro
    1235                1240                1245

Glu Asp  Asn Glu Gln Lys Gln  Leu Phe Val Glu Gln  His Lys His
    1250                1255                1260

Tyr Leu  Asp Glu Ile Ile Glu  Gln Ile Ser Glu Phe  Ser Lys Arg
    1265                1270                1275

Val Ile  Leu Ala Asp Ala Asn  Leu Asp Lys Val Leu  Ser Ala Tyr
    1280                1285                1290

Asn Lys  His Arg Asp Lys Pro  Ile Arg Glu Gln Ala  Glu Asn Ile
    1295                1300                1305

Ile His  Leu Phe Thr Leu Thr  Asn Leu Gly Ala Pro  Ala Ala Phe
    1310                1315                1320

Lys Tyr  Phe Asp Thr Thr Ile  Asp Arg Lys Arg Tyr  Thr Ser Thr
    1325                1330                1335

Lys Glu  Val Leu Asp Ala Thr  Leu Ile His Gln Ser  Ile Thr Gly
    1340                1345                1350

Leu Tyr  Glu Thr Arg Ile Asp  Leu Ser Gln Leu Gly  Gly Asp Pro
    1355                1360                1365

Lys Lys  Lys Arg Lys Val Leu  Glu Gly Gly Gly Gly  Ser Met Pro
    1370                1375                1380

Lys Arg  Lys Ser Pro Glu Asn  Thr Glu Gly Lys Asp  Gly Ser Lys
    1385                1390                1395

Val Thr  Lys Gln Glu Pro Thr  Arg Arg Ser Ala Arg  Leu Ser Ala
```

1400 1405 1410

Lys Pro Ala Pro Pro Lys Pro Glu Pro Lys Pro Arg Lys Thr Ser
1415 1420 1425

Ala Lys Lys Glu Pro Gly Ala Lys Ile Ser Arg Gly Ala Lys Gly
1430 1435 1440

Lys Lys Glu Glu Lys Gln Glu Ala Gly Lys Glu Gly Thr Glu Asn
1445 1450 1455

<210> 66
<211> 1461
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 66

Met Asp Lys Lys Tyr Ser Ile Gly Leu Asp Ile Gly Thr Asn Ser Val
1 5 10 15

Gly Trp Ala Val Ile Thr Asp Glu Tyr Lys Val Pro Ser Lys Lys Phe
20 25 30

Lys Val Leu Gly Asn Thr Asp Arg His Ser Ile Lys Lys Asn Leu Ile
35 40 45

Gly Ala Leu Leu Phe Asp Ser Gly Glu Thr Ala Glu Ala Thr Arg Leu
50 55 60

Lys Arg Thr Ala Arg Arg Arg Tyr Thr Arg Arg Lys Asn Arg Ile Cys
65 70 75 80

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

Phe Phe His Arg Leu Glu Glu Ser Phe Leu Val Glu Glu Asp Lys Lys
100 105 110

```
His Glu Arg His Pro Ile Phe Gly Asn Ile Val Asp Glu Val Ala Tyr
        115                 120                 125

His Glu Lys Tyr Pro Thr Ile Tyr His Leu Arg Lys Lys Leu Val Asp
    130                 135                 140

Ser Thr Asp Lys Ala Asp Leu Arg Leu Ile Tyr Leu Ala Leu Ala His
145                 150                 155                 160

Met Ile Lys Phe Arg Gly His Phe Leu Ile Glu Gly Asp Leu Asn Pro
                165                 170                 175

Asp Asn Ser Asp Val Asp Lys Leu Phe Ile Gln Leu Val Gln Thr Tyr
            180                 185                 190

Asn Gln Leu Phe Glu Glu Asn Pro Ile Asn Ala Ser Gly Val Asp Ala
        195                 200                 205

Lys Ala Ile Leu Ser Ala Arg Leu Ser Lys Ser Arg Arg Leu Glu Asn
    210                 215                 220

Leu Ile Ala Gln Leu Pro Gly Glu Lys Lys Asn Gly Leu Phe Gly Asn
225                 230                 235                 240

Leu Ile Ala Leu Ser Leu Gly Leu Thr Pro Asn Phe Lys Ser Asn Phe
                245                 250                 255

Asp Leu Ala Glu Asp Ala Lys Leu Gln Leu Ser Lys Asp Thr Tyr Asp
            260                 265                 270

Asp Asp Leu Asp Asn Leu Leu Ala Gln Ile Gly Asp Gln Tyr Ala Asp
        275                 280                 285

Leu Phe Leu Ala Ala Lys Asn Leu Ser Asp Ala Ile Leu Leu Ser Asp
    290                 295                 300

Ile Leu Arg Val Asn Thr Glu Ile Thr Lys Ala Pro Leu Ser Ala Ser
```

```
305                 310                 315                 320

Met Ile Lys Arg Tyr Asp Glu His His Gln Asp Leu Thr Leu Leu Lys
                325                 330                 335

Ala Leu Val Arg Gln Gln Leu Pro Glu Lys Tyr Lys Glu Ile Phe Phe
            340                 345                 350

Asp Gln Ser Lys Asn Gly Tyr Ala Gly Tyr Ile Asp Gly Gly Ala Ser
        355                 360                 365

Gln Glu Glu Phe Tyr Lys Phe Ile Lys Pro Ile Leu Glu Lys Met Asp
    370                 375                 380

Gly Thr Glu Glu Leu Leu Val Lys Leu Asn Arg Glu Asp Leu Leu Arg
385                 390                 395                 400

Lys Gln Arg Thr Phe Asp Asn Gly Ser Ile Pro His Gln Ile His Leu
                405                 410                 415

Gly Glu Leu His Ala Ile Leu Arg Arg Gln Glu Asp Phe Tyr Pro Phe
            420                 425                 430

Leu Lys Asp Asn Arg Glu Lys Ile Glu Lys Ile Leu Thr Phe Arg Ile
        435                 440                 445

Pro Tyr Tyr Val Gly Pro Leu Ala Arg Gly Asn Ser Arg Phe Ala Trp
    450                 455                 460

Met Thr Arg Lys Ser Glu Glu Thr Ile Thr Pro Trp Asn Phe Glu Glu
465                 470                 475                 480

Val Val Asp Lys Gly Ala Ser Ala Gln Ser Phe Ile Glu Arg Met Thr
                485                 490                 495

Asn Phe Asp Lys Asn Leu Pro Asn Glu Lys Val Leu Pro Lys His Ser
            500                 505                 510
```

```
Leu Leu Tyr Glu Tyr Phe Thr Val Tyr Asn Glu Leu Thr Lys Val Lys
        515                 520                 525

Tyr Val Thr Glu Gly Met Arg Lys Pro Ala Phe Leu Ser Gly Glu Gln
    530                 535                 540

Lys Lys Ala Ile Val Asp Leu Leu Phe Lys Thr Asn Arg Lys Val Thr
545                 550                 555                 560

Val Lys Gln Leu Lys Glu Asp Tyr Phe Lys Lys Ile Glu Cys Phe Asp
                565                 570                 575

Ser Val Glu Ile Ser Gly Val Glu Asp Arg Phe Asn Ala Ser Leu Gly
            580                 585                 590

Thr Tyr His Asp Leu Leu Lys Ile Ile Lys Asp Lys Asp Phe Leu Asp
        595                 600                 605

Asn Glu Glu Asn Glu Asp Ile Leu Glu Asp Ile Val Leu Thr Leu Thr
    610                 615                 620

Leu Phe Glu Asp Arg Glu Met Ile Glu Glu Arg Leu Lys Thr Tyr Ala
625                 630                 635                 640

His Leu Phe Asp Asp Lys Val Met Lys Gln Leu Lys Arg Arg Arg Tyr
                645                 650                 655

Thr Gly Trp Gly Arg Leu Ser Arg Lys Leu Ile Asn Gly Ile Arg Asp
            660                 665                 670

Lys Gln Ser Gly Lys Thr Ile Leu Asp Phe Leu Lys Ser Asp Gly Phe
        675                 680                 685

Ala Asn Arg Asn Phe Met Gln Leu Ile His Asp Asp Ser Leu Thr Phe
    690                 695                 700

Lys Glu Asp Ile Gln Lys Ala Gln Val Ser Gly Gln Gly Asp Ser Leu
705                 710                 715                 720
```

```
His Glu His Ile Ala Asn Leu Ala Gly Ser Pro Ala Ile Lys Lys Gly
               725                 730                 735

Ile Leu Gln Thr Val Lys Ile Val Asp Glu Leu Val Lys Val Met Gly
            740                 745                 750

His Lys Pro Glu Asn Ile Val Ile Glu Met Ala Arg Glu Asn Gln Thr
        755                 760                 765

Thr Gln Lys Gly Gln Lys Asn Ser Arg Glu Arg Met Lys Arg Ile Glu
    770                 775                 780

Glu Gly Ile Lys Glu Leu Gly Ser Gln Ile Leu Lys Glu His Pro Val
785                 790                 795                 800

Glu Asn Thr Gln Leu Gln Asn Glu Lys Leu Tyr Leu Tyr Tyr Leu Gln
               805                 810                 815

Asn Gly Arg Asp Met Tyr Val Asp Gln Glu Leu Asp Ile Asn Arg Leu
            820                 825                 830

Ser Asp Tyr Asp Val Asp His Ile Val Pro Gln Ser Phe Ile Lys Asp
        835                 840                 845

Asp Ser Ile Asp Asn Lys Val Leu Thr Arg Ser Asp Lys Asn Arg Gly
    850                 855                 860

Lys Ser Asp Asn Val Pro Ser Glu Glu Val Val Lys Lys Met Lys Asn
865                 870                 875                 880

Tyr Trp Arg Gln Leu Leu Asn Ala Lys Leu Ile Thr Gln Arg Lys Phe
               885                 890                 895

Asp Asn Leu Thr Lys Ala Glu Arg Gly Gly Leu Ser Glu Leu Asp Lys
            900                 905                 910

Ala Gly Phe Ile Lys Arg Gln Leu Val Glu Thr Arg Gln Ile Thr Lys
        915                 920                 925
```

```
His Val Ala Gln Ile Leu Asp Ser Arg Met Asn Thr Lys Tyr Asp Glu
    930                 935                 940

Asn Asp Lys Leu Ile Arg Glu Val Lys Val Ile Thr Leu Lys Ser Lys
945                 950                 955                 960

Leu Val Ser Asp Phe Arg Lys Asp Phe Gln Phe Tyr Lys Val Arg Glu
                965                 970                 975

Ile Asn Asn Tyr His His Ala His Asp Ala Tyr Leu Asn Ala Val Val
            980                 985                 990

Gly Thr Ala Leu Ile Lys Lys Tyr  Pro Lys Leu Glu Ser  Glu Phe Val
        995                 1000                1005

Tyr Gly  Asp Tyr Lys Val Tyr  Asp Val Arg Lys Met  Ile Ala Lys
    1010                1015                1020

Ser Glu  Gln Glu Ile Gly Lys  Ala Thr Ala Lys Tyr  Phe Phe Tyr
    1025                1030                1035

Ser Asn  Ile Met Asn Phe Phe  Lys Thr Glu Ile Thr  Leu Ala Asn
    1040                1045                1050

Gly Glu  Ile Arg Lys Arg Pro  Leu Ile Glu Thr Asn  Gly Glu Thr
    1055                1060                1065

Gly Glu  Ile Val Trp Asp Lys  Gly Arg Asp Phe Ala  Thr Val Arg
    1070                1075                1080

Lys Val  Leu Ser Met Pro Gln  Val Asn Ile Val Lys  Lys Thr Glu
    1085                1090                1095

Val Gln  Thr Gly Gly Phe Ser  Lys Glu Ser Ile Leu  Pro Lys Arg
    1100                1105                1110

Asn Ser  Asp Lys Leu Ile Ala  Arg Lys Lys Asp Trp  Asp Pro Lys
```

```
    1115                1120                1125

Lys Tyr  Gly Gly Phe Asp Ser  Pro Thr Val Ala Tyr  Ser Val Leu
    1130                1135                1140

Val Val  Ala Lys Val Glu Lys  Gly Lys Ser Lys Lys  Leu Lys Ser
    1145                1150                1155

Val Lys  Glu Leu Leu Gly Ile  Thr Ile Met Glu Arg  Ser Ser Phe
    1160                1165                1170

Glu Lys  Asn Pro Ile Asp Phe  Leu Glu Ala Lys Gly  Tyr Lys Glu
    1175                1180                1185

Val Lys  Lys Asp Leu Ile Ile  Lys Leu Pro Lys Tyr  Ser Leu Phe
    1190                1195                1200

Glu Leu  Glu Asn Gly Arg Lys  Arg Met Leu Ala Ser  Ala Gly Glu
    1205                1210                1215

Leu Gln  Lys Gly Asn Glu Leu  Ala Leu Pro Ser Lys  Tyr Val Asn
    1220                1225                1230

Phe Leu  Tyr Leu Ala Ser His  Tyr Glu Lys Leu Lys  Gly Ser Pro
    1235                1240                1245

Glu Asp  Asn Glu Gln Lys Gln  Leu Phe Val Glu Gln  His Lys His
    1250                1255                1260

Tyr Leu  Asp Glu Ile Ile Glu  Gln Ile Ser Glu Phe  Ser Lys Arg
    1265                1270                1275

Val Ile  Leu Ala Asp Ala Asn  Leu Asp Lys Val Leu  Ser Ala Tyr
    1280                1285                1290

Asn Lys  His Arg Asp Lys Pro  Ile Arg Glu Gln Ala  Glu Asn Ile
    1295                1300                1305
```

```
Ile His  Leu Phe Thr Leu Thr  Asn Leu Gly Ala Pro  Ala Ala Phe
    1310                1315                1320

Lys Tyr  Phe Asp Thr Thr Ile  Asp Arg Lys Arg Tyr  Thr Ser Thr
    1325                1330                1335

Lys Glu  Val Leu Asp Ala Thr  Leu Ile His Gln Ser  Ile Thr Gly
    1340                1345                1350

Leu Tyr  Glu Thr Arg Ile Asp  Leu Ser Gln Leu Gly  Gly Asp Pro
    1355                1360                1365

Lys Lys  Lys Arg Lys Val Leu  Glu Gly Gly Gly Gly  Ser Ser Thr
    1370                1375                1380

Asp His  Pro Lys Tyr Ser Asp  Met Ile Val Ala Ala  Ile Gln Ala
    1385                1390                1395

Glu Lys  Asn Arg Ala Gly Ser  Ser Arg Gln Ser Ile  Gln Lys Tyr
    1400                1405                1410

Ile Lys  Ser His Tyr Lys Val  Gly Glu Asn Ala Asp  Ser Gln Ile
    1415                1420                1425

Lys Leu  Ser Ile Lys Arg Leu  Val Thr Thr Gly Val  Leu Lys Gln
    1430                1435                1440

Thr Lys  Gly Val Gly Ala Ser  Gly Ser Phe Arg Leu  Ala Lys Ser
    1445                1450                1455

Asp Glu  Pro
    1460
```

<210> 67
<211> 1745
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 67

```
Leu Leu Asn Pro Thr Lys Arg Glu Arg Lys Glu Asn Tyr Ser Ile Asp
1               5                  10                  15

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

His Pro Arg Met Pro Lys Pro His Val Phe His Ser His Gln Leu Gln
        35                  40                  45

Pro Pro Gln Leu Lys Val Leu Tyr Glu Lys Glu Arg Met Trp Thr Ala
    50                  55                  60

Lys Lys Thr Gly Tyr Val Pro Thr Met Asp Asp Val Lys Ala Ala Tyr
65                  70                  75                  80

Gly Asp Ile Ser Asp Glu Glu Glu Lys Lys Gln Lys Leu Glu Leu Leu
                85                  90                  95

Lys Leu Ser Val Asn Asn Ser Gln Pro Leu Thr Glu Glu Glu Glu Lys
            100                 105                 110

Met Lys Ala Asp Trp Glu Ser Glu Gly Phe Thr Asn Trp Asn Lys Leu
        115                 120                 125

Glu Phe Arg Lys Phe Ile Thr Val Ser Gly Lys Tyr Gly Arg Asn Ser
    130                 135                 140

Ile Gln Ala Ile Ala Arg Glu Leu Ala Pro Gly Lys Thr Leu Glu Glu
145                 150                 155                 160

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

Asp Tyr Glu Lys Tyr Leu Lys Ile Ile Glu Asn Glu Glu Glu Lys Ile
            180                 185                 190
```

```
Lys Arg Val Lys Met Gln Gln Glu Ala Leu Arg Arg Lys Leu Ser Glu
        195                 200                 205

Tyr Lys Asn Pro Phe Phe Asp Leu Lys Leu Lys His Pro Pro Ser Ser
    210                 215                 220

Asn Asn Lys Arg Thr Tyr Ser Glu Glu Glu Asp Arg Phe Ile Leu Leu
225                 230                 235                 240

Met Leu Phe Lys Tyr Gly Leu Asp Arg Asp Asp Val Tyr Glu Leu Val
                245                 250                 255

Arg Asp Glu Ile Arg Asp Cys Pro Leu Phe Glu Leu Asp Phe Tyr Phe
            260                 265                 270

Arg Ser Arg Thr Pro Val Glu Leu Ala Arg Arg Gly Asn Thr Leu Leu
        275                 280                 285

Gln Cys Leu Glu Lys Glu Phe Asn Ala Gly Ile Val Leu Asp Asp Ala
    290                 295                 300

Thr Lys Asp Arg Met Lys Lys Glu Asp Glu Asn Gly Lys Arg Ile Arg
305                 310                 315                 320

Glu Glu Phe Ala Asp Gln Thr Ala Asn Glu Lys Glu Asn Val Asp Gly
                325                 330                 335

Val Glu Ser Lys Lys Ala Lys Ile Glu Asp Thr Ser Asn Val Gly Thr
            340                 345                 350

Glu Gln Leu Val Ala Glu Lys Ile Pro Glu Asn Glu Thr Thr His Thr
        355                 360                 365

Gly Ser Gly Met Asp Lys Lys Tyr Ser Ile Gly Leu Asp Ile Gly Thr
    370                 375                 380

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

```
Lys Lys Phe Lys Val Leu Gly Asn Thr Asp Arg His Ser Ile Lys Lys
                405                 410                 415

Asn Leu Ile Gly Ala Leu Leu Phe Asp Ser Gly Glu Thr Ala Glu Ala
            420                 425                 430

Thr Arg Leu Lys Arg Thr Ala Arg Arg Arg Tyr Thr Arg Arg Lys Asn
        435                 440                 445

Arg Ile Cys Tyr Leu Gln Glu Ile Phe Ser Asn Glu Met Ala Lys Val
    450                 455                 460

Asp Asp Ser Phe Phe His Arg Leu Glu Glu Ser Phe Leu Val Glu Glu
465                 470                 475                 480

Asp Lys Lys His Glu Arg His Pro Ile Phe Gly Asn Ile Val Asp Glu
                485                 490                 495

Val Ala Tyr His Glu Lys Tyr Pro Thr Ile Tyr His Leu Arg Lys Lys
            500                 505                 510

Leu Val Asp Ser Thr Asp Lys Ala Asp Leu Arg Leu Ile Tyr Leu Ala
        515                 520                 525

Leu Ala His Met Ile Lys Phe Arg Gly His Phe Leu Ile Glu Gly Asp
    530                 535                 540

Leu Asn Pro Asp Asn Ser Asp Val Asp Lys Leu Phe Ile Gln Leu Val
545                 550                 555                 560

Gln Thr Tyr Asn Gln Leu Phe Glu Glu Asn Pro Ile Asn Ala Ser Gly
                565                 570                 575

Val Asp Ala Lys Ala Ile Leu Ser Ala Arg Leu Ser Lys Ser Arg Arg
            580                 585                 590

Leu Glu Asn Leu Ile Ala Gln Leu Pro Gly Glu Lys Lys Asn Gly Leu
        595                 600                 605
```

```
Phe Gly Asn Leu Ile Ala Leu Ser Leu Gly Leu Thr Pro Asn Phe Lys
    610                 615                 620

Ser Asn Phe Asp Leu Ala Glu Asp Ala Lys Leu Gln Leu Ser Lys Asp
625                 630                 635                 640

Thr Tyr Asp Asp Asp Leu Asp Asn Leu Leu Ala Gln Ile Gly Asp Gln
                645                 650                 655

Tyr Ala Asp Leu Phe Leu Ala Ala Lys Asn Leu Ser Asp Ala Ile Leu
            660                 665                 670

Leu Ser Asp Ile Leu Arg Val Asn Thr Glu Ile Thr Lys Ala Pro Leu
        675                 680                 685

Ser Ala Ser Met Ile Lys Arg Tyr Asp Glu His His Gln Asp Leu Thr
    690                 695                 700

Leu Leu Lys Ala Leu Val Arg Gln Gln Leu Pro Glu Lys Tyr Lys Glu
705                 710                 715                 720

Ile Phe Phe Asp Gln Ser Lys Asn Gly Tyr Ala Gly Tyr Ile Asp Gly
                725                 730                 735

Gly Ala Ser Gln Glu Glu Phe Tyr Lys Phe Ile Lys Pro Ile Leu Glu
            740                 745                 750

Lys Met Asp Gly Thr Glu Glu Leu Leu Val Lys Leu Asn Arg Glu Asp
        755                 760                 765

Leu Leu Arg Lys Gln Arg Thr Phe Asp Asn Gly Ser Ile Pro His Gln
    770                 775                 780

Ile His Leu Gly Glu Leu His Ala Ile Leu Arg Arg Gln Glu Asp Phe
785                 790                 795                 800

Tyr Pro Phe Leu Lys Asp Asn Arg Glu Lys Ile Glu Lys Ile Leu Thr
```

```
                805                 810                 815

Phe Arg Ile Pro Tyr Tyr Val Gly Pro Leu Ala Arg Gly Asn Ser Arg
            820                 825                 830

Phe Ala Trp Met Thr Arg Lys Ser Glu Glu Thr Ile Thr Pro Trp Asn
        835                 840                 845

Phe Glu Glu Val Val Asp Lys Gly Ala Ser Ala Gln Ser Phe Ile Glu
    850                 855                 860

Arg Met Thr Asn Phe Asp Lys Asn Leu Pro Asn Glu Lys Val Leu Pro
865                 870                 875                 880

Lys His Ser Leu Leu Tyr Glu Tyr Phe Thr Val Tyr Asn Glu Leu Thr
                885                 890                 895

Lys Val Lys Tyr Val Thr Glu Gly Met Arg Lys Pro Ala Phe Leu Ser
            900                 905                 910

Gly Glu Gln Lys Lys Ala Ile Val Asp Leu Leu Phe Lys Thr Asn Arg
        915                 920                 925

Lys Val Thr Val Lys Gln Leu Lys Glu Asp Tyr Phe Lys Lys Ile Glu
    930                 935                 940

Cys Phe Asp Ser Val Glu Ile Ser Gly Val Glu Asp Arg Phe Asn Ala
945                 950                 955                 960

Ser Leu Gly Thr Tyr His Asp Leu Leu Lys Ile Ile Lys Asp Lys Asp
                965                 970                 975

Phe Leu Asp Asn Glu Glu Asn Glu Asp Ile Leu Glu Asp Ile Val Leu
            980                 985                 990

Thr Leu Thr Leu Phe Glu Asp Arg  Glu Met Ile Glu Glu  Arg Leu Lys
        995                 1000                1005
```

```
Thr Tyr  Ala His Leu Phe Asp  Asp Lys Val Met Lys  Gln Leu Lys
    1010                1015                1020

Arg Arg  Arg Tyr Thr Gly Trp  Gly Arg Leu Ser Arg  Lys Leu Ile
    1025                1030                1035

Asn Gly  Ile Arg Asp Lys Gln  Ser Gly Lys Thr Ile  Leu Asp Phe
    1040                1045                1050

Leu Lys  Ser Asp Gly Phe Ala  Asn Arg Asn Phe Met  Gln Leu Ile
    1055                1060                1065

His Asp  Asp Ser Leu Thr Phe  Lys Glu Asp Ile Gln  Lys Ala Gln
    1070                1075                1080

Val Ser  Gly Gln Gly Asp Ser  Leu His Glu His Ile  Ala Asn Leu
    1085                1090                1095

Ala Gly  Ser Pro Ala Ile Lys  Lys Gly Ile Leu Gln  Thr Val Lys
    1100                1105                1110

Ile Val  Asp Glu Leu Val Lys  Val Met Gly His Lys  Pro Glu Asn
    1115                1120                1125

Ile Val  Ile Glu Met Ala Arg  Glu Asn Gln Thr Thr  Gln Lys Gly
    1130                1135                1140

Gln Lys  Asn Ser Arg Glu Arg  Met Lys Arg Ile Glu  Glu Gly Ile
    1145                1150                1155

Lys Glu  Leu Gly Ser Gln Ile  Leu Lys Glu His Pro  Val Glu Asn
    1160                1165                1170

Thr Gln  Leu Gln Asn Glu Lys  Leu Tyr Leu Tyr Tyr  Leu Gln Asn
    1175                1180                1185

Gly Arg  Asp Met Tyr Val Asp  Gln Glu Leu Asp Ile  Asn Arg Leu
    1190                1195                1200
```

```
Ser Asp  Tyr Asp Val Asp His  Ile Val Pro Gln Ser  Phe Ile Lys
    1205                1210                1215

Asp Asp  Ser Ile Asp Asn Lys  Val Leu Thr Arg Ser  Asp Lys Asn
    1220                1225                1230

Arg Gly  Lys Ser Asp Asn Val  Pro Ser Glu Glu Val  Val Lys Lys
    1235                1240                1245

Met Lys  Asn Tyr Trp Arg Gln  Leu Leu Asn Ala Lys  Leu Ile Thr
    1250                1255                1260

Gln Arg  Lys Phe Asp Asn Leu  Thr Lys Ala Glu Arg  Gly Gly Leu
    1265                1270                1275

Ser Glu  Leu Asp Lys Ala Gly  Phe Ile Lys Arg Gln  Leu Val Glu
    1280                1285                1290

Thr Arg  Gln Ile Thr Lys His  Val Ala Gln Ile Leu  Asp Ser Arg
    1295                1300                1305

Met Asn  Thr Lys Tyr Asp Glu  Asn Asp Lys Leu Ile  Arg Glu Val
    1310                1315                1320

Lys Val  Ile Thr Leu Lys Ser  Lys Leu Val Ser Asp  Phe Arg Lys
    1325                1330                1335

Asp Phe  Gln Phe Tyr Lys Val  Arg Glu Ile Asn Asn  Tyr His His
    1340                1345                1350

Ala His  Asp Ala Tyr Leu Asn  Ala Val Val Gly Thr  Ala Leu Ile
    1355                1360                1365

Lys Lys  Tyr Pro Lys Leu Glu  Ser Glu Phe Val Tyr  Gly Asp Tyr
    1370                1375                1380

Lys Val  Tyr Asp Val Arg Lys  Met Ile Ala Lys Ser  Glu Gln Glu
    1385                1390                1395
```

```
Ile Gly  Lys Ala Thr Ala Lys  Tyr Phe Phe Tyr Ser  Asn Ile Met
    1400                1405                1410

Asn Phe  Phe Lys Thr Glu Ile  Thr Leu Ala Asn Gly  Glu Ile Arg
    1415                1420                1425

Lys Arg  Pro Leu Ile Glu Thr  Asn Gly Glu Thr Gly  Glu Ile Val
    1430                1435                1440

Trp Asp  Lys Gly Arg Asp Phe  Ala Thr Val Arg Lys  Val Leu Ser
    1445                1450                1455

Met Pro  Gln Val Asn Ile Val  Lys Lys Thr Glu Val  Gln Thr Gly
    1460                1465                1470

Gly Phe  Ser Lys Glu Ser Ile  Leu Pro Lys Arg Asn  Ser Asp Lys
    1475                1480                1485

Leu Ile  Ala Arg Lys Lys Asp  Trp Asp Pro Lys Lys  Tyr Gly Gly
    1490                1495                1500

Phe Asp  Ser Pro Thr Val Ala  Tyr Ser Val Leu Val  Val Ala Lys
    1505                1510                1515

Val Glu  Lys Gly Lys Ser Lys  Lys Leu Lys Ser Val  Lys Glu Leu
    1520                1525                1530

Leu Gly  Ile Thr Ile Met Glu  Arg Ser Ser Phe Glu  Lys Asn Pro
    1535                1540                1545

Ile Asp  Phe Leu Glu Ala Lys  Gly Tyr Lys Glu Val  Lys Lys Asp
    1550                1555                1560

Leu Ile  Ile Lys Leu Pro Lys  Tyr Ser Leu Phe Glu  Leu Glu Asn
    1565                1570                1575

Gly Arg  Lys Arg Met Leu Ala  Ser Ala Gly Glu Leu  Gln Lys Gly
```

1580 1585 1590

Asn Glu Leu Ala Leu Pro Ser Lys Tyr Val Asn Phe Leu Tyr Leu
1595 1600 1605

Ala Ser His Tyr Glu Lys Leu Lys Gly Ser Pro Glu Asp Asn Glu
1610 1615 1620

Gln Lys Gln Leu Phe Val Glu Gln His Lys His Tyr Leu Asp Glu
1625 1630 1635

Ile Ile Glu Gln Ile Ser Glu Phe Ser Lys Arg Val Ile Leu Ala
1640 1645 1650

Asp Ala Asn Leu Asp Lys Val Leu Ser Ala Tyr Asn Lys His Arg
1655 1660 1665

Asp Lys Pro Ile Arg Glu Gln Ala Glu Asn Ile Ile His Leu Phe
1670 1675 1680

Thr Leu Thr Asn Leu Gly Ala Pro Ala Ala Phe Lys Tyr Phe Asp
1685 1690 1695

Thr Thr Ile Asp Arg Lys Arg Tyr Thr Ser Thr Lys Glu Val Leu
1700 1705 1710

Asp Ala Thr Leu Ile His Gln Ser Ile Thr Gly Leu Tyr Glu Thr
1715 1720 1725

Arg Ile Asp Leu Ser Gln Leu Gly Gly Asp Pro Lys Lys Lys Arg
1730 1735 1740

Lys Val
1745

<210> 68
<211> 1650
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 68

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Met Asp Lys Lys Tyr Ser Ile Gly Leu Asp Ile Gly Thr Asn Ser Val
1               5                   10                  15


Gly Trp Ala Val Ile Thr Asp Glu Tyr Lys Val Pro Ser Lys Lys Phe
            20                  25                  30


Lys Val Leu Gly Asn Thr Asp Arg His Ser Ile Lys Lys Asn Leu Ile
        35                  40                  45


Gly Ala Leu Leu Phe Asp Ser Gly Glu Thr Ala Glu Ala Thr Arg Leu
    50                  55                  60


Lys Arg Thr Ala Arg Arg Arg Tyr Thr Arg Arg Lys Asn Arg Ile Cys
65                  70                  75                  80


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


Phe Phe His Arg Leu Glu Glu Ser Phe Leu Val Glu Glu Asp Lys Lys
            100                 105                 110


His Glu Arg His Pro Ile Phe Gly Asn Ile Val Asp Glu Val Ala Tyr
        115                 120                 125


His Glu Lys Tyr Pro Thr Ile Tyr His Leu Arg Lys Lys Leu Val Asp
    130                 135                 140


Ser Thr Asp Lys Ala Asp Leu Arg Leu Ile Tyr Leu Ala Leu Ala His
145                 150                 155                 160


Met Ile Lys Phe Arg Gly His Phe Leu Ile Glu Gly Asp Leu Asn Pro
                165                 170                 175


Asp Asn Ser Asp Val Asp Lys Leu Phe Ile Gln Leu Val Gln Thr Tyr
```

```
            180                 185                 190

Asn Gln Leu Phe Glu Glu Asn Pro Ile Asn Ala Ser Gly Val Asp Ala
        195                 200                 205

Lys Ala Ile Leu Ser Ala Arg Leu Ser Lys Ser Arg Arg Leu Glu Asn
    210                 215                 220

Leu Ile Ala Gln Leu Pro Gly Glu Lys Lys Asn Gly Leu Phe Gly Asn
225                 230                 235                 240

Leu Ile Ala Leu Ser Leu Gly Leu Thr Pro Asn Phe Lys Ser Asn Phe
                245                 250                 255

Asp Leu Ala Glu Asp Ala Lys Leu Gln Leu Ser Lys Asp Thr Tyr Asp
            260                 265                 270

Asp Asp Leu Asp Asn Leu Leu Ala Gln Ile Gly Asp Gln Tyr Ala Asp
        275                 280                 285

Leu Phe Leu Ala Ala Lys Asn Leu Ser Asp Ala Ile Leu Leu Ser Asp
    290                 295                 300

Ile Leu Arg Val Asn Thr Glu Ile Thr Lys Ala Pro Leu Ser Ala Ser
305                 310                 315                 320

Met Ile Lys Arg Tyr Asp Glu His His Gln Asp Leu Thr Leu Leu Lys
                325                 330                 335

Ala Leu Val Arg Gln Gln Leu Pro Glu Lys Tyr Lys Glu Ile Phe Phe
            340                 345                 350

Asp Gln Ser Lys Asn Gly Tyr Ala Gly Tyr Ile Asp Gly Gly Ala Ser
        355                 360                 365

Gln Glu Glu Phe Tyr Lys Phe Ile Lys Pro Ile Leu Glu Lys Met Asp
    370                 375                 380
```

```
Gly Thr Glu Glu Leu Leu Val Lys Leu Asn Arg Glu Asp Leu Leu Arg
385                 390                 395                 400

Lys Gln Arg Thr Phe Asp Asn Gly Ser Ile Pro His Gln Ile His Leu
                405                 410                 415

Gly Glu Leu His Ala Ile Leu Arg Arg Gln Glu Asp Phe Tyr Pro Phe
            420                 425                 430

Leu Lys Asp Asn Arg Glu Lys Ile Glu Lys Ile Leu Thr Phe Arg Ile
        435                 440                 445

Pro Tyr Tyr Val Gly Pro Leu Ala Arg Gly Asn Ser Arg Phe Ala Trp
    450                 455                 460

Met Thr Arg Lys Ser Glu Glu Thr Ile Thr Pro Trp Asn Phe Glu Glu
465                 470                 475                 480

Val Val Asp Lys Gly Ala Ser Ala Gln Ser Phe Ile Glu Arg Met Thr
                485                 490                 495

Asn Phe Asp Lys Asn Leu Pro Asn Glu Lys Val Leu Pro Lys His Ser
            500                 505                 510

Leu Leu Tyr Glu Tyr Phe Thr Val Tyr Asn Glu Leu Thr Lys Val Lys
        515                 520                 525

Tyr Val Thr Glu Gly Met Arg Lys Pro Ala Phe Leu Ser Gly Glu Gln
    530                 535                 540

Lys Lys Ala Ile Val Asp Leu Leu Phe Lys Thr Asn Arg Lys Val Thr
545                 550                 555                 560

Val Lys Gln Leu Lys Glu Asp Tyr Phe Lys Lys Ile Glu Cys Phe Asp
                565                 570                 575

Ser Val Glu Ile Ser Gly Val Glu Asp Arg Phe Asn Ala Ser Leu Gly
            580                 585                 590
```

```
Thr Tyr His Asp Leu Leu Lys Ile Ile Lys Asp Lys Asp Phe Leu Asp
        595                 600                 605

Asn Glu Glu Asn Glu Asp Ile Leu Glu Asp Ile Val Leu Thr Leu Thr
    610                 615                 620

Leu Phe Glu Asp Arg Glu Met Ile Glu Glu Arg Leu Lys Thr Tyr Ala
625                 630                 635                 640

His Leu Phe Asp Asp Lys Val Met Lys Gln Leu Lys Arg Arg Arg Tyr
                645                 650                 655

Thr Gly Trp Gly Arg Leu Ser Arg Lys Leu Ile Asn Gly Ile Arg Asp
            660                 665                 670

Lys Gln Ser Gly Lys Thr Ile Leu Asp Phe Leu Lys Ser Asp Gly Phe
        675                 680                 685

Ala Asn Arg Asn Phe Met Gln Leu Ile His Asp Asp Ser Leu Thr Phe
    690                 695                 700

Lys Glu Asp Ile Gln Lys Ala Gln Val Ser Gly Gln Gly Asp Ser Leu
705                 710                 715                 720

His Glu His Ile Ala Asn Leu Ala Gly Ser Pro Ala Ile Lys Lys Gly
                725                 730                 735

Ile Leu Gln Thr Val Lys Ile Val Asp Glu Leu Val Lys Val Met Gly
            740                 745                 750

His Lys Pro Glu Asn Ile Val Ile Glu Met Ala Arg Glu Asn Gln Thr
        755                 760                 765

Thr Gln Lys Gly Gln Lys Asn Ser Arg Glu Arg Met Lys Arg Ile Glu
    770                 775                 780

Glu Gly Ile Lys Glu Leu Gly Ser Gln Ile Leu Lys Glu His Pro Val
785                 790                 795                 800
```

```
Glu Asn Thr Gln Leu Gln Asn Glu Lys Leu Tyr Leu Tyr Tyr Leu Gln
                805                 810                 815

Asn Gly Arg Asp Met Tyr Val Asp Gln Glu Leu Asp Ile Asn Arg Leu
            820                 825                 830

Ser Asp Tyr Asp Val Asp His Ile Val Pro Gln Ser Phe Ile Lys Asp
        835                 840                 845

Asp Ser Ile Asp Asn Lys Val Leu Thr Arg Ser Asp Lys Asn Arg Gly
    850                 855                 860

Lys Ser Asp Asn Val Pro Ser Glu Glu Val Val Lys Lys Met Lys Asn
865                 870                 875                 880

Tyr Trp Arg Gln Leu Leu Asn Ala Lys Leu Ile Thr Gln Arg Lys Phe
                885                 890                 895

Asp Asn Leu Thr Lys Ala Glu Arg Gly Gly Leu Ser Glu Leu Asp Lys
            900                 905                 910

Ala Gly Phe Ile Lys Arg Gln Leu Val Glu Thr Arg Gln Ile Thr Lys
        915                 920                 925

His Val Ala Gln Ile Leu Asp Ser Arg Met Asn Thr Lys Tyr Asp Glu
    930                 935                 940

Asn Asp Lys Leu Ile Arg Glu Val Lys Val Ile Thr Leu Lys Ser Lys
945                 950                 955                 960

Leu Val Ser Asp Phe Arg Lys Asp Phe Gln Phe Tyr Lys Val Arg Glu
                965                 970                 975

Ile Asn Asn Tyr His His Ala His Asp Ala Tyr Leu Asn Ala Val Val
            980                 985                 990

Gly Thr Ala Leu Ile Lys Lys Tyr  Pro Lys Leu Glu Ser  Glu Phe Val
```

```
        995                 1000                1005

Tyr Gly  Asp Tyr Lys Val Tyr  Asp Val Arg Lys Met  Ile Ala Lys
    1010                1015                1020

Ser Glu  Gln Glu Ile Gly Lys  Ala Thr Ala Lys Tyr  Phe Phe Tyr
    1025                1030                1035

Ser Asn  Ile Met Asn Phe Phe  Lys Thr Glu Ile Thr  Leu Ala Asn
    1040                1045                1050

Gly Glu  Ile Arg Lys Arg Pro  Leu Ile Glu Thr Asn  Gly Glu Thr
    1055                1060                1065

Gly Glu  Ile Val Trp Asp Lys  Gly Arg Asp Phe Ala  Thr Val Arg
    1070                1075                1080

Lys Val  Leu Ser Met Pro Gln  Val Asn Ile Val Lys  Lys Thr Glu
    1085                1090                1095

Val Gln  Thr Gly Gly Phe Ser  Lys Glu Ser Ile Leu  Pro Lys Arg
    1100                1105                1110

Asn Ser  Asp Lys Leu Ile Ala  Arg Lys Lys Asp Trp  Asp Pro Lys
    1115                1120                1125

Lys Tyr  Gly Gly Phe Asp Ser  Pro Thr Val Ala Tyr  Ser Val Leu
    1130                1135                1140

Val Val  Ala Lys Val Glu Lys  Gly Lys Ser Lys Lys  Leu Lys Ser
    1145                1150                1155

Val Lys  Glu Leu Leu Gly Ile  Thr Ile Met Glu Arg  Ser Ser Phe
    1160                1165                1170

Glu Lys  Asn Pro Ile Asp Phe  Leu Glu Ala Lys Gly  Tyr Lys Glu
    1175                1180                1185
```

```
Val Lys  Lys Asp Leu Ile Ile  Lys Leu Pro Lys Tyr  Ser Leu Phe
    1190                1195                1200

Glu Leu  Glu Asn Gly Arg Lys  Arg Met Leu Ala Ser  Ala Gly Glu
    1205                1210                1215

Leu Gln  Lys Gly Asn Glu Leu  Ala Leu Pro Ser Lys  Tyr Val Asn
    1220                1225                1230

Phe Leu  Tyr Leu Ala Ser His  Tyr Glu Lys Leu Lys  Gly Ser Pro
    1235                1240                1245

Glu Asp  Asn Glu Gln Lys Gln  Leu Phe Val Glu Gln  His Lys His
    1250                1255                1260

Tyr Leu  Asp Glu Ile Ile Glu  Gln Ile Ser Glu Phe  Ser Lys Arg
    1265                1270                1275

Val Ile  Leu Ala Asp Ala Asn  Leu Asp Lys Val Leu  Ser Ala Tyr
    1280                1285                1290

Asn Lys  His Arg Asp Lys Pro  Ile Arg Glu Gln Ala  Glu Asn Ile
    1295                1300                1305

Ile His  Leu Phe Thr Leu Thr  Asn Leu Gly Ala Pro  Ala Ala Phe
    1310                1315                1320

Lys Tyr  Phe Asp Thr Thr Ile  Asp Arg Lys Arg Tyr  Thr Ser Thr
    1325                1330                1335

Lys Glu  Val Leu Asp Ala Thr  Leu Ile His Gln Ser  Ile Thr Gly
    1340                1345                1350

Leu Tyr  Glu Thr Arg Ile Asp  Leu Ser Gln Leu Gly  Gly Asp Pro
    1355                1360                1365

Lys Lys  Lys Arg Lys Val Leu  Glu Gly Gly Gly Gly  Ser Asp Met
    1370                1375                1380
```

```
Asp Ser  Ile Gly Glu Ser Glu  Val Arg Ala Leu Tyr  Lys Ala Ile
    1385                1390                1395

Leu Lys  Phe Gly Asn Leu Lys  Glu Ile Leu Asp Glu  Leu Ile Ala
    1400                1405                1410

Asp Gly  Thr Leu Pro Val Lys  Ser Phe Glu Lys Tyr  Gly Glu Thr
    1415                1420                1425

Tyr Asp  Glu Met Met Glu Ala  Ala Lys Asp Cys Val  His Glu Glu
    1430                1435                1440

Glu Lys  Asn Arg Lys Glu Ile  Leu Glu Lys Leu Glu  Lys His Ala
    1445                1450                1455

Thr Ala  Tyr Arg Ala Lys Leu  Lys Ser Gly Glu Ile  Lys Ala Glu
    1460                1465                1470

Asn Gln  Pro Lys Asp Asn Pro  Leu Thr Arg Leu Ser  Leu Lys Lys
    1475                1480                1485

Arg Glu  Lys Lys Ala Val Leu  Phe Asn Phe Lys Gly  Val Lys Ser
    1490                1495                1500

Leu Asn  Ala Glu Ser Leu Leu  Ser Arg Val Glu Asp  Leu Lys Tyr
    1505                1510                1515

Leu Lys  Asn Leu Ile Asn Ser  Asn Tyr Lys Asp Asp  Pro Leu Lys
    1520                1525                1530

Phe Ser  Leu Gly Asn Asn Thr  Pro Lys Pro Val Gln  Asn Trp Ser
    1535                1540                1545

Ser Asn  Trp Thr Lys Glu Glu  Asp Glu Lys Leu Leu  Ile Gly Val
    1550                1555                1560

Phe Lys  Tyr Gly Tyr Gly Ser  Trp Thr Gln Ile Arg  Asp Asp Pro
    1565                1570                1575
```

Phe Leu Gly Ile Thr Asp Lys Ile Phe Leu Asn Glu Val His Asn
    1580   1585   1590

Pro Val Ala Lys Lys Ser Ala Ser Ser Ser Asp Thr Thr Pro Thr
    1595   1600   1605

Pro Ser Lys Lys Gly Lys Gly Ile Thr Gly Ser Ser Lys Lys Val
    1610   1615   1620

Pro Gly Ala Ile His Leu Gly Arg Arg Val Asp Tyr Leu Leu Ser
    1625   1630   1635

Phe Leu Arg Gly Gly Leu Asn Thr Lys Ser Pro Ser
    1640   1645   1650

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<211> 1568
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 69

Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1   5   10   15

Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
            20   25   30

Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
        35   40   45

Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
    50   55   60

Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65   70   75   80

```
Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
                85                  90                  95

Ala Lys Ser Asp Thr Gly Ser Gly Met Asp Lys Lys Tyr Ser Ile Gly
            100                 105                 110

Leu Asp Ile Gly Thr Asn Ser Val Gly Trp Ala Val Ile Thr Asp Glu
        115                 120                 125

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

His Ser Ile Lys Lys Asn Leu Ile Gly Ala Leu Leu Phe Asp Ser Gly
145                 150                 155                 160

Glu Thr Ala Glu Ala Thr Arg Leu Lys Arg Thr Ala Arg Arg Arg Tyr
                165                 170                 175

Thr Arg Arg Lys Asn Arg Ile Cys Tyr Leu Gln Glu Ile Phe Ser Asn
            180                 185                 190

Glu Met Ala Lys Val Asp Asp Ser Phe Phe His Arg Leu Glu Glu Ser
        195                 200                 205

Phe Leu Val Glu Glu Asp Lys Lys His Glu Arg His Pro Ile Phe Gly
    210                 215                 220

Asn Ile Val Asp Glu Val Ala Tyr His Glu Lys Tyr Pro Thr Ile Tyr
225                 230                 235                 240

His Leu Arg Lys Lys Leu Val Asp Ser Thr Asp Lys Ala Asp Leu Arg
                245                 250                 255

Leu Ile Tyr Leu Ala Leu Ala His Met Ile Lys Phe Arg Gly His Phe
            260                 265                 270

Leu Ile Glu Gly Asp Leu Asn Pro Asp Asn Ser Asp Val Asp Lys Leu
        275                 280                 285
```

```
Phe Ile Gln Leu Val Gln Thr Tyr Asn Gln Leu Phe Glu Glu Asn Pro
    290                 295                 300

Ile Asn Ala Ser Gly Val Asp Ala Lys Ala Ile Leu Ser Ala Arg Leu
305                 310                 315                 320

Ser Lys Ser Arg Arg Leu Glu Asn Leu Ile Ala Gln Leu Pro Gly Glu
                325                 330                 335

Lys Lys Asn Gly Leu Phe Gly Asn Leu Ile Ala Leu Ser Leu Gly Leu
            340                 345                 350

Thr Pro Asn Phe Lys Ser Asn Phe Asp Leu Ala Glu Asp Ala Lys Leu
        355                 360                 365

Gln Leu Ser Lys Asp Thr Tyr Asp Asp Asp Leu Asp Asn Leu Leu Ala
    370                 375                 380

Gln Ile Gly Asp Gln Tyr Ala Asp Leu Phe Leu Ala Ala Lys Asn Leu
385                 390                 395                 400

Ser Asp Ala Ile Leu Leu Ser Asp Ile Leu Arg Val Asn Thr Glu Ile
                405                 410                 415

Thr Lys Ala Pro Leu Ser Ala Ser Met Ile Lys Arg Tyr Asp Glu His
            420                 425                 430

His Gln Asp Leu Thr Leu Leu Lys Ala Leu Val Arg Gln Gln Leu Pro
        435                 440                 445

Glu Lys Tyr Lys Glu Ile Phe Phe Asp Gln Ser Lys Asn Gly Tyr Ala
    450                 455                 460

Gly Tyr Ile Asp Gly Gly Ala Ser Gln Glu Glu Phe Tyr Lys Phe Ile
465                 470                 475                 480

Lys Pro Ile Leu Glu Lys Met Asp Gly Thr Glu Glu Leu Leu Val Lys
```

```
                485                 490                 495

Leu Asn Arg Glu Asp Leu Leu Arg Lys Gln Arg Thr Phe Asp Asn Gly
            500                 505                 510

Ser Ile Pro His Gln Ile His Leu Gly Glu Leu His Ala Ile Leu Arg
        515                 520                 525

Arg Gln Glu Asp Phe Tyr Pro Phe Leu Lys Asp Asn Arg Glu Lys Ile
    530                 535                 540

Glu Lys Ile Leu Thr Phe Arg Ile Pro Tyr Tyr Val Gly Pro Leu Ala
545                 550                 555                 560

Arg Gly Asn Ser Arg Phe Ala Trp Met Thr Arg Lys Ser Glu Glu Thr
                565                 570                 575

Ile Thr Pro Trp Asn Phe Glu Glu Val Val Asp Lys Gly Ala Ser Ala
            580                 585                 590

Gln Ser Phe Ile Glu Arg Met Thr Asn Phe Asp Lys Asn Leu Pro Asn
        595                 600                 605

Glu Lys Val Leu Pro Lys His Ser Leu Leu Tyr Glu Tyr Phe Thr Val
    610                 615                 620

Tyr Asn Glu Leu Thr Lys Val Lys Tyr Val Thr Glu Gly Met Arg Lys
625                 630                 635                 640

Pro Ala Phe Leu Ser Gly Glu Gln Lys Lys Ala Ile Val Asp Leu Leu
                645                 650                 655

Phe Lys Thr Asn Arg Lys Val Thr Val Lys Gln Leu Lys Glu Asp Tyr
            660                 665                 670

Phe Lys Lys Ile Glu Cys Phe Asp Ser Val Glu Ile Ser Gly Val Glu
        675                 680                 685
```

```
Asp Arg Phe Asn Ala Ser Leu Gly Thr Tyr His Asp Leu Leu Lys Ile
    690                 695                 700

Ile Lys Asp Lys Asp Phe Leu Asp Asn Glu Glu Asn Glu Asp Ile Leu
705                 710                 715                 720

Glu Asp Ile Val Leu Thr Leu Thr Leu Phe Glu Asp Arg Glu Met Ile
                725                 730                 735

Glu Glu Arg Leu Lys Thr Tyr Ala His Leu Phe Asp Asp Lys Val Met
            740                 745                 750

Lys Gln Leu Lys Arg Arg Arg Tyr Thr Gly Trp Gly Arg Leu Ser Arg
        755                 760                 765

Lys Leu Ile Asn Gly Ile Arg Asp Lys Gln Ser Gly Lys Thr Ile Leu
    770                 775                 780

Asp Phe Leu Lys Ser Asp Gly Phe Ala Asn Arg Asn Phe Met Gln Leu
785                 790                 795                 800

Ile His Asp Asp Ser Leu Thr Phe Lys Glu Asp Ile Gln Lys Ala Gln
                805                 810                 815

Val Ser Gly Gln Gly Asp Ser Leu His Glu His Ile Ala Asn Leu Ala
            820                 825                 830

Gly Ser Pro Ala Ile Lys Lys Gly Ile Leu Gln Thr Val Lys Ile Val
        835                 840                 845

Asp Glu Leu Val Lys Val Met Gly His Lys Pro Glu Asn Ile Val Ile
    850                 855                 860

Glu Met Ala Arg Glu Asn Gln Thr Thr Gln Lys Gly Gln Lys Asn Ser
865                 870                 875                 880

Arg Glu Arg Met Lys Arg Ile Glu Glu Gly Ile Lys Glu Leu Gly Ser
                885                 890                 895
```

```
Gln Ile Leu Lys Glu His Pro Val Glu Asn Thr Gln Leu Gln Asn Glu
            900                 905                 910

Lys Leu Tyr Leu Tyr Tyr Leu Gln Asn Gly Arg Asp Met Tyr Val Asp
        915                 920                 925

Gln Glu Leu Asp Ile Asn Arg Leu Ser Asp Tyr Asp Val Asp His Ile
    930                 935                 940

Val Pro Gln Ser Phe Ile Lys Asp Asp Ser Ile Asp Asn Lys Val Leu
945                 950                 955                 960

Thr Arg Ser Asp Lys Asn Arg Gly Lys Ser Asp Asn Val Pro Ser Glu
                965                 970                 975

Glu Val Val Lys Lys Met Lys Asn Tyr Trp Arg Gln Leu Leu Asn Ala
            980                 985                 990

Lys Leu Ile Thr Gln Arg Lys Phe  Asp Asn Leu Thr Lys  Ala Glu Arg
        995                 1000                1005

Gly Gly  Leu Ser Glu Leu Asp  Lys Ala Gly Phe Ile  Lys Arg Gln
    1010                1015                1020

Leu Val  Glu Thr Arg Gln Ile  Thr Lys His Val Ala  Gln Ile Leu
    1025                1030                1035

Asp Ser  Arg Met Asn Thr Lys  Tyr Asp Glu Asn Asp  Lys Leu Ile
    1040                1045                1050

Arg Glu  Val Lys Val Ile Thr  Leu Lys Ser Lys Leu  Val Ser Asp
    1055                1060                1065

Phe Arg  Lys Asp Phe Gln Phe  Tyr Lys Val Arg Glu  Ile Asn Asn
    1070                1075                1080

Tyr His  His Ala His Asp Ala  Tyr Leu Asn Ala Val  Val Gly Thr
    1085                1090                1095
```

```
Ala Leu  Ile Lys Lys Tyr Pro  Lys Leu Glu Ser Glu  Phe Val Tyr
    1100                1105                1110

Gly Asp  Tyr Lys Val Tyr Asp  Val Arg Lys Met Ile  Ala Lys Ser
    1115                1120                1125

Glu Gln  Glu Ile Gly Lys Ala  Thr Ala Lys Tyr Phe  Phe Tyr Ser
    1130                1135                1140

Asn Ile  Met Asn Phe Phe Lys  Thr Glu Ile Thr Leu  Ala Asn Gly
    1145                1150                1155

Glu Ile  Arg Lys Arg Pro Leu  Ile Glu Thr Asn Gly  Glu Thr Gly
    1160                1165                1170

Glu Ile  Val Trp Asp Lys Gly  Arg Asp Phe Ala Thr  Val Arg Lys
    1175                1180                1185

Val Leu  Ser Met Pro Gln Val  Asn Ile Val Lys Lys  Thr Glu Val
    1190                1195                1200

Gln Thr  Gly Gly Phe Ser Lys  Glu Ser Ile Leu Pro  Lys Arg Asn
    1205                1210                1215

Ser Asp  Lys Leu Ile Ala Arg  Lys Lys Asp Trp Asp  Pro Lys Lys
    1220                1225                1230

Tyr Gly  Gly Phe Asp Ser Pro  Thr Val Ala Tyr Ser  Val Leu Val
    1235                1240                1245

Val Ala  Lys Val Glu Lys Gly  Lys Ser Lys Lys Leu  Lys Ser Val
    1250                1255                1260

Lys Glu  Leu Leu Gly Ile Thr  Ile Met Glu Arg Ser  Ser Phe Glu
    1265                1270                1275

Lys Asn  Pro Ile Asp Phe Leu  Glu Ala Lys Gly Tyr  Lys Glu Val
```

```
    1280                1285                1290

Lys Lys  Asp Leu Ile Ile Lys  Leu Pro Lys Tyr Ser  Leu Phe Glu
    1295                1300                1305

Leu Glu  Asn Gly Arg Lys Arg  Met Leu Ala Ser Ala  Gly Glu Leu
    1310                1315                1320

Gln Lys  Gly Asn Glu Leu Ala  Leu Pro Ser Lys Tyr  Val Asn Phe
    1325                1330                1335

Leu Tyr  Leu Ala Ser His Tyr  Glu Lys Leu Lys Gly  Ser Pro Glu
    1340                1345                1350

Asp Asn  Glu Gln Lys Gln Leu  Phe Val Glu Gln His  Lys His Tyr
    1355                1360                1365

Leu Asp  Glu Ile Ile Glu Gln  Ile Ser Glu Phe Ser  Lys Arg Val
    1370                1375                1380

Ile Leu  Ala Asp Ala Asn Leu  Asp Lys Val Leu Ser  Ala Tyr Asn
    1385                1390                1395

Lys His  Arg Asp Lys Pro Ile  Arg Glu Gln Ala Glu  Asn Ile Ile
    1400                1405                1410

His Leu  Phe Thr Leu Thr Asn  Leu Gly Ala Pro Ala  Ala Phe Lys
    1415                1420                1425

Tyr Phe  Asp Thr Thr Ile Asp  Arg Lys Arg Tyr Thr  Ser Thr Lys
    1430                1435                1440

Glu Val  Leu Asp Ala Thr Leu  Ile His Gln Ser Ile  Thr Gly Leu
    1445                1450                1455

Tyr Glu  Thr Arg Ile Asp Leu  Ser Gln Leu Gly Gly  Asp Pro Lys
    1460                1465                1470
```

```
Lys Lys  Arg Lys Val Leu Glu  Gly Gly Gly Gly Ser  Gly Lys Gly
    1475                1480                1485


Asp Pro  Lys Lys Pro Arg Gly  Lys Met Ser Ser Tyr  Ala Phe Phe
    1490                1495                1500


Val Gln  Thr Cys Arg Glu Glu  His Lys Lys Lys His  Pro Asp Ala
    1505                1510                1515


Ser Val  Asn Phe Ser Glu Phe  Ser Lys Lys Cys Ser  Glu Arg Trp
    1520                1525                1530


Lys Thr  Met Ser Ala Lys Glu  Lys Gly Lys Phe Glu  Asp Met Ala
    1535                1540                1545


Lys Ala  Asp Lys Ala Arg Tyr  Glu Arg Glu Met Lys  Thr Tyr Ile
    1550                1555                1560


Pro Pro  Lys Gly Glu
    1565


<210>  70
<211>  1565
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  SYNTHESIZED

<400>  70

Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1               5                   10                  15


Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
            20                  25                  30


Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
        35                  40                  45


Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
```

```
    50                  55                  60

Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65                  70                  75                  80

Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
                85                  90                  95

Ala Lys Ser Asp Thr Gly Ser Gly Met Asp Lys Lys Tyr Ser Ile Gly
            100                 105                 110

Leu Asp Ile Gly Thr Asn Ser Val Gly Trp Ala Val Ile Thr Asp Glu
        115                 120                 125

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

His Ser Ile Lys Lys Asn Leu Ile Gly Ala Leu Leu Phe Asp Ser Gly
145                 150                 155                 160

Glu Thr Ala Glu Ala Thr Arg Leu Lys Arg Thr Ala Arg Arg Arg Tyr
                165                 170                 175

Thr Arg Arg Lys Asn Arg Ile Cys Tyr Leu Gln Glu Ile Phe Ser Asn
            180                 185                 190

Glu Met Ala Lys Val Asp Asp Ser Phe Phe His Arg Leu Glu Glu Ser
        195                 200                 205

Phe Leu Val Glu Glu Asp Lys Lys His Glu Arg His Pro Ile Phe Gly
    210                 215                 220

Asn Ile Val Asp Glu Val Ala Tyr His Glu Lys Tyr Pro Thr Ile Tyr
225                 230                 235                 240

His Leu Arg Lys Lys Leu Val Asp Ser Thr Asp Lys Ala Asp Leu Arg
                245                 250                 255
```

```
Leu Ile Tyr Leu Ala Leu Ala His Met Ile Lys Phe Arg Gly His Phe
            260                 265                 270

Leu Ile Glu Gly Asp Leu Asn Pro Asp Asn Ser Asp Val Asp Lys Leu
        275                 280                 285

Phe Ile Gln Leu Val Gln Thr Tyr Asn Gln Leu Phe Glu Glu Asn Pro
    290                 295                 300

Ile Asn Ala Ser Gly Val Asp Ala Lys Ala Ile Leu Ser Ala Arg Leu
305                 310                 315                 320

Ser Lys Ser Arg Arg Leu Glu Asn Leu Ile Ala Gln Leu Pro Gly Glu
                325                 330                 335

Lys Lys Asn Gly Leu Phe Gly Asn Leu Ile Ala Leu Ser Leu Gly Leu
            340                 345                 350

Thr Pro Asn Phe Lys Ser Asn Phe Asp Leu Ala Glu Asp Ala Lys Leu
        355                 360                 365

Gln Leu Ser Lys Asp Thr Tyr Asp Asp Asp Leu Asp Asn Leu Leu Ala
    370                 375                 380

Gln Ile Gly Asp Gln Tyr Ala Asp Leu Phe Leu Ala Ala Lys Asn Leu
385                 390                 395                 400

Ser Asp Ala Ile Leu Leu Ser Asp Ile Leu Arg Val Asn Thr Glu Ile
                405                 410                 415

Thr Lys Ala Pro Leu Ser Ala Ser Met Ile Lys Arg Tyr Asp Glu His
            420                 425                 430

His Gln Asp Leu Thr Leu Leu Lys Ala Leu Val Arg Gln Gln Leu Pro
        435                 440                 445

Glu Lys Tyr Lys Glu Ile Phe Phe Asp Gln Ser Lys Asn Gly Tyr Ala
    450                 455                 460
```

```
Gly Tyr Ile Asp Gly Gly Ala Ser Gln Glu Glu Phe Tyr Lys Phe Ile
465                 470                 475                 480

Lys Pro Ile Leu Glu Lys Met Asp Gly Thr Glu Glu Leu Leu Val Lys
                485                 490                 495

Leu Asn Arg Glu Asp Leu Leu Arg Lys Gln Arg Thr Phe Asp Asn Gly
            500                 505                 510

Ser Ile Pro His Gln Ile His Leu Gly Glu Leu His Ala Ile Leu Arg
        515                 520                 525

Arg Gln Glu Asp Phe Tyr Pro Phe Leu Lys Asp Asn Arg Glu Lys Ile
    530                 535                 540

Glu Lys Ile Leu Thr Phe Arg Ile Pro Tyr Tyr Val Gly Pro Leu Ala
545                 550                 555                 560

Arg Gly Asn Ser Arg Phe Ala Trp Met Thr Arg Lys Ser Glu Glu Thr
                565                 570                 575

Ile Thr Pro Trp Asn Phe Glu Glu Val Val Asp Lys Gly Ala Ser Ala
            580                 585                 590

Gln Ser Phe Ile Glu Arg Met Thr Asn Phe Asp Lys Asn Leu Pro Asn
        595                 600                 605

Glu Lys Val Leu Pro Lys His Ser Leu Leu Tyr Glu Tyr Phe Thr Val
    610                 615                 620

Tyr Asn Glu Leu Thr Lys Val Lys Tyr Val Thr Glu Gly Met Arg Lys
625                 630                 635                 640

Pro Ala Phe Leu Ser Gly Glu Gln Lys Lys Ala Ile Val Asp Leu Leu
                645                 650                 655

Phe Lys Thr Asn Arg Lys Val Thr Val Lys Gln Leu Lys Glu Asp Tyr
            660                 665                 670
```

```
Phe Lys Lys Ile Glu Cys Phe Asp Ser Val Glu Ile Ser Gly Val Glu
        675                 680                 685

Asp Arg Phe Asn Ala Ser Leu Gly Thr Tyr His Asp Leu Leu Lys Ile
    690                 695                 700

Ile Lys Asp Lys Asp Phe Leu Asp Asn Glu Glu Asn Glu Asp Ile Leu
705                 710                 715                 720

Glu Asp Ile Val Leu Thr Leu Thr Leu Phe Glu Asp Arg Glu Met Ile
                725                 730                 735

Glu Glu Arg Leu Lys Thr Tyr Ala His Leu Phe Asp Asp Lys Val Met
            740                 745                 750

Lys Gln Leu Lys Arg Arg Arg Tyr Thr Gly Trp Gly Arg Leu Ser Arg
        755                 760                 765

Lys Leu Ile Asn Gly Ile Arg Asp Lys Gln Ser Gly Lys Thr Ile Leu
    770                 775                 780

Asp Phe Leu Lys Ser Asp Gly Phe Ala Asn Arg Asn Phe Met Gln Leu
785                 790                 795                 800

Ile His Asp Asp Ser Leu Thr Phe Lys Glu Asp Ile Gln Lys Ala Gln
                805                 810                 815

Val Ser Gly Gln Gly Asp Ser Leu His Glu His Ile Ala Asn Leu Ala
            820                 825                 830

Gly Ser Pro Ala Ile Lys Lys Gly Ile Leu Gln Thr Val Lys Ile Val
        835                 840                 845

Asp Glu Leu Val Lys Val Met Gly His Lys Pro Glu Asn Ile Val Ile
    850                 855                 860

Glu Met Ala Arg Glu Asn Gln Thr Thr Gln Lys Gly Gln Lys Asn Ser
```

```
865                 870                 875                 880

Arg Glu Arg Met Lys Arg Ile Glu Glu Gly Ile Lys Glu Leu Gly Ser
                885                 890                 895

Gln Ile Leu Lys Glu His Pro Val Glu Asn Thr Gln Leu Gln Asn Glu
            900                 905                 910

Lys Leu Tyr Leu Tyr Tyr Leu Gln Asn Gly Arg Asp Met Tyr Val Asp
        915                 920                 925

Gln Glu Leu Asp Ile Asn Arg Leu Ser Asp Tyr Asp Val Asp His Ile
    930                 935                 940

Val Pro Gln Ser Phe Ile Lys Asp Asp Ser Ile Asp Asn Lys Val Leu
945                 950                 955                 960

Thr Arg Ser Asp Lys Asn Arg Gly Lys Ser Asp Asn Val Pro Ser Glu
                965                 970                 975

Glu Val Val Lys Lys Met Lys Asn Tyr Trp Arg Gln Leu Leu Asn Ala
            980                 985                 990

Lys Leu Ile Thr Gln Arg Lys Phe  Asp Asn Leu Thr Lys  Ala Glu Arg
        995                 1000                1005

Gly Gly  Leu Ser Glu Leu Asp  Lys Ala Gly Phe Ile  Lys Arg Gln
    1010                1015                1020

Leu Val  Glu Thr Arg Gln Ile  Thr Lys His Val Ala  Gln Ile Leu
    1025                1030                1035

Asp Ser  Arg Met Asn Thr Lys  Tyr Asp Glu Asn Asp  Lys Leu Ile
    1040                1045                1050

Arg Glu  Val Lys Val Ile Thr  Leu Lys Ser Lys Leu  Val Ser Asp
    1055                1060                1065
```

```
Phe Arg  Lys Asp Phe Gln Phe  Tyr Lys Val Arg Glu  Ile Asn Asn
    1070                1075                1080

Tyr His  His Ala His Asp Ala  Tyr Leu Asn Ala Val  Val Gly Thr
    1085                1090                1095

Ala Leu  Ile Lys Lys Tyr Pro  Lys Leu Glu Ser Glu  Phe Val Tyr
    1100                1105                1110

Gly Asp  Tyr Lys Val Tyr Asp  Val Arg Lys Met Ile  Ala Lys Ser
    1115                1120                1125

Glu Gln  Glu Ile Gly Lys Ala  Thr Ala Lys Tyr Phe  Phe Tyr Ser
    1130                1135                1140

Asn Ile  Met Asn Phe Phe Lys  Thr Glu Ile Thr Leu  Ala Asn Gly
    1145                1150                1155

Glu Ile  Arg Lys Arg Pro Leu  Ile Glu Thr Asn Gly  Glu Thr Gly
    1160                1165                1170

Glu Ile  Val Trp Asp Lys Gly  Arg Asp Phe Ala Thr  Val Arg Lys
    1175                1180                1185

Val Leu  Ser Met Pro Gln Val  Asn Ile Val Lys Lys  Thr Glu Val
    1190                1195                1200

Gln Thr  Gly Gly Phe Ser Lys  Glu Ser Ile Leu Pro  Lys Arg Asn
    1205                1210                1215

Ser Asp  Lys Leu Ile Ala Arg  Lys Lys Asp Trp Asp  Pro Lys Lys
    1220                1225                1230

Tyr Gly  Gly Phe Asp Ser Pro  Thr Val Ala Tyr Ser  Val Leu Val
    1235                1240                1245

Val Ala  Lys Val Glu Lys Gly  Lys Ser Lys Lys Leu  Lys Ser Val
    1250                1255                1260
```

```
Lys Glu  Leu Leu Gly Ile Thr  Ile Met Glu Arg Ser  Ser Phe Glu
    1265                1270                1275

Lys Asn  Pro Ile Asp Phe Leu  Glu Ala Lys Gly Tyr  Lys Glu Val
    1280                1285                1290

Lys Lys  Asp Leu Ile Ile Lys  Leu Pro Lys Tyr Ser  Leu Phe Glu
    1295                1300                1305

Leu Glu  Asn Gly Arg Lys Arg  Met Leu Ala Ser Ala  Gly Glu Leu
    1310                1315                1320

Gln Lys  Gly Asn Glu Leu Ala  Leu Pro Ser Lys Tyr  Val Asn Phe
    1325                1330                1335

Leu Tyr  Leu Ala Ser His Tyr  Glu Lys Leu Lys Gly  Ser Pro Glu
    1340                1345                1350

Asp Asn  Glu Gln Lys Gln Leu  Phe Val Glu Gln His  Lys His Tyr
    1355                1360                1365

Leu Asp  Glu Ile Ile Glu Gln  Ile Ser Glu Phe Ser  Lys Arg Val
    1370                1375                1380

Ile Leu  Ala Asp Ala Asn Leu  Asp Lys Val Leu Ser  Ala Tyr Asn
    1385                1390                1395

Lys His  Arg Asp Lys Pro Ile  Arg Glu Gln Ala Glu  Asn Ile Ile
    1400                1405                1410

His Leu  Phe Thr Leu Thr Asn  Leu Gly Ala Pro Ala  Ala Phe Lys
    1415                1420                1425

Tyr Phe  Asp Thr Thr Ile Asp  Arg Lys Arg Tyr Thr  Ser Thr Lys
    1430                1435                1440

Glu Val  Leu Asp Ala Thr Leu  Ile His Gln Ser Ile  Thr Gly Leu
    1445                1450                1455
```

```
Tyr Glu  Thr Arg Ile Asp Leu  Ser Gln Leu Gly Gly  Asp Pro Lys
    1460                1465                1470


Lys Lys  Arg Lys Val Leu Glu  Gly Gly Gly Gly Ser  Ser Thr Asp
    1475                1480                1485


His Pro  Lys Tyr Ser Asp Met  Ile Val Ala Ala Ile  Gln Ala Glu
    1490                1495                1500


Lys Asn  Arg Ala Gly Ser Ser  Arg Gln Ser Ile Gln  Lys Tyr Ile
    1505                1510                1515


Lys Ser  His Tyr Lys Val Gly  Glu Asn Ala Asp Ser  Gln Ile Lys
    1520                1525                1530


Leu Ser  Ile Lys Arg Leu Val  Thr Thr Gly Val Leu  Lys Gln Thr
    1535                1540                1545


Lys Gly  Val Gly Ala Ser Gly  Ser Phe Arg Leu Ala  Lys Ser Asp
    1550                1555                1560


Glu Pro
    1565


<210>  71
<211>  1754
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  SYNTHESIZED

<400>  71

Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1               5                   10                  15


Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
            20                  25                  30
```

```
Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
        35                  40                  45

Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
    50                  55                  60

Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65                  70                  75                  80

Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
                85                  90                  95

Ala Lys Ser Asp Thr Gly Ser Gly Met Asp Lys Lys Tyr Ser Ile Gly
            100                 105                 110

Leu Asp Ile Gly Thr Asn Ser Val Gly Trp Ala Val Ile Thr Asp Glu
        115                 120                 125

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

His Ser Ile Lys Lys Asn Leu Ile Gly Ala Leu Leu Phe Asp Ser Gly
145                 150                 155                 160

Glu Thr Ala Glu Ala Thr Arg Leu Lys Arg Thr Ala Arg Arg Arg Tyr
                165                 170                 175

Thr Arg Arg Lys Asn Arg Ile Cys Tyr Leu Gln Glu Ile Phe Ser Asn
            180                 185                 190

Glu Met Ala Lys Val Asp Asp Ser Phe Phe His Arg Leu Glu Glu Ser
        195                 200                 205

Phe Leu Val Glu Glu Asp Lys Lys His Glu Arg His Pro Ile Phe Gly
    210                 215                 220

Asn Ile Val Asp Glu Val Ala Tyr His Glu Lys Tyr Pro Thr Ile Tyr
225                 230                 235                 240
```

```
His Leu Arg Lys Lys Leu Val Asp Ser Thr Asp Lys Ala Asp Leu Arg
                245                 250                 255

Leu Ile Tyr Leu Ala Leu Ala His Met Ile Lys Phe Arg Gly His Phe
            260                 265                 270

Leu Ile Glu Gly Asp Leu Asn Pro Asp Asn Ser Asp Val Asp Lys Leu
        275                 280                 285

Phe Ile Gln Leu Val Gln Thr Tyr Asn Gln Leu Phe Glu Glu Asn Pro
    290                 295                 300

Ile Asn Ala Ser Gly Val Asp Ala Lys Ala Ile Leu Ser Ala Arg Leu
305                 310                 315                 320

Ser Lys Ser Arg Arg Leu Glu Asn Leu Ile Ala Gln Leu Pro Gly Glu
                325                 330                 335

Lys Lys Asn Gly Leu Phe Gly Asn Leu Ile Ala Leu Ser Leu Gly Leu
            340                 345                 350

Thr Pro Asn Phe Lys Ser Asn Phe Asp Leu Ala Glu Asp Ala Lys Leu
        355                 360                 365

Gln Leu Ser Lys Asp Thr Tyr Asp Asp Asp Leu Asp Asn Leu Leu Ala
    370                 375                 380

Gln Ile Gly Asp Gln Tyr Ala Asp Leu Phe Leu Ala Ala Lys Asn Leu
385                 390                 395                 400

Ser Asp Ala Ile Leu Leu Ser Asp Ile Leu Arg Val Asn Thr Glu Ile
                405                 410                 415

Thr Lys Ala Pro Leu Ser Ala Ser Met Ile Lys Arg Tyr Asp Glu His
            420                 425                 430

His Gln Asp Leu Thr Leu Leu Lys Ala Leu Val Arg Gln Gln Leu Pro
```

```
        435                 440                 445

Glu Lys Tyr Lys Glu Ile Phe Phe Asp Gln Ser Lys Asn Gly Tyr Ala
    450                 455                 460

Gly Tyr Ile Asp Gly Gly Ala Ser Gln Glu Glu Phe Tyr Lys Phe Ile
465                 470                 475                 480

Lys Pro Ile Leu Glu Lys Met Asp Gly Thr Glu Glu Leu Leu Val Lys
                485                 490                 495

Leu Asn Arg Glu Asp Leu Leu Arg Lys Gln Arg Thr Phe Asp Asn Gly
            500                 505                 510

Ser Ile Pro His Gln Ile His Leu Gly Glu Leu His Ala Ile Leu Arg
        515                 520                 525

Arg Gln Glu Asp Phe Tyr Pro Phe Leu Lys Asp Asn Arg Glu Lys Ile
    530                 535                 540

Glu Lys Ile Leu Thr Phe Arg Ile Pro Tyr Tyr Val Gly Pro Leu Ala
545                 550                 555                 560

Arg Gly Asn Ser Arg Phe Ala Trp Met Thr Arg Lys Ser Glu Glu Thr
                565                 570                 575

Ile Thr Pro Trp Asn Phe Glu Glu Val Val Asp Lys Gly Ala Ser Ala
            580                 585                 590

Gln Ser Phe Ile Glu Arg Met Thr Asn Phe Asp Lys Asn Leu Pro Asn
        595                 600                 605

Glu Lys Val Leu Pro Lys His Ser Leu Leu Tyr Glu Tyr Phe Thr Val
    610                 615                 620

Tyr Asn Glu Leu Thr Lys Val Lys Tyr Val Thr Glu Gly Met Arg Lys
625                 630                 635                 640
```

```
Pro Ala Phe Leu Ser Gly Glu Gln Lys Lys Ala Ile Val Asp Leu Leu
                645                 650                 655

Phe Lys Thr Asn Arg Lys Val Thr Val Lys Gln Leu Lys Glu Asp Tyr
            660                 665                 670

Phe Lys Lys Ile Glu Cys Phe Asp Ser Val Glu Ile Ser Gly Val Glu
        675                 680                 685

Asp Arg Phe Asn Ala Ser Leu Gly Thr Tyr His Asp Leu Leu Lys Ile
    690                 695                 700

Ile Lys Asp Lys Asp Phe Leu Asp Asn Glu Glu Asn Glu Asp Ile Leu
705                 710                 715                 720

Glu Asp Ile Val Leu Thr Leu Thr Leu Phe Glu Asp Arg Glu Met Ile
                725                 730                 735

Glu Glu Arg Leu Lys Thr Tyr Ala His Leu Phe Asp Asp Lys Val Met
            740                 745                 750

Lys Gln Leu Lys Arg Arg Arg Tyr Thr Gly Trp Gly Arg Leu Ser Arg
        755                 760                 765

Lys Leu Ile Asn Gly Ile Arg Asp Lys Gln Ser Gly Lys Thr Ile Leu
    770                 775                 780

Asp Phe Leu Lys Ser Asp Gly Phe Ala Asn Arg Asn Phe Met Gln Leu
785                 790                 795                 800

Ile His Asp Asp Ser Leu Thr Phe Lys Glu Asp Ile Gln Lys Ala Gln
                805                 810                 815

Val Ser Gly Gln Gly Asp Ser Leu His Glu His Ile Ala Asn Leu Ala
            820                 825                 830

Gly Ser Pro Ala Ile Lys Lys Gly Ile Leu Gln Thr Val Lys Ile Val
        835                 840                 845
```

```
Asp Glu Leu Val Lys Val Met Gly His Lys Pro Glu Asn Ile Val Ile
    850                 855                 860

Glu Met Ala Arg Glu Asn Gln Thr Thr Gln Lys Gly Gln Lys Asn Ser
865                 870                 875                 880

Arg Glu Arg Met Lys Arg Ile Glu Glu Gly Ile Lys Glu Leu Gly Ser
                885                 890                 895

Gln Ile Leu Lys Glu His Pro Val Glu Asn Thr Gln Leu Gln Asn Glu
            900                 905                 910

Lys Leu Tyr Leu Tyr Tyr Leu Gln Asn Gly Arg Asp Met Tyr Val Asp
        915                 920                 925

Gln Glu Leu Asp Ile Asn Arg Leu Ser Asp Tyr Asp Val Asp His Ile
    930                 935                 940

Val Pro Gln Ser Phe Ile Lys Asp Asp Ser Ile Asp Asn Lys Val Leu
945                 950                 955                 960

Thr Arg Ser Asp Lys Asn Arg Gly Lys Ser Asp Asn Val Pro Ser Glu
                965                 970                 975

Glu Val Val Lys Lys Met Lys Asn Tyr Trp Arg Gln Leu Leu Asn Ala
            980                 985                 990

Lys Leu Ile Thr Gln Arg Lys Phe  Asp Asn Leu Thr Lys  Ala Glu Arg
        995                 1000                1005

Gly Gly  Leu Ser Glu Leu Asp  Lys Ala Gly Phe Ile  Lys Arg Gln
    1010                1015                1020

Leu Val  Glu Thr Arg Gln Ile  Thr Lys His Val Ala  Gln Ile Leu
    1025                1030                1035

Asp Ser  Arg Met Asn Thr Lys  Tyr Asp Glu Asn Asp  Lys Leu Ile
    1040                1045                1050
```

```
Arg Glu  Val Lys Val Ile Thr  Leu Lys Ser Lys Leu  Val Ser Asp
    1055                1060                1065

Phe Arg  Lys Asp Phe Gln Phe  Tyr Lys Val Arg Glu  Ile Asn Asn
    1070                1075                1080

Tyr His  His Ala His Asp Ala  Tyr Leu Asn Ala Val  Val Gly Thr
    1085                1090                1095

Ala Leu  Ile Lys Lys Tyr Pro  Lys Leu Glu Ser Glu  Phe Val Tyr
    1100                1105                1110

Gly Asp  Tyr Lys Val Tyr Asp  Val Arg Lys Met Ile  Ala Lys Ser
    1115                1120                1125

Glu Gln  Glu Ile Gly Lys Ala  Thr Ala Lys Tyr Phe  Phe Tyr Ser
    1130                1135                1140

Asn Ile  Met Asn Phe Phe Lys  Thr Glu Ile Thr Leu  Ala Asn Gly
    1145                1150                1155

Glu Ile  Arg Lys Arg Pro Leu  Ile Glu Thr Asn Gly  Glu Thr Gly
    1160                1165                1170

Glu Ile  Val Trp Asp Lys Gly  Arg Asp Phe Ala Thr  Val Arg Lys
    1175                1180                1185

Val Leu  Ser Met Pro Gln Val  Asn Ile Val Lys Lys  Thr Glu Val
    1190                1195                1200

Gln Thr  Gly Gly Phe Ser Lys  Glu Ser Ile Leu Pro  Lys Arg Asn
    1205                1210                1215

Ser Asp  Lys Leu Ile Ala Arg  Lys Lys Asp Trp Asp  Pro Lys Lys
    1220                1225                1230

Tyr Gly  Gly Phe Asp Ser Pro  Thr Val Ala Tyr Ser  Val Leu Val
```

```
    1235                1240                1245

Val Ala  Lys Val Glu Lys Gly  Lys Ser Lys Lys Leu  Lys Ser Val
    1250                1255                1260

Lys Glu  Leu Leu Gly Ile Thr  Ile Met Glu Arg Ser  Ser Phe Glu
    1265                1270                1275

Lys Asn  Pro Ile Asp Phe Leu  Glu Ala Lys Gly Tyr  Lys Glu Val
    1280                1285                1290

Lys Lys  Asp Leu Ile Ile Lys  Leu Pro Lys Tyr Ser  Leu Phe Glu
    1295                1300                1305

Leu Glu  Asn Gly Arg Lys Arg  Met Leu Ala Ser Ala  Gly Glu Leu
    1310                1315                1320

Gln Lys  Gly Asn Glu Leu Ala  Leu Pro Ser Lys Tyr  Val Asn Phe
    1325                1330                1335

Leu Tyr  Leu Ala Ser His Tyr  Glu Lys Leu Lys Gly  Ser Pro Glu
    1340                1345                1350

Asp Asn  Glu Gln Lys Gln Leu  Phe Val Glu Gln His  Lys His Tyr
    1355                1360                1365

Leu Asp  Glu Ile Ile Glu Gln  Ile Ser Glu Phe Ser  Lys Arg Val
    1370                1375                1380

Ile Leu  Ala Asp Ala Asn Leu  Asp Lys Val Leu Ser  Ala Tyr Asn
    1385                1390                1395

Lys His  Arg Asp Lys Pro Ile  Arg Glu Gln Ala Glu  Asn Ile Ile
    1400                1405                1410

His Leu  Phe Thr Leu Thr Asn  Leu Gly Ala Pro Ala  Ala Phe Lys
    1415                1420                1425
```

```
Tyr Phe  Asp Thr Thr Ile Asp  Arg Lys Arg Tyr Thr  Ser Thr Lys
    1430                1435                1440

Glu Val  Leu Asp Ala Thr Leu  Ile His Gln Ser Ile  Thr Gly Leu
    1445                1450                1455

Tyr Glu  Thr Arg Ile Asp Leu  Ser Gln Leu Gly Gly  Asp Pro Lys
    1460                1465                1470

Lys Lys  Arg Lys Val Leu Glu  Gly Gly Gly Gly Ser  Asp Met Asp
    1475                1480                1485

Ser Ile  Gly Glu Ser Glu Val  Arg Ala Leu Tyr Lys  Ala Ile Leu
    1490                1495                1500

Lys Phe  Gly Asn Leu Lys Glu  Ile Leu Asp Glu Leu  Ile Ala Asp
    1505                1510                1515

Gly Thr  Leu Pro Val Lys Ser  Phe Glu Lys Tyr Gly  Glu Thr Tyr
    1520                1525                1530

Asp Glu  Met Met Glu Ala Ala  Lys Asp Cys Val His  Glu Glu Glu
    1535                1540                1545

Lys Asn  Arg Lys Glu Ile Leu  Glu Lys Leu Glu Lys  His Ala Thr
    1550                1555                1560

Ala Tyr  Arg Ala Lys Leu Lys  Ser Gly Glu Ile Lys  Ala Glu Asn
    1565                1570                1575

Gln Pro  Lys Asp Asn Pro Leu  Thr Arg Leu Ser Leu  Lys Lys Arg
    1580                1585                1590

Glu Lys  Lys Ala Val Leu Phe  Asn Phe Lys Gly Val  Lys Ser Leu
    1595                1600                1605

Asn Ala  Glu Ser Leu Leu Ser  Arg Val Glu Asp Leu  Lys Tyr Leu
    1610                1615                1620
```

```
Lys Asn  Leu Ile Asn Ser Asn  Tyr Lys Asp Asp Pro  Leu Lys Phe
    1625                1630                1635


Ser Leu  Gly Asn Asn Thr Pro  Lys Pro Val Gln Asn  Trp Ser Ser
    1640                1645                1650


Asn Trp  Thr Lys Glu Glu Asp  Glu Lys Leu Leu Ile  Gly Val Phe
    1655                1660                1665


Lys Tyr  Gly Tyr Gly Ser Trp  Thr Gln Ile Arg Asp  Asp Pro Phe
    1670                1675                1680


Leu Gly  Ile Thr Asp Lys Ile  Phe Leu Asn Glu Val  His Asn Pro
    1685                1690                1695


Val Ala  Lys Lys Ser Ala Ser  Ser Ser Asp Thr Thr  Pro Thr Pro
    1700                1705                1710


Ser Lys  Lys Gly Lys Gly Ile  Thr Gly Ser Ser Lys  Lys Val Pro
    1715                1720                1725


Gly Ala  Ile His Leu Gly Arg  Arg Val Asp Tyr Leu  Leu Ser Phe
    1730                1735                1740


Leu Arg  Gly Gly Leu Asn Thr  Lys Ser Pro Ser
    1745                1750


<210>  72
<211>  1331
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  SYNTHESIZED

<400>  72

Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1               5                   10                  15
```

```
Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
            20                  25                  30

Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
        35                  40                  45

Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
    50                  55                  60

Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65                  70                  75                  80

Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
                85                  90                  95

Ala Lys Ser Asp Thr Gly Ser Gly Met Thr Asn Gly Lys Ile Leu Gly
            100                 105                 110

Leu Asp Ile Gly Ile Ala Ser Val Gly Val Gly Ile Ile Glu Ala Lys
        115                 120                 125

Thr Gly Lys Val Val His Ala Asn Ser Arg Leu Phe Ser Ala Ala Asn
    130                 135                 140

Ala Glu Asn Asn Ala Glu Arg Arg Gly Phe Arg Gly Ser Arg Arg Leu
145                 150                 155                 160

Asn Arg Arg Lys Lys His Arg Val Lys Arg Val Arg Asp Leu Phe Glu
                165                 170                 175

Lys Tyr Gly Ile Val Thr Asp Phe Arg Asn Leu Asn Leu Asn Pro Tyr
            180                 185                 190

Glu Leu Arg Val Lys Gly Leu Thr Glu Gln Leu Lys Asn Glu Glu Leu
        195                 200                 205

Phe Ala Ala Leu Arg Thr Ile Ser Lys Arg Arg Gly Ile Ser Tyr Leu
    210                 215                 220
```

```
Asp Asp Ala Glu Asp Asp Ser Thr Gly Ser Thr Asp Tyr Ala Lys Ser
225                 230                 235                 240

Ile Asp Glu Asn Arg Arg Leu Leu Lys Asn Lys Thr Pro Gly Gln Ile
                245                 250                 255

Gln Leu Glu Arg Leu Glu Lys Tyr Gly Gln Leu Arg Gly Asn Phe Thr
            260                 265                 270

Val Tyr Asp Glu Asn Gly Glu Ala His Arg Leu Ile Asn Val Phe Ser
        275                 280                 285

Thr Ser Asp Tyr Glu Lys Glu Ala Arg Lys Ile Leu Glu Thr Gln Ala
    290                 295                 300

Asp Tyr Asn Lys Lys Ile Thr Ala Glu Phe Ile Asp Asp Tyr Val Glu
305                 310                 315                 320

Ile Leu Thr Gln Lys Arg Lys Tyr Tyr His Gly Pro Gly Asn Glu Lys
                325                 330                 335

Ser Arg Thr Asp Tyr Gly Arg Phe Arg Thr Asp Gly Thr Thr Leu Glu
            340                 345                 350

Asn Ile Phe Gly Ile Leu Ile Gly Lys Cys Asn Phe Tyr Pro Asp Glu
        355                 360                 365

Tyr Arg Ala Ser Lys Ala Ser Tyr Thr Ala Gln Glu Tyr Asn Phe Leu
    370                 375                 380

Asn Asp Leu Asn Asn Leu Lys Val Ser Thr Glu Thr Gly Lys Leu Ser
385                 390                 395                 400

Thr Glu Gln Lys Glu Ser Leu Val Glu Phe Ala Lys Asn Thr Ala Thr
                405                 410                 415

Leu Gly Pro Ala Lys Leu Leu Lys Glu Ile Ala Lys Ile Leu Asp Cys
            420                 425                 430
```

```
Lys Val Asp Glu Ile Lys Gly Tyr Arg Glu Asp Asp Lys Gly Lys Pro
        435                 440                 445

Asp Leu His Thr Phe Glu Pro Tyr Arg Lys Leu Lys Phe Asn Leu Glu
    450                 455                 460

Ser Ile Asn Ile Asp Asp Leu Ser Arg Glu Val Ile Asp Lys Leu Ala
465                 470                 475                 480

Asp Ile Leu Thr Leu Asn Thr Glu Arg Glu Gly Ile Glu Asp Ala Ile
                485                 490                 495

Lys Arg Asn Leu Pro Asn Gln Phe Thr Glu Glu Gln Ile Ser Glu Ile
            500                 505                 510

Ile Lys Val Arg Lys Ser Gln Ser Thr Ala Phe Asn Lys Gly Trp His
        515                 520                 525

Ser Phe Ser Ala Lys Leu Met Asn Glu Leu Ile Pro Glu Leu Tyr Ala
    530                 535                 540

Thr Ser Asp Glu Gln Met Thr Ile Leu Thr Arg Leu Glu Lys Phe Lys
545                 550                 555                 560

Val Asn Lys Lys Ser Ser Lys Asn Thr Lys Thr Ile Asp Glu Lys Glu
                565                 570                 575

Val Thr Asp Glu Ile Tyr Asn Pro Val Val Ala Lys Ser Val Arg Gln
            580                 585                 590

Thr Ile Lys Ile Ile Asn Ala Ala Val Lys Lys Tyr Gly Asp Phe Asp
        595                 600                 605

Lys Ile Val Ile Glu Met Pro Arg Asp Lys Asn Ala Asp Asp Glu Lys
    610                 615                 620

Lys Phe Ile Asp Lys Arg Asn Lys Glu Asn Lys Lys Glu Lys Asp Asp
```

625 630 635 640

Ala Leu Lys Arg Ala Ala Tyr Leu Tyr Asn Ser Ser Asp Lys Leu Pro
645 650 655

Asp Glu Val Phe His Gly Asn Lys Gln Leu Glu Thr Lys Ile Arg Leu
660 665 670

Trp Tyr Gln Gln Gly Glu Arg Cys Leu Tyr Ser Gly Lys Pro Ile Ser
675 680 685

Ile Gln Glu Leu Val His Asn Ser Asn Asn Phe Glu Ile Asp His Ile
690 695 700

Leu Pro Leu Ser Leu Ser Phe Asp Asp Ser Leu Ala Asn Lys Val Leu
705 710 715 720

Val Tyr Ala Trp Thr Asn Gln Glu Lys Gly Gln Lys Thr Pro Tyr Gln
725 730 735

Val Ile Asp Ser Met Asp Ala Ala Trp Ser Phe Arg Glu Met Lys Asp
740 745 750

Tyr Val Leu Lys Gln Lys Gly Leu Gly Lys Lys Lys Arg Asp Tyr Leu
755 760 765

Leu Thr Thr Glu Asn Ile Asp Lys Ile Glu Val Lys Lys Lys Phe Ile
770 775 780

Glu Arg Asn Leu Val Asp Thr Arg Tyr Ala Ser Arg Val Val Leu Asn
785 790 795 800

Ser Leu Gln Ser Ala Leu Arg Glu Leu Gly Lys Asp Thr Lys Val Ser
805 810 815

Val Val Arg Gly Gln Phe Thr Ser Gln Leu Arg Arg Lys Trp Lys Ile
820 825 830

```
Asp Lys Ser Arg Glu Thr Tyr His His His Ala Val Asp Ala Leu Ile
        835                 840                 845

Ile Ala Ala Ser Ser Gln Leu Lys Leu Trp Glu Lys Gln Asp Asn Pro
    850                 855                 860

Met Phe Val Asp Tyr Gly Lys Asn Gln Val Val Asp Lys Gln Thr Gly
865                 870                 875                 880

Glu Ile Leu Ser Val Ser Asp Asp Glu Tyr Lys Glu Leu Val Phe Gln
                885                 890                 895

Pro Pro Tyr Gln Gly Phe Val Asn Thr Ile Ser Ser Lys Gly Phe Glu
            900                 905                 910

Asp Glu Ile Leu Phe Ser Tyr Gln Val Asp Ser Lys Tyr Asn Arg Lys
        915                 920                 925

Val Ser Asp Ala Thr Ile Tyr Ser Thr Arg Lys Ala Lys Ile Gly Lys
    930                 935                 940

Asp Lys Lys Glu Glu Thr Tyr Val Leu Gly Lys Ile Lys Asp Ile Tyr
945                 950                 955                 960

Ser Gln Asn Gly Phe Asp Thr Phe Ile Lys Lys Tyr Asn Lys Asp Lys
                965                 970                 975

Thr Gln Phe Leu Met Tyr Gln Lys Asp Ser Leu Thr Trp Glu Asn Val
            980                 985                 990

Ile Glu Val Ile Leu Arg Asp Tyr  Pro Thr Thr Lys Lys  Ser Glu Asp
        995                 1000                1005

Gly Lys  Asn Asp Val Lys Cys  Asn Pro Phe Glu Glu  Tyr Arg Arg
    1010                1015                1020

Glu Asn  Gly Leu Ile Cys Lys  Tyr Ser Lys Lys Gly  Lys Gly Thr
    1025                1030                1035
```

```
Pro Ile  Lys Ser Leu Lys Tyr  Tyr Asp Lys Lys Leu  Gly Asn Cys
    1040                1045                1050

Ile Asp  Ile Thr Pro Glu Glu  Ser Arg Asn Lys Val  Ile Leu Gln
    1055                1060                1065

Ser Ile  Asn Pro Trp Arg Ala  Asp Val Tyr Phe Asn  Pro Glu Thr
    1070                1075                1080

Leu Lys  Tyr Glu Leu Met Gly  Leu Lys Tyr Ser Asp  Leu Ser Phe
    1085                1090                1095

Glu Lys  Gly Thr Gly Asn Tyr  His Ile Ser Gln Glu  Lys Tyr Asp
    1100                1105                1110

Ala Ile  Lys Glu Lys Glu Gly  Ile Gly Lys Lys Ser  Glu Phe Lys
    1115                1120                1125

Phe Thr  Leu Tyr Arg Asn Asp  Leu Ile Leu Ile Lys  Asp Ile Ala
    1130                1135                1140

Ser Gly  Glu Gln Glu Ile Tyr  Arg Phe Leu Ser Arg  Thr Met Pro
    1145                1150                1155

Asn Val  Asn His Tyr Val Glu  Leu Lys Pro Tyr Asp  Lys Glu Lys
    1160                1165                1170

Phe Asp  Asn Val Gln Glu Leu  Val Glu Ala Leu Gly  Glu Ala Asp
    1175                1180                1185

Lys Val  Gly Arg Cys Ile Lys  Gly Leu Asn Lys Pro  Asn Ile Ser
    1190                1195                1200

Ile Tyr  Lys Val Arg Thr Asp  Val Leu Gly Asn Lys  Tyr Phe Val
    1205                1210                1215

Lys Lys  Lys Gly Asp Lys Pro  Lys Leu Asp Phe Lys  Asn Asn Lys
    1220                1225                1230
```

```
Lys Pro  Lys Lys Lys Arg Lys  Val Leu Glu Gly Gly  Gly Gly Ser
    1235                1240                1245


Gly Lys  Gly Asp Pro Lys Lys  Pro Arg Gly Lys Met  Ser Ser Tyr
    1250                1255                1260


Ala Phe  Phe Val Gln Thr Cys  Arg Glu Glu His Lys  Lys Lys His
    1265                1270                1275


Pro Asp  Ala Ser Val Asn Phe  Ser Glu Phe Ser Lys  Lys Cys Ser
    1280                1285                1290


Glu Arg  Trp Lys Thr Met Ser  Ala Lys Glu Lys Gly  Lys Phe Glu
    1295                1300                1305


Asp Met  Ala Lys Ala Asp Lys  Ala Arg Tyr Glu Arg  Glu Met Lys
    1310                1315                1320


Thr Tyr  Ile Pro Pro Lys Gly  Glu
    1325                1330
```

<210> 73
<211> 1328
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 73

```
Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1               5                   10                  15


Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
            20                  25                  30


Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
        35                  40                  45
```

```
Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
    50                  55                  60

Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65                  70                  75                  80

Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
                85                  90                  95

Ala Lys Ser Asp Thr Gly Ser Gly Met Thr Asn Gly Lys Ile Leu Gly
            100                 105                 110

Leu Asp Ile Gly Ile Ala Ser Val Gly Val Gly Ile Ile Glu Ala Lys
        115                 120                 125

Thr Gly Lys Val Val His Ala Asn Ser Arg Leu Phe Ser Ala Ala Asn
    130                 135                 140

Ala Glu Asn Asn Ala Glu Arg Arg Gly Phe Arg Gly Ser Arg Arg Leu
145                 150                 155                 160

Asn Arg Arg Lys Lys His Arg Val Lys Arg Val Arg Asp Leu Phe Glu
                165                 170                 175

Lys Tyr Gly Ile Val Thr Asp Phe Arg Asn Leu Asn Leu Asn Pro Tyr
            180                 185                 190

Glu Leu Arg Val Lys Gly Leu Thr Glu Gln Leu Lys Asn Glu Glu Leu
        195                 200                 205

Phe Ala Ala Leu Arg Thr Ile Ser Lys Arg Arg Gly Ile Ser Tyr Leu
    210                 215                 220

Asp Asp Ala Glu Asp Asp Ser Thr Gly Ser Thr Asp Tyr Ala Lys Ser
225                 230                 235                 240

Ile Asp Glu Asn Arg Arg Leu Leu Lys Asn Lys Thr Pro Gly Gln Ile
                245                 250                 255
```

```
Gln Leu Glu Arg Leu Glu Lys Tyr Gly Gln Leu Arg Gly Asn Phe Thr
            260                 265                 270

Val Tyr Asp Glu Asn Gly Glu Ala His Arg Leu Ile Asn Val Phe Ser
        275                 280                 285

Thr Ser Asp Tyr Glu Lys Glu Ala Arg Lys Ile Leu Glu Thr Gln Ala
    290                 295                 300

Asp Tyr Asn Lys Lys Ile Thr Ala Glu Phe Ile Asp Asp Tyr Val Glu
305                 310                 315                 320

Ile Leu Thr Gln Lys Arg Lys Tyr Tyr His Gly Pro Gly Asn Glu Lys
                325                 330                 335

Ser Arg Thr Asp Tyr Gly Arg Phe Arg Thr Asp Gly Thr Thr Leu Glu
            340                 345                 350

Asn Ile Phe Gly Ile Leu Ile Gly Lys Cys Asn Phe Tyr Pro Asp Glu
        355                 360                 365

Tyr Arg Ala Ser Lys Ala Ser Tyr Thr Ala Gln Glu Tyr Asn Phe Leu
    370                 375                 380

Asn Asp Leu Asn Asn Leu Lys Val Ser Thr Glu Thr Gly Lys Leu Ser
385                 390                 395                 400

Thr Glu Gln Lys Glu Ser Leu Val Glu Phe Ala Lys Asn Thr Ala Thr
                405                 410                 415

Leu Gly Pro Ala Lys Leu Leu Lys Glu Ile Ala Lys Ile Leu Asp Cys
            420                 425                 430

Lys Val Asp Glu Ile Lys Gly Tyr Arg Glu Asp Asp Lys Gly Lys Pro
        435                 440                 445

Asp Leu His Thr Phe Glu Pro Tyr Arg Lys Leu Lys Phe Asn Leu Glu
```

```
    450                 455                 460

Ser Ile Asn Ile Asp Asp Leu Ser Arg Glu Val Ile Asp Lys Leu Ala
465                 470                 475                 480

Asp Ile Leu Thr Leu Asn Thr Glu Arg Glu Gly Ile Glu Asp Ala Ile
                485                 490                 495

Lys Arg Asn Leu Pro Asn Gln Phe Thr Glu Glu Gln Ile Ser Glu Ile
            500                 505                 510

Ile Lys Val Arg Lys Ser Gln Ser Thr Ala Phe Asn Lys Gly Trp His
        515                 520                 525

Ser Phe Ser Ala Lys Leu Met Asn Glu Leu Ile Pro Glu Leu Tyr Ala
    530                 535                 540

Thr Ser Asp Glu Gln Met Thr Ile Leu Thr Arg Leu Glu Lys Phe Lys
545                 550                 555                 560

Val Asn Lys Lys Ser Ser Lys Asn Thr Lys Thr Ile Asp Glu Lys Glu
                565                 570                 575

Val Thr Asp Glu Ile Tyr Asn Pro Val Val Ala Lys Ser Val Arg Gln
            580                 585                 590

Thr Ile Lys Ile Ile Asn Ala Ala Val Lys Lys Tyr Gly Asp Phe Asp
        595                 600                 605

Lys Ile Val Ile Glu Met Pro Arg Asp Lys Asn Ala Asp Asp Glu Lys
    610                 615                 620

Lys Phe Ile Asp Lys Arg Asn Lys Glu Asn Lys Lys Glu Lys Asp Asp
625                 630                 635                 640

Ala Leu Lys Arg Ala Ala Tyr Leu Tyr Asn Ser Ser Asp Lys Leu Pro
                645                 650                 655
```

```
Asp Glu Val Phe His Gly Asn Lys Gln Leu Glu Thr Lys Ile Arg Leu
            660                 665                 670

Trp Tyr Gln Gln Gly Glu Arg Cys Leu Tyr Ser Gly Lys Pro Ile Ser
        675                 680                 685

Ile Gln Glu Leu Val His Asn Ser Asn Asn Phe Glu Ile Asp His Ile
    690                 695                 700

Leu Pro Leu Ser Leu Ser Phe Asp Asp Ser Leu Ala Asn Lys Val Leu
705                 710                 715                 720

Val Tyr Ala Trp Thr Asn Gln Glu Lys Gly Gln Lys Thr Pro Tyr Gln
                725                 730                 735

Val Ile Asp Ser Met Asp Ala Ala Trp Ser Phe Arg Glu Met Lys Asp
            740                 745                 750

Tyr Val Leu Lys Gln Lys Gly Leu Gly Lys Lys Lys Arg Asp Tyr Leu
        755                 760                 765

Leu Thr Thr Glu Asn Ile Asp Lys Ile Glu Val Lys Lys Lys Phe Ile
    770                 775                 780

Glu Arg Asn Leu Val Asp Thr Arg Tyr Ala Ser Arg Val Val Leu Asn
785                 790                 795                 800

Ser Leu Gln Ser Ala Leu Arg Glu Leu Gly Lys Asp Thr Lys Val Ser
                805                 810                 815

Val Val Arg Gly Gln Phe Thr Ser Gln Leu Arg Arg Lys Trp Lys Ile
            820                 825                 830

Asp Lys Ser Arg Glu Thr Tyr His His His Ala Val Asp Ala Leu Ile
        835                 840                 845

Ile Ala Ala Ser Ser Gln Leu Lys Leu Trp Glu Lys Gln Asp Asn Pro
    850                 855                 860
```

```
Met Phe Val Asp Tyr Gly Lys Asn Gln Val Val Asp Lys Gln Thr Gly
865                 870                 875                 880


Glu Ile Leu Ser Val Ser Asp Asp Glu Tyr Lys Glu Leu Val Phe Gln
                885                 890                 895


Pro Pro Tyr Gln Gly Phe Val Asn Thr Ile Ser Ser Lys Gly Phe Glu
            900                 905                 910


Asp Glu Ile Leu Phe Ser Tyr Gln Val Asp Ser Lys Tyr Asn Arg Lys
        915                 920                 925


Val Ser Asp Ala Thr Ile Tyr Ser Thr Arg Lys Ala Lys Ile Gly Lys
    930                 935                 940


Asp Lys Lys Glu Glu Thr Tyr Val Leu Gly Lys Ile Lys Asp Ile Tyr
945                 950                 955                 960


Ser Gln Asn Gly Phe Asp Thr Phe Ile Lys Lys Tyr Asn Lys Asp Lys
                965                 970                 975


Thr Gln Phe Leu Met Tyr Gln Lys Asp Ser Leu Thr Trp Glu Asn Val
            980                 985                 990


Ile Glu Val Ile Leu Arg Asp Tyr  Pro Thr Thr Lys Lys  Ser Glu Asp
        995                 1000                1005


Gly Lys  Asn Asp Val Lys Cys  Asn Pro Phe Glu Glu  Tyr Arg Arg
    1010                1015                1020


Glu Asn  Gly Leu Ile Cys Lys  Tyr Ser Lys Lys Gly  Lys Gly Thr
    1025                1030                1035


Pro Ile  Lys Ser Leu Lys Tyr  Tyr Asp Lys Lys Leu  Gly Asn Cys
    1040                1045                1050


Ile Asp  Ile Thr Pro Glu Glu  Ser Arg Asn Lys Val  Ile Leu Gln
    1055                1060                1065
```

```
Ser Ile  Asn Pro Trp Arg Ala  Asp Val Tyr Phe Asn  Pro Glu Thr
    1070                1075                1080

Leu Lys  Tyr Glu Leu Met Gly  Leu Lys Tyr Ser Asp  Leu Ser Phe
    1085                1090                1095

Glu Lys  Gly Thr Gly Asn Tyr  His Ile Ser Gln Glu  Lys Tyr Asp
    1100                1105                1110

Ala Ile  Lys Glu Lys Glu Gly  Ile Gly Lys Lys Ser  Glu Phe Lys
    1115                1120                1125

Phe Thr  Leu Tyr Arg Asn Asp  Leu Ile Leu Ile Lys  Asp Ile Ala
    1130                1135                1140

Ser Gly  Glu Gln Glu Ile Tyr  Arg Phe Leu Ser Arg  Thr Met Pro
    1145                1150                1155

Asn Val  Asn His Tyr Val Glu  Leu Lys Pro Tyr Asp  Lys Glu Lys
    1160                1165                1170

Phe Asp  Asn Val Gln Glu Leu  Val Glu Ala Leu Gly  Glu Ala Asp
    1175                1180                1185

Lys Val  Gly Arg Cys Ile Lys  Gly Leu Asn Lys Pro  Asn Ile Ser
    1190                1195                1200

Ile Tyr  Lys Val Arg Thr Asp  Val Leu Gly Asn Lys  Tyr Phe Val
    1205                1210                1215

Lys Lys  Lys Gly Asp Lys Pro  Lys Leu Asp Phe Lys  Asn Asn Lys
    1220                1225                1230

Lys Pro  Lys Lys Lys Arg Lys  Val Leu Glu Gly Gly  Gly Gly Ser
    1235                1240                1245

Ser Thr  Asp His Pro Lys Tyr  Ser Asp Met Ile Val  Ala Ala Ile
```

```
    1250                1255                1260

Gln Ala  Glu Lys Asn Arg Ala  Gly Ser Ser Arg Gln  Ser Ile Gln
    1265                1270                1275

Lys Tyr  Ile Lys Ser His Tyr  Lys Val Gly Glu Asn  Ala Asp Ser
    1280                1285                1290

Gln Ile  Lys Leu Ser Ile Lys  Arg Leu Val Thr Thr  Gly Val Leu
    1295                1300                1305

Lys Gln  Thr Lys Gly Val Gly  Ala Ser Gly Ser Phe  Arg Leu Ala
    1310                1315                1320

Lys Ser  Asp Glu Pro
    1325
```

<210> 74
<211> 1517
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 74

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Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1               5                   10                  15

Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
            20                  25                  30

Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
        35                  40                  45

Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
    50                  55                  60

Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65                  70                  75                  80
```

```
Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
                85                  90                  95

Ala Lys Ser Asp Thr Gly Ser Gly Met Thr Asn Gly Lys Ile Leu Gly
            100                 105                 110

Leu Asp Ile Gly Ile Ala Ser Val Gly Val Gly Ile Ile Glu Ala Lys
        115                 120                 125

Thr Gly Lys Val Val His Ala Asn Ser Arg Leu Phe Ser Ala Ala Asn
    130                 135                 140

Ala Glu Asn Asn Ala Glu Arg Arg Gly Phe Arg Gly Ser Arg Arg Leu
145                 150                 155                 160

Asn Arg Arg Lys Lys His Arg Val Lys Arg Val Arg Asp Leu Phe Glu
                165                 170                 175

Lys Tyr Gly Ile Val Thr Asp Phe Arg Asn Leu Asn Leu Asn Pro Tyr
            180                 185                 190

Glu Leu Arg Val Lys Gly Leu Thr Glu Gln Leu Lys Asn Glu Glu Leu
        195                 200                 205

Phe Ala Ala Leu Arg Thr Ile Ser Lys Arg Arg Gly Ile Ser Tyr Leu
    210                 215                 220

Asp Asp Ala Glu Asp Asp Ser Thr Gly Ser Thr Asp Tyr Ala Lys Ser
225                 230                 235                 240

Ile Asp Glu Asn Arg Arg Leu Leu Lys Asn Lys Thr Pro Gly Gln Ile
                245                 250                 255

Gln Leu Glu Arg Leu Glu Lys Tyr Gly Gln Leu Arg Gly Asn Phe Thr
            260                 265                 270

Val Tyr Asp Glu Asn Gly Glu Ala His Arg Leu Ile Asn Val Phe Ser
```

```
        275                 280                 285

Thr Ser Asp Tyr Glu Lys Glu Ala Arg Lys Ile Leu Glu Thr Gln Ala
    290                 295                 300

Asp Tyr Asn Lys Lys Ile Thr Ala Glu Phe Ile Asp Asp Tyr Val Glu
305                 310                 315                 320

Ile Leu Thr Gln Lys Arg Lys Tyr Tyr His Gly Pro Gly Asn Glu Lys
                325                 330                 335

Ser Arg Thr Asp Tyr Gly Arg Phe Arg Thr Asp Gly Thr Thr Leu Glu
            340                 345                 350

Asn Ile Phe Gly Ile Leu Ile Gly Lys Cys Asn Phe Tyr Pro Asp Glu
        355                 360                 365

Tyr Arg Ala Ser Lys Ala Ser Tyr Thr Ala Gln Glu Tyr Asn Phe Leu
    370                 375                 380

Asn Asp Leu Asn Asn Leu Lys Val Ser Thr Glu Thr Gly Lys Leu Ser
385                 390                 395                 400

Thr Glu Gln Lys Glu Ser Leu Val Glu Phe Ala Lys Asn Thr Ala Thr
                405                 410                 415

Leu Gly Pro Ala Lys Leu Leu Lys Glu Ile Ala Lys Ile Leu Asp Cys
            420                 425                 430

Lys Val Asp Glu Ile Lys Gly Tyr Arg Glu Asp Asp Lys Gly Lys Pro
        435                 440                 445

Asp Leu His Thr Phe Glu Pro Tyr Arg Lys Leu Lys Phe Asn Leu Glu
    450                 455                 460

Ser Ile Asn Ile Asp Asp Leu Ser Arg Glu Val Ile Asp Lys Leu Ala
465                 470                 475                 480
```

```
Asp Ile Leu Thr Leu Asn Thr Glu Arg Glu Gly Ile Glu Asp Ala Ile
                485                 490                 495

Lys Arg Asn Leu Pro Asn Gln Phe Thr Glu Glu Gln Ile Ser Glu Ile
            500                 505                 510

Ile Lys Val Arg Lys Ser Gln Ser Thr Ala Phe Asn Lys Gly Trp His
        515                 520                 525

Ser Phe Ser Ala Lys Leu Met Asn Glu Leu Ile Pro Glu Leu Tyr Ala
    530                 535                 540

Thr Ser Asp Glu Gln Met Thr Ile Leu Thr Arg Leu Glu Lys Phe Lys
545                 550                 555                 560

Val Asn Lys Lys Ser Ser Lys Asn Thr Lys Thr Ile Asp Glu Lys Glu
                565                 570                 575

Val Thr Asp Glu Ile Tyr Asn Pro Val Val Ala Lys Ser Val Arg Gln
            580                 585                 590

Thr Ile Lys Ile Ile Asn Ala Ala Val Lys Lys Tyr Gly Asp Phe Asp
        595                 600                 605

Lys Ile Val Ile Glu Met Pro Arg Asp Lys Asn Ala Asp Asp Glu Lys
    610                 615                 620

Lys Phe Ile Asp Lys Arg Asn Lys Glu Asn Lys Lys Glu Lys Asp Asp
625                 630                 635                 640

Ala Leu Lys Arg Ala Ala Tyr Leu Tyr Asn Ser Ser Asp Lys Leu Pro
                645                 650                 655

Asp Glu Val Phe His Gly Asn Lys Gln Leu Glu Thr Lys Ile Arg Leu
            660                 665                 670

Trp Tyr Gln Gln Gly Glu Arg Cys Leu Tyr Ser Gly Lys Pro Ile Ser
        675                 680                 685
```

```
Ile Gln Glu Leu Val His Asn Ser Asn Asn Phe Glu Ile Asp His Ile
    690                 695                 700

Leu Pro Leu Ser Leu Ser Phe Asp Asp Ser Leu Ala Asn Lys Val Leu
705                 710                 715                 720

Val Tyr Ala Trp Thr Asn Gln Glu Lys Gly Gln Lys Thr Pro Tyr Gln
                725                 730                 735

Val Ile Asp Ser Met Asp Ala Ala Trp Ser Phe Arg Glu Met Lys Asp
            740                 745                 750

Tyr Val Leu Lys Gln Lys Gly Leu Gly Lys Lys Lys Arg Asp Tyr Leu
        755                 760                 765

Leu Thr Thr Glu Asn Ile Asp Lys Ile Glu Val Lys Lys Lys Phe Ile
    770                 775                 780

Glu Arg Asn Leu Val Asp Thr Arg Tyr Ala Ser Arg Val Val Leu Asn
785                 790                 795                 800

Ser Leu Gln Ser Ala Leu Arg Glu Leu Gly Lys Asp Thr Lys Val Ser
                805                 810                 815

Val Val Arg Gly Gln Phe Thr Ser Gln Leu Arg Arg Lys Trp Lys Ile
            820                 825                 830

Asp Lys Ser Arg Glu Thr Tyr His His His Ala Val Asp Ala Leu Ile
        835                 840                 845

Ile Ala Ala Ser Ser Gln Leu Lys Leu Trp Glu Lys Gln Asp Asn Pro
    850                 855                 860

Met Phe Val Asp Tyr Gly Lys Asn Gln Val Val Asp Lys Gln Thr Gly
865                 870                 875                 880

Glu Ile Leu Ser Val Ser Asp Asp Glu Tyr Lys Glu Leu Val Phe Gln
                885                 890                 895
```

```
Pro Pro Tyr Gln Gly Phe Val Asn Thr Ile Ser Ser Lys Gly Phe Glu
            900                 905                 910

Asp Glu Ile Leu Phe Ser Tyr Gln Val Asp Ser Lys Tyr Asn Arg Lys
        915                 920                 925

Val Ser Asp Ala Thr Ile Tyr Ser Thr Arg Lys Ala Lys Ile Gly Lys
    930                 935                 940

Asp Lys Lys Glu Glu Thr Tyr Val Leu Gly Lys Ile Lys Asp Ile Tyr
945                 950                 955                 960

Ser Gln Asn Gly Phe Asp Thr Phe Ile Lys Lys Tyr Asn Lys Asp Lys
                965                 970                 975

Thr Gln Phe Leu Met Tyr Gln Lys Asp Ser Leu Thr Trp Glu Asn Val
            980                 985                 990

Ile Glu Val Ile Leu Arg Asp Tyr  Pro Thr Thr Lys Lys  Ser Glu Asp
        995                 1000                1005

Gly Lys  Asn Asp Val Lys Cys  Asn Pro Phe Glu Glu  Tyr Arg Arg
    1010                1015                1020

Glu Asn  Gly Leu Ile Cys Lys  Tyr Ser Lys Lys Gly  Lys Gly Thr
    1025                1030                1035

Pro Ile  Lys Ser Leu Lys Tyr  Tyr Asp Lys Lys Leu  Gly Asn Cys
    1040                1045                1050

Ile Asp  Ile Thr Pro Glu Glu  Ser Arg Asn Lys Val  Ile Leu Gln
    1055                1060                1065

Ser Ile  Asn Pro Trp Arg Ala  Asp Val Tyr Phe Asn  Pro Glu Thr
    1070                1075                1080

Leu Lys  Tyr Glu Leu Met Gly  Leu Lys Tyr Ser Asp  Leu Ser Phe
```

```
    1085                1090                1095

Glu Lys  Gly Thr Gly Asn Tyr  His Ile Ser Gln Glu  Lys Tyr Asp
    1100                1105                1110

Ala Ile  Lys Glu Lys Glu Gly  Ile Gly Lys Lys Ser  Glu Phe Lys
    1115                1120                1125

Phe Thr  Leu Tyr Arg Asn Asp  Leu Ile Leu Ile Lys  Asp Ile Ala
    1130                1135                1140

Ser Gly  Glu Gln Glu Ile Tyr  Arg Phe Leu Ser Arg  Thr Met Pro
    1145                1150                1155

Asn Val  Asn His Tyr Val Glu  Leu Lys Pro Tyr Asp  Lys Glu Lys
    1160                1165                1170

Phe Asp  Asn Val Gln Glu Leu  Val Glu Ala Leu Gly  Glu Ala Asp
    1175                1180                1185

Lys Val  Gly Arg Cys Ile Lys  Gly Leu Asn Lys Pro  Asn Ile Ser
    1190                1195                1200

Ile Tyr  Lys Val Arg Thr Asp  Val Leu Gly Asn Lys  Tyr Phe Val
    1205                1210                1215

Lys Lys  Lys Gly Asp Lys Pro  Lys Leu Asp Phe Lys  Asn Asn Lys
    1220                1225                1230

Lys Pro  Lys Lys Lys Arg Lys  Val Leu Glu Gly Gly  Gly Gly Ser
    1235                1240                1245

Asp Met  Asp Ser Ile Gly Glu  Ser Glu Val Arg Ala  Leu Tyr Lys
    1250                1255                1260

Ala Ile  Leu Lys Phe Gly Asn  Leu Lys Glu Ile Leu  Asp Glu Leu
    1265                1270                1275
```

```
Ile Ala  Asp Gly Thr Leu Pro  Val Lys Ser Phe Glu  Lys Tyr Gly
    1280                1285                1290

Glu Thr  Tyr Asp Glu Met Met  Glu Ala Ala Lys Asp  Cys Val His
    1295                1300                1305

Glu Glu  Glu Lys Asn Arg Lys  Glu Ile Leu Glu Lys  Leu Glu Lys
    1310                1315                1320

His Ala  Thr Ala Tyr Arg Ala  Lys Leu Lys Ser Gly  Glu Ile Lys
    1325                1330                1335

Ala Glu  Asn Gln Pro Lys Asp  Asn Pro Leu Thr Arg  Leu Ser Leu
    1340                1345                1350

Lys Lys  Arg Glu Lys Lys Ala  Val Leu Phe Asn Phe  Lys Gly Val
    1355                1360                1365

Lys Ser  Leu Asn Ala Glu Ser  Leu Leu Ser Arg Val  Glu Asp Leu
    1370                1375                1380

Lys Tyr  Leu Lys Asn Leu Ile  Asn Ser Asn Tyr Lys  Asp Asp Pro
    1385                1390                1395

Leu Lys  Phe Ser Leu Gly Asn  Asn Thr Pro Lys Pro  Val Gln Asn
    1400                1405                1410

Trp Ser  Ser Asn Trp Thr Lys  Glu Glu Asp Glu Lys  Leu Leu Ile
    1415                1420                1425

Gly Val  Phe Lys Tyr Gly Tyr  Gly Ser Trp Thr Gln  Ile Arg Asp
    1430                1435                1440

Asp Pro  Phe Leu Gly Ile Thr  Asp Lys Ile Phe Leu  Asn Glu Val
    1445                1450                1455

His Asn  Pro Val Ala Lys Lys  Ser Ala Ser Ser Ser  Asp Thr Thr
    1460                1465                1470
```

Pro Thr Pro Ser Lys Lys Gly Lys Gly Ile Thr Gly Ser Ser Lys
    1475   1480   1485

Lys Val Pro Gly Ala Ile His Leu Gly Arg Arg Val Asp Tyr Leu
    1490   1495   1500

Leu Ser Phe Leu Arg Gly Gly Leu Asn Thr Lys Ser Pro Ser
    1505   1510   1515

<210> 75
<211> 1501
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 75

Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1   5   10   15

Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
            20   25   30

Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
        35   40   45

Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
    50   55   60

Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65   70   75   80

Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
                85   90   95

Ala Lys Ser Asp Thr Gly Ser Gly Met Ser Ile Tyr Gln Glu Phe Val
            100   105   110

```
Asn Lys Tyr Ser Leu Ser Lys Thr Leu Arg Phe Glu Leu Ile Pro Gln
        115                 120                 125

Gly Lys Thr Leu Glu Asn Ile Lys Ala Arg Gly Leu Ile Leu Asp Asp
    130                 135                 140

Glu Lys Arg Ala Lys Asp Tyr Lys Lys Ala Lys Gln Ile Ile Asp Lys
145                 150                 155                 160

Tyr His Gln Phe Phe Ile Glu Glu Ile Leu Ser Ser Val Cys Ile Ser
                165                 170                 175

Glu Asp Leu Leu Gln Asn Tyr Ser Asp Val Tyr Phe Lys Leu Lys Lys
            180                 185                 190

Ser Asp Asp Asp Asn Leu Gln Lys Asp Phe Lys Ser Ala Lys Asp Thr
        195                 200                 205

Ile Lys Lys Gln Ile Ser Glu Tyr Ile Lys Asp Ser Glu Lys Phe Lys
    210                 215                 220

Asn Leu Phe Asn Gln Asn Leu Ile Asp Ala Lys Lys Gly Gln Glu Ser
225                 230                 235                 240

Asp Leu Ile Leu Trp Leu Lys Gln Ser Lys Asp Asn Gly Ile Glu Leu
                245                 250                 255

Phe Lys Ala Asn Ser Asp Ile Thr Asp Ile Asp Glu Ala Leu Glu Ile
            260                 265                 270

Ile Lys Ser Phe Lys Gly Trp Thr Thr Tyr Phe Lys Gly Phe His Glu
        275                 280                 285

Asn Arg Lys Asn Val Tyr Ser Ser Asn Asp Ile Pro Thr Ser Ile Ile
    290                 295                 300

Tyr Arg Ile Val Asp Asp Asn Leu Pro Lys Phe Leu Glu Asn Lys Ala
305                 310                 315                 320
```

```
Lys Tyr Glu Ser Leu Lys Asp Lys Ala Pro Glu Ala Ile Asn Tyr Glu
                325                 330                 335

Gln Ile Lys Lys Asp Leu Ala Glu Glu Leu Thr Phe Asp Ile Asp Tyr
            340                 345                 350

Lys Thr Ser Glu Val Asn Gln Arg Val Phe Ser Leu Asp Glu Val Phe
        355                 360                 365

Glu Ile Ala Asn Phe Asn Asn Tyr Leu Asn Gln Ser Gly Ile Thr Lys
    370                 375                 380

Phe Asn Thr Ile Ile Gly Gly Lys Phe Val Asn Gly Glu Asn Thr Lys
385                 390                 395                 400

Arg Lys Gly Ile Asn Glu Tyr Ile Asn Leu Tyr Ser Gln Gln Ile Asn
                405                 410                 415

Asp Lys Thr Leu Lys Lys Tyr Lys Met Ser Val Leu Phe Lys Gln Ile
            420                 425                 430

Leu Ser Asp Thr Glu Ser Lys Ser Phe Val Ile Asp Lys Leu Glu Asp
        435                 440                 445

Asp Ser Asp Val Val Thr Thr Met Gln Ser Phe Tyr Glu Gln Ile Ala
    450                 455                 460

Ala Phe Lys Thr Val Glu Glu Lys Ser Ile Lys Glu Thr Leu Ser Leu
465                 470                 475                 480

Leu Phe Asp Asp Leu Lys Ala Gln Lys Leu Asp Leu Ser Lys Ile Tyr
                485                 490                 495

Phe Lys Asn Asp Lys Ser Leu Thr Asp Leu Ser Gln Gln Val Phe Asp
            500                 505                 510

Asp Tyr Ser Val Ile Gly Thr Ala Val Leu Glu Tyr Ile Thr Gln Gln
        515                 520                 525
```

```
Ile Ala Pro Lys Asn Leu Asp Asn Pro Ser Lys Lys Glu Gln Glu Leu
    530                 535                 540

Ile Ala Lys Lys Thr Glu Lys Ala Lys Tyr Leu Ser Leu Glu Thr Ile
545                 550                 555                 560

Lys Leu Ala Leu Glu Glu Phe Asn Lys His Arg Asp Ile Asp Lys Gln
                565                 570                 575

Cys Arg Phe Glu Glu Ile Leu Ala Asn Phe Ala Ala Ile Pro Met Ile
            580                 585                 590

Phe Asp Glu Ile Ala Gln Asn Lys Asp Asn Leu Ala Gln Ile Ser Ile
        595                 600                 605

Lys Tyr Gln Asn Gln Gly Lys Lys Asp Leu Leu Gln Ala Ser Ala Glu
    610                 615                 620

Asp Asp Val Lys Ala Ile Lys Asp Leu Leu Asp Gln Thr Asn Asn Leu
625                 630                 635                 640

Leu His Lys Leu Lys Ile Phe His Ile Ser Gln Ser Glu Asp Lys Ala
                645                 650                 655

Asn Ile Leu Asp Lys Asp Glu His Phe Tyr Leu Val Phe Glu Glu Cys
            660                 665                 670

Tyr Phe Glu Leu Ala Asn Ile Val Pro Leu Tyr Asn Lys Ile Arg Asn
        675                 680                 685

Tyr Ile Thr Gln Lys Pro Tyr Ser Asp Glu Lys Phe Lys Leu Asn Phe
    690                 695                 700

Glu Asn Ser Thr Leu Ala Asn Gly Trp Asp Lys Asn Lys Glu Pro Asp
705                 710                 715                 720

Asn Thr Ala Ile Leu Phe Ile Lys Asp Asp Lys Tyr Tyr Leu Gly Val
```

```
                725                 730                 735

Met Asn Lys Lys Asn Asn Lys Ile Phe Asp Asp Lys Ala Ile Lys Glu
            740                 745                 750

Asn Lys Gly Glu Gly Tyr Lys Lys Ile Val Tyr Lys Leu Leu Pro Gly
        755                 760                 765

Ala Asn Lys Met Leu Pro Lys Val Phe Phe Ser Ala Lys Ser Ile Lys
    770                 775                 780

Phe Tyr Asn Pro Ser Glu Asp Ile Leu Arg Ile Arg Asn His Ser Thr
785                 790                 795                 800

His Thr Lys Asn Gly Ser Pro Gln Lys Gly Tyr Glu Lys Phe Glu Phe
                805                 810                 815

Asn Ile Glu Asp Cys Arg Lys Phe Ile Asp Phe Tyr Lys Gln Ser Ile
            820                 825                 830

Ser Lys His Pro Glu Trp Lys Asp Phe Gly Phe Arg Phe Ser Asp Thr
        835                 840                 845

Gln Arg Tyr Asn Ser Ile Asp Glu Phe Tyr Arg Glu Val Glu Asn Gln
    850                 855                 860

Gly Tyr Lys Leu Thr Phe Glu Asn Ile Ser Glu Ser Tyr Ile Asp Ser
865                 870                 875                 880

Val Val Asn Gln Gly Lys Leu Tyr Leu Phe Gln Ile Tyr Asn Lys Asp
                885                 890                 895

Phe Ser Ala Tyr Ser Lys Gly Arg Pro Asn Leu His Thr Leu Tyr Trp
            900                 905                 910

Lys Ala Leu Phe Asp Glu Arg Asn Leu Gln Asp Val Val Tyr Lys Leu
        915                 920                 925
```

```
Asn Gly Glu Ala Glu Leu Phe Tyr Arg Lys Gln Ser Ile Pro Lys Lys
    930                 935                 940

Ile Thr His Pro Ala Lys Glu Ala Ile Ala Asn Lys Asn Lys Asp Asn
945                 950                 955                 960

Pro Lys Lys Glu Ser Val Phe Glu Tyr Asp Leu Ile Lys Asp Lys Arg
                965                 970                 975

Phe Thr Glu Asp Lys Phe Phe Phe His Cys Pro Ile Thr Ile Asn Phe
            980                 985                 990

Lys Ser Ser Gly Ala Asn Lys Phe  Asn Asp Glu Ile Asn  Leu Leu Leu
        995                 1000                1005

Lys Glu  Lys Ala Asn Asp Val  His Ile Leu Ser Ile  Asp Arg Gly
    1010                1015                1020

Glu Arg  His Leu Ala Tyr Tyr  Thr Leu Val Asp Gly  Lys Gly Asn
    1025                1030                1035

Ile Ile  Lys Gln Asp Thr Phe  Asn Ile Ile Gly Asn  Asp Arg Met
    1040                1045                1050

Lys Thr  Asn Tyr His Asp Lys  Leu Ala Ala Ile Glu  Lys Asp Arg
    1055                1060                1065

Asp Ser  Ala Arg Lys Asp Trp  Lys Lys Ile Asn Asn  Ile Lys Glu
    1070                1075                1080

Met Lys  Glu Gly Tyr Leu Ser  Gln Val Val His Glu  Ile Ala Lys
    1085                1090                1095

Leu Val  Ile Glu Tyr Asn Ala  Ile Val Val Phe Glu  Asp Leu Asn
    1100                1105                1110

Phe Gly  Phe Lys Arg Gly Arg  Phe Lys Val Glu Lys  Gln Val Tyr
    1115                1120                1125
```

```
Gln Lys  Leu Glu Lys Met Leu  Ile Glu Lys Leu Asn  Tyr Leu Val
    1130                1135                1140

Phe Lys  Asp Asn Glu Phe Asp  Lys Thr Gly Gly Val  Leu Arg Ala
    1145                1150                1155

Tyr Gln  Leu Thr Ala Pro Phe  Glu Thr Phe Lys Lys  Met Gly Lys
    1160                1165                1170

Gln Thr  Gly Ile Ile Tyr Tyr  Val Pro Ala Gly Phe  Thr Ser Lys
    1175                1180                1185

Ile Cys  Pro Val Thr Gly Phe  Val Asn Gln Leu Tyr  Pro Lys Tyr
    1190                1195                1200

Glu Ser  Val Ser Lys Ser Gln  Glu Phe Phe Ser Lys  Phe Asp Lys
    1205                1210                1215

Ile Cys  Tyr Asn Leu Asp Lys  Gly Tyr Phe Glu Phe  Ser Phe Asp
    1220                1225                1230

Tyr Lys  Asn Phe Gly Asp Lys  Ala Ala Lys Gly Lys  Trp Thr Ile
    1235                1240                1245

Ala Ser  Phe Gly Ser Arg Leu  Ile Asn Phe Arg Asn  Ser Asp Lys
    1250                1255                1260

Asn His  Asn Trp Asp Thr Arg  Glu Val Tyr Pro Thr  Lys Glu Leu
    1265                1270                1275

Glu Lys  Leu Leu Lys Asp Tyr  Ser Ile Glu Tyr Gly  His Gly Glu
    1280                1285                1290

Cys Ile  Lys Ala Ala Ile Cys  Gly Glu Ser Asp Lys  Lys Phe Phe
    1295                1300                1305

Ala Lys  Leu Thr Ser Val Leu  Asn Thr Ile Leu Gln  Met Arg Asn
    1310                1315                1320
```

```
Ser Lys  Thr Gly Thr Glu Leu  Asp Tyr Leu Ile Ser  Pro Val Ala
    1325                1330                1335

Asp Val  Asn Gly Asn Phe Phe  Asp Ser Arg Gln Ala  Pro Lys Asn
    1340                1345                1350

Met Pro  Gln Asp Ala Asp Ala  Asn Gly Ala Tyr His  Ile Gly Leu
    1355                1360                1365

Lys Gly  Leu Met Leu Leu Gly  Arg Ile Lys Asn Asn  Gln Glu Gly
    1370                1375                1380

Lys Lys  Leu Asn Leu Val Ile  Lys Asn Glu Glu Tyr  Phe Glu Phe
    1385                1390                1395

Val Gln  Asn Arg Asn Asn Pro  Lys Lys Lys Arg Lys  Val Leu Glu
    1400                1405                1410

Gly Gly  Gly Gly Ser Gly Lys  Gly Asp Pro Lys Lys  Pro Arg Gly
    1415                1420                1425

Lys Met  Ser Ser Tyr Ala Phe  Phe Val Gln Thr Cys  Arg Glu Glu
    1430                1435                1440

His Lys  Lys Lys His Pro Asp  Ala Ser Val Asn Phe  Ser Glu Phe
    1445                1450                1455

Ser Lys  Lys Cys Ser Glu Arg  Trp Lys Thr Met Ser  Ala Lys Glu
    1460                1465                1470

Lys Gly  Lys Phe Glu Asp Met  Ala Lys Ala Asp Lys  Ala Arg Tyr
    1475                1480                1485

Glu Arg  Glu Met Lys Thr Tyr  Ile Pro Pro Lys Gly  Glu
    1490                1495                1500
```

<210> 76

<211> 1498
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 76

Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1 5 10 15

Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
20 25 30

Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
35 40 45

Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
50 55 60

Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65 70 75 80

Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
85 90 95

Ala Lys Ser Asp Thr Gly Ser Gly Met Ser Ile Tyr Gln Glu Phe Val
100 105 110

Asn Lys Tyr Ser Leu Ser Lys Thr Leu Arg Phe Glu Leu Ile Pro Gln
115 120 125

Gly Lys Thr Leu Glu Asn Ile Lys Ala Arg Gly Leu Ile Leu Asp Asp
130 135 140

Glu Lys Arg Ala Lys Asp Tyr Lys Lys Ala Lys Gln Ile Ile Asp Lys
145 150 155 160

Tyr His Gln Phe Phe Ile Glu Glu Ile Leu Ser Ser Val Cys Ile Ser
165 170 175

```
Glu Asp Leu Leu Gln Asn Tyr Ser Asp Val Tyr Phe Lys Leu Lys Lys
            180                 185                 190

Ser Asp Asp Asp Asn Leu Gln Lys Asp Phe Lys Ser Ala Lys Asp Thr
        195                 200                 205

Ile Lys Lys Gln Ile Ser Glu Tyr Ile Lys Asp Ser Glu Lys Phe Lys
    210                 215                 220

Asn Leu Phe Asn Gln Asn Leu Ile Asp Ala Lys Lys Gly Gln Glu Ser
225                 230                 235                 240

Asp Leu Ile Leu Trp Leu Lys Gln Ser Lys Asp Asn Gly Ile Glu Leu
                245                 250                 255

Phe Lys Ala Asn Ser Asp Ile Thr Asp Ile Asp Glu Ala Leu Glu Ile
            260                 265                 270

Ile Lys Ser Phe Lys Gly Trp Thr Thr Tyr Phe Lys Gly Phe His Glu
        275                 280                 285

Asn Arg Lys Asn Val Tyr Ser Ser Asn Asp Ile Pro Thr Ser Ile Ile
    290                 295                 300

Tyr Arg Ile Val Asp Asp Asn Leu Pro Lys Phe Leu Glu Asn Lys Ala
305                 310                 315                 320

Lys Tyr Glu Ser Leu Lys Asp Lys Ala Pro Glu Ala Ile Asn Tyr Glu
                325                 330                 335

Gln Ile Lys Lys Asp Leu Ala Glu Glu Leu Thr Phe Asp Ile Asp Tyr
            340                 345                 350

Lys Thr Ser Glu Val Asn Gln Arg Val Phe Ser Leu Asp Glu Val Phe
        355                 360                 365

Glu Ile Ala Asn Phe Asn Asn Tyr Leu Asn Gln Ser Gly Ile Thr Lys
```

```
    370                 375                 380

Phe Asn Thr Ile Ile Gly Gly Lys Phe Val Asn Gly Glu Asn Thr Lys
385                 390                 395                 400

Arg Lys Gly Ile Asn Glu Tyr Ile Asn Leu Tyr Ser Gln Gln Ile Asn
                405                 410                 415

Asp Lys Thr Leu Lys Lys Tyr Lys Met Ser Val Leu Phe Lys Gln Ile
            420                 425                 430

Leu Ser Asp Thr Glu Ser Lys Ser Phe Val Ile Asp Lys Leu Glu Asp
        435                 440                 445

Asp Ser Asp Val Val Thr Thr Met Gln Ser Phe Tyr Glu Gln Ile Ala
    450                 455                 460

Ala Phe Lys Thr Val Glu Glu Lys Ser Ile Lys Glu Thr Leu Ser Leu
465                 470                 475                 480

Leu Phe Asp Asp Leu Lys Ala Gln Lys Leu Asp Leu Ser Lys Ile Tyr
                485                 490                 495

Phe Lys Asn Asp Lys Ser Leu Thr Asp Leu Ser Gln Gln Val Phe Asp
            500                 505                 510

Asp Tyr Ser Val Ile Gly Thr Ala Val Leu Glu Tyr Ile Thr Gln Gln
        515                 520                 525

Ile Ala Pro Lys Asn Leu Asp Asn Pro Ser Lys Lys Glu Gln Glu Leu
    530                 535                 540

Ile Ala Lys Lys Thr Glu Lys Ala Lys Tyr Leu Ser Leu Glu Thr Ile
545                 550                 555                 560

Lys Leu Ala Leu Glu Glu Phe Asn Lys His Arg Asp Ile Asp Lys Gln
                565                 570                 575
```

```
Cys Arg Phe Glu Glu Ile Leu Ala Asn Phe Ala Ala Ile Pro Met Ile
            580                 585                 590

Phe Asp Glu Ile Ala Gln Asn Lys Asp Asn Leu Ala Gln Ile Ser Ile
        595                 600                 605

Lys Tyr Gln Asn Gln Gly Lys Lys Asp Leu Leu Gln Ala Ser Ala Glu
    610                 615                 620

Asp Asp Val Lys Ala Ile Lys Asp Leu Leu Asp Gln Thr Asn Asn Leu
625                 630                 635                 640

Leu His Lys Leu Lys Ile Phe His Ile Ser Gln Ser Glu Asp Lys Ala
                645                 650                 655

Asn Ile Leu Asp Lys Asp Glu His Phe Tyr Leu Val Phe Glu Glu Cys
            660                 665                 670

Tyr Phe Glu Leu Ala Asn Ile Val Pro Leu Tyr Asn Lys Ile Arg Asn
        675                 680                 685

Tyr Ile Thr Gln Lys Pro Tyr Ser Asp Glu Lys Phe Lys Leu Asn Phe
    690                 695                 700

Glu Asn Ser Thr Leu Ala Asn Gly Trp Asp Lys Asn Lys Glu Pro Asp
705                 710                 715                 720

Asn Thr Ala Ile Leu Phe Ile Lys Asp Asp Lys Tyr Tyr Leu Gly Val
                725                 730                 735

Met Asn Lys Lys Asn Asn Lys Ile Phe Asp Asp Lys Ala Ile Lys Glu
            740                 745                 750

Asn Lys Gly Glu Gly Tyr Lys Lys Ile Val Tyr Lys Leu Leu Pro Gly
        755                 760                 765

Ala Asn Lys Met Leu Pro Lys Val Phe Phe Ser Ala Lys Ser Ile Lys
    770                 775                 780
```

```
Phe Tyr Asn Pro Ser Glu Asp Ile Leu Arg Ile Arg Asn His Ser Thr
785                 790                 795                 800


His Thr Lys Asn Gly Ser Pro Gln Lys Gly Tyr Glu Lys Phe Glu Phe
                805                 810                 815


Asn Ile Glu Asp Cys Arg Lys Phe Ile Asp Phe Tyr Lys Gln Ser Ile
            820                 825                 830


Ser Lys His Pro Glu Trp Lys Asp Phe Gly Phe Arg Phe Ser Asp Thr
        835                 840                 845


Gln Arg Tyr Asn Ser Ile Asp Glu Phe Tyr Arg Glu Val Glu Asn Gln
    850                 855                 860


Gly Tyr Lys Leu Thr Phe Glu Asn Ile Ser Glu Ser Tyr Ile Asp Ser
865                 870                 875                 880


Val Val Asn Gln Gly Lys Leu Tyr Leu Phe Gln Ile Tyr Asn Lys Asp
                885                 890                 895


Phe Ser Ala Tyr Ser Lys Gly Arg Pro Asn Leu His Thr Leu Tyr Trp
            900                 905                 910


Lys Ala Leu Phe Asp Glu Arg Asn Leu Gln Asp Val Val Tyr Lys Leu
        915                 920                 925


Asn Gly Glu Ala Glu Leu Phe Tyr Arg Lys Gln Ser Ile Pro Lys Lys
    930                 935                 940


Ile Thr His Pro Ala Lys Glu Ala Ile Ala Asn Lys Asn Lys Asp Asn
945                 950                 955                 960


Pro Lys Lys Glu Ser Val Phe Glu Tyr Asp Leu Ile Lys Asp Lys Arg
                965                 970                 975


Phe Thr Glu Asp Lys Phe Phe Phe His Cys Pro Ile Thr Ile Asn Phe
            980                 985                 990
```

```
Lys Ser Ser Gly Ala Asn Lys Phe  Asn Asp Glu Ile Asn  Leu Leu Leu
        995                 1000                1005


Lys Glu  Lys Ala Asn Asp Val  His Ile Leu Ser Ile  Asp Arg Gly
    1010                1015                1020


Glu Arg  His Leu Ala Tyr Tyr  Thr Leu Val Asp Gly  Lys Gly Asn
    1025                1030                1035


Ile Ile  Lys Gln Asp Thr Phe  Asn Ile Ile Gly Asn  Asp Arg Met
    1040                1045                1050


Lys Thr  Asn Tyr His Asp Lys  Leu Ala Ala Ile Glu  Lys Asp Arg
    1055                1060                1065


Asp Ser  Ala Arg Lys Asp Trp  Lys Lys Ile Asn Asn  Ile Lys Glu
    1070                1075                1080


Met Lys  Glu Gly Tyr Leu Ser  Gln Val Val His Glu  Ile Ala Lys
    1085                1090                1095


Leu Val  Ile Glu Tyr Asn Ala  Ile Val Val Phe Glu  Asp Leu Asn
    1100                1105                1110


Phe Gly  Phe Lys Arg Gly Arg  Phe Lys Val Glu Lys  Gln Val Tyr
    1115                1120                1125


Gln Lys  Leu Glu Lys Met Leu  Ile Glu Lys Leu Asn  Tyr Leu Val
    1130                1135                1140


Phe Lys  Asp Asn Glu Phe Asp  Lys Thr Gly Gly Val  Leu Arg Ala
    1145                1150                1155


Tyr Gln  Leu Thr Ala Pro Phe  Glu Thr Phe Lys Lys  Met Gly Lys
    1160                1165                1170


Gln Thr  Gly Ile Ile Tyr Tyr  Val Pro Ala Gly Phe  Thr Ser Lys
```

```
    1175                1180                1185

Ile Cys  Pro Val Thr Gly Phe  Val Asn Gln Leu Tyr  Pro Lys Tyr
    1190                1195                1200

Glu Ser  Val Ser Lys Ser Gln  Glu Phe Phe Ser Lys  Phe Asp Lys
    1205                1210                1215

Ile Cys  Tyr Asn Leu Asp Lys  Gly Tyr Phe Glu Phe  Ser Phe Asp
    1220                1225                1230

Tyr Lys  Asn Phe Gly Asp Lys  Ala Ala Lys Gly Lys  Trp Thr Ile
    1235                1240                1245

Ala Ser  Phe Gly Ser Arg Leu  Ile Asn Phe Arg Asn  Ser Asp Lys
    1250                1255                1260

Asn His  Asn Trp Asp Thr Arg  Glu Val Tyr Pro Thr  Lys Glu Leu
    1265                1270                1275

Glu Lys  Leu Leu Lys Asp Tyr  Ser Ile Glu Tyr Gly  His Gly Glu
    1280                1285                1290

Cys Ile  Lys Ala Ala Ile Cys  Gly Glu Ser Asp Lys  Lys Phe Phe
    1295                1300                1305

Ala Lys  Leu Thr Ser Val Leu  Asn Thr Ile Leu Gln  Met Arg Asn
    1310                1315                1320

Ser Lys  Thr Gly Thr Glu Leu  Asp Tyr Leu Ile Ser  Pro Val Ala
    1325                1330                1335

Asp Val  Asn Gly Asn Phe Phe  Asp Ser Arg Gln Ala  Pro Lys Asn
    1340                1345                1350

Met Pro  Gln Asp Ala Asp Ala  Asn Gly Ala Tyr His  Ile Gly Leu
    1355                1360                1365
```

Lys Gly Leu Met Leu Leu Gly Arg Ile Lys Asn Asn Gln Glu Gly
    1370   1375   1380

Lys Lys Leu Asn Leu Val Ile Lys Asn Glu Glu Tyr Phe Glu Phe
    1385   1390   1395

Val Gln Asn Arg Asn Asn Pro Lys Lys Lys Arg Lys Val Leu Glu
    1400   1405   1410

Gly Gly Gly Gly Ser Ser Thr Asp His Pro Lys Tyr Ser Asp Met
    1415   1420   1425

Ile Val Ala Ala Ile Gln Ala Glu Lys Asn Arg Ala Gly Ser Ser
    1430   1435   1440

Arg Gln Ser Ile Gln Lys Tyr Ile Lys Ser His Tyr Lys Val Gly
    1445   1450   1455

Glu Asn Ala Asp Ser Gln Ile Lys Leu Ser Ile Lys Arg Leu Val
    1460   1465   1470

Thr Thr Gly Val Leu Lys Gln Thr Lys Gly Val Gly Ala Ser Gly
    1475   1480   1485

Ser Phe Arg Leu Ala Lys Ser Asp Glu Pro
    1490   1495

<210> 77
<211> 1687
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 77

Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1   5   10   15

Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val

```
            20                  25                  30

Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
        35                  40                  45

Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
    50                  55                  60

Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65                  70                  75                  80

Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
                85                  90                  95

Ala Lys Ser Asp Thr Gly Ser Gly Met Ser Ile Tyr Gln Glu Phe Val
            100                 105                 110

Asn Lys Tyr Ser Leu Ser Lys Thr Leu Arg Phe Glu Leu Ile Pro Gln
        115                 120                 125

Gly Lys Thr Leu Glu Asn Ile Lys Ala Arg Gly Leu Ile Leu Asp Asp
    130                 135                 140

Glu Lys Arg Ala Lys Asp Tyr Lys Lys Ala Lys Gln Ile Ile Asp Lys
145                 150                 155                 160

Tyr His Gln Phe Phe Ile Glu Glu Ile Leu Ser Ser Val Cys Ile Ser
                165                 170                 175

Glu Asp Leu Leu Gln Asn Tyr Ser Asp Val Tyr Phe Lys Leu Lys Lys
            180                 185                 190

Ser Asp Asp Asp Asn Leu Gln Lys Asp Phe Lys Ser Ala Lys Asp Thr
        195                 200                 205

Ile Lys Lys Gln Ile Ser Glu Tyr Ile Lys Asp Ser Glu Lys Phe Lys
    210                 215                 220
```

```
Asn Leu Phe Asn Gln Asn Leu Ile Asp Ala Lys Lys Gly Gln Glu Ser
225                 230                 235                 240

Asp Leu Ile Leu Trp Leu Lys Gln Ser Lys Asp Asn Gly Ile Glu Leu
                245                 250                 255

Phe Lys Ala Asn Ser Asp Ile Thr Asp Ile Asp Glu Ala Leu Glu Ile
            260                 265                 270

Ile Lys Ser Phe Lys Gly Trp Thr Thr Tyr Phe Lys Gly Phe His Glu
        275                 280                 285

Asn Arg Lys Asn Val Tyr Ser Ser Asn Asp Ile Pro Thr Ser Ile Ile
    290                 295                 300

Tyr Arg Ile Val Asp Asp Asn Leu Pro Lys Phe Leu Glu Asn Lys Ala
305                 310                 315                 320

Lys Tyr Glu Ser Leu Lys Asp Lys Ala Pro Glu Ala Ile Asn Tyr Glu
                325                 330                 335

Gln Ile Lys Lys Asp Leu Ala Glu Glu Leu Thr Phe Asp Ile Asp Tyr
            340                 345                 350

Lys Thr Ser Glu Val Asn Gln Arg Val Phe Ser Leu Asp Glu Val Phe
        355                 360                 365

Glu Ile Ala Asn Phe Asn Asn Tyr Leu Asn Gln Ser Gly Ile Thr Lys
    370                 375                 380

Phe Asn Thr Ile Ile Gly Gly Lys Phe Val Asn Gly Glu Asn Thr Lys
385                 390                 395                 400

Arg Lys Gly Ile Asn Glu Tyr Ile Asn Leu Tyr Ser Gln Gln Ile Asn
                405                 410                 415

Asp Lys Thr Leu Lys Lys Tyr Lys Met Ser Val Leu Phe Lys Gln Ile
            420                 425                 430
```

```
Leu Ser Asp Thr Glu Ser Lys Ser Phe Val Ile Asp Lys Leu Glu Asp
        435                 440                 445

Asp Ser Asp Val Val Thr Thr Met Gln Ser Phe Tyr Glu Gln Ile Ala
    450                 455                 460

Ala Phe Lys Thr Val Glu Glu Lys Ser Ile Lys Glu Thr Leu Ser Leu
465                 470                 475                 480

Leu Phe Asp Asp Leu Lys Ala Gln Lys Leu Asp Leu Ser Lys Ile Tyr
                485                 490                 495

Phe Lys Asn Asp Lys Ser Leu Thr Asp Leu Ser Gln Gln Val Phe Asp
            500                 505                 510

Asp Tyr Ser Val Ile Gly Thr Ala Val Leu Glu Tyr Ile Thr Gln Gln
        515                 520                 525

Ile Ala Pro Lys Asn Leu Asp Asn Pro Ser Lys Lys Glu Gln Glu Leu
    530                 535                 540

Ile Ala Lys Lys Thr Glu Lys Ala Lys Tyr Leu Ser Leu Glu Thr Ile
545                 550                 555                 560

Lys Leu Ala Leu Glu Glu Phe Asn Lys His Arg Asp Ile Asp Lys Gln
                565                 570                 575

Cys Arg Phe Glu Glu Ile Leu Ala Asn Phe Ala Ala Ile Pro Met Ile
            580                 585                 590

Phe Asp Glu Ile Ala Gln Asn Lys Asp Asn Leu Ala Gln Ile Ser Ile
        595                 600                 605

Lys Tyr Gln Asn Gln Gly Lys Lys Asp Leu Leu Gln Ala Ser Ala Glu
    610                 615                 620

Asp Asp Val Lys Ala Ile Lys Asp Leu Leu Asp Gln Thr Asn Asn Leu
625                 630                 635                 640
```

```
Leu His Lys Leu Lys Ile Phe His Ile Ser Gln Ser Glu Asp Lys Ala
               645                 650                 655

Asn Ile Leu Asp Lys Asp Glu His Phe Tyr Leu Val Phe Glu Glu Cys
            660                 665                 670

Tyr Phe Glu Leu Ala Asn Ile Val Pro Leu Tyr Asn Lys Ile Arg Asn
        675                 680                 685

Tyr Ile Thr Gln Lys Pro Tyr Ser Asp Glu Lys Phe Lys Leu Asn Phe
    690                 695                 700

Glu Asn Ser Thr Leu Ala Asn Gly Trp Asp Lys Asn Lys Glu Pro Asp
705                 710                 715                 720

Asn Thr Ala Ile Leu Phe Ile Lys Asp Asp Lys Tyr Tyr Leu Gly Val
               725                 730                 735

Met Asn Lys Lys Asn Asn Lys Ile Phe Asp Asp Lys Ala Ile Lys Glu
            740                 745                 750

Asn Lys Gly Glu Gly Tyr Lys Lys Ile Val Tyr Lys Leu Leu Pro Gly
        755                 760                 765

Ala Asn Lys Met Leu Pro Lys Val Phe Phe Ser Ala Lys Ser Ile Lys
    770                 775                 780

Phe Tyr Asn Pro Ser Glu Asp Ile Leu Arg Ile Arg Asn His Ser Thr
785                 790                 795                 800

His Thr Lys Asn Gly Ser Pro Gln Lys Gly Tyr Glu Lys Phe Glu Phe
               805                 810                 815

Asn Ile Glu Asp Cys Arg Lys Phe Ile Asp Phe Tyr Lys Gln Ser Ile
            820                 825                 830

Ser Lys His Pro Glu Trp Lys Asp Phe Gly Phe Arg Phe Ser Asp Thr
```

```
        835                 840                 845

Gln Arg Tyr Asn Ser Ile Asp Glu Phe Tyr Arg Glu Val Glu Asn Gln
    850                 855                 860

Gly Tyr Lys Leu Thr Phe Glu Asn Ile Ser Glu Ser Tyr Ile Asp Ser
865                 870                 875                 880

Val Val Asn Gln Gly Lys Leu Tyr Leu Phe Gln Ile Tyr Asn Lys Asp
                885                 890                 895

Phe Ser Ala Tyr Ser Lys Gly Arg Pro Asn Leu His Thr Leu Tyr Trp
            900                 905                 910

Lys Ala Leu Phe Asp Glu Arg Asn Leu Gln Asp Val Val Tyr Lys Leu
        915                 920                 925

Asn Gly Glu Ala Glu Leu Phe Tyr Arg Lys Gln Ser Ile Pro Lys Lys
    930                 935                 940

Ile Thr His Pro Ala Lys Glu Ala Ile Ala Asn Lys Asn Lys Asp Asn
945                 950                 955                 960

Pro Lys Lys Glu Ser Val Phe Glu Tyr Asp Leu Ile Lys Asp Lys Arg
                965                 970                 975

Phe Thr Glu Asp Lys Phe Phe Phe His Cys Pro Ile Thr Ile Asn Phe
            980                 985                 990

Lys Ser Ser Gly Ala Asn Lys Phe  Asn Asp Glu Ile Asn  Leu Leu Leu
        995                 1000                1005

Lys Glu  Lys Ala Asn Asp Val  His Ile Leu Ser Ile  Asp Arg Gly
    1010                1015                1020

Glu Arg  His Leu Ala Tyr Tyr  Thr Leu Val Asp Gly  Lys Gly Asn
    1025                1030                1035
```

```
Ile Ile  Lys Gln Asp Thr Phe  Asn Ile Ile Gly Asn  Asp Arg Met
    1040                1045                1050

Lys Thr  Asn Tyr His Asp Lys  Leu Ala Ala Ile Glu  Lys Asp Arg
    1055                1060                1065

Asp Ser  Ala Arg Lys Asp Trp  Lys Lys Ile Asn Asn  Ile Lys Glu
    1070                1075                1080

Met Lys  Glu Gly Tyr Leu Ser  Gln Val Val His Glu  Ile Ala Lys
    1085                1090                1095

Leu Val  Ile Glu Tyr Asn Ala  Ile Val Val Phe Glu  Asp Leu Asn
    1100                1105                1110

Phe Gly  Phe Lys Arg Gly Arg  Phe Lys Val Glu Lys  Gln Val Tyr
    1115                1120                1125

Gln Lys  Leu Glu Lys Met Leu  Ile Glu Lys Leu Asn  Tyr Leu Val
    1130                1135                1140

Phe Lys  Asp Asn Glu Phe Asp  Lys Thr Gly Gly Val  Leu Arg Ala
    1145                1150                1155

Tyr Gln  Leu Thr Ala Pro Phe  Glu Thr Phe Lys Lys  Met Gly Lys
    1160                1165                1170

Gln Thr  Gly Ile Ile Tyr Tyr  Val Pro Ala Gly Phe  Thr Ser Lys
    1175                1180                1185

Ile Cys  Pro Val Thr Gly Phe  Val Asn Gln Leu Tyr  Pro Lys Tyr
    1190                1195                1200

Glu Ser  Val Ser Lys Ser Gln  Glu Phe Phe Ser Lys  Phe Asp Lys
    1205                1210                1215

Ile Cys  Tyr Asn Leu Asp Lys  Gly Tyr Phe Glu Phe  Ser Phe Asp
    1220                1225                1230
```

```
Tyr Lys  Asn Phe Gly Asp Lys  Ala Ala Lys Gly Lys  Trp Thr Ile
    1235                1240                1245

Ala Ser  Phe Gly Ser Arg Leu  Ile Asn Phe Arg Asn  Ser Asp Lys
    1250                1255                1260

Asn His  Asn Trp Asp Thr Arg  Glu Val Tyr Pro Thr  Lys Glu Leu
    1265                1270                1275

Glu Lys  Leu Leu Lys Asp Tyr  Ser Ile Glu Tyr Gly  His Gly Glu
    1280                1285                1290

Cys Ile  Lys Ala Ala Ile Cys  Gly Glu Ser Asp Lys  Lys Phe Phe
    1295                1300                1305

Ala Lys  Leu Thr Ser Val Leu  Asn Thr Ile Leu Gln  Met Arg Asn
    1310                1315                1320

Ser Lys  Thr Gly Thr Glu Leu  Asp Tyr Leu Ile Ser  Pro Val Ala
    1325                1330                1335

Asp Val  Asn Gly Asn Phe Phe  Asp Ser Arg Gln Ala  Pro Lys Asn
    1340                1345                1350

Met Pro  Gln Asp Ala Asp Ala  Asn Gly Ala Tyr His  Ile Gly Leu
    1355                1360                1365

Lys Gly  Leu Met Leu Leu Gly  Arg Ile Lys Asn Asn  Gln Glu Gly
    1370                1375                1380

Lys Lys  Leu Asn Leu Val Ile  Lys Asn Glu Glu Tyr  Phe Glu Phe
    1385                1390                1395

Val Gln  Asn Arg Asn Asn Pro  Lys Lys Lys Arg Lys  Val Leu Glu
    1400                1405                1410

Gly Gly  Gly Gly Ser Asp Met  Asp Ser Ile Gly Glu  Ser Glu Val
    1415                1420                1425
```

```
Arg Ala  Leu Tyr Lys Ala Ile  Leu Lys Phe Gly Asn  Leu Lys Glu
    1430                1435                1440

Ile Leu  Asp Glu Leu Ile Ala  Asp Gly Thr Leu Pro  Val Lys Ser
    1445                1450                1455

Phe Glu  Lys Tyr Gly Glu Thr  Tyr Asp Glu Met Met  Glu Ala Ala
    1460                1465                1470

Lys Asp  Cys Val His Glu Glu  Glu Lys Asn Arg Lys  Glu Ile Leu
    1475                1480                1485

Glu Lys  Leu Glu Lys His Ala  Thr Ala Tyr Arg Ala  Lys Leu Lys
    1490                1495                1500

Ser Gly  Glu Ile Lys Ala Glu  Asn Gln Pro Lys Asp  Asn Pro Leu
    1505                1510                1515

Thr Arg  Leu Ser Leu Lys Lys  Arg Glu Lys Lys Ala  Val Leu Phe
    1520                1525                1530

Asn Phe  Lys Gly Val Lys Ser  Leu Asn Ala Glu Ser  Leu Leu Ser
    1535                1540                1545

Arg Val  Glu Asp Leu Lys Tyr  Leu Lys Asn Leu Ile  Asn Ser Asn
    1550                1555                1560

Tyr Lys  Asp Asp Pro Leu Lys  Phe Ser Leu Gly Asn  Asn Thr Pro
    1565                1570                1575

Lys Pro  Val Gln Asn Trp Ser  Ser Asn Trp Thr Lys  Glu Glu Asp
    1580                1585                1590

Glu Lys  Leu Leu Ile Gly Val  Phe Lys Tyr Gly Tyr  Gly Ser Trp
    1595                1600                1605

Thr Gln  Ile Arg Asp Asp Pro  Phe Leu Gly Ile Thr  Asp Lys Ile
```

```
    1610                1615                1620

Phe Leu  Asn Glu Val His Asn  Pro Val Ala Lys Lys  Ser Ala Ser
    1625                1630                1635

Ser Ser  Asp Thr Thr Pro Thr  Pro Ser Lys Lys Gly  Lys Gly Ile
    1640                1645                1650

Thr Gly  Ser Ser Lys Lys Val  Pro Gly Ala Ile His  Leu Gly Arg
    1655                1660                1665

Arg Val  Asp Tyr Leu Leu Ser  Phe Leu Arg Gly Gly  Leu Asn Thr
    1670                1675                1680

Lys Ser  Pro Ser
    1685
```

<210> 78
<211> 1185
<212> PRT
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 78

```
Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1               5                   10                  15

Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
            20                  25                  30

Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
        35                  40                  45

Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
    50                  55                  60

Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65                  70                  75                  80
```

```
Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
                85                  90                  95

Ala Lys Ser Asp Thr Gly Ser Gly Met Ala Arg Ile Leu Ala Phe Asp
            100                 105                 110

Ile Gly Ile Ser Ser Ile Gly Trp Ala Phe Ser Glu Asn Asp Glu Leu
        115                 120                 125

Lys Asp Cys Gly Val Arg Ile Phe Thr Lys Val Glu Asn Pro Lys Thr
    130                 135                 140

Gly Glu Ser Leu Ala Leu Pro Arg Arg Leu Ala Arg Ser Ala Arg Lys
145                 150                 155                 160

Arg Leu Ala Arg Arg Lys Ala Arg Leu Asn His Leu Lys His Leu Ile
                165                 170                 175

Ala Asn Glu Phe Lys Leu Asn Tyr Glu Asp Tyr Gln Ser Phe Asp Glu
            180                 185                 190

Ser Leu Ala Lys Ala Tyr Lys Gly Ser Leu Ile Ser Pro Tyr Glu Leu
        195                 200                 205

Arg Phe Arg Ala Leu Asn Glu Leu Leu Ser Lys Gln Asp Phe Ala Arg
    210                 215                 220

Val Ile Leu His Ile Ala Lys Arg Arg Gly Tyr Asp Asp Ile Lys Asn
225                 230                 235                 240

Ser Asp Asp Lys Glu Lys Gly Ala Ile Leu Lys Ala Ile Lys Gln Asn
                245                 250                 255

Glu Glu Lys Leu Ala Asn Tyr Gln Ser Val Gly Glu Tyr Leu Tyr Lys
            260                 265                 270

Glu Tyr Phe Gln Lys Phe Lys Glu Asn Ser Lys Glu Phe Thr Asn Val
```

```
        275                 280                 285

Arg Asn Lys Lys Glu Ser Tyr Glu Arg Cys Ile Ala Gln Ser Phe Leu
    290                 295                 300

Lys Asp Glu Leu Lys Leu Ile Phe Lys Lys Gln Arg Glu Phe Gly Phe
305                 310                 315                 320

Ser Phe Ser Lys Lys Phe Glu Glu Glu Val Leu Ser Val Ala Phe Tyr
                325                 330                 335

Lys Arg Ala Leu Lys Asp Phe Ser His Leu Val Gly Asn Cys Ser Phe
            340                 345                 350

Phe Thr Asp Glu Lys Arg Ala Pro Lys Asn Ser Pro Leu Ala Phe Met
        355                 360                 365

Phe Val Ala Leu Thr Arg Ile Ile Asn Leu Leu Asn Asn Leu Lys Asn
    370                 375                 380

Thr Glu Gly Ile Leu Tyr Thr Lys Asp Asp Leu Asn Ala Leu Leu Asn
385                 390                 395                 400

Glu Val Leu Lys Asn Gly Thr Leu Thr Tyr Lys Gln Thr Lys Lys Leu
                405                 410                 415

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

Phe Ile Glu Phe Lys Lys Tyr Lys Glu Phe Ile Lys Ala Leu Gly Glu
        435                 440                 445

His Asn Leu Ser Gln Asp Asp Leu Asn Glu Ile Ala Lys Asp Ile Thr
    450                 455                 460

Leu Ile Lys Asp Glu Ile Lys Leu Lys Lys Ala Leu Ala Lys Tyr Asp
465                 470                 475                 480
```

```
Leu Asn Gln Asn Gln Ile Asp Ser Leu Ser Lys Leu Glu Phe Lys Asp
                485                 490                 495

His Leu Asn Ile Ser Phe Lys Ala Leu Lys Leu Val Thr Pro Leu Met
            500                 505                 510

Leu Glu Gly Lys Lys Tyr Asp Glu Ala Cys Asn Glu Leu Asn Leu Lys
        515                 520                 525

Val Ala Ile Asn Glu Asp Lys Lys Asp Phe Leu Pro Ala Phe Asn Glu
    530                 535                 540

Thr Tyr Tyr Lys Asp Glu Val Thr Asn Pro Val Val Leu Arg Ala Ile
545                 550                 555                 560

Lys Glu Tyr Arg Lys Val Leu Asn Ala Leu Leu Lys Lys Tyr Gly Lys
                565                 570                 575

Val His Lys Ile Asn Ile Glu Leu Ala Arg Glu Val Gly Lys Asn His
            580                 585                 590

Ser Gln Arg Ala Lys Ile Glu Lys Glu Gln Asn Glu Asn Tyr Lys Ala
        595                 600                 605

Lys Lys Asp Ala Glu Leu Glu Cys Glu Lys Leu Gly Leu Lys Ile Asn
    610                 615                 620

Ser Lys Asn Ile Leu Lys Leu Arg Leu Phe Lys Glu Gln Lys Glu Phe
625                 630                 635                 640

Cys Ala Tyr Ser Gly Glu Lys Ile Lys Ile Ser Asp Leu Gln Asp Glu
                645                 650                 655

Lys Met Leu Glu Ile Asp His Ile Tyr Pro Tyr Ser Arg Ser Phe Asp
            660                 665                 670

Asp Ser Tyr Met Asn Lys Val Leu Val Phe Thr Lys Gln Asn Gln Glu
        675                 680                 685
```

```
Lys Leu Asn Gln Thr Pro Phe Glu Ala Phe Gly Asn Asp Ser Ala Lys
    690                 695                 700

Trp Gln Lys Ile Glu Val Leu Ala Lys Asn Leu Pro Thr Lys Lys Gln
705                 710                 715                 720

Lys Arg Ile Leu Asp Lys Asn Tyr Lys Asp Lys Glu Gln Lys Asn Phe
                725                 730                 735

Lys Asp Arg Asn Leu Asn Asp Thr Arg Tyr Ile Ala Arg Leu Val Leu
            740                 745                 750

Asn Tyr Thr Lys Asp Tyr Leu Asp Phe Leu Pro Leu Ser Asp Asp Glu
        755                 760                 765

Asn Thr Lys Leu Asn Asp Thr Gln Lys Gly Ser Lys Val His Val Glu
    770                 775                 780

Ala Lys Ser Gly Met Leu Thr Ser Ala Leu Arg His Thr Trp Gly Phe
785                 790                 795                 800

Ser Ala Lys Asp Arg Asn Asn His Leu His His Ala Ile Asp Ala Val
                805                 810                 815

Ile Ile Ala Tyr Ala Asn Asn Ser Ile Val Lys Ala Phe Ser Asp Phe
            820                 825                 830

Lys Lys Glu Gln Glu Ser Asn Ser Ala Glu Leu Tyr Ala Lys Lys Ile
        835                 840                 845

Ser Glu Leu Asp Tyr Lys Asn Lys Arg Lys Phe Phe Glu Pro Phe Ser
    850                 855                 860

Gly Phe Arg Gln Lys Val Leu Asp Lys Ile Asp Glu Ile Phe Val Ser
865                 870                 875                 880

Lys Pro Glu Arg Lys Lys Pro Ser Gly Ala Leu His Glu Glu Thr Phe
                885                 890                 895
```

```
Arg Lys Glu Glu Glu Phe Tyr Gln Ser Tyr Gly Gly Lys Glu Gly Val
            900                 905                 910

Leu Lys Ala Leu Glu Leu Gly Lys Ile Arg Lys Val Asn Gly Lys Ile
        915                 920                 925

Val Lys Asn Gly Asp Met Phe Arg Val Asp Ile Phe Lys His Lys Lys
    930                 935                 940

Thr Asn Lys Phe Tyr Ala Val Pro Ile Tyr Thr Met Asp Phe Ala Leu
945                 950                 955                 960

Lys Val Leu Pro Asn Lys Ala Val Ala Arg Ser Lys Lys Gly Glu Ile
                965                 970                 975

Lys Asp Trp Ile Leu Met Asp Glu Asn Tyr Glu Phe Cys Phe Ser Leu
            980                 985                 990

Tyr Lys Asp Ser Leu Ile Leu Ile  Gln Thr Lys Asp Met  Gln Glu Pro
        995                 1000                1005

Glu Phe  Val Tyr Tyr Asn Ala  Phe Thr Ser Ser Thr  Val Ser Leu
    1010                1015                1020

Ile Val  Ser Lys His Asp Asn  Lys Phe Glu Thr Leu  Ser Lys Asn
    1025                1030                1035

Gln Lys  Ile Leu Phe Lys Asn  Ala Asn Glu Lys Glu  Val Ile Ala
    1040                1045                1050

Lys Ser  Ile Gly Ile Gln Asn  Leu Lys Val Phe Glu  Lys Tyr Ile
    1055                1060                1065

Val Ser  Ala Leu Gly Glu Val  Thr Lys Ala Glu Phe  Arg Gln Arg
    1070                1075                1080

Glu Asp  Phe Lys Lys Pro Lys  Lys Lys Arg Lys Val  Leu Glu Gly
```

```
    1085                1090                1095

Gly Gly  Gly Ser Gly Lys Gly  Asp Pro Lys Lys Pro  Arg Gly Lys
    1100                1105                1110

Met Ser  Ser Tyr Ala Phe Phe  Val Gln Thr Cys Arg  Glu Glu His
    1115                1120                1125

Lys Lys  Lys His Pro Asp Ala  Ser Val Asn Phe Ser  Glu Phe Ser
    1130                1135                1140

Lys Lys  Cys Ser Glu Arg Trp  Lys Thr Met Ser Ala  Lys Glu Lys
    1145                1150                1155

Gly Lys  Phe Glu Asp Met Ala  Lys Ala Asp Lys Ala  Arg Tyr Glu
    1160                1165                1170

Arg Glu  Met Lys Thr Tyr Ile  Pro Pro Lys Gly Glu
    1175                1180                1185
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<220>
<223> SYNTHESIZED

<400> 79

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Met Pro Lys Arg Lys Val Ser Ser Ala Glu Gly Ala Ala Lys Glu Glu
1               5                   10                  15

Pro Lys Arg Arg Ser Ala Arg Leu Ser Ala Lys Pro Pro Ala Lys Val
            20                  25                  30

Glu Ala Lys Pro Lys Lys Ala Ala Ala Lys Asp Lys Ser Ser Asp Lys
        35                  40                  45

Lys Val Gln Thr Lys Gly Lys Arg Gly Ala Lys Gly Lys Gln Ala Glu
    50                  55                  60
```

```
Val Ala Asn Gln Glu Thr Lys Glu Asp Leu Pro Ala Glu Asn Gly Glu
65                  70                  75                  80

Thr Lys Thr Glu Glu Ser Pro Ala Ser Asp Glu Ala Gly Glu Lys Glu
                85                  90                  95

Ala Lys Ser Asp Thr Gly Ser Gly Met Ala Arg Ile Leu Ala Phe Asp
            100                 105                 110

Ile Gly Ile Ser Ser Ile Gly Trp Ala Phe Ser Glu Asn Asp Glu Leu
        115                 120                 125

Lys Asp Cys Gly Val Arg Ile Phe Thr Lys Val Glu Asn Pro Lys Thr
    130                 135                 140

Gly Glu Ser Leu Ala Leu Pro Arg Arg Leu Ala Arg Ser Ala Arg Lys
145                 150                 155                 160

Arg Leu Ala Arg Arg Lys Ala Arg Leu Asn His Leu Lys His Leu Ile
                165                 170                 175

Ala Asn Glu Phe Lys Leu Asn Tyr Glu Asp Tyr Gln Ser Phe Asp Glu
            180                 185                 190

Ser Leu Ala Lys Ala Tyr Lys Gly Ser Leu Ile Ser Pro Tyr Glu Leu
        195                 200                 205

Arg Phe Arg Ala Leu Asn Glu Leu Leu Ser Lys Gln Asp Phe Ala Arg
    210                 215                 220

Val Ile Leu His Ile Ala Lys Arg Arg Gly Tyr Asp Asp Ile Lys Asn
225                 230                 235                 240

Ser Asp Asp Lys Glu Lys Gly Ala Ile Leu Lys Ala Ile Lys Gln Asn
                245                 250                 255

Glu Glu Lys Leu Ala Asn Tyr Gln Ser Val Gly Glu Tyr Leu Tyr Lys
```

```
            260                 265                 270

Glu Tyr Phe Gln Lys Phe Lys Glu Asn Ser Lys Glu Phe Thr Asn Val
        275                 280                 285

Arg Asn Lys Lys Glu Ser Tyr Glu Arg Cys Ile Ala Gln Ser Phe Leu
    290                 295                 300

Lys Asp Glu Leu Lys Leu Ile Phe Lys Lys Gln Arg Glu Phe Gly Phe
305                 310                 315                 320

Ser Phe Ser Lys Lys Phe Glu Glu Glu Val Leu Ser Val Ala Phe Tyr
                325                 330                 335

Lys Arg Ala Leu Lys Asp Phe Ser His Leu Val Gly Asn Cys Ser Phe
            340                 345                 350

Phe Thr Asp Glu Lys Arg Ala Pro Lys Asn Ser Pro Leu Ala Phe Met
        355                 360                 365

Phe Val Ala Leu Thr Arg Ile Ile Asn Leu Leu Asn Asn Leu Lys Asn
    370                 375                 380

Thr Glu Gly Ile Leu Tyr Thr Lys Asp Asp Leu Asn Ala Leu Leu Asn
385                 390                 395                 400

Glu Val Leu Lys Asn Gly Thr Leu Thr Tyr Lys Gln Thr Lys Lys Leu
                405                 410                 415

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

Phe Ile Glu Phe Lys Lys Tyr Lys Glu Phe Ile Lys Ala Leu Gly Glu
        435                 440                 445

His Asn Leu Ser Gln Asp Asp Leu Asn Glu Ile Ala Lys Asp Ile Thr
    450                 455                 460
```

```
Leu Ile Lys Asp Glu Ile Lys Leu Lys Lys Ala Leu Ala Lys Tyr Asp
465                 470                 475                 480

Leu Asn Gln Asn Gln Ile Asp Ser Leu Ser Lys Leu Glu Phe Lys Asp
                485                 490                 495

His Leu Asn Ile Ser Phe Lys Ala Leu Lys Leu Val Thr Pro Leu Met
            500                 505                 510

Leu Glu Gly Lys Lys Tyr Asp Glu Ala Cys Asn Glu Leu Asn Leu Lys
        515                 520                 525

Val Ala Ile Asn Glu Asp Lys Lys Asp Phe Leu Pro Ala Phe Asn Glu
    530                 535                 540

Thr Tyr Tyr Lys Asp Glu Val Thr Asn Pro Val Val Leu Arg Ala Ile
545                 550                 555                 560

Lys Glu Tyr Arg Lys Val Leu Asn Ala Leu Leu Lys Lys Tyr Gly Lys
                565                 570                 575

Val His Lys Ile Asn Ile Glu Leu Ala Arg Glu Val Gly Lys Asn His
            580                 585                 590

Ser Gln Arg Ala Lys Ile Glu Lys Glu Gln Asn Glu Asn Tyr Lys Ala
        595                 600                 605

Lys Lys Asp Ala Glu Leu Glu Cys Glu Lys Leu Gly Leu Lys Ile Asn
    610                 615                 620

Ser Lys Asn Ile Leu Lys Leu Arg Leu Phe Lys Glu Gln Lys Glu Phe
625                 630                 635                 640

Cys Ala Tyr Ser Gly Glu Lys Ile Lys Ile Ser Asp Leu Gln Asp Glu
                645                 650                 655

Lys Met Leu Glu Ile Asp His Ile Tyr Pro Tyr Ser Arg Ser Phe Asp
            660                 665                 670
```

```
Asp Ser Tyr Met Asn Lys Val Leu Val Phe Thr Lys Gln Asn Gln Glu
        675                 680                 685

Lys Leu Asn Gln Thr Pro Phe Glu Ala Phe Gly Asn Asp Ser Ala Lys
    690                 695                 700

Trp Gln Lys Ile Glu Val Leu Ala Lys Asn Leu Pro Thr Lys Lys Gln
705                 710                 715                 720

Lys Arg Ile Leu Asp Lys Asn Tyr Lys Asp Lys Glu Gln Lys Asn Phe
                725                 730                 735

Lys Asp Arg Asn Leu Asn Asp Thr Arg Tyr Ile Ala Arg Leu Val Leu
            740                 745                 750

Asn Tyr Thr Lys Asp Tyr Leu Asp Phe Leu Pro Leu Ser Asp Asp Glu
        755                 760                 765

Asn Thr Lys Leu Asn Asp Thr Gln Lys Gly Ser Lys Val His Val Glu
    770                 775                 780

Ala Lys Ser Gly Met Leu Thr Ser Ala Leu Arg His Thr Trp Gly Phe
785                 790                 795                 800

Ser Ala Lys Asp Arg Asn Asn His Leu His His Ala Ile Asp Ala Val
                805                 810                 815

Ile Ile Ala Tyr Ala Asn Asn Ser Ile Val Lys Ala Phe Ser Asp Phe
            820                 825                 830

Lys Lys Glu Gln Glu Ser Asn Ser Ala Glu Leu Tyr Ala Lys Lys Ile
        835                 840                 845

Ser Glu Leu Asp Tyr Lys Asn Lys Arg Lys Phe Phe Glu Pro Phe Ser
    850                 855                 860

Gly Phe Arg Gln Lys Val Leu Asp Lys Ile Asp Glu Ile Phe Val Ser
865                 870                 875                 880
```

```
Lys Pro Glu Arg Lys Lys Pro Ser Gly Ala Leu His Glu Glu Thr Phe
                885                 890                 895

Arg Lys Glu Glu Glu Phe Tyr Gln Ser Tyr Gly Gly Lys Glu Gly Val
            900                 905                 910

Leu Lys Ala Leu Glu Leu Gly Lys Ile Arg Lys Val Asn Gly Lys Ile
        915                 920                 925

Val Lys Asn Gly Asp Met Phe Arg Val Asp Ile Phe Lys His Lys Lys
    930                 935                 940

Thr Asn Lys Phe Tyr Ala Val Pro Ile Tyr Thr Met Asp Phe Ala Leu
945                 950                 955                 960

Lys Val Leu Pro Asn Lys Ala Val Ala Arg Ser Lys Lys Gly Glu Ile
                965                 970                 975

Lys Asp Trp Ile Leu Met Asp Glu Asn Tyr Glu Phe Cys Phe Ser Leu
            980                 985                 990

Tyr Lys Asp Ser Leu Ile Leu Ile  Gln Thr Lys Asp Met  Gln Glu Pro
        995                 1000                1005

Glu Phe  Val Tyr Tyr Asn Ala  Phe Thr Ser Ser Thr  Val Ser Leu
    1010                1015                1020

Ile Val  Ser Lys His Asp Asn  Lys Phe Glu Thr Leu  Ser Lys Asn
    1025                1030                1035

Gln Lys  Ile Leu Phe Lys Asn  Ala Asn Glu Lys Glu  Val Ile Ala
    1040                1045                1050

Lys Ser  Ile Gly Ile Gln Asn  Leu Lys Val Phe Glu  Lys Tyr Ile
    1055                1060                1065

Val Ser  Ala Leu Gly Glu Val  Thr Lys Ala Glu Phe  Arg Gln Arg
```

```
    1070                1075                1080

Glu Asp  Phe Lys Lys Pro Lys  Lys Lys Arg Lys Val  Leu Glu Gly
    1085                1090                1095

Gly Gly  Gly Ser Ser Thr Asp  His Pro Lys Tyr Ser  Asp Met Ile
    1100                1105                1110

Val Ala  Ala Ile Gln Ala Glu  Lys Asn Arg Ala Gly  Ser Ser Arg
    1115                1120                1125

Gln Ser  Ile Gln Lys Tyr Ile  Lys Ser His Tyr Lys  Val Gly Glu
    1130                1135                1140

Asn Ala  Asp Ser Gln Ile Lys  Leu Ser Ile Lys Arg  Leu Val Thr
    1145                1150                1155

Thr Gly  Val Leu Lys Gln Thr  Lys Gly Val Gly Ala  Ser Gly Ser
    1160                1165                1170

Phe Arg  Leu Ala Lys Ser Asp  Glu Pro
    1175                1180
```