SEQUENCE LISTING

<110> ISA Pharmaceuticals B.V.

<120> Formulation of a peptide vaccine

<130> P6060608PCT

<150> EP16175215.9
<151> 2016-06-20

<160> 232

<170> PatentIn version 3.3

<210> 1
<211> 25
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 1

Asp Lys Cys Leu Lys Phe Tyr Ser Lys Ile Ser Glu Tyr Arg His Tyr
1 5 10 15

Cys Tyr Ser Leu Tyr Gly Thr Thr Leu
20 25

<210> 2
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 2

Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser Glu Glu Glu Asp Glu
1 5 10 15

Ile Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp Arg Ala His Tyr Asn
20 25 30

Ile Val Thr
        35

<210> 3
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 3

Met His Gly Asp Thr Pro Thr Leu His Glu Tyr Met Leu Asp Leu Gln
1   5   10   15

Pro Glu Thr Thr Asp Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser
            20   25   30

Glu Glu Glu
        35

<210> 4
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 4

Arg Cys Ile Asn Cys Gln Lys Pro Leu Cys Pro Glu Glu Lys Gln Arg
1   5   10   15

His Leu Asp Lys Lys Gln Arg Phe His Asn Ile Arg Gly Arg Trp Thr
            20   25   30

<210> 5
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 5

Thr Leu Arg Leu Cys Val Gln Ser Thr His Val Asp Ile Arg Thr Leu
1   5   10   15

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

Gln Lys Pro
        35

<210> 6
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 6

Gly Gln Ala Glu Pro Asp Arg Ala His Tyr Asn Ile Val Thr Phe Cys
1   5   10   15

Cys Lys Cys Asp Ser Thr Leu Arg Leu Cys Val Gln Ser Thr His Val
            20   25   30

Asp Ile Arg
        35

<210> 7
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 7

Asp Lys Lys Gln Arg Phe His Asn Ile Arg Gly Arg Trp Thr Gly Arg

1 5 10 15

Cys Met Ser Cys Cys Arg Ser Ser Arg Thr Arg Arg Glu Thr Gln Leu
20 25 30

<210> 8
<211> 25
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 8

His Tyr Cys Tyr Ser Leu Tyr Gly Thr Thr Leu Glu Gln Gln Tyr Asn
1 5 10 15

Lys Pro Leu Cys Asp Leu Leu Ile Arg
20 25

<210> 9
<211> 25
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 9

Lys Gln Gln Leu Leu Arg Arg Glu Val Tyr Asp Phe Ala Phe Arg Asp
1 5 10 15

Leu Cys Ile Val Tyr Arg Asp Gly Asn
20 25

<210> 10
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 10

Leu Pro Gln Leu Cys Thr Glu Leu Gln Thr Thr Ile His Asp Ile Ile
1 5 10 15

Leu Glu Cys Val Tyr Cys Lys Gln Gln Leu Leu Arg Arg Glu Val Tyr
20 25 30

<210> 11
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 11

Met His Gln Lys Arg Thr Ala Met Phe Gln Asp Pro Gln Glu Arg Pro
1 5 10 15

Arg Lys Leu Pro Gln Leu Cys Thr Glu Leu Gln Thr Thr Ile His Asp
20 25 30

<210> 12
<211> 26
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 12

Arg Asp Leu Cys Ile Val Tyr Arg Asp Gly Asn Pro Tyr Ala Val Cys
1 5 10 15

Asp Lys Cys Leu Lys Phe Tyr Ser Lys Ile
20 25

<210> 13
<211> 32
<212> PRT

<213> Artificial

<220>
<223> peptide

<400> 13

Tyr Gly Thr Thr Leu Glu Gln Gln Tyr Asn Lys Pro Leu Cys Asp Leu
1 5 10 15

Leu Ile Arg Cys Ile Asn Cys Gln Lys Pro Leu Cys Pro Glu Glu Lys
20 25 30

<210> 14
<211> 365
<212> PRT
<213> Human papillomavirus type 16

<400> 14

Met Glu Thr Leu Cys Gln Arg Leu Asn Val Cys Gln Asp Lys Ile Leu
1 5 10 15

Thr His Tyr Glu Asn Asp Ser Thr Asp Leu Arg Asp His Ile Asp Tyr
20 25 30

Trp Lys His Met Arg Leu Glu Cys Ala Ile Tyr Tyr Lys Ala Arg Glu
35 40 45

Met Gly Phe Lys His Ile Asn His Gln Val Val Pro Thr Leu Ala Val
50 55 60

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

Thr Ile Tyr Asn Ser Gln Tyr Ser Asn Glu Lys Trp Thr Leu Gln Asp
85 90 95

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

```
His Gly Tyr Thr Val Glu Val Gln Phe Asp Gly Asp Ile Cys Asn Thr
        115                 120                 125

Met His Tyr Thr Asn Trp Thr His Ile Tyr Ile Cys Glu Glu Ala Ser
    130                 135                 140

Val Thr Val Val Glu Gly Gln Val Asp Tyr Tyr Gly Leu Tyr Tyr Val
145                 150                 155                 160

His Glu Gly Ile Arg Thr Tyr Phe Val Gln Phe Lys Asp Asp Ala Glu
                165                 170                 175

Lys Tyr Ser Lys Asn Lys Val Trp Glu Val His Ala Gly Gly Gln Val
            180                 185                 190

Ile Leu Cys Pro Thr Ser Val Phe Ser Ser Asn Glu Val Ser Ser Pro
        195                 200                 205

Glu Ile Ile Arg Gln His Leu Ala Asn His Pro Ala Ala Thr His Thr
    210                 215                 220

Lys Ala Val Ala Leu Gly Thr Glu Glu Thr Gln Thr Thr Ile Gln Arg
225                 230                 235                 240

Pro Arg Ser Glu Pro Asp Thr Gly Asn Pro Cys His Thr Thr Lys Leu
                245                 250                 255

Leu His Arg Asp Ser Val Asp Ser Ala Pro Ile Leu Thr Ala Phe Asn
            260                 265                 270

Ser Ser His Lys Gly Arg Ile Asn Cys Asn Ser Asn Thr Thr Pro Ile
        275                 280                 285

Val His Leu Lys Gly Asp Ala Asn Thr Leu Lys Cys Leu Arg Tyr Arg
    290                 295                 300

Phe Lys Lys His Cys Thr Leu Tyr Thr Ala Val Ser Ser Thr Trp His
305                 310                 315                 320
```

```
Trp Thr Gly His Asn Val Lys His Lys Ser Ala Ile Val Thr Leu Thr
                325                 330                 335


Tyr Asp Ser Glu Trp Gln Arg Asp Gln Phe Leu Ser Gln Val Lys Ile
            340                 345                 350


Pro Lys Thr Ile Thr Val Ser Thr Gly Phe Met Ser Ile
        355                 360                 365
```

<210> 15
<211> 158
<212> PRT
<213> Human papillomavirus type 16

<400> 15

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Met His Gln Lys Arg Thr Ala Met Phe Gln Asp Pro Gln Glu Arg Pro
1               5                   10                  15


Arg Lys Leu Pro Gln Leu Cys Thr Glu Leu Gln Thr Thr Ile His Asp
            20                  25                  30


Ile Ile Leu Glu Cys Val Tyr Cys Lys Gln Gln Leu Leu Arg Arg Glu
        35                  40                  45


Val Tyr Asp Phe Ala Phe Arg Asp Leu Cys Ile Val Tyr Arg Asp Gly
    50                  55                  60


Asn Pro Tyr Ala Val Cys Asp Lys Cys Leu Lys Phe Tyr Ser Lys Ile
65                  70                  75                  80


Ser Glu Tyr Arg His Tyr Cys Tyr Ser Leu Tyr Gly Thr Thr Leu Glu
                85                  90                  95


Gln Gln Tyr Asn Lys Pro Leu Cys Asp Leu Leu Ile Arg Cys Ile Asn
            100                 105                 110


Cys Gln Lys Pro Leu Cys Pro Glu Glu Lys Gln Arg His Leu Asp Lys
```

```
        115                 120                 125


Lys Gln Arg Phe His Asn Ile Arg Gly Arg Trp Thr Gly Arg Cys Met
    130                 135                 140


Ser Cys Cys Arg Ser Ser Arg Thr Arg Arg Glu Thr Gln Leu
145                 150                 155


<210>  16
<211>  98
<212>  PRT
<213>  Human papillomavirus type 16

<400>  16

Met His Gly Asp Thr Pro Thr Leu His Glu Tyr Met Leu Asp Leu Gln
1               5                   10                  15


Pro Glu Thr Thr Asp Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser
            20                  25                  30


Glu Glu Glu Asp Glu Ile Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp
        35                  40                  45


Arg Ala His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp Ser Thr
    50                  55                  60


Leu Arg Leu Cys Val Gln Ser Thr His Val Asp Ile Arg Thr Leu Glu
65                  70                  75                  80


Asp Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile Cys Ser Gln
                85                  90                  95


Lys Pro



<210>  17
<211>  365
<212>  PRT
<213>  Human papillomavirus type 18
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<400> 17

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Met Gln Thr Pro Lys Glu Thr Leu Ser Glu Arg Leu Ser Cys Val Gln
1               5                  10                  15

Asp Lys Ile Ile Asp His Tyr Glu Asn Asp Ser Lys Asp Ile Asp Ser
            20                  25                  30

Gln Ile Gln Tyr Trp Gln Leu Ile Arg Trp Glu Asn Ala Ile Phe Phe
        35                  40                  45

Ala Ala Arg Glu His Gly Ile Gln Thr Leu Asn His Gln Val Val Pro
    50                  55                  60

Ala Tyr Asn Ile Ser Lys Ser Lys Ala His Lys Ala Ile Glu Leu Gln
65                  70                  75                  80

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

Thr Leu Gln Asp Thr Cys Glu Glu Leu Trp Asn Thr Glu Pro Thr His
            100                 105                 110

Cys Phe Lys Lys Gly Gly Gln Thr Val Gln Val Tyr Phe Asp Gly Asn
        115                 120                 125

Lys Asp Asn Cys Met Thr Tyr Val Ala Trp Asp Ser Val Tyr Tyr Met
    130                 135                 140

Thr Asp Ala Gly Thr Trp Asp Lys Thr Ala Thr Cys Val Ser His Arg
145                 150                 155                 160

Gly Leu Tyr Tyr Val Lys Glu Gly Tyr Asn Thr Phe Tyr Ile Glu Phe
                165                 170                 175

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

```
Phe Gly Asn Asn Val Ile Asp Cys Asn Asp Ser Met Cys Ser Thr Ser
        195                 200                 205

Asp Asp Thr Val Ser Ala Thr Gln Leu Val Lys Gln Leu Gln His Thr
    210                 215                 220

Pro Ser Pro Tyr Ser Ser Thr Val Ser Val Gly Thr Ala Lys Thr Tyr
225                 230                 235                 240

Gly Gln Thr Ser Ala Ala Thr Arg Pro Gly His Cys Gly Leu Ala Glu
                245                 250                 255

Lys Gln His Cys Gly Pro Val Asn Pro Leu Leu Gly Ala Ala Thr Pro
            260                 265                 270

Thr Gly Asn Asn Lys Arg Arg Lys Leu Cys Ser Gly Asn Thr Thr Pro
        275                 280                 285

Ile Ile His Leu Lys Gly Asp Arg Asn Ser Leu Lys Cys Leu Arg Tyr
    290                 295                 300

Arg Leu Arg Lys His Ser Asp His Tyr Arg Asp Ile Ser Ser Thr Trp
305                 310                 315                 320

His Trp Thr Gly Ala Gly Asn Glu Lys Thr Gly Ile Leu Thr Val Thr
                325                 330                 335

Tyr His Ser Glu Thr Gln Arg Thr Lys Phe Leu Asn Thr Val Ala Ile
            340                 345                 350

Pro Asp Ser Val Gln Ile Leu Val Gly Tyr Met Thr Met
        355                 360                 365
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<210> 18
<211> 158
<212> PRT
<213> Human papillomavirus type 18

<400> 18

Met Ala Arg Phe Glu Asp Pro Thr Arg Arg Pro Tyr Lys Leu Pro Asp
1 5 10 15

Leu Cys Thr Glu Leu Asn Thr Ser Leu Gln Asp Ile Glu Ile Thr Cys
20 25 30

Val Tyr Cys Lys Thr Val Leu Glu Leu Thr Glu Val Phe Glu Phe Ala
35 40 45

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

Cys His Lys Cys Ile Asp Phe Tyr Ser Arg Ile Arg Glu Leu Arg His
65 70 75 80

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

Gly Leu Tyr Asn Leu Leu Ile Arg Cys Leu Arg Cys Gln Lys Pro Leu
100 105 110

Asn Pro Ala Glu Lys Leu Arg His Leu Asn Glu Lys Arg Arg Phe His
115 120 125

Asn Ile Ala Gly His Tyr Arg Gly Gln Cys His Ser Cys Cys Asn Arg
130 135 140

Ala Arg Gln Glu Arg Leu Gln Arg Arg Arg Glu Thr Gln Val
145 150 155

<210> 19
<211> 105
<212> PRT
<213> Human papillomavirus type 18

<400> 19

Met His Gly Pro Lys Ala Thr Leu Gln Asp Ile Val Leu His Leu Glu

```
1               5                   10                  15


Pro Gln Asn Glu Ile Pro Val Asp Leu Leu Cys His Glu Gln Leu Ser
            20                  25                  30


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


Leu Pro Ala Arg Arg Ala Glu Pro Gln Arg His Thr Met Leu Cys Met
    50                  55                  60


Cys Cys Lys Cys Glu Ala Arg Ile Lys Leu Val Val Glu Ser Ser Ala
65                  70                  75                  80


Asp Asp Leu Arg Ala Phe Gln Gln Leu Phe Leu Asn Thr Leu Ser Phe
                85                  90                  95


Val Cys Pro Trp Cys Ala Ser Gln Gln
            100                 105


<210>  20
<211>  30
<212>  PRT
<213>  Artificial

<220>
<223>  peptide

<400>  20

Arg Pro Arg Lys Leu Pro Gln Leu Cys Thr Glu Leu Gln Thr Thr Ile
1               5                   10                  15


His Asp Ile Ile Leu Glu Cys Val Tyr Cys Lys Gln Gln Leu
            20                  25                  30


<210>  21
<211>  22
<212>  PRT
<213>  Artificial
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<220>
<223> peptide

<400> 21

Arg Arg Glu Val Tyr Asp Phe Ala Phe Arg Asp Leu Cys Ile Val Tyr
1   5   10   15

Arg Asp Gly Asn Pro Tyr
            20

<210> 22
<211> 29
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 22

Ile Ser Glu Tyr Arg His Tyr Cys Tyr Ser Leu Tyr Gly Thr Thr Leu
1   5   10   15

Glu Gln Gln Tyr Asn Lys Pro Leu Cys Asp Leu Leu Ile
            20   25

<210> 23
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 23

Ile Arg Cys Ile Asn Cys Gln Lys Pro Leu Cys Pro Glu Glu Lys Gln
1   5   10   15

Arg His Leu Asp Lys Lys Gln Arg Phe His Asn Ile Arg Gly Arg Trp
            20   25   30

<210> 24

<211> 23
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 24

Gly Asp Thr Pro Thr Leu His Glu Tyr Met Leu Asp Leu Gln Pro Glu
1 5 10 15

Thr Thr Asp Leu Tyr Cys Tyr
20

<210> 25
<211> 17
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 25

Gln Ala Glu Pro Asp Arg Ala His Tyr Asn Ile Val Thr Phe Cys Cys
1 5 10 15

Lys

<210> 26
<211> 19
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 26

Leu Glu Asp Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile Cys
1 5 10 15

Ser Gln Lys

<210> 27
<211> 8
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 27

Arg Pro Arg Lys Leu Pro Gln Leu
1 5

<210> 28
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 28

Lys Leu Pro Gln Leu Cys Thr Glu Leu
1 5

<210> 29
<211> 8
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 29

Leu Pro Gln Leu Cys Thr Glu Leu
1 5

<210> 30
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 30

Gln Leu Cys Thr Glu Leu Gln Thr Thr Ile
1   5   10

<210> 31
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 31

Thr Glu Leu Gln Thr Thr Ile His Asp Ile
1   5   10

<210> 32
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 32

Thr Ile His Asp Ile Ile Leu Arg Cys Val
1   5   10

<210> 33
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 33

Ile Ile Leu Glu Cys Val Tyr Cys Lys
1   5

<210> 34
<211> 10
<212> PRT
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<220>
<223> peptide

<400> 34

Leu Glu Cys Val Tyr Cys Lys Gln Gln Leu
1 5 10

<210> 35
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<220>
<223> peptide

<400> 35

Cys Val Tyr Cys Lys Gln Gln Leu
1 5

<210> 36
<211> 10
<212> PRT
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<220>
<223> peptide

<400> 36

Arg Arg Glu Val Tyr Asp Phe Ala Phe Arg
1 5 10

<210> 37
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 37

Val Tyr Asp Phe Ala Phe Arg Asp Leu
1 5

<210> 38
<211> 8
<212> PRT
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<220>
<223> peptide

<400> 38

Tyr Asp Phe Ala Phe Arg Asp Leu
1 5

<210> 39
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 39

Phe Ala Phe Arg Asp Leu Cys Ile Val
1 5

<210> 40
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 40

Phe Arg Asp Leu Cys Ile Val Tyr Arg
1 5

<210> 41

<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 41

Ile Val Tyr Arg Asp Gly Asn Pro Tyr
1 5

<210> 42
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 42

Ile Ser Glu Tyr Arg His Tyr Cys Tyr
1 5

<210> 43
<211> 8
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 43

Ser Glu Tyr Arg His Tyr Cys Tyr
1 5

<210> 44
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 44

Cys Tyr Ser Leu Tyr Gly Thr Thr Leu
1   5

<210> 45
<211> 8
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 45

Thr Leu Glu Gln Gln Tyr Asn Lys
1   5

<210> 46
<211> 9
<212> PRT
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<220>
<223> peptide

<400> 46

Leu Glu Gln Gln Tyr Asn Lys Pro Leu
1   5

<210> 47
<211> 8
<212> PRT
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<220>
<223> peptide

<400> 47

Lys Pro Leu Cys Asp Leu Leu Ile
1   5

<210> 48
<211> 9
<212> PRT

<213> Artificial

<220>
<223> peptide

<400> 48

Cys Pro Glu Glu Lys Gln Arg His Leu
1 5

<210> 49
<211> 8
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 49

Pro Glu Glu Lys Gln Arg His Leu
1 5

<210> 50
<211> 7
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 50

Asp Lys Lys Gln Arg His Met
1 5

<210> 51
<211> 9
<212> PRT
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<220>
<223> peptide

<400> 51

Lys Lys Gln Arg Phe His Asn Ile Arg

1 5

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

<220>
<223> peptide

<400> 52

Gln Arg Phe His Asn Ile Arg Gly Arg Trp
1 5 10

<210> 53
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 53

Arg Phe His Asn Ile Arg Gly Arg Trp
1 5

<210> 54
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 54

Gly Asp Thr Pro Thr Leu His Glu Tyr
1 5

<210> 55
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 55

Thr Pro Thr Leu His Glu Tyr Met Leu
1   5

<210> 56
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 56

Tyr Met Leu Asp Leu Gln Pro Glu Thr Thr
1   5   10

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

<220>
<223> peptide

<400> 57

Leu Gln Pro Glu Thr Thr Asp Leu Tyr
1   5

<210> 58
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 58

Gln Pro Glu Thr Thr Asp Leu Tyr Cys Tyr
1   5   10

<210> 59
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 59

Gln Ala Glu Pro Asp Arg Ala His Tyr
1   5

<210> 60
<211> 8
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 60

Ala Glu Pro Asp Arg Ala His Tyr
1   5

<210> 61
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 61

Glu Pro Asp Arg Ala His Tyr Asn Ile Val
1   5   10

<210> 62
<211> 7
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 62

Met Val Thr Phe Cys Cys Lys
1 5

<210> 63
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 63

Leu Glu Asp Leu Leu Met Gly Thr Leu
1 5

<210> 64
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 64

Leu Leu Met Gly Thr Leu Gly Ile Val
1 5

<210> 65
<211> 8
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 65

Thr Leu Gly Ile Val Cys Pro Ile
1 5

<210> 66

<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 66

Ile Val Cys Pro Ile Cys Ser Gln Lys
1 5

<210> 67
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 67

Arg Ala His Tyr Asn Ile Val Thr Phe
1 5

<210> 68
<211> 90
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 68

Asp Tyr Trp Lys His Met Arg Leu Glu Cys Ala Ile Tyr Tyr Lys Ala
1 5 10 15

Arg Glu Met Gly Phe Lys His Ile Asn His Gln Val Val Pro Thr Leu
20 25 30

Ala Val Ser Lys Asn Lys Ala Leu Gln Ala Ile Glu Leu Gln Leu Thr
35 40 45

Leu Glu Thr Ile Tyr Asn Ser Gln Tyr Ser Asn Glu Lys Trp Thr Leu

```
    50                  55                  60

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

Lys Lys His Gly Tyr Thr Val Glu Val Gln
                85                  90
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<210> 69
<211> 45
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 69

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Gln Val Asp Tyr Tyr Gly Leu Tyr Tyr Val His Glu Gly Ile Arg Thr
1               5                   10                  15

Tyr Phe Val Gln Phe Lys Asp Asp Ala Glu Lys Tyr Ser Lys Asn Lys
            20                  25                  30

Val Trp Glu Val His Ala Gly Gly Gln Val Ile Leu Cys
        35                  40                  45
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<210> 70
<211> 95
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 70

```
Phe Asn Ser Ser His Lys Gly Arg Ile Asn Cys Asn Ser Asn Thr Thr
1               5                   10                  15

Pro Ile Val His Leu Lys Gly Asp Ala Asn Thr Leu Lys Cys Leu Arg
            20                  25                  30
```

```
Tyr Arg Phe Lys Lys His Cys Thr Leu Tyr Thr Ala Val Ser Ser Thr
        35                  40                  45

Trp His Trp Thr Gly His Asn Val Lys His Lys Ser Ala Ile Val Thr
    50                  55                  60

Leu Thr Tyr Asp Ser Glu Trp Gln Arg Asp Gln Phe Leu Ser Gln Val
65                  70                  75                  80

Lys Ile Pro Lys Thr Ile Thr Val Ser Thr Gly Phe Met Ser Ile
                85                  90                  95
```

<210> 71
<211> 78
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 71

```
Ser Glu Tyr Arg His Tyr Cys Tyr Ser Leu Tyr Gly Thr Thr Leu Glu
1               5                   10                  15

Gln Gln Tyr Asn Lys Pro Leu Cys Asp Leu Leu Ile Arg Cys Ile Asn
            20                  25                  30

Cys Gln Lys Pro Leu Cys Pro Glu Glu Lys Gln Arg His Leu Asp Lys
        35                  40                  45

Lys Gln Arg Phe His Asn Ile Arg Gly Arg Trp Thr Gly Arg Cys Met
    50                  55                  60

Ser Cys Cys Arg Ser Ser Arg Thr Arg Arg Glu Thr Gln Leu
65                  70                  75
```

<210> 72
<211> 47
<212> PRT

<213> Artificial

<220>
<223> peptide

<400> 72

Ser Ser Glu Glu Glu Asp Glu Ile Asp Gly Pro Ala Gly Gln Ala Glu
1   5   10   15

Pro Asp Arg Ala His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp
            20   25   30

Ser Thr Leu Arg Leu Cys Val Gln Ser Thr His Val Asp Ile Arg
        35   40   45

<210> 73
<211> 15
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 73

Lys Ile Pro Lys Thr Ile Thr Val Ser Thr Gly Phe Met Ser Ile
1   5   10   15

<210> 74
<211> 15
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 74

Ser Ser Thr Trp His Trp Thr Gly His Asn Val Lys His Lys Ser
1   5   10   15

<210> 75
<211> 10
<212> PRT

<213> Artificial

<220>
<223> peptide

<400> 75

Phe Leu Ser Gln Val Lys Ile Pro Lys Thr
1 5 10

<210> 76
<211> 20
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 76

Phe Lys His Ile Asn His Gln Val Val Pro Thr Leu Ala Val Ser Lys
1 5 10 15

Asn Lys Ala Leu
20

<210> 77
<211> 16
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 77

Thr Leu Ala Val Ser Lys Asn Lys Ala Leu Gln Ala Ile Glu Leu Gln
1 5 10 15

<210> 78
<211> 15
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 78

Leu Tyr Thr Ala Val Ser Ser Thr Trp His Trp Thr Gly His Asn
1 5 10 15

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

<220>
<223> peptide

<400> 79

Ala His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp
1 5 10

<210> 80
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 80

Gly Gln Ala Glu Pro Asp Arg Ala His Tyr Asn Ile Val Thr Phe Cys
1 5 10 15

Cys Lys Cys Asp Ser Thr Leu Arg Leu Cys Val Gln Ser Thr His Val
20 25 30

Asp Ile Arg
35

<210> 81
<211> 16
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 81

Glu Asp Glu Ile Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp Arg Ala
1 5 10 15

<210> 82
<211> 16
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 82

Asp Lys Lys Gln Arg Phe His Asn Ile Arg Gly Arg Trp Thr Gly Arg
1 5 10 15

<210> 83
<211> 22
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 83

Asp Pro Gln Glu Arg Pro Arg Lys Leu Pro Gln Leu Cys Thr Glu Leu
1 5 10 15

Gln Thr Thr Ile His Asp
20

<210> 84
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 84

Cys Val Tyr Cys Lys Gln Gln Leu Leu Arg Arg Glu Val Tyr Asp Phe

1 5 10 15

Ala Phe Arg Asp Leu Cys Ile Val Tyr Arg Asp Gly Asn Pro Tyr Ala
20 25 30

<210> 85
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 85

Phe Ala Phe Arg Asp Leu Cys Ile Val Tyr
1 5 10

<210> 86
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 86

Arg Asp Leu Cys Ile Val Tyr Arg Asp Gly Asn Pro Tyr Ala Val Cys
1 5 10 15

Asp Lys Cys Leu Lys Phe Tyr Ser Lys Ile Ser Glu Tyr Arg His Tyr
20 25 30

<210> 87
<211> 22
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 87

Tyr Arg Asp Gly Asn Pro Tyr Ala Val Cys Asp Lys Cys Leu Lys Phe

1 5 10 15

Tyr Ser Lys Ile Ser Glu
20

<210> 88
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 88

Cys Leu Lys Phe Tyr Ser Lys Ile Ser Glu Tyr Arg His Tyr Cys Tyr
1 5 10 15

Ser Leu Tyr Gly Thr Thr Leu Glu Gln Gln Tyr Asn Lys Pro Leu Cys
20 25 30

Asp

<210> 89
<211> 22
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 89

Tyr Gly Thr Thr Leu Glu Gln Gln Tyr Asn Lys Pro Leu Cys Asp Leu
1 5 10 15

Leu Ile Arg Cys Ile Asn
20

<210> 90
<211> 22
<212> PRT

<213> Artificial

<220>
<223> peptide

<400> 90

Lys Pro Leu Cys Asp Leu Leu Ile Arg Cys Ile Asn Cys Gln Lys Pro
1 5 10 15

Leu Cys Pro Glu Glu Lys
20

<210> 91
<211> 22
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 91

Glu Lys Gln Arg His Leu Asp Lys Lys Gln Arg Phe His Asn Ile Arg
1 5 10 15

Gly Arg Trp Thr Gly Arg
20

<210> 92
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 92

Lys Gln Arg Phe His Asn Ile Arg Gly Arg
1 5 10

<210> 93
<211> 22
<212> PRT

<213> Artificial

<220>
<223> peptide

<400> 93

Asp Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser Glu Glu Glu Asp
1 5 10 15

Glu Ile Asp Gly Pro Ala
20

<210> 94
<211> 22
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 94

His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp Ser Thr Leu Arg
1 5 10 15

Leu Cys Val Gln Ser Thr
20

<210> 95
<211> 11
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 95

Ile Arg Thr Leu Glu Asp Leu Leu Met Gly Thr
1 5 10

<210> 96
<211> 22
<212> PRT

<213> Artificial

<220>
<223> peptide

<400> 96

Arg Glu His Gly Ile Gln Thr Leu Asn His Gln Val Val Pro Ala Tyr
1 5 10 15

Asn Ile Ser Lys Ser Lys
20

<210> 97
<211> 22
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 97

Asp Lys Cys Leu Lys Phe Tyr Ser Lys Ile Ser Glu Tyr Arg His Tyr
1 5 10 15

Cys Tyr Ser Leu Tyr Gly
20

<210> 98
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 98

Met His Gly Pro Lys Ala Thr Leu Gln Asp Ile Val Leu His Leu Glu
1 5 10 15

Pro Gln Asn Glu Ile Pro Val Asp Leu Leu Cys His Glu Gln Leu Ser
20 25 30

<210> 99
<211> 16
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 99

Ile Pro Val Asp Leu Leu Cys His Glu Gln Leu Ser Asp Ser Glu Glu
1   5   10   15

<210> 100
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 100

Gln Glu Arg Pro Arg Lys Leu Pro Gln Leu
1   5   10

<210> 101
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 101

Thr Ile His Asp Ile Ile Leu Glu Cys Val
1   5   10

<210> 102
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 102

Gly Arg Trp Thr Gly Arg Cys Met Ser Cys
1 5 10

<210> 103
<211> 10
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 103

Ser Ser Arg Thr Arg Arg Glu Thr Gln Leu
1 5 10

<210> 104
<211> 9
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 104

Ile Val Leu His Leu Glu Pro Gln Asn
1 5

<210> 105
<211> 845
<212> PRT
<213> Hepatitis B virus

<400> 105

Met Pro Leu Ser Tyr Gln His Phe Arg Lys Leu Leu Leu Leu Asp Asp
1 5 10 15

Gly Thr Glu Ala Gly Pro Leu Glu Glu Glu Leu Pro Arg Leu Ala Asp
20 25 30

```
Ala Asp Leu His Arg Arg Val Ala Glu Asp Leu Asn Leu Gly Asn Leu
        35                  40                  45

Asn Val Ser Ile Pro Trp Thr His Lys Val Gly Asn Phe Thr Gly Leu
    50                  55                  60

Tyr Ser Ser Thr Val Pro Ile Phe Asn Pro Glu Trp Gln Thr Pro Ser
65                  70                  75                  80

Phe Pro Lys Ile His Leu Gln Glu Asp Ile Ile Asn Arg Cys Gln Gln
                85                  90                  95

Phe Val Gly Pro Leu Thr Val Asn Glu Lys Arg Arg Leu Lys Leu Ile
            100                 105                 110

Met Pro Ala Arg Phe Tyr Pro Thr His Thr Lys Tyr Leu Pro Leu Asp
        115                 120                 125

Lys Gly Ile Lys Pro Tyr Tyr Pro Asp Gln Val Val Asn His Tyr Phe
    130                 135                 140

Gln Thr Arg His Tyr Leu His Thr Leu Trp Lys Ala Gly Ile Leu Tyr
145                 150                 155                 160

Lys Arg Glu Thr Thr Arg Ser Ala Ser Phe Cys Gly Ser Pro Tyr Ser
                165                 170                 175

Trp Glu Gln Glu Leu Gln His Gly Arg Leu Val Ile Lys Thr Ser Gln
            180                 185                 190

Arg His Gly Asp Glu Ser Phe Cys Ser Gln Ser Ser Gly Ile Leu Ser
        195                 200                 205

Arg Ser Ser Val Gly Pro Cys Ile Arg Ser Gln Leu Lys Gln Ser Arg
    210                 215                 220

Leu Gly Leu Gln Pro Arg Gln Gly Arg Leu Ala Ser Ser Gln Pro Ser
225                 230                 235                 240
```

```
Arg Ser Gly Ser Ile Arg Ala Lys Ala His Pro Ser Thr Arg Arg Tyr
                245                 250                 255

Phe Gly Val Glu Pro Ser Gly Ser Gly His Ile Asp His Ser Val Asn
            260                 265                 270

Asn Ser Ser Ser Cys Leu His Gln Ser Ala Val Arg Lys Ala Ala Tyr
        275                 280                 285

Ser His Leu Ser Thr Ser Lys Arg Gln Ser Ser Ser Gly His Ala Val
    290                 295                 300

Glu Phe His Cys Leu Pro Pro Asn Ser Ala Gly Ser Gln Ser Gln Gly
305                 310                 315                 320

Ser Val Ser Ser Cys Trp Trp Leu Gln Phe Arg Asn Ser Lys Pro Cys
                325                 330                 335

Ser Glu Tyr Cys Leu Ser His Leu Val Asn Leu Arg Glu Asp Trp Gly
            340                 345                 350

Pro Cys Asp Glu His Gly Glu His His Ile Arg Ile Pro Arg Thr Pro
        355                 360                 365

Ala Arg Val Thr Gly Gly Val Phe Leu Val Asp Lys Asn Pro His Asn
    370                 375                 380

Thr Ala Glu Ser Arg Leu Val Val Asp Phe Ser Gln Phe Ser Arg Gly
385                 390                 395                 400

Ile Ser Arg Val Ser Trp Pro Lys Phe Ala Val Pro Asn Leu Gln Ser
                405                 410                 415

Leu Thr Asn Leu Leu Ser Ser Asn Leu Ser Trp Leu Ser Leu Asp Val
            420                 425                 430
```

```
Ser Ala Ala Phe Tyr His Ile Pro Leu His Pro Ala Ala Met Pro His
        435                 440                 445

Leu Leu Ile Gly Ser Ser Gly Leu Ser Arg Tyr Val Ala Arg Leu Ser
    450                 455                 460

Ser Asn Ser Arg Ile Asn Asn Asn Gln Tyr Gly Thr Met Gln Asn Leu
465                 470                 475                 480

His Asp Ser Cys Ser Arg Gln Leu Tyr Val Ser Leu Met Leu Leu Tyr
                485                 490                 495

Lys Thr Tyr Gly Trp Lys Leu His Leu Tyr Ser His Pro Ile Val Leu
            500                 505                 510

Gly Phe Arg Lys Ile Pro Met Gly Val Gly Leu Ser Pro Phe Leu Leu
        515                 520                 525

Ala Gln Phe Thr Ser Ala Ile Cys Ser Val Val Arg Arg Ala Phe Pro
    530                 535                 540

His Cys Leu Ala Phe Ser Tyr Met Asp Asp Val Val Leu Gly Ala Lys
545                 550                 555                 560

Ser Val Gln His Arg Glu Ser Leu Tyr Thr Ala Val Thr Asn Phe Leu
                565                 570                 575

Leu Ser Leu Gly Ile His Leu Asn Pro Asn Lys Thr Lys Arg Trp Gly
            580                 585                 590

Tyr Ser Leu Asn Phe Met Gly Tyr Ile Ile Gly Ser Trp Gly Thr Leu
        595                 600                 605

Pro Gln Asp His Ile Val Gln Lys Ile Lys His Cys Phe Arg Lys Leu
    610                 615                 620

Pro Val Asn Arg Pro Ile Asp Trp Lys Val Cys Gln Arg Ile Val Gly
625                 630                 635                 640
```

```
Leu Leu Gly Phe Ala Ala Pro Phe Thr Gln Cys Gly Tyr Pro Ala Leu
               645                 650                 655

Met Pro Leu Tyr Ala Cys Ile Gln Ala Lys Gln Ala Phe Thr Phe Ser
            660                 665                 670

Pro Thr Tyr Lys Ala Phe Leu Ser Lys Gln Tyr Met Asn Leu Tyr Pro
        675                 680                 685

Val Ala Arg Gln Arg Pro Gly Leu Cys Gln Val Phe Ala Asp Ala Thr
    690                 695                 700

Pro Thr Gly Trp Gly Leu Ala Ile Gly His Gln Arg Met Arg Gly Thr
705                 710                 715                 720

Phe Val Ala Pro Leu Pro Ile His Thr Ala Glu Leu Leu Ala Ala Cys
               725                 730                 735

Phe Ala Arg Ser Arg Ser Gly Ala Lys Leu Ile Gly Thr Asp Asn Ser
            740                 745                 750

Val Val Leu Ser Arg Lys Tyr Thr Ser Phe Pro Trp Leu Leu Gly Cys
        755                 760                 765

Thr Ala Asn Trp Ile Leu Arg Gly Thr Ser Phe Val Tyr Val Pro Ser
    770                 775                 780

Ala Leu Asn Pro Ala Asp Asp Pro Ser Arg Gly Arg Leu Gly Leu Ser
785                 790                 795                 800

Arg Pro Leu Leu Arg Leu Pro Phe Gln Pro Thr Thr Gly Arg Thr Ser
               805                 810                 815

Leu Tyr Ala Val Ser Pro Ser Val Pro Ser His Leu Pro Val Arg Val
            820                 825                 830
```

```
His Phe Ala Ser Pro Leu His Val Ala Trp Arg Pro Pro
        835                 840                 845


<210>  106
<211>  214
<212>  PRT
<213>  Hepatitis B virus

<400>  106

Met Gln Leu Phe His Leu Cys Leu Ile Ile Ser Cys Thr Cys Pro Thr
1               5                   10                  15


Val Gln Ala Ser Lys Leu Cys Leu Gly Trp Leu Trp Gly Met Asp Ile
            20                  25                  30


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


Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp Thr Ala Ser
    50                  55                  60


Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys Ser Pro His
65                  70                  75                  80


His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu Met Thr
                85                  90                  95


Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala Ser Arg Asp
            100                 105                 110


Leu Val Val Asn Tyr Val Asn Thr Asn Val Gly Leu Lys Ile Arg Gln
        115                 120                 125


Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg Glu Thr Val
    130                 135                 140


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

```
Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu Thr Thr
                165                 170                 175


Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro
            180                 185                 190


Ser Pro Arg Arg Arg Arg Ser Pro Ser Pro Arg Arg Arg Arg Ser Gln
        195                 200                 205


Ser Arg Glu Ser Gln Cys
    210
```

<210> 107
<211> 154
<212> PRT
<213> Hepatitis B virus

<400> 107

```
Met Ala Ala Arg Leu Cys Cys Gln Leu Asp Pro Ala Arg Asp Val Leu
1               5                   10                  15


Cys Leu Arg Pro Val Gly Ala Glu Ser Arg Gly Arg Pro Leu Ser Gly
            20                  25                  30


Pro Leu Gly Ala Leu Pro Ser Pro Ser Pro Ser Ala Val Pro Ala Asp
        35                  40                  45


His Gly Ala His Leu Ser Leu Arg Gly Leu Pro Val Cys Ala Phe Ser
    50                  55                  60


Ser Ala Gly Pro Cys Ala Leu Arg Phe Thr Ser Ala Arg Arg Met Glu
65                  70                  75                  80


Thr Thr Val Asn Ala His Gln Ile Leu Pro Lys Val Leu His Lys Arg
                85                  90                  95


Thr Leu Gly Leu Ser Ala Met Ser Thr Thr Asp Leu Glu Ala Tyr Phe
            100                 105                 110
```

```
Lys Asp Cys Val Phe Lys Asp Trp Glu Glu Leu Gly Glu Glu Ile Arg
        115                 120                 125


Leu Lys Val Phe Val Leu Gly Gly Cys Arg His Lys Leu Val Cys Ser
    130                 135                 140


Pro Ala Pro Cys Asn Phe Phe Thr Ser Ala
145                 150


<210>  108
<211>  400
<212>  PRT
<213>  Hepatitis B virus

<400>  108

Met Gly Gly Trp Ser Ser Lys Pro Arg Lys Gly Met Gly Thr Asn Leu
1               5                   10                  15


Ser Val Pro Asn Pro Leu Gly Phe Phe Pro Asp His Gln Leu Asp Pro
            20                  25                  30


Ala Phe Gly Ala Asn Ser Asn Asn Pro Asp Trp Asp Phe Asn Pro Val
        35                  40                  45


Lys Asp Asp Trp Pro Ala Ala Asn Gln Val Gly Val Gly Ala Phe Gly
    50                  55                  60


Pro Arg Leu Thr Pro Pro His Gly Gly Ile Leu Gly Trp Ser Pro Gln
65                  70                  75                  80


Ala Gln Gly Ile Leu Thr Thr Val Ser Thr Ile Pro Pro Pro Ala Ser
                85                  90                  95


Thr Asn Arg Gln Ser Gly Arg Gln Pro Thr Pro Ile Ser Pro Pro Leu
            100                 105                 110


Arg Asp Ser His Pro Gln Ala Met Gln Trp Asn Ser Thr Ala Phe His
```

```
        115                 120                 125

Gln Thr Leu Gln Asp Pro Arg Val Arg Gly Leu Tyr Leu Pro Ala Gly
    130                 135                 140

Gly Ser Ser Ser Gly Thr Val Asn Pro Ala Pro Asn Ile Ala Ser His
145                 150                 155                 160

Ile Ser Ser Ile Ser Ala Arg Thr Gly Asp Pro Val Thr Asn Met Glu
                165                 170                 175

Asn Ile Thr Ser Gly Phe Leu Gly Pro Leu Leu Val Leu Gln Ala Gly
            180                 185                 190

Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Leu Asp Ser
        195                 200                 205

Trp Trp Thr Ser Leu Asn Phe Leu Gly Gly Ser Pro Val Cys Leu Gly
    210                 215                 220

Gln Asn Ser Gln Ser Pro Thr Ser Asn His Ser Pro Thr Ser Cys Pro
225                 230                 235                 240

Pro Ile Cys Pro Gly Tyr Arg Trp Met Cys Leu Arg Arg Phe Ile Ile
                245                 250                 255

Phe Leu Phe Ile Leu Leu Leu Cys Leu Ile Phe Leu Leu Val Leu Leu
            260                 265                 270

Asp Tyr Gln Gly Met Leu Pro Val Cys Pro Leu Ile Pro Gly Ser Thr
        275                 280                 285

Thr Thr Ser Thr Gly Pro Cys Lys Thr Cys Thr Thr Pro Ala Gln Gly
    290                 295                 300

Asn Ser Met Phe Pro Ser Cys Cys Cys Thr Lys Pro Thr Asp Gly Asn
305                 310                 315                 320
```

Cys Thr Cys Ile Pro Ile Pro Ser Ser Trp Ala Phe Ala Lys Tyr Leu
325 330 335

Trp Glu Trp Ala Ser Val Arg Phe Ser Trp Leu Ser Leu Leu Val Pro
340 345 350

Phe Val Gln Trp Phe Val Gly Leu Ser Pro Thr Val Trp Leu Ser Ala
355 360 365

Ile Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Ser Ile Val Ser
370 375 380

Pro Phe Ile Pro Leu Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile
385 390 395 400

<210> 109
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 109

Met Pro Leu Ser Tyr Gln His Phe Arg Lys Leu Leu Leu Leu Asp Asp
1 5 10 15

Gly Thr Glu Ala Gly Pro Leu Glu Glu Glu Leu Pro Arg Leu
20 25 30

<210> 110
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 110

Ile Pro Trp Thr His Lys Val Gly Asn Phe Thr Gly Leu Tyr Ser Ser

1 5 10 15

Thr Val Pro Ile Phe Asn Pro Glu Trp Gln Thr Pro Ser Phe Pro Lys
20 25 30

Ile His Leu
35

<210> 111
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 111

Val Asn Glu Lys Arg Arg Leu Lys Leu Ile Met Pro Ala Arg Phe Tyr
1 5 10 15

Pro Thr His Thr Lys Tyr Leu Pro Leu Asp Lys Gly Ile Lys Pro Tyr
20 25 30

Tyr

<210> 112
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 112

Tyr Pro Thr His Thr Lys Tyr Leu Pro Leu Asp Lys Gly Ile Lys Pro
1 5 10 15

Tyr Tyr Pro Asp Gln Val Val Asn His Tyr Phe Gln Thr Arg His Tyr
20 25 30

Leu

<210> 113
<211> 39
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 113

Val Val Asn His Tyr Phe Gln Thr Arg His Tyr Leu His Thr Leu Trp
1 5 10 15

Lys Ala Gly Ile Leu Tyr Lys Arg Glu Thr Thr Arg Ser Ala Ser Phe
20 25 30

Cys Gly Ser Pro Tyr Ser Trp
35

<210> 114
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 114

Tyr Phe Gln Thr Arg His Tyr Leu His Thr Leu Trp Lys Ala Gly Ile
1 5 10 15

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

Tyr Ser Trp
35

<210> 115

<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 115

Asp Gln Val Val Asn His Tyr Phe Gln Thr Arg His Tyr Leu His Thr
1 5 10 15

Leu Trp Lys Ala Gly Ile Leu Tyr Lys Arg Glu Thr Thr Arg Ser Ala
20 25 30

Ser Phe

<210> 116
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 116

Ser Gln Ser Gln Gly Ser Val Ser Ser Cys Trp Trp Leu Gln Phe Arg
1 5 10 15

Asn Ser Lys Pro Cys Ser Glu Tyr Cys Leu Ser His Leu Val Asn Leu
20 25 30

<210> 117
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 117

Thr Ala Glu Ser Arg Leu Val Val Asp Phe Ser Gln Phe Ser Arg Gly

1 5 10 15

Ile Ser Arg Val Ser Trp Pro Lys Phe Ala Val Pro Asn Leu Gln Ser
20 25 30

Leu

<210> 118
<211> 38
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 118

Asn Leu Leu Ser Ser Asn Leu Ser Trp Leu Ser Leu Asp Val Ser Ala
1 5 10 15

Ala Phe Tyr His Ile Pro Leu His Pro Ala Ala Met Pro His Leu Leu
20 25 30

Ile Gly Ser Ser Gly Leu
35

<210> 119
<211> 38
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 119

Ser Ser Asn Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr
1 5 10 15

His Ile Pro Leu His Pro Ala Ala Met Pro His Leu Leu Ile Gly Ser
20 25 30

Ser Gly Leu Ser Arg Tyr
        35

<210> 120
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 120

Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr His Ile Pro Leu His
1   5   10   15

Pro Ala Ala Met Pro His Leu Leu Ile Gly Ser Ser Gly Leu Ser Arg
            20   25   30

Tyr

<210> 121
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 121

His Asp Ser Cys Ser Arg Gln Leu Tyr Val Ser Leu Met Leu Leu Tyr
1   5   10   15

Lys Thr Tyr Gly Trp Lys Leu His Leu Tyr Ser His Pro Ile Val Leu
            20   25   30

Gly Phe

<210> 122

<211> 36
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 122

Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile Cys Ser Val Val
1 5 10 15

Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr Met Asp Asp Val
20 25 30

Val Leu Gly Ala
35

<210> 123
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 123

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

Ala Phe Pro His Cys Leu Ala Phe Ser Tyr Met Asp Asp Val Val Leu
20 25 30

Gly Ala

<210> 124
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 124

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

Ile His Leu Asn Pro Asn Lys Thr Lys Arg Trp Gly Tyr Ser Leu Asn
20 25 30

Phe Met

<210> 125
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 125

Asn Pro Asn Lys Thr Lys Arg Trp Gly Tyr Ser Leu Asn Phe Met Gly
1 5 10 15

Tyr Ile Ile Gly Ser Trp Gly Thr Leu Pro Gln Asp His Ile Val Gln
20 25 30

Lys Ile

<210> 126
<211> 39
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 126

Tyr Pro Ala Leu Met Pro Leu Tyr Ala Cys Ile Gln Ala Lys Gln Ala
1 5 10 15

Phe Thr Phe Ser Pro Thr Tyr Lys Ala Phe Leu Ser Lys Gln Tyr Met
            20   25   30

Asn Leu Tyr Pro Val Ala Arg
        35

<210> 127
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 127

Met Pro Leu Tyr Ala Cys Ile Gln Ala Lys Gln Ala Phe Thr Phe Ser
1   5   10   15

Pro Thr Tyr Lys Ala Phe Leu Ser Lys Gln Tyr Met Asn Leu Tyr Pro
            20   25   30

Val Ala Arg
        35

<210> 128
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 128

Gln Arg Met Arg Gly Thr Phe Val Ala Pro Leu Pro Ile His Thr Ala
1   5   10   15

Glu Leu Leu Ala Ala Cys Phe Ala Arg Ser Arg Ser Gly Ala Lys Leu
            20   25   30

<210> 129

<211> 38
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 129

Val Leu Ser Arg Lys Tyr Thr Ser Phe Pro Trp Leu Leu Gly Cys Thr
1 5 10 15

Ala Asn Trp Ile Leu Arg Gly Thr Ser Phe Val Tyr Val Pro Ser Ala
20 25 30

Leu Asn Pro Ala Asp Asp
35

<210> 130
<211> 36
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 130

Arg Lys Tyr Thr Ser Phe Pro Trp Leu Leu Gly Cys Thr Ala Asn Trp
1 5 10 15

Ile Leu Arg Gly Thr Ser Phe Val Tyr Val Pro Ser Ala Leu Asn Pro
20 25 30

Ala Asp Asp Pro
35

<210> 131
<211> 36
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 131

Val Leu Ser Arg Lys Tyr Thr Ser Phe Pro Trp Leu Leu Gly Cys Thr
1 5 10 15

Ala Asn Trp Ile Leu Arg Gly Thr Ser Phe Val Tyr Val Pro Ser Ala
20 25 30

Leu Asn Pro Ala
35

<210> 132
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 132

Asp Pro Ala Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Val
1 5 10 15

Gly Leu Lys Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr
20 25 30

Phe Gly Arg
35

<210> 133
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 133

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

Gly Val Trp Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro
            20   25   30

Ile Leu

<210> 134
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 134

Ala Leu Pro Ser Pro Ser Pro Ser Ala Val Pro Ala Asp His Gly Ala
1   5   10   15

His Leu Ser Leu Arg Gly Leu Pro Val Cys Ala Phe Ser Ser Ala Gly
            20   25   30

Pro

<210> 135
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 135

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

Arg Arg Met Glu Thr Thr Val Asn Ala His Gln Ile Leu Pro Lys Val
            20   25   30

Leu His Lys

35

<210> 136
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 136

His Gln Ile Leu Pro Lys Val Leu His Lys Arg Thr Leu Gly Leu Ser
1 5 10 15

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

Lys Asp Trp
35

<210> 137
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 137

Leu Glu Ala Tyr Phe Lys Asp Cys Val Phe Lys Asp Trp Glu Glu Leu
1 5 10 15

Gly Glu Glu Ile Arg Leu Lys Val Phe Val Leu Gly Gly Cys Arg His
20 25 30

Lys Leu

<210> 138
<211> 36
<212> PRT

<213> Artificial

<220>
<223> peptide

<400> 138

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

Ala Gly Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Leu
20 25 30

Asp Ser Trp Trp
35

<210> 139
<211> 36
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 139

Cys Pro Pro Ile Cys Pro Gly Tyr Arg Trp Met Cys Leu Arg Arg Phe
1 5 10 15

Ile Ile Phe Leu Phe Ile Leu Leu Leu Cys Leu Ile Phe Leu Leu Val
20 25 30

Leu Leu Asp Tyr
35

<210> 140
<211> 36
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 140

Cys Ile Pro Ile Pro Ser Ser Trp Ala Phe Ala Lys Tyr Leu Trp Glu
1   5   10   15

Trp Ala Ser Val Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val
            20   25   30

Gln Trp Phe Val
        35

<210> 141
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 141

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

Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val
            20   25   30

<210> 142
<211> 31
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 142

Ser Ser Trp Ala Phe Ala Lys Tyr Leu Trp Glu Trp Ala Ser Val Arg
1   5   10   15

Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val
            20   25   30

<210> 143

<211> 36
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 143

Trp Leu Ser Ala Ile Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr
1   5   10   15

Ser Ile Val Ser Pro Phe Ile Pro Leu Leu Pro Ile Phe Phe Cys Leu
            20   25   30

Trp Val Tyr Ile
        35

<210> 144
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 144

Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Ser Ile Val Ser Pro Phe
1   5   10   15

Ile Pro Leu Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile
            20   25   30

<210> 145
<211> 31
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 145

Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Ser Ile Val Ser Pro

1 5 10 15

Phe Ile Pro Leu Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile
20 25 30

<210> 146
<211> 37
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 146

Met Gln Leu Phe His Leu Cys Leu Ile Ile Ser Cys Thr Cys Pro Thr
1 5 10 15

Val Gln Ala Ser Lys Leu Cys Leu Gly Trp Leu Trp Gly Met Asp Ile
20 25 30

Asp Pro Tyr Lys Glu
35

<210> 147
<211> 509
<212> PRT
<213> Homo sapiens

<400> 147

Met Glu Arg Arg Arg Leu Trp Gly Ser Ile Gln Ser Arg Tyr Ile Ser
1 5 10 15

Met Ser Val Trp Thr Ser Pro Arg Arg Leu Val Glu Leu Ala Gly Gln
20 25 30

Ser Leu Leu Lys Asp Glu Ala Leu Ala Ile Ala Ala Leu Glu Leu Leu
35 40 45

Pro Arg Glu Leu Phe Pro Pro Leu Phe Met Ala Ala Phe Asp Gly Arg
50 55 60

```
His Ser Gln Thr Leu Lys Ala Met Val Gln Ala Trp Pro Phe Thr Cys
65                  70                  75                  80

Leu Pro Leu Gly Val Leu Met Lys Gly Gln His Leu His Leu Glu Thr
                85                  90                  95

Phe Lys Ala Val Leu Asp Gly Leu Asp Val Leu Leu Ala Gln Glu Val
            100                 105                 110

Arg Pro Arg Arg Trp Lys Leu Gln Val Leu Asp Leu Arg Lys Asn Ser
        115                 120                 125

His Gln Asp Phe Trp Thr Val Trp Ser Gly Asn Arg Ala Ser Leu Tyr
    130                 135                 140

Ser Phe Pro Glu Pro Glu Ala Ala Gln Pro Met Thr Lys Lys Arg Lys
145                 150                 155                 160

Val Asp Gly Leu Ser Thr Glu Ala Glu Gln Pro Phe Ile Pro Val Glu
                165                 170                 175

Val Leu Val Asp Leu Phe Leu Lys Glu Gly Ala Cys Asp Glu Leu Phe
            180                 185                 190

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

Cys Cys Lys Lys Leu Lys Ile Phe Ala Met Pro Met Gln Asp Ile Lys
    210                 215                 220

Met Ile Leu Lys Met Val Gln Leu Asp Ser Ile Glu Asp Leu Glu Val
225                 230                 235                 240

Thr Cys Thr Trp Lys Leu Pro Thr Leu Ala Lys Phe Ser Pro Tyr Leu
                245                 250                 255
```

```
Gly Gln Met Ile Asn Leu Arg Arg Leu Leu Leu Ser His Ile His Ala
            260                 265                 270

Ser Ser Tyr Ile Ser Pro Glu Lys Glu Glu Gln Tyr Ile Ala Gln Phe
        275                 280                 285

Thr Ser Gln Phe Leu Ser Leu Gln Cys Leu Gln Ala Leu Tyr Val Asp
    290                 295                 300

Ser Leu Phe Phe Leu Arg Gly Arg Leu Asp Gln Leu Leu Arg His Val
305                 310                 315                 320

Met Asn Pro Leu Glu Thr Leu Ser Ile Thr Asn Cys Arg Leu Ser Glu
                325                 330                 335

Gly Asp Val Met His Leu Ser Gln Ser Pro Ser Val Ser Gln Leu Ser
            340                 345                 350

Val Leu Ser Leu Ser Gly Val Met Leu Thr Asp Val Ser Pro Glu Pro
        355                 360                 365

Leu Gln Ala Leu Leu Glu Arg Ala Ser Ala Thr Leu Gln Asp Leu Val
    370                 375                 380

Phe Asp Glu Cys Gly Ile Thr Asp Asp Gln Leu Leu Ala Leu Leu Pro
385                 390                 395                 400

Ser Leu Ser His Cys Ser Gln Leu Thr Thr Leu Ser Phe Tyr Gly Asn
                405                 410                 415

Ser Ile Ser Ile Ser Ala Leu Gln Ser Leu Leu Gln His Leu Ile Gly
            420                 425                 430

Leu Ser Asn Leu Thr His Val Leu Tyr Pro Val Pro Leu Glu Ser Tyr
        435                 440                 445

Glu Asp Ile His Gly Thr Leu His Leu Glu Arg Leu Ala Tyr Leu His
    450                 455                 460
```

```
Ala Arg Leu Arg Glu Leu Leu Cys Glu Leu Gly Arg Pro Ser Met Val
465                 470                 475                 480


Trp Leu Ser Ala Asn Pro Cys Pro His Cys Gly Asp Arg Thr Phe Tyr
                485                 490                 495


Asp Pro Glu Pro Ile Leu Cys Pro Cys Phe Met Pro Asn
            500                 505


<210>  148
<211>  33
<212>  PRT
<213>  Artificial

<220>
<223>  peptide

<400>  148

Met Glu Arg Arg Arg Leu Trp Gly Ser Ile Gln Ser Arg Tyr Ile Ser
1               5                   10                  15


Met Ser Val Trp Thr Ser Pro Arg Arg Leu Val Glu Leu Ala Gly Gln
            20                  25                  30


Ser



<210>  149
<211>  35
<212>  PRT
<213>  Artificial

<220>
<223>  peptide

<400>  149

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

Leu Lys Asp Glu Ala Leu Ala Ile Ala Ala Leu Glu Leu Leu Pro Arg
            20   25   30

Glu Leu Phe
        35

<210> 150
<211> 40
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 150

Pro Glu Pro Thr Ile Asp Glu Leu Leu Pro Arg Glu Leu Phe Pro Pro
1   5   10   15

Leu Phe Met Ala Ala Phe Asp Gly Arg His Ser Gln Thr Leu Lys Ala
            20   25   30

Met Val Gln Ala Trp Pro Phe Thr
        35   40

<210> 151
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 151

Leu Lys Ala Met Val Gln Ala Trp Pro Phe Thr Cys Leu Pro Leu Gly
1   5   10   15

Val Leu Met Lys Gly Gln His Leu His Leu Glu Thr Phe Lys Ala Val
            20   25   30

Leu

<210> 152
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 152

Cys Leu Pro Leu Gly Val Leu Met Lys Gly Gln His Leu His Leu Glu
1 5 10 15

Thr Phe Lys Ala Val Leu Asp Gly Leu Asp Val Leu Leu Ala Gln Glu
20 25 30

Val Arg Pro
35

<210> 153
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 153

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

Gln Glu Val Arg Pro Arg Arg Trp Lys Leu Gln Val Leu Asp Leu Arg
20 25 30

Lys

<210> 154
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 154

Val Arg Pro Arg Arg Trp Lys Leu Gln Val Leu Asp Leu Arg Lys Asn
1   5   10   15

Ser His Gln Asp Phe Trp Thr Val Trp Ser Gly Asn Arg Ala Ser Leu
            20   25   30

Tyr

<210> 155
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 155

Trp Thr Val Trp Ser Gly Asn Arg Ala Ser Leu Tyr Ser Phe Pro Glu
1   5   10   15

Pro Glu Ala Ala Gln Pro Met Thr Lys Lys Arg Lys Val Asp Gly Leu
            20   25   30

Ser Thr

<210> 156
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 156

```
Ile Pro Val Glu Val Leu Val Asp Leu Phe Leu Lys Glu Gly Ala Cys
1               5                   10                  15


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


Val Leu Arg
        35
```

<210> 157
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 157

```
Glu Leu Phe Ser Tyr Leu Ile Glu Lys Val Lys Arg Lys Lys Asn Val
1               5                   10                  15


Leu Arg Leu Cys Cys Lys Lys Leu Lys Ile Phe Ala Met Pro Met Gln
            20                  25                  30


Asp Ile
```

<210> 158
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 158

```
Ser Ile Glu Asp Leu Glu Val Thr Cys Thr Trp Lys Leu Pro Thr Leu
1               5                   10                  15


Ala Lys Phe Ser Pro Tyr Leu Gly Gln Met Ile Asn Leu Arg Arg Leu
            20                  25                  30
```

Leu Leu Ser
        35

<210> 159
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 159

Pro Thr Leu Ala Lys Phe Ser Pro Tyr Leu Gly Gln Met Ile Asn Leu
1   5   10   15

Arg Arg Leu Leu Leu Ser His Ile His Ala Ser Ser Tyr Ile Ser Pro
            20   25   30

Glu

<210> 160
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 160

Leu Arg Arg Leu Leu Leu Ser His Ile His Ala Ser Ser Tyr Ile Ser
1   5   10   15

Pro Glu Lys Glu Glu Gln Tyr Ile Ala Gln Phe Thr Ser Gln Phe Leu
            20   25   30

Ser

<210> 161
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 161

Tyr Ile Ala Gln Phe Thr Ser Gln Phe Leu Ser Leu Gln Cys Leu Gln
1 5 10 15

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

Leu

<210> 162
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 162

Leu Gln Cys Leu Gln Ala Leu Tyr Val Asp Ser Leu Phe Phe Leu Arg
1 5 10 15

Gly Arg Leu Asp Gln Leu Leu Arg His Val Met Asn Pro Leu Glu Thr
20 25 30

Leu

<210> 163
<211> 35
<212> PRT
<213> Artificial

<220>

<223> peptide

<400> 163

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

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

Phe Asp Glu
        35

<210> 164
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 164

Leu Pro Ser Leu Ser His Cys Ser Gln Leu Thr Thr Leu Ser Phe Tyr
1   5   10   15

Gly Asn Ser Ile Ser Ile Ser Ala Leu Gln Ser Leu Leu Gln His Leu
            20   25   30

Ile

<210> 165
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 165

Ser Ile Ser Ile Ser Ala Leu Gln Ser Leu Leu Gln His Leu Ile Gly
1   5   10   15

Leu Ser Asn Leu Thr His Val Leu Tyr Pro Val Pro Leu Glu Ser Tyr
            20   25   30

Glu Asp

<210> 166
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 166

Ser Tyr Glu Asp Ile His Gly Thr Leu His Leu Glu Arg Leu Ala Tyr
1   5   10   15

Leu His Ala Arg Leu Arg Glu Leu Leu Cys Glu Leu Gly Arg Pro Ser
            20   25   30

Met Val

<210> 167
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 167

Pro Ser Met Val Trp Leu Ser Ala Asn Pro Cys Pro His Cys Gly Asp
1   5   10   15

Arg Thr Phe Tyr Asp Pro Glu Pro Ile Leu Cys Pro Cys Phe Met Pro
            20   25   30

Asn

<210> 168
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 168

Met Glu Arg Arg Arg Leu Trp Gly Ser Ile Gln Ser Arg Tyr Ile Ser
1 5 10 15

Met Ser Val Trp Thr Ser Pro Arg Arg Leu Val
20 25

<210> 169
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 169

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

Leu Lys Asp Glu Ala Leu Ala Ile Ala Ala Leu
20 25

<210> 170
<211> 22
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 170

Leu Pro Arg Glu Leu Phe Pro Pro Leu Phe Met Ala Ala Phe Asp Gly
1   5   10   15

Arg His Ser Gln Thr Leu
            20

<210> 171
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 171

Phe Pro Pro Leu Phe Met Ala Ala Phe Asp Gly Arg His Ser Gln Thr
1   5   10   15

Leu Lys Ala Met Val Gln Ala Trp Pro Phe Thr
            20   25

<210> 172
<211> 26
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 172

Lys Ala Met Val Gln Ala Trp Pro Phe Thr Cys Leu Pro Leu Gly Val
1   5   10   15

Leu Met Lys Gly Gln His Leu His Leu Glu
            20   25

<210> 173
<211> 27
<212> PRT
<213> Artificial

<220>

<223> peptide

<400> 173

Gly Val Leu Met Lys Gly Gln His Leu His Leu Glu Thr Phe Lys Ala
1 5 10 15

Val Leu Asp Gly Leu Asp Val Leu Leu Ala Gln
20 25

<210> 174
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 174

Lys Ala Val Leu Asp Gly Leu Asp Val Leu Leu Ala Gln Glu Val Arg
1 5 10 15

Pro Arg Arg Trp Lys Leu Gln Val Leu Asp Leu
20 25

<210> 175
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 175

Arg Trp Lys Leu Gln Val Leu Asp Leu Arg Lys Asn Ser His Gln Asp
1 5 10 15

Phe Trp Thr Val Trp Ser Gly Asn Arg Ala Ser
20 25

<210> 176
<211> 27

<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 176

Trp Thr Val Trp Ser Gly Asn Arg Ala Ser Leu Tyr Ser Phe Pro Glu
1   5   10   15

Pro Glu Ala Ala Gln Pro Met Thr Lys Lys Arg
            20   25

<210> 177
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 177

Leu Phe Leu Lys Glu Gly Ala Cys Asp Glu Leu Phe Ser Tyr Leu Ile
1   5   10   15

Glu Lys Val Lys Arg Lys Lys Asn Val Leu Arg
            20   25

<210> 178
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 178

Tyr Leu Ile Glu Lys Val Lys Arg Lys Lys Asn Val Leu Arg Leu Cys
1   5   10   15

Cys Lys Lys Leu Lys Ile Phe Ala Met Pro Met
            20   25

<210> 179
<211> 22
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 179

Ser Ile Glu Asp Leu Glu Val Thr Cys Thr Trp Lys Leu Pro Thr Leu
1   5   10   15

Ala Lys Phe Ser Pro Tyr
            20

<210> 180
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 180

Pro Thr Leu Ala Lys Phe Ser Pro Tyr Leu Gly Gln Met Ile Asn Leu
1   5   10   15

Arg Arg Leu Leu Leu Ser His Ile His Ala Ser
            20   25

<210> 181
<211> 22
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 181

Leu Gly Gln Met Ile Asn Leu Arg Arg Leu Leu Leu Ser His Ile His
1   5   10   15

Ala Ser Ser Tyr Ile Ser
            20

<210> 182
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 182

Leu Arg Arg Leu Leu Leu Ser His Ile His Ala Ser Ser Tyr Ile Ser
1   5   10   15

Pro Glu Lys Glu Glu Gln Tyr Ile Ala Gln Phe
            20   25

<210> 183
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 183

Ser Gln Phe Leu Ser Leu Gln Cys Leu Gln Ala Leu Tyr Val Asp Ser
1   5   10   15

Leu Phe Phe Leu Arg Gly Arg Leu Asp Gln Leu
            20   25

<210> 184
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 184

Ala Leu Tyr Val Asp Ser Leu Phe Phe Leu Arg Gly Arg Leu Asp Gln
1 5 10 15

Leu Leu Arg His Val Met Asn Pro Leu Glu Thr
20 25

<210> 185
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 185

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

Leu Gln Ala Leu Leu Glu Arg Ala Ser Ala Thr
20 25

<210> 186
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 186

Leu Pro Ser Leu Ser His Cys Ser Gln Leu Thr Thr Leu Ser Phe Tyr
1 5 10 15

Gly Asn Ser Ile Ser Ile Ser Ala Leu Gln Ser
20 25

<210> 187
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 187

Gln Ser Leu Leu Gln His Leu Ile Gly Leu Ser Asn Leu Thr His Val
1   5   10   15

Leu Tyr Pro Val Pro Leu Glu Ser Tyr Glu Asp
            20   25

<210> 188
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 188

Ser Tyr Glu Asp Ile His Gly Thr Leu His Leu Glu Arg Leu Ala Tyr
1   5   10   15

Leu His Ala Arg Leu Arg Glu Leu Leu Cys Glu
            20   25

<210> 189
<211> 27
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 189

Ser Ala Asn Pro Cys Pro His Cys Gly Asp Arg Thr Phe Tyr Asp Pro
1   5   10   15

Glu Pro Ile Leu Cys Pro Cys Phe Met Pro Asn
            20   25

<210> 190
<211> 393
<212> PRT
<213> Homo sapiens

<400> 190

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


Glu Thr Phe Ser Asp Leu Trp Lys Leu Leu Pro Glu Asn Asn Val Leu
            20                  25                  30


Ser Pro Leu Pro Ser Gln Ala Met Asp Asp Leu Met Leu Ser Pro Asp
        35                  40                  45


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


Arg Met Pro Glu Ala Ala Pro Pro Val Ala Pro Ala Pro Ala Ala Pro
65                  70                  75                  80


Thr Pro Ala Ala Pro Ala Pro Ala Pro Ser Trp Pro Leu Ser Ser Ser
                85                  90                  95


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


Phe Leu His Ser Gly Thr Ala Lys Ser Val Thr Cys Thr Tyr Ser Pro
        115                 120                 125


Ala Leu Asn Lys Met Phe Cys Gln Leu Ala Lys Thr Cys Pro Val Gln
    130                 135                 140


Leu Trp Val Asp Ser Thr Pro Pro Pro Gly Thr Arg Val Arg Ala Met
145                 150                 155                 160


Ala Ile Tyr Lys Gln Ser Gln His Met Thr Glu Val Val Arg Arg Cys
                165                 170                 175
```

```
Pro His His Glu Arg Cys Ser Asp Ser Asp Gly Leu Ala Pro Pro Gln
            180                 185                 190

His Leu Ile Arg Val Glu Gly Asn Leu Arg Val Glu Tyr Leu Asp Asp
        195                 200                 205

Arg Asn Thr Phe Arg His Ser Val Val Val Pro Tyr Glu Pro Pro Glu
    210                 215                 220

Val Gly Ser Asp Cys Thr Thr Ile His Tyr Asn Tyr Met Cys Asn Ser
225                 230                 235                 240

Ser Cys Met Gly Gly Met Asn Arg Arg Pro Ile Leu Thr Ile Ile Thr
                245                 250                 255

Leu Glu Asp Ser Ser Gly Asn Leu Leu Gly Arg Asn Ser Phe Glu Val
            260                 265                 270

Arg Val Cys Ala Cys Pro Gly Arg Asp Arg Arg Thr Glu Glu Glu Asn
        275                 280                 285

Leu Arg Lys Lys Gly Glu Pro His His Glu Leu Pro Pro Gly Ser Thr
    290                 295                 300

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

Lys Pro Leu Asp Gly Glu Tyr Phe Thr Leu Gln Ile Arg Gly Arg Glu
                325                 330                 335

Arg Phe Glu Met Phe Arg Glu Leu Asn Glu Ala Leu Glu Leu Lys Asp
            340                 345                 350

Ala Gln Ala Gly Lys Glu Pro Gly Gly Ser Arg Ala His Ser Ser His
        355                 360                 365

Leu Lys Ser Lys Lys Gly Gln Ser Thr Ser Arg His Lys Lys Leu Met
```

370 375 380

Phe Lys Thr Glu Gly Pro Asp Ser Asp
385 390

<210> 191
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 191

Ala Pro Ala Pro Ser Trp Pro Leu Ser Ser Ser Val Pro Ser Gln Lys
1 5 10 15

Thr Tyr Gln Gly Ser Tyr Gly Phe Arg Leu Gly Phe Leu His
20 25 30

<210> 192
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 192

Thr Tyr Gln Gly Ser Tyr Gly Phe Arg Leu Gly Phe Leu His Ser Gly
1 5 10 15

Thr Ala Lys Ser Val Thr Cys Thr Tyr Ser Pro Ala Leu Asn
20 25 30

<210> 193
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 193

Pro Val Gln Leu Trp Val Asp Ser Thr Pro Pro Pro Gly Thr Arg Val
1 5 10 15

Arg Ala Met Ala Ile Tyr Lys Gln Ser Gln His Met Thr Glu
20 25 30

<210> 194
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 194

Val Arg Ala Met Ala Ile Tyr Lys Gln Ser Gln His Met Thr Glu Val
1 5 10 15

Val Arg Arg Cys Pro His His Glu Arg Cys Ser Asp Ser Asp
20 25 30

<210> 195
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 195

Pro Pro Gln His Leu Ile Arg Val Glu Gly Asn Leu Arg Val Glu Tyr
1 5 10 15

Leu Asp Asp Arg Asn Thr Phe Arg His Ser Val Val Val Pro
20 25 30

<210> 196
<211> 25
<212> PRT

<213> Artificial

<220>
<223> peptide

<400> 196

Glu Val Gly Ser Asp Cys Thr Thr Ile His Tyr Asn Tyr Met Cys Asn
1 5 10 15

Ser Ser Cys Met Gly Gly Met Asn Arg
20 25

<210> 197
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 197

Val Gly Ser Asp Cys Thr Thr Ile His Tyr Asn Tyr Met Cys Asn Ser
1 5 10 15

Ser Cys Met Gly Gly Met Asn Arg Arg Pro Ile Leu Thr Ile
20 25 30

<210> 198
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 198

Leu Glu Asp Ser Ser Gly Asn Leu Leu Gly Arg Asn Ser Phe Glu Val
1 5 10 15

Arg Val Cys Ala Cys Pro Gly Arg Asp Arg Arg Thr Glu Glu
20 25 30

<210> 199
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 199

Arg Val Cys Ala Cys Pro Gly Arg Asp Arg Arg Thr Glu Glu Glu Asn
1   5   10   15

Leu Arg Lys Lys Gly Glu Pro His His Glu Leu Pro Pro Gly
            20   25   30

<210> 200
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 200

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

Pro Pro Glu Val Gly Ser Asp Cys Thr Thr Ile His Tyr Asn
            20   25   30

<210> 201
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 201

Arg Arg Cys Pro His His Glu Arg Cys Ser Asp Ser Asp Gly Leu Ala
1   5   10   15

Pro Pro Gln His Leu Ile Arg Val Glu Gly Asn Leu Arg Val
20 25 30

<210> 202
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 202

Ser Cys Met Gly Gly Met Asn Arg Arg Pro Ile Leu Thr Ile Ile Thr
1 5 10 15

Leu Glu Asp Ser Ser Gly Asn Leu Leu Gly Arg Asn Ser Phe
20 25 30

<210> 203
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 203

Tyr Ser Pro Ala Leu Asn Lys Met Phe Cys Gln Leu Ala Lys Thr Cys
1 5 10 15

Pro Val Gln Leu Trp Val Asp Ser Thr Pro Pro Pro Gly Thr
20 25 30

<210> 204
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 204

Ala Pro Pro Val Ala Pro Ala Pro Ala Ala Pro Thr Pro Ala Ala Pro
1 5 10 15

Ala Pro Ala Pro Ser Trp Pro Leu Ser Ser Ser Val Pro Ser
20 25 30

<210> 205
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 205

Ile Tyr Lys Gln Ser Gln His Met Thr Glu Val Val Arg Arg Cys Pro
1 5 10 15

His His Glu Arg Cys Ser Asp Ser Asp Gly Leu Ala Pro Pro
20 25 30

<210> 206
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 206

Lys Arg Ala Leu Pro Asn Asn Thr Ser Ser Ser Pro Gln Pro Lys Lys
1 5 10 15

Lys Pro Leu Asp Gly Glu Tyr Phe Thr Leu Gln Ile Arg Gly
20 25 30

<210> 207
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 207

Ala Gln Ala Gly Lys Glu Pro Gly Gly Ser Arg Ala His Ser Ser His
1   5   10   15

Leu Lys Ser Lys Lys Gly Gln Ser Thr Ser Arg His Lys Lys
            20   25   30

<210> 208
<211> 25
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 208

Leu Lys Ser Lys Lys Gly Gln Ser Thr Ser Arg His Lys Lys Leu Met
1   5   10   15

Phe Lys Thr Glu Gly Pro Asp Ser Asp
            20   25

<210> 209
<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 209

Leu Arg Lys Lys Gly Glu Pro His His Glu Leu Pro Pro Gly Ser Thr
1   5   10   15

Lys Arg Ala Leu Pro Asn Asn Thr Ser Ser Ser Pro Gln Pro
            20   25   30

<210> 210

<211> 30
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 210

Lys Pro Leu Asp Gly Glu Tyr Phe Thr Leu Gln Ile Arg Gly Arg Glu
1 5 10 15

Arg Phe Glu Met Phe Arg Glu Leu Asn Glu Ala Leu Glu Leu
20 25 30

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

<220>
<223> peptide

<400> 211

Arg Phe Glu Met Phe Arg Glu Leu Asn Glu Ala Leu Glu Leu Lys Asp
1 5 10 15

Ala Gln Ala Gly Lys Glu Pro Gly Gly Ser Arg Ala His Ser
20 25 30

<210> 212
<211> 720
<212> PRT
<213> Homo sapiens

<400> 212

Met Trp Asn Leu Leu His Glu Thr Asp Ser Ala Val Ala Thr Ala Arg
1 5 10 15

Arg Pro Arg Trp Leu Cys Ala Gly Ala Leu Val Leu Ala Gly Gly Phe
20 25 30

```
Phe Leu Leu Gly Phe Leu Phe Gly Trp Phe Ile Lys Ser Ser Asn Glu
        35                  40                  45

Ala Thr Asn Ile Thr Pro Lys His Asn Met Lys Ala Phe Leu Asp Glu
    50                  55                  60

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

Pro His Leu Ala Gly Thr Glu Gln Asn Phe Gln Leu Ala Lys Gln Ile
                85                  90                  95

Gln Ser Gln Trp Lys Glu Phe Gly Leu Asp Ser Val Glu Leu Ala His
            100                 105                 110

Tyr Asp Val Leu Leu Ser Tyr Pro Asn Lys Thr His Pro Asn Tyr Ile
        115                 120                 125

Ser Ile Ile Asn Glu Asp Gly Asn Glu Ile Phe Asn Thr Ser Leu Phe
    130                 135                 140

Glu Pro Pro Pro Pro Gly Tyr Glu Asn Val Ser Asp Ile Val Pro Pro
145                 150                 155                 160

Phe Ser Ala Phe Ser Pro Gln Gly Met Pro Glu Gly Asp Leu Val Tyr
                165                 170                 175

Val Asn Tyr Ala Arg Thr Glu Asp Phe Phe Lys Leu Glu Arg Asp Met
            180                 185                 190

Lys Ile Asn Cys Ser Gly Lys Ile Val Ile Ala Arg Tyr Gly Lys Val
        195                 200                 205

Phe Arg Gly Asn Lys Val Lys Asn Ala Gln Leu Ala Gly Ala Lys Gly
    210                 215                 220

Val Ile Leu Tyr Ser Asp Pro Ala Asp Tyr Phe Ala Pro Gly Val Lys
225                 230                 235                 240
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```
Ser Tyr Pro Asp Gly Trp Asn Leu Pro Gly Gly Gly Val Gln Arg Gly
                245                 250                 255

Asn Ile Leu Asn Leu Asn Gly Ala Gly Asp Pro Leu Thr Pro Gly Tyr
            260                 265                 270

Pro Ala Asn Glu Tyr Ala Tyr Arg Arg Gly Ile Ala Glu Ala Val Gly
        275                 280                 285

Leu Pro Ser Ile Pro Val His Pro Ile Gly Tyr Tyr Asp Ala Gln Lys
    290                 295                 300

Leu Leu Glu Lys Met Gly Gly Ser Ala Pro Pro Asp Ser Ser Trp Arg
305                 310                 315                 320

Gly Ser Leu Lys Val Pro Tyr Asn Val Gly Pro Gly Phe Thr Gly Asn
                325                 330                 335

Phe Ser Thr Gln Lys Val Lys Met His Ile His Ser Thr Asn Glu Val
            340                 345                 350

Thr Arg Ile Tyr Asn Val Ile Gly Thr Leu Arg Gly Ala Val Glu Pro
        355                 360                 365

Asp Arg Tyr Val Ile Leu Gly Gly His Arg Asp Ser Trp Val Phe Gly
    370                 375                 380

Gly Ile Asp Pro Gln Ser Gly Ala Ala Val Val His Glu Ile Val Arg
385                 390                 395                 400

Ser Phe Gly Thr Leu Lys Lys Glu Gly Trp Arg Pro Arg Arg Thr Ile
                405                 410                 415

Leu Phe Ala Ser Trp Asp Ala Glu Glu Phe Gly Leu Leu Gly Ser Thr
            420                 425                 430
```

```
Glu Trp Ala Glu Glu Asn Ser Arg Leu Leu Gln Glu Arg Gly Val Ala
        435                 440                 445

Tyr Ile Asn Ala Asp Ser Ser Ile Glu Gly Asn Tyr Thr Leu Arg Val
    450                 455                 460

Asp Cys Thr Pro Leu Met Tyr Ser Leu Val His Asn Leu Thr Lys Glu
465                 470                 475                 480

Leu Lys Ser Pro Asp Glu Gly Phe Glu Gly Lys Ser Leu Tyr Glu Ser
                485                 490                 495

Trp Thr Lys Lys Ser Pro Ser Pro Glu Phe Ser Gly Met Pro Arg Ile
            500                 505                 510

Ser Lys Leu Gly Ser Gly Asn Asp Phe Glu Val Phe Phe Gln Arg Leu
        515                 520                 525

Gly Ile Ala Ser Gly Arg Ala Arg Tyr Thr Lys Asn Trp Glu Thr Asn
    530                 535                 540

Lys Phe Ser Gly Tyr Pro Leu Tyr His Ser Val Tyr Glu Thr Tyr Glu
545                 550                 555                 560

Leu Val Glu Lys Phe Tyr Asp Pro Met Phe Lys Tyr His Leu Thr Val
                565                 570                 575

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

Leu Pro Phe Asp Cys Arg Asp Tyr Ala Val Val Leu Arg Lys Tyr Ala
        595                 600                 605

Asp Lys Ile Tyr Ser Ile Ser Met Lys His Pro Gln Glu Met Lys Thr
    610                 615                 620

Tyr Ser Val Ser Phe Asp Ser Leu Phe Ser Ala Val Lys Asn Phe Thr
625                 630                 635                 640
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```
Glu Ile Ala Ser Lys Phe Ser Glu Arg Leu Gln Asp Phe Asp Lys Ser
                645                 650                 655


Asn Pro Ile Val Leu Arg Met Met Asn Asp Gln Leu Met Phe Leu Glu
            660                 665                 670


Arg Ala Phe Ile Asp Pro Leu Gly Leu Pro Asp Arg Pro Phe Tyr Arg
        675                 680                 685


His Val Ile Tyr Ala Pro Ser Ser His Asn Lys Tyr Ala Gly Glu Ser
    690                 695                 700


Phe Pro Gly Ile Tyr Asp Ala Leu Phe Asp Ile Glu Ser Lys Val Asp
705                 710                 715                 720


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

<220>
<223>  peptide

<400>  213

Asn Leu Leu His Glu Thr Asp Ser Ala Val Ala Thr Ala Arg Arg Pro
1               5                   10                  15


Arg Trp Leu Cys Ala Gly Ala Leu Val Leu Ala Gly Gly Phe Phe Leu
            20                  25                  30


Leu



<210>  214
<211>  35
<212>  PRT
<213>  Artificial

<220>
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<223> peptide

<400> 214

Gly Phe Phe Leu Leu Gly Phe Leu Phe Gly Trp Phe Ile Lys Ser Ser
1   5   10   15

Asn Glu Ala Thr Asn Ile Thr Pro Lys His Asn Met Lys Ala Phe Leu
            20   25   30

Asp Glu Leu
        35

<210> 215
<211> 36
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 215

Thr Pro Lys His Asn Met Lys Ala Phe Leu Asp Glu Leu Lys Ala Glu
1   5   10   15

Asn Ile Lys Lys Phe Leu Tyr Asn Phe Thr Gln Ile Pro His Leu Ala
            20   25   30

Gly Thr Glu Gln
        35

<210> 216
<211> 37
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 216

Lys Gln Ile Gln Ser Gln Trp Lys Glu Phe Gly Leu Asp Ser Val Glu
1   5   10   15

Leu Ala His Tyr Asp Val Leu Leu Ser Tyr Pro Asn Lys Thr His Pro
            20   25   30

Asn Tyr Ile Ser Ile
        35

<210> 217
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 217

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

Gly Asp Leu Val Tyr Val Asn Tyr Ala Arg Thr Glu Asp Phe Phe Lys
            20   25   30

Leu

<210> 218
<211> 36
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 218

Lys Val Phe Arg Gly Asn Lys Val Lys Asn Ala Gln Leu Ala Gly Ala
1   5   10   15

Lys Gly Val Ile Leu Tyr Ser Asp Pro Ala Asp Tyr Phe Ala Pro Gly
            20   25   30

Val Lys Ser Tyr
        35

<210> 219
<211> 37
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 219

Val Gln Arg Gly Asn Ile Leu Asn Leu Asn Gly Ala Gly Asp Pro Leu
1   5   10   15

Thr Pro Gly Tyr Pro Ala Asn Glu Tyr Ala Tyr Arg Arg Gly Ile Ala
            20   25   30

Glu Ala Val Gly Leu
        35

<210> 220
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 220

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

Ser Trp Arg Gly Ser Leu Lys Val Pro Tyr Asn Val Gly Pro Gly Phe
            20   25   30

<210> 221
<211> 31
<212> PRT
<213> Artificial

<220>

<223> peptide

<400> 221

Lys Val Lys Met His Ile His Ser Thr Asn Glu Val Thr Arg Ile Tyr
1   5   10   15

Asn Val Ile Gly Thr Leu Arg Gly Ala Val Glu Pro Asp Arg Tyr
            20   25   30

<210> 222
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 222

Ala Val Val His Glu Ile Val Arg Ser Phe Gly Thr Leu Lys Lys Glu
1   5   10   15

Gly Trp Arg Pro Arg Arg Thr Ile Leu Phe Ala Ser Trp Asp Ala Glu
            20   25   30

Glu Phe

<210> 223
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 223

Thr Glu Trp Ala Glu Glu Asn Ser Arg Leu Leu Gln Glu Arg Gly Val
1   5   10   15

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

Val

<210> 224
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 224

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

Thr Pro Leu Met Tyr Ser Leu Val His Asn Leu Thr Lys Glu Leu Lys
20 25 30

Ser Pro Asp
35

<210> 225
<211> 32
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 225

Leu Met Tyr Ser Leu Val His Asn Leu Thr Lys Glu Leu Lys Ser Pro
1 5 10 15

Asp Glu Gly Phe Glu Gly Lys Ser Leu Tyr Glu Ser Trp Thr Lys Lys
20 25 30

<210> 226
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 226

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

Val Phe Phe Gln Arg Leu Gly Ile Ala Ser Gly Arg Ala Arg Tyr Thr
            20   25   30

Lys

<210> 227
<211> 33
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 227

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

Glu Lys Phe Tyr Asp Pro Met Phe Lys Tyr His Leu Thr Val Ala Gln
            20   25   30

Val

<210> 228
<211> 36
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 228

Phe Tyr Asp Pro Met Phe Lys Tyr His Leu Thr Val Ala Gln Val Arg
1   5   10   15

Gly Gly Met Val Phe Glu Leu Ala Asn Ser Ile Val Leu Pro Phe Asp
            20   25   30

Cys Arg Asp Tyr
        35

<210> 229
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 229

Val Leu Arg Lys Tyr Ala Asp Lys Ile Tyr Ser Ile Ser Met Lys His
1   5   10   15

Pro Gln Glu Met Lys Thr Tyr Ser Val Ser Phe Asp Ser Leu Phe Ser
            20   25   30

Ala Val

<210> 230
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 230

Glu Arg Leu Gln Asp Phe Asp Lys Ser Asn Pro Ile Val Leu Arg Met
1   5   10   15

Met Asn Asp Gln Leu Met Phe Leu Glu Arg Ala Phe Ile Asp Pro Leu
            20   25   30

Gly Leu

<210> 231
<211> 35
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 231

Leu Gly Leu Pro Asp Arg Pro Phe Tyr Arg His Val Ile Tyr Ala Pro
1   5   10   15

Ser Ser His Asn Lys Tyr Ala Gly Glu Ser Phe Pro Gly Ile Tyr Asp
            20   25   30

Ala Leu Phe
        35

<210> 232
<211> 34
<212> PRT
<213> Artificial

<220>
<223> peptide

<400> 232

Glu Ser Lys Val Asp Pro Ser Lys Ala Trp Gly Glu Val Lys Arg Gln
1   5   10   15

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

Glu Val