<110> Pharmabcine Inc.

<120> Anti-VISTA antibody and Use Thereof

<130> PP-B2107

<150> KR 17/136632
<151> 2017-10-20

<160> 50

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<210> 1
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy-chain CDR1 of 1B8

<400> 1
Gly Gly Ser Ser Ser Asn Tyr Ala
1 5

<210> 2
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy-chain CDR2 of 1B8

<400> 2
Ile Ile Pro Ile Phe Gly Thr Thr
1 5

<210> 3
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy-chain CDR3 of 1B8

<400> 3
Ala Lys Gly Ala Ile Glu Pro Trp Pro Phe Tyr Phe Asp Asn
1 5 10

<210> 4
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR1 of 1B8

<400> 4
Asn Ser Asp Val Gly Ala Tyr Asn Tyr
  1   5

<210> 5
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR2 of 1B8

<400> 5
Asp Val Asn
  1

<210> 6
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR3 of 1B8

<400> 6
Ala Ala Trp Asp Asp Ser Leu Asn Gly Leu Val
  1   5   10

<210> 7
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy-chain CDR1 of 2C12

<400> 7
Gly Tyr Ile Phe Thr Asp Tyr Tyr
  1   5

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

<220>
<223> Heavy-chain CDR2 of 2C12

<400> 8
Ile Asn Pro Tyr Asp Gly Arg Thr
  1   5

<210> 9
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy-chain CDR3 of 2C12

<400> 9
Ala Lys Gln Met Gly Ile Trp Asp Tyr Asp Ala Phe Asp Ile
  1   5   10

<210> 10
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR1 of 2C12

<400> 10
Ser Ser Asn Ile Gly Ala Gly Tyr Asp
  1   5

<210> 11
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR2 of 2C12

<400> 11
Gly Asn Ser
1

<210> 12
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR3 of 2C12

<400> 12
Val Ala Trp Asp Asp Ser Leu Lys Ala Tyr Val
1 5 10

<210> 13
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy-chain CDR1 of 1A12

<400> 13
Gly Phe Ser Phe His Asp Tyr Thr
1 5

<210> 14
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy-chain CDR2 of 1A12

<400> 14
Ile Ser Trp Asp Gly Thr Ile Thr
1 5

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

<220>
<223> Heavy-chain CDR3 of 1A12

<400> 15
Ala Lys Glu Asp Arg Tyr Asp Tyr Tyr Ser Gly Ala Phe Asp Ile
1 5 10 15

<210> 16
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR1 of 1A12

<400> 16
Ser Ser Asp Val Gly Gly Tyr Asp Tyr
1 5

<210> 17
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR2 of 1A12

<400> 17
Asp Val Asn
1

<210> 18
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR3 of 1A12

<400> 18
Ser Ser Phe Ala Gly Ser Asn Thr Leu Arg Val
1 5 10

<210> 19
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy-chain CDR1 of 3C5

<400> 19
Gly Tyr Thr Phe Ser Ser Tyr Trp
  1   5

<210> 20
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy-chain CDR2 of 3C5

<400> 20
Ile Asn Pro Gly Asn Gly His Thr
  1   5

<210> 21
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy-chain CDR3 of 3C5

<400> 21
Ala Lys Asp Ile Ala Tyr Tyr Asp Phe Trp Ser Gly Asp Ala Phe Asp
  1   5   10   15

Leu

<210> 22
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR1 of 3C5

<400> 22
Lys Leu Gly Asn Lys Tyr
  1   5

<210> 23
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR2 of 3C5

<400> 23
Gln Asp Asn
  1

<210> 24
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Light-chain CDR3 of 3C5

<400> 24
Gln Thr Trp Asp Arg Ser Thr Gly Val
  1   5

<210> 25
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> VH of 1B8

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

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Ser Ser Ser Asn Tyr
             20   25   30

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

Gly Gly Ile Ile Pro Ile Phe Gly Thr Thr Ser Tyr Ala Gln Lys Phe
     50   55   60

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

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys

```
                85                  90                  95

Ala Lys Gly Ala Ile Glu Pro Trp Pro Phe Tyr Phe Asp Asn Trp Gly
            100                 105                 110

Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>    26
<211>    112
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    VL of 1B8


<400>    26
Gln Leu Val Leu Thr Gln Pro Arg Ser Val Ser Gly Ser Pro Gly Gln
  1               5                  10                  15

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

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

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

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

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

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




<210>    27
<211>    121
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    VH of 2C12


<400>    27
Gln Val Gln Leu Val Glu Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
```

```
  1               5                  10                  15

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

Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
         35                  40                  45

Gly Val Ile Asn Pro Tyr Asp Gly Arg Thr Ser Phe Ala Gln Lys Phe
     50                  55                  60

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

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

Ala Lys Gln Met Gly Ile Trp Asp Tyr Asp Ala Phe Asp Ile Trp Gly
            100                 105                 110

Gln Gly Thr Met Val Thr Val Ser Ser
        115                 120


<210>    28
<211>    112
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    VL of 2C12


<400>    28
Gln Phe Val Leu Thr Gln Pro Ser Ser Val Ser Gly Ala Pro Gly Gln
  1               5                  10                  15

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

Tyr Asp Val His Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Lys Val
         35                  40                  45

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

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

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Val Ala Trp Asp Asp Ser
                 85                  90                  95

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

<210> 29
<211> 122
<212> PRT
<213> Artificial Sequence

<220>
<223> VH of 1A12

<400> 29
Gln Met Gln Leu Val Glu Ser Gly Gly Gly Leu Val Glu Pro Gly Arg
  1   5   10   15

Ser Leu Arg Leu Ser Cys Thr Thr Ser Gly Phe Ser Phe His Asp Tyr
             20   25   30

Thr Met Tyr Trp Val Arg Gln Val Pro Gly Lys Gly Leu Glu Trp Val
         35   40   45

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

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

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

Ala Lys Glu Asp Arg Tyr Asp Tyr Tyr Ser Gly Ala Phe Asp Ile Trp
            100   105   110

Gly Gln Gly Thr Val Val Thr Val Ser Ser
        115   120

<210> 30
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> VL of 1A12

<400> 30
Gln Ser Ala Leu Thr Gln Pro Arg Ser Val Ser Gly Ser Pro Gly Gln
  1   5   10   15

Ser Val Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Gly Tyr
             20   25   30

```
Asp Tyr Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
         35                  40                  45

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

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

Gln Pro Asp Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Phe Ala Gly Ser
                 85                  90                  95

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

<210> 31
<211> 124
<212> PRT
<213> Artificial Sequence

<220>
<223> VH of 3C5

<400> 31

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

Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe Ser Ser Tyr
             20                  25                  30

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

Gly Glu Ile Asn Pro Gly Asn Gly His Thr Asn Tyr Asn Glu Lys Phe
     50                  55                  60

Lys Ser Arg Val Thr Ile Thr Val Asp Lys Ser Ala Ser Thr Ala Tyr
 65                  70                  75                  80

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

Ala Lys Asp Ile Ala Tyr Tyr Asp Phe Trp Ser Gly Asp Ala Phe Asp
            100                 105                 110

Leu Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser
        115                 120
```

<210> 32
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> VL of 3C5

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

Thr Ala Ser Ile Thr Cys Ser Gly Asp Lys Leu Gly Asn Lys Tyr Ala
             20   25   30

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

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

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly Thr Gln Ala Thr
 65   70   75   80

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

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

<210> 33
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 33
Ala Ala Trp Asp Asp Asp Leu Asn Gly Leu Val
  1   5   10

<210> 34
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 34
Ala Ala Trp Asp Asp Ser Leu Ile Gly His Val
1 5 10

<210> 35
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 35
Ala Ala Trp Asp Asp Asn Leu Asn Gly Leu Val
1 5 10

<210> 36
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 36
Ala Ala Trp Asp Asp Ser Leu Tyr Gly Leu Val
1 5 10

<210> 37
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 37
Ala Ala Trp Asp Asp Ser Leu Asn Asp Leu Val
1 5 10

<210> 38
<211> 11
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic Sequence

<400> 38
Ala Ala Trp Asp Asp Ser Leu Asn Val Leu Val
  1   5   10

<210> 39
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 39
Ala Ala Trp Asp Asp Asn Ser Asp Phe His Val
  1   5   10

<210> 40
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 40
Ala Ala Trp Asp Asp Asn Leu Tyr Gly Leu Val
  1   5   10

<210> 41
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

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

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

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

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

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

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Ala Trp Asp Asp Asp
                 85                  90                  95

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

<210> 42
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 42

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

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

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

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

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

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

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

<210> 43
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

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

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

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

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

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

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

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

<210> 44
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 44
Gln Leu Val Leu Thr Gln Pro Arg Ser Val Ser Gly Ser Pro Gly Gln
  1   5   10   15

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

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

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

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

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

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

<210> 45
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 45

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

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

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

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

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

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

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

<210> 46
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 46

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

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

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

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

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

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

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

<210> 47
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 47

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

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

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

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

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

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

Ser Asp Phe His Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
            100                 105                 110
```

<210> 48
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 48
Gln Leu Val Leu Thr Gln Pro Arg Ser Val Ser Gly Ser Pro Gly Gln
  1   5   10   15

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

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

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

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

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

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

<210> 49
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Sequence

<400> 49
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
  1   5   10   15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Ser Ser Ser Asn Tyr
             20   25   30

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

Gly Gly Ile Ile Pro Ile Phe Gly Thr Thr Ser Tyr Ala Gln Lys Phe
     50                  55                  60

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

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

Ala Lys Gly Ala Ile Glu Pro Trp Pro Phe Tyr Phe Asp Asn Trp Gly
            100                 105                 110

Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>    50
<211>    111
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    Synthetic Sequence


<400>    50
Gln Ser Ala Leu Thr Gln Pro Arg Ser Val Ser Gly Ser Pro Gly Gln
  1               5                  10                  15

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

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

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

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

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

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