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SEQUENCE LISTING

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<120> Recombinant anti-MUC1 antibodies

<130> WOB 09 MW LFB MUC1

<150> EP 08160727

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<170> PatentIn version 3.5

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ser val Lys val Ser Cys Lys Ala Ser  
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Ser Val Lys Leu Ser Cys Lys Ala Ser  
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Trp

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Trp

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Trp

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Thr Ala Met Tyr Tyr Cys  
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Ser Ile Arg Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp  
20 25 30

Thr Ala Met Tyr Tyr Cys  
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Thr Ala Met Tyr Tyr Cys  
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Ser Ile Ser Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp  
20 25 30

Thr Ala Met Tyr Tyr Cys  
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Thr Ala Met Tyr Tyr Cys  
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Tyr

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Tyr

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Tyr

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Tyr

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

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

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

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

Leu Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Met Tyr Tyr Cys  
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Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys Trp Gly Gln  
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Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Gly His  
 20 25 30

Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met  
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Gly Trp Ile Asp Pro Val Thr Gly Gly Thr Lys Tyr Ala Gln Asn Phe  
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Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Met Tyr Tyr Cys  
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Gly Trp Ile Asp Pro Val Thr Gly Gly Thr Lys Tyr Ala Gln Asn Phe  
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Met Glu Leu Ser Arg Leu Arg Pro Asp Asp Thr Ala Met Tyr Tyr Cys  
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Gly Trp Ile Asp Pro Val Thr Gly Ser Thr Lys Tyr Ala Gln Asn Phe  
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Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys Trp Gly Gln  
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Gly Thr Leu Val Thr Val Ala Ser  
115 120

<210> 89  
<211> 120  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 89

<400> 89

Gln Met Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala  
1 5 10 15  
Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Gly His  
20 25 30  
Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met  
35 40 45  
Gly Trp Ile Asp Pro Val Thr Gly Gly Thr Lys Tyr Ala Gln Asn Phe  
50 55 60  
Gln Gly Trp Val Thr Met Thr Arg Asp Thr Ser Ile Arg Thr Ala Tyr  
65 70 75 80

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

Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys Trp Gly Gln  
100 105 110

Gly Thr Leu Val Thr Val Ala Ser  
115 120

<210> 90  
<211> 120  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 90

<400> 90

Arg Met 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 Ala Gly His  
20 25 30

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

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

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

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

Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys Trp Gly Gln  
100 105 110

Gly Thr Leu Val Thr Val Ala Ser  
115 120

<210> 91  
<211> 107  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 91

<400> 91

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



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

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

Tyr Gly Ser Asn 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 Arg Val Glu Ala Gly  
                   65                                  70                                  75                                  80

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

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

<210> 92  
 <211> 107  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> SEQ ID NO: 92

<400> 92

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

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

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

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

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

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

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

<210> 93  
 <211> 107  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> SEQ ID NO: 93

&lt;400&gt; 93

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

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

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

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

Asn Ser Gly Asn Met Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly  
 65 70 75 80

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

Val Phe Gly Gly Gly Thr Arg Leu Thr Ile Leu  
 100 105

&lt;210&gt; 94

&lt;211&gt; 107

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; SEQ ID NO: 94

&lt;400&gt; 94

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

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

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

Tyr Gly Ser Asp Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser  
 50 55 60

Asn Thr Gly Asn Met Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly  
 65 70 75 80

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

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

<210> 95  
 <211> 107  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> SEQ ID NO: 95

<400> 95

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

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

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

Tyr Gly Ser Tyr Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser  
 50 55 60

Asn Tyr Gly Asn Thr Ala Thr Leu Thr Ile Arg Arg Val Glu Ala Gly  
 65 70 75 80

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

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

<210> 96  
 <211> 107  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> SEQ ID NO: 96

<400> 96

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

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

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

Tyr Gly Ser Asp Arg Ser Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser  
 50 55 60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly  
 65 70 75 80

Asp Glu Ala Asp Tyr Tyr Cys Gln Val Trp Asp Ser Ser Ser Asp Trp

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

<210> 97  
<211> 10  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 97

<400> 97

Ser Ser Thr Lys Gly Pro Ser Val Lys Leu  
1 5 10

<210> 98  
<211> 10  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 98

<400> 98

Ala Ser Thr Lys Gly Pro Ser Ala Lys Leu  
1 5 10

<210> 99  
<211> 10  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 99

<400> 99

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

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

<220>  
<223> SEQ ID NO: 100

<400> 100

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

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

<220>

<223> SEQ ID NO: 101

<400> 101

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

<210> 102

<211> 10

<212> PRT

<213> Artificial sequence

<220>

<223> SEQ ID NO: 102

<400> 102

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

<210> 103

<211> 10

<212> PRT

<213> Artificial sequence

<220>

<223> SEQ ID NO: 103

<400> 103

Glu Glu Gly Glu Phe Ser Glu Ala Arg Val  
1 5 10

<210> 104

<211> 10

<212> PRT

<213> Artificial sequence

<220>

<223> SEQ ID NO: 104

<400> 104

Glu Glu Gly Glu Phe Ser Glu Ala Arg Val  
1 5 10

<210> 105

<211> 10

<212> PRT

<213> Artificial sequence

<220>

<223> SEQ ID NO: 105

<400> 105

Glu Glu Gly Glu Phe Ser Glu Ala Arg Val  
1 5 10

<210> 106

<211> 10

<212> PRT

<213> Artificial sequence

<220>

<223> SEQ ID NO: 106

<400> 106

Glu Glu Gly Glu Phe Ser Glu Ala Arg Val  
1 5 10

<210> 107

<211> 10

<212> PRT

<213> Artificial sequence

<220>

<223> SEQ ID NO: 107

<400> 107

Glu Glu Gly Glu Phe Ser Glu Ala Arg Val  
1 5 10

<210> 108

<211> 10

<212> PRT

<213> Artificial sequence

<220>

<223> SEQ ID NO: 108

<400> 108

Glu Glu Gly Lys Phe Leu Glu Ala His Val  
1 5 10

<210> 109

<211> 15

<212> PRT

<213> Artificial sequence

<220>

<223> SEQ ID NO: 109

<400> 109

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

<210> 110

<211> 15

<212> PRT

<213> Artificial sequence

<220>

<223> SEQ ID NO: 110

<400> 110

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

<210> 111

<211> 15

<212> PRT

<213> Artificial sequence

<220>  
<223> SEQ ID NO: 111

<400> 111

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

<210> 112  
<211> 15  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 112

<400> 112

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

<210> 113  
<211> 15  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 113

<400> 113

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

<210> 114  
<211> 15  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 114

<400> 114

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

<210> 115  
<211> 16  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 115

<400> 115

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala Cys  
1 5 10 15

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

<213> Artificial sequence

<220>

<223> SEQ ID NO: 116

<400> 116

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
1 5 10 15

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
20 25 30

<210> 117

<211> 33

<212> PRT

<213> Artificial sequence

<220>

<223> SEQ ID NO: 117

<220>

<221> MOD\_RES

<222> (1)..(1)

<223> biotinylated beta-Alanin

<220>

<221> MOD\_RES

<222> (2)..(2)

<223> beta-Alanin

<400> 117

Ala Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala  
1 5 10 15

His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr  
20 25 30

Ala

<210> 118

<211> 33

<212> PRT

<213> Artificial sequence

<220>

<223> SEQ ID NO: 118

<400> 118

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
1 5 10 15

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
20 25 30

Cys



<210> 119  
 <211> 21  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> SEQ ID NO: 119

<400> 119  
 tggctgcacc aagtgctcact c 21

<210> 120  
 <211> 22  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> SEQ ID NO: 120

<400> 120  
 ccgggatcct ctctagagtt ta 22

<210> 121  
 <211> 23  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> SEQ ID NO: 121

<400> 121  
 gggaggggca aacaacagat ggc 23

<210> 122  
 <211> 262  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> SEQ ID NO: 122

<400> 122

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

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

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

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

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

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

Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys Trp Gly Gln  
100 105 110

Gly Thr Leu Val Thr Val Ala Ser Ala Ser Thr Lys Gly Pro Ser Val  
115 120 125

Lys Leu Glu Glu Gly Glu Phe Ser Glu Ala Arg Val Gln Ser Val Leu  
130 135 140

Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Lys Thr Ala Arg Ile  
145 150 155 160

Thr Cys Gly Gly Asn Asn Ile Gly Ser Lys Ser Val His Trp Tyr Gln  
165 170 175

Gln Lys Pro Gly Gln Ala Pro Ala Leu Val Ile Tyr Tyr Gly Ser Tyr  
180 185 190

Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser Asn Tyr Gly Asn  
195 200 205

Thr Ala Thr Leu Thr Ile Arg Arg Val Glu Ala Gly Asp Glu Ala Asp  
210 215 220

Tyr Tyr Cys Gln Val Trp Asp Ser Ser Ser Asp Trp Val Phe Gly Gly  
225 230 235 240

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

Thr Leu Phe Pro Pro Ser  
260

<210> 123  
<211> 262  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 123

<400> 123

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

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

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

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

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

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

Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys Trp Gly Gln  
100 105 110

Gly Thr Leu Val Thr Val Ala Ser Ser Ser Thr Lys Gly Pro Ser Val  
115 120 125

Lys Leu Glu Glu Gly Glu Phe Ser Glu Ala Arg Val Gln Ser Val Leu  
130 135 140

Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Lys Thr Ala Arg Ile  
145 150 155 160

Thr Cys Gly Gly Asn Asn Ile Gly Ser Lys Ser Val His Trp Tyr Gln  
165 170 175

Gln Lys Pro Gly Gln Ala Pro Ala Leu Val Ile Tyr Tyr Gly Ser Asn  
180 185 190

Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser Asn Ser Gly Asn  
195 200 205

Thr Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly Asp Glu Ala Asp  
210 215 220

Tyr Tyr Cys Gln Val Trp Asp Ser Ser Ser Asp Trp Val Phe Gly Gly  
225 230 235 240

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

Thr Leu Phe Pro Ser Ser  
260

<210> 124  
<211> 262  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 124  
<400> 124

Arg Met 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 Ala Gly His

20

25

30

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

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

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

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

Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys Trp Gly Gln  
                           100                          105                          110

Gly Thr Leu Val Thr Val Ala Ser Ala Ser Thr Lys Gly Pro Ser Val  
           115                          120                          125

Lys Leu Glu Glu Gly Lys Phe Leu Glu Ala His Val Gln Ser Val Leu  
       130                          135                          140

Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Lys Thr Ala Arg Ile  
       145                          150                          155                          160

Thr Cys Gly Gly Asn Asn Ile Gly Ser Lys Ser Val His Trp Tyr Gln  
                           165                          170                          175

Gln Lys Pro Gly Gln Ala Pro Val Leu Val Ile Tyr Tyr Gly Ser Asp  
                           180                          185                          190

Arg Ser Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser Asn Ser Gly Asn  
           195                          200                          205

Thr Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly Asp Glu Ala Asp  
       210                          215                          220

Tyr Tyr Cys Gln Val Trp Asp Ser Ser Ser Asp Trp Val Phe Gly Gly  
       225                          230                          235                          240

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

Thr Leu Phe Pro Pro Ser  
           260

&lt;210&gt; 125

&lt;211&gt; 232

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; SEQ ID NO: 125

&lt;400&gt; 125

Met Ala Trp Thr Val Leu Leu Leu Gly Leu Leu Ser His Cys Thr Gly  
 1 5 10 15  
 Ser Val Thr Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Val Ala  
 20 25 30  
 Pro Gly Lys Thr Ala Arg Ile Thr Cys Gly Gly Asn Asn Ile Gly Ser  
 35 40 45  
 Lys Ser Val His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Ala Leu  
 50 55 60  
 Val Ile Tyr Tyr Gly Ser Tyr Arg Pro Ser Gly Ile Pro Glu Arg Phe  
 65 70 75 80  
 Ser Gly Ser Asn Tyr Gly Asn Thr Ala Thr Leu Thr Ile Arg Arg Val  
 85 90 95  
 Glu Ala Gly Asp Glu Ala Asp Tyr Tyr Cys Gln Val Trp Asp Ser Ser  
 100 105 110  
 Ser Asp Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln  
 115 120 125  
 Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu  
 130 135 140  
 Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe Tyr  
 145 150 155 160  
 Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys  
 165 170 175  
 Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr  
 180 185 190  
 Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His  
 195 200 205  
 Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu Lys  
 210 215 220  
 Thr Val Ala Pro Thr Glu Cys Ser  
 225 230

&lt;210&gt; 126

&lt;211&gt; 232

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; SEQ ID NO: 126

&lt;400&gt; 126

Met Ala Trp Thr Val Leu Leu Leu Gly Leu Leu Ser His Cys Thr Gly  
 1 5 10 15

Ser Val Thr Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Val Ala  
 20 25 30

Pro Gly Lys Thr Ala Arg Ile Thr Cys Gly Gly Asn Asn Ile Gly Ser  
 35 40 45

Lys Ser Val His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Leu  
 50 55 60

Val Ile Tyr Tyr Gly Ser Asp Arg Ser Ser Gly Ile Pro Glu Arg Phe  
 65 70 75 80

Ser Gly Ser Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Arg Val  
 85 90 95

Glu Ala Gly Asp Glu Ala Asp Tyr Tyr Cys Gln Val Trp Asp Ser Ser  
 100 105 110

Ser Asp Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln  
 115 120 125

Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu  
 130 135 140

Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe Tyr  
 145 150 155 160

Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys  
 165 170 175

Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr  
 180 185 190

Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His  
 195 200 205

Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu Lys  
 210 215 220

Thr Val Ala Pro Thr Glu Cys Ser  
 225 230

&lt;210&gt; 127

&lt;211&gt; 232

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; SEQ ID NO: 127

&lt;400&gt; 127

Met Ala Trp Thr Val Leu Leu Leu Gly Leu Leu Ser His Cys Thr Gly  
 1 5 10 15

Ser Val Thr Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Val Ala  
 20 25 30

Pro Gly Lys Thr Ala Arg Ile Thr Cys Gly Gly Asn Asn Ile Gly Ser  
 35 40 45

Lys Ser Val His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Ala Leu  
 50 55 60

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

Ser Gly Ser Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Arg Val  
 85 90 95

Glu Ala Gly Asp Glu Ala Asp Tyr Tyr Cys Gln Val Trp Asp Ser Ser  
 100 105 110

Ser Asp Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln  
 115 120 125

Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu  
 130 135 140

Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe Tyr  
 145 150 155 160

Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys  
 165 170 175

Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr  
 180 185 190

Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His  
 195 200 205

Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu Lys  
 210 215 220

Thr Val Ala Pro Thr Glu Cys Ser  
 225 230

&lt;210&gt; 128

&lt;211&gt; 213

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; SEQ ID NO: 128

&lt;400&gt; 128

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

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

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

Tyr Gly Ser Tyr Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser  
 50 55 60

Asn Tyr Gly Asn Thr Ala Thr Leu Thr Ile Arg Arg Val Glu Ala Gly  
 65 70 75 80

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

Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln Pro Lys Ala  
 100 105 110

Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu Leu Gln Ala  
 115 120 125

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

Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys Ala Gly Val  
 145 150 155 160

Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr Ala Ala Ser  
 165 170 175

Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His Arg Ser Tyr  
 180 185 190

Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu Lys Thr Val Ala  
 195 200 205

Pro Thr Glu Cys Ser  
 210

&lt;210&gt; 129

&lt;211&gt; 213

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;



&lt;223&gt; SEQ ID NO: 129

&lt;400&gt; 129

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

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

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

Tyr Gly Ser Asp Arg Ser Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser  
 50 55 60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Arg Val Glu Ala Gly  
 65 70 75 80

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

Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln Pro Lys Ala  
 100 105 110

Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu Leu Gln Ala  
 115 120 125

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

Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys Ala Gly Val  
 145 150 155 160

Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr Ala Ala Ser  
 165 170 175

Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His Arg Ser Tyr  
 180 185 190

Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu Lys Thr Val Ala  
 195 200 205

Pro Thr Glu Cys Ser  
 210

&lt;210&gt; 130

&lt;211&gt; 213

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; SEQ ID NO: 130

&lt;400&gt; 130

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

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

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

Tyr Gly Ser Asn 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 Arg Val Glu Ala Gly  
65 70 75 80

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

Val Phe Gly Gly Thr Lys Leu Thr Val Leu Gly Gln Pro Lys Ala  
100 105 110

Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu Leu Gln Ala  
115 120 125

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

Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys Ala Gly Val  
145 150 155 160

Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr Ala Ala Ser  
165 170 175

Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His Arg Ser Tyr  
180 185 190

Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu Lys Thr Val Ala  
195 200 205

Pro Thr Glu Cys Ser  
210

<210> 131  
<211> 469  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 131

<400> 131

Met Asp Trp Thr Trp Arg Ile Leu Phe Leu Val Ala Ala Ala Thr Gly  
1 5 10 15

Ala His Ser Gln Met Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys  
 20 25 30  
 Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe  
 35 40 45  
 Thr Gly His Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu  
 50 55 60  
 Glu Trp Met Gly Trp Ile Asp Pro Val Thr Gly Gly Thr Lys Tyr Ala  
 65 70 75 80  
 Gln Asn Phe Gln Gly Trp Val Thr Met Thr Arg Asp Thr Ser Ile Arg  
 85 90 95  
 Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Met  
 100 105 110  
 Tyr Tyr Cys Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys  
 115 120 125  
 Trp Gly Gln Gly Thr Leu Val Thr Val Ala Ser Ala Ser Thr Lys Gly  
 130 135 140  
 Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly  
 145 150 155 160  
 Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val  
 165 170 175  
 Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe  
 180 185 190  
 Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val  
 195 200 205  
 Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val  
 210 215 220  
 Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys  
 225 230 235 240  
 Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu  
 245 250 255  
 Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr  
 260 265 270  
 Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val  
 275 280 285

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

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

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu  
325 330 335

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

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

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

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

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

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

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser  
435 440 445

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

Leu Ser Pro Gly Lys  
465

<210> 132  
<211> 469  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 132

<400> 132

Met Asp Trp Thr Trp Arg Ile Leu Phe Leu Val Ala Ala Ala Thr Gly  
1 5 10 15

Ala His Ser Arg Met Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys  
20 25 30

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

Ala Gly His Tyr Met His Trp Val Arg Gln Ala Pro Gly Arg Gly Leu  
50 55 60

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

Gln Asn Phe Gln Gly Trp Val Thr Met Thr Arg Asp Thr Ser Ile Arg  
85 90 95

Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Met  
100 105 110

Tyr Tyr Cys Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys  
115 120 125

Trp Gly Gln Gly Thr Leu Val Thr Val Ala Ser Ala Ser Thr Lys Gly  
130 135 140

Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly  
145 150 155 160

Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val  
165 170 175

Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe  
180 185 190

Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val  
195 200 205

Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val  
210 215 220

Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys  
225 230 235 240

Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu  
245 250 255

Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr  
260 265 270

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val  
275 280 285

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

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

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu  
325 330 335

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

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

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

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

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

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

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser  
435 440 445

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

Leu Ser Pro Gly Lys  
465

<210> 133  
<211> 469  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 133

<400> 133

Met Asp Trp Thr Trp Arg Ile Leu Phe Leu Val Ala Ala Ala Thr Gly  
1 5 10 15

Ala His Ser Gln Met Gln Leu Val Gln Ser Glu Ala Glu Leu Lys Lys  
20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ser Phe  
35 40 45

Thr Gly His Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu  
50 55 60

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

Gln Asn Phe Gln Gly Trp Val Thr Met Thr Arg Asp Thr Ser Ile Arg  
85 90 95

Thr Ala Tyr Leu Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Met  
100 105 110

Tyr Tyr Cys Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys  
115 120 125

Trp Gly Gln Gly Thr Leu Val Thr Val Ala Ser Ala Ser Thr Lys Gly  
130 135 140

Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly  
145 150 155 160

Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val  
165 170 175

Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe  
180 185 190

Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val  
195 200 205

Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val  
210 215 220

Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys  
225 230 235 240

Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu  
245 250 255

Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr  
260 265 270

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val  
275 280 285

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

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

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu  
325 330 335

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

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

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

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

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

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

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser  
435 440 445

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

Leu Ser Pro Gly Lys  
465

<210> 134  
<211> 450  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 134

<400> 134

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

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

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

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

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

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

Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys Trp Gly Gln  
100 105 110



Gly Thr Leu Val Thr Val Ala Ser Ala Ser Thr Lys Gly Pro Ser Val  
 115 120 125  
 Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala  
 130 135 140  
 Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser  
 145 150 155 160  
 Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val  
 165 170 175  
 Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro  
 180 185 190  
 Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys  
 195 200 205  
 Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp  
 210 215 220  
 Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly  
 225 230 235 240  
 Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile  
 245 250 255  
 Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu  
 260 265 270  
 Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His  
 275 280 285  
 Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg  
 290 295 300  
 Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys  
 305 310 315 320  
 Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu  
 325 330 335  
 Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr  
 340 345 350  
 Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu  
 355 360 365  
 Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp  
 370 375 380

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val  
385 390 395 400

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

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His  
420 425 430

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro  
435 440 445

Gly Lys  
450

<210> 135  
<211> 450  
<212> PRT  
<213> Artificial sequence

<220>  
<223> SEQ ID NO: 135

<400> 135

Arg Met 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 Ala Gly His  
20 25 30

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

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

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

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

Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys Trp Gly Gln  
100 105 110

Gly Thr Leu Val Thr Val Ala Ser Ala Ser Thr Lys Gly Pro Ser Val  
115 120 125

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala  
130 135 140

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

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val  
 165 170 175  
 Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro  
 180 185 190  
 Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys  
 195 200 205  
 Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp  
 210 215 220  
 Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly  
 225 230 235 240  
 Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile  
 245 250 255  
 Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu  
 260 265 270  
 Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His  
 275 280 285  
 Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg  
 290 295 300  
 Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys  
 305 310 315 320  
 Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu  
 325 330 335  
 Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr  
 340 345 350  
 Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu  
 355 360 365  
 Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp  
 370 375 380  
 Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val  
 385 390 395 400  
 Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp  
 405 410 415  
 Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His  
 420 425 430

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro  
 435 440 445

Gly Lys  
 450

<210> 136  
 <211> 450  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> SEQ ID NO: 136

<400> 136

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

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

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

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

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

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

Ala Arg Glu Val Thr Gly Asp Arg Gly Gln Phe Asp Lys Trp Gly Gln  
 100 105 110

Gly Thr Leu Val Thr Val Ala Ser Ala Ser Thr Lys Gly Pro Ser Val  
 115 120 125

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala  
 130 135 140

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

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val  
 165 170 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro  
 180 185 190

Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys  
 195 200 205

Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp  
 210 215 220  
 Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly  
 225 230 235 240  
 Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile  
 245 250 255  
 Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu  
 260 265 270  
 Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His  
 275 280 285  
 Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg  
 290 295 300  
 Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys  
 305 310 315 320  
 Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu  
 325 330 335  
 Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr  
 340 345 350  
 Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu  
 355 360 365  
 Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp  
 370 375 380  
 Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val  
 385 390 395 400  
 Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp  
 405 410 415  
 Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His  
 420 425 430  
 Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro  
 435 440 445  
 Gly Lys  
 450