

SEQUENCE LISTING

<110> Augusta University Research Institute, Inc
He, Yukai
Zhu, Wei
Celis, Esteban
Peng, Yibing
Wang, Lan

<120> Human Alpha Fetoprotein-Specific T Cell Receptors and Uses
Thereof

<130> 064466.067

<150> 62/505,406
<151> 2017-05-12

<150> 62/609,614
<151> 2017-12-22

<150> 62/625,051
<151> 2018-02-01

<160> 105

<170> PatentIn version 3.5

<210> 1
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Phe Met Asn Lys Phe Ile Tyr Glu Ile
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Trp Val Asn Ser Gln Gln Lys Val Gln Gln Ser Pro Glu Ser Leu Ile
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Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Ile Thr Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His
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Val Leu Pro Asn
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Trp Val Asn Ser Gln Gln Lys Val Gln Gln Ser Pro Glu Ser Leu Ile
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Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Thr Val Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His
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Val Leu Pro Asn
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Met Lys Ser Phe Ser Ile Ser Leu Val Val Leu Trp Leu Gln Leu Asn
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Trp Val Asn Ser Gln Gln Lys Val Gln Gln Ser Pro Glu Ser Leu Ile
20 25 30

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Met Ala Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
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Val Ser Pro Asp
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Trp Val Asn Ser Gln Gln Lys Val Gln Gln Ser Pro Glu Ser Leu Ile
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Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Met Ile Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His
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Val Leu Pro Asn
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Trp Val Asn Ser Gln Gln Lys Val Gln Gln Ser Pro Glu Ser Leu Ile
20 25 30

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Ile Val Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
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Val Ser Pro Asp
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Trp Val Asn Ser Gln Gln Lys Val Gln Gln Ser Pro Glu Ser Leu Ile
20 25 30

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Lys Thr Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
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Val Ser Pro Asp
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Trp Val Asn Ser Gln Gln Lys Val Gln Gln Ser Pro Glu Ser Leu Ile
20 25 30

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Met Thr Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
115 120 125

Val Ser Pro Asp
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Met Lys Ser Phe Ser Ile Ser Leu Val Val Leu Trp Leu Gln Leu Asn
1 5 10 15

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

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

Gly Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr
35 40 45

Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His
50 55 60

Tyr Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly
65 70 75 80

Tyr Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu
85 90 95

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

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

Gly Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr
35 40 45

Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His
50 55 60

Tyr Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly
65 70 75 80

Tyr Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu
85 90 95

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

Ala Gly Thr Ala Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu
115 120 125

Ser Val Leu
130

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Met Gly Ser Arg Leu Phe Leu Val Leu Ser Leu Leu Cys Thr Lys His
1 5 10 15

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

Gly Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr
35 40 45

Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His
50 55 60

Tyr Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly
65 70 75 80

Tyr Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu
85 90 95

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

Ala Gly Val Ser Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu
115 120 125

Ser Val Leu
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Met Gly Ser Arg Leu Phe Leu Val Leu Ser Leu Leu Cys Thr Lys His
1 5 10 15

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

Gly Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr
35 40 45

Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His
50 55 60

Tyr Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly
65 70 75 80

Tyr Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu
85 90 95

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

His Gly Thr Gly Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu
115 120 125

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Ile Thr Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

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

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Thr Val Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

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

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

Arg Asp Ser Gln Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser

100

105

110

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

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
 245 250 255

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
 35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
 50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Met Ile Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

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

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Ile Ser Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

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

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Ile Val Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

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

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Lys Thr Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

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

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Met Thr Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
115 120 125

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

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

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

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

Ala Ile Ala Trp Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe

195

200

205

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
 245 250 255

Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
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<210> 23
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Met Lys Ser Phe Ser Ile Ser Leu Val Val Leu Trp Leu Gln Leu Asn
 1 5 10 15

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
 35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
 50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
 65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
 85 90 95

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

Leu Thr Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
 115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

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

<210> 24
<211> 304
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 24

Met Gly Ser Arg Leu Phe Leu Val Leu Ser Leu Leu Cys Thr Lys His
1 5 10 15

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

Gly Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr
35 40 45

Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His
50 55 60

Tyr Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly
65 70 75 80

Tyr Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu
85 90 95

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

Ala Gly Thr Ser Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu
115 120 125

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

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

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

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

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

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

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

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

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

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

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

<210> 25
<211> 304
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 25

Met Gly Ser Arg Leu Phe Leu Val Leu Ser Leu Leu Cys Thr Lys His
1 5 10 15

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

Gly Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr
35 40 45

Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His
50 55 60

Tyr Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly
 65 70 75 80
 Tyr Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu
 85 90 95
 Leu Ala Ser Pro Ser Gln Thr Ser Leu Tyr Phe Cys Ala Ser Ser Asp
 100 105 110
 Ala Gly Thr Ala Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu
 115 120 125
 Ser Val Leu Glu Asp Leu Arg Asn Val Thr Pro Pro Lys Val Ser Leu
 130 135 140
 Phe Glu Pro Ser Lys Ala Glu Ile Ala Asn Lys Arg Lys Ala Thr Leu
 145 150 155 160
 Val Cys Leu Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp
 165 170 175
 Trp Val Asn Gly Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln
 180 185 190
 Ala Tyr Lys Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg
 195 200 205
 Val Ser Ala Thr Phe Trp His Asn Pro Arg Asn His Phe Arg Cys Gln
 210 215 220
 Val Gln Phe His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser
 225 230 235 240
 Pro Lys Pro Val Thr Gln Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala
 245 250 255
 Asp Cys Gly Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala
 260 265 270
 Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val
 275 280 285
 Leu Val Ser Thr Leu Val Val Met Ala Met Val Lys Arg Lys Asn Ser
 290 295 300

<210> 26
 <211> 304
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<400> 26

Met Gly Ser Arg Leu Phe Leu Val Leu Ser Leu Leu Cys Thr Lys His
1 5 10 15

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

Gly Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr
35 40 45

Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His
50 55 60

Tyr Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly
65 70 75 80

Tyr Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu
85 90 95

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

Ala Gly Val Ser Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu
115 120 125

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

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

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

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

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

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

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

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

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

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

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

<210> 27
<211> 304
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 27

Met Gly Ser Arg Leu Phe Leu Val Leu Ser Leu Leu Cys Thr Lys His
1 5 10 15

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

Gly Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr
35 40 45

Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His
50 55 60

Tyr Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly
65 70 75 80

Tyr Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu
85 90 95

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

His Gly Thr Gly Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu
115 120 125

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

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

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

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

Ala Tyr Lys Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg

195

200

205

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

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

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

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

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

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

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

<220>
 <223> Synthetic

<400> 28

Ala Ala Ser Ile Thr Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr
 1 5 10 15

His Leu His Val Leu Pro Asn Ile Gln Asn Pro Glu
 20 25

<210> 29
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<400> 29

Ala Ala Ser Thr Val Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr
 1 5 10 15

His Leu His Val Leu Pro Asn Ile Gln Asn Pro Glu
 20 25

<210> 30
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Synthetic

<400> 30

Ala Ala Ser Met Ala Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr
1 5 10 15

Arg Leu Leu Val Ser Pro Asp Ile Gln Asn Pro Glu
20 25

<210> 31

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 31

Ala Ala Ser Met Ile Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr
1 5 10 15

His Leu His Val Leu Pro Asn Ile Gln Asn Pro Glu
20 25

<210> 32

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 32

Ala Ala Ser Ile Ser Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr
1 5 10 15

Arg Leu Leu Val Ser Pro Asp Ile Gln Asn Pro Glu
20 25

<210> 33

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 33

Ala Ala Ser Ile Val Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr
1 5 10 15

Arg Leu Leu Val Ser Pro Asp Ile Gln Asn Pro Glu
20 25

<210> 34

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 34

Ala Ala Ser Lys Thr Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr
1 5 10 15

Arg Leu Leu Val Ser Pro Asp Ile Gln Asn Pro Glu
20 25

<210> 35

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 35

Ala Ala Ser Met Thr Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr
1 5 10 15

Arg Leu Leu Val Ser Pro Asp Ile Gln Asn Pro Glu
20 25

<210> 36

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 36

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

Arg Leu Leu Val Ser Pro Asp Ile Gln Asn Pro Glu
20 25

<210> 37

<211> 23

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 37

Ala Ser Ser Asp Ala Gly Thr Ser Gln Asn Thr Leu Tyr Phe Gly Ala
1 5 10 15

Gly Thr Arg Leu Ser Val Leu
20

<210> 38
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 38

Ala Ser Ser Asp Ala Gly Thr Ala Gln Asn Thr Leu Tyr Phe Gly Ala
1 5 10 15

Gly Thr Arg Leu Ser Val Leu
20

<210> 39
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 39

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

Gly Thr Arg Leu Ser Val Leu
20

<210> 40
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 40

Ala Ser Ser Asp His Gly Thr Gly Gln Asn Thr Leu Tyr Phe Gly Ala
1 5 10 15

Gly Thr Arg Leu Ser Val Leu
20

<210> 41
<211> 222
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 41

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

Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr

20

25

30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

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

Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His Val Leu Pro Asn
100 105 110

Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg Ser
115 120 125

Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile Asn
130 135 140

Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala Trp
165 170 175

Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr Asn
180 185 190

Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu Thr Glu
195 200 205

Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu
210 215 220

<210> 42

<211> 222

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 42

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

Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr
20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

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

Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His Val Leu Pro Asn
100 105 110

Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg Ser
115 120 125

Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile Asn
130 135 140

Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala Trp
165 170 175

Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr Asn
180 185 190

Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu Thr Glu
195 200 205

Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu
210 215 220

<210> 43
<211> 222
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 43

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

Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr
20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Met Ala Gly Gly
85 90 95

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

Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg Ser
115 120 125

Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile Asn
130 135 140

Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala Trp
165 170 175

Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr Asn
180 185 190

Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu Thr Glu
195 200 205

Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu
210 215 220

<210> 44
<211> 222
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 44

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

Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr
20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Met Ile Asn Ala
85 90 95

Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His Val Leu Pro Asn
100 105 110

Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg Ser
115 120 125

Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile Asn
130 135 140

Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala Trp
165 170 175

Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr Asn
180 185 190

Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu Thr Glu
195 200 205

Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu
210 215 220

<210> 45
<211> 222
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 45

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

Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr
20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln

65		70		75		80									
Pro	Ser	Asp	Ser	Ala	Leu	Tyr	Leu	Cys	Ala	Ala	Ser	Ile	Ser	Gly	Gly
			85					90					95		
Tyr	Lys	Val	Val	Phe	Gly	Ser	Gly	Thr	Arg	Leu	Leu	Val	Ser	Pro	Asp
		100					105					110			
Ile	Gln	Asn	Pro	Glu	Pro	Ala	Val	Tyr	Gln	Leu	Lys	Asp	Pro	Arg	Ser
		115					120				125				
Gln	Asp	Ser	Thr	Leu	Cys	Leu	Phe	Thr	Asp	Phe	Asp	Ser	Gln	Ile	Asn
	130					135					140				
Val	Pro	Lys	Thr	Met	Glu	Ser	Gly	Thr	Phe	Ile	Thr	Asp	Lys	Thr	Val
145					150					155					160
Leu	Asp	Met	Lys	Ala	Met	Asp	Ser	Lys	Ser	Asn	Gly	Ala	Ile	Ala	Trp
			165					170					175		
Ser	Asn	Gln	Thr	Ser	Phe	Thr	Cys	Gln	Asp	Ile	Phe	Lys	Glu	Thr	Asn
		180					185					190			
Ala	Thr	Tyr	Pro	Ser	Ser	Asp	Val	Pro	Cys	Asp	Ala	Thr	Leu	Thr	Glu
		195					200				205				
Lys	Ser	Phe	Glu	Thr	Asp	Met	Asn	Leu	Asn	Phe	Gln	Asn	Leu		
	210					215				220					
<210>	46														
<211>	222														
<212>	PRT														
<213>	Artificial Sequence														
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<223>	Synthetic														
<400>	46														
Gln	Gln	Lys	Val	Gln	Gln	Ser	Pro	Glu	Ser	Leu	Ile	Val	Pro	Glu	Gly
1			5					10					15		
Gly	Met	Ala	Ser	Leu	Asn	Cys	Thr	Ser	Ser	Asp	Arg	Asn	Val	Asp	Tyr
		20					25					30			
Phe	Trp	Trp	Tyr	Arg	Gln	His	Ser	Gly	Lys	Ser	Pro	Lys	Met	Leu	Met
	35						40				45				
Ser	Ile	Phe	Ser	Asn	Gly	Glu	Lys	Glu	Glu	Gly	Arg	Phe	Thr	Val	His
	50					55				60					
Leu	Asn	Lys	Ala	Ser	Leu	His	Thr	Ser	Leu	His	Ile	Arg	Asp	Ser	Gln
65					70			75							80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Ile Val Gly Gly
85 90 95

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

Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg Ser
115 120 125

Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile Asn
130 135 140

Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala Trp
165 170 175

Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr Asn
180 185 190

Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu Thr Glu
195 200 205

Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu
210 215 220

<210> 47
<211> 222
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 47

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

Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr
20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Lys Thr Gly Gly
85 90 95

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

Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg Ser
115 120 125

Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile Asn
130 135 140

Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala Trp
165 170 175

Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr Asn
180 185 190

Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu Thr Glu
195 200 205

Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu
210 215 220

<210> 48
<211> 222
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 48

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

Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr
20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Met Thr Gly Gly
85 90 95

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

Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg Ser
115 120 125

Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile Asn
130 135 140

Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala Trp
165 170 175

Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr Asn
180 185 190

Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu Thr Glu
195 200 205

Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu
210 215 220

<210> 49
<211> 222
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 49

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

Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr
20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Thr Leu Thr Gly Gly
85 90 95

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

Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg Ser

115

120

125

Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile Asn
 130 135 140

Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Thr Val
 145 150 155 160

Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala Trp
 165 170 175

Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr Asn
 180 185 190

Ala Thr Tyr Pro Ser Ser Asp Val Pro Cys Asp Ala Thr Leu Thr Glu
 195 200 205

Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu
 210 215 220

<210> 50

<211> 259

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 50

Glu Ala Ala Val Thr Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly
 1 5 10 15

Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met
 20 25 30

Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr
 35 40 45

Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr
 50 55 60

Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu
 65 70 75 80

Ala Ser Pro Ser Gln Thr Ser Leu Tyr Phe Cys Ala Ser Ser Asp Ala
 85 90 95

Gly Thr Ser Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser
 100 105 110

Val Leu Glu Asp Leu Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe
 115 120 125

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

Cys Leu Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp
145 150 155 160

Val Asn Gly Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln Ala
165 170 175

Tyr Lys Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val
180 185 190

Ser Ala Thr Phe Trp His Asn Pro Arg Asn His Phe Arg Cys Gln Val
195 200 205

Gln Phe His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro
210 215 220

Lys Pro Val Thr Gln Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp
225 230 235 240

Cys Gly Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr
245 250 255

Ile Leu Tyr

<210> 51
<211> 260
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 51

Val Thr Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly Gly Asn Val
1 5 10 15

Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met Tyr Trp Tyr
20 25 30

Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr Ser Tyr Gly
35 40 45

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

Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu Ala Ser Pro
65 70 75 80

Ser Gln Thr Ser Leu Tyr Phe Cys Ala Ser Ser Asp Ala Gly Thr Ala
85 90 95

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

Asp Leu Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro Ser
115 120 125

Lys Ala Glu Ile Ala Asn Lys Arg Lys Ala Thr Leu Val Cys Leu Ala
130 135 140

Arg Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn Gly
145 150 155 160

Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys Glu
165 170 175

Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala Thr
180 185 190

Phe Trp His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe His
195 200 205

Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro Val
210 215 220

Thr Gln Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile
225 230 235 240

Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr
245 250 255

Glu Ile Leu Leu
260

<210> 52
<211> 259
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 52

Glu Ala Ala Val Thr Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly
1 5 10 15

Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met
20 25 30

Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr
35 40 45

Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr
50 55 60

Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu
65 70 75 80

Ala Ser Pro Ser Gln Thr Ser Leu Tyr Phe Cys Ala Ser Cys Asp Ala
85 90 95

Gly Val Ser Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser
100 105 110

Val Leu Glu Asp Leu Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe
115 120 125

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

Cys Leu Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp
145 150 155 160

Val Asn Gly Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln Ala
165 170 175

Tyr Lys Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val
180 185 190

Ser Ala Thr Phe Trp His Asn Pro Arg Asn His Phe Arg Cys Gln Val
195 200 205

Gln Phe His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro
210 215 220

Lys Pro Val Thr Gln Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp
225 230 235 240

Cys Gly Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr
245 250 255

Ile Leu Tyr

<210> 53
<211> 259
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 53

Glu Ala Ala Val Thr Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly
1 5 10 15

Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met

20

25

30

Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr
 35 40 45

Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr
 50 55 60

Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu
 65 70 75 80

Ala Ser Pro Ser Gln Thr Ser Leu Tyr Phe Cys Ala Ser Ser Asp His
 85 90 95

Gly Thr Gly Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser
 100 105 110

Val Leu Glu Asp Leu Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe
 115 120 125

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

Cys Leu Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp
 145 150 155 160

Val Asn Gly Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln Ala
 165 170 175

Tyr Lys Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val
 180 185 190

Ser Ala Thr Phe Trp His Asn Pro Arg Asn His Phe Arg Cys Gln Val
 195 200 205

Gln Phe His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro
 210 215 220

Lys Pro Val Thr Gln Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp
 225 230 235 240

Cys Gly Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr
 245 250 255

Ile Leu Tyr

<210> 54

<211> 602

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 54

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Ile Thr Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser Gly Ser Arg Ala

260

265

270

Lys Arg Ser Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala
 275 280 285

Gly Asp Val Glu Glu Asn Pro Gly Pro Arg Met Gly Ser Arg Leu Phe
 290 295 300

Leu Val Leu Ser Leu Leu Cys Thr Lys His Met Glu Ala Ala Val Thr
 305 310 315 320

Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly Gly Asn Val Thr Leu
 325 330 335

Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met Tyr Trp Tyr Arg Gln
 340 345 350

Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr Ser Tyr Gly Ala Gly
 355 360 365

Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr Lys Ala Thr Arg Thr
 370 375 380

Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu Ala Ser Pro Ser Gln
 385 390 395 400

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

Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu Asp Leu
 420 425 430

Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro Ser Lys Ala
 435 440 445

Glu Ile Ala Asn Lys Arg Lys Ala Thr Leu Val Cys Leu Ala Arg Gly
 450 455 460

Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn Gly Lys Glu
 465 470 475 480

Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys Glu Ser Asn
 485 490 495

Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp
 500 505 510

His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe His Gly Leu
 515 520 525

Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro Val Thr Gln
 530 535 540

Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile Thr Ser
545 550 555 560

Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile
565 570 575

Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser Thr Leu Val
580 585 590

Val Met Ala Met Val Lys Arg Lys Asn Ser
595 600

<210> 55
<211> 602
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 55

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Thr Val Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His
115 120 125

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

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

Ser Gln Ile Asn Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr

175

Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro Ser Lys Ala
435 440 445

Glu Ile Ala Asn Lys Arg Lys Ala Thr Leu Val Cys Leu Ala Arg Gly
450 455 460

Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn Gly Lys Glu
465 470 475 480

Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys Glu Ser Asn
485 490 495

Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp
500 505 510

His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe His Gly Leu
515 520 525

Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro Val Thr Gln
530 535 540

Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile Thr Ser
545 550 555 560

Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile
565 570 575

Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser Thr Leu Val
580 585 590

Val Met Ala Met Val Lys Arg Lys Asn Ser
595 600

<210> 56
<211> 602
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 56

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg

65				70					75					80			
Phe	Thr	Val	His	Leu	Asn	Lys	Ala	Ser	Leu	His	Thr	Ser	Leu	His	Ile		
				85					90					95			
Arg	Asp	Ser	Gln	Pro	Ser	Asp	Ser	Ala	Leu	Tyr	Leu	Cys	Ala	Ala	Ser		
				100					105					110			
Met	Ala	Gly	Gly	Tyr	Lys	Val	Val	Phe	Gly	Ser	Gly	Thr	Arg	Leu	Leu		
				115					120					125			
Val	Ser	Pro	Asp	Ile	Gln	Asn	Pro	Glu	Pro	Ala	Val	Tyr	Gln	Leu	Lys		
				130					135					140			
Asp	Pro	Arg	Ser	Gln	Asp	Ser	Thr	Leu	Cys	Leu	Phe	Thr	Asp	Phe	Asp		
				145					150					155			
Ser	Gln	Ile	Asn	Val	Pro	Lys	Thr	Met	Glu	Ser	Gly	Thr	Phe	Ile	Thr		
				165					170					175			
Asp	Lys	Thr	Val	Leu	Asp	Met	Lys	Ala	Met	Asp	Ser	Lys	Ser	Asn	Gly		
				180					185					190			
Ala	Ile	Ala	Trp	Ser	Asn	Gln	Thr	Ser	Phe	Thr	Cys	Gln	Asp	Ile	Phe		
				195					200					205			
Lys	Glu	Thr	Asn	Ala	Thr	Tyr	Pro	Ser	Ser	Asp	Val	Pro	Cys	Asp	Ala		
				210					215					220			
Thr	Leu	Thr	Glu	Lys	Ser	Phe	Glu	Thr	Asp	Met	Asn	Leu	Asn	Phe	Gln		
				225					230					235			
Asn	Leu	Ser	Val	Met	Gly	Leu	Arg	Ile	Leu	Leu	Leu	Lys	Val	Ala	Gly		
				245					250					255			
Phe	Asn	Leu	Leu	Met	Thr	Leu	Arg	Leu	Trp	Ser	Ser	Gly	Ser	Arg	Ala		
				260					265					270			
Lys	Arg	Ser	Gly	Ser	Gly	Ala	Thr	Asn	Phe	Ser	Leu	Leu	Lys	Gln	Ala		
				275					280					285			
Gly	Asp	Val	Glu	Glu	Asn	Pro	Gly	Pro	Arg	Met	Gly	Ser	Arg	Leu	Phe		
				290					295					300			
Leu	Val	Leu	Ser	Leu	Leu	Cys	Thr	Lys	His	Met	Glu	Ala	Ala	Val	Thr		
				305					310					315			
Gln	Ser	Pro	Arg	Asn	Lys	Val	Thr	Val	Thr	Gly	Gly	Asn	Val	Thr	Leu		
				325					330					335			
Ser	Cys	Arg	Gln	Thr	Asn	Ser	His	Asn	Tyr	Met	Tyr	Trp	Tyr	Arg	Gln		
				340					345					350			

Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr Ser Tyr Gly Ala Gly
 355 360 365

Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr Lys Ala Thr Arg Thr
 370 375 380

Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu Ala Ser Pro Ser Gln
 385 390 395 400

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

Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu Asp Leu
 420 425 430

Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro Ser Lys Ala
 435 440 445

Glu Ile Ala Asn Lys Arg Lys Ala Thr Leu Val Cys Leu Ala Arg Gly
 450 455 460

Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn Gly Lys Glu
 465 470 475 480

Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys Glu Ser Asn
 485 490 495

Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp
 500 505 510

His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe His Gly Leu
 515 520 525

Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro Val Thr Gln
 530 535 540

Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile Thr Ser
 545 550 555 560

Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile
 565 570 575

Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser Thr Leu Val
 580 585 590

Val Met Ala Met Val Lys Arg Lys Asn Ser
 595 600

<210> 57
 <211> 602
 <212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 57

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Met Ile Asn Ala Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser Gly Ser Arg Ala
 260 265 270

Lys Arg Ser Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala
 275 280 285

Gly Asp Val Glu Glu Asn Pro Gly Pro Arg Met Gly Ser Arg Leu Phe
 290 295 300

Leu Val Leu Ser Leu Leu Cys Thr Lys His Met Glu Ala Ala Val Thr
 305 310 315 320

Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly Gly Asn Val Thr Leu
 325 330 335

Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met Tyr Trp Tyr Arg Gln
 340 345 350

Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr Ser Tyr Gly Ala Gly
 355 360 365

Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr Lys Ala Thr Arg Thr
 370 375 380

Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu Ala Ser Pro Ser Gln
 385 390 395 400

Thr Ser Leu Tyr Phe Cys Ala Ser Ser Asp Ala Gly Val Ser Gln Asn
 405 410 415

Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu Asp Leu
 420 425 430

Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro Ser Lys Ala
 435 440 445

Glu Ile Ala Asn Lys Arg Lys Ala Thr Leu Val Cys Leu Ala Arg Gly
 450 455 460

Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn Gly Lys Glu
 465 470 475 480

Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys Glu Ser Asn
 485 490 495

Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp
 500 505 510

His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe His Gly Leu
 515 520 525

Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro Val Thr Gln
530 535 540

Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile Thr Ser
545 550 555 560

Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile
565 570 575

Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser Thr Leu Val
580 585 590

Val Met Ala Met Val Lys Arg Lys Asn Ser
595 600

<210> 58
<211> 602
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 58

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Ile Ser Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
 245 250 255

Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser Gly Ser Arg Ala
 260 265 270

Lys Arg Ser Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala
 275 280 285

Gly Asp Val Glu Glu Asn Pro Gly Pro Arg Met Gly Ser Arg Leu Phe
 290 295 300

Leu Val Leu Ser Leu Leu Cys Thr Lys His Met Glu Ala Ala Val Thr
 305 310 315 320

Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly Gly Asn Val Thr Leu
 325 330 335

Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met Tyr Trp Tyr Arg Gln
 340 345 350

Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr Ser Tyr Gly Ala Gly
 355 360 365

Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr Lys Ala Thr Arg Thr
 370 375 380

Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu Ala Ser Pro Ser Gln
 385 390 395 400

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

Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu Asp Leu
 420 425 430

Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro Ser Lys Ala
435 440 445

Glu Ile Ala Asn Lys Arg Lys Ala Thr Leu Val Cys Leu Ala Arg Gly
450 455 460

Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn Gly Lys Glu
465 470 475 480

Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys Glu Ser Asn
485 490 495

Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp
500 505 510

His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe His Gly Leu
515 520 525

Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro Val Thr Gln
530 535 540

Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile Thr Ser
545 550 555 560

Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile
565 570 575

Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser Thr Leu Val
580 585 590

Val Met Ala Met Val Lys Arg Lys Asn Ser
595 600

<210> 59
<211> 602
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 59

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

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
 65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
 85 90 95

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

Ile Val Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
 115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
 245 250 255

Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser Gly Ser Arg Ala
 260 265 270

Lys Arg Ser Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala
 275 280 285

Gly Asp Val Glu Glu Asn Pro Gly Pro Arg Met Gly Ser Arg Leu Phe
 290 295 300

Leu Val Leu Ser Leu Leu Cys Thr Lys His Met Glu Ala Ala Val Thr
 305 310 315 320

Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly Gly Asn Val Thr Leu
 325 330 335

Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met Tyr Trp Tyr Arg Gln
340 345 350

Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr Ser Tyr Gly Ala Gly
355 360 365

Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr Lys Ala Thr Arg Thr
370 375 380

Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu Ala Ser Pro Ser Gln
385 390 395 400

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

Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu Asp Leu
420 425 430

Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro Ser Lys Ala
435 440 445

Glu Ile Ala Asn Lys Arg Lys Ala Thr Leu Val Cys Leu Ala Arg Gly
450 455 460

Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn Gly Lys Glu
465 470 475 480

Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys Glu Ser Asn
485 490 495

Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp
500 505 510

His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe His Gly Leu
515 520 525

Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro Val Thr Gln
530 535 540

Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile Thr Ser
545 550 555 560

Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile
565 570 575

Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser Thr Leu Val
580 585 590

Val Met Ala Met Val Lys Arg Lys Asn Ser
595 600

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<212> PRT
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<400> 60

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Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Lys Thr Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser Gly Ser Arg Ala
260 265 270

Lys Arg Ser Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala
275 280 285

Gly Asp Val Glu Glu Asn Pro Gly Pro Arg Met Gly Ser Arg Leu Phe
290 295 300

Leu Val Leu Ser Leu Leu Cys Thr Lys His Met Glu Ala Ala Val Thr
305 310 315 320

Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly Gly Asn Val Thr Leu
325 330 335

Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met Tyr Trp Tyr Arg Gln
340 345 350

Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr Ser Tyr Gly Ala Gly
355 360 365

Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr Lys Ala Thr Arg Thr
370 375 380

Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu Ala Ser Pro Ser Gln
385 390 395 400

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

Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu Asp Leu
420 425 430

Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro Ser Lys Ala
435 440 445

Glu Ile Ala Asn Lys Arg Lys Ala Thr Leu Val Cys Leu Ala Arg Gly
450 455 460

Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn Gly Lys Glu
465 470 475 480

Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys Glu Ser Asn
485 490 495

Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp
500 505 510

His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe His Gly Leu
515 520 525

Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro Val Thr Gln
530 535 540

Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile Thr Ser
545 550 555 560

Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile
565 570 575

Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser Thr Leu Val
580 585 590

Val Met Ala Met Val Lys Arg Lys Asn Ser
595 600

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<220>
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<400> 61

Met Lys Ser Phe Ser Ile Ser Leu Val Val Leu Trp Leu Gln Leu Asn
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Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Met Thr Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser Gly Ser Arg Ala
260 265 270

Lys Arg Ser Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala
275 280 285

Gly Asp Val Glu Glu Asn Pro Gly Pro Arg Met Gly Ser Arg Leu Phe
290 295 300

Leu Val Leu Ser Leu Leu Cys Thr Lys His Met Glu Ala Ala Val Thr
305 310 315 320

Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly Gly Asn Val Thr Leu
325 330 335

Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met Tyr Trp Tyr Arg Gln
340 345 350

Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr Ser Tyr Gly Ala Gly
355 360 365

Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr Lys Ala Thr Arg Thr
370 375 380

Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu Ala Ser Pro Ser Gln
385 390 395 400

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

Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu Asp Leu
420 425 430

Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro Ser Lys Ala
435 440 445

Glu Ile Ala Asn Lys Arg Lys Ala Thr Leu Val Cys Leu Ala Arg Gly
450 455 460

Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn Gly Lys Glu
465 470 475 480

Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys Glu Ser Asn
485 490 495

Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp
500 505 510

His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe His Gly Leu
515 520 525

Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro Val Thr Gln
530 535 540

Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile Thr Ser
545 550 555 560

Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile
565 570 575

Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser Thr Leu Val
580 585 590

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

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg
35 40 45

Asn Val Asp Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro
50 55 60

Lys Met Leu Met Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg
65 70 75 80

Phe Thr Val His Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile
85 90 95

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

Leu Thr Gly Gly Tyr Lys Val Val Phe Gly Ser Gly Thr Arg Leu Leu
115 120 125

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

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

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

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

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

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

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

Asn Leu Ser Val Met Gly Leu Arg Ile Leu Leu Leu Lys Val Ala Gly
245 250 255

Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser Gly Ser Arg Ala
260 265 270

Lys Arg Ser Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala
275 280 285

Gly Asp Val Glu Glu Asn Pro Gly Pro Arg Met Gly Ser Arg Leu Phe
290 295 300

Leu Val Leu Ser Leu Leu Cys Thr Lys His Met Glu Ala Ala Val Thr
305 310 315 320

Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly Gly Asn Val Thr Leu
325 330 335

Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met Tyr Trp Tyr Arg Gln
340 345 350

Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr Ser Tyr Gly Ala Gly
355 360 365

Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr Lys Ala Thr Arg Thr
370 375 380

Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu Ala Ser Pro Ser Gln
385 390 395 400

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

Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu Asp Leu
420 425 430

Arg Asn Val Thr Pro Pro Lys Val Ser Leu Phe Glu Pro Ser Lys Ala
435 440 445

Glu Ile Ala Asn Lys Arg Lys Ala Thr Leu Val Cys Leu Ala Arg Gly
450 455 460

Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn Gly Lys Glu
465 470 475 480

Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys Glu Ser Asn
485 490 495

Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp
500 505 510

His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe His Gly Leu
515 520 525

Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro Val Thr Gln
530 535 540

Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile Thr Ser
545 550 555 560

Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile
565 570 575

Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser Thr Leu Val
580 585 590

Val Met Ala Met Val Lys Arg Lys Asn Ser

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aactcctaa	1809

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ctgaactgca ccagctccga ccggaatgtg gattatTTTT ggtggtacag acagcactcc	180
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ccttccgatt ctgccctgta tctgtgcgcc gcctctatga tcaatgccta caaagtgatc	360
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<220>
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<400> 72

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 <223> n= I

<400> 73

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<400> 74
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<400> 75
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<400> 76
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<400> 77
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20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

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

Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His Val Leu Pro Asn
100 105 110

Ile Gln Asn Pro Glu
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<210> 81

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 81

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

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

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

Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His Val Leu Pro Asn
100 105 110

Ile Gln Asn Pro Glu
115

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<400> 82

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

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Met Ile Asn Ala
85 90 95

Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His Val Leu Pro Asn
100 105 110

Ile Gln Asn Pro Glu
115

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<400> 83

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

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Met Ala Gly Gly
85 90 95

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

Ile Gln Asn Pro Glu
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<211> 117

<212> PRT

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<400> 84

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Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr
20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Ile Ser Gly Gly
85 90 95

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

Ile Gln Asn Pro Glu
115

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<212> PRT
<213> Artificial Sequence

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<223> Synthetic

<400> 85

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

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Ile Val Gly Gly
85 90 95

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

Ile Gln Asn Pro Glu
115

<210> 86
<211> 117
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 86

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

Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr
20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Lys Thr Gly Gly
85 90 95

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

Ile Gln Asn Pro Glu
115

<210> 87
<211> 117
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 87

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

Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr
20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Met Thr Gly Gly
85 90 95

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

Ile Gln Asn Pro Glu
115

<210> 88
<211> 117
<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 88

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

Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg Asn Val Asp Tyr
20 25 30

Phe Trp Trp Tyr Arg Gln His Ser Gly Lys Ser Pro Lys Met Leu Met
35 40 45

Ser Ile Phe Ser Asn Gly Glu Lys Glu Glu Gly Arg Phe Thr Val His
50 55 60

Leu Asn Lys Ala Ser Leu His Thr Ser Leu His Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Thr Leu Thr Gly Gly
85 90 95

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

Ile Gln Asn Pro Glu
115

<210> 89

<211> 114

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 89

Glu Ala Ala Val Thr Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly
1 5 10 15

Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met
20 25 30

Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr
35 40 45

Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr
50 55 60

Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu
65 70 75 80

Ala Ser Pro Ser Gln Thr Ser Leu Tyr Phe Cys Ala Ser Ser Asp Ala
85 90 95

Gly Thr Ser Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser
100 105 110

Val Leu

<210> 90
<211> 114
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 90

Glu Ala Ala Val Thr Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly
1 5 10 15

Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met
20 25 30

Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr
35 40 45

Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr
50 55 60

Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu
65 70 75 80

Ala Ser Pro Ser Gln Thr Ser Leu Tyr Phe Cys Ala Ser Ser Asp Ala
85 90 95

Gly Val Ser Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser
100 105 110

Val Leu

<210> 91
<211> 114
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 91

Glu Ala Ala Val Thr Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly
1 5 10 15

Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met

20

25

30

Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr
 35 40 45

Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr
 50 55 60

Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu
 65 70 75 80

Ala Ser Pro Ser Gln Thr Ser Leu Tyr Phe Cys Ala Ser Ser Asp Ala
 85 90 95

Gly Thr Ala Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser
 100 105 110

Val Leu

<210> 92
 <211> 114
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<400> 92

Glu Ala Ala Val Thr Gln Ser Pro Arg Asn Lys Val Thr Val Thr Gly
 1 5 10 15

Gly Asn Val Thr Leu Ser Cys Arg Gln Thr Asn Ser His Asn Tyr Met
 20 25 30

Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile His Tyr
 35 40 45

Ser Tyr Gly Ala Gly Asn Leu Gln Ile Gly Asp Val Pro Asp Gly Tyr
 50 55 60

Lys Ala Thr Arg Thr Thr Gln Glu Asp Phe Phe Leu Leu Leu Glu Leu
 65 70 75 80

Ala Ser Pro Ser Gln Thr Ser Leu Tyr Phe Cys Ala Ser Ser Asp His
 85 90 95

Gly Thr Gly Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser
 100 105 110

Val Leu

<210> 93
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 93

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Ile Thr Asn Ala
1 5 10 15

Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His Val Leu Pro Asn
20 25 30

Ile Gln Asn Pro Glu Pro Ala Val
35 40

<210> 94
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 94

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

Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His Val Leu Pro Asn
20 25 30

Ile Gln Asn Pro Glu Pro Ala Val
35 40

<210> 95
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 95

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Met Ile Asn Ala
1 5 10 15

Tyr Lys Val Ile Phe Gly Lys Gly Thr His Leu His Val Leu Pro Asn
20 25 30

Ile Gln Asn Pro Glu Pro Ala Val
35 40

<210> 96
<211> 40
<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 96

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Met Ala Gly Gly
1 5 10 15

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

Ile Gln Asn Pro Glu Pro Ala Val
35 40

<210> 97

<211> 40

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 97

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Ile Ser Gly Gly
1 5 10 15

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

Ile Gln Asn Pro Glu Pro Ala Val
35 40

<210> 98

<211> 40

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 98

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

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

Ile Gln Asn Pro Glu Pro Ala Val
35 40

<210> 99

<211> 40

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 99

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Lys Thr Gly Gly
1 5 10 15

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

Ile Gln Asn Pro Glu Pro Ala Val
35 40

<210> 100

<211> 40

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 100

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Ser Met Thr Gly Gly
1 5 10 15

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

Ile Gln Asn Pro Glu Pro Ala Val
35 40

<210> 101

<211> 40

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 101

Pro Ser Asp Ser Ala Leu Tyr Leu Cys Ala Ala Thr Leu Thr Gly Gly
1 5 10 15

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

Ile Gln Asn Pro Glu Pro Ala Val
35 40

<210> 102

<211> 40

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 102

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

Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu
20 25 30

Asp Leu Arg Asn Val Thr Pro Pro
35 40

<210> 103
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 103

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

Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu
20 25 30

Asp Leu Arg Asn Val Thr Pro Pro
35 40

<210> 104
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 104

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

Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu
20 25 30

Asp Leu Arg Asn Val Thr Pro Pro
35 40

<210> 105
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 105

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

Gln Asn Thr Leu Tyr Phe Gly Ala Gly Thr Arg Leu Ser Val Leu Glu
20 25 30

Asp Leu Arg Asn Val Thr Pro Pro
35 40