

SEQUENCE LISTING

<110> THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE
SECRETARY, DEPARTMENT OF HEALTH AND HUMAN SERVICES

<120> HLA CLASS II-RESTRICTED T CELL RECEPTORS AGAINST MUTATED RAS

<130> 739664

<150> US 62/560,930

<151> 2017-09-20

<160> 56

<170> PatentIn version 3.5

<210> 1

<211> 6

<212> PRT

<213> Homo sapiens

<400> 1

Asp Ser Ala Ser Asn Tyr
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<211> 7

<212> PRT

<213> Homo sapiens

<400> 2

Ile Arg Ser Asn Val Gly Glu
1 5

<210> 3

<211> 13

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Cys Ala Ala Ser Thr Gly Gly Gly Asn Lys Leu Thr Phe
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Asp Phe Gln Ala Thr Thr
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<400> 5

Ser Asn Glu Gly Ser Lys Ala
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<211> 15

<212> PRT

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Cys Ser Ala Arg Glu Gly Ala Gly Gly Met Gly Thr Gln Tyr Phe
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<210> 7

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Ser Ser Asn Phe Tyr Ala
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Met Thr Leu Asn Gly Asp Glu
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Cys Ala Phe Thr Thr Gly Asn Gln Phe Tyr Phe
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Ser Gly His Asp Tyr Leu
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<400> 11

Phe Asn Asn Asn Val Pro
1 5

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<211> 16

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<400> 12

Cys Ala Ser Ser Ser Tyr Gly Gly Tyr Ser Asn Gln Pro Gln His Phe
1 5 10 15

<210> 13

<211> 131

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<213> Homo sapiens

<400> 13

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

Leu Val Asn Gly Glu Asn Val Glu Gln His Pro Ser Thr Leu Ser Val
20 25 30

Gln Glu Gly Asp Ser Ala Val Ile Lys Cys Thr Tyr Ser Asp Ser Ala
 35 40 45

Ser Asn Tyr Phe Pro Trp Tyr Lys Gln Glu Leu Gly Lys Gly Pro Gln
 50 55 60

Leu Ile Ile Asp Ile Arg Ser Asn Val Gly Glu Lys Lys Asp Gln Arg
 65 70 75 80

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

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

Thr Gly Gly Gly Asn Lys Leu Thr Phe Gly Thr Gly Thr Gln Leu Lys
 115 120 125

Val Glu Leu
 130

<210> 14
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<400> 14

Met Leu Leu Leu Leu Leu Leu Gly Pro Ala Gly Ser Gly Leu Gly
 1 5 10 15

Ala Val Val Ser Gln His Pro Ser Arg Val Ile Cys Lys Ser Gly Thr
 20 25 30

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

Phe Trp Tyr Arg Gln Phe Pro Lys Gln Ser Leu Met Leu Met Ala Thr
 50 55 60

Ser Asn Glu Gly Ser Lys Ala Thr Tyr Glu Gln Gly Val Glu Lys Asp
 65 70 75 80

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

Thr Ser Ala His Pro Glu Asp Ser Ser Phe Tyr Ile Cys Ser Ala Arg
 100 105 110

Glu Gly Ala Gly Gly Met Gly Thr Gln Tyr Phe Gly Pro Gly Thr Arg
 115 120 125

Leu Leu Val Leu
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<400> 15

Met Glu Lys Asn Pro Leu Ala Ala Pro Leu Leu Ile Leu Trp Phe His
 1 5 10 15

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

Leu His Val Gln Glu Gly Asp Ser Thr Asn Phe Thr Cys Ser Phe Pro
 35 40 45

Ser Ser Asn Phe Tyr Ala Leu His Trp Tyr Arg Trp Glu Thr Ala Lys
 50 55 60

Ser Pro Glu Ala Leu Phe Val Met Thr Leu Asn Gly Asp Glu Lys Lys
 65 70 75 80

Lys Gly Arg Ile Ser Ala Thr Leu Asn Thr Lys Glu Gly Tyr Ser Tyr
 85 90 95

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

Ala Phe Thr Thr Gly Asn Gln Phe Tyr Phe Gly Thr Gly Thr Ser Leu

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120

125

Thr Val Ile Pro
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<210> 16
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<212> PRT
<213> Homo sapiens

<400> 16

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

Lys His Thr Asp Ala Gly Val Ile Gln Ser Pro Arg His Glu Val Thr
20 25 30

Glu Met Gly Gln Glu Val Thr Leu Arg Cys Lys Pro Ile Ser Gly His
35 40 45

Asp Tyr Leu Phe Trp Tyr Arg Gln Thr Met Met Arg Gly Leu Glu Leu
50 55 60

Leu Ile Tyr Phe Asn Asn Asn Val Pro Ile Asp Asp Ser Gly Met Pro
65 70 75 80

Glu Asp Arg Phe Ser Ala Lys Met Pro Asn Ala Ser Phe Ser Thr Leu
85 90 95

Lys Ile Gln Pro Ser Glu Pro Arg Asp Ser Ala Val Tyr Phe Cys Ala
100 105 110

Ser Ser Ser Tyr Gly Gly Tyr Ser Asn Gln Pro Gln His Phe Gly Asp
115 120 125

Gly Thr Arg Leu Ser Ile Leu Glu Asp
130 135

<210> 17
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<213> Homo sapiens

<400> 17

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Gly Gly Val Gly Lys
 1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
 20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
 35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
 50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
 65 70 75 80

Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His His Tyr
 85 90 95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Glu Asp Val Pro Met Val
 100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Ser Arg Thr Val Asp Thr Lys
 115 120 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Phe Ile Glu Thr
 130 135 140

Ser Ala Lys Thr Arg Gln Arg Val Glu Asp Ala Phe Tyr Thr Leu Val
 145 150 155 160

Arg Glu Ile Arg Gln Tyr Arg Leu Lys Lys Ile Ser Lys Glu Glu Lys
 165 170 175

Thr Pro Gly Cys Val Lys Ile Lys Lys Cys Ile Ile Met
 180 185

<210> 18

<211> 188

<212> PRT

<213> Homo sapiens

<400> 18

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Gly Gly Val Gly Lys
1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
65 70 75 80

Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His His Tyr
85 90 95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Glu Asp Val Pro Met Val
100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Ser Arg Thr Val Asp Thr Lys
115 120 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Phe Ile Glu Thr
130 135 140

Ser Ala Lys Thr Arg Gln Gly Val Asp Asp Ala Phe Tyr Thr Leu Val
145 150 155 160

Arg Glu Ile Arg Lys His Lys Glu Lys Met Ser Lys Asp Gly Lys Lys
165 170 175

Lys Lys Lys Lys Ser Lys Thr Lys Cys Val Ile Met
180 185

<210> 19

<211> 189

<212> PRT
 <213> Homo sapiens

<400> 19

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Gly Gly Val Gly Lys
 1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
 20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
 35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
 50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
 65 70 75 80

Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His Gln Tyr
 85 90 95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Asp Asp Val Pro Met Val
 100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Ala Ala Arg Thr Val Glu Ser Arg
 115 120 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Tyr Ile Glu Thr
 130 135 140

Ser Ala Lys Thr Arg Gln Gly Val Glu Asp Ala Phe Tyr Thr Leu Val
 145 150 155 160

Arg Glu Ile Arg Gln His Lys Leu Arg Lys Leu Asn Pro Pro Asp Glu
 165 170 175

Ser Gly Pro Gly Cys Met Ser Cys Lys Cys Val Leu Ser
 180 185

<210> 20

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<400> 20

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Gly Gly Val Gly Lys
 1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
 20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
 35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
 50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
 65 70 75 80

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

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Asp Asp Val Pro Met Val
 100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Thr Arg Thr Val Asp Thr Lys
 115 120 125

Gln Ala His Glu Leu Ala Lys Ser Tyr Gly Ile Pro Phe Ile Glu Thr
 130 135 140

Ser Ala Lys Thr Arg Gln Gly Val Glu Asp Ala Phe Tyr Thr Leu Val
 145 150 155 160

Arg Glu Ile Arg Gln Tyr Arg Met Lys Lys Leu Asn Ser Ser Asp Asp
 165 170 175

Gly Thr Gln Gly Cys Met Gly Leu Pro Cys Val Val Met
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<210> 21
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 <212> PRT
 <213> Homo sapiens

<400> 21

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Val Gly Val Gly Lys
 1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
 20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
 35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
 50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
 65 70 75 80

Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His His Tyr
 85 90 95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Glu Asp Val Pro Met Val
 100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Ser Arg Thr Val Asp Thr Lys
 115 120 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Phe Ile Glu Thr
 130 135 140

Ser Ala Lys Thr Arg Gln Arg Val Glu Asp Ala Phe Tyr Thr Leu Val
 145 150 155 160

Arg Glu Ile Arg Gln Tyr Arg Leu Lys Lys Ile Ser Lys Glu Glu Lys
 165 170 175

Thr Pro Gly Cys Val Lys Ile Lys Lys Cys Ile Ile Met
 180 185

<210> 22
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 <212> PRT
 <213> Homo sapiens

<400> 22

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Val Gly Val Gly Lys
 1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
 20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
 35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
 50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
 65 70 75 80

Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His His Tyr
 85 90 95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Glu Asp Val Pro Met Val
 100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Ser Arg Thr Val Asp Thr Lys
 115 120 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Phe Ile Glu Thr
 130 135 140

Ser Ala Lys Thr Arg Gln Gly Val Asp Asp Ala Phe Tyr Thr Leu Val
 145 150 155 160

Arg Glu Ile Arg Lys His Lys Glu Lys Met Ser Lys Asp Gly Lys Lys
 165 170 175

Lys Lys Lys Lys Ser Lys Thr Lys Cys Val Ile Met
 180 185

<210> 23
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 <213> Homo sapiens

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Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Val Gly Val Gly Lys
 1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
 20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
 35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
 50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
 65 70 75 80

Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His Gln Tyr
 85 90 95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Asp Asp Val Pro Met Val
 100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Ala Ala Arg Thr Val Glu Ser Arg
 115 120 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Tyr Ile Glu Thr
 130 135 140

Ser Ala Lys Thr Arg Gln Gly Val Glu Asp Ala Phe Tyr Thr Leu Val
 145 150 155 160

Arg Glu Ile Arg Gln His Lys Leu Arg Lys Leu Asn Pro Pro Asp Glu
 165 170 175

Ser Gly Pro Gly Cys Met Ser Cys Lys Cys Val Leu Ser

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<210> 24
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 <213> Homo sapiens

<400> 24

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Val Gly Val Gly Lys
 1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
 20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
 35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
 50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
 65 70 75 80

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

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Asp Asp Val Pro Met Val
 100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Thr Arg Thr Val Asp Thr Lys
 115 120 125

Gln Ala His Glu Leu Ala Lys Ser Tyr Gly Ile Pro Phe Ile Glu Thr
 130 135 140

Ser Ala Lys Thr Arg Gln Gly Val Glu Asp Ala Phe Tyr Thr Leu Val
 145 150 155 160

Arg Glu Ile Arg Gln Tyr Arg Met Lys Lys Leu Asn Ser Ser Asp Asp
 165 170 175

Gly Thr Gln Gly Cys Met Gly Leu Pro Cys Val Val Met
 180 185

<210> 25
 <211> 189
 <212> PRT
 <213> Homo sapiens

<400> 25

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Cys Gly Val Gly Lys
 1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
 20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
 35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
 50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
 65 70 75 80

Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His His Tyr
 85 90 95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Glu Asp Val Pro Met Val
 100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Ser Arg Thr Val Asp Thr Lys
 115 120 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Phe Ile Glu Thr
 130 135 140

Ser Ala Lys Thr Arg Gln Arg Val Glu Asp Ala Phe Tyr Thr Leu Val
 145 150 155 160

Arg Glu Ile Arg Gln Tyr Arg Leu Lys Lys Ile Ser Lys Glu Glu Lys
 165 170 175

Thr Pro Gly Cys Val Lys Ile Lys Lys Cys Ile Ile Met
 180 185

<210> 26
 <211> 188
 <212> PRT
 <213> Homo sapiens

<400> 26

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Cys Gly Val Gly Lys
 1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
 20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
 35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
 50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
 65 70 75 80

Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His His Tyr
 85 90 95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Glu Asp Val Pro Met Val
 100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Ser Arg Thr Val Asp Thr Lys
 115 120 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Phe Ile Glu Thr
 130 135 140

Ser Ala Lys Thr Arg Gln Gly Val Asp Asp Ala Phe Tyr Thr Leu Val
 145 150 155 160

Arg Glu Ile Arg Lys His Lys Glu Lys Met Ser Lys Asp Gly Lys Lys
 165 170 175

Lys Lys Lys Lys Ser Lys Thr Lys Cys Val Ile Met
 180 185

<210> 27
 <211> 189
 <212> PRT
 <213> Homo sapiens

<400> 27

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Cys Gly Val Gly Lys
 1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
 20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
 35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
 50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
 65 70 75 80

Val Phe Ala Ile Asn Asn Thr Lys Ser Phe Glu Asp Ile His Gln Tyr
 85 90 95

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Asp Asp Val Pro Met Val
 100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Ala Ala Arg Thr Val Glu Ser Arg
 115 120 125

Gln Ala Gln Asp Leu Ala Arg Ser Tyr Gly Ile Pro Tyr Ile Glu Thr
 130 135 140

Ser Ala Lys Thr Arg Gln Gly Val Glu Asp Ala Phe Tyr Thr Leu Val
 145 150 155 160

Arg Glu Ile Arg Gln His Lys Leu Arg Lys Leu Asn Pro Pro Asp Glu

165

170

175

Ser Gly Pro Gly Cys Met Ser Cys Lys Cys Val Leu Ser
 180 185

<210> 28
 <211> 189
 <212> PRT
 <213> Homo sapiens

<400> 28

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Cys Gly Val Gly Lys
 1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile Gln Asn His Phe Val Asp Glu Tyr
 20 25 30

Asp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Val Ile Asp Gly
 35 40 45

Glu Thr Cys Leu Leu Asp Ile Leu Asp Thr Ala Gly Gln Glu Glu Tyr
 50 55 60

Ser Ala Met Arg Asp Gln Tyr Met Arg Thr Gly Glu Gly Phe Leu Cys
 65 70 75 80

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

Arg Glu Gln Ile Lys Arg Val Lys Asp Ser Asp Asp Val Pro Met Val
 100 105 110

Leu Val Gly Asn Lys Cys Asp Leu Pro Thr Arg Thr Val Asp Thr Lys
 115 120 125

Gln Ala His Glu Leu Ala Lys Ser Tyr Gly Ile Pro Phe Ile Glu Thr
 130 135 140

Ser Ala Lys Thr Arg Gln Gly Val Glu Asp Ala Phe Tyr Thr Leu Val
 145 150 155 160

Arg Glu Ile Arg Gln Tyr Arg Met Lys Lys Leu Asn Ser Ser Asp Asp
 165 170 175

Gly Thr Gln Gly Cys Met Gly Leu Pro Cys Val Val Met
 180 185

<210> 29
 <211> 23
 <212> PRT
 <213> Homo sapiens

<400> 29

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

Ala Leu Thr Ile Gln Leu Ile
 20

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 <222> (48)..(48)
 <223> X is Thr or Cys

<220>
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 <222> (112)..(112)
 <223> X is Ser, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp

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 <222> (114)..(114)
 <223> X is Met, Ala, Val, Leu, Ile, Pro, Phe, or Trp

<220>
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 <223> X is Gly, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp

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Asp Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg
 1 5 10 15

Ser Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile
 20 25 30

Asn Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Xaa
 35 40 45

Val Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala
 50 55 60

Trp Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr
 65 70 75 80

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

Glu Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu Xaa
 100 105 110

Val Xaa Xaa Leu Arg Ile Leu Leu Leu Lys Val Ala Gly Phe Asn Leu
 115 120 125

Leu Met Thr Leu Arg Leu Trp Ser Ser
 130 135

<210> 31
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 <213> Artificial Sequence

<220>
 <223> Synthetic

<220>
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 <222> (57)..(57)
 <223> X is Ser or Cys

<400> 31

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

Ser Lys Ala Glu Ile Ala Asn Lys Gln Lys Ala Thr Leu Val Cys Leu
 20 25 30

Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn
 35 40 45

Gly Lys Glu Val His Ser Gly Val Xaa Thr Asp Pro Gln Ala Tyr Lys
 50 55 60

Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala
 65 70 75 80

Thr Phe Trp His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe
 85 90 95

His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro
 100 105 110

Val Thr Gln Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly
 115 120 125

Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu
 130 135 140

Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser
 145 150 155 160

Thr Leu Val Val Met Ala Met Val Lys Arg Lys Asn Ser
 165 170

<210> 32

<211> 137

<212> PRT

<213> Mus musculus

<400> 32

Asp Ile Gln Asn Pro Glu Pro Ala Val Tyr Gln Leu Lys Asp Pro Arg
 1 5 10 15

Ser Gln Asp Ser Thr Leu Cys Leu Phe Thr Asp Phe Asp Ser Gln Ile

20

25

30

Asn Val Pro Lys Thr Met Glu Ser Gly Thr Phe Ile Thr Asp Lys Thr
 35 40 45

Val Leu Asp Met Lys Ala Met Asp Ser Lys Ser Asn Gly Ala Ile Ala
 50 55 60

Trp Ser Asn Gln Thr Ser Phe Thr Cys Gln Asp Ile Phe Lys Glu Thr
 65 70 75 80

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

Glu Lys Ser Phe Glu Thr Asp Met Asn Leu Asn Phe Gln Asn Leu Ser
 100 105 110

Val Met Gly Leu Arg Ile Leu Leu Lys Val Ala Gly Phe Asn Leu
 115 120 125

Leu Met Thr Leu Arg Leu Trp Ser Ser
 130 135

<210> 33
 <211> 173
 <212> PRT
 <213> Mus musculus

<400> 33

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

Ser Lys Ala Glu Ile Ala Asn Lys Gln Lys Ala Thr Leu Val Cys Leu
 20 25 30

Ala Arg Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val Asn
 35 40 45

Gly Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln Ala Tyr Lys
 50 55 60

Glu Ser Asn Tyr Ser Tyr Cys Leu Ser Ser Arg Leu Arg Val Ser Ala
 65 70 75 80

Thr Phe Trp His Asn Pro Arg Asn His Phe Arg Cys Gln Val Gln Phe
 85 90 95

His Gly Leu Ser Glu Glu Asp Lys Trp Pro Glu Gly Ser Pro Lys Pro
 100 105 110

Val Thr Gln Asn Ile Ser Ala Glu Ala Trp Gly Arg Ala Asp Cys Gly
 115 120 125

Ile Thr Ser Ala Ser Tyr Gln Gln Gly Val Leu Ser Ala Thr Ile Leu
 130 135 140

Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr Ala Val Leu Val Ser
 145 150 155 160

Thr Leu Val Val Met Ala Met Val Lys Arg Lys Asn Ser
 165 170

<210> 34
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 <223> X is Thr or Cys

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 <222> (243)..(243)
 <223> X is Ser, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp

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 <223> X is Met, Ala, Val, Leu, Ile, Pro, Phe, or Trp

<220>
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<222> (246)..(246)

<223> X is Gly, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp

<400> 34

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

Leu Val Asn Gly Glu Asn Val Glu Gln His Pro Ser Thr Leu Ser Val
20 25 30

Gln Glu Gly Asp Ser Ala Val Ile Lys Cys Thr Tyr Ser Asp Ser Ala
35 40 45

Ser Asn Tyr Phe Pro Trp Tyr Lys Gln Glu Leu Gly Lys Gly Pro Gln
50 55 60

Leu Ile Ile Asp Ile Arg Ser Asn Val Gly Glu Lys Lys Asp Gln Arg
65 70 75 80

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

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

Thr Gly Gly Gly Asn Lys Leu Thr Phe Gly Thr Gly Thr Gln Leu Lys
115 120 125

Val Glu Leu 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 Xaa 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 Xaa Val Xaa Xaa 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> 35
 <211> 305
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<220>
 <221> MISC_FEATURE
 <222> (189)..(189)
 <223> X is Ser or Cys

<400> 35

Met Leu Leu Leu Leu Leu Leu Leu Gly Pro Ala Gly Ser Gly Leu Gly
 1 5 10 15

Ala Val Val Ser Gln His Pro Ser Arg Val Ile Cys Lys Ser Gly Thr
 20 25 30

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

Phe Trp Tyr Arg Gln Phe Pro Lys Gln Ser Leu Met Leu Met Ala Thr
 50 55 60

Ser Asn Glu Gly Ser Lys Ala Thr Tyr Glu Gln Gly Val Glu Lys Asp
 65 70 75 80

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

Thr Ser Ala His Pro Glu Asp Ser Ser Phe Tyr Ile Cys Ser Ala Arg
 100 105 110

Glu Gly Ala Gly Gly Met Gly Thr Gln Tyr Phe Gly Pro Gly Thr Arg
 115 120 125

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

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

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

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

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

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

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

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

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

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

Val Leu Val Ser Thr Leu Val Val Met Ala Met Val Lys Arg Lys Asn

290

295

300

Ser
305

<210> 36
<211> 269
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<220>
<221> MISC_FEATURE
<222> (180)..(180)
<223> X is Thr or Cys

<220>
<221> MISC_FEATURE
<222> (244)..(244)
<223> X is Ser, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp

<220>
<221> MISC_FEATURE
<222> (246)..(246)
<223> X is Met, Ala, Val, Leu, Ile, Pro, Phe, or Trp

<220>
<221> MISC_FEATURE
<222> (247)..(247)
<223> X is Gly, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp

<400> 36

Met Glu Lys Asn Pro Leu Ala Ala Pro Leu Leu Ile Leu Trp Phe His
1 5 10 15

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

Leu His Val Gln Glu Gly Asp Ser Thr Asn Phe Thr Cys Ser Phe Pro
35 40 45

Ser Ser Asn Phe Tyr Ala Leu His Trp Tyr Arg Trp Glu Thr Ala Lys
50 55 60

Ser Pro Glu Ala Leu Phe Val Met Thr Leu Asn Gly Asp Glu Lys Lys
65 70 75 80

Lys Gly Arg Ile Ser Ala Thr Leu Asn Thr Lys Glu Gly Tyr Ser Tyr
85 90 95

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

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

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

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

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

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

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

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

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

Gln Asn Leu Xaa Val Xaa Xaa Leu Arg Ile Leu Leu Leu Lys Val Ala
245 250 255

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

<210> 37

<211> 310

<212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<220>
 <221> MISC_FEATURE
 <222> (194)..(194)
 <223> X is Ser or Cys

<400> 37

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

Lys His Thr Asp Ala Gly Val Ile Gln Ser Pro Arg His Glu Val Thr
 20 25 30

Glu Met Gly Gln Glu Val Thr Leu Arg Cys Lys Pro Ile Ser Gly His
 35 40 45

Asp Tyr Leu Phe Trp Tyr Arg Gln Thr Met Met Arg Gly Leu Glu Leu
 50 55 60

Leu Ile Tyr Phe Asn Asn Asn Val Pro Ile Asp Asp Ser Gly Met Pro
 65 70 75 80

Glu Asp Arg Phe Ser Ala Lys Met Pro Asn Ala Ser Phe Ser Thr Leu
 85 90 95

Lys Ile Gln Pro Ser Glu Pro Arg Asp Ser Ala Val Tyr Phe Cys Ala
 100 105 110

Ser Ser Ser Tyr Gly Gly Tyr Ser Asn Gln Pro Gln His Phe Gly Asp
 115 120 125

Gly Thr Arg Leu Ser Ile Leu Glu Asp Glu Asp Leu Arg Asn Val Thr
 130 135 140

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

Lys Gln Lys Ala Thr Leu Val Cys Leu Ala Arg Gly Phe Phe Pro Asp
165 170 175

His Val Glu Leu Ser Trp Trp Val Asn Gly Lys Glu Val His Ser Gly
180 185 190

Val	Xaa	Thr	Asp	Pro	Gln	Ala	Tyr	Lys	Glu	Ser	Asn	Tyr	Ser	Tyr	Cys
		195					200					205			

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

Asn His Phe Arg Cys Gln Val Gln Phe His Gly Leu Ser Glu Glu Asp
225 230 235 240

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

Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile Thr Ser Ala Ser Tyr Gln
260 265 270

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

Ala Thr Leu Tyr Ala Val Leu Val Ser Thr Leu Val Val Met Ala Met
290 295 300

Val Lys Arg Lys Asn Ser
305 310

<210> 38

<211> 268

<212> PRT

<213> Artificial Sequence

 $\langle 220 \rangle$

<223> Synthetic

<400> 38

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

Leu Val Asn Gly Glu Asn Val Glu Gln His Pro Ser Thr Leu Ser Val
 20 25 30

Gln Glu Gly Asp Ser Ala Val Ile Lys Cys Thr Tyr Ser Asp Ser Ala
 35 40 45

Ser Asn Tyr Phe Pro Trp Tyr Lys Gln Glu Leu Gly Lys Gly Pro Gln
 50 55 60

Leu Ile Ile Asp Ile Arg Ser Asn Val Gly Glu Lys Lys Asp Gln Arg
 65 70 75 80

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

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

Thr Gly Gly Gly Asn Lys Leu Thr Phe Gly Thr Gly Thr Gln Leu Lys
 115 120 125

Val Glu Leu 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> 39

<211> 305

<212> PRT

<213> Artificial Sequence

 $\langle 220 \rangle$

<223> Synthetic

<400> 39

Met Leu Leu Leu Leu Leu Leu Leu Gly Pro Ala Gly Ser Gly Leu Gly
1 5 10 15

Ala Val Val Ser Gln His Pro Ser Arg Val Ile Cys Lys Ser Gly Thr
20 25 30

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

Phe Trp Tyr Arg Gln Phe Pro Lys Gln Ser Leu Met Leu Met Ala Thr
50 55 60

Ser Asn Glu Gly Ser Lys Ala Thr Tyr Glu Gln Gly Val Glu Lys Asp
65 70 75 80

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

Thr Ser Ala His Pro Glu Asp Ser Ser Phe Tyr Ile Cys Ser Ala Arg
100 105 110

Glu Gly Ala Gly Gly Met Gly Thr Gln Tyr Phe Gly Pro Gly Thr Arg
115 120 125

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

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

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

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

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

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

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

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

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

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

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

Ser
 305

<210> 40
 <211> 269
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<400> 40

Met Glu Lys Asn Pro Leu Ala Ala Pro Leu Leu Ile Leu Trp Phe His
 1 5 10 15

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

Leu His Val Gln Glu Gly Asp Ser Thr Asn Phe Thr Cys Ser Phe Pro
 35 40 45

Ser Ser Asn Phe Tyr Ala Leu His Trp Tyr Arg Trp Glu Thr Ala Lys
 50 55 60

Ser Pro Glu Ala Leu Phe Val Met Thr Leu Asn Gly Asp Glu Lys Lys
 65 70 75 80

Lys Gly Arg Ile Ser Ala Thr Leu Asn Thr Lys Glu Gly Tyr Ser Tyr
 85 90 95

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

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

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

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

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

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

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

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

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

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

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

<210> 41
 <211> 310
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<400> 41

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

Lys His Thr Asp Ala Gly Val Ile Gln Ser Pro Arg His Glu Val Thr
 20 25 30

Glu Met Gly Gln Glu Val Thr Leu Arg Cys Lys Pro Ile Ser Gly His
 35 40 45

Asp Tyr Leu Phe Trp Tyr Arg Gln Thr Met Met Arg Gly Leu Glu Leu
 50 55 60

Leu Ile Tyr Phe Asn Asn Asn Val Pro Ile Asp Asp Ser Gly Met Pro
 65 70 75 80

Glu Asp Arg Phe Ser Ala Lys Met Pro Asn Ala Ser Phe Ser Thr Leu
 85 90 95

Lys Ile Gln Pro Ser Glu Pro Arg Asp Ser Ala Val Tyr Phe Cys Ala
 100 105 110

Ser Ser Ser Tyr Gly Gly Tyr Ser Asn Gln Pro Gln His Phe Gly Asp
 115 120 125

Gly Thr Arg Leu Ser Ile Leu Glu Asp Glu Asp Leu Arg Asn Val Thr
 130 135 140

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

Lys Gln Lys Ala Thr Leu Val Cys Leu Ala Arg Gly Phe Phe Pro Asp
 165 170 175

His Val Glu Leu Ser Trp Trp Val Asn Gly Lys Glu Val His Ser Gly
 180 185 190

Val Ser Thr Asp Pro Gln Ala Tyr Lys Glu Ser Asn Tyr Ser Tyr Cys
 195 200 205

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

Asn His Phe Arg Cys Gln Val Gln Phe His Gly Leu Ser Glu Glu Asp
 225 230 235 240

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

Glu Ala Trp Gly Arg Ala Asp Cys Gly Ile Thr Ser Ala Ser Tyr Gln
 260 265 270

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

Ala Thr Leu Tyr Ala Val Leu Val Ser Thr Leu Val Val Met Ala Met
 290 295 300

Val Lys Arg Lys Asn Ser
 305 310

<210> 42
 <211> 393

<212> DNA
 <213> Homo sapiens

<400> 42
 atgaccagca tcagggccgt gttcatcttc ctgtggctgc agctggacct ggtgaacggc 60
 gagaacgtgg agcagcaccc cagcaccttg agcgtgcagg agggcgacag cgccgtgata 120
 aagtgcacct acagcgacag cgccagcaac tactttccct ggtacaagca ggagctgggc 180
 aagggtcccc agctgatcat cgacatcagg agcaacgtgg gcgagaagaa ggaccagagg 240
 atcgccgtga ccctgaacaa gaccgccaag cacttcagcc tgcacatcac cgagaccag 300
 cccgaggaca gcgccgtgta cttctgcgcc gccagcaccg gcggcgga caagctgacc 360
 ttcggcaccg gcacccagct gaaggtggag ctg 393

<210> 43
 <211> 393
 <212> DNA
 <213> Homo sapiens

<400> 43
 atgaccagca tcagggccgt gttcatcttc ctgtggctgc agctggacct ggtgaacggc 60
 gagaacgtgg agcagcaccc cagcaccttg agcgtgcagg agggcgacag cgccgtgata 120
 aagtgcacct acagcgacag cgccagcaac tactttccct ggtacaagca ggagctgggc 180
 aagggtcccc agctgatcat cgacatcagg agcaacgtgg gcgagaagaa ggaccagagg 240
 atcgccgtga ccctgaacaa gaccgccaag cacttcagcc tgcacatcac cgagaccag 300
 cccgaggaca gcgccgtgta cttctgcgcc gccagcaccg gcggcgga caagctgacc 360
 ttcggcaccg gcacccagct gaaggtggag ctg 393

<210> 44
 <211> 396
 <212> DNA
 <213> Homo sapiens

<400> 44
 atggagaaga accccctggc cgccccctg ctgatactgt gggtccacct ggactgcgtg 60
 agcagcatcc tgaacgtgga gcagagcccc cagagcctgc acgtgcagga gggcgacagc 120
 accaacttca cctgcagctt ccccagcagc aacttctacg ccctgcactg gtacaggtgg 180
 gagaccgcca agagccccga ggccctgttc gtgatgacct tgaacggcga cgagaagaag 240

aagggcagga tcagcgccac cctgaacacc aaggagggct acagctacct gtacatcaag 300
 ggagccagc ccgaggacag cgccacctac ctgtgcgctt tcaccaccgg caaccagttc 360
 tacttcggca ccggcaccag cctgaccgtg atcccc 396

<210> 45
 <211> 411
 <212> DNA
 <213> Homo sapiens

<400> 45
 atgggcagct ggaccctgtg ctgctgagc ctgtgcatcc tggaggccaa gcacaccgac 60
 gccggcgtga tccagagccc caggcacgag gtgaccgaga tgggcccagga ggtgaccctg 120
 aggtgcaagc ccatcagcgg ccacgactac ctgttctggt acaggcagac catgatgagg 180
 ggcttgagc tgctgatcta cttcaacaac aacgtgcccc tcgacgacag cggcatgccc 240
 gaggacaggt tcagcgccaa gatgcccac gccagcttca gcaccctgaa gatccagccc 300
 agcgagccca gggacagcgc cgtgtacttc tgcgccagca gcagctacgg cggctacagc 360
 aaccagcccc agcacttcgg cgacggcacc aggctgagca tcctggagga c 411

<210> 46
 <211> 11
 <212> PRT
 <213> Homo sapiens

<400> 46

Leu Val Val Val Gly Ala Val Gly Val Gly Lys
 1 5 10

<210> 47
 <211> 12
 <212> PRT
 <213> Homo sapiens

<400> 47

Lys Leu Val Val Val Gly Ala Val Gly Val Gly Lys
 1 5 10

<210> 48
 <211> 12
 <212> PRT
 <213> Homo sapiens

<400> 48

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

<210> 49

<211> 13

<212> PRT

<213> Homo sapiens

<400> 49

Tyr Lys Leu Val Val Val Gly Ala Val Gly Val Gly Lys
1 5 10

<210> 50

<211> 13

<212> PRT

<213> Homo sapiens

<400> 50

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

<210> 51

<211> 13

<212> PRT

<213> Homo sapiens

<400> 51

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

<210> 52

<211> 15

<212> PRT

<213> Homo sapiens

<400> 52

Glu Tyr Lys Leu Val Val Val Gly Ala Val Gly Val Gly Lys Ser
1 5 10 15

<210> 53

<211> 24

<212> PRT

<213> Homo sapiens

<400> 53

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Val Gly Val Gly Lys
1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile
20

<210> 54

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 54

Arg Ala Lys Arg Ser Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys
1 5 10 15

Gln Ala Gly Asp Val Glu Glu Asn Pro Gly Pro
20 25

<210> 55

<211> 24

<212> PRT

<213> Homo sapiens

<400> 55

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Gly Gly Val Gly Lys
1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile
20

<210> 56

<211> 24

<212> PRT

<213> Homo sapiens

<400> 56

Met Thr Glu Tyr Lys Leu Val Val Val Gly Ala Cys Gly Val Gly Lys
1 5 10 15

Ser Ala Leu Thr Ile Gln Leu Ile
20