

1 SEQUENCE LISTING

<110> Ono Pharmaceutical Co., Ltd.
 <120> PD-1/CD19 bispecific Antibody
 <130> P20-006
 <150> JP 2019-071840
 <151> 2019-04-04
 <150> JP 2020-022256
 <151> 2020-02-13
 <160> 80
 <170> PatentIn version 3.5
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 <213> Homo sapiens
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Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr His Tyr
 20 25 30

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

Gly Trp Leu Asn Thr Asn Thr Glu Asn Pro Thr Phe Ala Gln Gly Phe
 50 55 60

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

Leu Gln Ile Ser Ser Leu Lys Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Ala Arg Gly Asp Met Val Val Pro Thr Thr Ile Trp Asn Tyr Tyr His
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Phe Met Asp Val Trp Gly Asn Gly Thr Leu Val Thr Val Ser Ser
 115 120 125

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<400> 2

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 Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr His Tyr
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 Gly Leu His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
 35 40 45
 Gly Trp Ile Asn Thr Asn Thr Gly Asn Pro Thr Tyr Ala Gln Gly Phe
 50 55 60
 Thr Gly Arg Phe Val Phe Ser Leu Asp Thr Ser Val Ser Thr Ala Tyr
 65 70 75 80
 Leu Gln Ile Ser Ser Leu Lys Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95
 Ala Arg Gly Asp Leu Val Val Pro Thr Thr Ile Trp Asn Tyr Tyr His
 100 105 110
 Tyr Met Glu Val Trp Gly Lys Gly Thr Leu Val Thr Val Ser Ser
 115 120 125

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<400> 3

Gln Val Gln Leu Val Gln Ser Gly Ser Glu Leu Lys Lys Pro Gly Ala
 1 5 10 15
 Ser Val Met Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr His Tyr
 20 25 30
 Ala Leu His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
 35 40 45

Gly Trp Leu Asn Thr Asn Thr Glu Asn Pro Thr Tyr Ala Gln Gly Phe
50 55 60

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

Leu Gln Ile Asn Ser Leu Lys Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Gly Asp Met Val Val Pro Thr Thr Ile Trp Asn Tyr Tyr Tyr
100 105 110

Tyr Met Asp Val Trp Gly Lys Gly Thr Thr Val Thr Val Ser Ser
115 120 125

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<400> 4

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

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

Gly Trp Leu Asn Thr Asn Thr Glu Asn Pro Thr Phe Ala Gln Gly Phe
50 55 60

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

Leu Gln Ile Ser Ser Leu Lys Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Gly Asp Met Val Val Pro Thr Thr Ile Trp Asn Tyr Tyr His
100 105 110

Phe Met Asp Val Trp Gly Asn Gly Thr Thr Val Thr Val Ser Ser

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

Gly Trp Leu Asn Thr Asn Thr Glu Asn Pro Thr Phe Ala Gln Gly Phe
 50 55 60

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

Leu Gln Ile Ser Ser Leu Lys Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Ala Arg Gly Asp Met Val Val Pro Thr Thr Ile Trp Asn Tyr Tyr His
 100 105 110

Phe Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
 115 120 125

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<400> 6

His Tyr Gly Leu His
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<210> 7
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Trp Leu Asn Thr Asn Thr Glu Asn Pro Thr Phe Ala Gln Gly Phe Thr
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Gly

<210> 8

<211> 18

<212> PRT

<213> Homo sapiens

<400> 8

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Asp Val

<210> 9

<211> 5

<212> PRT

<213> Homo sapiens

<400> 9

His Tyr Gly Leu His
1 5

<210> 10

<211> 17

<212> PRT

<213> Homo sapiens

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Trp Ile Asn Thr Asn Thr Gly Asn Pro Thr Tyr Ala Gln Gly Phe Thr
1 5 10 15

Gly

<210> 11

<211> 18

<212> PRT

<213> Homo sapiens

<400> 11

Gly Asp Leu Val Val Pro Thr Thr Ile Trp Asn Tyr Tyr His Tyr Met

1 5 10 15

Glu Val

<210> 12
<211> 5
<212> PRT
<213> Homo sapiens

<400> 12

His Tyr Ala Leu His
1 5

<210> 13
<211> 17
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<400> 13

Trp Leu Asn Thr Asn Thr Glu Asn Pro Thr Tyr Ala Gln Gly Phe Thr
1 5 10 15

Gly

<210> 14
<211> 18
<212> PRT
<213> Homo sapiens

<400> 14

Gly Asp Met Val Val Pro Thr Thr Ile Trp Asn Tyr Tyr Tyr Tyr Met
1 5 10 15

Asp Val

<210> 15
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<212> PRT
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<400> 15

His Tyr Ala Leu His
1 5

<210> 16

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<400> 16

Trp Leu Asn Thr Asn Thr Glu Asn Pro Thr Phe Ala Gln Gly Phe Thr
 1 5 10 15

Gly

<210> 17
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 <213> Homo sapiens

<400> 17

Gly Asp Met Val Val Pro Thr Thr Ile Trp Asn Tyr Tyr His Phe Met
 1 5 10 15

Asp Val

<210> 18
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 <212> PRT
 <213> Homo sapiens

<400> 18

His Tyr Ala Leu His
 1 5

<210> 19
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<400> 19

Trp Leu Asn Thr Asn Thr Glu Asn Pro Thr Phe Ala Gln Gly Phe Thr
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Gly

<210> 20
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<400> 20

Gly Asp Met Val Val Pro Thr Thr Ile Trp Asn Tyr Tyr His Phe Met
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Asp Val

<210> 21

<211> 98

<212> PRT

<213> Homo sapiens

<400> 21

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

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

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

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

Leu Gln Ile Cys Ser Leu Lys Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Ala Arg

<210> 22

<211> 98

<212> PRT

<213> Homo sapiens

<400> 22

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
 20 25 30

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

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

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

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

Ala Arg

$\langle 210 \rangle$	23
$\langle 211 \rangle$	329
$\langle 212 \rangle$	PRT
$\langle 213 \rangle$	Homo sapiens

〈400〉 23

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

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

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
35 40 45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
50 55 60

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr
65 70 75 80

Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys
85 90 95

Arg Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
100 105 110

Pro Ala Pro Glu Leu Gly Arg Gly Pro Ser Val¹⁰ Phe Leu Phe Pro Pro
 115 120 125
 Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
 130 135 140
 Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
 145 150 155 160
 Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
 165 170 175
 Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
 180 185 190
 His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
 195 200 205
 Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
 210 215 220
 Gln Pro Arg Glu Pro Gln Val Tyr Thr Asp Pro Pro Ser Arg Glu Glu
 225 230 235 240
 Met Thr Lys Asn Gln Val Ser Leu Thr Cys Glu Val Lys Gly Phe Tyr
 245 250 255
 Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
 260 265 270
 Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
 275 280 285
 Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
 290 295 300
 Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
 305 310 315 320
 Gln Lys Ser Leu Ser Leu Ser Pro Gly
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<211> 329
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 <213> Homo sapiens

<400> 24

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

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

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
 35 40 45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
 50 55 60

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr
 65 70 75 80

Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys
 85 90 95

Arg Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
 100 105 110

Pro Ala Pro Glu Leu Gly Arg Gly Pro Ser Val Phe Leu Phe Pro Pro
 115 120 125

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
 130 135 140

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
 145 150 155 160

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
 165 170 175

Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
 180 185 190

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
 195 200 205

Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
 210 215 220

Gln Pro Arg Glu Pro Gln Val Tyr Thr Lys Pro Pro Ser Arg Glu Glu
 225 230 235 240

Met Thr Lys Asn Gln Val Ser Leu Lys Cys Leu Val Lys Gly Phe Tyr
 245 250 255

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
 260 265 270

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
 275 280 285

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
 290 295 300

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
 305 310 315 320

Gln Lys Ser Leu Ser Leu Ser Pro Gly
 325

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 <213> Homo sapiens

<400> 25

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
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Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Ser Tyr
 20 25 30

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

Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro

65		70		13 75		80									
Glu	Asp	Phe	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Ser	Tyr	Ser	Thr	Pro	Pro
				85					90					95	

Thr	Phe	Gly	Gln	Gly	Thr	Lys	Val	Glu	Ile	Lys
			100					105		

<210> 26
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<400> 26

Arg	Ala	Ser	Gln	Ser	Ile	Ser	Ser	Tyr	Leu	Asn
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<210> 27
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 <213> Homo sapiens

<400> 27

Ala	Ala	Ser	Ser	Leu	Gln	Ser
1				5		

<210> 28
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 <213> Homo sapiens

<400> 28

Gln	Gln	Ser	Tyr	Ser	Thr	Pro	Pro	Thr
1				5				

<210> 29
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 <213> Homo sapiens

<400> 29

Arg	Thr	Val	Ala	Ala	Pro	Ser	Val	Phe	Ile	Phe	Pro	Pro	Ser	Asp	Glu
1				5					10					15	

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

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
35 40 45

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
50 55 60

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
65 70 75 80

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
85 90 95

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
100 105

$\langle 210 \rangle$	30
$\langle 211 \rangle$	122
$\langle 212 \rangle$	PRT
$\langle 213 \rangle$	Homo sapiens

<400> 30

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
20 25 30

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

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

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

Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Ile Tyr Tyr Cys
85 90 95

Ala Arg Lys Thr Ile Val Gly Val Val Met Thr Ala Phe Asp Ile Trp
100 105 110

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

<210> 31
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 <213> Homo sapiens

<400> 31

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
 20 25 30

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

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

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

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

Val Arg Gln Thr Ile Val Ala Thr Val Met Asn Ala Phe Asp Ile Trp
 100 105 110

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

<210> 32
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<400> 32

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Phe Ser Phe Thr Ser Tyr
 20 25 30

Val Arg Gln Thr Ile Val Ala Thr Thr Gly¹⁷ Leu Ala Phe Asp Ile Trp
100 105 110

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

<210> 34
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<212> PRT
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<400> 34

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
20 25 30

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

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

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

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

Ala Arg Arg Thr Ile Val Ala Thr Ile His Trp Ala Ser Asp Tyr Trp
100 105 110

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

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Ser Tyr Trp Ile Gly
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<210> 36
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<400> 36

Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe Gln
 1 5 10 15

Gly

<210> 37
 <211> 13
 <212> PRT
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<400> 37

Lys Thr Ile Val Gly Val Val Met Thr Ala Phe Asp Ile
 1 5 10

<210> 38
 <211> 5
 <212> PRT
 <213> Homo sapiens

<400> 38

Ser Tyr Trp Ile Gly
 1 5

<210> 39
 <211> 17
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 <213> Homo sapiens

<400> 39

Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe Gln
 1 5 10 15

Gly

<210> 40
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 <213> Homo sapiens

<400> 40

Gln Thr Ile Val Ala Thr Val Met Asn Ala Phe Asp Ile
1 5 10

<210> 41

<211> 5

<212> PRT

<213> Homo sapiens

<400> 41

Ser Tyr Trp Ile Ala
1 5

<210> 42

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<213> Homo sapiens

<400> 42

Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe Gln
1 5 10 15

Gly

<210> 43

<211> 13

<212> PRT

<213> Homo sapiens

<400> 43

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

<210> 44

<211> 5

<212> PRT

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<400> 44

Ser Tyr Trp Ile Gly
1 5

<210> 45

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<400> 45

Ile Ile Trp Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe Gln
 1 5 10 15

Gly

<210> 46
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<400> 46

Gln Thr Ile Val Ala Thr Thr Gly Leu Ala Phe Asp Ile
 1 5 10

<210> 47
 <211> 5
 <212> PRT
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<400> 47

Ser Tyr Trp Ile Gly
 1 5

<210> 48
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<400> 48

Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe Gln
 1 5 10 15

Gly

<210> 49
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<400> 49

Arg Thr Ile Val Ala Thr Ile His Trp Ala Ser Asp Tyr
 1 5 10 21

<210> 50
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 Gln Val Gln Leu Val Gln Ser Gly Ser Glu Leu Lys Gln Pro Gly Ala
 1 5 10 15
 tca gtg aag gtt tcc tgt aag gct tct gga tac acc ttc act cac tat 96
 Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr His Tyr
 20 25 30
 ggt ttg cat tgg gtg cga cag gcc cct gga caa ggg ctt gag tgg atg 144
 Gly Leu His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
 35 40 45
 gga tgg ctc aac acc aac act gag aac cca acg ttt gcc cag ggc ttc 192
 Gly Trp Leu Asn Thr Asn Thr Glu Asn Pro Thr Phe Ala Gln Gly Phe
 50 55 60
 aca gga cgg ttt gtc ttc tcc ttg gac acc tct gtc acc acg gca tat 240
 Thr Gly Arg Phe Val Phe Ser Leu Asp Thr Ser Val Thr Thr Ala Tyr
 65 70 75 80
 ctg cag atc agc agc ctg aag gct gag gac act gcc gta tat tac tgt 288
 Leu Gln Ile Ser Ser Leu Lys Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95
 gcg aga ggg gat atg gta gta ccg act act ata tgg aac tac tac cac 336
 Ala Arg Gly Asp Met Val Val Pro Thr Thr Ile Trp Asn Tyr Tyr His
 100 105 110
 ttc atg gac gtc tgg ggc aac ggc acc ctg gtc acc gtc tcg agt 381
 Phe Met Asp Val Trp Gly Asn Gly Thr Leu Val Thr Val Ser Ser
 115 120 125

<210> 51
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<220>
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 <222> (1).. (381)

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$\langle 212 \rangle$	DNA
$\langle 213 \rangle$	Homo sapiens

$\langle 220 \rangle$
 $\langle 221 \rangle$ CDS
 $\langle 222 \rangle$ (1) .. (381)

[illegible]

gga tgg ctc aat acc aac act gag aat cca acg tat gcc cag ggc ttc 192
 Gly Trp Leu Asn Thr Asn Thr Glu Asn Pro Thr Tyr Ala Gln Gly Phe
 50 55 60

aca gga cgg ttt gtc ttc tcc ttg gac acc tct gtc acc acg gca tat 240
 Thr Gly Arg Phe Val Phe Ser Leu Asp Thr Ser Val Thr Thr Ala Tyr
 65 70 75 80

ctg cag atc aac agc cta aag gct gag gac act gcc gtg tat tac tgt 288
 Leu Gln Ile Asn Ser Leu Lys Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

gcg aga ggg gat atg gta gta cca act act ata tgg aac tac tac tac 336
 Ala Arg Gly Asp Met Val Val Pro Thr Thr Ile Trp Asn Tyr Tyr Tyr
 100 105 110

tac atg gac gtc tgg ggc aaa ggg acc acg gtc acc gtc tcg agt 381
 Tyr Met Asp Val Trp Gly Lys Gly Thr Thr Val Thr Val Ser Ser

115

120

125

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 <222> (1).. (381)

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 Gln Val Gln Leu Val Gln Ser Gly Ser Glu Leu Lys Gln Pro Gly Ala
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tca gtg aag gtt tcc tgt aag gct tct gga tac acc ttc act cac tat 96
 Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr His Tyr
 20 25 30

gct ttg cat tgg ttg cga cag gcc cct gga caa ggg ctt gag tgg atg 144
 Ala Leu His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
 35 40 45

gga tgg ctc aac acc aac act gag aac cca acg ttt gcc cag ggc ttc 192
 Gly Trp Leu Asn Thr Asn Thr Glu Asn Pro Thr Phe Ala Gln Gly Phe
 50 55 60

aca gga cgt ttt gtc ttc tct ttg gac acc tct gtc acc acg gca tat 240
 Thr Gly Arg Phe Val Phe Ser Leu Asp Thr Ser Val Thr Thr Ala Tyr
 65 70 75 80

ctg cag atc agc agc ctg aag gct gag gac act gcc gta tat tac tgt 288
 Leu Gln Ile Ser Ser Leu Lys Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

gcg	aga	ggg	gat	atg	gta	gta	ccg	act	act	ata	tgg	aac	tac	tac	cac	336
Ala	Arg	Gly	Asp	Met	Val	Val	Pro	Thr	Thr	Ile	Trp	Asn	Tyr	Tyr	His	
			100					105					110			

ttc	atg	gac	gtc	tgg	ggc	aac	ggg	acc	acg	gtc	acc	gtc	tcg	agt	381
Phe	Met	Asp	Val	Trp	Gly	Asn	Gly	Thr	Thr	Val	Thr	Val	Ser	Ser	
		115					120					125			

<210> 54
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<400>	54																
cag	gtg	cag	ctg	gtg	caa	tct	ggg	tct	gag	ttg	aag	cag	cct	ggg	gcc	48	
Gln	Val	Gln	Leu	Val	Gln	Ser	Gly	Ser	Glu	Leu	Lys	Gln	Pro	Gly	Ala		
1				5					10					15			

tca	gtg	aag	gtt	tcc	tgt	aag	gct	tct	gga	tac	acc	ttc	act	cac	tat	96
Ser	Val	Lys	Val	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe	Thr	His	Tyr	
			20					25					30			

gct	ttg	cat	tgg	ttg	cga	cag	gcc	cct	gga	caa	ggg	ctt	gag	tgg	atg	144
Ala	Leu	His	Trp	Leu	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu	Glu	Trp	Met	
		35					40					45				

gga	tgg	ctc	aac	acc	aac	act	gag	aac	cca	acg	ttt	gcc	cag	ggc	ttc	192
Gly	Trp	Leu	Asn	Thr	Asn	Thr	Glu	Asn	Pro	Thr	Phe	Ala	Gln	Gly	Phe	
	50					55					60					

aca	gga	cgt	ttt	gtc	ttc	tct	ttg	gac	acc	tct	gtc	acc	acg	gca	tat	240
Thr	Gly	Arg	Phe	Val	Phe	Ser	Leu	Asp	Thr	Ser	Val	Thr	Thr	Ala	Tyr	
65					70					75					80	

ctg	cag	atc	agc	agc	ctg	aag	gct	gag	gac	act	gcc	gta	tat	tac	tgt	288
Leu	Gln	Ile	Ser	Ser	Leu	Lys	Ala	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys	
				85					90					95		

gcg	aga	ggg	gat	atg	gta	gta	ccg	act	act	ata	tgg	aac	tac	tac	cac	336
Ala	Arg	Gly	Asp	Met	Val	Val	Pro	Thr	Thr	Ile	Trp	Asn	Tyr	Tyr	His	
			100					105					110			

ttc	atg	gac	gtc	tgg	ggc	cag	ggg	acc	acg	gtc	acc	gtc	tcg	agt	381
Phe	Met	Asp	Val	Trp	Gly	Gln	Gly	Thr	Thr	Val	Thr	Val	Ser	Ser	
		115					120					125			

<210> 55
 <211> 321
 <212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1).. (321)

<400> 55

gac	atc	cag	atg	acc	cag	tct	cca	tcc	tcc	ctg	tct	gca	tct	gta	gga	48
Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly	
1				5					10					15		

gac	aga	gtc	acc	atc	act	tgc	cgg	gca	agt	cag	agc	att	agc	agc	tac	96
Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Ser	Ile	Ser	Ser	Tyr	
			20					25					30			

tta	aat	tgg	tat	cag	cag	aaa	cca	ggg	aaa	gcc	cct	aag	ctc	ctg	atc	144
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Lys	Leu	Leu	Ile	
		35					40					45				

tat	gct	gca	tcc	agt	ttg	caa	agt	ggg	gtc	cca	tca	agg	ttc	agt	ggc	192
Tyr	Ala	Ala	Ser	Ser	Leu	Gln	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	
	50					55					60					

agt	gga	tct	ggg	aca	gat	ttc	act	ctc	acc	atc	agc	agt	ctg	caa	cct	240
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro	
65					70					75					80	

gaa	gat	ttt	gca	act	tac	tac	tgt	caa	cag	agt	tac	agt	acc	cct	cca	288
Glu	Asp	Phe	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Ser	Tyr	Ser	Thr	Pro	Pro	
				85					90					95		

acg	ttc	ggc	caa	ggg	acc	aag	gtg	gag	atc	aaa						321
Thr	Phe	Gly	Gln	Gly	Thr	Lys	Val	Glu	Ile	Lys						
			100					105								

<210> 56

<211> 366

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1).. (366)

<400> 56

cag	gtg	cag	ctg	gtg	cag	tct	ggg	gcc	gag	gtg	aaa	aag	ccc	ggg	gag	48
Gln	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu	Val	Lys	Lys	Pro	Gly	Glu	
1				5					10					15		

tct	ctg	aag	atc	tcc	tgt	aag	ggt	tct	gga	tac	agc	ttt	acc	agc	tac	96
Ser	Leu	Lys	Ile	Ser	Cys	Lys	Gly	Ser	Gly	Tyr	Ser	Phe	Thr	Ser	Tyr	
			20					25					30			

tgg	atc	ggc	tgg	gtg	cgc	cag	atg	ccc	ggg	aaa	ggc	ctg	gag	tgg	atg	144
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Trp	Ile	Gly	Trp	Val	Arg	Gln	Met	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Met	
		35					40			26		45				
ggg	atc	atc	tat	cct	ggt	gac	tct	gat	acc	aga	tac	agc	ccg	tcc	ttc	192
Gly	Ile	Ile	Tyr	Pro	Gly	Asp	Ser	Asp	Thr	Arg	Tyr	Ser	Pro	Ser	Phe	
	50					55					60					
caa	ggc	cag	gtc	acc	atc	tca	gcc	gac	aag	tcc	atc	agc	acc	gcc	tac	240
Gln	Gly	Gln	Val	Thr	Ile	Ser	Ala	Asp	Lys	Ser	Ile	Ser	Thr	Ala	Tyr	
65					70					75					80	
ctg	cag	tgg	agt	agc	ctg	aag	gcc	tcg	gac	acc	gcc	ata	tat	tac	tgt	288
Leu	Gln	Trp	Ser	Ser	Leu	Lys	Ala	Ser	Asp	Thr	Ala	Ile	Tyr	Tyr	Cys	
				85					90					95		
gcg	aga	aag	acg	att	gtt	gga	gtg	gtt	atg	acg	gct	ttt	gat	atc	tgg	336
Ala	Arg	Lys	Thr	Ile	Val	Gly	Val	Val	Met	Thr	Ala	Phe	Asp	Ile	Trp	
			100					105					110			
ggc	caa	ggg	aca	atg	gtc	acc	gtc	tcc	agt							366
Gly	Gln	Gly	Thr	Met	Val	Thr	Val	Ser	Ser							
		115					120									

<210> 57
 <211> 366
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1).. (366)

<400>	57															
gag	gtg	cag	ctg	gtg	cag	tct	gga	gca	gag	gtg	aaa	aag	ccc	ggg	gag	48
Glu	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu	Val	Lys	Lys	Pro	Gly	Glu	
1				5					10					15		
tct	ctg	aag	atc	tcc	tgt	aag	ggt	tct	gga	tac	agc	ttt	acc	agc	tac	96
Ser	Leu	Lys	Ile	Ser	Cys	Lys	Gly	Ser	Gly	Tyr	Ser	Phe	Thr	Ser	Tyr	
			20					25					30			
tgg	atc	ggc	tgg	gtg	cgc	cag	atg	ccc	ggg	aaa	ggc	ctg	gag	tgg	atg	144
Trp	Ile	Gly	Trp	Val	Arg	Gln	Met	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Met	
		35					40					45				
ggg	atc	atc	tat	cct	ggt	gac	tct	gat	acc	aga	tac	agc	ccg	tcc	ttc	192
Gly	Ile	Ile	Tyr	Pro	Gly	Asp	Ser	Asp	Thr	Arg	Tyr	Ser	Pro	Ser	Phe	
	50					55					60					
caa	ggc	cag	gtc	acc	atc	tca	gcc	gac	aag	tcc	atc	agc	acc	gcc	tac	240
Gln	Gly	Gln	Val	Thr	Ile	Ser	Ala	Asp	Lys	Ser	Ile	Ser	Thr	Ala	Tyr	
65					70					75					80	
ctg	cag	tgg	agc	agc	ctg	aag	gcc	tcg	gac	acc	gcc	atg	tat	tat	tgt	288
Leu	Gln	Trp	Ser	Ser	Leu	Lys	Ala	Ser	Asp	Thr	Ala	Met	Tyr	Tyr	Cys	

<212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1).. (366)

<400> 59
 cag gtg cag ctg gtg cag tct ggg gca gag gtg aaa aag ccc ggg gag 48
 Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Glu
 1 5 10 15
 tct ctg aag atc tcc tgt aag ggt tct gga tac agt ttt atc agc tac 96
 Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Ile Ser Tyr
 20 25 30
 tgg atc ggc tgg gtg cgc cag atg ccc ggg aaa ggc ctg gag tgg atg 144
 Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met
 35 40 45
 ggg atc atc tgg cct ggt gac tct gat acc aga tac agt ccg tcc ttc 192
 Gly Ile Ile Trp Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
 50 55 60
 caa ggc cag gtc acc atc tca gcc gac aag tcc atc aat gtc gcc tac 240
 Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Asn Val Ala Tyr
 65 70 75 80
 ctg cag tgg agc agc ctg aag gcc tcg gac acc gcc ttg tat tat tgt 288
 Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Leu Tyr Tyr Cys
 85 90 95
 gtg aga caa acg att gtg gct acg act ggg ctt gct ttt gat atc tgg 336
 Val Arg Gln Thr Ile Val Ala Thr Thr Gly Leu Ala Phe Asp Ile Trp
 100 105 110
 ggc caa ggc acc ctg gtc acc gtc tcc agt 366
 Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 115 120

<210> 60
 <211> 366
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1).. (366)

<400> 60
 gag gtg cag ctg gtg cag tct gga gca gag gtg aaa aag ccc ggg gag 48
 Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Glu
 1 5 10 15

tct	ctg	aag	atc	tcc	tgt	aag	ggg	tct	gga	29	tac	agc	ttt	aca	agt	tat	96
Ser	Leu	Lys	Ile	Ser	Cys	Lys	Gly	Ser	Gly	Tyr	Ser	Phe	30	Thr	Ser	Tyr	
			20					25									
tgg	atc	ggc	tgg	gtg	cgc	cag	atg	ccc	ggg	aaa	ggc	ctg	gag	tgg	atg	144	
Trp	Ile	Gly	Trp	Val	Arg	Gln	Met	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Met		
		35					40					45					
ggg	atc	atc	tat	cct	ggg	gac	tct	gat	acc	aga	tac	agc	ccg	tcc	ttc	192	
Gly	Ile	Ile	Tyr	Pro	Gly	Asp	Ser	Asp	Thr	Arg	Tyr	Ser	Pro	Ser	Phe		
	50					55					60						
caa	ggc	cag	gtc	acc	atc	tca	gcc	gat	aag	tcc	atc	aac	acc	gcc	tac	240	
Gln	Gly	Gln	Val	Thr	Ile	Ser	Ala	Asp	Lys	Ser	Ile	Asn	Thr	Ala	Tyr		
65					70				75						80		
ctg	cag	tgg	agc	agc	ctg	aag	gcc	tcg	gac	acc	gcc	atg	tat	tac	tgt	288	
Leu	Gln	Trp	Ser	Ser	Leu	Lys	Ala	Ser	Asp	Thr	Ala	Met	Tyr	Tyr	Cys		
				85					90					95			
gcg	aga	cgg	acc	ata	gtg	gca	acg	att	cac	tgg	gct	tct	gac	tac	tgg	336	
Ala	Arg	Arg	Thr	Ile	Val	Ala	Thr	Ile	His	Trp	Ala	Ser	Asp	Tyr	Trp		
			100					105					110				
ggc	cag	ggg	aca	atg	gtc	acc	gtc	tcc	agt							366	
Gly	Gln	Gly	Thr	Met	Val	Thr	Val	Ser	Ser								
		115					120										

$\langle 210 \rangle$	61
$\langle 211 \rangle$	11
$\langle 212 \rangle$	PRT
$\langle 213 \rangle$	Homo sapiens

<400> 61

Trp Gly Lys Gly Thr Thr Val Thr Val Ser Ser
1 5 10

$\langle 210 \rangle$	62
$\langle 211 \rangle$	122
$\langle 212 \rangle$	PRT
$\langle 213 \rangle$	Homo sapiens

<400> 62

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
20 25 30

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

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

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

Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Ile Tyr Tyr Cys
 85 90 95

Ala Arg Lys Thr Ile Val Gly Val Val Met Thr Ala Phe Asp Ile Trp
 100 105 110

Gly Arg Gly Thr Met Val Thr Val Ser Ser
 115 120

<210> 63
 <211> 122
 <212> PRT
 <213> Homo sapiens

<400> 63

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
 20 25 30

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

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

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

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

Val Arg Gln Thr Ile Val Ala Thr Val Met Asn Ala Phe Asp Ile Trp
 100 105 110

Gly Arg Gly Thr Thr Val Thr Val Ser Ser³¹
115 120

<210> 64
<211> 122
<212> PRT
<213> Homo sapiens

<400> 64

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Phe Ser Phe Thr Ser Tyr
20 25 30

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

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

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

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

Ala Arg His Thr Ile Val Ala Thr Ile Tyr Asn Ala Phe Asp Phe Trp
100 105 110

Gly Arg Gly Thr Met Val Thr Val Ser Ser
115 120

<210> 65
<211> 122
<212> PRT
<213> Homo sapiens

<400> 65

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Ile Ser Tyr
20 25 30

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

Gly Ile Ile Trp Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
 50 55 60

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

Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Leu Tyr Tyr Cys
 85 90 95

Val Arg Gln Thr Ile Val Ala Thr Thr Gly Leu Ala Phe Asp Ile Trp
 100 105 110

Gly Arg Gly Thr Leu Val Thr Val Ser Ser
 115 120

<210> 66
 <211> 122
 <212> PRT
 <213> Homo sapiens

<400> 66

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

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
 20 25 30

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

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

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

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

Ala Arg Arg Thr Ile Val Ala Thr Ile His Trp Ala Ser Asp Tyr Trp

100

105

33

110

Gly Arg Gly Thr Met Val Thr Val Ser Ser
115 120

<210> 67
<211> 4
<212> PRT
<213> Artificial Sequence

<400> 67

Gly Lys Lys Ala
1

<210> 68
<211> 5
<212> PRT
<213> Artificial Sequence

<400> 68

Gly Lys Ala Lys Ala
1 5

<210> 69
<211> 4
<212> PRT
<213> Artificial Sequence

<400> 69

Gly Arg Arg Ala
1

<210> 70
<211> 5
<212> PRT
<213> Artificial Sequence

<400> 70

Gly Arg Ala Arg Ala
1 5

<210> 71
<211> 331
<212> PRT
<213> Homo sapiens

<400> 71

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

Gln Pro Arg Glu Pro Gln Val Tyr Thr Lys³⁵ Pro Pro Ser Arg Glu Glu
225 230 235 240

Met Thr Lys Asn Gln Val Ser Leu Lys Cys Leu Val Lys Gly Phe Tyr
245 250 255

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
260 265 270

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
275 280 285

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
290 295 300

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
305 310 315 320

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys Gly
325 330

<210> 72
<211> 334
<212> PRT
<213> Homo sapiens

<400> 72

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

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

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
35 40 45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
50 55 60

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr
65 70 75 80

Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys
85 90 95

Arg Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
100 105 110

Pro Ala Pro Glu Leu Gly Arg Gly Pro Ser Val Phe Leu Phe Pro Pro
115 120 125

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
130 135 140

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
145 150 155 160

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
165 170 175

Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
180 185 190

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
195 200 205

Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
210 215 220

Gln Pro Arg Glu Pro Gln Val Tyr Thr Lys Pro Pro Ser Arg Glu Glu
225 230 235 240

Met Thr Lys Asn Gln Val Ser Leu Lys Cys Leu Val Lys Gly Phe Tyr
245 250 255

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
260 265 270

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
275 280 285

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
290 295 300

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
305 310 315 320

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys Gly Lys Lys Ala
 325 330

<210> 73
 <211> 335
 <212> PRT
 <213> Homo sapiens

<400> 73

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

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

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
 35 40 45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
 50 55 60

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr
 65 70 75 80

Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys
 85 90 95

Arg Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
 100 105 110

Pro Ala Pro Glu Leu Gly Arg Gly Pro Ser Val Phe Leu Phe Pro Pro
 115 120 125

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
 130 135 140

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
 145 150 155 160

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
 165 170 175

Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu

190

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
35 40 45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
50 55 60

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr
65 70 75 80

Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys
85 90 95

Arg Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
100 105 110

Pro Ala Pro Glu Leu Gly Arg Gly Pro Ser Val Phe Leu Phe Pro Pro
115 120 125

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
130 135 140

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
145 150 155 160

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
165 170 175

Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
180 185 190

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
195 200 205

Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
210 215 220

Gln Pro Arg Glu Pro Gln Val Tyr Thr Lys Pro Pro Ser Arg Glu Glu
225 230 235 240

Met Thr Lys Asn Gln Val Ser Leu Lys Cys Leu Val Lys Gly Phe Tyr
245 250 255

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
260 265 270

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
275 280 285 40

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
290 295 300

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
305 310 315 320

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys Gly Arg Arg Ala
325 330

<210> 75
<211> 335
<212> PRT
<213> Homo sapiens

<400> 75

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

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

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
35 40 45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
50 55 60

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr
65 70 75 80

Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys
85 90 95

Arg Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
100 105 110

Pro Ala Pro Glu Leu Gly Arg Gly Pro Ser Val Phe Leu Phe Pro Pro
115 120 125

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
130 135 140

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
145 150 155 160

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
165 170 175

Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
180 185 190

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
195 200 205

Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
210 215 220

Gln Pro Arg Glu Pro Gln Val Tyr Thr Lys Pro Pro Ser Arg Glu Glu
225 230 235 240

Met Thr Lys Asn Gln Val Ser Leu Lys Cys Leu Val Lys Gly Phe Tyr
245 250 255

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
260 265 270

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
275 280 285

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
290 295 300

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
305 310 315 320

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys Gly Arg Ala Arg Ala
325 330 335

<210> 76
<211> 366
<212> DNA
<213> Homo sapiens

<220>
<221> CDS

<222> (1).. (366)

<400> 76

cag	gtg	cag	ctg	gtg	cag	tct	ggg	gcc	gag	gtg	aaa	aag	ccc	ggg	gag		48
Gln	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu	Val	Lys	Lys	Pro	Gly	Glu		
1				5					10					15			

tct	ctg	aag	atc	tcc	tgt	aag	ggg	tct	gga	tac	agc	ttt	acc	agc	tac		96
Ser	Leu	Lys	Ile	Ser	Cys	Lys	Gly	Ser	Gly	Tyr	Ser	Phe	Thr	Ser	Tyr		
			20					25					30				

tgg	atc	ggc	tgg	gtg	cgc	cag	atg	ccc	ggg	aaa	ggc	ctg	gag	tgg	atg		144
Trp	Ile	Gly	Trp	Val	Arg	Gln	Met	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Met		
		35					40					45					

ggg	atc	atc	tat	cct	ggg	gac	tct	gat	acc	aga	tac	agc	ccg	tcc	ttc		192
Gly	Ile	Ile	Tyr	Pro	Gly	Asp	Ser	Asp	Thr	Arg	Tyr	Ser	Pro	Ser	Phe		
	50					55					60						

caa	ggc	cag	gtc	acc	atc	tca	gcc	gac	aag	tcc	atc	agc	acc	gcc	tac		240
Gln	Gly	Gln	Val	Thr	Ile	Ser	Ala	Asp	Lys	Ser	Ile	Ser	Thr	Ala	Tyr		
65					70					75					80		

ctg	cag	tgg	agt	agc	ctg	aag	gcc	tgc	gac	acc	gcc	ata	tat	tac	tgt		288
Leu	Gln	Trp	Ser	Ser	Leu	Lys	Ala	Ser	Asp	Thr	Ala	Ile	Tyr	Tyr	Cys		
				85					90					95			

gcg	aga	aag	acg	att	gtt	gga	gtg	gtt	atg	acg	gct	ttt	gat	atc	tgg		336
Ala	Arg	Lys	Thr	Ile	Val	Gly	Val	Val	Met	Thr	Ala	Phe	Asp	Ile	Trp		
			100					105					110				

ggc	cga	ggg	aca	atg	gtc	acc	gtc	tcc	agt								366
Gly	Arg	Gly	Thr	Met	Val	Thr	Val	Ser	Ser								
		115					120										

<210> 77

<211> 366

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1).. (366)

<400> 77

gag	gtg	cag	ctg	gtg	cag	tct	gga	gca	gag	gtg	aaa	aag	ccc	ggg	gag		48
Glu	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu	Val	Lys	Lys	Pro	Gly	Glu		
1				5					10					15			

tct	ctg	aag	atc	tcc	tgt	aag	ggg	tct	gga	tac	agc	ttt	acc	agc	tac		96
Ser	Leu	Lys	Ile	Ser	Cys	Lys	Gly	Ser	Gly	Tyr	Ser	Phe	Thr	Ser	Tyr		
			20					25					30				

tgg	atc	ggc	tgg	gtg	cgc	cag	atg	ccc	ggg	aaa	ggc	ctg	gag	tgg	atg		144
Trp	Ile	Gly	Trp	Val	Arg	Gln	Met	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Met		

35	40	43	45	
ggg atc atc tat cct ggt gac tct gat acc aga tac agc ccg tcc ttc Gly Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe 50 55 60				192
caa ggc cag gtc acc atc tca gcc gac aag tcc atc agc acc gcc tac Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Ser Thr Ala Tyr 65 70 75 80				240
ctg cag tgg agc agc ctg aag gcc tcg gac acc gcc atg tat tat tgt Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Met Tyr Tyr Cys 85 90 95				288
gtg cga cag act ata gtg gct acg gta atg aat gct ttt gat atc tgg Val Arg Gln Thr Ile Val Ala Thr Val Met Asn Ala Phe Asp Ile Trp 100 105 110				336
ggc cga ggc acc acg gtc acc gtc tcc agt Gly Arg Gly Thr Thr Val Thr Val Ser Ser 115 120				366

<210> 78
 <211> 366
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1).. (366)

<400> 78 cag gtg cag ctg gtg cag tct ggg gca gag gtg aaa aag tcc ggg gag Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Ser Gly Glu 1 5 10 15	48
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tgg atc gcc tgg gtg cgc cag atg ccc ggg aaa ggc ctg gag tgg atg Trp Ile Ala Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met 35 40 45	144
ggg atc atc tat cct ggt gac tct gat acc aga tat agc ccg tcc ttc Gly Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe 50 55 60	192
caa ggc cag gtc acc atc tca gcc gac aag tcc ttc acc acc gcc tac Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Phe Thr Thr Ala Tyr 65 70 75 80	240
ctg cag tgg aac agc ctg aag gcc tcg gac acc gcc ata tat tac tgt Leu Gln Trp Asn Ser Leu Lys Ala Ser Asp Thr Ala Ile Tyr Tyr Cys 85 90 95	288

gcg aga cat act ata gtg gct acg ata tac aat gct ttt gat ttc tgg 336
 Ala Arg His Thr Ile Val Ala Thr Ile Tyr Asn Ala Phe Asp Phe Trp
 100 105 110

ggc cga ggg aca atg gtc acc gtc tcc agt 366
 Gly Arg Gly Thr Met Val Thr Val Ser Ser
 115 120

<210> 79
 <211> 366
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1).. (366)

<400> 79 48
 cag gtg cag ctg gtg cag tct ggg gca gag gtg aaa aag ccc ggg gag
 Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Glu
 1 5 10 15

tct ctg aag atc tcc tgt aag ggt tct gga tac agt ttt atc agc tac 96
 Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Ile Ser Tyr
 20 25 30

tgg atc ggc tgg gtg cgc cag atg ccc ggg aaa ggc ctg gag tgg atg 144
 Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met
 35 40 45

ggg atc atc tgg cct ggt gac tct gat acc aga tac agt ccg tcc ttc 192
 Gly Ile Ile Trp Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
 50 55 60

caa ggc cag gtc acc atc tca gcc gac aag tcc atc aat gtc gcc tac 240
 Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Asn Val Ala Tyr
 65 70 75 80

ctg cag tgg agc agc ctg aag gcc tcg gac acc gcc ttg tat tat tgt 288
 Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Leu Tyr Tyr Cys
 85 90 95

gtg aga caa acg att gtg gct acg act ggg ctt gct ttt gat atc tgg 336
 Val Arg Gln Thr Ile Val Ala Thr Thr Gly Leu Ala Phe Asp Ile Trp
 100 105 110

ggc cga ggc acc ctg gtc acc gtc tcc agt 366
 Gly Arg Gly Thr Leu Val Thr Val Ser Ser
 115 120

<210> 80
 <211> 366
 <212> DNA

$\langle 221 \rangle$ CDS
 $\langle 222 \rangle$ (1) .. (366)

gag gtg cag ctg gtg cag tct gga gca gag gtg aaa aag ccc ggg gag 48
Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Glu
1 5 10 15

tct ctg aag atc tcc tgt aag ggt tct gga tac agc ttt aca agt tat 96
Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
20 25 30

tgg atc ggc tgg gtg cgc cag atg ccc ggg aaa ggc ctg gag tgg atg 144
Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met
35 40 45

ggg atc atc tat cct ggt gac tct gat acc aga tac agc ccg tcc ttc 192
Gly Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
50 55 60

caa ggc cag gtc acc atc tca gcc gat aag tcc atc aac acc gcc tac 240
Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Asn Thr Ala Tyr
65 70 75 80

ctg cag tgg agc agc ctg aag gcc tcg gac acc gcc atg tat tac tgt 288
Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Met Tyr Tyr Cys
85 90 95

gcg aga cgg acc ata gtg gca acg att cac tgg gct tct gac tac tgg 336
Ala Arg Arg Thr Ile Val Ala Thr Ile His Trp Ala Ser Asp Tyr Trp
100 105 110

ggc cga ggg aca atg gtc acc gtc tcc agt 366
Gly Arg Gly Thr Met Val Thr Val Ser Ser
115 120