

pbd 00085 wo_Seq Listing_ST25.txt
SEQUENCE LISTING

<110> PROBIODRUG AG

<120> CRYSTAL STRUCTURE OF ISOGLUTAMINYL CYCLASE

<130> PBD00085/WO

<160> 19

<170> PatentIn version 3.5

<210> 1

<211> 382

<212> PRT

<213> Human

<400> 1

Met Arg Ser Gly Gly Arg Gly Arg Pro Arg Leu Arg Leu Gly Glu Arg
1 5 10 15

Gly Leu Met Glu Pro Leu Leu Pro Pro Lys Arg Arg Leu Leu Pro Arg
20 25 30

Val Arg Leu Leu Pro Leu Leu Leu Ala Leu Ala Val Gly Ser Ala Phe
35 40 45

Tyr Thr Ile Trp Ser Gly Trp His Arg Arg Thr Glu Glu Leu Pro Leu
50 55 60

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

Leu Arg Arg Val Val Gly Gln Leu Asp Pro Gln Arg Leu Trp Ser Thr
85 90 95

Tyr Leu Arg Pro Leu Leu Val Val Arg Thr Pro Gly Ser Pro Gly Asn
100 105 110

Leu Gln Val Arg Lys Phe Leu Glu Ala Thr Leu Arg Ser Leu Thr Ala
115 120 125

Gly Trp His Val Glu Leu Asp Pro Phe Thr Ala Ser Thr Pro Leu Gly
130 135 140

Pro Val Asp Phe Gly Asn Val Val Ala Thr Leu Asp Pro Arg Ala Ala
145 150 155 160

Arg His Leu Thr Leu Ala Cys His Tyr Asp Ser Lys Leu Phe Pro Pro
165 170 175

Gly Ser Thr Pro Phe Val Gly Ala Thr Asp Ser Ala Val Pro Cys Ala
180 185 190

Leu Leu Leu Glu Leu Ala Gln Ala Leu Asp Leu Glu Leu Ser Arg Ala
195 200 205

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Lys Lys Gln Ala Ala Pro Val Thr Leu Gln Leu Leu Phe Leu Asp Gly
210 215 220

Glu Glu Ala Leu Lys Glu Trp Gly Pro Lys Asp Ser Leu Tyr Gly Ser
225 230 235 240

Arg His Leu Ala Gln Leu Met Glu Ser Ile Pro His Ser Pro Gly Pro
245 250 255

Thr Arg Ile Gln Ala Ile Glu Leu Phe Met Leu Leu Asp Leu Leu Gly
260 265 270

Ala Pro Asn Pro Thr Phe Tyr Ser His Phe Pro Arg Thr Val Arg Trp
275 280 285

Phe His Arg Leu Arg Ser Ile Glu Lys Arg Leu His Arg Leu Asn Leu
290 295 300

Leu Gln Ser His Pro Gln Glu Val Met Tyr Phe Gln Pro Gly Glu Pro
305 310 315 320

Phe Gly Ser Val Glu Asp Asp His Ile Pro Phe Leu Arg Arg Gly Val
325 330 335

Pro Val Leu His Leu Ile Ser Thr Pro Phe Pro Ala Val Trp His Thr
340 345 350

Pro Ala Asp Thr Glu Val Asn Leu His Pro Pro Thr Val His Asn Leu
355 360 365

Cys Arg Ile Leu Ala Val Phe Leu Ala Glu Tyr Leu Gly Leu
370 375 380

<210> 2
<211> 309
<212> PRT
<213> Human

<400> 2

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

Pro Gln Arg Leu Trp Ser Thr Tyr Leu Arg Pro Leu Leu Val Val Arg
20 25 30

Thr Pro Gly Ser Pro Gly Asn Leu Gln Val Arg Lys Phe Leu Glu Ala
35 40 45

Thr Leu Arg Ser Leu Thr Ala Gly Trp His Val Glu Leu Asp Pro Phe
50 55 60

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

Thr Leu Asp Pro Arg Ala Ala Arg His Leu Thr Leu Ala Cys His Tyr
85 90 95

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

Asp Ser Ala Val Pro Cys Ala Leu Leu Leu Glu Leu Ala Gln Ala Leu
115 120 125

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

Gln Leu Leu Phe Leu Asp Gly Glu Glu Ala Leu Lys Glu Trp Gly Pro
145 150 155 160

Lys Asp Ser Leu Tyr Gly Ser Arg His Leu Ala Gln Leu Met Glu Ser
165 170 175

Ile Pro His Ser Pro Gly Pro Thr Arg Ile Gln Ala Ile Glu Leu Phe
180 185 190

Met Leu Leu Asp Leu Leu Gly Ala Pro Asn Pro Thr Phe Tyr Ser His
195 200 205

Phe Pro Arg Thr Val Arg Trp Phe His Arg Leu Arg Ser Ile Glu Lys
210 215 220

Arg Leu His Arg Leu Asn Leu Leu Gln Ser His Pro Gln Glu Val Met
225 230 235 240

Tyr Phe Gln Pro Gly Glu Pro Phe Gly Ser Val Glu Asp Asp His Ile
245 250 255

Pro Phe Leu Arg Arg Gly Val Pro Val Leu His Leu Ile Ser Thr Pro
260 265 270

Phe Pro Ala Val Trp His Thr Pro Ala Asp Thr Glu Val Asn Leu His
275 280 285

Pro Pro Thr Val His Asn Leu Ala Arg Ile Leu Ala Val Phe Leu Ala
290 295 300

Glu Tyr Leu Gly Leu
305

<210> 3
<211> 307
<212> PRT
<213> Human

<400> 3

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

Pro Gln Arg Leu Trp Ser Thr Tyr Leu Arg Pro Leu Leu Val Val Arg
20      25      30

Thr Pro Gly Ser Pro Gly Asn Leu Gln Val Arg Lys Phe Leu Glu Ala
35      40      45

Thr Leu Arg Ser Leu Thr Ala Gly Trp His Val Glu Leu Asp Pro Phe
50      55      60

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

Thr Leu Asp Pro Arg Ala Ala Arg His Leu Thr Leu Ala Cys His Tyr
85      90      95

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

Asp Ser Ala Val Pro Cys Ala Leu Leu Leu Glu Leu Ala Gln Ala Leu
115     120     125

Asp Leu Glu Leu Ser Arg Ala Lys Lys Gln Ala Val Thr Leu Gln Leu
130     135     140

Leu Phe Leu Asp Gly Glu Glu Ala Leu Lys Glu Trp Gly Pro Lys Asp
145     150     155     160

Ser Leu Tyr Gly Ser Arg His Leu Ala Gln Leu Met Glu Ser Ile Pro
165     170     175

His Ser Pro Gly Pro Thr Arg Ile Gln Ala Ile Glu Leu Phe Met Leu
180     185     190

Leu Asp Leu Leu Gly Ala Pro Asn Pro Thr Phe Tyr Ser His Phe Pro
195     200     205

Arg Thr Val Arg Trp Phe His Arg Leu Arg Ser Ile Glu Lys Arg Leu
210     215     220

His Arg Leu Asn Leu Leu Gln Ser His Pro Gln Glu Val Met Tyr Phe
225     230     235     240

Gln Pro Gly Glu Pro Phe Gly Ser Val Glu Asp Asp His Ile Pro Phe
245     250     255

Leu Arg Arg Gly Val Pro Val Leu His Leu Ile Ser Thr Pro Phe Pro
260     265     270

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Ala Val Trp His Thr Pro Ala Asp Thr Glu Val Asn Leu His Pro Pro
275 280 285

Thr Val His Asn Leu Ala Arg Ile Leu Ala Val Phe Leu Ala Glu Tyr
290 295 300

Leu Gly Leu
305

<210> 4
<211> 309
<212> PRT
<213> Human

<400> 4

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

Pro Gln Arg Leu Trp Ser Thr Tyr Leu Arg Pro Leu Leu Val Val Arg
20 25 30

Thr Pro Gly Ser Pro Gly Asn Leu Gln Val Arg Lys Phe Leu Glu Ala
35 40 45

Thr Leu Arg Ser Leu Thr Ala Gly Trp His Val Glu Leu Asp Pro Phe
50 55 60

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

Thr Leu Asp Pro Arg Ala Ala Arg His Leu Thr Leu Ala Cys His Tyr
85 90 95

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

Asp Ser Ala Val Pro Cys Ala Leu Leu Leu Glu Leu Ala Gln Ala Leu
115 120 125

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

Gln Leu Leu Phe Leu Asp Gly Glu Glu Ala Leu Lys Glu Trp Gly Pro
145 150 155 160

Lys Asp Ser Leu Tyr Gly Ser Arg His Leu Ala Gln Leu Met Glu Ser
165 170 175

Ile Pro His Ser Pro Gly Pro Thr Arg Ile Gln Ala Ile Glu Leu Phe
180 185 190

Met Leu Leu Asp Leu Leu Gly Ala Pro Asn Pro Thr Phe Tyr Ser His
Seite 5

195

Phe Pro Arg Thr Val Arg Trp Phe His Arg Leu Arg Ser Ile Glu Lys
210 215 220

Arg Leu His Arg Leu Asn Leu Leu Gln Ser His Pro Gln Glu Val Met
225 230 235 240

Tyr Phe Gln Pro Gly Glu Pro Phe Gly Ser Val Glu Asp Asp His Ile
245 250 255

Pro Phe Leu Arg Arg Gly Val Pro Val Leu His Leu Ile Ser Thr Pro
260 265 270

Phe Pro Ala Val Trp His Thr Pro Ala Asp Thr Glu Val Asn Leu His
275 280 285

Pro Pro Thr Val His Asn Leu Ala Arg Ile Leu Ala Val Phe Leu Ala
290 295 300

Glu Tyr Leu Gly Leu
305

<210> 5
<211> 308
<212> PRT
<213> Human

<400> 5

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

Gln Arg Leu Trp Ser Thr Tyr Leu Arg Pro Leu Leu Val Val Arg Thr
20 25 30

Pro Gly Ser Pro Gly Asn Leu Gln Val Arg Lys Phe Leu Glu Ala Thr
35 40 45

Leu Arg Ser Leu Thr Ala Gly Trp His Val Glu Leu Asp Pro Phe Thr
50 55 60

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

Leu Asp Pro Arg Ala Ala Arg His Leu Thr Leu Ala Cys His Tyr Asp
85 90 95

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

Ser Ala Val Pro Cys Ala Leu Leu Leu Glu Leu Ala Gln Ala Leu Asp
115 120 125

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

Leu Leu Phe Leu Asp Gly Glu Glu Ala Leu Lys Glu Trp Gly Pro Lys
145 150 155 160

Asp Ser Leu Tyr Gly Ser Arg His Leu Ala Gln Leu Met Glu Ser Ile
165 170 175

Pro His Ser Pro Gly Pro Thr Arg Ile Gln Ala Ile Glu Leu Phe Met
180 185 190

Leu Leu Asp Leu Leu Gly Ala Pro Asn Pro Thr Phe Tyr Ser His Phe
195 200 205

Pro Arg Thr Val Arg Trp Phe His Arg Leu Arg Ser Ile Glu Lys Arg
210 215 220

Leu His Arg Leu Asn Leu Leu Gln Ser His Pro Gln Glu Val Met Tyr
225 230 235 240

Phe Gln Pro Gly Glu Pro Phe Gly Ser Val Glu Asp Asp His Ile Pro
245 250 255

Phe Leu Arg Arg Gly Val Pro Val Leu His Leu Ile Ser Thr Pro Phe
260 265 270

Pro Ala Val Trp His Thr Pro Ala Asp Thr Glu Val Asn Leu His Pro
275 280 285

Pro Thr Val His Asn Leu Ala Arg Ile Leu Ala Val Phe Leu Ala Glu
290 295 300

Tyr Leu Gly Leu
305

<210> 6
<211> 310
<212> PRT
<213> Human

<400> 6

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

Asp Pro Gln Arg Leu Trp Ser Thr Tyr Leu Arg Pro Leu Leu Val Val
20 25 30

Arg Thr Pro Gly Ser Pro Gly Asn Leu Gln Val Arg Lys Phe Leu Glu
35 40 45

Ala Thr Leu Arg Ser Leu Thr Ala Gly Trp His Val Glu Leu Asp Pro
Seite 7

50

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

Ala Thr Leu Asp Pro Arg Ala Ala Arg His Leu Thr Leu Ala Cys His
85 90 95

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

Thr Asp Ser Ala Val Pro Cys Ala Leu Leu Leu Glu Leu Ala Gln Ala
115 120 125

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

Leu Gln Leu Leu Phe Leu Asp Gly Glu Glu Ala Leu Lys Glu Trp Gly
145 150 155 160

Pro Lys Asp Ser Leu Tyr Gly Ser Arg His Leu Ala Gln Leu Met Glu
165 170 175

Ser Ile Pro His Ser Pro Gly Pro Thr Arg Ile Gln Ala Ile Glu Leu
180 185 190

Phe Met Leu Leu Asp Leu Leu Gly Ala Pro Asn Pro Thr Phe Tyr Ser
195 200 205

His Phe Pro Arg Thr Val Arg Trp Phe His Arg Leu Arg Ser Ile Glu
210 215 220

Lys Arg Leu His Arg Leu Asn Leu Leu Gln Ser His Pro Gln Glu Val
225 230 235 240

Met Tyr Phe Gln Pro Gly Glu Pro Phe Gly Ser Val Glu Asp Asp His
245 250 255

Ile Pro Phe Leu Arg Arg Gly Val Pro Val Leu His Leu Ile Ser Thr
260 265 270

Pro Phe Pro Ala Val Trp His Thr Pro Ala Asp Thr Glu Val Asn Leu
275 280 285

His Pro Pro Thr Val His Asn Leu Ala Arg Ile Leu Ala Val Phe Leu
290 295 300

Ala Glu Tyr Leu Gly Leu
305 310

<210> 7
<211> 308

<212> PRT
<213> Human

<400> 7

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

Gln Arg Leu Trp Ser Thr Tyr Leu Arg Pro Leu Leu Val Val Arg Thr
20      25      30

Pro Gly Ser Pro Gly Asn Leu Gln Val Arg Lys Phe Leu Glu Ala Thr
35      40      45

Leu Arg Ser Leu Thr Ala Gly Trp His Val Glu Leu Asp Pro Phe Thr
50      55      60

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

Leu Asp Pro Arg Ala Ala Arg His Leu Thr Leu Ala Cys His Tyr Asp
85      90      95

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

Ser Ala Val Pro Cys Ala Leu Leu Leu Glu Leu Ala Gln Ala Leu Asp
115     120     125

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

Leu Leu Phe Leu Asp Gly Glu Glu Ala Leu Lys Glu Trp Gly Pro Lys
145     150     155     160

Asp Ser Leu Tyr Gly Ser Arg His Leu Ala Gln Leu Met Glu Ser Ile
165     170     175

Pro His Ser Pro Gly Pro Thr Arg Ile Gln Ala Ile Glu Leu Phe Met
180     185     190

Leu Leu Asp Leu Leu Gly Ala Pro Asn Pro Thr Phe Tyr Ser His Phe
195     200     205

Pro Arg Thr Val Arg Trp Phe His Arg Leu Arg Ser Ile Glu Lys Arg
210     215     220

Leu His Arg Leu Asn Leu Leu Gln Ser His Pro Gln Glu Val Met Tyr
225     230     235     240

Phe Gln Pro Gly Glu Pro Phe Gly Ser Val Glu Asp Asp His Ile Pro
245     250     255

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Phe Leu Arg Arg Gly Val Pro Val Leu His Leu Ile Ser Thr Pro Phe
260 265 270

Pro Ala Val Trp His Thr Pro Ala Asp Thr Glu Val Asn Leu His Pro
275 280 285

Pro Thr Val His Asn Leu Ala Arg Ile Leu Ala Val Phe Leu Ala Glu
290 295 300

Tyr Leu Gly Leu
305

<210> 8
<211> 303
<212> PRT
<213> Human

<400> 8

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

Gln Arg Leu Trp Ser Thr Tyr Leu Arg Pro Leu Leu Val Val Arg Thr
20 25 30

Pro Gly Ser Pro Gly Asn Leu Gln Val Arg Lys Phe Leu Glu Ala Thr
35 40 45

Leu Arg Ser Leu Thr Ala Gly Trp His Val Glu Leu Asp Pro Phe Thr
50 55 60

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

Leu Asp Pro Arg Ala Ala Arg His Leu Thr Leu Ala Cys His Tyr Asp
85 90 95

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

Val Pro Cys Ala Leu Leu Leu Glu Leu Ala Gln Ala Leu Asp Leu Glu
115 120 125

Leu Ser Arg Ala Lys Lys Pro Val Thr Leu Gln Leu Leu Phe Leu Asp
130 135 140

Gly Glu Glu Ala Leu Lys Glu Trp Gly Pro Lys Asp Ser Leu Tyr Gly
145 150 155 160

Ser Arg His Leu Ala Gln Leu Met Glu Ser Ile Pro His Ser Pro Gly
165 170 175

Pro Thr Arg Ile Gln Ala Ile Glu Leu Phe Met Leu Leu Asp Leu Leu
180 185 190

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Gly Ala Pro Asn Pro Thr Phe Tyr Ser His Phe Pro Arg Thr Val Arg
195 200 205

Trp Phe His Arg Leu Arg Ser Ile Glu Lys Arg Leu His Arg Leu Asn
210 215 220

Leu Leu Gln Ser His Pro Gln Glu Val Met Tyr Phe Gln Pro Gly Glu
225 230 235 240

Pro Phe Gly Ser Val Glu Asp Asp His Ile Pro Phe Leu Arg Arg Gly
245 250 255

Val Pro Val Leu His Leu Ile Ser Thr Pro Phe Pro Ala Val Trp His
260 265 270

Thr Pro Ala Asp Thr Glu Val Asn Leu His Pro Pro Thr Val His Asn
275 280 285

Leu Ala Arg Ile Leu Ala Val Phe Leu Ala Glu Tyr Leu Gly Leu
290 295 300

<210> 9
<211> 302
<212> PRT
<213> Human

<400> 9

Leu Pro Glu Ala Arg Leu Arg Arg Val Val Gly Gln Leu Asp Pro Gln
1 5 10 15

Arg Leu Trp Ser Thr Tyr Leu Arg Pro Leu Leu Val Val Arg Thr Pro
20 25 30

Gly Ser Pro Gly Asn Leu Gln Val Arg Lys Phe Leu Glu Ala Thr Leu
35 40 45

Arg Ser Leu Thr Ala Gly Trp His Val Glu Leu Asp Pro Phe Thr Ala
50 55 60

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

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

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

Ala Val Pro Cys Ala Leu Leu Leu Glu Leu Ala Gln Ala Leu Asp Leu
115 120 125

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

Glu Glu Ala Leu Lys Glu Trp Gly Pro Lys Asp Ser Leu Tyr Gly Ser
145 150 155 160

Arg His Leu Ala Gln Leu Met Glu Ser Ile Pro His Ser Pro Gly Pro
165 170 175

Thr Arg Ile Gln Ala Ile Glu Leu Phe Met Leu Leu Asp Leu Leu Gly
180 185 190

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

Phe His Arg Leu Arg Ser Ile Glu Lys Arg Leu His Arg Leu Asn Leu
210 215 220

Leu Gln Ser His Pro Gln Glu Val Met Tyr Phe Gln Pro Gly Glu Pro
225 230 235 240

Phe Gly Ser Val Glu Asp Asp His Ile Pro Phe Leu Arg Arg Gly Val
245 250 255

Pro Val Leu His Leu Ile Ser Thr Pro Phe Pro Ala Val Trp His Thr
260 265 270

Pro Ala Asp Thr Glu Val Asn Leu His Pro Pro Thr Val His Asn Leu
275 280 285

Ala Arg Ile Leu Ala Val Phe Leu Ala Glu Tyr Leu Gly Leu
290 295 300

<210> 10
<211> 300
<212> PRT
<213> Human

<400> 10

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

Gln Arg Leu Trp Ser Thr Tyr Leu Arg Pro Leu Leu Val Val Arg Thr
20 25 30

Pro Gly Ser Pro Gly Asn Leu Gln Val Arg Lys Phe Leu Glu Ala Thr
35 40 45

Leu Arg Ser Leu Thr Ala Gly Trp His Val Glu Leu Asp Pro Phe Thr
50 55 60

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

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Leu Asp Pro Arg Ala Ala Arg His Leu Thr Leu Ala Cys His Tyr Asp
85 90 95

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

Pro Cys Ala Leu Leu Leu Glu Leu Ala Gln Ala Leu Asp Leu Glu Leu
115 120 125

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

Ala Leu Lys Glu Trp Gly Pro Lys Asp Ser Leu Tyr Gly Ser Arg His
145 150 155 160

Leu Ala Gln Leu Met Glu Ser Ile Pro His Ser Pro Gly Pro Thr Arg
165 170 175

Ile Gln Ala Ile Glu Leu Phe Met Leu Leu Asp Leu Leu Gly Ala Pro
180 185 190

Asn Pro Thr Phe Tyr Ser His Phe Pro Arg Thr Val Arg Trp Phe His
195 200 205

Arg Leu Arg Ser Ile Glu Lys Arg Leu His Arg Leu Asn Leu Leu Gln
210 215 220

Ser His Pro Gln Glu Val Met Tyr Phe Gln Pro Gly Glu Pro Phe Gly
225 230 235 240

Ser Val Glu Asp Asp His Ile Pro Phe Leu Arg Arg Gly Val Pro Val
245 250 255

Leu His Leu Ile Ser Thr Pro Phe Pro Ala Val Trp His Thr Pro Ala
260 265 270

Asp Thr Glu Val Asn Leu His Pro Pro Thr Val His Asn Leu Ala Arg
275 280 285

Ile Leu Ala Val Phe Leu Ala Glu Tyr Leu Gly Leu
290 295 300

<210> 11
<211> 302
<212> PRT
<213> Human

<400> 11

Leu Pro Glu Ala Arg Leu Arg Arg Val Val Gly Gln Leu Asp Pro Gln
1 5 10 15

Arg Leu Trp Ser Thr Tyr Leu Arg Pro Leu Leu Val Val Arg Thr Pro
20 25 30

Gly Ser Pro Gly Asn Leu Gln Val Arg Lys Phe Leu Glu Ala Thr Leu
35 40 45

Arg Ser Leu Thr Ala Gly Trp His Val Glu Leu Asp Pro Phe Thr Ala
50 55 60

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

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

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

Ala Val Pro Cys Ala Leu Leu Leu Glu Leu Ala Gln Ala Leu Asp Leu
115 120 125

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

Glu Glu Ala Leu Lys Glu Trp Gly Pro Lys Asp Ser Leu Tyr Gly Ser
145 150 155 160

Arg His Leu Ala Gln Leu Met Glu Ser Ile Pro His Ser Pro Gly Pro
165 170 175

Thr Arg Ile Gln Ala Ile Glu Leu Phe Met Leu Leu Asp Leu Leu Gly
180 185 190

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

Phe His Arg Leu Arg Ser Ile Glu Lys Arg Leu His Arg Leu Asn Leu
210 215 220

Leu Gln Ser His Pro Gln Glu Val Met Tyr Phe Gln Pro Gly Glu Pro
225 230 235 240

Phe Gly Ser Val Glu Asp Asp His Ile Pro Phe Leu Arg Arg Gly Val
245 250 255

Pro Val Leu His Leu Ile Ser Thr Pro Phe Pro Ala Val Trp His Thr
260 265 270

Pro Ala Asp Thr Glu Val Asn Leu His Pro Pro Thr Val His Asn Leu
275 280 285

Ala Arg Ile Leu Ala Val Phe Leu Ala Glu Tyr Leu Gly Leu

290

<210> 12
 <211> 298
 <212> PRT
 <213> Human

<400> 12

Pro Glu Ala Arg Leu Arg Arg Val Val Gly Gln Leu Asp Pro Gln Arg
 1 5 10 15

Leu Trp Ser Thr Tyr Leu Arg Pro Leu Leu Val Val Arg Thr Pro Gly
 20 25 30

Ser Pro Gly Asn Leu Gln Val Arg Lys Phe Leu Glu Ala Thr Leu Arg
 35 40 45

Ser Leu Thr Ala Gly Trp His Val Glu Leu Asp Pro Phe Thr Ala Ser
 50 55 60

Thr Pro Leu Gly Pro Val Asp Phe Gly Asn Val Val Ala Thr Leu Asp
 65 70 75 80

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

Leu Phe Ser Thr Pro Phe Val Gly Ala Thr Asp Ser Ala Val Pro Cys
 100 105 110

Ala Leu Leu Leu Glu Leu Ala Gln Ala Leu Asp Leu Glu Leu Ser Arg
 115 120 125

Ala Lys Val Thr Leu Gln Leu Leu Phe Leu Asp Gly Glu Glu Ala Leu
 130 135 140

Lys Glu Trp Gly Pro Lys Asp Ser Leu Tyr Gly Ser Arg His Leu Ala
 145 150 155 160

Gln Leu Met Glu Ser Ile Pro His Ser Pro Gly Pro Thr Arg Ile Gln
 165 170 175

Ala Ile Glu Leu Phe Met Leu Leu Asp Leu Leu Gly Ala Pro Asn Pro
 180 185 190

Thr Phe Tyr Ser His Phe Pro Arg Thr Val Arg Trp Phe His Arg Leu
 195 200 205

Arg Ser Ile Glu Lys Arg Leu His Arg Leu Asn Leu Leu Gln Ser His
 210 215 220

Pro Gln Glu Val Met Tyr Phe Gln Pro Gly Glu Pro Phe Gly Ser Val
 225 230 235 240

pbd 00085 wo_Seq Listing_ST25.txt

Glu Asp Asp His Ile Pro Phe Leu Arg Arg Gly Val Pro Val Leu His
245 250 255

Leu Ile Ser Thr Pro Phe Pro Ala Val Trp His Thr Pro Ala Asp Thr
260 265 270

Glu Val Asn Leu His Pro Pro Thr Val His Asn Leu Ala Arg Ile Leu
275 280 285

Ala Val Phe Leu Ala Glu Tyr Leu Gly Leu
290 295

<210> 13
<211> 48
<212> DNA
<213> Artificial

<220>
<223> Synthetic Primer

<400> 13
tatgaattcc atcaccatca ccatcacgag gagctgccgc tgggccgg 48

<210> 14
<211> 35
<212> DNA
<213> Artificial

<220>
<223> Synthetic Primer

<400> 14
atatatgagg ccgcctagag cccaggtat tcagc 35

<210> 15
<211> 33
<212> DNA
<213> Artificial

<220>
<223> Synthetic Primer

<400> 15
ctgcgggtcc cattgaacgg aagcctcccc gaa 33

<210> 16
<211> 33
<212> DNA
<213> Artificial

<220>
<223> Synthetic Primer

<400> 16
ttcggggagg cttccgttca atgggacccg cag 33

<210> 17
<211> 33
<212> DNA
<213> Artificial

<220>

<223> Synthetic Primer

<400> 17

acggtacaca acttggcccg cattctcgct gtg

33

<210> 18

<211> 33

<212> DNA

<213> Artificial

<220>

<223> Synthetic Primer

<400> 18

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33

<210> 19

<211> 331

<212> PRT

<213> Human

<400> 19

Glu Phe His His His His His His Glu Glu Leu Pro Leu Gly Arg Glu
1 5 10 15

Leu Arg Val Pro Leu Asn Gly Ser Leu Pro Glu Ala Arg Leu Arg Arg
20 25 30

Val Val Gly Gln Leu Asp Pro Gln Arg Leu Trp Ser Thr Tyr Leu Arg
35 40 45

Pro Leu Leu Val Val Arg Thr Pro Gly Ser Pro Gly Asn Leu Gln Val
50 55 60

Arg Lys Phe Leu Glu Ala Thr Leu Arg Ser Leu Thr Ala Gly Trp His
65 70 75 80

Val Glu Leu Asp Pro Phe Thr Ala Ser Thr Pro Leu Gly Pro Val Asp
85 90 95

Phe Gly Asn Val Val Ala Thr Leu Asp Pro Arg Ala Ala Arg His Leu
100 105 110

Thr Leu Ala Cys His Tyr Asp Ser Lys Leu Phe Pro Pro Gly Ser Thr
115 120 125

Pro Phe Val Gly Ala Thr Asp Ser Ala Val Pro Cys Ala Leu Leu Leu
130 135 140

Glu Leu Ala Gln Ala Leu Asp Leu Glu Leu Ser Arg Ala Lys Lys Gln
145 150 155 160

Ala Ala Pro Val Thr Leu Gln Leu Leu Phe Leu Asp Gly Glu Glu Ala
165 170 175

pbd 00085 wo_Seq Listing_ST25.txt

Leu	Lys	Glu	Trp	Gly	Pro	Lys	Asp	Ser	Leu	Tyr	Gly	Ser	Arg	His	Leu
		180						185					190		
Ala	Gln	Leu	Met	Glu	Ser	Ile	Pro	His	Ser	Pro	Gly	Pro	Thr	Arg	Ile
		195					200					205			
Gln	Ala	Ile	Glu	Leu	Phe	Met	Leu	Leu	Asp	Leu	Leu	Gly	Ala	Pro	Asn
	210					215					220				
Pro	Thr	Phe	Tyr	Ser	His	Phe	Pro	Arg	Thr	Val	Arg	Trp	Phe	His	Arg
225					230					235					240
Leu	Arg	Ser	Ile	Glu	Lys	Arg	Leu	His	Arg	Leu	Asn	Leu	Leu	Gln	Ser
				245					250					255	
His	Pro	Gln	Glu	Val	Met	Tyr	Phe	Gln	Pro	Gly	Glu	Pro	Phe	Gly	Ser
			260					265					270		
Val	Glu	Asp	Asp	His	Ile	Pro	Phe	Leu	Arg	Arg	Gly	Val	Pro	Val	Leu
		275					280					285			
His	Leu	Ile	Ser	Thr	Pro	Phe	Pro	Ala	Val	Trp	His	Thr	Pro	Ala	Asp
	290					295					300				
Thr	Glu	Val	Asn	Leu	His	Pro	Pro	Thr	Val	His	Asn	Leu	Ala	Arg	Ile
305					310					315					320
Leu	Ala	Val	Phe	Leu	Ala	Glu	Tyr	Leu	Gly	Leu					
				325					330						