

SP102075SGM SEQUENCE LISTING

<110> YOO YOUNG PHARM CO.,LTD.
 <120> CHIMERIC ANTIGEN RECEPTOR AND T CELLS EXPRESSING THE CHIMERIC ANTIGEN RECEPTOR
 <130> SP102075SGM
 <150> 10-2015-0110788
 <151> 2015-08-05
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 <170> KoPatentIn 3.0
 <210> 1
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 <223> HUMAN

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 1 5 10 15
 Val Asn Ile Thr Gln Asn Gln Lys Ala Pro Leu Cys Asn Gly Ser Met
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 Val Trp Ser Ile Asn Leu Thr Ala Gly Met Tyr Cys Ala Ala Leu Glu
 35 40 45
 Ser Leu Ile Asn Val Ser Gly Cys Ser Ala Ile Glu Lys Thr Gln Arg
 50 55 60
 Met Leu Ser Gly Phe Cys Pro His Lys Val Ser Ala Gly Gln Phe Ser
 65 70 75 80
 Ser Leu His Val Arg Asp Thr Lys Ile Glu Val Ala Gln Phe Val Lys
 85 90 95
 Asp Leu Leu Leu His Leu Lys Lys Leu Phe Arg Glu Gly Gln Phe Asn
 100 105 110

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 Glu Val Val Ala Ala Thr Pro Thr Ser Leu Leu Ile Ser Trp Arg His
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 Pro His Phe Pro Thr Arg Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr Gly
 20 25 30
 Gly Asn Ser Pro Val Gln Glu Phe Thr Val Leu Gln Pro Pro Ser Thr
 35 40 45
 Ala Thr Ile Ser Gly Leu Lys Pro Gly Val Asp Tyr Thr Ile Thr Val
 Page 1

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50 55 60

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

Ser Ile Asn Tyr Arg Thr His His His His His His
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Gln Val Gln Leu Gln Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly
1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Lys Phe
20 25 30

Gly Met Ser Trp Val Arg Gln Thr Pro Asp Lys Arg Leu Glu Trp Val
35 40 45

Ala Ser Ile Ser Thr Gly Gly Tyr Asn Thr Phe Tyr Ser Asp Asn Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65 70 75 80

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

Ala Arg Gly Tyr Ser Ser Thr Ser Phe Ala Met Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Met Val Thr Val Ser Ser Gly Ser Thr Ser Gly Ser Gly Lys
115 120 125

Pro Gly Ser Gly Glu Gly Ser Asp Ile Gln Met Thr Gln Ser Pro Ser
130 135 140

Ser Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Met Thr
145 150 155 160

Ser Thr Asp Ile Asp Asp Asp Met Asn Trp Tyr Gln Gln Lys Pro Gly
165 170 175

Lys Thr Pro Lys Leu Leu Ile Tyr Glu Gly Asn Thr Leu Arg Pro Gly
180 185 190

Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Ile Phe
195 200 205

Thr Ile Ser Ser Leu Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys Leu
210 215 220

Gln Ser Phe Asn Val Pro Leu Thr Phe Gly Gly Gly Thr Lys Val Glu
225 230 235 240

Ile Lys Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
245 250

SP102075SGM SEQUENCE LISTING

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 Glu Asp Tyr Thr Ile His Val Gln Leu Asn Asp Tyr Val Asp Ile Ile
 20 25 30
 Cys Pro His Tyr Glu Asp His Ser Val Ala Asp Ala Ala Met Glu Gln
 35 40 45
 Tyr Ile Leu Tyr Leu Val Glu His Glu Glu Tyr Gln Leu Cys Gln Pro
 50 55 60
 Gln Ser Lys Asp Gln Val Arg Trp Gln Cys Asn Arg Pro Ser Ala Lys
 65 70 75 80
 His Gly Pro Glu Lys Leu Ser Glu Lys Phe Gln Arg Phe Thr Ala Phe
 85 90 95
 Ala Leu Ala Lys Glu Phe Lys Ala Gly His Ser Tyr Tyr Tyr Ile Ser
 100 105 110
 Lys Pro Ile His Gln His Glu Asp Arg Cys Leu Arg Leu Lys Val Thr
 115 120 125
 Val Ser Gly Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
 130 135 140

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 Val Ser Asp Val Pro Arg Asp Leu Glu Val Val Ala Ala Thr Pro Thr
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 Ser Leu Leu Ile Ser Trp Asp Ala Pro Ala Val Thr Val Arg Tyr Tyr
 20 25 30
 Arg Ile Thr Tyr Gly Glu Thr Gly Gly Asn Ser Pro Val Gln Glu Phe
 35 40 45
 Thr Val Pro Gly Ser Lys Ser Thr Ala Thr Ile Ser Gly Leu Lys Pro
 50 55 60
 Gly Val Asp Tyr Thr Ile Thr Val Tyr Ala Val Thr Pro Arg Gly Asp
 65 70 75 80
 Trp Asn Glu Gly Ser Lys Pro Ile Ser Ile Asn Tyr Arg Thr Glu Gln
 85 90 95

SP102075SGM SEQUENCE LISTING

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

SP102075SGM SEQUENCE LISTING

Glu Asp Leu Phe Asn Pro Cys Gln Ala Ile Lys Cys Lys His Gly Lys
 290 295 300
 Cys Arg Leu Ser Gly Leu Gly Gln Pro Tyr Cys Glu Cys Ser Ser Gly
 305 310 315 320
 Tyr Thr Gly Asp Ser Cys Asp Arg Glu Ile Ser Cys Arg Gly Glu Arg
 325 330 335
 Ile Arg Asp Tyr Tyr Gln Lys Gln Gln Gly Tyr Ala Ala Cys Gln Thr
 340 345 350
 Thr Lys Lys Val Ser Arg Leu Glu Cys Arg Gly Gly Cys Ala Gly Gly
 355 360 365
 Gln Cys Cys Gly Pro Leu Arg Ser Lys Arg Arg Lys Tyr Ser Phe Glu
 370 375 380
 Cys Thr Asp Gly Ser Ser Phe Val Asp Glu Val Glu Lys Val Val Lys
 385 390 395 400
 Cys Gly Cys Thr Arg Cys Val Ser Glu Gln Lys Leu Ile Ser Glu Glu
 405 410 415

Asp Leu

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 Pro Arg Asp Phe Ala Ala Tyr Arg Ser
 35 40

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 <211> 42
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 Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly Cys Ser Cys Arg Phe
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 Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu
 35 40

SP102075SGM SEQUENCE LISTING

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 Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala
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 35 40 45

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 Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe Ala
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SP102075SGM SEQUENCE LISTING

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 Thr Ala Leu Phe Leu Arg Val
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 Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
 20 25 30
 Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys
 35 40 45
 Pro Gln Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln
 50 55 60
 Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu
 65 70 75 80
 Arg Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr
 85 90 95
 Ala Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro
 100 105 110
 Arg

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 Glu Glu Leu Val Asn Ile Thr Gln Asn Gln Lys Ala Pro Leu Cys Asn
 35 40 45
 Gly Ser Met Val Trp Ser Ile Asn Leu Thr Ala Gly Met Tyr Cys Ala
 50 55 60
 Ala Leu Glu Ser Leu Ile Asn Val Ser Gly Cys Ser Ala Ile Glu Lys
 65 70 75 80

SP102075SGM SEQUENCE LISTING

Thr Gln Asp Met Leu₈₅ Asp Gly Phe Cys Pro₉₀ His Lys Val Ser Ala₉₅ Gly
 Gln Phe Ser Ser₁₀₀ Leu His Val Arg Asp₁₀₅ Thr Lys Ile Glu Val₁₁₀ Ala Gln
 Phe Val Lys₁₁₅ Asp Leu Leu Leu His₁₂₀ Leu Lys Lys Leu Phe₁₂₅ Lys Glu Gly
 Gln Phe₁₃₀ Asn Gly Gly Gly Pro₁₃₅ Arg Lys Pro Thr Thr₁₄₀ Thr Pro Ala Pro
 Arg₁₄₅ Pro Pro Thr Pro Ala₁₅₀ Pro Thr Ile Ala Ser₁₅₅ Gln Pro Leu Ser Leu₁₆₀
 Arg Pro Glu Ala Cys₁₆₅ Arg Pro Ala Ala Gly₁₇₀ Gly Ala Val His Thr₁₇₅ Arg
 Gly Leu Asp Phe₁₈₀ Ala Cys Asp Ile Tyr₁₈₅ Ile Trp Ala Pro Leu₁₉₀ Ala Gly
 Thr Cys Gly₁₉₅ Val Leu Leu Leu Ser₂₀₀ Leu Val Ile Thr Lys₂₀₅ Arg Gly Arg
 Lys Lys₂₁₀ Leu Leu Tyr Ile Phe₂₁₅ Lys Gln Pro Phe Met₂₂₀ Arg Pro Val Gln
 Thr Thr Gln Glu Glu Asp₂₃₀ Gly Cys Ser Cys Arg₂₃₅ Phe Pro Glu Glu Glu₂₄₀
 Glu Gly Gly Cys Glu₂₄₅ Leu Arg Val Lys Phe₂₅₀ Ser Arg Ser Ala Asp₂₅₅ Ala
 Pro Ala Tyr Gln₂₆₀ Gln Gly Gln Asn Gln₂₆₅ Leu Tyr Asn Glu Leu₂₇₀ Asn Leu
 Gly Arg Arg₂₇₅ Glu Glu Tyr Asp Val₂₈₀ Leu Asp Lys Arg Arg₂₈₅ Gly Arg Asp
 Pro Glu₂₉₀ Met Gly Gly Lys Pro₂₉₅ Gln Arg Arg Lys Asn Pro Gln Glu Gly
 Leu Tyr Asn Glu Leu Gln₃₁₀ Lys Asp Lys Met Ala₃₁₅ Glu Ala Tyr Ser Glu₃₂₀
 Ile Gly Met Lys Gly₃₂₅ Glu Arg Arg Arg Gly₃₃₀ Lys Gly His Asp Gly₃₃₅ Leu
 Tyr Gln Gly Leu₃₄₀ Ser Thr Ala Thr Lys₃₄₅ Asp Thr Tyr Asp Ala₃₅₀ Leu His
 Met Gln Ala₃₅₅ Leu Pro Pro Arg

<210> 15
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SP102075SGM SEQUENCE LISTING

Val His Ser Gly₂₀ Pro Val Pro Pro Ser₂₅ Thr Ala Leu Arg Lys₃₀ Leu Ile
 Glu Glu Leu₃₅ Val Asn Ile Thr Gln₄₀ Asn Gln Lys Ala Pro₄₅ Leu Cys Asn
 Gly Ser₅₀ Met Val Trp Ser Ile₅₅ Asn Leu Thr Ala Gly₆₀ Met Tyr Cys Ala
 Ala₆₅ Leu Glu Ser Leu Ile₇₀ Asn Val Ser Gly Cys₇₅ Ser Ala Ile Glu Lys₈₀
 Thr Gln Asp Met Leu₈₅ Asp Gly Phe Cys Pro₉₀ His Lys Val Ser Ala₉₅ Gly
 Gln Phe Ser Ser₁₀₀ Leu His Val Arg Asp₁₀₅ Thr Lys Ile Glu Val Ala Gln
 Phe Val Lys₁₁₅ Asp Leu Leu Leu His₁₂₀ Leu Lys Lys Leu Phe₁₂₅ Lys Glu Gly
 Gln Phe₁₃₀ Asn Gly Gly Gly Pro₁₃₅ Arg Lys Pro Thr Thr₁₄₀ Thr Pro Ala Pro
 Arg₁₄₅ Pro Pro Thr Pro Ala₁₅₀ Pro Thr Ile Ala Ser₁₅₅ Gln Pro Leu Ser Leu₁₆₀
 Arg Pro Glu Ala Cys₁₆₅ Arg Pro Ala Ala Gly₁₇₀ Gly Ala Val His Thr Arg₁₇₅
 Gly Leu Asp Phe₁₈₀ Ala Cys Asp Ile Tyr₁₈₅ Ile Trp Ala Pro Leu₁₉₀ Ala Gly
 Thr Cys Gly₁₉₅ Val Leu Leu Leu Ser₂₀₀ Leu Val Ile Thr Arg₂₀₅ Ser Lys Arg
 Ser Arg₂₁₀ Gly Gly His Ser Asp₂₁₅ Tyr Met Asn Met Thr₂₂₀ Pro Arg Arg Pro
 Gly₂₂₅ Pro Thr Arg Lys His₂₃₀ Tyr Gln Pro Tyr Ala₂₃₅ Pro Pro Arg Asp Phe₂₄₀
 Ala Ala Tyr Arg Ser₂₄₅ Lys Arg Gly Arg Lys₂₅₀ Lys Leu Leu Tyr Ile₂₅₅ Phe
 Lys Gln Pro Phe₂₆₀ Met Arg Pro Val Gln₂₆₅ Thr Thr Gln Glu Glu₂₇₀ Asp Gly
 Cys Ser Cys₂₇₅ Arg Phe Pro Glu₂₈₀ Glu Glu Gly Gly Cys₂₈₅ Glu Leu Arg
 Val Lys₂₉₀ Phe Ser Arg Ser Ala₂₉₅ Asp Ala Pro Ala Tyr₃₀₀ Gln Gln Gly Gln
 Asn Gln Leu Tyr Asn Glu₃₁₀ Leu Asn Leu Gly Arg₃₁₅ Arg Glu Glu Tyr Asp₃₂₀
 Val Leu Asp Lys Arg₃₂₅ Arg Gly Arg Asp Pro₃₃₀ Glu Met Gly Gly Lys₃₃₅ Pro
 Gln Arg Arg Lys₃₄₀ Asn Pro Gln Glu Gly₃₄₅ Leu Tyr Asn Glu Leu₃₅₀ Gln Lys
 Asp Lys Met₃₅₅ Ala Glu Ala Tyr Ser₃₆₀ Glu Ile Gly Met Lys₃₆₅ Gly Glu Arg
 Arg Arg₃₇₀ Gly Lys Gly His Asp₃₇₅ Gly Leu Tyr Gln Gly₃₈₀ Leu Ser Thr Ala

SP102075SGM SEQUENCE LISTING

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

Gly Ser Met Val Trp Ser Ile Asn Leu Thr Ala Gly Met Tyr Cys Ala
50 55 60

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

Thr Gln Arg Met Leu Ser Gly Phe Cys Pro His Lys Val Ser Ala Gly
85 90 95

Gln Phe Ser Ser Leu His Val Arg Asp Thr Lys Ile Glu Val Ala Gln
100 105 110

Phe Val Lys Asp Leu Leu Leu His Leu Lys Lys Leu Phe Lys Glu Gly
115 120 125

Gln Phe Asn Gly Gly Gly Pro Arg Lys Pro Thr Thr Thr Pro Ala Pro
130 135 140

Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu
145 150 155 160

Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val His Thr Arg
165 170 175

Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly
180 185 190

Thr Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Arg Ser Lys Arg
195 200 205

Ser Arg Gly Gly His Ser Asp Tyr Met Asn Met Thr Pro Arg Arg Pro
210 215 220

Gly Pro Thr Arg Lys His Tyr Gln Pro Tyr Ala Pro Pro Arg Asp Phe
225 230 235 240

Ala Ala Tyr Arg Ser Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe
245 250 255

Lys Gln Pro Phe Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly
260 265 270

Cys Ser Cys Arg Phe Pro Glu Glu Glu Gly Gly Cys Glu Leu Arg
275 280 285

SP102075SGM SEQUENCE LISTING

Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln
 290 295 300
 Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp
 305 310 315 320
 Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro
 325 330 335
 Gln Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys
 340 345 350
 Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg
 355 360 365
 Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala
 370 375 380
 Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
 385 390 395 400

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 Val His Ser Glu Val Val Ala Ala Thr Pro Thr Ser Leu Leu Ile Ser
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 Trp Arg His Pro His Phe Pro Thr Arg Tyr Tyr Arg Ile Thr Tyr Gly
 35 40 45
 Glu Thr Gly Gly Asn Ser Pro Val Gln Glu Phe Thr Val Leu Gln Pro
 50 55 60
 Pro Ser Thr Ala Thr Ile Ser Gly Leu Lys Pro Gly Val Asp Tyr Thr
 65 70 75 80
 Ile Thr Val Tyr Ala Val Val Glu Arg Asn Gly Arg Glu Leu Asn Thr
 85 90 95
 Pro Pro Ile Ser Ile Asn Tyr Arg Thr His His His His His His Gly
 100 105 110
 Gly Gly Pro Arg Lys Pro Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr
 115 120 125
 Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala
 130 135 140
 Cys Arg Pro Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe
 145 150 155 160
 Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly Thr Cys Gly Val
 165 170 175
 Leu Leu Leu Ser Leu Val Ile Thr Lys Arg Gly Arg Lys Lys Leu Leu
 180 185 190

SP102075SGM SEQUENCE LISTING

Tyr Ile Phe Lys Gln Pro Phe Met Arg Pro Val Gln Thr Thr Gln Glu
195 200 205
Glu Asp Gly Cys Ser Cys Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys
210 215 220
Glu Leu Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln
225 230 235 240
Gln Gly Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu
245 250 255
Glu Tyr Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly
260 265 270
Gly Lys Pro Gln Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu
275 280 285
Leu Gln Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys
290 295 300
Gly Glu Arg Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu
305 310 315 320
Ser Thr Ala Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu
325 330 335
Pro Pro Arg

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<223> HUMAN

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Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
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Val His Ser Glu Val Val Ala Ala Thr Pro Thr Ser Leu Leu Ile Ser
20 25 30
Trp Arg His Pro His Phe Pro Thr Arg Tyr Tyr Arg Ile Thr Tyr Gly
35 40 45
Glu Thr Gly Gly Asn Ser Pro Val Gln Glu Phe Thr Val Leu Gln Pro
50 55 60
Pro Ser Thr Ala Thr Ile Ser Gly Leu Lys Pro Gly Val Asp Tyr Thr
65 70 75 80
Ile Thr Val Tyr Ala Val Val Glu Arg Asn Gly Arg Glu Leu Asn Thr
85 90 95
Pro Pro Ile Ser Ile Asn Tyr Arg Thr His His His His His His Gly
100 105 110
Gly Gly Pro Arg Lys Pro Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr
115 120 125
Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala
130 135 140

SP102075SGM SEQUENCE LISTING

Cys Arg Pro Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe
145 150 155 160
Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly Thr Cys Gly Val
165 170 175
Leu Leu Leu Ser Leu Val Ile Thr Arg Ser Lys Arg Ser Arg Gly Gly
180 185 190
His Ser Asp Tyr Met Asn Met Thr Pro Arg Arg Pro Gly Pro Thr Arg
195 200 205
Lys His Tyr Gln Pro Tyr Ala Pro Pro Arg Asp Phe Ala Ala Tyr Arg
210 215 220
Ser Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe Lys Gln Pro Phe
225 230 235 240
Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly Cys Ser Cys Arg
245 250 255
Phe Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu Arg Val Lys Phe Ser
260 265 270
Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn Gln Leu Tyr
275 280 285
Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu Asp Lys
290 295 300
Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Gln Arg Arg Lys
305 310 315 320
Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp Lys Met Ala
325 330 335
Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg Arg Gly Lys
340 345 350
Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr Lys Asp Thr
355 360 365
Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
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<210> 19
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<213> Unknown

<220>
<223> HUMAN

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20 25 30
Pro Gly Gly Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
35 40 45
Ser Lys Phe Gly Met Ser Trp Val Arg Gln Thr Pro Asp Lys Arg Leu
50 55 60

SP102075SGM SEQUENCE LISTING

Glu Trp Val Ala Ser Ile Ser Thr Gly Gly Tyr Asn Thr Phe Tyr Ser
 65 70 75 80
 Asp Asn Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn
 85 90 95
 Thr Leu Tyr Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Thr Ala Met
 100 105 110
 Tyr Tyr Cys Ala Arg Gly Tyr Ser Ser Thr Ser Phe Ala Met Asp Tyr
 115 120 125
 Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Gly Ser Thr Ser Gly
 130 135 140
 Ser Gly Lys Pro Gly Ser Gly Glu Gly Ser Asp Ile Gln Met Thr Gln
 145 150 155 160
 Ser Pro Ser Ser Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr
 165 170 175
 Cys Met Thr Ser Thr Asp Ile Asp Asp Asp Met Asn Trp Tyr Gln Gln
 180 185 190
 Lys Pro Gly Lys Thr Pro Lys Leu Leu Ile Tyr Glu Gly Asn Thr Leu
 195 200 205
 Arg Pro Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
 210 215 220
 Phe Ile Phe Thr Ile Ser Ser Leu Gln Pro Glu Asp Ile Ala Thr Tyr
 225 230 235 240
 Tyr Cys Leu Gln Ser Phe Asn Val Pro Leu Thr Phe Gly Gly Gly Thr
 245 250 255
 Lys Val Glu Ile Lys Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Gly
 260 265 270
 Gly Gly Pro Arg Lys Pro Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr
 275 280 285
 Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala
 290 295 300
 Ala Arg Pro Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe
 305 310 315 320
 Ala Leu Ala Tyr Leu Leu Asp Gly Ile Leu Phe Ile Tyr Gly Val Ile
 325 330 335
 Leu Thr Ala Leu Phe Leu Arg Val Lys Arg Gly Arg Lys Lys Leu Leu
 340 345 350
 Tyr Ile Phe Lys Gln Pro Phe Met Arg Pro Val Gln Thr Thr Gln Glu
 355 360 365
 Glu Asp Gly Cys Ser Cys Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys
 370 375 380
 Glu Leu Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly
 385 390 395 400
 Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
 405 410 415
 Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys

SP102075SGM SEQUENCE LISTING

	420		425		430										
Pro	Gln	Arg	Arg	Lys	Asn	Pro	Gln	Glu	Gly	Leu	Tyr	Asn	Glu	Leu	Gln
		435					440					445			
Lys	Asp	Lys	Met	Ala	Glu	Ala	Tyr	Ser	Glu	Ile	Gly	Met	Lys	Gly	Glu
	450					455					460				
Arg	Arg	Arg	Gly	Lys	Gly	His	Asp	Gly	Leu	Tyr	Gln	Gly	Leu	Ser	Thr
465					470					475					480
Ala	Thr	Lys	Asp	Thr	Tyr	Asp	Ala	Leu	His	Met	Gln	Ala	Leu	Pro	Pro
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Arg

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

SP102075SGM SEQUENCE LISTING

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Phe 225	Ile Phe Thr Ile Ser 230	Ser Leu Gln Pro Glu 235	Asp Ile Ala Thr Tyr 240	
Tyr 245	Cys Leu Gln Ser 245	Phe Asn Val Pro Leu 250	Thr Phe Gly Gly Gly 255	Thr
Lys 260	Val Glu Ile 260	Lys Glu Gln Lys Leu 265	Ile Ser Glu Glu Asp 270	Leu Gly
Gly 275	Gly Pro Arg Lys Pro Thr 280	Thr Thr Pro Ala Pro Arg 285	Pro Pro Thr	
Pro 290	Ala Pro Thr Ile Ala Ser 295	Gln Pro Leu Ser Leu 300	Arg Pro Glu Ala	
Ala 305	Arg Pro Ala Ala Gly 310	Gly Ala Val His Thr 315	Arg Gly Leu Asp Phe 320	
Ala 325	Leu Ala Tyr Leu 325	Leu Asp Gly Ile Leu 330	Phe Ile Tyr Gly Val 335	Ile
Leu 340	Thr Ala Leu Phe Leu Arg Val 345	Arg Ser Lys Arg Ser 350	Arg Gly Gly	
His 355	Ser Asp Tyr Met Asn Met Thr 360	Pro Arg Arg Pro Gly 365	Pro Thr Arg	
Lys 370	His Tyr Gln Pro Tyr Ala 375	Pro Pro Arg Asp Phe 380	Ala Ala Tyr Arg	
Ser 385	Lys Arg Gly Arg Lys 390	Lys Leu Leu Tyr Ile 395	Phe Lys Gln Pro Phe 400	
Met 405	Arg Pro Val Gln Thr Thr Gln Glu 410	Glu Asp Gly Cys Ser 415	Cys Arg	
Phe 420	Pro Glu Glu Glu Gly Gly Cys 425	Glu Leu Lys Phe Ser 430	Arg Ser	
Ala 435	Asp Ala Pro Ala Tyr Gln 440	Gln Gly Gln Asn Gln 445	Leu Tyr Asn Glu	
Leu 450	Asn Leu Gly Arg Arg Glu 455	Glu Tyr Asp Val Leu 460	Asp Lys Arg Arg	
Gly 465	Arg Asp Pro Glu Met 470	Gly Gly Lys Pro Gln 475	Arg Arg Lys Asn Pro 480	
Gln 485	Glu Gly Leu Tyr Asn Glu Leu Gln 490	Lys Asp Lys Met Ala Glu 495	Ala	
Tyr 500	Ser Glu Ile Gly Met Lys Gly 505	Glu Arg Arg Arg Gly 510	Lys Gly His	
Asp 515	Gly Leu Tyr Gln Gly Leu Ser 520	Thr Ala Thr Lys Asp 525	Thr Tyr Asp	
Ala 530	Leu His Met Gln Ala Leu 535	Pro Pro Arg		

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SP102075SGM SEQUENCE LISTING

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 Phe Arg Asn₃₅ Glu Asp Tyr Thr Ile₄₀ His Val Gln Leu Asn₄₅ Asp Tyr Val
 Asp Ile₅₀ Ile Cys Pro His Tyr₅₅ Glu Asp His Ser Val₆₀ Ala Asp Ala Ala
 Met₆₅ Glu Gln Tyr Ile Leu₇₀ Tyr Leu Val Glu His₇₅ Glu Glu Tyr Gln Leu₈₀
 Cys Gln Pro Gln Ser₈₅ Lys Asp Gln Val Arg₉₀ Trp Gln Cys Asn Arg₉₅ Pro
 Ser Ala Lys His₁₀₀ Gly Pro Glu Lys Leu₁₀₅ Ser Glu Lys Phe Gln₁₁₀ Arg Phe
 Thr Ala Phe₁₁₅ Ala Leu Ala Lys Glu₁₂₀ Phe Lys Ala Gly His₁₂₅ Ser Tyr Tyr
 Tyr Ile₁₃₀ Ser Lys Pro Ile His₁₃₅ Gln His Glu Asp Arg₁₄₀ Cys Leu Arg Leu
 Lys₁₄₅ Val Thr Val Ser Gly₁₅₀ Glu Gln Lys Leu Ile₁₅₅ Ser Glu Glu Asp Leu₁₆₀
 Gly Gly Gly Pro Arg₁₆₅ Lys Pro Thr Thr Thr₁₇₀ Pro Ala Pro Arg Pro₁₇₅ Pro
 Thr Pro Ala Pro₁₈₀ Thr Ile Ala Ser Gln₁₈₅ Pro Leu Ser Leu Arg Pro Glu
 Ala Cys Arg₁₉₅ Pro Ala Ala Gly Gly₂₀₀ Ala Val His Thr Arg₂₀₅ Gly Leu Asp
 Phe Ala Cys Asp Ile Tyr Ile₂₁₅ Trp Ala Pro Leu Ala Gly Thr Cys Gly
 Val₂₂₅ Leu Leu Leu Ser Leu₂₃₀ Val Ile Thr Lys Arg₂₃₅ Gly Arg Lys Lys Leu₂₄₀
 Leu Tyr Ile Phe Lys₂₄₅ Gln Pro Phe Met Arg₂₅₀ Pro Val Gln Thr Thr₂₅₅ Gln
 Glu Glu Asp Gly₂₆₀ Cys Ser Cys Arg Phe₂₆₅ Pro Glu Glu Glu Glu₂₇₀ Gly Gly
 Cys Glu Leu₂₇₅ Arg Val Lys Phe Ser₂₈₀ Arg Ser Ala Asp Ala₂₈₅ Pro Ala Tyr
 Gln Gln Gly Gln Asn Gln Leu₂₉₅ Tyr Asn Glu Leu Asn₃₀₀ Leu Gly Arg Arg
 Glu Glu Tyr Asp Val Leu₃₁₀ Asp Lys Arg Arg Gly₃₁₅ Arg Asp Pro Glu Met₃₂₀
 Gly Gly Lys Pro Gln₃₂₅ Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr₃₃₅ Asn

SP102075SGM SEQUENCE LISTING

Glu Leu Gln Lys₃₄₀ Asp Lys Met Ala Glu₃₄₅ Ala Tyr Ser Glu Ile₃₅₀ Gly Met

Lys Gly Glu₃₅₅ Arg Arg Arg Gly₃₆₀ Lys Gly His Asp Gly Leu₃₆₅ Tyr Gln Gly

Leu Ser₃₇₀ Thr Ala Thr Lys Asp₃₇₅ Thr Tyr Asp Ala Leu₃₈₀ His Met Gln Ala

Leu Pro Pro Arg
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Phe Arg Asn₃₅ Glu Asp Tyr Thr Ile₄₀ His Val Gln Leu Asn₄₅ Asp Tyr Val

Asp Ile₅₀ Ile Cys Pro His Tyr₅₅ Glu Asp His Ser Val₆₀ Ala Asp Ala Ala

Met₆₅ Glu Gln Tyr Ile Leu₇₀ Tyr Leu Val Glu His₇₅ Glu Glu Tyr Gln Leu₈₀

Cys Gln Pro Gln Ser₈₅ Lys Asp Gln Val Arg₉₀ Trp Gln Cys Asn₉₅ Arg Pro

Ser Ala Lys His₁₀₀ Gly Pro Glu Lys Leu₁₀₅ Ser Glu Lys Phe Gln₁₁₀ Arg Phe

Thr Ala Phe₁₁₅ Ala Leu Ala Lys Glu₁₂₀ Phe Lys Ala Gly His₁₂₅ Ser Tyr Tyr

Tyr Ile₁₃₀ Ser Lys Pro Ile His₁₃₅ Gln His Glu Asp Arg₁₄₀ Cys Leu Arg Leu

Lys Val Thr Val Ser Gly₁₅₀ Glu Gln Lys Leu Ile₁₅₅ Ser Glu Glu Asp Leu₁₆₀

Gly Gly Gly Pro Arg₁₆₅ Lys Pro Thr Thr Thr₁₇₀ Pro Ala Pro Arg Pro₁₇₅ Pro

Thr Pro Ala Pro₁₈₀ Thr Ile Ala Ser Gln₁₈₅ Pro Leu Ser Leu Arg₁₉₀ Pro Glu

Ala Cys Arg₁₉₅ Pro Ala Ala Gly Gly₂₀₀ Ala Val His Thr Arg₂₀₅ Gly Leu Asp

Phe Ala Cys Asp Ile Tyr Ile₂₁₅ Trp Ala Pro Leu Ala₂₂₀ Gly Thr Cys Gly

Val₂₂₅ Leu Leu Leu Ser Leu₂₃₀ Val Ile Thr Arg Ser₂₃₅ Lys Arg Ser Arg Gly₂₄₀

SP102075SGM SEQUENCE LISTING

Gly His Ser Asp Tyr Met Asn Met Thr Pro Arg Arg Pro Gly Pro Thr
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Arg Lys His Tyr Gln Pro Tyr Ala Pro Pro Arg Asp Phe Ala Ala Tyr
260 265 270
Arg Ser Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe Lys Gln Pro
275 280 285
Phe Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly Cys Ser Cys
290 295 300
Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu Arg Val Lys Phe
305 310 315 320
Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn Gln Leu
325 330 335
Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu Asp
340 345 350
Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Gln Arg Arg
355 360 365
Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp Lys Met
370 375 380
Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg Arg Gly
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Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr Lys Asp
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Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
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<223> HUMAN

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

SP102075SGM SEQUENCE LISTING

Thr Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Gly Gly Gly Pro Arg
115 120 125
Lys Pro Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr Pro Ala Pro Thr
130 135 140
Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala
145 150 155 160
Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe Ala Cys Asp Ile
165 170 175
Tyr Ile Trp Ala Pro Leu Ala Gly Thr Cys Gly Val Leu Leu Leu Ser
180 185 190
Leu Val Ile Thr Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe Lys
195 200 205
Gln Pro Phe Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly Cys
210 215 220
Ser Cys Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu Arg Val
225 230 235 240
Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn
245 250 255
Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val
260 265 270
Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Gln
275 280 285
Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp
290 295 300
Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg
305 310 315 320
Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr
325 330 335
Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
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<223> HUMAN

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20 25 30
Thr Pro Thr Ser Leu Leu Ile Ser Trp Asp Ala Pro Ala Val Thr Val
35 40 45
Arg Tyr Tyr Arg Ile Thr Tyr Gly Glu Thr Gly Gly Asn Ser Pro Val
Page 20

SP102075SGM SEQUENCE LISTING

50	55	60
Gln 65	Glu Phe Thr Val Pro 70	Gly Ser Lys Ser Thr 75
Ala Thr Ile Ser Gly 80		
Leu Lys Pro Gly Val 85	Asp Tyr Thr Ile Thr 90	Val Tyr Ala Val Thr 95
Pro		
Arg Gly Asp Trp 100	Asn Glu Gly Ser Lys 105	Pro Ile Ser Ile Asn 110
Tyr Arg		
Thr Glu Gln 115	Lys Leu Ile Ser Glu 120	Glu Asp Leu Gly Gly 125
Gly Pro Arg		
Lys Pro 130	Thr Thr Thr Pro Ala 135	Pro Arg Pro Pro Thr 140
Pro Ala Pro Thr		
Ile 145	Ala Ser Gln Pro Leu 150	Ser Leu Arg Pro Glu 155
Ala Cys Arg Pro Ala 160		
Ala Gly Gly Ala Val 165	His Thr Arg Gly Leu 170	Asp Phe Ala Cys Asp 175
Ile		
Tyr Ile Trp Ala 180	Pro Leu Ala Gly Thr 185	Cys Gly Val Leu 190
Leu Ser		
Leu Val Ile 195	Thr Arg Ser Lys Arg 200	Ser Arg Gly Gly His 205
Ser Asp Tyr		
Met Asn 210	Met Thr Pro Arg Arg 215	Pro Gly Pro Thr Arg 220
Lys His Tyr Gln		
Pro 225	Tyr Ala Pro Pro Arg 230	Asp Phe Ala Ala Tyr 235
Arg Ser Lys Arg Gly 240		
Arg Lys Lys Leu 245	Leu Tyr Ile Phe Lys Gln 250	Pro Phe Met Arg Pro 255
Val		
Gln Thr Thr Gln 260	Glu Glu Asp Gly Cys 265	Ser Cys Arg Phe Pro 270
Glu Glu		
Glu Glu Gly 275	Gly Cys Glu Leu Arg 280	Val Lys Phe Ser Arg 285
Ser Ala Asp		
Ala Pro 290	Ala Tyr Gln Gln Gly 295	Gln Asn Gln Leu Tyr 300
Asn Glu Leu Asn		
Leu Gly Arg Arg Glu 305	Glu Tyr Asp Val Leu 310	Asp Lys Arg Arg Gly 315
Arg 320		
Asp Pro Glu Met Gly 325	Gly Lys Pro Gln Arg 330	Arg Lys Asn Pro Gln 335
Glu		
Gly Leu Tyr Asn 340	Glu Leu Gln Lys Asp 345	Lys Met Ala Glu Ala 350
Tyr Ser		
Glu Ile Gly 355	Met Lys Gly Glu Arg 360	Arg Arg Gly Lys Gly 365
His Asp Gly		
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SP102075SGM SEQUENCE LISTING

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Gln Cys Ile Val Arg Ile Asn Glu Pro Ile Cys Gln Cys Leu Pro Gly
          35          40          45
Tyr Gln Gly Glu Lys Cys Glu Lys Leu Val Ser Val Asn Phe Ile Asn
          50          55          60
Lys Glu Ser Tyr Leu Gln Ile Pro Ser Ala Lys Val Arg Pro Gln Thr
          65          70          75          80
Asn Ile Thr Leu Gln Ile Ala Thr Asp Glu Asp Ser Gly Ile Leu Leu
          85          90          95
Tyr Lys Gly Asp Lys Asp His Ile Ala Val Glu Leu Tyr Arg Gly Arg
          100          105          110
Val Arg Ala Ser Tyr Asp Thr Gly Ser His Pro Ala Ser Ala Ile Tyr
          115          120          125
Ser Val Glu Thr Ile Asn Asp Gly Asn Phe His Ile Val Glu Leu Leu
          130          135          140
Ala Leu Asp Gln Ser Leu Ser Leu Ser Val Asp Gly Gly Asn Pro Lys
          145          150          155          160
Ile Ile Thr Asn Leu Ser Lys Gln Ser Thr Leu Asn Phe Asp Ser Pro
          165          170          175
Leu Tyr Val Gly Gly Met Pro Gly Lys Ser Asn Val Ala Ser Leu Arg
          180          185          190
Gln Ala Pro Gly Gln Asn Gly Thr Ser Phe His Gly Cys Ile Arg Asn
          195          200          205
Leu Tyr Ile Asn Ser Glu Leu Gln Asp Phe Gln Lys Val Pro Met Gln
          210          215          220
Thr Gly Ile Leu Pro Gly Cys Glu Pro Cys His Lys Lys Val Cys Ala
          225          230          235          240
His Gly Thr Cys Gln Pro Ser Ser Gln Ala Gly Phe Thr Cys Glu Cys
          245          250          255
Gln Glu Gly Trp Met Gly Pro Leu Cys Asp Gln Arg Thr Asn Asp Pro
          260          265          270
Cys Leu Gly Asn Lys Cys Val His Gly Thr Cys Leu Pro Ile Asn Ala
          275          280          285
Phe Ser Tyr Ser Cys Lys Cys Leu Glu Gly His Gly Gly Val Leu Cys
          290          295          300
Asp Glu Glu Glu Asp Leu Phe Asn Pro Cys Gln Ala Ile Lys Cys Lys
          305          310          315          320

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SP102075SGM SEQUENCE LISTING

His Gly Lys Cys Arg₃₂₅ Leu Ser Gly Leu Gly₃₃₀ Gln Pro Tyr Cys Glu₃₃₅ Cys
 Ser Ser Gly Tyr₃₄₀ Thr Gly Asp Ser Cys₃₄₅ Asp Arg Glu Ile Ser₃₅₀ Cys Arg
 Gly Glu Arg₃₅₅ Ile Arg Asp Tyr Tyr₃₆₀ Gln Lys Gln Gln Gly₃₆₅ Tyr Ala Ala
 Cys Gln Thr Thr Lys Lys Val₃₇₅ Ser Arg Leu Glu Cys₃₈₀ Arg Gly Gly Cys
 Ala Gly Gly Gln Cys Cys₃₉₀ Gly Pro Leu Arg Ser₃₉₅ Lys Arg Arg Lys Tyr₄₀₀
 Ser Phe Glu Cys Thr₄₀₅ Asp Gly Ser Ser Phe Val₄₁₀ Asp Glu Val Glu₄₁₅ Lys
 Val Val Lys Cys₄₂₀ Gly Cys Thr Arg Cys₄₂₅ Val Ser Glu Gln Lys₄₃₀ Leu Ile
 Ser Glu Glu₄₃₅ Asp Leu Gly Gly Gly₄₄₀ Pro Arg Lys Pro Thr₄₄₅ Thr Thr Pro
 Ala Pro Arg Pro Pro Thr₄₅₅ Ala Pro Thr Ile Ala₄₆₀ Ser Gln Pro Leu
 Ser Leu Arg Pro Glu Ala₄₇₀ Cys Arg Pro Ala Ala₄₇₅ Gly Gly Ala Val His₄₈₀
 Thr Arg Gly Leu Asp₄₈₅ Phe Ala Cys Asp Ile₄₉₀ Tyr Ile Trp Ala Pro₄₉₅ Leu
 Ala Gly Thr Cys₅₀₀ Gly Val Leu Leu Leu₅₀₅ Ser Leu Val Ile Thr₅₁₀ Lys Arg
 Gly Arg Lys₅₁₅ Lys Leu Leu Tyr Ile₅₂₀ Phe Lys Gln Pro Phe₅₂₅ Met Arg Pro
 Val Gln Thr Thr Gln Glu Glu₅₃₅ Asp Gly Cys Ser Cys₅₄₀ Arg Phe Pro Glu
 Glu Glu Glu Gly Gly Cys₅₅₀ Glu Leu Arg Val Lys₅₅₅ Phe Ser Arg Ser Ala₅₆₀
 Asp Ala Pro Ala Tyr₅₆₅ Gln Gln Gly Gln Asn₅₇₀ Gln Leu Tyr Asn Glu₅₇₅ Leu
 Asn Leu Gly Arg₅₈₀ Arg Glu Glu Tyr Asp Val₅₈₅ Leu Asp Lys Arg₅₉₀ Arg Gly
 Arg Asp Pro₅₉₅ Glu Met Gly Gly Lys₆₀₀ Pro Gln Arg Arg Lys₆₀₅ Asn Pro Gln
 Glu Gly Leu Tyr Asn Glu Leu₆₁₅ Gln Lys Asp Lys Met₆₂₀ Ala Glu Ala Tyr
 Ser Glu Ile Gly Met Lys₆₃₀ Gly Glu Arg Arg Arg₆₃₅ Gly Lys Gly His Asp₆₄₀
 Gly Leu Tyr Gln Gly₆₄₅ Leu Ser Thr Ala Thr₆₅₀ Lys Asp Thr Tyr Asp₆₅₅ Ala
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SP102075SGM SEQUENCE LISTING

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<213> Unknown

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35 40 45
Tyr Gln Gly Glu Lys Cys Glu Lys Leu Val Ser Val Asn Phe Ile Asn
50 55 60
Lys Glu Ser Tyr Leu Gln Ile Pro Ser Ala Lys Val Arg Pro Gln Thr
65 70 75 80
Asn Ile Thr Leu Gln Ile Ala Thr Asp Glu Asp Ser Gly Ile Leu Leu
85 90 95
Tyr Lys Gly Asp Lys Asp His Ile Ala Val Glu Leu Tyr Arg Gly Arg
100 105 110
Val Arg Ala Ser Tyr Asp Thr Gly Ser His Pro Ala Ser Ala Ile Tyr
115 120 125
Ser Val Glu Thr Ile Asn Asp Gly Asn Phe His Ile Val Glu Leu Leu
130 135 140
Ala Leu Asp Gln Ser Leu Ser Leu Ser Val Asp Gly Gly Asn Pro Lys
145 150 155 160
Ile Ile Thr Asn Leu Ser Lys Gln Ser Thr Leu Asn Phe Asp Ser Pro
165 170 175
Leu Tyr Val Gly Gly Met Pro Gly Lys Ser Asn Val Ala Ser Leu Arg
180 185 190
Gln Ala Pro Gly Gln Asn Gly Thr Ser Phe His Gly Cys Ile Arg Asn
195 200 205
Leu Tyr Ile Asn Ser Glu Leu Gln Asp Phe Gln Lys Val Pro Met Gln
210 215 220
Thr Gly Ile Leu Pro Gly Cys Glu Pro Cys His Lys Lys Val Cys Ala
225 230 235 240
His Gly Thr Cys Gln Pro Ser Ser Gln Ala Gly Phe Thr Cys Glu Cys
245 250 255
Gln Glu Gly Trp Met Gly Pro Leu Cys Asp Gln Arg Thr Asn Asp Pro
260 265 270
Cys Leu Gly Asn Lys Cys Val His Gly Thr Cys Leu Pro Ile Asn Ala
275 280 285
Phe Ser Tyr Ser Cys Lys Cys Leu Glu Gly His Gly Gly Val Leu Cys
290 295 300
Asp Glu Glu Glu Asp Leu Phe Asn Pro Cys Gln Ala Ile Lys Cys Lys
305 310 315 320

SP102075SGM SEQUENCE LISTING

His Gly Lys Cys Arg 325 Leu Ser Gly Leu Gly 330 Gln Pro Tyr Cys Glu 335 Cys
 Ser Ser Gly Tyr 340 Thr Gly Asp Ser Cys 345 Asp Arg Glu Ile Ser 350 Cys Arg
 Gly Glu Arg 355 Ile Arg Asp Tyr Tyr 360 Gln Lys Gln Gln Gly 365 Tyr Ala Ala
 Cys Gln Thr Thr Lys Lys Val 375 Ser Arg Leu Glu Cys 380 Arg Gly Gly Cys
 Ala 385 Gly Gly Gln Cys Cys 390 Gly Pro Leu Arg Ser 395 Lys Arg Arg Lys Tyr 400
 Ser Phe Glu Cys Thr 405 Asp Gly Ser Ser Phe 410 Val Asp Glu Val Glu 415 Lys
 Val Val Lys Cys 420 Gly Cys Thr Arg Cys 425 Val Ser Glu Gln Lys 430 Leu Ile
 Ser Glu Glu 435 Asp Leu Gly Gly Gly 440 Pro Arg Lys Pro Thr 445 Thr Thr Pro
 Ala 450 Pro Arg Pro Pro Thr Pro 455 Ala Pro Thr Ile Ala 460 Ser Gln Pro Leu
 Ser 465 Leu Arg Pro Glu Ala 470 Cys Arg Pro Ala Ala 475 Gly Gly Ala Val His 480
 Thr Arg Gly Leu Asp 485 Phe Ala Cys Asp Ile 490 Tyr Ile Trp Ala Pro 495 Leu
 Ala Gly Thr Cys 500 Gly Val Leu Leu Leu 505 Ser Leu Val Ile Thr 510 Arg Ser
 Lys Arg Ser 515 Arg Gly Gly His Ser 520 Asp Tyr Met Asn 525 Met Thr Pro Arg
 Arg Pro 530 Gly Pro Thr Arg Lys 535 His Tyr Gln Pro Tyr 540 Ala Pro Pro Arg
 Asp 545 Phe Ala Ala Tyr Arg 550 Ser Lys Arg Gly Arg 555 Lys Lys Leu Leu Tyr 560
 Ile Phe Lys Gln Pro 565 Phe Met Arg Pro Val 570 Gln Thr Thr Gln Glu 575 Glu
 Asp Gly Cys Ser 580 Cys Arg Phe Pro Glu 585 Glu Glu Glu Gly Gly 590 Cys Glu
 Leu Arg Val 595 Lys Phe Ser Arg Ser 600 Ala Asp Ala Pro Ala 605 Tyr Gln Gln
 Gly Gln Asn Gln Leu Tyr Asn 615 Glu Leu Asn Leu Gly 620 Arg Arg Glu Glu
 Tyr 625 Asp Val Leu Asp Lys 630 Arg Arg Gly Arg Asp 635 Pro Glu Met Gly Gly 640
 Lys Pro Gln Arg Arg 645 Lys Asn Pro Gln Glu 650 Gly Leu Tyr Asn Glu 655 Leu
 Gln Lys Asp Lys 660 Met Ala Glu Ala Tyr 665 Ser Glu Ile Gly Met 670 Lys Gly
 Glu Arg Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser

SP102075SGM SEQUENCE LISTING

	675						680						685	
Thr	Ala	Thr	Lys	Asp	Thr	Tyr	Asp	Ala	Leu	His	Met	Gln	Ala	Leu
690						695					700			Pro
Pro	Arg													
705														