

2008_M004_A145-1 ST25.txt
SEQUENCE LISTING

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CSL BEHRING GMBH

<120> Factor VIII with prolonged half-life

<130> 2008_M004_A145

<150> EP 08011429.1
<151> 2008-06-24

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<170> PatentIn version 3.3

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 35 40 45

Thr Leu Phe Val Glu Phe Thr Asp His Leu Phe Asn Ile Ala Lys Pro
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Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln Ala Glu Val
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65

70

80

Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser His Pro Val
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Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp Asp Lys Val
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Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu Lys Glu Asn
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Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr Gln Thr Leu
180 185 190

His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly Lys Ser Trp
195 200 205

His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp Ala Ala Ser
210 215 220

Ala Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr Val Asn Arg
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Ser Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val Tyr Trp His
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Val Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile Phe Leu Glu
260 265 270

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290 295 300

Gln Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His Asp Gly Met
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Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro Gln Leu Arg
325 330 335

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

610

615

620

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725 730 735

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Pro Arg Ser Phe Gln Lys Lys Thr Arg His Tyr Phe Ile Ala Ala Val
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Glu Arg Leu Trp Asp Tyr Gly Met Ser Ser Ser Pro His Val Leu Arg
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820 825 830

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Seite 5

885

890

895

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Cys Lys Ala Trp Ala Tyr Phe Ser Asp Val Asp Leu Glu Lys Asp Val
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Asn Pro Ala His Gly Arg Gln Val Thr Val Gln Glu Phe Ala Leu Phe
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Phe Thr Ile Phe Asp Glu Thr Lys Ser Trp Tyr Phe Thr Glu Asn Met
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Glu Arg Asn Cys Arg Ala Pro Cys Asn Ile Gln Met Glu Asp Pro Thr
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Phe Lys Glu Asn Tyr Arg Phe His Ala Ile Asn Gly Tyr Ile Met
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Asp Thr Leu Pro Gly Leu Val Met Ala Gln Asp Gln Arg Ile Arg
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Trp Tyr Leu Leu Ser Met Gly Ser Asn Glu Asn Ile His Ser Ile
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His Phe Ser Gly His Val Phe Thr Val Arg Lys Lys Glu Glu Tyr
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Lys Met Ala Leu Tyr Asn Leu Tyr Pro Gly Val Phe Glu Thr Val
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Glu Met Leu Pro Ser Lys Ala Gly Ile Trp Arg Val Glu Cys Leu
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Ile Gly Glu His Leu His Ala Gly Met Ser Thr Leu Phe Leu Val
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Tyr Ser Asn Lys Cys Gln Thr Pro Leu Gly Met Ala Ser Gly His
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Ile Arg Asp Phe Gln Ile Thr Ala Ser Gly Gln Tyr Gly Gln Trp
 1130 1135 1140

Ala Pro Lys Leu Ala Arg Leu His Tyr Ser Gly Ser Ile Asn Ala
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1145

1150

1155

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Ala	Pro	Met	Ile	Ile	His	Gly	Ile	Lys	Thr	Gln	Gly	Ala	Arg	Gln
1175						1180					1185			
Lys	Phe	Ser	Ser	Leu	Tyr	Ile	Ser	Gln	Phe	Ile	Ile	Met	Tyr	Ser
1190						1195					1200			
Leu	Asp	Gly	Lys	Lys	Trp	Gln	Thr	Tyr	Arg	Gly	Asn	Ser	Thr	Gly
1205						1210					1215			
Thr	Leu	Met	Val	Phe	Phe	Gly	Asn	Val	Asp	Ser	Ser	Gly	Ile	Lys
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His	Pro	Thr	His	Tyr	Ser	Ile	Arg	Ser	Thr	Leu	Arg	Met	Glu	Leu
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Met	Gly	Cys	Asp	Leu	Asn	Ser	Cys	Ser	Met	Pro	Leu	Gly	Met	Glu
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Ser	Lys	Ala	Ile	Ser	Asp	Ala	Gln	Ile	Thr	Ala	Ser	Ser	Tyr	Phe
1280						1285					1290			
Thr	Asn	Met	Phe	Ala	Thr	Trp	Ser	Pro	Ser	Lys	Ala	Arg	Leu	His
1295						1300					1305			
Leu	Gln	Gly	Arg	Ser	Asn	Ala	Trp	Arg	Pro	Gln	Val	Asn	Asn	Pro
1310						1315					1320			
Lys	Glu	Trp	Leu	Gln	Val	Asp	Phe	Gln	Lys	Thr	Met	Lys	Val	Thr
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1405

1410

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

1655

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Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr Gln Thr Leu
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Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro Gln Leu Arg
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Gln Arg Ile Gly Arg Lys Tyr Lys Lys Val Arg Phe Met Ala Tyr Thr
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Asp Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu Ser Gly Ile
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Phe Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro His Gly Ile
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Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys Asn Asn Ala
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His Gly Leu Ser Leu Ser Asp Leu Gln Glu Ala Lys Tyr Glu Thr Phe
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Arg His Pro Tyr Phe Tyr Ala Pro Glu Leu Leu Phe Phe Ala Lys Arg
145 150 155 160

Tyr Lys Ala Ala Phe Thr Glu Cys Cys Gln Ala Ala Asp Lys Ala Ala
165 170 175

Cys Leu Leu Pro Lys Leu Asp Glu Leu Arg Asp Glu Gly Lys Ala Ser
180 185 190

Ser Ala Lys Gln Arg Leu Lys Cys Ala Ser Leu Gln Lys Phe Gly Glu
195 200 205

Arg Ala Phe Lys Ala Trp Ala Val Ala Arg Leu Ser Gln Arg Phe Pro
210 215 220

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

Val His Thr Glu Cys Cys His Gly Asp Leu Leu Glu Cys Ala Asp Asp
245 250 255

Arg Ala Asp Leu Ala Lys Tyr Ile Cys Glu Asn Gln Asp Ser Ile Ser
260 265 270

Ser Lys Leu Lys Glu Cys Cys Glu Lys Pro Leu Leu Glu Lys Ser His
275 280 285

Cys Ile Ala Glu Val Glu Asn Asp Glu Met Pro Ala Asp Leu Pro Ser
290 295 300

Leu Ala Ala Asp Phe Val Glu Ser Lys Asp Val Cys Lys Asn Tyr Ala
305 310 315 320

Glu Ala Lys Asp Val Phe Leu Gly Met Phe Leu Tyr Glu Tyr Ala Arg
 325 330 335
 Arg His Pro Asp Tyr Ser Val Val Leu Leu Leu Arg Leu Ala Lys Thr
 340 345 350
 Tyr Glu Thr Thr Leu Glu Lys Cys Cys Ala Ala Ala Asp Pro His Glu
 355 360 365
 Cys Tyr Ala Lys Val Phe Asp Glu Phe Lys Pro Leu Val Glu Glu Pro
 370 375 380
 Gln Asn Leu Ile Lys Gln Asn Cys Glu Leu Phe Glu Gln Leu Gly Glu
 385 390 395 400
 Tyr Lys Phe Gln Asn Ala Leu Leu Val Arg Tyr Thr Lys Lys Val Pro
 405 410 415
 Gln Val Ser Thr Pro Thr Leu Val Glu Val Ser Arg Asn Leu Gly Lys
 420 425 430
 Val Gly Ser Lys Cys Cys Lys His Pro Glu Ala Lys Arg Met Pro Cys
 435 440 445
 Ala Glu Asp Tyr Leu Ser Val Val Leu Asn Gln Leu Cys Val Leu His
 450 455 460
 Glu Lys Thr Pro Val Ser Asp Arg Val Thr Lys Cys Cys Thr Glu Ser
 465 470 475 480
 Leu Val Asn Arg Arg Pro Cys Phe Ser Ala Leu Glu Val Asp Glu Thr
 485 490 495
 Tyr Val Pro Lys Glu Phe Asn Ala Glu Thr Phe Thr Phe His Ala Asp
 500 505 510
 Ile Cys Thr Leu Ser Glu Lys Glu Arg Gln Ile Lys Lys Gln Thr Ala
 515 520 525
 Leu Val Glu Leu Val Lys His Lys Pro Lys Ala Thr Lys Glu Gln Leu
 530 535 540
 Lys Ala Val Met Asp Asp Phe Ala Ala Phe Val Glu Lys Cys Cys Lys
 545 550 555 560
 Ala Asp Asp Lys Glu Thr Cys Phe Ala Glu Glu Gly Lys Lys Leu Val
 565 570 575
 Ala Ala Ser Gln Ala Ala Leu Gly Leu
 580 585

<210> 17
 <211> 30
 <212> DNA
 <213> Artificial
 <220>
 <223> Primer
 <400> 17
 ttcgaattcc cgcagccctc atttgcaggg 30

<210> 18
 <211> 31
 <212> DNA
 <213> Artificial
 <220>
 <223> Primer
 <400> 18
 tccgaattcc ggcagcagca ggcacccatg c 31

<210> 19
 <211> 25
 <212> DNA
 <213> Artificial
 <220>
 <223> Primer
 <400> 19
 gcggcggccg cgagcccat ttccc 25

<210> 20
 <211> 18
 <212> DNA
 <213> Artificial
 <220>
 <223> Primer
 <400> 20
 gagagggagt actcacc 18

<210> 21
 <211> 27
 <212> DNA
 <213> Artificial
 <220>
 <223> Primer
 <400> 21
 ggaagtgcag caagtcgagc gggggat 27

<210> 22
 <211> 27
 <212> DNA
 <213> Artificial
 <220>

<223> Primer

<400> 22
 atcccccgcgt cgacttgctg cacttcc

27

<210> 23
 <211> 585
 <212> PRT
 <213> Homo sapiens

<400> 23

Asp Ala His Lys Ser Glu Val Ala His Arg Phe Lys Asp Leu Gly Glu
 1 5 10 15

Glu Asn Phe Lys Ala Leu Val Leu Ile Ala Phe Ala Gln Tyr Leu Gln
 20 25 30

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

Phe Ala Lys Thr Cys Val Ala Asp Glu Ser Ala Glu Asn Cys Asp Lys
 50 55 60

Ser Leu His Thr Leu Phe Gly Asp Lys Leu Cys Thr Val Ala Thr Leu
 65 70 75 80

Arg Glu Thr Tyr Gly Glu Met Ala Asp Cys Cys Ala Lys Gln Glu Pro
 85 90 95

Glu Arg Asn Glu Cys Phe Leu Gln His Lys Asp Asp Asn Pro Asn Leu
 100 105 110

Pro Arg Leu Val Arg Pro Glu Val Asp Val Met Cys Thr Ala Phe His
 115 120 125

Asp Asn Glu Glu Thr Phe Leu Lys Lys Tyr Leu Tyr Glu Ile Ala Arg
 130 135 140

Arg His Pro Tyr Phe Tyr Ala Pro Glu Leu Leu Phe Phe Ala Lys Arg
 145 150 155 160

Tyr Lys Ala Ala Phe Thr Glu Cys Cys Gln Ala Ala Asp Lys Ala Ala
 165 170 175

Cys Leu Leu Pro Lys Leu Asp Glu Leu Arg Asp Glu Gly Lys Ala Ser
 180 185 190

Ser Ala Lys Gln Arg Leu Lys Cys Ala Ser Leu Gln Lys Phe Gly Glu
 195 200 205

Arg Ala Phe Lys Ala Trp Ala Val Ala Arg Leu Ser Gln Arg Phe Pro
 210 215 220

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

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Tyr Val Pro Lys Glu Phe Asn Ala Glu Thr Phe Thr Phe His Ala Asp
500 505 510

Ile Cys Thr Leu Ser Glu Lys Glu Arg Gln Ile Lys Lys Gln Thr Ala
515 520 525

Leu Val Glu Leu Val Lys His Lys Pro Lys Ala Thr Lys Glu Gln Leu
530 535 540

Lys Ala Val Met Asp Asp Phe Ala Ala Phe Val Glu Lys Cys Cys Lys
545 550 555 560

Ala Asp Asp Lys Glu Thr Cys Phe Ala Glu Glu Gly Lys Lys Leu Val
565 570 575

Ala Ala Ser Gln Ala Ala Leu Gly Leu
580 585

<210> 24
<211> 2813
<212> PRT
<213> homo sapiens

<400> 24

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr
20 25 30

Ala Arg Cys Ser Leu Phe Gly Ser Asp Phe Val Asn Thr Phe Asp Gly
35 40 45

Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly
50 55 60

Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys
65 70 75 80

Arg Val Ser Leu Ser Val Tyr Leu Gly Glu Phe Phe Asp Ile His Leu
85 90 95

Phe Val Asn Gly Thr Val Thr Gln Gly Asp Gln Arg Val Ser Met Pro
100 105 110

Tyr Ala Ser Lys Gly Leu Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys
115 120 125

Leu Ser Gly Glu Ala Tyr Gly Phe Val Ala Arg Ile Asp Gly Ser Gly
130 135 140

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

Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys
 420 425 430
 Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu
 435 440 445
 Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val
 450 455 460
 Ala Met Asp Gly Gln Asp Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu
 465 470 475 480
 Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu
 485 490 495
 Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu
 500 505 510
 Ser Pro Val Tyr Ala Gly Lys Thr Cys Gly Leu Cys Gly Asn Tyr Asn
 515 520 525
 Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro
 530 535 540
 Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln
 545 550 555 560
 Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met
 565 570 575
 Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe
 580 585 590
 Glu Ala Cys His Arg Ala Val Ser Pro Leu Pro Tyr Leu Arg Asn Cys
 595 600 605
 Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly
 610 615 620
 Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val
 625 630 635 640
 Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln
 645 650 655
 Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu
 660 665 670
 Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe
 675 680 685

Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys
 690 695 700
 Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp
 705 710 715 720
 Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met
 725 730 735
 His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val
 740 745 750
 Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg Ser Leu Ser Cys Arg
 755 760 765
 Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu
 770 775 780
 Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met
 785 790 795 800
 Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg
 805 810 815
 His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln
 820 825 830
 Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr
 835 840 845
 Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp
 850 855 860
 Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly
 865 870 875 880
 Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp
 885 890 895
 Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys
 900 905 910
 Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu
 915 920 925
 Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys
 930 935 940
 Arg Pro Met Lys Asp Glu Thr His Phe Glu Val Val Glu Ser Gly Arg
 945 950 955 960

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Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg
 965 970 975
 His Leu Ser Ile Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val
 980 985 990
 Cys Gly Leu Cys Gly Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr
 995 1000 1005
 Ser Ser Asn Leu Gln Val Glu Glu Asp Pro Val Asp Phe Gly Asn
 1010 1015 1020
 Ser Trp Lys Val Ser Ser Gln Cys Ala Asp Thr Arg Lys Val Pro
 1025 1030 1035
 Leu Asp Ser Ser Pro Ala Thr Cys His Asn Asn Ile Met Lys Gln
 1040 1045 1050
 Thr Met Val Asp Ser Ser Cys Arg Ile Leu Thr Ser Asp Val Phe
 1055 1060 1065
 Gln Asp Cys Asn Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp Val
 1070 1075 1080
 Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala
 1085 1090 1095
 Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His Val Cys Ala Gln
 1100 1105 1110
 His Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu Cys Pro Gln
 1115 1120 1125
 Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu Cys Glu
 1130 1135 1140
 Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln
 1145 1150 1155
 His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys
 1160 1165 1170
 His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln
 1175 1180 1185
 Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly
 1190 1195 1200
 Arg Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp
 1205 1210 1215

Pro Glu His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr
 1220 1225 1230
 Cys Glu Ala Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro Thr
 1235 1240 1245
 Asp Ala Pro Val Ser Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser
 1250 1255 1260
 Glu Pro Pro Leu His Asp Phe Tyr Cys Ser Arg Leu Leu Asp Leu
 1265 1270 1275
 Val Phe Leu Leu Asp Gly Ser Ser Arg Leu Ser Glu Ala Glu Phe
 1280 1285 1290
 Glu Val Leu Lys Ala Phe Val Val Asp Met Met Glu Arg Leu Arg
 1295 1300 1305
 Ile Ser Gln Lys Trp Val Arg Val Ala Val Val Glu Tyr His Asp
 1310 1315 1320
 Gly Ser His Ala Tyr Ile Gly Leu Lys Asp Arg Lys Arg Pro Ser
 1325 1330 1335
 Glu Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr Ala Gly Ser Gln
 1340 1345 1350
 Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu Phe Gln Ile
 1355 1360 1365
 Phe Ser Lys Ile Asp Arg Pro Glu Ala Ser Arg Ile Thr Leu Leu
 1370 1375 1380
 Leu Met Ala Ser Gln Glu Pro Gln Arg Met Ser Arg Asn Phe Val
 1385 1390 1395
 Arg Tyr Val Gln Gly Leu Lys Lys Lys Lys Val Ile Val Ile Pro
 1400 1405 1410
 Val Gly Ile Gly Pro His Ala Asn Leu Lys Gln Ile Arg Leu Ile
 1415 1420 1425
 Glu Lys Gln Ala Pro Glu Asn Lys Ala Phe Val Leu Ser Ser Val
 1430 1435 1440
 Asp Glu Leu Glu Gln Gln Arg Asp Glu Ile Val Ser Tyr Leu Cys
 1445 1450 1455
 Asp Leu Ala Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro Asp Met
 1460 1465 1470

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Ala	Gln	Val	Thr	Val	Gly	Pro	Gly	Leu	Leu	Gly	Val	Ser	Thr	Leu
1475						1480						1485		
Gly	Pro	Lys	Arg	Asn	Ser	Met	Val	Leu	Asp	Val	Ala	Phe	Val	Leu
1490						1495					1500			
Glu	Gly	Ser	Asp	Lys	Ile	Gly	Glu	Ala	Asp	Phe	Asn	Arg	Ser	Lys
1505						1510					1515			
Glu	Phe	Met	Glu	Glu	Val	Ile	Gln	Arg	Met	Asp	Val	Gly	Gln	Asp
1520						1525					1530			
Ser	Ile	His	Val	Thr	Val	Leu	Gln	Tyr	Ser	Tyr	Met	Val	Thr	Val
1535						1540					1545			
Glu	Tyr	Pro	Phe	Ser	Glu	Ala	Gln	Ser	Lys	Gly	Asp	Ile	Leu	Gln
1550						1555					1560			
Arg	Val	Arg	Glu	Ile	Arg	Tyr	Gln	Gly	Gly	Asn	Arg	Thr	Asn	Thr
1565						1570					1575			
Gly	Leu	Ala	Leu	Arg	Tyr	Leu	Ser	Asp	His	Ser	Phe	Leu	Val	Ser
1580						1585					1590			
Gln	Gly	Asp	Arg	Glu	Gln	Ala	Pro	Asn	Leu	Val	Tyr	Met	Val	Thr
1595						1600					1605			
Gly	Asn	Pro	Ala	Ser	Asp	Glu	Ile	Lys	Arg	Leu	Pro	Gly	Asp	Ile
1610						1615					1620			
Gln	Val	Val	Pro	Ile	Gly	Val	Gly	Pro	Asn	Ala	Asn	Val	Gln	Glu
1625						1630					1635			
Leu	Glu	Arg	Ile	Gly	Trp	Pro	Asn	Ala	Pro	Ile	Leu	Ile	Gln	Asp
1640						1645					1650			
Phe	Glu	Thr	Leu	Pro	Arg	Glu	Ala	Pro	Asp	Leu	Val	Leu	Gln	Arg
1655						1660					1665			
Cys	Cys	Ser	Gly	Glu	Gly	Leu	Gln	Ile	Pro	Thr	Leu	Ser	Pro	Ala
1670						1675					1680			
Pro	Asp	Cys	Ser	Gln	Pro	Leu	Asp	Val	Ile	Leu	Leu	Leu	Asp	Gly
1685						1690					1695			
Ser	Ser	Ser	Phe	Pro	Ala	Ser	Tyr	Phe	Asp	Glu	Met	Lys	Ser	Phe
1700						1705					1710			
Ala	Lys	Ala	Phe	Ile	Ser	Lys	Ala	Asn	Ile	Gly	Pro	Arg	Leu	Thr
1715						1720					1725			

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Gln Val Ser Val Leu Gln Tyr Gly Ser Ile Thr Thr Ile Asp Val
1730 1735 1740

Pro Trp Asn Val Val Pro Glu Lys Ala His Leu Leu Ser Leu Val
1745 1750 1755

Asp Val Met Gln Arg Glu Gly Gly Pro Ser Gln Ile Gly Asp Ala
1760 1765 1770

Leu Gly Phe Ala Val Arg Tyr Leu Thr Ser Glu Met His Gly Ala
1775 1780 1785

Arg Pro Gly Ala Ser Lys Ala Val Val Ile Leu Val Thr Asp Val
1790 1795 1800

Ser Val Asp Ser Val Asp Ala Ala Ala Asp Ala Ala Arg Ser Asn
1805 1810 1815

Arg Val Thr Val Phe Pro Ile Gly Ile Gly Asp Arg Tyr Asp Ala
1820 1825 1830

Ala Gln Leu Arg Ile Leu Ala Gly Pro Ala Gly Asp Ser Asn Val
1835 1840 1845

Val Lys Leu Gln Arg Ile Glu Asp Leu Pro Thr Met Val Thr Leu
1850 1855 1860

Gly Asn Ser Phe Leu His Lys Leu Cys Ser Gly Phe Val Arg Ile
1865 1870 1875

Cys Met Asp Glu Asp Gly Asn Glu Lys Arg Pro Gly Asp Val Trp
1880 1885 1890

Thr Leu Pro Asp Gln Cys His Thr Val Thr Cys Gln Pro Asp Gly
1895 1900 1905

Gln Thr Leu Leu Lys Ser His Arg Val Asn Cys Asp Arg Gly Leu
1910 1915 1920

Arg Pro Ser Cys Pro Asn Ser Gln Ser Pro Val Lys Val Glu Glu
1925 1930 1935

Thr Cys Gly Cys Arg Trp Thr Cys Pro Cys Val Cys Thr Gly Ser
1940 1945 1950

Ser Thr Arg His Ile Val Thr Phe Asp Gly Gln Asn Phe Lys Leu
1955 1960 1965

Thr Gly Ser Cys Ser Tyr Val Leu Phe Gln Asn Lys Glu Gln Asp
1970 1975 1980

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Leu Glu Val Ile Leu His Asn Gly Ala Cys Ser Pro Gly Ala Arg
1985 1990 1995

Gln Gly Cys Met Lys Ser Ile Glu Val Lys His Ser Ala Leu Ser
2000 2005 2010

Val Glu Leu His Ser Asp Met Glu Val Thr Val Asn Gly Arg Leu
2015 2020 2025

Val Ser Val Pro Tyr Val Gly Gly Asn Met Glu Val Asn Val Tyr
2030 2035 2040

Gly Ala Ile Met His Glu Val Arg Phe Asn His Leu Gly His Ile
2045 2050 2055

Phe Thr Phe Thr Pro Gln Asn Asn Glu Phe Gln Leu Gln Leu Ser
2060 2065 2070

Pro Lys Thr Phe Ala Ser Lys Thr Tyr Gly Leu Cys Gly Ile Cys
2075 2080 2085

Asp Glu Asn Gly Ala Asn Asp Phe Met Leu Arg Asp Gly Thr Val
2090 2095 2100

Thr Thr Asp Trp Lys Thr Leu Val Gln Glu Trp Thr Val Gln Arg
2105 2110 2115

Pro Gly Gln Thr Cys Gln Pro Ile Leu Glu Glu Gln Cys Leu Val
2120 2125 2130

Pro Asp Ser Ser His Cys Gln Val Leu Leu Leu Pro Leu Phe Ala
2135 2140 2145

Glu Cys His Lys Val Leu Ala Pro Ala Thr Phe Tyr Ala Ile Cys
2150 2155 2160

Gln Gln Asp Ser Cys His Gln Glu Gln Val Cys Glu Val Ile Ala
2165 2170 2175

Ser Tyr Ala His Leu Cys Arg Thr Asn Gly Val Cys Val Asp Trp
2180 2185 2190

Arg Thr Pro Asp Phe Cys Ala Met Ser Cys Pro Pro Ser Leu Val
2195 2200 2205

Tyr Asn His Cys Glu His Gly Cys Pro Arg His Cys Asp Gly Asn
2210 2215 2220

Val Ser Ser Cys Gly Asp His Pro Ser Glu Gly Cys Phe Cys Pro
2225 2230 2235

Pro Asp Lys Val Met Leu Glu Gly Ser Cys Val Pro Glu Glu Ala
 2240 2245 2250
 Cys Thr Gln Cys Ile Gly Glu Asp Gly Val Gln His Gln Phe Leu
 2255 2260 2265
 Glu Ala Trp Val Pro Asp His Gln Pro Cys Gln Ile Cys Thr Cys
 2270 2275 2280
 Leu Ser Gly Arg Lys Val Asn Cys Thr Thr Gln Pro Cys Pro Thr
 2285 2290 2295
 Ala Lys Ala Pro Thr Cys Gly Leu Cys Glu Val Ala Arg Leu Arg
 2300 2305 2310
 Gln Asn Ala Asp Gln Cys Cys Pro Glu Tyr Glu Cys Val Cys Asp
 2315 2320 2325
 Pro Val Ser Cys Asp Leu Pro Pro Val Pro His Cys Glu Arg Gly
 2330 2335 2340
 Leu Gln Pro Thr Leu Thr Asn Pro Gly Glu Cys Arg Pro Asn Phe
 2345 2350 2355
 Thr Cys Ala Cys Arg Lys Glu Glu Cys Lys Arg Val Ser Pro Pro
 2360 2365 2370
 Ser Cys Pro Pro His Arg Leu Pro Thr Leu Arg Lys Thr Gln Cys
 2375 2380 2385
 Cys Asp Glu Tyr Glu Cys Ala Cys Asn Cys Val Asn Ser Thr Val
 2390 2395 2400
 Ser Cys Pro Leu Gly Tyr Leu Ala Ser Thr Ala Thr Asn Asp Cys
 2405 2410 2415
 Gly Cys Thr Thr Thr Thr Cys Leu Pro Asp Lys Val Cys Val His
 2420 2425 2430
 Arg Ser Thr Ile Tyr Pro Val Gly Gln Phe Trp Glu Glu Gly Cys
 2435 2440 2445
 Asp Val Cys Thr Cys Thr Asp Met Glu Asp Ala Val Met Gly Leu
 2450 2455 2460
 Arg Val Ala Gln Cys Ser Gln Lys Pro Cys Glu Asp Ser Cys Arg
 2465 2470 2475
 Ser Gly Phe Thr Tyr Val Leu His Glu Gly Glu Cys Cys Gly Arg
 2480 2485 2490

Cys Leu Pro Ser Ala Cys Glu Val Val Thr Gly Ser Pro Arg Gly
 2495 2500 2505
 Asp Ser Gln Ser Ser Trp Lys Ser Val Gly Ser Gln Trp Ala Ser
 2510 2515 2520
 Pro Glu Asn Pro Cys Leu Ile Asn Glu Cys Val Arg Val Lys Glu
 2525 2530 2535
 Glu Val Phe Ile Gln Gln Arg Asn Val Ser Cys Pro Gln Leu Glu
 2540 2545 2550
 Val Pro Val Cys Pro Ser Gly Phe Gln Leu Ser Cys Lys Thr Ser
 2555 2560 2565
 Ala Cys Cys Pro Ser Cys Arg Cys Glu Arg Met Glu Ala Cys Met
 2570 2575 2580
 Leu Asn Gly Thr Val Ile Gly Pro Gly Lys Thr Val Met Ile Asp
 2585 2590 2595
 Val Cys Thr Thr Cys Arg Cys Met Val Gln Val Gly Val Ile Ser
 2600 2605 2610
 Gly Phe Lys Leu Glu Cys Arg Lys Thr Thr Cys Asn Pro Cys Pro
 2615 2620 2625
 Leu Gly Tyr Lys Glu Glu Asn Asn Thr Gly Glu Cys Cys Gly Arg
 2630 2635 2640
 Cys Leu Pro Thr Ala Cys Thr Ile Gln Leu Arg Gly Gly Gln Ile
 2645 2650 2655
 Met Thr Leu Lys Arg Asp Glu Thr Leu Gln Asp Gly Cys Asp Thr
 2660 2665 2670
 His Phe Cys Lys Val Asn Glu Arg Gly Glu Tyr Phe Trp Glu Lys
 2675 2680 2685
 Arg Val Thr Gly Cys Pro Pro Phe Asp Glu His Lys Cys Leu Ala
 2690 2695 2700
 Glu Gly Gly Lys Ile Met Lys Ile Pro Gly Thr Cys Cys Asp Thr
 2705 2710 2715
 Cys Glu Glu Pro Glu Cys Asn Asp Ile Thr Ala Arg Leu Gln Tyr
 2720 2725 2730
 Val Lys Val Gly Ser Cys Lys Ser Glu Val Glu Val Asp Ile His
 2735 2740 2745

Tyr Cys Gln Gly Lys Cys Ala Ser Lys Ala Met Tyr Ser Ile Asp
 2750 2755 2760

Ile Asn Asp Val Gln Asp Gln Cys Ser Cys Cys Ser Pro Thr Arg
 2765 2770 2775

Thr Glu Pro Met Gln Val Ala Leu His Cys Thr Asn Gly Ser Val
 2780 2785 2790

Val Tyr His Glu Val Leu Asn Ala Met Glu Cys Lys Cys Ser Pro
 2795 2800 2805

Arg Lys Cys Ser Lys
 2810

<210> 25

<211> 3429

<212> PRT

<213> Artificial

<220>

<223> Amino acid sequence of human VWF albumin fusion preproprotein

<400> 25

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
 1 5 10 15

Leu Pro Gly Thr Leu Cys Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr
 20 25 30

Ala Arg Cys Ser Leu Phe Gly Ser Asp Phe Val Asn Thr Phe Asp Gly
 35 40 45

Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly
 50 55 60

Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys
 65 70 75 80

Arg Val Ser Leu Ser Val Tyr Leu Gly Glu Phe Phe Asp Ile His Leu
 85 90 95

Phe Val Asn Gly Thr Val Thr Gln Gly Asp Gln Arg Val Ser Met Pro
 100 105 110

Tyr Ala Ser Lys Gly Leu Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys
 115 120 125

Leu Ser Gly Glu Ala Tyr Gly Phe Val Ala Arg Ile Asp Gly Ser Gly
 130 135 140

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

Leu Cys Gly Asn Phe Asn Ile Phe Ala Glu Asp Asp Phe Met Thr Gln
 165 170 175
 Glu Gly Thr Leu Thr Ser Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala
 180 185 190
 Leu Ser Ser Gly Glu Gln Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser
 195 200 205
 Ser Cys Asn Ile Ser Ser Gly Glu Met Gln Lys Gly Leu Trp Glu Gln
 210 215 220
 Cys Gln Leu Leu Lys Ser Thr Ser Val Phe Ala Arg Cys His Pro Leu
 225 230 235 240
 Val Asp Pro Glu Pro Phe Val Ala Leu Cys Glu Lys Thr Leu Cys Glu
 245 250 255
 Cys Ala Gly Gly Leu Glu Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala
 260 265 270
 Arg Thr Cys Ala Gln Glu Gly Met Val Leu Tyr Gly Trp Thr Asp His
 275 280 285
 Ser Ala Cys Ser Pro Val Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys
 290 295 300
 Val Ser Pro Cys Ala Arg Thr Cys Gln Ser Leu His Ile Asn Glu Met
 305 310 315 320
 Cys Gln Glu Arg Cys Val Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu
 325 330 335
 Leu Asp Glu Gly Leu Cys Val Glu Ser Thr Glu Cys Pro Cys Val His
 340 345 350
 Ser Gly Lys Arg Tyr Pro Pro Gly Thr Ser Leu Ser Arg Asp Cys Asn
 355 360 365
 Thr Cys Ile Cys Arg Asn Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys
 370 375 380
 Pro Gly Glu Cys Leu Val Thr Gly Gln Ser His Phe Lys Ser Phe Asp
 385 390 395 400
 Asn Arg Tyr Phe Thr Phe Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg
 405 410 415
 Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys
 420 425 430

Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu
435 440 445

Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val
450 455 460

Ala Met Asp Gly Gln Asp Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu
465 470 475 480

Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu
485 490 495

Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu
500 505 510

Ser Pro Val Tyr Ala Gly Lys Thr Cys Gly Leu Cys Gly Asn Tyr Asn
515 520 525

Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro
530 535 540

Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln
545 550 555 560

Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met
565 570 575

Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe
580 585 590

Glu Ala Cys His Arg Ala Val Ser Pro Leu Pro Tyr Leu Arg Asn Cys
595 600 605

Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly
610 615 620

Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val
625 630 635 640

Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln
645 650 655

Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu
660 665 670

Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe
675 680 685

Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys
690 695 700

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Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp
705 710 715 720

Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met
725 730 735

His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val
740 745 750

Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg Ser Leu Ser Cys Arg
755 760 765

Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu
770 775 780

Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met
785 790 795 800

Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg
805 810 815

His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln
820 825 830

Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr
835 840 845

Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp
850 855 860

Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly
865 870 875 880

Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp
885 890 895

Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys
900 905 910

Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu
915 920 925

Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys
930 935 940

Arg Pro Met Lys Asp Glu Thr His Phe Glu Val Val Glu Ser Gly Arg
945 950 955 960

Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg
965 970 975

His Leu Ser Ile Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val
 980 985 990
 Cys Gly Leu Cys Gly Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr
 995 1000 1005
 Ser Ser Asn Leu Gln Val Glu Glu Asp Pro Val Asp Phe Gly Asn
 1010 1015 1020
 Ser Trp Lys Val Ser Ser Gln Cys Ala Asp Thr Arg Lys Val Pro
 1025 1030 1035
 Leu Asp Ser Ser Pro Ala Thr Cys His Asn Asn Ile Met Lys Gln
 1040 1045 1050
 Thr Met Val Asp Ser Ser Cys Arg Ile Leu Thr Ser Asp Val Phe
 1055 1060 1065
 Gln Asp Cys Asn Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp Val
 1070 1075 1080
 Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala
 1085 1090 1095
 Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His Val Cys Ala Gln
 1100 1105 1110
 His Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu Cys Pro Gln
 1115 1120 1125
 Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu Cys Glu
 1130 1135 1140
 Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln
 1145 1150 1155
 His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys
 1160 1165 1170
 His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln
 1175 1180 1185
 Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly
 1190 1195 1200
 Arg Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp
 1205 1210 1215
 Pro Glu His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr
 1220 1225 1230

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Cys	Glu	Ala	Cys	Gln	Glu	Pro	Gly	Gly	Leu	Val	Val	Pro	Pro	Thr
	1235					1240					1245			
Asp	Ala	Pro	Val	Ser	Pro	Thr	Thr	Leu	Tyr	Val	Glu	Asp	Ile	Ser
	1250					1255					1260			
Glu	Pro	Pro	Leu	His	Asp	Phe	Tyr	Cys	Ser	Arg	Leu	Leu	Asp	Leu
	1265					1270					1275			
Val	Phe	Leu	Leu	Asp	Gly	Ser	Ser	Arg	Leu	Ser	Glu	Ala	Glu	Phe
	1280					1285					1290			
Glu	Val	Leu	Lys	Ala	Phe	Val	Val	Asp	Met	Met	Glu	Arg	Leu	Arg
	1295					1300					1305			
Ile	Ser	Gln	Lys	Trp	Val	Arg	Val	Ala	Val	Val	Glu	Tyr	His	Asp
	1310					1315					1320			
Gly	Ser	His	Ala	Tyr	Ile	Gly	Leu	Lys	Asp	Arg	Lys	Arg	Pro	Ser
	1325					1330					1335			
Glu	Leu	Arg	Arg	Ile	Ala	Ser	Gln	Val	Lys	Tyr	Ala	Gly	Ser	Gln
	1340					1345					1350			
Val	Ala	Ser	Thr	Ser	Glu	Val	Leu	Lys	Tyr	Thr	Leu	Phe	Gln	Ile
	1355					1360					1365			
Phe	Ser	Lys	Ile	Asp	Arg	Pro	Glu	Ala	Ser	Arg	Ile	Thr	Leu	Leu
	1370					1375					1380			
Leu	Met	Ala	Ser	Gln	Glu	Pro	Gln	Arg	Met	Ser	Arg	Asn	Phe	Val
	1385					1390					1395			
Arg	Tyr	Val	Gln	Gly	Leu	Lys	Lys	Lys	Lys	Val	Ile	Val	Ile	Pro
	1400					1405					1410			
Val	Gly	Ile	Gly	Pro	His	Ala	Asn	Leu	Lys	Gln	Ile	Arg	Leu	Ile
	1415					1420					1425			
Glu	Lys	Gln	Ala	Pro	Glu	Asn	Lys	Ala	Phe	Val	Leu	Ser	Ser	Val
	1430					1435					1440			
Asp	Glu	Leu	Glu	Gln	Gln	Arg	Asp	Glu	Ile	Val	Ser	Tyr	Leu	Cys
	1445					1450					1455			
Asp	Leu	Ala	Pro	Glu	Ala	Pro	Pro	Pro	Thr	Leu	Pro	Pro	Asp	Met
	1460					1465					1470			
Ala	Gln	Val	Thr	Val	Gly	Pro	Gly	Leu	Leu	Gly	Val	Ser	Thr	Leu
	1475					1480					1485			

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Gly	Pro	Lys	Arg	Asn	Ser	Met	Val	Leu	Asp	Val	Ala	Phe	Val	Leu
	1490					1495					1500			
Glu	Gly	Ser	Asp	Lys	Ile	Gly	Glu	Ala	Asp	Phe	Asn	Arg	Ser	Lys
	1505					1510					1515			
Glu	Phe	Met	Glu	Glu	Val	Ile	Gln	Arg	Met	Asp	Val	Gly	Gln	Asp
	1520					1525					1530			
Ser	Ile	His	Val	Thr	Val	Leu	Gln	Tyr	Ser	Tyr	Met	Val	Thr	Val
	1535					1540					1545			
Glu	Tyr	Pro	Phe	Ser	Glu	Ala	Gln	Ser	Lys	Gly	Asp	Ile	Leu	Gln
	1550					1555					1560			
Arg	Val	Arg	Glu	Ile	Arg	Tyr	Gln	Gly	Gly	Asn	Arg	Thr	Asn	Thr
	1565					1570					1575			
Gly	Leu	Ala	Leu	Arg	Tyr	Leu	Ser	Asp	His	Ser	Phe	Leu	Val	Ser
	1580					1585					1590			
Gln	Gly	Asp	Arg	Glu	Gln	Ala	Pro	Asn	Leu	Val	Tyr	Met	Val	Thr
	1595					1600					1605			
Gly	Asn	Pro	Ala	Ser	Asp	Glu	Ile	Lys	Arg	Leu	Pro	Gly	Asp	Ile
	1610					1615					1620			
Gln	Val	Val	Pro	Ile	Gly	Val	Gly	Pro	Asn	Ala	Asn	Val	Gln	Glu
	1625					1630					1635			
Leu	Glu	Arg	Ile	Gly	Trp	Pro	Asn	Ala	Pro	Ile	Leu	Ile	Gln	Asp
	1640					1645					1650			
Phe	Glu	Thr	Leu	Pro	Arg	Glu	Ala	Pro	Asp	Leu	Val	Leu	Gln	Arg
	1655					1660					1665			
Cys	Cys	Ser	Gly	Glu	Gly	Leu	Gln	Ile	Pro	Thr	Leu	Ser	Pro	Ala
	1670					1675					1680			
Pro	Asp	Cys	Ser	Gln	Pro	Leu	Asp	Val	Ile	Leu	Leu	Leu	Asp	Gly
	1685					1690					1695			
Ser	Ser	Ser	Phe	Pro	Ala	Ser	Tyr	Phe	Asp	Glu	Met	Lys	Ser	Phe
	1700					1705					1710			
Ala	Lys	Ala	Phe	Ile	Ser	Lys	Ala	Asn	Ile	Gly	Pro	Arg	Leu	Thr
	1715					1720					1725			
Gln	Val	Ser	Val	Leu	Gln	Tyr	Gly	Ser	Ile	Thr	Thr	Ile	Asp	Val
	1730					1735					1740			

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Pro Trp Asn Val Val Pro Glu Lys Ala His Leu Leu Ser Leu Val
1745 1750 1755

Asp Val Met Gln Arg Glu Gly Gly Pro Ser Gln Ile Gly Asp Ala
1760 1765 1770

Leu Gly Phe Ala Val Arg Tyr Leu Thr Ser Glu Met His Gly Ala
1775 1780 1785

Arg Pro Gly Ala Ser Lys Ala Val Val Ile Leu Val Thr Asp Val
1790 1795 1800

Ser Val Asp Ser Val Asp Ala Ala Ala Asp Ala Ala Arg Ser Asn
1805 1810 1815

Arg Val Thr Val Phe Pro Ile Gly Ile Gly Asp Arg Tyr Asp Ala
1820 1825 1830

Ala Gln Leu Arg Ile Leu Ala Gly Pro Ala Gly Asp Ser Asn Val
1835 1840 1845

Val Lys Leu Gln Arg Ile Glu Asp Leu Pro Thr Met Val Thr Leu
1850 1855 1860

Gly Asn Ser Phe Leu His Lys Leu Cys Ser Gly Phe Val Arg Ile
1865 1870 1875

Cys Met Asp Glu Asp Gly Asn Glu Lys Arg Pro Gly Asp Val Trp
1880 1885 1890

Thr Leu Pro Asp Gln Cys His Thr Val Thr Cys Gln Pro Asp Gly
1895 1900 1905

Gln Thr Leu Leu Lys Ser His Arg Val Asn Cys Asp Arg Gly Leu
1910 1915 1920

Arg Pro Ser Cys Pro Asn Ser Gln Ser Pro Val Lys Val Glu Glu
1925 1930 1935

Thr Cys Gly Cys Arg Trp Thr Cys Pro Cys Val Cys Thr Gly Ser
1940 1945 1950

Ser Thr Arg His Ile Val Thr Phe Asp Gly Gln Asn Phe Lys Leu
1955 1960 1965

Thr Gly Ser Cys Ser Tyr Val Leu Phe Gln Asn Lys Glu Gln Asp
1970 1975 1980

Leu Glu Val Ile Leu His Asn Gly Ala Cys Ser Pro Gly Ala Arg
1985 1990 1995

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Gln	Gly	Cys	Met	Lys	Ser	Ile	Glu	Val	Lys	His	Ser	Ala	Leu	Ser
	2000					2005					2010			
Val	Glu	Leu	His	Ser	Asp	Met	Glu	Val	Thr	Val	Asn	Gly	Arg	Leu
	2015					2020					2025			
Val	Ser	Val	Pro	Tyr	Val	Gly	Gly	Asn	Met	Glu	Val	Asn	Val	Tyr
	2030					2035					2040			
Gly	Ala	Ile	Met	His	Glu	Val	Arg	Phe	Asn	His	Leu	Gly	His	Ile
	2045					2050					2055			
Phe	Thr	Phe	Thr	Pro	Gln	Asn	Asn	Glu	Phe	Gln	Leu	Gln	Leu	Ser
	2060					2065					2070			
Pro	Lys	Thr	Phe	Ala	Ser	Lys	Thr	Tyr	Gly	Leu	Cys	Gly	Ile	Cys
	2075					2080					2085			
Asp	Glu	Asn	Gly	Ala	Asn	Asp	Phe	Met	Leu	Arg	Asp	Gly	Thr	Val
	2090					2095					2100			
Thr	Thr	Asp	Trp	Lys	Thr	Leu	Val	Gln	Glu	Trp	Thr	Val	Gln	Arg
	2105					2110					2115			
Pro	Gly	Gln	Thr	Cys	Gln	Pro	Ile	Leu	Glu	Glu	Gln	Cys	Leu	Val
	2120					2125					2130			
Pro	Asp	Ser	Ser	His	Cys	Gln	Val	Leu	Leu	Leu	Pro	Leu	Phe	Ala
	2135					2140					2145			
Glu	Cys	His	Lys	Val	Leu	Ala	Pro	Ala	Thr	Phe	Tyr	Ala	Ile	Cys
	2150					2155					2160			
Gln	Gln	Asp	Ser	Cys	His	Gln	Glu	Gln	Val	Cys	Glu	Val	Ile	Ala
	2165					2170					2175			
Ser	Tyr	Ala	His	Leu	Cys	Arg	Thr	Asn	Gly	Val	Cys	Val	Asp	Trp
	2180					2185					2190			
Arg	Thr	Pro	Asp	Phe	Cys	Ala	Met	Ser	Cys	Pro	Pro	Ser	Leu	Val
	2195					2200					2205			
Tyr	Asn	His	Cys	Glu	His	Gly	Cys	Pro	Arg	His	Cys	Asp	Gly	Asn
	2210					2215					2220			
Val	Ser	Ser	Cys	Gly	Asp	His	Pro	Ser	Glu	Gly	Cys	Phe	Cys	Pro
	2225					2230					2235			
Pro	Asp	Lys	Val	Met	Leu	Glu	Gly	Ser	Cys	Val	Pro	Glu	Glu	Ala
	2240					2245					2250			

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Cys Thr Gln Cys Ile Gly Glu Asp Gly Val Gln His Gln Phe Leu
 2255 2260 2265
 Glu Ala Trp Val Pro Asp His Gln Pro Cys Gln Ile Cys Thr Cys
 2270 2275 2280
 Leu Ser Gly Arg Lys Val Asn Cys Thr Thr Gln Pro Cys Pro Thr
 2285 2290 2295
 Ala Lys Ala Pro Thr Cys Gly Leu Cys Glu Val Ala Arg Leu Arg
 2300 2305 2310
 Gln Asn Ala Asp Gln Cys Cys Pro Glu Tyr Glu Cys Val Cys Asp
 2315 2320 2325
 Pro Val Ser Cys Asp Leu Pro Pro Val Pro His Cys Glu Arg Gly
 2330 2335 2340
 Leu Gln Pro Thr Leu Thr Asn Pro Gly Glu Cys Arg Pro Asn Phe
 2345 2350 2355
 Thr Cys Ala Cys Arg Lys Glu Glu Cys Lys Arg Val Ser Pro Pro
 2360 2365 2370
 Ser Cys Pro Pro His Arg Leu Pro Thr Leu Arg Lys Thr Gln Cys
 2375 2380 2385
 Cys Asp Glu Tyr Glu Cys Ala Cys Asn Cys Val Asn Ser Thr Val
 2390 2395 2400
 Ser Cys Pro Leu Gly Tyr Leu Ala Ser Thr Ala Thr Asn Asp Cys
 2405 2410 2415
 Gly Cys Thr Thr Thr Thr Cys Leu Pro Asp Lys Val Cys Val His
 2420 2425 2430
 Arg Ser Thr Ile Tyr Pro Val Gly Gln Phe Trp Glu Glu Gly Cys
 2435 2440 2445
 Asp Val Cys Thr Cys Thr Asp Met Glu Asp Ala Val Met Gly Leu
 2450 2455 2460
 Arg Val Ala Gln Cys Ser Gln Lys Pro Cys Glu Asp Ser Cys Arg
 2465 2470 2475
 Ser Gly Phe Thr Tyr Val Leu His Glu Gly Glu Cys Cys Gly Arg
 2480 2485 2490
 Cys Leu Pro Ser Ala Cys Glu Val Val Thr Gly Ser Pro Arg Gly
 2495 2500 2505

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Asp Ser Gln Ser Ser Trp Lys Ser Val Gly Ser Gln Trp Ala Ser
 2510 2515 2520
 Pro Glu Asn Pro Cys Leu Ile Asn Glu Cys Val Arg Val Lys Glu
 2525 2530 2535
 Glu Val Phe Ile Gln Gln Arg Asn Val Ser Cys Pro Gln Leu Glu
 2540 2545 2550
 Val Pro Val Cys Pro Ser Gly Phe Gln Leu Ser Cys Lys Thr Ser
 2555 2560 2565
 Ala Cys Cys Pro Ser Cys Arg Cys Glu Arg Met Glu Ala Cys Met
 2570 2575 2580
 Leu Asn Gly Thr Val Ile Gly Pro Gly Lys Thr Val Met Ile Asp
 2585 2590 2595
 Val Cys Thr Thr Cys Arg Cys Met Val Gln Val Gly Val Ile Ser
 2600 2605 2610
 Gly Phe Lys Leu Glu Cys Arg Lys Thr Thr Cys Asn Pro Cys Pro
 2615 2620 2625
 Leu Gly Tyr Lys Glu Glu Asn Asn Thr Gly Glu Cys Cys Gly Arg
 2630 2635 2640
 Cys Leu Pro Thr Ala Cys Thr Ile Gln Leu Arg Gly Gly Gln Ile
 2645 2650 2655
 Met Thr Leu Lys Arg Asp Glu Thr Leu Gln Asp Gly Cys Asp Thr
 2660 2665 2670
 His Phe Cys Lys Val Asn Glu Arg Gly Glu Tyr Phe Trp Glu Lys
 2675 2680 2685
 Arg Val Thr Gly Cys Pro Pro Phe Asp Glu His Lys Cys Leu Ala
 2690 2695 2700
 Glu Gly Gly Lys Ile Met Lys Ile Pro Gly Thr Cys Cys Asp Thr
 2705 2710 2715
 Cys Glu Glu Pro Glu Cys Asn Asp Ile Thr Ala Arg Leu Gln Tyr
 2720 2725 2730
 Val Lys Val Gly Ser Cys Lys Ser Glu Val Glu Val Asp Ile His
 2735 2740 2745
 Tyr Cys Gln Gly Lys Cys Ala Ser Lys Ala Met Tyr Ser Ile Asp
 2750 2755 2760

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Ile	Asn 2765	Asp	Val	Gln	Asp	Gln 2770	Cys	Ser	Cys	Cys	Ser 2775	Pro	Thr	Arg
Thr	Glu 2780	Pro	Met	Gln	Val	Ala 2785	Leu	His	Cys	Thr	Asn 2790	Gly	Ser	Val
Val	Tyr 2795	His	Glu	Val	Leu	Asn 2800	Ala	Met	Glu	Cys	Lys 2805	Cys	Ser	Pro
Arg	Lys 2810	Cys	Ser	Lys	Ser	Ser 2815	Gly	Gly	Ser	Gly	Gly 2820	Ser	Gly	Gly
Ser	Gly 2825	Gly	Ser	Gly	Gly	Ser 2830	Gly	Gly	Ser	Gly	Gly 2835	Ser	Gly	Gly
Ser	Gly 2840	Gly	Ser	Gly	Ser	Asp 2845	Ala	His	Lys	Ser	Glu 2850	Val	Ala	His
Arg	Phe 2855	Lys	Asp	Leu	Gly	Glu 2860	Glu	Asn	Phe	Lys	Ala 2865	Leu	Val	Leu
Ile	Ala 2870	Phe	Ala	Gln	Tyr	Leu 2875	Gln	Gln	Cys	Pro	Phe 2880	Glu	Asp	His
Val	Lys 2885	Leu	Val	Asn	Glu	Val 2890	Thr	Glu	Phe	Ala	Lys 2895	Thr	Cys	Val
Ala	Asp 2900	Glu	Ser	Ala	Glu	Asn 2905	Cys	Asp	Lys	Ser	Leu 2910	His	Thr	Leu
Phe	Gly 2915	Asp	Lys	Leu	Cys	Thr 2920	Val	Ala	Thr	Leu	Arg 2925	Glu	Thr	Tyr
Gly	Glu 2930	Met	Ala	Asp	Cys	Cys 2935	Ala	Lys	Gln	Glu	Pro 2940	Glu	Arg	Asn
Glu	Cys 2945	Phe	Leu	Gln	His	Lys 2950	Asp	Asp	Asn	Pro	Asn 2955	Leu	Pro	Arg
Leu	Val 2960	Arg	Pro	Glu	Val	Asp 2965	Val	Met	Cys	Thr	Ala 2970	Phe	His	Asp
Asn	Glu 2975	Glu	Thr	Phe	Leu	Lys 2980	Lys	Tyr	Leu	Tyr	Glu 2985	Ile	Ala	Arg
Arg	His 2990	Pro	Tyr	Phe	Tyr	Ala 2995	Pro	Glu	Leu	Leu	Phe 3000	Phe	Ala	Lys
Arg	Tyr 3005	Lys	Ala	Ala	Phe	Thr 3010	Glu	Cys	Cys	Gln	Ala 3015	Ala	Asp	Lys

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Ala	Ala	Cys	Leu	Leu	Pro	Lys	Leu	Asp	Glu	Leu	Arg	Asp	Glu	Gly
	3020					3025					3030			
Lys	Ala	Ser	Ser	Ala	Lys	Gln	Arg	Leu	Lys	Cys	Ala	Ser	Leu	Gln
	3035					3040					3045			
Lys	Phe	Gly	Glu	Arg	Ala	Phe	Lys	Ala	Trp	Ala	Val	Ala	Arg	Leu
	3050					3055					3060			
Ser	Gln	Arg	Phe	Pro	Lys	Ala	Glu	Phe	Ala	Glu	Val	Ser	Lys	Leu
	3065					3070					3075			
Val	Thr	Asp	Leu	Thr	Lys	Val	His	Thr	Glu	Cys	Cys	His	Gly	Asp
	3080					3085					3090			
Leu	Leu	Glu	Cys	Ala	Asp	Asp	Arg	Ala	Asp	Leu	Ala	Lys	Tyr	Ile
	3095					3100					3105			
Cys	Glu	Asn	Gln	Asp	Ser	Ile	Ser	Ser	Lys	Leu	Lys	Glu	Cys	Cys
	3110					3115					3120			
Glu	Lys	Pro	Leu	Leu	Glu	Lys	Ser	His	Cys	Ile	Ala	Glu	Val	Glu
	3125					3130					3135			
Asn	Asp	Glu	Met	Pro	Ala	Asp	Leu	Pro	Ser	Leu	Ala	Ala	Asp	Phe
	3140					3145					3150			
Val	Glu	Ser	Lys	Asp	Val	Cys	Lys	Asn	Tyr	Ala	Glu	Ala	Lys	Asp
	3155					3160					3165			
Val	Phe	Leu	Gly	Met	Phe	Leu	Tyr	Glu	Tyr	Ala	Arg	Arg	His	Pro
	3170					3175					3180			
Asp	Tyr	Ser	Val	Val	Leu	Leu	Leu	Arg	Leu	Ala	Lys	Thr	Tyr	Glu
	3185					3190					3195			
Thr	Thr	Leu	Glu	Lys	Cys	Cys	Ala	Ala	Ala	Asp	Pro	His	Glu	Cys
	3200					3205					3210			
Tyr	Ala	Lys	Val	Phe	Asp	Glu	Phe	Lys	Pro	Leu	Val	Glu	Glu	Pro
	3215					3220					3225			
Gln	Asn	Leu	Ile	Lys	Gln	Asn	Cys	Glu	Leu	Phe	Glu	Gln	Leu	Gly
	3230					3235					3240			
Glu	Tyr	Lys	Phe	Gln	Asn	Ala	Leu	Leu	Val	Arg	Tyr	Thr	Lys	Lys
	3245					3250					3255			
Val	Pro	Gln	Val	Ser	Thr	Pro	Thr	Leu	Val	Glu	Val	Ser	Arg	Asn
	3260					3265					3270			

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Leu Gly Lys Val Gly Ser Lys Cys Cys Lys His Pro Glu Ala Lys
 3275 3280 3285
 Arg Met Pro Cys Ala Glu Asp Tyr Leu Ser Val Val Leu Asn Gln
 3290 3295 3300
 Leu Cys Val Leu His Glu Lys Thr Pro Val Ser Asp Arg Val Thr
 3305 3310 3315
 Lys Cys Cys Thr Glu Ser Leu Val Asn Arg Arg Pro Cys Phe Ser
 3320 3325 3330
 Ala Leu Glu Val Asp Glu Thr Tyr Val Pro Lys Glu Phe Asn Ala
 3335 3340 3345
 Glu Thr Phe Thr Phe His Ala Asp Ile Cys Thr Leu Ser Glu Lys
 3350 3355 3360
 Glu Arg Gln Ile Lys Lys Gln Thr Ala Leu Val Glu Leu Val Lys
 3365 3370 3375
 His Lys Pro Lys Ala Thr Lys Glu Gln Leu Lys Ala Val Met Asp
 3380 3385 3390
 Asp Phe Ala Ala Phe Val Glu Lys Cys Cys Lys Ala Asp Asp Lys
 3395 3400 3405
 Glu Thr Cys Phe Ala Glu Glu Gly Lys Lys Leu Val Ala Ala Ser
 3410 3415 3420
 Gln Ala Ala Leu Gly Leu
 3425