

NS12009WO_Sequence_Listing_ST25
SEQUENCE LISTING

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<150> 61/734,742
<151> 2012-12-07
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<170> PatentIn version 3.5
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Leu Thr Ser Asn Tyr Glu Thr Pro Ser Pro Thr Ala Ile Pro Leu Glu
35 40 45

Pro Thr Pro Thr Ala Thr Gly Thr Ala Glu Leu Asp Ala Leu Trp Asn
50 55 60

Leu Val Glu Ala Gln Tyr Pro Val Gln Thr Ala Ala Val Thr Thr Leu
65 70 75 80

Val Thr Val Pro Asp Asp Tyr Lys Phe Glu Ala Asp Pro Pro Ser Tyr
85 90 95

Ala Leu Ala Gly Tyr Glu Thr Ser Glu Ile Ala Gly Leu Lys Phe Pro
100 105 110

Lys Gly Phe Lys Phe Gly Val Ala Gly Ala Ala Ile Gln Val Glu Gly
115 120 125

Ala Ala Lys Ala Glu Gly Arg Gly Pro Ser Thr Trp Asp Tyr Leu Cys
130 135 140

His His Tyr Ala Ser Thr Gln Cys Asn Asn Tyr Asp Pro Asp Ile Thr
145 150 155 160

Thr Asn His Tyr Tyr Leu Tyr Pro Leu Asp Phe Ala Arg Leu Gln His

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165

170

175

Leu Gly Ile Asn Thr Tyr Ser Phe Ser Ile Ser Trp Thr Arg Ile Tyr
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Pro Leu Gly Ala Gly Tyr Val Asn Glu Ala Gly Leu Ala His Tyr Asp
195 200 205

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

Val Phe His Trp Asp Thr Pro Leu Ser Leu Met Leu Lys Tyr Gly Ala
225 230 235 240

Trp Gln Asp Thr Gly Asp Gln Ile Val Lys Asp Phe Val Thr Tyr Ala
245 250 255

Thr Thr Val Phe Lys Arg Tyr Gly Asn Glu Val Lys Thr Trp Phe Thr
260 265 270

Phe Asn Glu Pro Arg Val Phe Cys Ser Gln Asn Ser Gly Leu Pro Tyr
275 280 285

Asn Leu Thr Tyr Pro Glu Gly Ile Asn Ser Thr Ser Ala Val Phe Arg
290 295 300

Cys Thr Tyr Asn Val Leu Lys Ala His Gly His Ala Val Lys Val Tyr
305 310 315 320

Arg Asp Leu Val Ala Ser Gly Thr Ile Ala Ala Gly Glu Ile Gly Phe
325 330 335

Lys Ser Asp Asp Asn Tyr Pro Ile Pro Ala Arg Pro Gly Asn Ala Asp
340 345 350

Asp Glu Glu Ser Ala Lys Arg His Glu Ala Phe Arg Ile Gly Ile Phe
355 360 365

Ala Gln Pro Val Tyr Gly Asn Gly Asp Tyr Pro Asp Val Val Lys Glu
370 375 380

Thr Val Gly Asp Met Leu Pro Ala Leu Thr Asp Glu Asp Lys Gly Tyr
385 390 395 400

Ile Lys Gly Ser Gly Asp Ile Phe Ala Ile Asp Gly Tyr Arg Thr Asp
405 410 415

Ile Ser His Ala Ala Leu Asn Gly Ile Ala Asn Cys Ile Arg Asn Gln
420 425 430

Ser Asp Pro Asn Trp Pro Val Cys Glu Glu Gly Ser Asp Pro Phe Ala

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435

440

445

His Val Tyr Pro Ser Gly Phe Ala Ile Gly Gln Ser Ala Asp Pro Leu
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Ser Ser Trp Leu Val Asn Ser Ala Pro Phe Ile Arg Asp Gln Leu Lys
465 470 475 480

Phe Leu Thr Gln Thr Tyr Pro Ala Lys Gly Gly Ile Tyr Phe Ser Glu
485 490 495

Phe Gly Trp Ala Glu Asp Ala Glu Tyr Asp Arg Gln Leu Leu Tyr Gln
500 505 510

Ile Thr Trp Asp Gly Leu Arg Thr Gln Tyr Leu Thr Asp Tyr Leu Ser
515 520 525

Gln Leu Leu Leu Ala Val His Lys Asp Gly Ile Asn Leu Arg Gly Ala
530 535 540

Leu Thr Trp Ser Phe Val Asp Asn Trp Glu Trp Gly Leu Gly Met Gln
545 550 555 560

Gln Lys Phe Gly Phe Gln Phe Val Asn Gln Ser Asp Pro Asp Leu Thr
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Arg Thr Phe Lys Leu Ser Ala His Ala Tyr Ala Gln Phe Gly Arg Asn
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His Leu

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Ile Pro Ala Glu Ala Val Ile Gly Tyr Ser Asp Leu Glu Gly Asp Phe
35 40 45

Asp Val Ala Val Leu Pro Phe Ser Asn Ser Thr Asn Asn Gly Leu Leu
50 55 60

Phe Ile Asn Thr Thr Ile Ala Ser Ile Ala Ala Lys Glu Glu Gly Val
65 70 75 80

Ser Leu Glu Lys Arg Glu Ala Glu Ala His His His His His Glu
85 90 95

Asn Leu Tyr Phe Gln Met Met Leu His Ala Ala Leu Leu Val Ala Leu
100 105 110

Pro Cys Val Val Leu Ala Arg Pro Ala Gly Ala Val Thr Tyr Pro Gly
115 120 125

Ala Ile Pro Leu Ser Leu Thr Ser Asn Tyr Glu Thr Pro Ser Pro Thr
130 135 140

Ala Ile Pro Leu Glu Pro Thr Pro Thr Ala Thr Gly Thr Ala Glu Leu
145 150 155 160

Asp Ala Leu Trp Asn Leu Val Glu Ala Gln Tyr Pro Val Gln Thr Ala
165 170 175

Ala Val Thr Thr Leu Val Thr Val Pro Asp Asp Tyr Lys Phe Glu Ala
180 185 190

Asp Pro Pro Ser Tyr Ala Leu Ala Gly Tyr Glu Thr Ser Glu Ile Ala
195 200 205

Gly Leu Lys Phe Pro Lys Gly Phe Lys Phe Gly Val Ala Gly Ala Ala
210 215 220

Ile Gln Val Glu Gly Ala Ala Lys Ala Glu Gly Arg Gly Pro Ser Thr
225 230 235 240

Trp Asp Tyr Leu Cys His His Tyr Ala Ser Thr Gln Cys Asn Asn Tyr
245 250 255

Asp Pro Asp Ile Thr Thr Asn His Tyr Tyr Leu Tyr Pro Leu Asp Phe
260 265 270

Ala Arg Leu Gln His Leu Gly Ile Asn Thr Tyr Ser Phe Ser Ile Ser
275 280 285

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Trp Thr Arg Ile Tyr Pro Leu Gly Ala Gly Tyr Val Asn Glu Ala Gly
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Leu Ala His Tyr Asp Ala Val Ile His Ser Ala Lys Lys Tyr Gly Leu
305 310 315 320

Glu Pro Val Gly Thr Val Phe His Trp Asp Thr Pro Leu Ser Leu Met
325 330 335

Leu Lys Tyr Gly Ala Trp Gln Asp Thr Gly Asp Gln Ile Val Lys Asp
340 345 350

Phe Val Thr Tyr Ala Thr Thr Val Phe Lys Arg Tyr Gly Asn Glu Val
355 360 365

Lys Thr Trp Phe Thr Phe Asn Glu Pro Arg Val Phe Cys Ser Gln Asn
370 375 380

Ser Gly Leu Pro Tyr Asn Leu Thr Tyr Pro Glu Gly Ile Asn Ser Thr
385 390 395 400

Ser Ala Val Phe Arg Cys Thr Tyr Asn Val Leu Lys Ala His Gly His
405 410 415

Ala Val Lys Val Tyr Arg Asp Leu Val Ala Ser Gly Thr Ile Ala Ala
420 425 430

Gly Glu Ile Gly Phe Lys Ser Asp Asp Asn Tyr Pro Ile Pro Ala Arg
435 440 445

Pro Gly Asn Ala Asp Asp Glu Glu Ser Ala Lys Arg His Glu Ala Phe
450 455 460

Arg Ile Gly Ile Phe Ala Gln Pro Val Tyr Gly Asn Gly Asp Tyr Pro
465 470 475 480

Asp Val Val Lys Glu Thr Val Gly Asp Met Leu Pro Ala Leu Thr Asp
485 490 495

Glu Asp Lys Gly Tyr Ile Lys Gly Ser Gly Asp Ile Phe Ala Ile Asp
500 505 510

Gly Tyr Arg Thr Asp Ile Ser His Ala Ala Leu Asn Gly Ile Ala Asn
515 520 525

Cys Ile Arg Asn Gln Ser Asp Pro Asn Trp Pro Val Cys Glu Glu Gly
530 535 540

Ser Asp Pro Phe Ala His Val Tyr Pro Ser Gly Phe Ala Ile Gly Gln
545 550 555 560

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Ser Ala Asp Pro Leu Ser Ser Trp Leu Val Asn Ser Ala Pro Phe Ile
565 570 575

Arg Asp Gln Leu Lys Phe Leu Thr Gln Thr Tyr Pro Ala Lys Gly Gly
580 585 590

Ile Tyr Phe Ser Glu Phe Gly Trp Ala Glu Asp Ala Glu Tyr Asp Arg
595 600 605

Gln Leu Leu Tyr Gln Ile Thr Trp Asp Gly Leu Arg Thr Gln Tyr Leu
610 615 620

Thr Asp Tyr Leu Ser Gln Leu Leu Leu Ala Val His Lys Asp Gly Ile
625 630 635 640

Asn Leu Arg Gly Ala Leu Thr Trp Ser Phe Val Asp Asn Trp Glu Trp
645 650 655

Gly Leu Gly Met Gln Gln Lys Phe Gly Phe Gln Phe Val Asn Gln Ser
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Asp Pro Asp Leu Thr Arg Thr Phe Lys Leu Ser Ala His Ala Tyr Ala
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Gln Phe Gly Arg Asn His Leu
690 695

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caacagaaat	tcggatttca	gtttgttaat	caatcagatc	ccgatctgac	acgcacgttt	2040
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<400> 6

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Ala	Leu	Ala	Ala	Pro	Val	Asn	Thr	Thr	Glu	Asp	Glu	Thr	Ala	Gln
			20				25					30		

NS12009WO_Sequence_Listing_ST25

Ile Pro Ala Glu Ala Val Ile Gly Tyr Ser Asp Leu Glu Gly Asp Phe
35 40 45

Asp Val Ala Val Leu Pro Phe Ser Asn Ser Thr Asn Asn Gly Leu Leu
50 55 60

Phe Ile Asn Thr Thr Ile Ala Ser Ile Ala Ala Lys Glu Glu Gly Val
65 70 75 80

Ser Leu Glu Lys Arg Glu Ala Glu Ala His His His His His His Glu
85 90 95

Asn Leu Tyr Phe Gln Met Met Leu His Ala Ala Leu Leu Val Ala Leu
100 105 110

Pro Cys Val Val Leu Ala Arg Pro Ala Gly Ala Val Thr Tyr Pro Gly
115 120 125

Ala Ile Pro Leu Ser Leu Thr Ser Asn Tyr Glu Thr Pro Ser Pro Thr
130 135 140

Ala Ile Pro Leu Glu Pro Thr Pro Thr Ala Thr Gly Thr Ala Glu Leu
145 150 155 160

Asp Ala Leu Trp Asn Leu Val Glu Ala Gln Tyr Pro Val Gln Thr Ala
165 170 175

Ala Val Thr Thr Leu Val Thr Val Pro Asp Asp Tyr Lys Phe Glu Ala
180 185 190

Asp Pro Pro Ser Tyr Ala Leu Ala Gly Tyr Glu Thr Ser Glu Ile Ala
195 200 205

Gly Leu Lys Phe Pro Lys Gly Phe Lys Phe Gly Val Ala Gly Ala Ala
210 215 220

Ile Gln Val Glu Gly Ala Ala Lys Ala Glu Gly Arg Gly Pro Ser Thr
225 230 235 240

Trp Asp Tyr Leu Cys His His Tyr Ala Ser Thr Gln Cys Asn Asn Tyr
245 250 255

Asp Pro Asp Ile Thr Thr Asn His Tyr Tyr Leu Tyr Pro Leu Asp Phe
260 265 270

Ala Arg Leu Gln His Leu Gly Ile Asn Thr Tyr Ser Phe Ser Ile Ser
275 280 285

Trp Thr Arg Ile Tyr Pro Leu Gly Ala Gly Tyr Val Asn Glu Ala Gly
290 295 300

NS12009WO_Sequence_Listing_ST25

Leu Ala His Tyr Asp Ala Val Ile His Ser Ala Lys Lys Tyr Gly Leu
 305 310 315 320
 Glu Pro Val Gly Thr Val Phe His Trp Asp Thr Pro Leu Ser Leu Met
 325 330 335
 Leu Lys Tyr Gly Ala Trp Gln Asp Thr Gly Asp Gln Ile Val Lys Asp
 340 345 350
 Phe Val Thr Tyr Ala Thr Thr Val Phe Lys Arg Tyr Gly Asn Glu Val
 355 360 365
 Lys Thr Trp Phe Thr Phe Asn Glu Pro Arg Val Phe Cys Ser Gln Asn
 370 375 380
 Ser Gly Leu Pro Tyr Asn Leu Thr Tyr Pro Glu Gly Ile Asn Ser Thr
 385 390 395 400
 Ser Ala Val Phe Arg Cys Thr Tyr Asn Val Leu Lys Ala His Gly His
 405 410 415
 Ala Val Lys Val Tyr Arg Asp Leu Val Ala Ser Gly Thr Ile Ala Ala
 420 425 430
 Gly Glu Ile Gly Phe Lys Ser Asp Asp Asn Tyr Pro Ile Pro Ala Arg
 435 440 445
 Pro Gly Asn Ala Asp Asp Glu Glu Ser Ala Lys Arg His Glu Ala Phe
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 Arg Ile Gly Ile Phe Ala Gln Pro Val Tyr Gly Asn Gly Asp Tyr Pro
 465 470 475 480
 Asp Val Val Lys Glu Thr Val Gly Asp Met Leu Pro Ala Leu Thr Asp
 485 490 495
 Glu Asp Lys Gly Tyr Ile Lys Gly Ser Gly Asp Ile Phe Ala Ile Asp
 500 505 510
 Gly Tyr Arg Thr Asp Ile Ser His Ala Ala Leu Asn Gly Ile Ala Asn
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 Cys Ile Arg Asn Gln Ser Asp Pro Asn Trp Pro Val Cys Glu Glu Gly
 530 535 540
 Ser Asp Pro Phe Ala His Val Tyr Pro Ser Gly Phe Ala Ile Gly Gln
 545 550 555 560
 Ser Ala Asp Pro Leu Ser Ser Trp Leu Val Asn Ser Ala Pro Phe Ile
 565 570 575

NS12009WO_Sequence_Listing_ST25

Arg Asp Gln Leu Lys Phe Leu Thr Gln Thr Tyr Pro Ala Lys Gly Gly
580 585 590

Ile Tyr Phe Ser Glu Phe Gly Trp Ala Glu Asp Ala Glu Tyr Asp Arg
595 600 605

Gln Leu Leu Tyr Gln Ile Thr Trp Asp Gly Leu Arg Thr Gln Tyr Leu
610 615 620

Thr Asp Tyr Leu Ser Gln Leu Leu Leu Ala Val His Lys Asp Gly Ile
625 630 635 640

Asn Leu Arg Gly Ala Leu Thr Trp Ser Phe Val Asp Asn Trp Glu Trp
645 650 655

Gly Leu Gly Met Gln Gln Lys Phe Gly Phe Gln Phe Val Asn Gln Ser
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Asp Pro Asp Leu Thr Arg Thr Phe Lys Leu Ser Ala His Ala Tyr Ala
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Gln Phe Gly Arg Asn His Leu His His His His His His
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gccgaagggc ggggcccaag tacctgggat tatctgtgtc atcactatgc cagcacgcag 720
tgtaacaatt atgatccga tattacaacc aaccattact acctgtaccc attggacttt 780

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catagtcca agaagtatgg tctggaacca gtgggcaccg tttttcactg ggatacgcca	960
ctgtctctga tgctgaaata cgggtgcctgg caagatactg gtgaccaaatt tgtaaggac	1020
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tatccagaag gtattaacag cacctccgct gtatttcgtt gcacctacaa tgttctgaaa	1200
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gatgacgagg aatcagccaa gcgtcacgag gcttttcgca ttgggatttt tgcgcaaccg	1380
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gccctgacgg atgaagataa aggatacatt aaaggtagcg gagatatttt tgcgattgac	1500
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caaagtgacc cgaattggcc agtggtgtaa gaagggtcag atccttttgc tcatgtttac	1620
ccatccgggt ttgctattgg tcaatcagcc gatccactgt cttcatgggt agtcaactca	1680
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atttatttct cggaatttgg ttgggctgaa gacgccgaat atgatcgtca actgctgtat	1800
caaattacct gggatggtct gcgtacgaa tacctgacgg actatctgag ccagctgctg	1860
ttggctgtgc acaaagacgg gattaatctg cgaggcgcgc tgacgtggag ttttgtcgat	1920
aattgggagt ggggttttag gatgcaacag aaattcggat ttcagtttgt taatcaatca	1980
gatcccgatc tgacacgcac gtttaaactg agcgctcacg cttacgcca atttgggcgt	2040
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<210> 8
 <211> 689
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic

<400> 8

Met	Arg	Phe	Pro	Ser	Ile	Phe	Thr	Ala	Val	Leu	Phe	Ala	Ala	Ser	Ser
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			20					25					30		

Ile	Pro	Ala	Glu	Ala	Val	Ile	Gly	Tyr	Ser	Asp	Leu	Glu	Gly	Asp	Phe
		35					40					45			

Asp	Val	Ala	Val	Leu	Pro	Phe	Ser	Asn	Ser	Thr	Asn	Asn	Gly	Leu	Leu
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

50

55

60

Phe Ile Asn Thr Thr Ile Ala Ser Ile Ala Ala Lys Glu Glu Gly Val
65 70 75 80

Ser Leu Glu Lys Arg Glu Ala Glu Ala Met Met Leu His Ala Ala Leu
85 90 95

Leu Val Ala Leu Pro Cys Val Val Leu Ala Arg Pro Ala Gly Ala Val
100 105 110

Thr Tyr Pro Gly Ala Ile Pro Leu Ser Leu Thr Ser Asn Tyr Glu Thr
115 120 125

Pro Ser Pro Thr Ala Ile Pro Leu Glu Pro Thr Pro Thr Ala Thr Gly
130 135 140

Thr Ala Glu Leu Asp Ala Leu Trp Asn Leu Val Glu Ala Gln Tyr Pro
145 150 155 160

Val Gln Thr Ala Ala Val Thr Thr Leu Val Thr Val Pro Asp Asp Tyr
165 170 175

Lys Phe Glu Ala Asp Pro Pro Ser Tyr Ala Leu Ala Gly Tyr Glu Thr
180 185 190

Ser Glu Ile Ala Gly Leu Lys Phe Pro Lys Gly Phe Lys Phe Gly Val
195 200 205

Ala Gly Ala Ala Ile Gln Val Glu Gly Ala Ala Lys Ala Glu Gly Arg
210 215 220

Gly Pro Ser Thr Trp Asp Tyr Leu Cys His His Tyr Ala Ser Thr Gln
225 230 235 240

Cys Asn Asn Tyr Asp Pro Asp Ile Thr Thr Asn His Tyr Tyr Leu Tyr
245 250 255

Pro Leu Asp Phe Ala Arg Leu Gln His Leu Gly Ile Asn Thr Tyr Ser
260 265 270

Phe Ser Ile Ser Trp Thr Arg Ile Tyr Pro Leu Gly Ala Gly Tyr Val
275 280 285

Asn Glu Ala Gly Leu Ala His Tyr Asp Ala Val Ile His Ser Ala Lys
290 295 300

Lys Tyr Gly Leu Glu Pro Val Gly Thr Val Phe His Trp Asp Thr Pro
305 310 315 320

Leu Ser Leu Met Leu Lys Tyr Gly Ala Trp Gln Asp Thr Gly Asp Gln

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325

330

335

Ile Val Lys Asp Phe Val Thr Tyr Ala Thr Thr Val Phe Lys Arg Tyr
340 345 350

Gly Asn Glu Val Lys Thr Trp Phe Thr Phe Asn Glu Pro Arg Val Phe
355 360 365

Cys Ser Gln Asn Ser Gly Leu Pro Tyr Asn Leu Thr Tyr Pro Glu Gly
370 375 380

Ile Asn Ser Thr Ser Ala Val Phe Arg Cys Thr Tyr Asn Val Leu Lys
385 390 395 400

Ala His Gly His Ala Val Lys Val Tyr Arg Asp Leu Val Ala Ser Gly
405 410 415

Thr Ile Ala Ala Gly Glu Ile Gly Phe Lys Ser Asp Asp Asn Tyr Pro
420 425 430

Ile Pro Ala Arg Pro Gly Asn Ala Asp Asp Glu Glu Ser Ala Lys Arg
435 440 445

His Glu Ala Phe Arg Ile Gly Ile Phe Ala Gln Pro Val Tyr Gly Asn
450 455 460

Gly Asp Tyr Pro Asp Val Val Lys Glu Thr Val Gly Asp Met Leu Pro
465 470 475 480

Ala Leu Thr Asp Glu Asp Lys Gly Tyr Ile Lys Gly Ser Gly Asp Ile
485 490 495

Phe Ala Ile Asp Gly Tyr Arg Thr Asp Ile Ser His Ala Ala Leu Asn
500 505 510

Gly Ile Ala Asn Cys Ile Arg Asn Gln Ser Asp Pro Asn Trp Pro Val
515 520 525

Cys Glu Glu Gly Ser Asp Pro Phe Ala His Val Tyr Pro Ser Gly Phe
530 535 540

Ala Ile Gly Gln Ser Ala Asp Pro Leu Ser Ser Trp Leu Val Asn Ser
545 550 555 560

Ala Pro Phe Ile Arg Asp Gln Leu Lys Phe Leu Thr Gln Thr Tyr Pro
565 570 575

Ala Lys Gly Gly Ile Tyr Phe Ser Glu Phe Gly Trp Ala Glu Asp Ala
580 585 590

Glu Tyr Asp Arg Gln Leu Leu Tyr Gln Ile Thr Trp Asp Gly Leu Arg

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595

600

605

Thr Gln Tyr Leu Thr Asp Tyr Leu Ser Gln Leu Leu Leu Ala Val His
610 615 620

Lys Asp Gly Ile Asn Leu Arg Gly Ala Leu Thr Trp Ser Phe Val Asp
625 630 635 640

Asn Trp Glu Trp Gly Leu Gly Met Gln Gln Lys Phe Gly Phe Gln Phe
645 650 655

Val Asn Gln Ser Asp Pro Asp Leu Thr Arg Thr Phe Lys Leu Ser Ala
660 665 670

His Ala Tyr Ala Gln Phe Gly Arg Asn His Leu His His His His His
675 680 685

His

<210> 9
<211> 2052
<212> DNA
<213> Artificial

<220>
<223> Synthetic

<400> 9
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tactcagatt tagaagggga tttcgatggt gctgttttgc ctttttccaa cagcacaat 180
aacgggttat tgtttataaa tactactatt gccagcattg ctgctaaaga agaaggggta 240
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ccaaaggggt ttaagtttgg tgttgcgggg gcagccattc aagttgaagg tgcagcaaaa 660
gccgaagggc ggggccaag tacctgggat tatctgtgtc atcactatgc cagcacgcag 720
tgtaacaatt atgatccga tattacaacc aaccattact acctgtaccc attggacttt 780
gcgcgcctgc aacacctagg cattaacact tactcgtttt caatttcatg gacgcgtatt 840
tatccattgg gcgcaggcta tgttaatgaa gcagggttag ccactatga tgccgtaatc 900
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NS12009WO_Sequence_Listing_ST25

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 actttcaatg aaccacgggt tttctgttca caaaatagtg gtctgccata caatctgacg 1140
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 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic

<400> 10

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Ala Leu Ala Ala Pro Val Asn Thr Thr Thr Glu Asp Glu Thr Ala Gln
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Ile Pro Ala Glu Ala Val Ile Gly Tyr Ser Asp Leu Glu Gly Asp Phe
 35 40 45

Asp Val Ala Val Leu Pro Phe Ser Asn Ser Thr Asn Asn Gly Leu Leu
 50 55 60

Phe Ile Asn Thr Thr Ile Ala Ser Ile Ala Ala Lys Glu Glu Gly Val
 65 70 75 80

NS12009WO_Sequence_Listing_ST25

Ser Leu Glu Lys Arg Glu Ala Glu Ala Met Met Leu His Ala Ala Leu
85 90 95

Leu Val Ala Leu Pro Cys Val Val Leu Ala Arg Pro Ala Gly Ala Val
100 105 110

Thr Tyr Pro Gly Ala Ile Pro Leu Ser Leu Thr Ser Asn Tyr Glu Thr
115 120 125

Pro Ser Pro Thr Ala Ile Pro Leu Glu Pro Thr Pro Thr Ala Thr Gly
130 135 140

Thr Ala Glu Leu Asp Ala Leu Trp Asn Leu Val Glu Ala Gln Tyr Pro
145 150 155 160

Val Gln Thr Ala Ala Val Thr Thr Leu Val Thr Val Pro Asp Asp Tyr
165 170 175

Lys Phe Glu Ala Asp Pro Pro Ser Tyr Ala Leu Ala Gly Tyr Glu Thr
180 185 190

Ser Glu Ile Ala Gly Leu Lys Phe Pro Lys Gly Phe Lys Phe Gly Val
195 200 205

Ala Gly Ala Ala Ile Gln Val Glu Gly Ala Ala Lys Ala Glu Gly Arg
210 215 220

Gly Pro Ser Thr Trp Asp Tyr Leu Cys His His Tyr Ala Ser Thr Gln
225 230 235 240

Cys Asn Asn Tyr Asp Pro Asp Ile Thr Thr Asn His Tyr Tyr Leu Tyr
245 250 255

Pro Leu Asp Phe Ala Arg Leu Gln His Leu Gly Ile Asn Thr Tyr Ser
260 265 270

Phe Ser Ile Ser Trp Thr Arg Ile Tyr Pro Leu Gly Ala Gly Tyr Val
275 280 285

Asn Glu Ala Gly Leu Ala His Tyr Asp Ala Val Ile His Ser Ala Lys
290 295 300

Lys Tyr Gly Leu Glu Pro Val Gly Thr Val Phe His Trp Asp Thr Pro
305 310 315 320

Leu Ser Leu Met Leu Lys Tyr Gly Ala Trp Gln Asp Thr Gly Asp Gln
325 330 335

Ile Val Lys Asp Phe Val Thr Tyr Ala Thr Thr Val Phe Lys Arg Tyr
340 345 350

NS12009WO_Sequence_Listing_ST25

Gly Asn Glu Val Lys Thr Trp Phe Thr Phe Asn Glu Pro Arg Val Phe
355 360 365

Cys Ser Gln Asn Ser Gly Leu Pro Tyr Asn Leu Thr Tyr Pro Glu Gly
370 375 380

Ile Asn Ser Thr Ser Ala Val Phe Arg Cys Thr Tyr Asn Val Leu Lys
385 390 395 400

Ala His Gly His Ala Val Lys Val Tyr Arg Asp Leu Val Ala Ser Gly
405 410 415

Thr Ile Ala Ala Gly Glu Ile Gly Phe Lys Ser Asp Asp Asn Tyr Pro
420 425 430

Ile Pro Ala Arg Pro Gly Asn Ala Asp Asp Glu Glu Ser Ala Lys Arg
435 440 445

His Glu Ala Phe Arg Ile Gly Ile Phe Ala Gln Pro Val Tyr Gly Asn
450 455 460

Gly Asp Tyr Pro Asp Val Val Lys Glu Thr Val Gly Asp Met Leu Pro
465 470 475 480

Ala Leu Thr Asp Glu Asp Lys Gly Tyr Ile Lys Gly Ser Gly Asp Ile
485 490 495

Phe Ala Ile Asp Gly Tyr Arg Thr Asp Ile Ser His Ala Ala Leu Asn
500 505 510

Gly Ile Ala Asn Cys Ile Arg Asn Gln Ser Asp Pro Asn Trp Pro Val
515 520 525

Cys Glu Glu Gly Ser Asp Pro Phe Ala His Val Tyr Pro Ser Gly Phe
530 535 540

Ala Ile Gly Gln Ser Ala Asp Pro Leu Ser Ser Trp Leu Val Asn Ser
545 550 555 560

Ala Pro Phe Ile Arg Asp Gln Leu Lys Phe Leu Thr Gln Thr Tyr Pro
565 570 575

Ala Lys Gly Gly Ile Tyr Phe Ser Glu Phe Gly Trp Ala Glu Asp Ala
580 585 590

Glu Tyr Asp Arg Gln Leu Leu Tyr Gln Ile Thr Trp Asp Gly Leu Arg
595 600 605

Thr Gln Tyr Leu Thr Asp Tyr Leu Ser Gln Leu Leu Leu Ala Val His
610 615 620

NS12009WO_Sequence_Listing_ST25

Lys Asp Gly Ile Asn Leu Arg Gly Ala Leu Thr Trp Ser Phe Val Asp
625 630 635 640

Asn Trp Glu Trp Gly Leu Gly Met Gln Gln Lys Phe Gly Phe Gln Phe
645 650 655

Val Asn Gln Ser Asp Pro Asp Leu Thr Arg Thr Phe Lys Leu Ser Ala
660 665 670

His Ala Tyr Ala Gln Phe Gly Arg Asn His Leu
675 680

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<211> 2004
<212> DNA
<213> Artificial

<220>
<223> Synthetic

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tactcagatt tagaagggga tttcgaatgtt gctgttttgc ctttttccaa cagcacaat 180
aacgggttat tgtttataaa tactactatt gccagcattg ctgctaaaga agaaggggta 240
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acgagcaatt acgaaacccc aagtccgaca gcaatcccgc tggagccaac accgacggct 360
accggtacag cagaattaga tgcgctgtgg aacttagtcg aagctcagta cccagttcaa 420
actgctgcag tgacaacttt ggtgacagtg cccgatgatt ataagtttga ggcagatcca 480
ccgagttatg cattagcagg gtatgaaaca agcgagattg cgggactgaa gtttccaaag 540
gggtttaagt ttggtgttgc gggggcagcc attcaagttg aagggtgcagc aaaagccgaa 600
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aattatgatc ccgatattac aaccaaccat tactacctgt acccattgga ctttgcgcgc 720
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NS12009WO_Sequence_Listing_ST25

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 acggatgaag ataaaggata cattaaggt agcggagata tttttgcat tgacgggtat 1440
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 gacccgaatt ggccagtgtg tgaagaagg tcatcctt ttgctcatgt ttacccatcc 1560
 gggtttgcta ttggtcaatc agccgatcca ctgtcttcat ggtagtcaa ctcagccccg 1620
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 gagtggggtt tagggatgca acagaaattc ggatttcagt ttgttaatca atcagatccc 1920
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<210> 12
 <211> 667
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic

<400> 12

Met Arg Phe Pro Ser Ile Phe Thr Ala Val Leu Phe Ala Ala Ser Ser
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Ala Leu Ala Ala Pro Val Asn Thr Thr Thr Glu Asp Glu Thr Ala Gln
 20 25 30

Ile Pro Ala Glu Ala Val Ile Gly Tyr Ser Asp Leu Glu Gly Asp Phe
 35 40 45

Asp Val Ala Val Leu Pro Phe Ser Asn Ser Thr Asn Asn Gly Leu Leu
 50 55 60

Phe Ile Asn Thr Thr Ile Ala Ser Ile Ala Ala Lys Glu Glu Gly Val
 65 70 75 80

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

Pro Leu Ser Leu Thr Ser Asn Tyr Glu Thr Pro Ser Pro Thr Ala Ile
 100 105 110

Pro Leu Glu Pro Thr Pro Thr Ala Thr Gly Thr Ala Glu Leu Asp Ala
 115 120 125

NS12009WO_Sequence_Listing_ST25

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

NS12009WO_Sequence_Listing_ST25

Ile Gly Phe Lys Ser Asp Asp Asn Tyr Pro Ile Pro Ala Arg Pro Gly
405 410 415

Asn Ala Asp Asp Glu Glu Ser Ala Lys Arg His Glu Ala Phe Arg Ile
420 425 430

Gly Ile Phe Ala Gln Pro Val Tyr Gly Asn Gly Asp Tyr Pro Asp Val
435 440 445

Val Lys Glu Thr Val Gly Asp Met Leu Pro Ala Leu Thr Asp Glu Asp
450 455 460

Lys Gly Tyr Ile Lys Gly Ser Gly Asp Ile Phe Ala Ile Asp Gly Tyr
465 470 475 480

Arg Thr Asp Ile Ser His Ala Ala Leu Asn Gly Ile Ala Asn Cys Ile
485 490 495

Arg Asn Gln Ser Asp Pro Asn Trp Pro Val Cys Glu Glu Gly Ser Asp
500 505 510

Pro Phe Ala His Val Tyr Pro Ser Gly Phe Ala Ile Gly Gln Ser Ala
515 520 525

Asp Pro Leu Ser Ser Trp Leu Val Asn Ser Ala Pro Phe Ile Arg Asp
530 535 540

Gln Leu Lys Phe Leu Thr Gln Thr Tyr Pro Ala Lys Gly Gly Ile Tyr
545 550 555 560

Phe Ser Glu Phe Gly Trp Ala Glu Asp Ala Glu Tyr Asp Arg Gln Leu
565 570 575

Leu Tyr Gln Ile Thr Trp Asp Gly Leu Arg Thr Gln Tyr Leu Thr Asp
580 585 590

Tyr Leu Ser Gln Leu Leu Leu Ala Val His Lys Asp Gly Ile Asn Leu
595 600 605

Arg Gly Ala Leu Thr Trp Ser Phe Val Asp Asn Trp Glu Trp Gly Leu
610 615 620

Gly Met Gln Gln Lys Phe Gly Phe Gln Phe Val Asn Gln Ser Asp Pro
625 630 635 640

Asp Leu Thr Arg Thr Phe Lys Leu Ser Ala His Ala Tyr Ala Gln Phe
645 650 655

Gly Arg Asn His Leu His His His His His His
660 665

NS12009WO_Sequence_Listing_ST25

<210> 13
<211> 1986
<212> DNA
<213> Artificial

<220>
<223> Synthetic

<400> 13
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tactcagatt tagaagggga tttc gatgtt gctgttttgc ctttttccaa cagcacaat 180
aacgggttat tgtttataaa tactactatt gccagcattg ctgctaaaga agaaggggta 240
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gaggaatcag ccaagcgtca cgaggctttt cgcattggga tttttgcgca accggtttat 1320
ggtaatggcg attatccaga tgttgttaaa gaaactgttg gagatatgct gccggccctg 1380
acggatgaag ataaaggata cattaaggt agcggagata tttttgcgat tgacgggtat 1440
cgtaccgata tttcccatgc ggctctgaac gggatcgcga attgtattcg caaccaaagt 1500
gacccgaatt ggccagtgtg tgaagaaggg tcagatcctt ttgctcatgt ttacccatcc 1560
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tttatccgcg atcaactgaa gtttctgaca caaacctacc ctgctaaggg tggatattat 1680
ttctcggaat ttggttgggc tgaagacgcc gaatatgatc gtcaactgct gtatcaaatt 1740

NS12009WO_Sequence_Listing_ST25

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 gtgcacaaag acgggattaa tctgcgaggc gcgctgacgt ggagttttgt cgataattgg 1860
 gagtgggggt tagggatgca acagaaattc ggatttcagt ttgttaatca atcagatccc 1920
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 ctgtaa 1986

<210> 14
 <211> 661
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic

<400> 14

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Ala Leu Ala Ala Pro Val Asn Thr Thr Thr Glu Asp Glu Thr Ala Gln
 20 25 30

Ile Pro Ala Glu Ala Val Ile Gly Tyr Ser Asp Leu Glu Gly Asp Phe
 35 40 45

Asp Val Ala Val Leu Pro Phe Ser Asn Ser Thr Asn Asn Gly Leu Leu
 50 55 60

Phe Ile Asn Thr Thr Ile Ala Ser Ile Ala Ala Lys Glu Glu Gly Val
 65 70 75 80

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

Pro Leu Ser Leu Thr Ser Asn Tyr Glu Thr Pro Ser Pro Thr Ala Ile
 100 105 110

Pro Leu Glu Pro Thr Pro Thr Ala Thr Gly Thr Ala Glu Leu Asp Ala
 115 120 125

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

Thr Thr Leu Val Thr Val Pro Asp Asp Tyr Lys Phe Glu Ala Asp Pro
 145 150 155 160

Pro Ser Tyr Ala Leu Ala Gly Tyr Glu Thr Ser Glu Ile Ala Gly Leu
 165 170 175

Lys Phe Pro Lys Gly Phe Lys Phe Gly Val Ala Gly Ala Ala Ile Gln
 180 185 190

NS12009WO_Sequence_Listing_ST25

Val Glu Gly Ala Ala Lys Ala Glu Gly Arg Gly Pro Ser Thr Trp Asp
 195 200 205
 Tyr Leu Cys His His Tyr Ala Ser Thr Gln Cys Asn Asn Tyr Asp Pro
 210 215 220
 Asp Ile Thr Thr Asn His Tyr Tyr Leu Tyr Pro Leu Asp Phe Ala Arg
 225 230 235 240
 Leu Gln His Leu Gly Ile Asn Thr Tyr Ser Phe Ser Ile Ser Trp Thr
 245 250 255
 Arg Ile Tyr Pro Leu Gly Ala Gly Tyr Val Asn Glu Ala Gly Leu Ala
 260 265 270
 His Tyr Asp Ala Val Ile His Ser Ala Lys Lys Tyr Gly Leu Glu Pro
 275 280 285
 Val Gly Thr Val Phe His Trp Asp Thr Pro Leu Ser Leu Met Leu Lys
 290 295 300
 Tyr Gly Ala Trp Gln Asp Thr Gly Asp Gln Ile Val Lys Asp Phe Val
 305 310 315 320
 Thr Tyr Ala Thr Thr Val Phe Lys Arg Tyr Gly Asn Glu Val Lys Thr
 325 330 335
 Trp Phe Thr Phe Asn Glu Pro Arg Val Phe Cys Ser Gln Asn Ser Gly
 340 345 350
 Leu Pro Tyr Asn Leu Thr Tyr Pro Glu Gly Ile Asn Ser Thr Ser Ala
 355 360 365
 Val Phe Arg Cys Thr Tyr Asn Val Leu Lys Ala His Gly His Ala Val
 370 375 380
 Lys Val Tyr Arg Asp Leu Val Ala Ser Gly Thr Ile Ala Ala Gly Glu
 385 390 395 400
 Ile Gly Phe Lys Ser Asp Asp Asn Tyr Pro Ile Pro Ala Arg Pro Gly
 405 410 415
 Asn Ala Asp Asp Glu Glu Ser Ala Lys Arg His Glu Ala Phe Arg Ile
 420 425 430
 Gly Ile Phe Ala Gln Pro Val Tyr Gly Asn Gly Asp Tyr Pro Asp Val
 435 440 445
 Val Lys Glu Thr Val Gly Asp Met Leu Pro Ala Leu Thr Asp Glu Asp
 450 455 460

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Lys Gly Tyr Ile Lys Gly Ser Gly Asp Ile Phe Ala Ile Asp Gly Tyr
465 470 475 480

Arg Thr Asp Ile Ser His Ala Ala Leu Asn Gly Ile Ala Asn Cys Ile
485 490 495

Arg Asn Gln Ser Asp Pro Asn Trp Pro Val Cys Glu Glu Gly Ser Asp
500 505 510

Pro Phe Ala His Val Tyr Pro Ser Gly Phe Ala Ile Gly Gln Ser Ala
515 520 525

Asp Pro Leu Ser Ser Trp Leu Val Asn Ser Ala Pro Phe Ile Arg Asp
530 535 540

Gln Leu Lys Phe Leu Thr Gln Thr Tyr Pro Ala Lys Gly Gly Ile Tyr
545 550 555 560

Phe Ser Glu Phe Gly Trp Ala Glu Asp Ala Glu Tyr Asp Arg Gln Leu
565 570 575

Leu Tyr Gln Ile Thr Trp Asp Gly Leu Arg Thr Gln Tyr Leu Thr Asp
580 585 590

Tyr Leu Ser Gln Leu Leu Leu Ala Val His Lys Asp Gly Ile Asn Leu
595 600 605

Arg Gly Ala Leu Thr Trp Ser Phe Val Asp Asn Trp Glu Trp Gly Leu
610 615 620

Gly Met Gln Gln Lys Phe Gly Phe Gln Phe Val Asn Gln Ser Asp Pro
625 630 635 640

Asp Leu Thr Arg Thr Phe Lys Leu Ser Ala His Ala Tyr Ala Gln Phe
645 650 655

Gly Arg Asn His Leu
660

<210> 15
<211> 1803
<212> DNA
<213> Artificial

<220>
<223> Synthetic

<400> 15
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agtccgacag caatcccgtt ggagccaaca ccgacggcta ccggtacagc agaattagat 180

NS12009WO_Sequence_Listing_ST25

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tatgaaacaa gcgagattgc cggactgaag tttccaaagg ggtttaagtt tgggtgttgcg	360
ggggcagcca ttcaagttga aggtgcagca aaagccgaag ggcggggccc aagtacctgg	420
gattatctgt gtcataccta tgccagcacg cagtgttaaca attatgatcc cgatattaca	480
accaaccatt actacctgta cccattggac tttgcgcgcc tgcaaacacct aggcattaac	540
acttactcgt tttcaatttc atggacgcgt atttatccat tgggcgcagg ctatgttaat	600
gaagcagggg tagcccacta tgatgccgta atccatagtg ccaagaagta tgggtctggaa	660
ccagtgggca ccgtttttca ctgggatacg ccaactgtctc tgatgctgaa atacgggtgcc	720
tggcaagata ctggtgacca aattgttaag gactttgtta cctatgccac aactgtgttt	780
aagcgttatg gtaatgaagt caagacgtgg tttactttca atgaaccacg ggttttctgt	840
tcacaaaata gtggtctgcc atacaatctg acgtatccag aaggatttaa cagcacctcc	900
gctgtatttc gttgcaccta caatgttctg aaagctcatg gtcattgctgt taaagtgtat	960
cgggatctag ttgcctccgg gaccattgcg gcagggtgaaa tcggctttta atccgatgat	1020
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gctctgaacg ggatcgcgaa ttgtattcgc aaccaaagtg acccgaattg gccagtgtgt	1320
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gccgatccac tgtcttcatg gttagtcaac tcagccccgt ttatccgcga tcaactgaag	1440
tttctgacac aaacctacc tgctaagggt ggtatttatt tctcggaatt tggttgggct	1500
gaagacgccg aatatgatcg tcaactgctg tatcaaatta cctgggatgg tctgcgtacg	1560
caatacctga cggactatct gagccagctg ctgttggtg tgcacaaaga cgggattaat	1620
ctgcgaggcg cgctgacgtg gagttttgtc gataattggg agtgggggtt agggatgcaa	1680
cagaaattcg gatttcagtt tgtaatacaa tcagatccc atctgacacg cagttttaa	1740
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taa	1803

<210> 16
 <211> 600
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic

<400> 16

Met Met Leu His Ala Ala Leu Leu Val Ala Leu Pro Cys Val Val Leu

NS12009WO_Sequence_Listing_ST25

1 5 10 15

Ala Arg Pro Ala Gly Ala Val Thr Tyr Pro Gly Ala Ile Pro Leu Ser
 20 25 30

Leu Thr Ser Asn Tyr Glu Thr Pro Ser Pro Thr Ala Ile Pro Leu Glu
 35 40 45

Pro Thr Pro Thr Ala Thr Gly Thr Ala Glu Leu Asp Ala Leu Trp Asn
 50 55 60

Leu Val Glu Ala Gln Tyr Pro Val Gln Thr Ala Ala Val Thr Thr Leu
 65 70 75 80

Val Thr Val Pro Asp Asp Tyr Lys Phe Glu Ala Asp Pro Pro Ser Tyr
 85 90 95

Ala Leu Ala Gly Tyr Glu Thr Ser Glu Ile Ala Gly Leu Lys Phe Pro
 100 105 110

Lys Gly Phe Lys Phe Gly Val Ala Gly Ala Ala Ile Gln Val Glu Gly
 115 120 125

Ala Ala Lys Ala Glu Gly Arg Gly Pro Ser Thr Trp Asp Tyr Leu Cys
 130 135 140

His His Tyr Ala Ser Thr Gln Cys Asn Asn Tyr Asp Pro Asp Ile Thr
 145 150 155 160

Thr Asn His Tyr Tyr Leu Tyr Pro Leu Asp Phe Ala Arg Leu Gln His
 165 170 175

Leu Gly Ile Asn Thr Tyr Ser Phe Ser Ile Ser Trp Thr Arg Ile Tyr
 180 185 190

Pro Leu Gly Ala Gly Tyr Val Asn Glu Ala Gly Leu Ala His Tyr Asp
 195 200 205

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

Val Phe His Trp Asp Thr Pro Leu Ser Leu Met Leu Lys Tyr Gly Ala
 225 230 235 240

Trp Gln Asp Thr Gly Asp Gln Ile Val Lys Asp Phe Val Thr Tyr Ala
 245 250 255

Thr Thr Val Phe Lys Arg Tyr Gly Asn Glu Val Lys Thr Trp Phe Thr
 260 265 270

Phe Asn Glu Pro Arg Val Phe Cys Ser Gln Asn Ser Gly Leu Pro Tyr

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275

280

285

Asn Leu Thr Tyr Pro Glu Gly Ile Asn Ser Thr Ser Ala Val Phe Arg
290 295 300

Cys Thr Tyr Asn Val Leu Lys Ala His Gly His Ala Val Lys Val Tyr
305 310 315 320

Arg Asp Leu Val Ala Ser Gly Thr Ile Ala Ala Gly Glu Ile Gly Phe
325 330 335

Lys Ser Asp Asp Asn Tyr Pro Ile Pro Ala Arg Pro Gly Asn Ala Asp
340 345 350

Asp Glu Glu Ser Ala Lys Arg His Glu Ala Phe Arg Ile Gly Ile Phe
355 360 365

Ala Gln Pro Val Tyr Gly Asn Gly Asp Tyr Pro Asp Val Val Lys Glu
370 375 380

Thr Val Gly Asp Met Leu Pro Ala Leu Thr Asp Glu Asp Lys Gly Tyr
385 390 395 400

Ile Lys Gly Ser Gly Asp Ile Phe Ala Ile Asp Gly Tyr Arg Thr Asp
405 410 415

Ile Ser His Ala Ala Leu Asn Gly Ile Ala Asn Cys Ile Arg Asn Gln
420 425 430

Ser Asp Pro Asn Trp Pro Val Cys Glu Glu Gly Ser Asp Pro Phe Ala
435 440 445

His Val Tyr Pro Ser Gly Phe Ala Ile Gly Gln Ser Ala Asp Pro Leu
450 455 460

Ser Ser Trp Leu Val Asn Ser Ala Pro Phe Ile Arg Asp Gln Leu Lys
465 470 475 480

Phe Leu Thr Gln Thr Tyr Pro Ala Lys Gly Gly Ile Tyr Phe Ser Glu
485 490 495

Phe Gly Trp Ala Glu Asp Ala Glu Tyr Asp Arg Gln Leu Leu Tyr Gln
500 505 510

Ile Thr Trp Asp Gly Leu Arg Thr Gln Tyr Leu Thr Asp Tyr Leu Ser
515 520 525

Gln Leu Leu Leu Ala Val His Lys Asp Gly Ile Asn Leu Arg Gly Ala
530 535 540

Leu Thr Trp Ser Phe Val Asp Asn Trp Glu Trp Gly Leu Gly Met Gln

NS12009WO_Sequence_Listing_ST25

545 550 555 560

Gln Lys Phe Gly Phe Gln Phe Val Asn Gln Ser Asp Pro Asp Leu Thr
565 570 575

Arg Thr Phe Lys Leu Ser Ala His Ala Tyr Ala Gln Phe Gly Arg Asn
580 585 590

His Leu His His His His His His
595 600

<210> 17
<211> 1740
<212> DNA
<213> Artificial

<220>
<223> Synthetic

<400> 17
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acagtgtccc atgattataa gtttgaggca gatccaccga gttatgcatt agcaggggat 240
gaaacaagcg agattgccgg actgaagttt ccaaaggggt ttaagtttg tggtgcgggg 300
gcagccattc aagttgaagg tgcagcaaaa gccgaagggc ggggcccaag tacctgggat 360
tatctgtgtc atcactatgc cagcacgcag tgtaacaatt atgatcccga tattacaacc 420
aaccattact acctgtaccc attggacttt gcgcgcctgc aacacctagg cattaacact 480
tactcgtttt caatttcatt gacgcgtatt tatccattgg gcgcaggcta tggttaatgaa 540
gcagggtag cccactatga tgccgtaatc catagtgcc agaagtatgg tctggaacca 600
gtgggcaccg tttttcactg ggatacgcca ctgtctctga tgctgaaata cgggtgcctgg 660
caagatactg gtgaccaaatt tgtaaggac tttgtttacct atgccacaac tgtgtttaag 720
cgttatggta atgaagtcaa gacgtgggtt actttcaatg aaccacgggt tttctgttca 780
caaaatagtg gtctgccata caatctgacg tatccagaag gtattaacag cacctccgct 840
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gatctagtgt cctccgggac cattgcggca ggtgaaatcg gctttaaatc cgatgataac 960
tacccaatcc cggcccgctc aggaacgcc gatgacgagg aatcagccaa gcgtcacgag 1020
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gttaaagaaa ctgttgaga tatgctgccg gccctgacgg atgaagataa aggatacatt 1140
aaaggtagcg gagatatttt tgcgattgac gggatcgtta ccgatatttc ccatgcggct 1200
ctgaacggga tcgcaattg tattcgcaac caaagtgacc cgaattggcc agtgtgtgaa 1260
gaagggtcag atccttttgc tcatgtttac ccatccgggt ttgctattgg tcaatcagcc 1320

NS12009WO_Sequence_Listing_ST25

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 gacgccgaat atgatcgta actgctgtat caaattacct gggatgggtct gcgtacgcaa 1500
 tacctgacgg actatctgag ccagctgctg ttggctgtgc acaaagacgg gattaatctg 1560
 cgaggcgcg tgacgtggag ttttgtcgat aattgggagt ggggtttagg gatgcaacag 1620
 aaattcggat ttcagtttgt taatcaatca gatcccgatc tgacacgcac gtttaaactg 1680
 agcgctcacg cttacgcca atttgggcgt aatcatctgc accaccacca ccaccactaa 1740

<210> 18
 <211> 579
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic

<400> 18

Met Val Thr Tyr Pro Gly Ala Ile Pro Leu Ser Leu Thr Ser Asn Tyr
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Glu Thr Pro Ser Pro Thr Ala Ile Pro Leu Glu Pro Thr Pro Thr Ala
 20 25 30

Thr Gly Thr Ala Glu Leu Asp Ala Leu Trp Asn Leu Val Glu Ala Gln
 35 40 45

Tyr Pro Val Gln Thr Ala Ala Val Thr Thr Leu Val Thr Val Pro Asp
 50 55 60

Asp Tyr Lys Phe Glu Ala Asp Pro Pro Ser Tyr Ala Leu Ala Gly Tyr
 65 70 75 80

Glu Thr Ser Glu Ile Ala Gly Leu Lys Phe Pro Lys Gly Phe Lys Phe
 85 90 95

Gly Val Ala Gly Ala Ala Ile Gln Val Glu Gly Ala Ala Lys Ala Glu
 100 105 110

Gly Arg Gly Pro Ser Thr Trp Asp Tyr Leu Cys His His Tyr Ala Ser
 115 120 125

Thr Gln Cys Asn Asn Tyr Asp Pro Asp Ile Thr Thr Asn His Tyr Tyr
 130 135 140

Leu Tyr Pro Leu Asp Phe Ala Arg Leu Gln His Leu Gly Ile Asn Thr
 145 150 155 160

Tyr Ser Phe Ser Ile Ser Trp Thr Arg Ile Tyr Pro Leu Gly Ala Gly
 165 170 175

NS12009WO_Sequence_Listing_ST25

Tyr Val Asn Glu Ala Gly Leu Ala His Tyr Asp Ala Val Ile His Ser
 180 185 190
 Ala Lys Lys Tyr Gly Leu Glu Pro Val Gly Thr Val Phe His Trp Asp
 195 200 205
 Thr Pro Leu Ser Leu Met Leu Lys Tyr Gly Ala Trp Gln Asp Thr Gly
 210 215 220
 Asp Gln Ile Val Lys Asp Phe Val Thr Tyr Ala Thr Thr Val Phe Lys
 225 230 235 240
 Arg Tyr Gly Asn Glu Val Lys Thr Trp Phe Thr Phe Asn Glu Pro Arg
 245 250 255
 Val Phe Cys Ser Gln Asn Ser Gly Leu Pro Tyr Asn Leu Thr Tyr Pro
 260 265 270
 Glu Gly Ile Asn Ser Thr Ser Ala Val Phe Arg Cys Thr Tyr Asn Val
 275 280 285
 Leu Lys Ala His Gly His Ala Val Lys Val Tyr Arg Asp Leu Val Ala
 290 295 300
 Ser Gly Thr Ile Ala Ala Gly Glu Ile Gly Phe Lys Ser Asp Asp Asn
 305 310 315 320
 Tyr Pro Ile Pro Ala Arg Pro Gly Asn Ala Asp Asp Glu Glu Ser Ala
 325 330 335
 Lys Arg His Glu Ala Phe Arg Ile Gly Ile Phe Ala Gln Pro Val Tyr
 340 345 350
 Gly Asn Gly Asp Tyr Pro Asp Val Val Lys Glu Thr Val Gly Asp Met
 355 360 365
 Leu Pro Ala Leu Thr Asp Glu Asp Lys Gly Tyr Ile Lys Gly Ser Gly
 370 375 380
 Asp Ile Phe Ala Ile Asp Gly Tyr Arg Thr Asp Ile Ser His Ala Ala
 385 390 395 400
 Leu Asn Gly Ile Ala Asn Cys Ile Arg Asn Gln Ser Asp Pro Asn Trp
 405 410 415
 Pro Val Cys Glu Glu Gly Ser Asp Pro Phe Ala His Val Tyr Pro Ser
 420 425 430
 Gly Phe Ala Ile Gly Gln Ser Ala Asp Pro Leu Ser Ser Trp Leu Val
 435 440 445

NS12009WO_Sequence_Listing_ST25

Asn Ser Ala Pro Phe Ile Arg Asp Gln Leu Lys Phe Leu Thr Gln Thr
450 455 460

Tyr Pro Ala Lys Gly Gly Ile Tyr Phe Ser Glu Phe Gly Trp Ala Glu
465 470 475 480

Asp Ala Glu Tyr Asp Arg Gln Leu Leu Tyr Gln Ile Thr Trp Asp Gly
485 490 495

Leu Arg Thr Gln Tyr Leu Thr Asp Tyr Leu Ser Gln Leu Leu Leu Ala
500 505 510

Val His Lys Asp Gly Ile Asn Leu Arg Gly Ala Leu Thr Trp Ser Phe
515 520 525

Val Asp Asn Trp Glu Trp Gly Leu Gly Met Gln Gln Lys Phe Gly Phe
530 535 540

Gln Phe Val Asn Gln Ser Asp Pro Asp Leu Thr Arg Thr Phe Lys Leu
545 550 555 560

Ser Ala His Ala Tyr Ala Gln Phe Gly Arg Asn His Leu His His His
565 570 575

His His His

<210> 19
<211> 1755
<212> DNA
<213> Artificial

<220>
<223> Synthetic

<400> 19
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ccagtcaaca ctacaacaga agatgaaacg gcacaaattc cggctgaagc tgtcatcggt 120
tactcagatt tagaagggga tttcgatggt gctgttttgc ctttttccaa cagcaciaaat 180
aacgggttat tgtttataaa tactactatt gccagcattg ctgctaaaga agaaggggta 240
tctctcgaga aaagagaggc tgaagcttac gtagaattca tgtttccaaa ggggtttaag 300
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ccaagtacct gggattatct gtgtcatcac tatgccagca cgcagtgtaa caattatgat 420
cccgatatta caaccaacca ttactacctg taccattgg actttgcgcg cctgcaacac 480
ctaggcatta acacttactc gttttcaatt tcatggacgc gtatttatcc attgggcgca 540
ggctatgtta atgaagcagg gttagccac tatgatgccg taatccatag tgccaagaag 600
tatggtctgg aaccagtggg caccgttttt cactgggata cgccactgtc tctgatgctg 660

NS12009WO_Sequence_Listing_ST25

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cgggttttct gttcacaaaa tagtggtctg ccatacaatc tgacgtatcc agaaggattt	840
aacagcacct ccgctgtatt tcgttgacc tacaatgttc tgaaagctca tggatcatgct	900
gttaaagtgt atcgggatct agttgcctcc gggaccattg cggcaggtga aatcggcttt	960
aatccgatg ataactaccc aatcccgcc cgtccagga acgccgatga cgaggaatca	1020
gccaagcgtc acgaggcttt tcgcattggg atttttgcgc aaccggttta tggtaatggc	1080
gattatccag atgttgtaa agaaactgtt ggagatatgc tgccggccct gacggatgaa	1140
gataaaggat acattaaagg tagcggagat atttttgcga ttgacgggta tcgtaccgat	1200
atttcccatg cggctctgaa cgggatcgc aattgtattc gcaaccaaag tgaccgaat	1260
tggccagtgt gtgaagaagg gtcagatcct tttgctcatg tttaccatc cgggtttgct	1320
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gatcaactga agtttctgac acaaacctac cctgctaagg gtggtattta tttctcgaa	1440
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ggtctgcgta cgcaatacct gacggactat ctgagccagc tgctgttggc tgtgcacaaa	1560
gacgggatta atctgcgagg cgcgctgacg tggagttttg tcgataattg ggagtgggt	1620
ttagggatgc aacagaaatt cggatttcag tttgttaatc aatcagatcc cgatctgaca	1680
cgcacgttta aactgagcgc tcacgcttac gcccaatttg ggcgtaatca tctgcaccac	1740
caccaccacc actaa	1755

<210> 20
 <211> 584
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic

<400> 20

Met	Arg	Phe	Pro	Ser	Ile	Phe	Thr	Ala	Val	Leu	Phe	Ala	Ala	Ser	Ser
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Ala	Leu	Ala	Ala	Pro	Val	Asn	Thr	Thr	Thr	Glu	Asp	Glu	Thr	Ala	Gln
			20					25					30		

Ile	Pro	Ala	Glu	Ala	Val	Ile	Gly	Tyr	Ser	Asp	Leu	Glu	Gly	Asp	Phe
		35					40					45			

Asp	Val	Ala	Val	Leu	Pro	Phe	Ser	Asn	Ser	Thr	Asn	Asn	Gly	Leu	Leu
	50					55					60				

Phe	Ile	Asn	Thr	Thr	Ile	Ala	Ser	Ile	Ala	Ala	Lys	Glu	Glu	Gly	Val
65					70				75						80

NS12009WO_Sequence_Listing_ST25

Ser Leu Glu Lys Arg Glu Ala Glu Ala Tyr Val Glu Phe Met Phe Pro
85 90 95

Lys Gly Phe Lys Phe Gly Val Ala Gly Ala Ala Ile Gln Val Glu Gly
100 105 110

Ala Ala Lys Ala Glu Gly Arg Gly Pro Ser Thr Trp Asp Tyr Leu Cys
115 120 125

His His Tyr Ala Ser Thr Gln Cys Asn Asn Tyr Asp Pro Asp Ile Thr
130 135 140

Thr Asn His Tyr Tyr Leu Tyr Pro Leu Asp Phe Ala Arg Leu Gln His
145 150 155 160

Leu Gly Ile Asn Thr Tyr Ser Phe Ser Ile Ser Trp Thr Arg Ile Tyr
165 170 175

Pro Leu Gly Ala Gly Tyr Val Asn Glu Ala Gly Leu Ala His Tyr Asp
180 185 190

Ala Val Ile His Ser Ala Lys Lys Tyr Gly Leu Glu Pro Val Gly Thr
195 200 205

Val Phe His Trp Asp Thr Pro Leu Ser Leu Met Leu Lys Tyr Gly Ala
210 215 220

Trp Gln Asp Thr Gly Asp Gln Ile Val Lys Asp Phe Val Thr Tyr Ala
225 230 235 240

Thr Thr Val Phe Lys Arg Tyr Gly Asn Glu Val Lys Thr Trp Phe Thr
245 250 255

Phe Asn Glu Pro Arg Val Phe Cys Ser Gln Asn Ser Gly Leu Pro Tyr
260 265 270

Asn Leu Thr Tyr Pro Glu Gly Ile Asn Ser Thr Ser Ala Val Phe Arg
275 280 285

Cys Thr Tyr Asn Val Leu Lys Ala His Gly His Ala Val Lys Val Tyr
290 295 300

Arg Asp Leu Val Ala Ser Gly Thr Ile Ala Ala Gly Glu Ile Gly Phe
305 310 315 320

Lys Ser Asp Asp Asn Tyr Pro Ile Pro Ala Arg Pro Gly Asn Ala Asp
325 330 335

Asp Glu Glu Ser Ala Lys Arg His Glu Ala Phe Arg Ile Gly Ile Phe
340 345 350

NS12009WO_Sequence_Listing_ST25

Ala Gln Pro Val Tyr Gly Asn Gly Asp Tyr Pro Asp Val Val Lys Glu
355 360 365

Thr Val Gly Asp Met Leu Pro Ala Leu Thr Asp Glu Asp Lys Gly Tyr
370 375 380

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