

PhoenixTemp2874.tmp.txt
SEQUENCE LISTING

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gagctccttt caatgtgata catatga 27

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gtcgaccgcg tataataaag aataat 26

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<223> 994103

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1 5 10 15

gaa ttg gct caa gct gtg gta ttt act tca caa ggg gta cca ttt atg 96
Glu Leu Ala Gln Ala Val Val Phe Thr Ser Gln Gly Val Pro Phe Met
20 25 30

caa ggt gga gaa gaa atg ctg cgg aca aaa ggc ggt aat gat aat agt 144
Gln Gly Gly Glu Glu Met Leu Arg Thr Lys Gly Gly Asn Asp Asn Ser
35 40 45

tac aat gcc ggg gat agc gtg aat cag ttc gat tgg tca aga aaa gca 192
Tyr Asn Ala Gly Asp Ser Val Asn Gln Phe Asp Trp Ser Arg Lys Ala
50 55 60

caa ttt gaa aat gta ttc gac tac tat tct tgg ttg att cat cta cgt 240
Gln Phe Glu Asn Val Phe Asp Tyr Tyr Ser Trp Leu Ile His Leu Arg
65 70 75 80

gat aat cac cca gca ttc cgt atg acg aca gcg gat caa atc aaa caa 288
Asp Asn His Pro Ala Phe Arg Met Thr Thr Ala Asp Gln Ile Lys Gln
85 90 95

aat ctc act ttc ttg gat agc cca acg aac act gta gca ttt gaa tta 336
Asn Leu Thr Phe Leu Asp Ser Pro Thr 105 Val Ala Phe Glu Leu
100 105 110

aaa aat cat gcc aat cat gat aaa tgg aaa aac att ata gtt atg tat 384
Lys Asn His Ala Asn His Asp Lys Trp Lys Asn Ile Ile Val Met Tyr
115 120 125

aat cca aat aaa act gca caa act ctc act cta cca agt gga aat tgg 432
Asn Pro Asn Lys Thr Ala Gln Thr Leu Thr Leu Pro Ser Gly Asn Trp
130 135 140

aca att gta gga tta ggc aat caa gta ggt gag aaa tca cta ggc cat 480
Thr Ile Val Gly Leu Gly Asn Gln Val Gly Glu Lys Ser Leu Gly His
145 150 155 160

gta aat ggc acg gtt gag gtg cca gct ctt agt acg atc att ctt cat 528
Val Asn Gly Thr Val Glu Val Pro Ala Leu Ser Thr Ile Ile Leu His
165 170 175

cag ggt aca tct gaa gat gtc att gat caa aat ccg gaa ccg acc ccg 576
Gln Gly Thr Ser Glu Asp Val Ile Asp Gln Asn Pro Glu Pro Thr Pro
180 185 190

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gaa ccg aac act tcc caa ata aca ttt act gta aat aac gcc aca acc	624
Glu Pro Asn Thr Ser Gln Ile Thr Phe Thr Val Asn Asn Ala Thr Thr	
195 200 205	
ggt tgg gga caa aat gta tac gtt gtc ggg aat att tcg cag ctg ggg	672
Val Trp Gly Gln Asn Val Tyr Val Val Gly Asn Ile Ser Gln Leu Gly	
210 215 220	
aac tgg gat cca gtc cac gca gtt caa atg acg ccg tct tct tat cca	720
Asn Trp Asp Pro Val His Ala Val Gln Met Thr Pro Ser Ser Tyr Pro	
225 230 235 240	
aca tgg act gta aca atc cct ctt ctt caa ggg caa aac ata caa ttt	768
Thr Trp Thr Val Thr Ile Pro Leu Leu Gln Gly Gln Asn Ile Gln Phe	
245 250 255	
aaa ttt atc aaa aaa gat tca gct gga aat gtc att tgg gaa gat ata	816
Lys Phe Ile Lys Lys Asp Ser Ala Gly Asn Val Ile Trp Glu Asp Ile	
260 265 270	
tcg aat cga aca tac acc gtc cca act gct gca tcc gga gca tat aca	864
Ser Asn Arg Thr Tyr Thr Val Pro Thr Ala Ala Ser Gly Ala Tyr Thr	
275 280 285	
gcc agc tgg aac gtg ccc tag acgcgttaat caataaaaaa acgctgtgcg	915
Ala Ser Trp Asn Val Pro	
290	
gttaaagggc acagcgtttt tttgtgtatg gatccgcggc cgcgcggtcaa caatgacctt	975
tatgccatat tcttcagcgg ctgcacacat ttcttttaaat tcttggttcag tacctaagta	1035
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Ser Ala Ser Asn Pro Asn Asp Thr Gln Ala Asp Arg Ile Lys Met Asp
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 20 25 30

Gln Gly Gly Glu Glu Met Leu Arg Thr Lys Gly Gly Asn Asp Asn Ser
 35 40 45

Tyr Asn Ala Gly Asp Ser Val Asn Gln Phe Asp Trp Ser Arg Lys Ala
 50 55 60

Gln Phe Glu Asn Val Phe Asp Tyr Tyr Ser Trp Leu Ile His Leu Arg
 65 70 75 80

Asp Asn His Pro Ala Phe Arg Met Thr Thr Ala Asp Gln Ile Lys Gln

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85

90

95

Asn Leu Thr Phe Leu Asp Ser Pro Thr Asn Thr Val Ala Phe Glu Leu
 100 105 110
 Lys Asn His Ala Asn His Asp Lys Trp Lys Asn Ile Ile Val Met Tyr
 115 120 125
 Asn Pro Asn Lys Thr Ala Gln Thr Leu Thr Leu Pro Ser Gly Asn Trp
 130 135 140
 Thr Ile Val Gly Leu Gly Asn Gln Val Gly Glu Lys Ser Leu Gly His
 145 150 155 160
 Val Asn Gly Thr Val Glu Val Pro Ala Leu Ser Thr Ile Ile Leu His
 165 170 175
 Gln Gly Thr Ser Glu Asp Val Ile Asp Gln Asn Pro Glu Pro Thr Pro
 180 185 190
 Glu Pro Asn Thr Ser Gln Ile Thr Phe Thr Val Asn Asn Ala Thr Thr
 195 200 205
 Val Trp Gly Gln Asn Val Tyr Val Val Gly Asn Ile Ser Gln Leu Gly
 210 215 220
 Asn Trp Asp Pro Val His Ala Val Gln Met Thr Pro Ser Ser Tyr Pro
 225 230 235 240
 Thr Trp Thr Val Thr Ile Pro Leu Leu Gln Gly Gln Asn Ile Gln Phe
 245 250 255
 Lys Phe Ile Lys Lys Asp Ser Ala Gly Asn Val Ile Trp Glu Asp Ile
 260 265 270
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 Ala Ser Trp Asn Val Pro
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<221> mat_peptide

<222> (34)..(969)

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-30 -25 -20

Val Ala Ile Met Phe Leu Thr Val Cys Phe Pro Ala Tyr Lys Ala Leu
-15 -10 -5

Ala Asp Ser Thr Ser Thr Glu Val Ile Val His Tyr His Arg Phe Asp
-1 1 5 10 15

Ser Asn Tyr Ala Asn Trp Asp Leu Trp Met Trp Pro Tyr Gln Pro Val
20 25 30

Asn Gly Asn Gly Ala Ala Tyr Glu Phe Ser Gly Lys Asp Asp Phe Gly
35 40 45

Val Lys Ala Asp Val Gln Val Pro Gly Asp Asp Thr Gln Val Gly Leu
50 55 60

Ile Val Arg Thr Asn Asp Trp Ser Gln Lys Asn Thr Ser Asp Asp Leu
65 70 75

His Ile Asp Leu Thr Lys Gly His Glu Ile Trp Ile Val Gln Gly Asp
80 85 90 95

Pro Asn Ile Tyr Tyr Asn Leu Ser Asp Ala Gln Ala Ala Ala Thr Pro
100 105 110

Lys Val Ser Asn Ala Tyr Leu Asp Asn Glu Lys Thr Val Leu Ala Lys
115 120 125

Leu Thr Asn Pro Met Thr Leu Ser Asp Gly Ser Ser Gly Phe Thr Val
130 135 140

Thr Asp Lys Thr Thr Gly Glu Gln Ile Pro Val Thr Ala Ala Thr Asn
145 150 155

Ala Asn Ser Ala Ser Ser Ser Glu Gln Thr Asp Leu Val Gln Leu Thr
160 165 170 175

Leu Ala Ser Ala Pro Asp Val Ser His Thr Ile Gln Val Gly Ala Ala
180 185 190

Gly Tyr Glu Ala Val Asn Leu Ile Pro Arg Asn Val Leu Asn Leu Pro
195 200 205

Arg Tyr Tyr Tyr Ser Gly Asn Asp Leu Gly Asn Val Tyr Ser Asn Lys
210 215 220

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Ala Thr Ala Phe Arg Val Trp Ala Pro Thr Ala Ser Asp Val Gln Leu
225 230 235

Leu Leu Tyr Asn Ser Glu Thr Gly Pro Val Thr Lys Gln Leu Glu Met
240 245 250 255

Gln Lys Ser Asp Asn Gly Thr Trp Lys Leu Lys Val Pro Gly Asn Leu
260 265 270

Lys Asn Trp Tyr Tyr Leu Tyr Gln Val Thr Val Asn Gly Lys Thr Gln
275 280 285

Thr Ala Val Asp Pro Tyr Val Arg Ala Ile Ser Val Asn Ala Thr Arg
290 295 300

Gly Met Ile Val Asp Leu Glu Asp Thr Asn Pro Pro Gly Trp Lys Glu
305 310 315

Asp His Gln Gln Thr Pro Ala Asn Pro Val Asp Glu Val Ile Tyr Glu
320 325 330 335

Val His Val Arg Asp Phe Ser Ile Asp Ala Asn Ser Gly Met Lys Asn
340 345 350

Lys Gly Lys Tyr Leu Ala Phe Thr Glu His Gly Thr Lys Gly Pro Asp
355 360 365

Asn Val Lys Thr Gly Ile Asp Ser Leu Lys Glu Leu Gly Ile Asn Ala
370 375 380

Val Gln Leu Gln Pro Ile Glu Glu Phe Asn Ser Ile Asp Glu Thr Gln
385 390 395

Pro Asn Met Tyr Asn Trp Gly Tyr Asp Pro Arg Asn Tyr Asn Val Pro
400 405 410 415

Glu Gly Ala Tyr Ala Thr Thr Pro Glu Gly Thr Ala Arg Ile Thr Gln
420 425 430

Leu Lys Gln Leu Ile Gln Ser Ile His Lys Asp Arg Ile Ala Ile Asn
435 440 445

Met Asp Val Val Tyr Asn His Thr Phe Asn Val Gly Val Ser Asp Phe
450 455 460

Asp Lys Ile Val Pro Gln Tyr Tyr Tyr Arg Thr Asp Ser Ala Gly Asn
465 470 475

Tyr Thr Asn Gly Ser Gly Val Gly Asn Glu Ile Ala Thr Glu Arg Pro
480 485 490 495

Met Val Gln Lys Phe Val Leu Asp Ser Val Lys Tyr Trp Val Lys Glu
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500

505

510

Tyr His Ile Asp Gly Phe Arg Phe Asp Leu Met Ala Leu Leu Gly Lys
 515 520 525

Asp Thr Met Ala Lys Ile Ser Lys Glu Leu His Ala Ile Asn Pro Gly
 530 535 540

Ile Val Leu Tyr Gly Glu Pro Trp Thr Gly Gly Thr Ser Gly Leu Ser
 545 550 555

Ser Asp Gln Leu Val Thr Lys Gly Gln Gln Lys Gly Leu Gly Ile Gly
 560 565 570 575

Val Phe Asn Asp Asn Ile Arg Asn Gly Leu Asp Gly Asn Val Phe Asp
 580 585 590

Lys Ser Ala Gln Gly Phe Ala Thr Gly Asp Pro Asn Gln Val Asn Val
 595 600 605

Ile Lys Asn Gly Val Met Gly Ser Ile Ser Asp Phe Thr Ser Ala Pro
 610 615 620

Ser Glu Thr Ile Asn Tyr Val Thr Ser His Asp Asn Met Thr Leu Trp
 625 630 635

Asp Lys Ile Ser Ala Ser Asn Pro Asn Asp Thr Gln Ala Asp Arg Ile
 640 645 650 655

Lys Met Asp Glu Leu Ala Gln Ala Val Val Phe Thr Ser Gln Gly Val
 660 665 670

Pro Phe Met Gln Gly Gly Glu Glu Met Leu Arg Thr Lys Gly Gly Asn
 675 680 685

Asp Asn Ser Tyr Asn Ala Gly Asp Ser Val Asn Gln Phe Asp Trp Ser
 690 695 700

Arg Lys Ala Gln Phe Glu Asn Val Phe Asp Tyr Tyr Ser Trp Leu Ile
 705 710 715

His Leu Arg Asp Asn His Pro Ala Phe Arg Met Thr Thr Ala Asp Gln
 720 725 730 735

Ile Lys Gln Asn Leu Thr Phe Leu Asp Ser Pro Thr Asn Thr Val Ala
 740 745 750

Phe Glu Leu Lys Asn His Ala Asn His Asp Lys Trp Lys Asn Ile Ile
 755 760 765

Val Met Tyr Asn Pro Asn Lys Thr Ala Gln Thr Leu Thr Leu Pro Ser
 770 775 780

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Gly Asn Trp Thr Ile Val Gly Leu Gly Asn Gln Val Gly Glu Lys Ser
785 790 795

Leu Gly His Val Asn Gly Thr Val Glu Val Pro Ala Leu Ser Thr Ile
800 805 810 815

Ile Leu His Gln Gly Thr Ser Glu Asp Val Ile Asp Gln Asn Pro Glu
820 825 830

Pro Thr Pro Glu Pro Asn Thr Ser Gln Ile Thr Phe Thr Val Asn Asn
835 840 845

Ala Thr Thr Val Trp Gly Gln Asn Val Tyr Val Val Gly Asn Ile Ser
850 855 860

Gln Leu Gly Asn Trp Asp Pro Val His Ala Val Gln Met Thr Pro Ser
865 870 875

Ser Tyr Pro Thr Trp Thr Val Thr Ile Pro Leu Leu Gln Gly Gln Asn
880 885 890 895

Ile Gln Phe Lys Phe Ile Lys Lys Asp Ser Ala Gly Asn Val Ile Trp
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Glu Asp Ile Ser Asn Arg Thr Tyr Thr Val Pro Thr Ala Ala Ser Gly
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Ala Tyr Thr Ala Ser Trp Asn Val Pro
930 935

<210> 15
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<213> Thermoanaerobacter sp.

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Asn Trp Asp Thr Ser Lys Ala Ile Gly Pro Met Phe Asn Gln Val Val
35 40 45

Tyr Gln Tyr Pro Thr Trp Tyr Tyr Asp Val Ser Val Pro Ala Gly Thr
50 55 60

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

PhoenixTemp2874.tmp.txt
Gly Tyr Asn His Val Tyr Thr Thr Pro Thr Ser Gly Thr Ala Thr Val
85 90 95

Ile Val Asp Trp Gln Pro
100