

bcs 10-2012_ST25.txt
SEQUENCE LISTING

<110> University of Copenhagen
Bayer BioScience N.V.

<120> Glucosinolate transporter protein and uses thereof

<130> BCS 10-2012

<160> 150

<170> PatentIn version 3.5

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<211> 1821

<212> DNA

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<221> CDS

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Cys Phe Leu Gly Ser Phe Val Ile Leu Leu Thr Ala Ala Ile Pro Ser	
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Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu Gly
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130 135 140

Ala Cys Gly Thr Ala Ala Asp Ser Ile Cys Asn Gly Pro Ser Gly Gly
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Gln Ile Ala Phe Leu Leu Met Gly Leu Gly Phe Leu Val Val Gly Ala
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Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn
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Pro Lys Ser Glu Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp
195 200 205

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Leu Tyr Val Lys Ile Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala
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275 280 285

Gln Pro Trp Leu Asn Leu Tyr Asn Tyr Tyr Pro Pro Lys Tyr Ala Asn
290 295 300

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

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Glu	Ala	Phe	Ala 500	Ala	Ile	Gly	Gln	Met 505	Glu	Phe	Tyr	Tyr	Lys 510	Gln	Phe	
Pro	Glu	Asn 515	Met	Arg	Ser	Phe	Ala 520	Gly	Ser	Ile	Phe	Tyr 525	Val	Gly	Gly	
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gtg Val	att Ile	cat His 115	ccc Pro	ctg Leu	cat His	cca Pro	gct Ala 120	caa Gln	tgc Cys	gct Ala	aag Lys	gaa Glu 125	ata Ile	gga Gly	agc Ser	384
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gat Asp 305	ggg Gly	tcg Ser	ccg Pro	gtg Val	gat Asp 310	gca Ala	tgg Trp	aaa Lys	ctc Leu	tgc Cys 315	agt Ser	atg Met	caa Gln	caa Gln	gtg Val 320	960
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335

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 Ala Met Ile Ala Cys Phe Leu Gly Ser Val Ala Met Asp Leu Thr Ala
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 115 120 125
 Val Cys Asn Gly Pro Ser Ile Gly Gln Ile Met Phe Leu Ala Gly Ala
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 Pro Phe Gly Ala Asp Gln Phe Asp Pro Lys Thr Lys Glu Gly Lys Arg
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 180 185 190
 Gln Met Val Ser Leu Thr Leu Ile Val Tyr Val Gln Ser Asn Val Ser
 195 200 205
 Trp Ser Ile Gly Leu Ala Ile Pro Ala Ile Leu Met Leu Leu Gly Cys
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 Ile Ile Phe Phe Ala Gly Ser Lys Leu Tyr Val Lys Val Lys Ala Ser
 225 230 235 240
 Gly Ser Pro Ile His Ser Ile Thr Arg Val Ile Val Val Ala Ile Lys
 245 250 255
 Lys Arg Arg Leu Lys Pro Val Gly Pro Asn Glu Leu Tyr Asn Tyr Ile
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 275 280 285
 Phe Leu Asp Lys Ser Ala Ile Gln Thr Gln Asp Asp Lys Leu Asn Lys
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 Asp Gly Ser Pro Val Asp Ala Trp Lys Leu Cys Ser Met Gln Gln Val
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Glu Glu Val Lys Cys Val Ile Arg Val Leu Pro Val Trp Leu Ser Ala
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 340 345 350
 Gln Ser Leu Gln Ser Asp Arg Arg Leu Gly Pro Gly Ser Phe Gln Ile
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 Pro Ala Gly Ser Tyr Thr Val Phe Leu Met Leu Gly Met Thr Ile Phe
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 Gly Arg Asp Gly Gly Ile Thr Gln Leu Gln Arg Val Gly Ala Gly Leu
 405 410 415
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 485 490 495
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 Leu Ser Ala Val His Asp Thr Thr Glu Gly Phe Ser Gly Gly Ser Trp
 515 520 525
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Thr Leu Glu Arg Leu Ala Thr Phe Gly Leu Met Ala Asn Phe Met Val	
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Tyr Met Val Arg Glu Tyr His Met Asp Gln Val Gln Ala Val Thr Leu	
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Ser Ile Ala Glu Leu Leu Gly Met Leu Val Leu Thr Phe Thr Ser Leu	
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180 185 190	
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Gln Leu Val Ser Met Thr Leu Val Leu Tyr Val Gln Asn Asn Ile Ser	
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Gly Ser Val Phe Ser Gly Val Phe Lys Val Leu Val Ala Ala Tyr Lys	
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Lys Arg Lys Ala Arg Phe Thr Ser Gly Ile Asp Tyr His Gln Pro Leu	
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Phe Ile Ser Asp Ser Tyr Thr Gly Lys Phe Asn Thr Ile Val Phe Gly
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Ser Ile Ala Glu Leu Leu Gly Met Leu Val Leu Thr Phe Thr Ser Leu
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Val Pro Asn Leu Arg Pro Pro Pro Cys Thr Ala Asp Gln Ile Thr Gly
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225 230 235 240

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

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Met Asp Leu Gln Phe Pro Gly Thr Ser Tyr Leu Ile Pro Pro Ala Ser
355 360 365

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370 375 380

Glu Thr Val Leu Val Arg His Ile Glu Asn Ile Thr Lys Gln Asn Gly
385 390 395 400

Gly Ile Ser Leu Leu Gln Lys Val Gly Ile Gly Asn Ile Phe Ser Ile
405 410 415

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450 455 460

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Thr Asp Asp Ile Asp Lys Ser Lys Leu Asp Cys Phe Tyr Tyr Phe Ile
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gag Glu 50	aaa Lys	aag Lys	cct Pro	gga Gly	gga Gly	tgg Trp 55	aga Arg	gcc Ala	gtc Val	tcg Ser	ttc Phe 60	att Ile	tta Leu	gga Gly	aat Asn	192
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Glu Thr Leu Glu Arg Leu Gly Ser Ile Gly Leu Leu Ala Asn Phe Met
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Val Tyr Leu Thr Lys Val Phe His Leu Glu Gln Val Asp Ala Ala Asn
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Val Ile Asn Ile Trp Ser Gly Phe Thr Asn Leu Thr Pro Leu Val Gly
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Ala Tyr Ile Ser Asp Thr Tyr Val Gly Arg Phe Lys Thr Ile Ala Phe
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Leu Cys Phe Leu Ser Val Gly Ser Gly Gly Ile Arg Pro Cys Ser Ile
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Trp Ile Ile Gly Phe Ser Ile Pro Thr Gly Leu Met Ala Leu Ala Val
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Gly Ser Ile Phe Ser Gly Ile Ala Gln Val Ile Val Ala Ala Arg Lys
275 280 285

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

Asn Gln Phe Arg Cys Leu Asp Lys Ala Ala Val Val Ile Glu Gly Asp
325 330 335

Leu Thr Pro Glu Gly Pro Pro Ala Asp Lys Trp Arg Leu Cys Ser Val
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Gln Glu Val Glu Glu Val Lys Cys Leu Ile Arg Ile Val Pro Ile Trp
355 360 365

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370 375 380

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Glu Ile Pro Ala Gly Ser Leu Ser Val Ile Ser Leu Leu Thr Ile Gly
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Phe	Asn	Trp	Tyr	Tyr	Leu	Thr	Leu	Thr	Met	Val	Leu	Ile	Phe	Ser	His		
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225 230 235 240

Ile Ala Arg Val Ile Val Ala Ala Arg Lys Lys Arg Asp Leu Lys Ile
245 250 255

Ser Leu Val Asp Asp Gly Thr Glu Glu Tyr Tyr Glu Pro Pro Val Lys
260 265 270

Pro Gly Val Leu Ser Lys Leu Pro Leu Thr Asp Gln Phe Lys Phe Leu
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Asp Lys Ala Ala Val Ile Leu Asp Gly Asp Leu Thr Ser Glu Gly Val
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Pro Ala Asn Lys Trp Arg Leu Cys Ser Ile Gln Glu Val Glu Glu Val
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Lys Cys Leu Ile Arg Val Val Pro Val Trp Ser Ala Gly Ile Ile Ser
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Lys Met Asp Arg His Met Gly Pro His Phe Glu Ile Pro Ala Ala Ser
355 360 365

Ile Thr Val Ile Ser Tyr Ile Thr Ile Gly Ile Trp Val Pro Ile Tyr
370 375 380

Glu His Leu Leu Val Pro Phe Leu Trp Arg Met Arg Lys Phe Arg Val
385 390 395 400

Thr Leu Leu Gln Arg Met Gly Ile Gly Ile Val Phe Ala Ile Leu Ser
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Glu Met Thr Gln Met Ser Val Phe Trp Leu Ala Leu Pro Leu Ile Leu
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Asn Ser Gln Phe Pro Glu His Met Arg Ser Ile Ala Asn Ser Leu Phe
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Pro Leu Ser Phe Ala Ala Ala Asn Tyr Leu Ser Ser Leu Leu Val Thr
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Val Leu Gly Val Val Asn Leu Val Tyr Phe Trp Tyr Cys Ala His Arg
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Ile Ile	
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Phe Leu Met Leu Gly Leu Ala Leu Leu Val Val Gly Ala Gly Gly Ile
165 170 175

Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser
180 185 190

Glu Ser Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn Trp Tyr Phe Phe
195 200 205

Thr Phe Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu Val Val Tyr Ile
210 215 220

Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Ser Ile Pro Val Gly Leu
225 230 235 240

Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly His Lys Leu Tyr Val
245 250 255

Lys Val Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala Arg Val Ile
260 265 270

Ala Ala Ala Ile Ser Lys Arg Gly Leu Lys Pro Val Lys Gln Pro Trp
275 280 285

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

Lys Tyr Thr Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Ile Met Thr
305 310 315 320

Pro Glu Asp Lys Leu Asn Ser Asp Gly Thr Ala Ser Asp Pro Trp Lys
325 330 335

Leu Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Ile Arg Val
340 345 350

Ile Pro Ile Trp Phe Ala Cys Ala Ile Tyr Tyr Leu Ala Ile Ser Ile
355 360 365

Gln Met Thr Tyr Pro Val Phe Gln Ala Gln Gln Ser Asp Arg Arg Leu
370 375 380

Gly Thr Gly Gly Phe Lys Ile Pro Ala Ala Thr Tyr Val Val Phe Leu
385 390 395 400

Met Thr Gly Met Thr Val Phe Ile Ile Ile Tyr Asp Arg Val Leu Val
405 410 415

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

Gln Arg Ile Gly Ala Gly Ile Phe Phe Ala Val Leu Ser Leu Leu Val
435 440 445

Ser Gly Phe Ile Glu Glu Arg Arg Arg Ser Ile Ala Leu Thr Lys Gln
450 455 460

Thr Leu Gly Met Glu Pro Arg Thr Gly Glu Ile Ser Ser Met Ser Ala
465 470 475 480

Met Trp Leu Ile Pro Gln Leu Val Leu Ala Gly Ile Ala Glu Ala Phe
485 490 495

Thr Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn
500 505 510

Met Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser
515 520 525

Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His Arg Thr Thr Glu
530 535 540

His Ser Pro Ser Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Ala Lys
545 550 555 560

Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met Phe Val Asn Met
565 570 575

Val Tyr Phe Leu Ile Met Ala Lys Phe Tyr Arg Tyr Lys Gly Ser Asp
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Lys Gln Ala Lys Asn Ser Val
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Tyr Ser Asp Gly Gly Gly Ser Asp Leu Thr Ser Thr Val Asp Ser Ser
20 25 30

ggc gac gag cag aaa aag ctc gtt tat aga ggc tgg aaa gtc atg cct 144
Gly Asp Glu Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val Met Pro
35 40 45

tat atc att g gtaacgcttt tctctctctc tctagaccgt tatttttaaa 194
Tyr Ile Ile
50

ctctgttttc tttttgtcaa ctaactctgt tttttcgtgt aacagaacac ttttcccgt 254

gatggttttt ttgtcattta ataatttggt tattttttatc ttgtcacgtt ggcttgactg 314

tgtagctatt ctagataatc taccaggtgt agtgtataga aagaaatggt acgttggtgt 374

ctttagtaac gtttttaaat gtccgtgaaa aggactttga atcactggaa gtccaatctt 434

ggttccaaac tgtgttactt tatgagaaac ccatgttggt ttgactattc attaacgaaa 494

agaatttgta tcttgatag gt aat gag aca ttt gag aag att ggg atc ata 545
Gly Asn Glu Thr Phe Glu Lys Ile Gly Ile Ile
55 60

ggg aca tta tca aac ctt cta gtg tac cta act caa gta ttc aac ctg 593
Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Gln Val Phe Asn Leu
65 70 75

aag aaa tac aca gct gca act att atc agt gcc ttt agt ggc act atc 641
Lys Lys Tyr Thr Ala Ala Thr Ile Ile Ser Ala Phe Ser Gly Thr Ile
80 85 90

aac ttc ggc act ttc ttc gct gct ttt ctg tgt gac act tac ttt ggt 689
Asn Phe Gly Thr Phe Phe Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly
95 100 105 110

cgc tac aag act ctc agt gtg gct gtc atc gct tgt ttt ctg 731
Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu

gtactaatgc tgctgatctt aatggggtttt ttttcttacg ccaagaactc ttaatgctga 791

tcatttttgg tctgtgtag gga tcg ctt ttt ata cta atg acg gct gca gtt 843
Gly Ser Leu Phe Ile Leu Met Thr Ala Ala Val
125 130 135

ccg gga ttg cac ccg act cct tgt gga act aaa agt tcg tgc caa ggg 891
Pro Gly Leu His Pro Thr Pro Cys Gly Thr Lys Ser Ser Cys Gln Gly
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Pro Asn Gly Gly Gln Val Leu Phe Leu Leu Leu Gly Leu Ala Leu Leu
155 160 165

gta gtc ggt gct ggt ggt atc agg ccg tgt aat ttg gcc ttt gga gct 987
Val Val Gly Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala
170 175 180

gat cag ttc aac ccc aag tca gaa tct gga agg aaa gga atc aac agt 1035
Asp Gln Phe Asn Pro Lys Ser Glu Ser Gly Arg Lys Gly Ile Asn Ser
185 190 195

ttc ttc aac tgg tac ttc ttc act ttc acg ttt gcg cag atc atc tcg 1083
Phe Phe Asn Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Ile Ser
200 205 210 215

ctc acg cta gtt gtg tat atc cag tca aac gtg agc tgg acc atc ggt 1131
Leu Thr Leu Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly
220 225 230

ttg agt atc cct gtg ggt cta atg ttc ttg gcc tgc gtc att tac ttt 1179
Leu Ser Ile Pro Val Gly Leu Met Phe Leu Ala Cys Val Ile Tyr Phe
235 240 245

gct ggc cat aat ctc tac gta aaa gtg aaa gcc tcg ggt agt ccc ttg 1227
Ala Gly His Asn Leu Tyr Val Lys Val Lys Ala Ser Gly Ser Pro Leu
250 255 260

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Ala Gly Ile Ala Arg Val Ile Ala Ala Ala Ile Lys Lys Arg Gly Leu
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Lys Pro Val Lys Lys Pro Cys Ser Asp Leu Tyr Asn His Ile Pro Pro
280 285 290 295

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Asn Tyr Ala Asn Ser Thr Leu Lys Tyr Ser Asp Gln Phe Arg
300 305

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gtttcttag a ttt ctc gac aag gca gcg gtg atg acc cct gag gac aag 1472
Phe Leu Asp Lys Ala Val Met Thr Pro Glu Asp Lys
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Leu Lys Pro Asp Gly Thr Ala Ser Asp Pro Trp Asn Leu Cys Thr Met
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Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Ile Pro Ile Trp
340 345 350

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Leu Ala Cys Ala Val Tyr Tyr Leu Ala Ile Thr Leu Gln Met Thr Tyr
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Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly Ser Gly Gly
375 380 385

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Phe Lys Ile Pro Gly Ala Thr Tyr Val Val Phe Leu Met Ser Gly Met

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	455	460	465
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	470	475	480
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	485	490	495
caa atg gag ttt tac tac aag cag ttt cct gaa aac atg aag agc ttt	Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met Lys Ser Phe	2048	
	500	505	510
gcg ggt tct atc ttc tat gtt ggt gca gga gtt tct agc tac ctc gct	Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser Ser Tyr Leu Ala	2096	
	515	520	525
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	535	540	545
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	550	555	560
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	565	570	575
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	580	585	590
tct gtg att aag acc aat gaa gaa gag acc aag gag aat cag caa cac	Ser Val Ile Lys Thr Asn Glu Glu Glu Thr Lys Glu Asn Gln Gln His	2336	
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			20					25				30			
Gly	Asp	Glu	Gln	Lys	Lys	Leu	Val	Tyr	Arg	Gly	Trp	Lys	Val	Met	Pro
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Tyr Ile Ile Gly Asn Glu Thr Phe Glu Lys Ile Gly Ile Ile Gly Thr
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 Leu Ser Asn Leu Leu Val Tyr Leu Thr Gln Val Phe Asn Leu Lys Lys
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 Tyr Thr Ala Ala Thr Ile Ile Ser Ala Phe Ser Gly Thr Ile Asn Phe
 85 90 95
 Gly Thr Phe Phe Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg Tyr
 100 105 110
 Lys Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu Phe
 115 120 125
 Ile Leu Met Thr Ala Ala Val Pro Gly Leu His Pro Thr Pro Cys Gly
 130 135 140
 Thr Lys Ser Ser Cys Gln Gly Pro Asn Gly Gly Gln Val Leu Phe Leu
 145 150 155 160
 Leu Leu Gly Leu Ala Leu Leu Val Val Gly Ala Gly Gly Ile Arg Pro
 165 170 175
 Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu Ser
 180 185 190
 Gly Arg Lys Gly Ile Asn Ser Phe Phe Asn Trp Tyr Phe Phe Thr Phe
 195 200 205
 Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu Val Val Tyr Ile Gln Ser
 210 215 220
 Asn Val Ser Trp Thr Ile Gly Leu Ser Ile Pro Val Gly Leu Met Phe
 225 230 235 240
 Leu Ala Cys Val Ile Tyr Phe Ala Gly His Asn Leu Tyr Val Lys Val
 245 250 255
 Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala Arg Val Ile Ala Ala
 260 265 270
 Ala Ile Lys Lys Arg Gly Leu Lys Pro Val Lys Lys Pro Cys Ser Asp
 275 280 285
 Leu Tyr Asn His Ile Pro Pro Asn Tyr Ala Asn Ser Thr Leu Lys Tyr
 290 295 300
 Ser Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Val Met Thr Pro Glu
 305 310 315 320
 Asp Lys Leu Lys Pro Asp Gly Thr Ala Ser Asp Pro Trp Asn Leu Cys
 325 330 335
 Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Ile Pro
 340 345 350

Ile Trp Leu Ala Cys Ala Val Tyr Tyr Leu Ala Ile Thr Leu Gln Met
355 360 365

Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly Ser
370 375 380

Gly Gly Phe Lys Ile Pro Gly Ala Thr Tyr Val Val Phe Leu Met Ser
385 390 395 400

Gly Met Thr Val Phe Ile Ile Phe Tyr Asp Arg Val Leu Val Pro Ser
405 410 415

Leu Arg Arg Val Thr Gly Leu Asp Asn Gly Ile Thr Leu Leu Gln Arg
420 425 430

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

Val Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met Lys
500 505 510

Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser Ser Tyr
515 520 525

Leu Ala Ser Phe Leu Ile Ser Thr Val His Lys Thr Thr Glu His Ser
530 535 540

Arg Ser Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Gly Lys Leu Asp
545 550 555 560

Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met Phe Val Asn Met Val Tyr
565 570 575

Phe Leu Leu Met Ala Lys Phe Tyr Arg Tyr Lys Val Thr Asn Asp Glu
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Gln His Asp Lys Ser Tyr Val
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Tyr Ser Ser Val Asp Gly Gly Gly Ser Asp Ser Val Asp Ser Phe Glu
20 25 30

gac gag cag aaa aag ctc gtt tat aga ggc tgg aaa gtc atg ccc ttt      144
Asp Glu Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val Met Pro Phe
35 40 45

atc att g gtaacgcttt cttcttctct tcagacaact tttttttttt agttttattct      201
Ile Ile
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Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn Phe Gly Thr Phe
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Ser Val Ala Val Ile Ala Cys Phe Leu
115 120

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atttcttgta g gga tcg ctt gtg ata cta ctg acg gct gca gtt cca gga      967
Gly Ser Leu Val Ile Leu Leu Thr Ala Ala Val Pro Gly
125 130 135

ttg cac ccc att cct tgt gga aca cag agt tct tgc caa ggc cca agc      1015
Leu His Pro Ile Pro Cys Gly Thr Gln Ser Ser Cys Gln Gly Pro Ser
140 145 150

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aga gtg acc ggt cta gac acg ggg ata aca ctc tta caa aga ata gga Arg Val Thr Gly Leu Asp Thr Gly Ile Thr Leu Leu Gln Arg Ile Gly 420 425 430	1938
gct ggc att ttc ttt gcc gtg ttg agt tta ttg gtc tcc ggg ttt ata	1986

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

Thr Phe Leu Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg Tyr Lys
 100 105 110
 Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu Val Ile
 115 120 125
 Leu Leu Thr Ala Ala Val Pro Gly Leu His Pro Ile Pro Cys Gly Thr
 130 135 140
 Gln Ser Ser Cys Gln Gly Pro Ser Glu Gly Gln Ile Ala Phe Leu Leu
 145 150 155 160
 Met Gly Leu Ala Leu Leu Val Val Gly Ala Gly Gly Ile Arg Pro Cys
 165 170 175
 Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu Ser Gly
 180 185 190
 Lys Lys Gly Ile Asn Ser Phe Phe Asn Trp Tyr Phe Phe Thr Phe Thr
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 Phe Ala Gln Ile Ile Ser Leu Thr Leu Val Val Tyr Ile Gln Ser Asn
 210 215 220
 Val Ser Trp Thr Ile Gly Leu Ser Ile Pro Val Gly Leu Met Phe Leu
 225 230 235 240
 Ala Cys Val Ile Phe Phe Ala Gly His Lys Leu Tyr Val Lys Val Lys
 245 250 255
 Ala Ser Gly Ser Pro Leu Ala Gly Ile Gly His Val Ile Ala Ala Ala
 260 265 270
 Ile Lys Lys Arg Gly Leu Lys Pro Val Lys Gln Pro Trp Ile Asp Leu
 275 280 285
 Tyr Asn His Ile Pro Pro Asn Tyr Ala Asn Ser Thr Leu Lys Tyr Thr
 290 295 300
 Asp Gln Leu Arg Phe Leu Asp Lys Ala Ala Ile Met Thr Pro Glu Asp
 305 310 315 320
 Lys Leu Asn Ser Asp Gly Thr Ala Ser Asp Pro Trp Lys Leu Cys Thr
 325 330 335
 Met Gln Lys Val Glu Glu Val Lys Cys Ile Leu Arg Val Ile Pro Ile
 340 345 350
 Trp Phe Ala Cys Ala Ile Tyr Tyr Leu Ala Ile Ser Met Gln Met Thr
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 Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Leu Leu Gly Ser Gly
 370 375 380
 Gly Phe Lys Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met Ser Gly

10-2012_ST25.txt															
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Gly	Ala	Gly 435	Ile	Phe	Phe	Ala	Val 440	Leu	Ser	Leu	Leu	Val 445	Ser	Gly	Phe
Ile	Glu 450	Glu	Arg	Arg	Arg	Thr 455	Phe	Ala	Leu	Thr	Arg 460	Pro	Thr	Leu	Gly
Ser 465	Glu	Pro	Arg	Thr	Gly 470	Glu	Ile	Ser	Ser	Met 475	Ser	Ala	Met	Trp	Leu 480
Ile	Pro	Gln	Leu	Val 485	Leu	Ala	Gly	Val	Ala 490	Glu	Ala	Phe	Val	Ala 495	Ile
Gly	Gln	Met	Glu 500	Phe	Tyr	Tyr	Lys	Gln 505	Phe	Pro	Glu	Asn	Met 510	Lys	Ser
Phe	Ala	Gly 515	Ser	Ile	Phe	Tyr	Val 520	Gly	Gly	Gly	Val	Ser 525	Ser	Tyr	Leu
Ala	Ser 530	Phe	Leu	Ile	Ser	Thr 535	Val	His	Arg	Thr	Thr 540	Glu	His	Ser	Pro
Thr 545	Gly	Asn	Trp	Leu	Ala 550	Glu	Asp	Leu	Asn	Lys 555	Ala	Lys	Leu	Asp	Tyr 560
Phe	Tyr	Phe	Met	Leu 565	Thr	Gly	Leu	Met	Phe 570	Val	Asn	Phe	Leu	Tyr 575	Phe
Leu	Leu	Met	Ala 580	Arg	Trp	Tyr	Arg	Tyr 585	Lys	Gly	Thr	His	Asp 590	Glu	Val
Ser	Tyr	Val 595	Val	Asp	Thr	Val	Asp 600	Glu	Glu	Thr	Lys	Gln 605	Gln	Asp	Lys
Asn	Ser 610	Val													

bcs 10-2012_ST25.txt

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Gln Lys Pro Tyr Ser Ala Val Asp Gly Gly Gly Ser Asp Ser Val Asp
20 25 30

tca ttt gat gaa gat cag aaa aag ctc gtg tat aga gga tgg aaa gtc 144
Ser Phe Asp Glu Asp Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val
35 40 45

atg cct ttt atc att g gtaacgcttt ttttttttct ctattcagac actccgtttt 200
Met Pro Phe Ile Ile
50

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ataaactaga acatgtcgtc cgtgaatttt aaaagtactt ttcttttctc ttctttcttt 320
tgactgaaaa cgaatgaaac caggatcaac caaatctacc agatctagag aaagagatat 380
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gaaacccgtt ttttctttga caactgattc atttattgtg aaaaagaaat taataatgat 620
tcttggtttt tttatag gt aat gaa aca ttt gag aag att ggg atc att 669
Gly Asn Glu Thr Phe Glu Lys Ile Gly Ile Ile
55 60

ggg aca tta tca aac ctt ctc gtc tac cta act caa gta ttc aac ctc 717
Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Gln Val Phe Asn Leu
65 70 75 80

aag aaa tac aca gct gca acc atc atc aat gcc ttt agt ggc acc atc 765
Lys Lys Tyr Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile
85 90 95

aac ttc ggc act ttc ctc gct gct ttc ctc tgc gac act tac ttt ggt 813
Asn Phe Gly Thr Phe Leu Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly
100 105 110

cgc tac aag act ctc agt gtt gct gtc gtc gct tgt ttt ctg 855
Arg Tyr Lys Thr Leu Ser Val Ala Val Val Ala Cys Phe Leu
115 120 125

gtaactacta atgctgttct taacggttta gttttcgtca agactctatt cttttttggt 915
tttttttggt tttgctgaac cgtgttttat ctcttgtag gga tcg ctt gcg ata 969
Gly Ser Leu Ala Ile
130

cta ctc acg gca gca gtt ccg gga ctg cac ccg act cct tgt gga aca 1017
Leu Leu Thr Ala Ala Val Pro Gly Leu His Pro Thr Pro Cys Gly Thr
135 140 145

aaa agt tca tgc gaa ggg cca ggt gcg ggc cag att ttg ttt ctg atg 1065
Lys Ser Ser Cys Glu Gly Pro Gly Ala Gly Gln Ile Leu Phe Leu Met
150 155 160

ttg ggt tta gcg ctt ctt gtg gtt ggt gct ggt ggt atc agg ccg tgt 1113
Leu Gly Leu Ala Leu Leu Val Val Gly Ala Gly Gly Ile Arg Pro Cys
165 170 175

aac ttg gcg ttc ggt gcc gat cag ttc aac ccc aag tcc gaa tca gga 1161
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bcs 10-2012_ST25.txt

180	185	190	195																									
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ttc Phe	gcg Ala	cag Gln	atc Ile 215	atc Ile	tcg Ser	ctc Leu	acg Thr	cta Leu 220	ggt Val	gtg Val	tat Tyr	atc Ile	cag Gln 225	tcg Ser	aat Asn	1257												
gtg Val	agc Ser	tgg Trp 230	acc Thr	atc Ile	ggt Gly	ttg Leu	agt Ser 235	atc Ile	ccc Pro	gtg Val	ggt Gly	ctc Leu 240	atg Met	ttc Phe	ttg Leu	1305												
gct Ala	tgc Cys 245	gtc Val	att Ile	ttc Phe	ttc Phe	gct Ala 250	ggt Gly	cat His	aaa Lys	ctt Leu	tat Tyr 255	gtt Val	aaa Lys	gtg Val	aaa Lys	1353												
gcc Ala 260	tcg Ser	ggc Gly	agt Ser	ccc Pro	ttg Leu 265	gct Ala	ggt Gly	ata Ile	gct Ala	cgt Arg 270	gtt Val	ata Ile	gca Ala	gca Ala	gcg Ala 275	1401												
atc Ile	tcg Ser	aaa Lys	cga Arg	gga Gly 280	ttg Leu	aag Lys	ccg Pro	gtc Val	aag Lys 285	cag Gln	cct Pro	tgg Trp	gtc Val	gat Asp 290	ctt Leu	1449												
tac Tyr	aat Asn	cac His	att Ile 295	cct Pro	cgt Arg	aac Asn	tat Tyr	gca Ala 300	aac Asn	ttg Leu	acc Thr	cta Leu	aaa Lys 305	tac Tyr	acc Thr	1497												
gac Asp	cag Gln	ttc Phe	ag Arg 310	gtataactcaa tagttctgtc tctattgctt tatatccgga												1548												
tgaaacattc gcctttactt ctaaataattt ttaaaatggg tcgtatagac cccaagttgt																1608												
caaatttggt taccaaaata tatatttttt atttaccaaa atatttttaa aatgggtccg																1668												
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gat Asp	cca Pro	tgg Trp 335	aaa Lys	cta Leu	tgt Cys	acg Thr	atg Met 340	cag Gln	caa Gln	gtg Val	gaa Glu	gaa Glu 345	gtg Val	aaa Lys	tgc Cys	1819												
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cgt Arg	gtc Val	ctt Leu 415	gtc Val	cca Pro	tcg Ser	ctc Leu	aaa Lys 420	aga Arg	gtg Val	acc Thr	ggt Gly	cta Leu 425	gac Asp	act Thr	ggt Gly	2059												
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agt Ser	tta Leu	ttg Leu	gtc Val	tcc Ser	ggg Gly	ttc Phe	ata Ile	gag Glu	gaa Glu	cgt Arg	aga Arg	aga Arg	agc Ser	att Ile	gcg Ala	2155												

bcs 10-2012_ST25.txt

445	450	455	460	
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gct gaa gca ttt aca gcc att gga cag atg gag ttt tac tac aag cag Ala Glu Ala Phe Thr Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln 505				2299
ttt cct gag aac atg agg agc ttt gct ggc tct atc ttc tat gtc ggt Phe Pro Glu Asn Met Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly 510 515 520				2347
gcg ggg gtt tct agc tac ctc gct agc ttc ttg atc tcc act gtt cat Ala Gly Val Ser Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His 525 530 535 540				2395
agg aca act gaa cat tca cct tcg ggg aac tgg tta gct gag gat ctg Arg Thr Thr Glu His Ser Pro Ser Gly Asn Trp Leu Ala Glu Asp Leu 545 550 555				2443
aac aag gcg aag ttg gat tac ttc tat ttc atg ctc acg gga ctc atg Asn Lys Ala Lys Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met 560 565 570				2491
ttc gtt aac atg gtt tac ttc ttg ata atg gct aag ttt tat aga tac Phe Val Asn Met Val Tyr Phe Leu Ile Met Ala Lys Phe Tyr Arg Tyr 575 580 585				2539
aaa ggc agt gat gat aaa gtc atc tct gct att gag acc aat gaa gac Lys Gly Ser Asp Asp Lys Val Ile Ser Ala Ile Glu Thr Asn Glu Asp 590 595 600				2587
gag acc aag cag aag caa gag aag aac tcg gtg taa Glu Thr Lys Gln Lys Gln Glu Lys Asn Ser Val 605 610 615				2623

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

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

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

Gln Arg Ile Gly Ala Gly Ile Phe Phe Ala Val Leu Ser Leu Leu Val
435 440 445

Ser Gly Phe Ile Glu Glu Arg Arg Arg Ser Ile Ala Leu Thr Lys Gln
450 455 460

Thr Leu Gly Met Glu Pro Arg Thr Gly Glu Ile Ser Ser Met Ser Ala
465 470 475 480

Met Trp Leu Ile Pro Gln Leu Val Leu Ala Gly Ile Ala Glu Ala Phe
485 490 495

Thr Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn
500 505 510

Met Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser
515 520 525

Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His Arg Thr Thr Glu
530 535 540

His Ser Pro Ser Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Ala Lys
545 550 555 560

Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met Phe Val Asn Met
565 570 575

Val Tyr Phe Leu Ile Met Ala Lys Phe Tyr Arg Tyr Lys Gly Ser Asp
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Tyr Ser Asp Gly Gly Gly Ser Asp Leu Thr Ser Thr Val Asp Ser Ser
20      25      30

ggc gac gag cag aaa aag ctc gtt tat aga ggc tgg aaa gtc atg cct      144
Gly Asp Glu Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val Met Pro
35      40      45

tat atc att g gtaacgcttt tctctctctc tctagaccgt tatttttaaa      194
Tyr Ile Ile
50

ctctgttttc tttttgtcaa ctaactctgt tttttcgtgt aacagaacac ttttccccgt      254
gatgggtttt tttgtcattt aataattttg tttattttta tcttgtcacg ttggccttgac      314
tgtgtcagtg ttctagataa tctaccaggt gtagtgtaca gaaagaaatg ttaccttgatg      374
ttcttttagta acgtttttta atgtctgtgg gaaggacttt gaatcactgg aagtccaatc      434
ttggttccaa actgtgttac tttatgagaa acccgtgttg gtttgactat tcattaacga      494
aaagaatttg tatcttgata g gt aat gag aca ttt gag aag att ggg atc      544
Gly Asn Glu Thr Phe Glu Lys Ile Gly Ile
55      60

ata ggg aca tta tca aac ctt cta gtg tac cta act caa gta ttc aac      592
Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Gln Val Phe Asn
65      70      75

ctt aag aaa tac aca gct gca act att atc aat gcc ttt agt ggc act      640
Leu Lys Lys Tyr Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr
80      85      90

atc aac ttc ggc act ttc ttc gct gct ttt ctg tgt gac act tac ttt      688
Ile Asn Phe Gly Thr Phe Phe Ala Ala Phe Leu Cys Asp Thr Tyr Phe
95      100      105

ggc cgc tac aag act ctc agt gtg gct gtc atc gct tgt ttt ctg      733
Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu
110      115      120

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catttttcgt ctgtgtag gga tcg gtt ttt ata cta atg acg gct gca gtt      844
Gly Ser Val Phe Ile Leu Met Thr Ala Ala Val
125      130      135

ccg gga ttg cac ccg act cct tgt gga act aaa agt tcg tgc caa ggg      892
Pro Gly Leu His Pro Thr Pro Cys Gly Thr Lys Ser Ser Cys Gln Gly
140      145      150

cca aat ggg ggg cag gtt ttg ttt ctg ctg ttg ggt tta gcg ctt ctc      940
Pro Asn Gly Gly Gln Val Leu Phe Leu Leu Leu Gly Leu Ala Leu Leu
155      160      165

gta gtc ggt gct ggt ggt atc agg ccg tgt aat ttg gcc ttt gga gct      988
Val Val Gly Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala
170      175      180

gat cag ttc aac ccc aag tca gaa tct gga aag aaa gga atc aac agt      1036
Asp Gln Phe Asn Pro Lys Ser Glu Ser Gly Lys Lys Gly Ile Asn Ser
185      190      195

ttc ttc aac tgg tac ttc ttc act ttc acg ttt gcg cag atc atc tcg      1084
Phe Phe Asn Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Ile Ser
200      205      210      215

ctc acg cta gtt gtg tat atc cag tca aac gtg agc tgg acc att ggt      1132
Leu Thr Leu Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly
220      225      230

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bc5 10-2012_ST25.txt

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	245
gct ggc cat aat ctc tac gta aaa gtg aaa gcc tgc ggt agt ccc ttg	1228
Ala Gly His Asn Leu Tyr Val Lys Val Lys Ala Ser Gly Ser Pro Leu	
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gct ggc atc gct cgt gtt ata gct gca gcg atc aag aaa cga ggg ttg	1276
Ala Gly Ile Ala Arg Val Ile Ala Ala Ala Ile Lys Lys Arg Gly Leu	
	265
	270
	275
aag cct gtt aag aag cct tgc tcc gat ctt tac aat cac atc ccg cct	1324
Lys Pro Val Lys Lys Pro Cys Ser Asp Leu Tyr Asn His Ile Pro Pro	
	280
	285
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aac tat gca aac tct aca ctc aaa tac tcc gac cag ttt ag	1365
Asn Tyr Ala Asn Ser Thr Leu Lys Tyr Ser Asp Gln Phe Arg	
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	305
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gac aag ttg aaa ccc gat gga acg gct tca gat cca tgg aat cta tgt	1523
Asp Lys Leu Lys Pro Asp Gly Thr Ala Ser Asp Pro Trp Asn Leu Cys	
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Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Ile Pro	
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Ile Trp Phe Ala Cys Ala Val Tyr Tyr Leu Ala Ile Thr Leu Gln Met	
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	365
act tat ccg gtc ttc caa gcg ctc cag agc gac cgg aga ttg ggt tca	1667
Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly Ser	
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	375
	380
ggt ggc ttc aag att cca ggc ggc acc tat gta gtg ttc ttg atg tcc	1715
Gly Gly Phe Lys Ile Pro Gly Gly Thr Tyr Val Val Phe Leu Met Ser	
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	395
	400
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Gly Met Thr Val Phe Ile Ile Phe Tyr Asp Arg Val Leu Val Pro Ser	
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	410
	415
ctc aga aga gtg aca ggg cta gac aat ggt ata act ctc tta caa aga	1811
Leu Arg Arg Val Thr Gly Leu Asp Asn Gly Ile Thr Leu Leu Gln Arg	
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	425
	430
atc gga tca ggc att ttc ttt gcg ctt ttg agt atg ttg att tct ggg	1859
Ile Gly Ser Gly Ile Phe Phe Ala Leu Leu Ser Met Leu Ile Ser Gly	
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	445
ttc gtt gag gaa cgg cga aga gcc att gca ctg aca aaa cct act ctc	1907
Phe Val Glu Glu Arg Arg Arg Ala Ile Ala Leu Thr Lys Pro Thr Leu	
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	455
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ggg atc gag cct cga gct gga gaa atc tca tca atg tca gcg atg tgg	1955
Gly Ile Glu Pro Arg Ala Gly Glu Ile Ser Ser Met Ser Ala Met Trp	
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	475
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ctg ata ccg cag ctc gtg ctt gca ggg ata gct gaa gct ttt gca gct	2003
Leu Ile Pro Gln Leu Val Leu Ala Gly Ile Ala Glu Ala Phe Ala Ala	
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	490
	495
gtt gga caa atg gag ttt tac tac aag cag ttt cct gaa aac atg aag	2051
Val Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met Lys	
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	505
	510
agc ttt gcg ggt tct atc ttc tat gtc ggt gca gga gtt tct agc tac	2099

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Ser	Phe	Ala	Gly	Ser	Ile	Phe	Tyr	Val	Gly	Ala	Gly	Val	Ser	Ser	Tyr	
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Leu	Ala	Ser	Phe	Leu	Ile	Ser	Thr	Val	His	Lys	Thr	Thr	Glu	His	Ser	
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cgc	tcc	ggg	aat	tgg	cta	gct	gag	gat	ctg	aac	aaa	ggg	aag	ctg	gat	2195
Arg	Ser	Gly	Asn	Trp	Leu	Ala	Glu	Asp	Leu	Asn	Lys	Gly	Lys	Leu	Asp	
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tac	ttt	tat	ttc	atg	atc	act	ggc	ctc	atg	ttt	gtc	aac	atg	ggg	tac	2243
Tyr	Phe	Tyr	Phe	Met	Ile	Thr	Gly	Leu	Met	Phe	Val	Asn	Met	Gly	Tyr	
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Phe	Leu	Leu	Met	Ala	Lys	Phe	Tyr	Arg	Tyr	Lys	Val	Thr	Asn	Asp	Glu	
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gca	aat	tct	gtg	att	aag	acc	aat	gaa	gaa	gag	acc	aag	gag	aat	cag	2339
Ala	Asn	Ser	Val	Ile	Lys	Thr	Asn	Glu	Glu	Glu	Thr	Lys	Glu	Asn	Gln	
		595					600					605				
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Gly	Asp	Glu	Gln	Lys	Lys	Leu	Val	Tyr	Arg	Gly	Trp	Lys	Val	Met	Pro	
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Tyr	Ile	Ile	Gly	Asn	Glu	Thr	Phe	Glu	Lys	Ile	Gly	Ile	Ile	Gly	Thr	
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Leu	Ser	Asn	Leu	Leu	Val	Tyr	Leu	Thr	Gln	Val	Phe	Asn	Leu	Lys	Lys	
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Tyr	Thr	Ala	Ala	Thr	Ile	Ile	Asn	Ala	Phe	Ser	Gly	Thr	Ile	Asn	Phe	
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Gly	Thr	Phe	Phe	Ala	Ala	Phe	Leu	Cys	Asp	Thr	Tyr	Phe	Gly	Arg	Tyr	
			100					105					110			
Lys	Thr	Leu	Ser	Val	Ala	Val	Ile	Ala	Cys	Phe	Leu	Gly	Ser	Val	Phe	
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Ile	Leu	Met	Thr	Ala	Ala	Val	Pro	Gly	Leu	His	Pro	Thr	Pro	Cys	Gly	
	130					135					140					
Thr	Lys	Ser	Ser	Cys	Gln	Gly	Pro	Asn	Gly	Gly	Gln	Val	Leu	Phe	Leu	
	145				150				155						160	
Leu	Leu	Gly	Leu	Ala	Leu	Leu	Val	Val	Gly	Ala	Gly	Gly	Ile	Arg	Pro	

Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu Ser
180 185 190

Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn Trp Tyr Phe Phe Thr Phe
195 200 205

Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu Val Val Tyr Ile Gln Ser
210 215 220

Asn Val Ser Trp Thr Ile Gly Leu Ser Ile Pro Val Gly Leu Met Phe
225 230 235 240

Leu Ala Cys Val Ile Tyr Phe Ala Gly His Asn Leu Tyr Val Lys Val
245 250 255

Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala Arg Val Ile Ala Ala
260 265 270

Ala Ile Lys Lys Arg Gly Leu Lys Pro Val Lys Lys Pro Cys Ser Asp
275 280 285

Leu Tyr Asn His Ile Pro Pro Asn Tyr Ala Asn Ser Thr Leu Lys Tyr
290 295 300

Ser Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Val Thr Thr Pro Asp
305 310 315 320

Asp Lys Leu Lys Pro Asp Gly Thr Ala Ser Asp Pro Trp Asn Leu Cys
325 330 335

Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Ile Pro
340 345 350

Ile Trp Phe Ala Cys Ala Val Tyr Tyr Leu Ala Ile Thr Leu Gln Met
355 360 365

Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly Ser
370 375 380

Gly Gly Phe Lys Ile Pro Gly Gly Thr Tyr Val Val Phe Leu Met Ser
385 390 395 400

Gly Met Thr Val Phe Ile Ile Phe Tyr Asp Arg Val Leu Val Pro Ser
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Leu Arg Arg Val Thr Gly Leu Asp Asn Gly Ile Thr Leu Leu Gln Arg
420 425 430

Ile Gly Ser Gly Ile Phe Phe Ala Leu Leu Ser Met Leu Ile Ser Gly
435 440 445

Phe Val Glu Glu Arg Arg Arg Ala Ile Ala Leu Thr Lys Pro Thr Leu
450 455 460

Gly Ile Glu Pro Arg Ala Gly Glu Ile Ser Ser Met Ser Ala Met Trp

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Val	Gly	Gln	Met	Glu	Phe	Tyr	Tyr	Lys	Gln	Phe	Pro	Glu	Asn	Met	Lys	
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Ser	Phe	Ala	Gly	Ser	Ile	Phe	Tyr	Val	Gly	Ala	Gly	Val	Ser	Ser	Tyr	
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Leu	Ala	Ser	Phe	Leu	Ile	Ser	Thr	Val	His	Lys	Thr	Thr	Glu	His	Ser	
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Gln	Gln	Asp	Lys	Ser	Tyr	Val										
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 g ga aat gag acg ttt gag aag ctt ggg atc att gga aca cta tca aac 545
 Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile Gly Thr Leu Ser Asn
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 ctt ctg gtt tat tta act gct gtc ttc aac atg aag agt atc aca gct 593
 Leu Leu Val Tyr Leu Thr Ala Val Phe Asn Met Lys Ser Ile Thr Ala
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 gca aca atc atc aat gca ttc agt ggc aca atc aac ttc gga acc ttc 641
 Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn Phe Gly Thr Phe
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 Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg Tyr Lys Thr Leu
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 act gtc gct gtc atc gcc tgt ttt ctt gtaatgatca ttcctttgca 736
 Thr Val Ala Val Ile Ala Cys Phe Leu
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 Gly Ser Leu Val Ile Leu Leu Thr Ala Ala Val Pro
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 Gln Leu His Pro Ala Pro Cys Gly Thr Ala Leu Ser Cys Ile Gly Pro
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 Ser Gly Gly Gln Ile Ala Phe Leu Leu Leu Gly Leu Gly Phe Leu Val
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 gtt gga gca ggc ggg att aga cca tgt aat cta gct ttc ggg gct gat 991
 Val Gly Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp
 170 175 180 185
 cag ttt aac ccc aag agc gag tca gga aaa cga ggc atc gat agt ttc 1039
 Gln Phe Asn Pro Lys Ser Glu Ser Gly Lys Arg Gly Ile Asp Ser Phe
 190 195 200
 ttc aat tgg tac ttc ttc acc ttc acg ttc gcg cag atc ctg tcg ctg 1087
 Phe Asn Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Leu Ser Leu
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 Thr Leu Ile Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu
 220 225 230
 acc atc ccg gtc gtt ctc atg ttc ttg gcc tgc gtg att ttc ttt gct 1183
 Thr Ile Pro Val Val Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala
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 Gly Asp Lys Leu Tyr Val Lys Ile Lys Ala Ser Gly Ser Pro Leu Ala
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 ggt ata gct caa gtt ata gcg gtt gca atc aag aaa cgt ggg tta aag 1279
 Gly Ile Ala Gln Val Ile Ala Val Ala Ile Lys Lys Arg Gly Leu Lys
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gttactgagg aagtttcttg tttcggcag g ttc ctt gat aag gcg gcg att ttg			1489
	Phe	Leu Asp Lys Ala Ala Ile Leu	315
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Ala Pro Glu Asp Lys Leu Glu Ala Asp Gly Lys Pro Ala Asp Pro Trp	320	325	330
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Lys Leu Cys Thr Met Gln Val Glu Glu Val Lys Cys Ile Val Arg	335	340	345
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Val Leu Pro Ile Trp Phe Ala Ala Ser Ile Tyr Tyr Leu Thr Ile Thr	355	360	365
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Gln Gln Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg	370	375	380
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Leu Gly Ser Arg Gly Phe Val Ile Pro Ala Ala Thr Tyr Val Val Phe	385	390	395
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Leu Met Thr Gly Met Thr Val Phe Ile Ile Phe Tyr Asp Arg Val Leu	400	405	410
gtg cct acc tta aga aga ata acc ggt ata gac acg ggg ata acg cta			1825
Val Pro Thr Leu Arg Arg Ile Thr Gly Ile Asp Thr Gly Ile Thr Leu	415	420	425
ctg cag agg att gga acc gga att ttc ttc gcc ttt gtt agc ttg ata			1873
Leu Gln Arg Ile Gly Thr Gly Ile Phe Phe Ala Phe Val Ser Leu Ile	435	440	445
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Val Ser Gly Phe Val Glu Glu Arg Arg Arg Thr Phe Ala Leu Thr Lys	450	455	460
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Pro Thr Leu Gly Met Ala Pro Arg Lys Gly Glu Ile Ser Ser Met Ser	465	470	475
gct atg tgg ctg atc cca caa ctc gcc ctt gcg ggt ata gct gag gcg			2017
Ala Met Trp Leu Ile Pro Gln Leu Ala Leu Ala Gly Ile Ala Glu Ala	480	485	490
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Phe Gly Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu	495	500	505
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Asn Met Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val	515	520	525
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Ser Ser Tyr Leu Gly Ser Phe Leu Ile Ala Met Val His Arg Thr Thr	530	535	540
cag aac tca gct ggt ggt aat tgg ttg gct gag gat ttg aac aaa gga			2209
Gln Asn Ser Ala Gly Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Gly	545	550	555
aga ttg gat tac ttc tat ttc atg atc gct gga atc ttg gca gtt aat			2257
Arg Leu Asp Tyr Phe Tyr Phe Met Ile Ala Gly Ile Leu Ala Val Asn	560	565	570

ttt gct tac ttc ttg gtc atg tca aga tgg tat aga tac aaa gga agt 2305
Phe Ala Tyr Phe Leu Val Met Ser Arg Trp Tyr Arg Tyr Lys Gly Ser
575 580 585 590

gat ggt gaa gtg aca act tat gaa acc aat gga gat gcc atc aaa caa 2353
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Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile Gly
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Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ala Val Phe Asn Met Lys
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Ser Ile Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn
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Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg
100 105 110

Tyr Lys Thr Leu Thr Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu
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Val Ile Leu Leu Thr Ala Ala Val Pro Gln Leu His Pro Ala Pro Cys
130 135 140

Gly Thr Ala Leu Ser Cys Ile Gly Pro Ser Gly Gly Gln Ile Ala Phe
145 150 155 160

Leu Leu Leu Gly Leu Gly Phe Leu Val Val Gly Ala Gly Gly Ile Arg
165 170 175

Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu
180 185 190

Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr
195 200 205

Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Leu Ile Val Tyr Ile Gln
210 215 220

bcs 10-2012_ST25.txt

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

Tyr Thr Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Ile Leu Ala Pro
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Glu Asp Lys Leu Glu Ala Asp Gly Lys Pro Ala Asp Pro Trp Lys Leu
325 330 335

Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Leu
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Pro Ile Trp Phe Ala Ala Ser Ile Tyr Tyr Leu Thr Ile Thr Gln Gln
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370 375 380

Ser Arg Gly Phe Val Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met
385 390 395 400

Thr Gly Met Thr Val Phe Ile Ile Phe Tyr Asp Arg Val Leu Val Pro
405 410 415

Thr Leu Arg Arg Ile Thr Gly Ile Asp Thr Gly Ile Thr Leu Leu Gln
420 425 430

Arg Ile Gly Thr Gly Ile Phe Phe Ala Phe Val Ser Leu Ile Val Ser
435 440 445

Gly Phe Val Glu Glu Arg Arg Arg Thr Phe Ala Leu Thr Lys Pro Thr
450 455 460

Leu Gly Met Ala Pro Arg Lys Gly Glu Ile Ser Ser Met Ser Ala Met
465 470 475 480

Trp Leu Ile Pro Gln Leu Ala Leu Ala Gly Ile Ala Glu Ala Phe Gly
485 490 495

Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met
500 505 510

Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser Ser
515 520 525

bcs 10-2012_ST25.txt

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Asp Tyr Phe Tyr Phe Met Ile Ala Gly Ile Leu Ala Val Asn Phe Ala
 565 570 575

Tyr Phe Leu Val Met Ser Arg Trp Tyr Arg Tyr Lys Gly Ser Asp Gly
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gaa gaa gtt cag gaa acc aaa ctc gtt tat aga ggc tgg aaa gtc atg	144
Glu Glu Val Gln Glu Thr Lys Leu Val Tyr Arg Gly Trp Lys Val Met	
35 40 45	

cct ttc atc ata g gtaacgcata tggttttaaa catattaaaa atataaattt	197
Pro Phe Ile Ile	
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bcs 10-2012_ST25.txt

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bcs 10-2012_ST25.txt

Pro 320	Glu	Asp	Lys	Leu	Glu 325	Ala	Asp	Gly	Lys	Pro 330	Thr	Asp	Pro	Trp	Lys 335	
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cgc Arg	tct Ser 385	gga Gly	ggg Gly	ttt Phe	gtg Val	att Ile 390	cct Pro	gca Ala	gcc Ala	acc Thr	tat Tyr 395	gtg Val	gtc Val	ttc Phe	ttg Leu	1729
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cct Pro	acc Thr	ttg Leu	aga Arg	aga Arg 420	atc Ile	acc Thr	ggt Gly	ata Ile	gac Asp 425	acc Thr	ggg Gly	atc Ile	acg Thr	ctc Leu 430	ttg Leu	1825
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gct Ala	tac Tyr	ttc Phe	ttg Leu	gtg Val 580	atg Met	tca Ser	aga Arg	tgg Trp	tat Tyr 585	agg Arg	tac Tyr	aaa Lys	gga Gly	agt Ser 590	gat Asp	2305
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 Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile Gly
 50 55 60
 Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ala Val Phe Asn Met Lys
 65 70 75 80
 Ser Ile Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn
 85 90 95
 Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg
 100 105 110
 Tyr Lys Thr Leu Thr Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu
 115 120 125
 Val Ile Leu Leu Thr Ala Ala Val Pro Gln Leu His Pro Ala Pro Cys
 130 135 140
 Gly Thr Ala Leu Thr Cys Thr Gly Pro Ser Gly Gly Gln Ile Ala Phe
 145 150 155 160
 Leu Leu Met Gly Leu Ala Phe Leu Val Val Gly Ala Gly Gly Ile Arg
 165 170 175
 Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu
 180 185 190
 Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr
 195 200 205
 Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Leu Val Val Tyr Ile Gln
 210 215 220
 Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro Val Val Leu Met
 225 230 235 240
 Phe Leu Ala Cys Val Ile Phe Phe Ala Gly Asp Lys Leu Tyr Val Lys
 245 250 255
 Ile Lys Ala Ser Gly Ser Pro Leu Ala Ser Ile Ala Gln Val Ile Thr
 260 265 270
 Val Ala Ile Lys Lys Arg Gly Leu Lys Ala Val Lys Gln Pro Trp Val

275

280

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290 295 300

Tyr Thr Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Ile Leu Ala Pro
305 310 320

Glu Asp Lys Leu Glu Ala Asp Gly Lys Pro Thr Asp Pro Trp Lys Leu
325 330 335

Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Leu
340 345 350

Pro Ile Trp Phe Ala Ser Ser Ile Tyr Tyr Leu Thr Ile Thr Gln Gln
355 360 365

Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Arg
370 375 380

Ser Gly Gly Phe Val Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met
385 390 395 400

Thr Gly Met Thr Val Phe Ile Ile Ile Tyr Asp Arg Val Leu Val Pro
405 410 415

Thr Leu Arg Arg Ile Thr Gly Ile Asp Thr Gly Ile Thr Leu Leu Gln
420 425 430

Arg Ile Gly Thr Gly Ile Phe Phe Ala Phe Leu Ser Leu Val Val Ser
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Gly Phe Val Glu Glu Arg Arg Arg Thr Phe Ala Leu Thr Lys Pro Thr
450 455 460

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485 490 495

Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met
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Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Gly Gly Val Ser Ser
515 520 525

Tyr Leu Gly Ser Phe Leu Ile Ala Thr Val His Arg Thr Thr Gln Asn
530 535 540

Ser Ala Gly Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Gly Arg Leu
545 550 555 560

Asp Leu Phe Tyr Phe Met Ile Ala Gly Ile Leu Ala Val Asn Phe Ala
565 570 575

Tyr Phe Leu Val Met Ser Arg Trp Tyr Arg Tyr Lys Gly Ser Asp Asp

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585

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Lys Asn Lys Val
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Ser Ser Ala Val Tyr Asp Gly Ser Val Thr Ala Val Asp Ser Val Lys
20 25 30
gaa gat gtt cag gag acc aaa gtc gtt tat aga ggc tgg aaa gtc atg 144
Glu Asp Val Gln Glu Thr Lys Val Val Tyr Arg Gly Trp Lys Val Met
35 40 45
cct tac atc att g gtaacgcaat aatattatca tttaccgtgc tctataaact 197
Pro Tyr Ile Ile
50
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ttgttgtcctt aagttttcac ttagtcataa tattgaagtc ttatgatcctt gggttaacttt 317
tggttgttgg accaccag ga aat gag aca ttt gag aag ctt ggg atc att 367
Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile
55 60
gga aca cta tca aac ctt ctg gtt tat tta act tct gtc ttc aac atg 415
Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser Val Phe Asn Met
65 70 75
aag agt gtc aca gct gca aca atc atc act gcc ttt gct ggc aca gtc 463
Lys Ser Val Thr Ala Ala Thr Ile Ile Thr Ala Phe Ala Gly Thr Val
80 85 90 95
aac ttc gga act ttc gtc gct gct ttc ctt tgc gac act tac ttc ggt 511
Asn Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly
100 105 110
cga tac aag act ctt acc gtt gcg gtc ctc gcc tgt ttt ctt 553
Arg Tyr Lys Thr Leu Thr Val Ala Val Leu Ala Cys Phe Leu
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bcs 10-2012_ST25.txt																	
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Ser Cys Ile Gly Pro Ser Gly Gly Gln Ile Ala Phe Leu Leu Met Gly 150 155 160																	
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Leu Gly Ile Leu Val Val Gly Ala Gly Ile Arg Pro Cys Asn Leu 165 170 175 180																	
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Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Gly Ser Gly Lys Arg 185 190 195																	
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Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr Phe Thr Phe Ala 200 205 210																	
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Gln Ile Leu Ser Leu Thr Val Val Val Tyr Val Gln Ser Asn Val Ser 215 220 225																	
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Trp Thr Ile Gly Leu Thr Ile Pro Val Val Leu Met Phe Leu Ala Ser 230 235 240																	
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Val Ile Phe Phe Ala Gly Ala Lys Leu Tyr Val Lys Ile Glu Ala Ser 245 250 255 260																	
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Gly Ser Pro Leu Ala Ser Ile Ala His Val Ile Thr Ala Ala Ile Lys 265 270 275																	
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Lys His Arg Leu Glu Pro Val Glu Gln Pro Trp Leu Asn Leu Tyr Asn 280 285 290																	
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Tyr Tyr Pro Ser Lys Tyr Ala Asn Ala Lys Leu Lys Tyr Thr Gln Gln 295 300 305																	
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bcs 10-2012_ST25.txt

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cct aca tta aaa aga ata acc ggt ata gag acg ggt ata acg ctc ttg Pro Thr Leu Lys Arg Ile Thr Gly Ile Glu Thr Gly Ile Thr Leu Leu 420 425 430	1757
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 65 70 75 80

Ser Val Thr Ala Ala Thr Ile Ile Thr Ala Phe Ala Gly Thr Val Asn
 85 90 95

Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg
 100 105 110

Tyr Lys Thr Leu Thr Val Ala Val Leu Ala Cys Phe Leu Gly Ser Leu
 115 120 125

Ala Ile Leu Leu Thr Ala Ala Val Pro Gln Leu His Pro Ala Pro Cys
 130 135 140

Gly Thr Ala Ser Ser Cys Ile Gly Pro Ser Gly Gly Gln Ile Ala Phe
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Leu Leu Met Gly Leu Gly Ile Leu Val Val Gly Ala Gly Gly Ile Arg
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Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Gly
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Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr
 195 200 205

Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Val Val Val Tyr Val Gln
 210 215 220

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

Ala Ala Ile Lys Lys His Arg Leu Glu Pro Val Glu Gln Pro Trp Leu
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Asn Leu Tyr Asn Tyr Tyr Pro Ser Lys Tyr Ala Asn Ala Lys Leu Lys
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bcs 10-2012_ST25.txt

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385 390 400

Thr Gly Met Thr Leu Phe Ile Ile Phe Tyr Asp Arg Val Leu Val Pro
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Thr Leu Lys Arg Ile Thr Gly Ile Glu Thr Gly Ile Thr Leu Leu Gln
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Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met
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Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Gly Gly Val Ser Ser
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Tyr Ile Ser Ser Phe Leu Ile Thr Thr Val His Arg Met Thr Gln Asn
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Ser Ala Gly Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Gly Arg Leu
545 550 555 560

Asp Tyr Phe Tyr Phe Leu Leu Ala Gly Ile Leu Ala Val Asn Phe Ala
565 570 575

Tyr Phe Leu Val Met Ala Arg Trp Tyr Arg Tyr Lys Gly Ser Asp Asp
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Lys Asn Lys Val
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Pro Ser Ala Val Tyr Asp Gly Ser Val Met Ala Val Asp Ser Val Glu
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gaa gaa gtt ggg gag acc aaa gtc gtt tac aga ggc tgg aaa gtc atg 144
Glu Glu Val Gly Glu Thr Lys Val Val Tyr Arg Gly Trp Lys Val Met
35 40 45

ccc ttt atc att g gtaacacaaa ctttttttta taaactttct tcttttggtc 197
Pro Phe Ile Ile
50

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gtcagaagaa atgaagagga aaacatcagt cttgctattg gtttgatttt ttcaaaaaaa 317

aatcgtgaga ttctctgtac tggtgtcaaa agctttgact tagtcaacca gtttttcaag 377

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80 85 90

ggc aca atc aac ttc gga acc ttc gtt gct gct ttc ctc tgc gac act 692
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95 100 105

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Leu
125

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Gly Ser Leu Val

ata cta ttg aca gct gca gtg cca caa tta cat cca gct cca tgc gga 895
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acc gac cag ttt ag gtaacaaaac acacacacgc caagagttag ttttatcttt Thr Asp Gln Phe Arg	1429
aatatctttc cacttttggt ttatggttac tgaggaagtt tcctgttttg gcag g ttt Phe	1487
ctt gat aag gcg gcg att ttg gct ccc gaa gac aag ttg gag gct gat Leu Asp Lys Ala Ala Ile Leu Ala Pro Glu Asp Lys Leu Glu Ala Asp 315 320 325	1535
ggt aag cct gcg gat cca tgg aag ctt tgt aca atg caa caa gtt gaa Gly Lys Pro Ala Asp Pro Trp Lys Leu Cys Thr Met Gln Gln Val Glu 330 335 340	1583
gaa gtg aag tgc att gtg aga gtg ctt cct ata tgg ttt gct gca tcc Glu Val Lys Cys Ile Val Arg Val Leu Pro Ile Trp Phe Ala Ala Ser 345 350 355	1631
atc tat tac ttg acc atc acg caa caa atg act tac ccc gtc ttc caa Ile Tyr Tyr Leu Thr Ile Thr Gln Gln Met Thr Tyr Pro Val Phe Gln 360 365 370 375	1679
gcc ctc cag agc gac cgt cgc tta gga tcc aga gga ttt gtg atc ccg Ala Leu Gln Ser Asp Arg Arg Leu Gly Ser Arg Gly Phe Val Ile Pro 380 385 390	1727
gca gcc acc tac gtt gtc ttt ttg atg aca gga atg acg gtt ttc atc Ala Ala Thr Tyr Val Val Phe Leu Met Thr Gly Met Thr Val Phe Ile 395 400 405	1775
ata ttc tac gac cgt gtc ctc gtg cct acc tta aga aga ata acc ggt Ile Phe Tyr Asp Arg Val Leu Val Pro Thr Leu Arg Arg Ile Thr Gly 410 415 420	1823

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ata gac acg ggg ata acg ctc ttg cag agg att gga acc ggt att ttc Ile Asp Thr Gly Ile Thr Leu Gln Arg Ile Gly Thr Gly Ile Phe 425 430 435	1871
ttc gcc ttt gtt agc ttg ata gtc tcc ggt ttc gtc gag gaa cgg agg Phe Ala Phe Val Ser Leu Ile Val Ser Gly Phe Val Glu Glu Arg Arg 440 445 450 455	1919
aga acg ttc gcg ctg act aaa cca aca ctt ggt atg gct cca agg aag Arg Thr Phe Ala Leu Thr Lys Pro Thr Leu Gly Met Ala Pro Arg Lys 460 465 470	1967
gga gaa atc tcc tca atg tca gct atg tgg ctg atc cca caa ctc gcc Gly Glu Ile Ser Ser Met Ser Ala Met Trp Leu Ile Pro Gln Leu Ala 475 480 485	2015
ctt gcg ggt ata gcc gag gcg ttt gga gct att gga cag atg gag ttt Leu Ala Gly Ile Ala Glu Ala Phe Gly Ala Ile Gly Gln Met Glu Phe 490 495 500	2063
tac tac aag caa ttc cct gag aac atg agg agt ttt gct ggt tcg atc Tyr Tyr Lys Gln Phe Pro Glu Asn Met Arg Ser Phe Ala Gly Ser Ile 505 510 515	2111
ttc tat gta gga gca gga gtt tca agc tac ctc ggt agc ttc ttg att Phe Tyr Val Gly Ala Gly Val Ser Ser Tyr Leu Gly Ser Phe Leu Ile 520 525 530 535	2159
gca atg gtt cac agg acg acg cag aac tcg gct ggt ggt aat tgg tta Ala Met Val His Arg Thr Thr Gln Asn Ser Ala Gly Gly Asn Trp Leu 540 545 550	2207
gct gag gat ttg aac aaa gga aga ttg gat tac ttc tat ttc atg atc Ala Glu Asp Leu Asn Lys Gly Arg Leu Asp Tyr Phe Tyr Phe Met Ile 555 560 565	2255
gct gga atc ttg gcg gtt aat ttt gct tac ttc ttg gtc atg tca aga Ala Gly Ile Leu Ala Val Asn Phe Ala Tyr Phe Leu Val Met Ser Arg 570 575 580	2303
tgg tat aga tac aaa gga agt gat gat gaa gtg aca act tat gaa acc Trp Tyr Arg Tyr Lys Gly Ser Asp Asp Glu Val Thr Thr Tyr Glu Thr 585 590 595	2351
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 <213> Brassica napus

<400> 32

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

bcs 10-2012_ST25.txt

Ser Ile Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn
85 90 95

Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg
100 105 110

Tyr Lys Thr Leu Thr Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu
115 120 125

Val Ile Leu Leu Thr Ala Ala Val Pro Gln Leu His Pro Ala Pro Cys
130 135 140

Gly Thr Ala Leu Ser Cys Ile Gly Pro Ser Gly Gly Gln Ile Ala Phe
145 150 155 160

Leu Leu Leu Gly Leu Gly Phe Leu Val Val Gly Ala Gly Gly Ile Arg
165 170 175

Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu
180 185 190

Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr
195 200 205

Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Leu Ile Val Tyr Ile Gln
210 215 220

Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro Val Val Leu Met
225 230 235 240

Phe Leu Ala Cys Val Ile Phe Phe Ala Gly Asp Lys Leu Tyr Val Lys
245 250 255

Ile Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala Gln Val Ile Ala
260 265 270

Val Ala Ile Lys Lys Arg Gly Leu Lys Pro Thr Lys Glu Pro Trp Leu
275 280 285

Asn Leu Tyr Asn Tyr Tyr Pro Pro Lys Tyr Ala Asn Ser Lys Leu Lys
290 295 300

Tyr Thr Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Ile Leu Ala Pro
305 310 315 320

Glu Asp Lys Leu Glu Ala Asp Gly Lys Pro Ala Asp Pro Trp Lys Leu
325 330 335

Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Leu
340 345 350

Pro Ile Trp Phe Ala Ala Ser Ile Tyr Tyr Leu Thr Ile Thr Gln Gln
355 360 365

Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly
370 375 380

bcs 10-2012_ST25.txt

Ser Arg Gly Phe Val Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met
385 390 395 400

Thr Gly Met Thr Val Phe Ile Ile Phe Tyr Asp Arg Val Leu Val Pro
405 410 415

Thr Leu Arg Arg Ile Thr Gly Ile Asp Thr Gly Ile Thr Leu Leu Gln
420 425 430

Arg Ile Gly Thr Gly Ile Phe Phe Ala Phe Val Ser Leu Ile Val Ser
435 440 445

Gly Phe Val Glu Glu Arg Arg Arg Thr Phe Ala Leu Thr Lys Pro Thr
450 455 460

Leu Gly Met Ala Pro Arg Lys Gly Glu Ile Ser Ser Met Ser Ala Met
465 470 475 480

Trp Leu Ile Pro Gln Leu Ala Leu Ala Gly Ile Ala Glu Ala Phe Gly
485 490 495

Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met
500 505 510

Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser Ser
515 520 525

Tyr Leu Gly Ser Phe Leu Ile Ala Met Val His Arg Thr Thr Gln Asn
530 535 540

Ser Ala Gly Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Gly Arg Leu
545 550 555 560

Asp Tyr Phe Tyr Phe Met Ile Ala Gly Ile Leu Ala Val Asn Phe Ala
565 570 575

Tyr Phe Leu Val Met Ser Arg Trp Tyr Arg Tyr Lys Gly Ser Asp Asp
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595 600 605

Lys Asn Thr Val
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bc5 10-2012_ST25.txt

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act gct gtc ttc aac atg aag agt atc aca gcc gca aca atc atc aac 96
Thr Ala Val Phe Asn Met Lys Ser Ile Thr Ala Ala Thr Ile Ile Asn
20 25 30

gcc ttt agc ggc aca atc aac ttc gga acc ttc gtt gct gcc ttc ctt 144
Ala Phe Ser Gly Thr Ile Asn Phe Gly Thr Phe Val Ala Ala Phe Leu
35 40 45

tgc gac act tac ttc ggc cgt tac aag aca cta acc gtc gcg gtc atc 192
Cys Asp Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Thr Val Ala Val Ile
50 55 60

gca tgt ttt ctt gtaataatcc atcctctata accttttctt cctccacaag 244
Ala Cys Phe Leu
65

caatcttggt ttataaacct aaaaaaaaaa aatctgattc ttgttttggt ag gga tca 302
Gly Ser
70

ctt gtg ata cta tta act gct gca gta cca caa ctg cat cca gct cca 350
Leu Val Ile Leu Leu Thr Ala Ala Val Pro Gln Leu His Pro Ala Pro
75 80 85

tgc gga aca gcc ctc acg tgt aca ggc cca agt ggt ggc cag ata gcc 398
Cys Gly Thr Ala Leu Thr Cys Thr Gly Pro Ser Gly Gly Gln Ile Ala
90 95 100

ttt cta cta atg ggt ctt gcc ttt ctt gtg gtg gga gca ggt ggg att 446
Phe Leu Leu Met Gly Leu Ala Phe Leu Val Val Gly Ala Gly Gly Ile
105 110 115

aga ccg tgt aat ctt gct ttt gga gct gat cag ttt aac cct aaa agc 494
Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser
120 125 130

gag tca ggg aaa aga ggg att gat agt ttc ttt aac tgg tac ttc ttc 542
Glu Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe
135 140 145 150

acc ttc acg ttc gcg cag atc ttg tct ctg aca cta gtt gtc tac atc 590
Thr Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Leu Val Val Tyr Ile
155 160 165

cag tct aac gtc agt tgg acc atc ggt tta acc atc ccg gtc gtg tta 638
Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro Val Val Leu
170 175 180

atg ttc ttg gcc tgc gtg atc ttc ttt gcg ggt gat aag ttg tat gtc 686
Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly Asp Lys Leu Tyr Val
185 190 195

aag atc aaa gcc tca ggt agt cca ttg gct agt ata gct caa gtt ata 734
Lys Ile Lys Ala Ser Gly Ser Pro Leu Ala Ser Ile Ala Gln Val Ile
200 205 210

acg gtt gct atc aag aaa cgt ggg tta aag gct gtg aag cag cct tgg 782
Thr Val Ala Ile Lys Lys Arg Gly Leu Lys Ala Val Lys Gln Pro Trp
215 220 225 230

gtt aac ctt tac aat tac tac cca cta aac tac gca aac tcc aag ctc 830
Val Asn Leu Tyr Asn Tyr Tyr Pro Leu Asn Tyr Ala Asn Ser Lys Leu
235 240 245

aag tac act gac cag ttc ag gtaaaagaca cagttataaa taatatcttt 880
Lys Tyr Thr Asp Gln Phe Arg
250

bcs 10-2012_ST25.txt

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gcg	gcg	ata	ttg	gct	cct	gaa	gac	aag	ttg	gaa	gct	gat	ggc	aag	cct	984
Ala	Ala	Ile	Leu	Ala	Pro	Glu	Asp	Lys	Leu	Glu	Ala	Asp	Gly	Lys	Pro	
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acg	gat	cca	tgg	aag	cta	tgt	aca	atg	caa	caa	gtt	gaa	gaa	gtg	aag	1032
Thr	Asp	Pro	Trp	Lys	Leu	Cys	Thr	Met	Gln	Gln	Val	Glu	Glu	Val	Lys	
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tgc	att	gtg	aga	gtg	ctt	cct	ata	tgg	ttt	gct	tca	tcg	atc	tat	tac	1080
Cys	Ile	Val	Arg	Val	Leu	Pro	Ile	Trp	Phe	Ala	Ser	Ser	Ile	Tyr	Tyr	
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ttg	acc	atc	acg	caa	caa	atg	act	tat	cca	gtc	ttc	caa	gcc	ctc	cag	1128
Leu	Thr	Ile	Thr	Gln	Gln	Met	Thr	Tyr	Pro	Val	Phe	Gln	Ala	Leu	Gln	
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agc	gat	cgt	cg	tta	tgc	tct	gga	ggg	ttt	gtg	att	cct	gca	gcc	acc	1176
Ser	Asp	Arg	Arg	Leu	Cys	Ser	Gly	Gly	Phe	Val	Ile	Pro	Ala	Ala	Thr	
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Tyr	Val	Val	Phe	Leu	Met	Thr	Gly	Met	Thr	Val	Phe	Ile	Ile	Ile	Tyr	
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gac	cg	gtc	ctc	gtg	cct	acc	ttg	agg	aga	atc	acc	gg	ata	gac	acc	1272
Asp	Arg	Val	Leu	Val	Pro	Thr	Leu	Arg	Arg	Ile	Thr	Gly	Ile	Asp	Thr	
	355					360					365					
ggg	atc	acg	ctc	ttg	caa	agg	ata	gga	act	ggg	att	ttc	ttc	gcc	ttt	1320
Gly	Ile	Thr	Leu	Leu	Gln	Arg	Ile	Gly	Thr	Gly	Ile	Phe	Phe	Ala	Phe	
					375					380					385	
ttg	agc	ttg	gta	gtg	tcc	gg	ttc	gtc	gag	gaa	cgg	agg	agg	acc	ttc	1368
Leu	Ser	Leu	Val	Val	Ser	Gly	Phe	Val	Glu	Glu	Arg	Arg	Arg	Thr	Phe	
				390					395					400		
gca	ttg	act	aaa	cca	aca	ctc	gg	atg	gcg	cca	cgg	aag	gga	gaa	atc	1416
Ala	Leu	Thr	Lys	Pro	Thr	Leu	Gly	Met	Ala	Pro	Arg	Lys	Gly	Glu	Ile	
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tcc	tca	atg	tca	gct	atg	tgg	ctg	ata	ccg	cag	ctc	aca	ctc	gcg	gg	1464
Ser	Ser	Met	Ser	Ala	Met	Trp	Leu	Ile	Pro	Gln	Leu	Thr	Leu	Ala	Gly	
		420					425					430				
gta	gcc	gag	gcg	ttt	gga	gcc	att	ggg	cag	atg	gag	ttt	tac	tac	aag	1512
Val	Ala	Glu	Ala	Phe	Gly	Ala	Ile	Gly	Gln	Met	Glu	Phe	Tyr	Tyr	Lys	
	435					440					445					
cag	ttc	ccc	gag	aac	atg	agg	agt	ttc	gcc	gg	tcc	atc	ttc	tat	gtg	1560
Gln	Phe	Pro	Glu	Asn	Met	Arg	Ser	Phe	Ala	Gly	Ser	Ile	Phe	Tyr	Val	
	450				455				460						465	
gga	gga	gga	gtt	tcg	agt	tac	ctc	gg	agc	ttc	ttg	att	gca	acg	gtt	1608
Gly	Gly	Gly	Val	Ser	Ser	Tyr	Leu	Gly	Ser	Phe	Leu	Ile	Ala	Thr	Val	
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cac	agg	acg	acg	cag	aac	tcg	gct	ggc	gg	aac	tgg	tta	gct	gaa	gat	1656
His	Arg	Thr	Thr	Gln	Asn	Ser	Ala	Gly	Gly	Asn	Trp	Leu	Ala	Glu	Asp	
			485					490					495			
ttg	aac	aaa	gga	aga	ttg	gat	ttg	ttt	tac	ttc	atg	atc	gct	gga	atc	1704
Leu	Asn	Lys	Gly	Arg	Leu	Asp	Leu	Phe	Tyr	Phe	Met	Ile	Ala	Gly	Ile	
		500					505					510				
ttg	gcg	gtt	aat	ttt	gct	tac	ttc	ttg	gtg	atg	tca	aga	tgg	tat	agg	1752
Leu	Ala	Val	Asn	Phe	Ala	Tyr	Phe	Leu	Val	Met	Ser	Arg	Trp	Tyr	Arg	
	515					520					525					
tac	aaa	gga	agt	gat	gat	gaa	gtg	aca	gct	tat	gaa	aca	aat	gga	gat	1800
Tyr	Lys	Gly	Ser	Asp	Asp	Glu	Val	Thr	Ala	Tyr	Glu	Thr	Asn	Gly	Asp	
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1833

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Ala Phe Ser Gly Thr Ile Asn Phe Gly Thr Phe Val Ala Ala Phe Leu
 35 40 45

Cys Asp Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Thr Val Ala Val Ile
 50 55 60

Ala Cys Phe Leu Gly Ser Leu Val Ile Leu Leu Thr Ala Ala Val Pro
 65 70 75 80

Gln Leu His Pro Ala Pro Cys Gly Thr Ala Leu Thr Cys Thr Gly Pro
 85 90 95

Ser Gly Gly Gln Ile Ala Phe Leu Leu Met Gly Leu Ala Phe Leu Val
 100 105 110

Val Gly Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp
 115 120 125

Gln Phe Asn Pro Lys Ser Glu Ser Gly Lys Arg Gly Ile Asp Ser Phe
 130 135 140

Phe Asn Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Leu Ser Leu
 145 150 155 160

Thr Leu Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu
 165 170 175

Thr Ile Pro Val Val Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala
 180 185 190

Gly Asp Lys Leu Tyr Val Lys Ile Lys Ala Ser Gly Ser Pro Leu Ala
 195 200 205

Ser Ile Ala Gln Val Ile Thr Val Ala Ile Lys Lys Arg Gly Leu Lys
 210 215 220

Ala Val Lys Gln Pro Trp Val Asn Leu Tyr Asn Tyr Tyr Pro Leu Asn
 225 230 235 240

Tyr Ala Asn Ser Lys Leu Lys Tyr Thr Asp Gln Phe Arg Phe Leu Asp
 245 250 255

bcs 10-2012_ST25.txt

Lys Ala Ala Ile Leu Ala Pro Glu Asp Lys Leu Glu Ala Asp Gly Lys
 260 265 270

Pro Thr Asp Pro Trp Lys Leu Cys Thr Met Gln Gln Val Glu Glu Val
 275 280 285

Lys Cys Ile Val Arg Val Leu Pro Ile Trp Phe Ala Ser Ser Ile Tyr
 290 295 300

Tyr Leu Thr Ile Thr Gln Gln Met Thr Tyr Pro Val Phe Gln Ala Leu
 305 310 315 320

Gln Ser Asp Arg Arg Leu Cys Ser Gly Gly Phe Val Ile Pro Ala Ala
 325 330 335

Thr Tyr Val Val Phe Leu Met Thr Gly Met Thr Val Phe Ile Ile Ile
 340 345 350

Tyr Asp Arg Val Leu Val Pro Thr Leu Arg Arg Ile Thr Gly Ile Asp
 355 360 365

Thr Gly Ile Thr Leu Leu Gln Arg Ile Gly Thr Gly Ile Phe Phe Ala
 370 375 380

Phe Leu Ser Leu Val Val Ser Gly Phe Val Glu Glu Arg Arg Arg Thr
 385 390 395 400

Phe Ala Leu Thr Lys Pro Thr Leu Gly Met Ala Pro Arg Lys Gly Glu
 405 410 415

Ile Ser Ser Met Ser Ala Met Trp Leu Ile Pro Gln Leu Thr Leu Ala
 420 425 430

Gly Val Ala Glu Ala Phe Gly Ala Ile Gly Gln Met Glu Phe Tyr Tyr
 435 440 445

Lys Gln Phe Pro Glu Asn Met Arg Ser Phe Ala Gly Ser Ile Phe Tyr
 450 455 460

Val Gly Gly Gly Val Ser Ser Tyr Leu Gly Ser Phe Leu Ile Ala Thr
 465 470 475 480

Val His Arg Thr Thr Gln Asn Ser Ala Gly Gly Asn Trp Leu Ala Glu
 485 490 495

Asp Leu Asn Lys Gly Arg Leu Asp Leu Phe Tyr Phe Met Ile Ala Gly
 500 505 510

Ile Leu Ala Val Asn Phe Ala Tyr Phe Leu Val Met Ser Arg Trp Tyr
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 Ser Ser Ala Tyr Asp Gly Ser Val Thr Ala Val Asp Ser Val Lys Glu
 20 25 30
 gat gtt cag gag acc aaa gtc gtt tat aga ggc tgg aaa gtc atg cct 144
 Asp Val Gln Glu Thr Lys Val Val Tyr Arg Gly Trp Lys Val Met Pro
 35 40 45
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 Tyr Ile Ile
 50
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 tttgttgtct taagttttca cttgggtcatt attgaagtct tatgatcttg gtttaattttt 314
 gttgttgtta ccaccag ga aat gag act ttt gag aag ctt ggg atc att 363
 Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile
 55 60
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 Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser Val Phe Asn Met
 65 70 75
 aag agt gtc aca gct gca aca atc atc aat gcc ttt gct ggc aca gtc 459
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 80 85 90
 aac ttc gga act ttc gtc gct gct ttc ctt tgc gac act tac ttc ggt 507
 Asn Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly
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 cga tac aag act ctt acc gtc gcg gtc ctc gcc tgt ttt ctt 549
 Arg Tyr Lys Thr Leu Thr Val Ala Val Leu Ala Cys Phe Leu
 115 120
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 aaaataaaat ctggttcttg tttttag gga tca ctt gcg ata cta ttg act 661
 Gly Ser Leu Ala Ile Leu Leu Thr
 125 130
 gct gca gtc cca caa cta cat cca gcc cca tgc ggc aca gcg agc tcg 709
 Ala Ala Val Pro Gln Leu His Pro Ala Pro Cys Gly Thr Ala Ser Ser
 135 140 145
 tgt agc ggg cca agt ggt ggc cag ata gcg ttt cta ctg atg ggt ctt 757
 Cys Ser Gly Pro Ser Gly Gly Gln Ile Ala Phe Leu Leu Met Gly Leu
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bc5 10-2012_ST25.txt

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ttc gga gct gat cag ttt aat ccg aag agc ggg tca ggg aaa aga ggg Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Gly Ser Gly Lys Arg Gly 185 190 195	853
att gat agt ttc ttc aac tgg tac ttc ttc acc ttc act ttc gcg cag Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln 200 205 210	901
atc ttg tct ctg aca gta gtt gtc tat gtc cag tct aat gtc agt tgg Ile Leu Ser Leu Thr Val Val Val Tyr Val Gln Ser Asn Val Ser Trp 215 220 225	949
acc atc ggt tta acc atc ccg gtt gtt tta atg ttc ttg gcc tcc gtg Thr Ile Gly Leu Thr Ile Pro Val Val Leu Met Phe Leu Ala Ser Val 230 235 240	997
att ttc ttt gcg ggt gct aag ttg tat gtt aag atc gaa gcc tca ggt Ile Phe Phe Ala Gly Ala Lys Leu Tyr Val Lys Ile Glu Ala Ser Gly 245 250 255 260	1045
agt cca ttg gct agt ata gct cat gtt ata acg gct gct atc aag aaa Ser Pro Leu Ala Ser Ile Ala His Val Ile Thr Ala Ala Ile Lys Lys 265 270 275	1093
cac ggg tta aag tca gtg gaa cag cct tgg ctg aac ctt tac aac tac His Gly Leu Lys Ser Val Glu Gln Pro Trp Leu Asn Leu Tyr Asn Tyr 280 285 290	1141
tac cca tca aaa tac gca aac gcc aag ctc aaa tac acc gaa caa ttc Tyr Pro Ser Lys Tyr Ala Asn Ala Lys Leu Lys Tyr Thr Glu Gln Phe 295 300 305	1189
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Gly	Thr	Phe	Val 100	Ala	Ala	Phe	Leu	Cys 105	Asp	Thr	Tyr	Phe	Gly 110	Arg	Tyr					
Lys	Thr	Leu 115	Thr	Val	Ala	Val	Leu 120	Ala	Cys	Phe	Leu	Gly 125	Ser	Leu	Ala					
Ile	Leu 130	Leu	Thr	Ala	Ala	Val 135	Pro	Gln	Leu	His	Pro 140	Ala	Pro	Cys	Gly					
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370

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aac gag cag aaa aag ctc gtt tat aga ggc tgg aaa gtc atg ccc ttt 144
Asn Glu Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val Met Pro Phe
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Ile Ile
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Gly Asn Glu Thr Phe Glu
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aag ata ggg atc att ggg aca cta tca aac ctt ctg gtg tac cta act 662
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Ser Val Phe Asn Leu Lys Ser Val Thr Ala Ala Thr Ile Ile Asn Ala
75 80 85

ttc agt ggc act atc aac ttc ggc act ttc ctc gct gct ttc ctc tgc 758
Phe Ser Gly Thr Ile Asn Phe Gly Thr Phe Leu Ala Ala Phe Leu Cys
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gac act tac ttt ggt cgc tac aag act ctc tct gtt gct gtc atc gcc 806
Asp Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala
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Cys Phe Leu

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Gly Ser
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ctt gtg ata cta ctg acg gct gca gtt cca gga ttg cac ccc att cct 961
Leu Val Ile Leu Leu Thr Ala Ala Val Pro Gly Leu His Pro Ile Pro
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Cys Gly Thr Gln Ser Ser Cys Gln Gly Pro Ser Glu Gly Gln Ile Ala
145 150 155

ttt ctt ctg atg ggt tta gcg ctt ctt gtg gtg ggt gct ggt gga atc 1057
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gac acg ggg ata aca ctc tta caa aga ata gga gct ggc att ttc ttt Asp Thr Gly Ile Thr Leu Leu Gln Arg Ile Gly Ala Gly Ile Phe Phe	425 430 435	1932
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Glu Ile Ser Ser Met Ser Ala Met Trp Leu Ile Pro Gln Leu Val Leu
475 480 485
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Ala Gly Val Ala Glu Ala Phe Ala Ala Ile Gly Gln Met Glu Phe Tyr
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Tyr Lys Gln Phe Pro Glu Asn Met Lys Ser Phe Ala Gly Ser Ile Phe
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Tyr Val Gly Ala Gly Val Ser Ser Tyr Leu Ala Ser Phe Leu Ile Ser
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Glu Asp Leu Asn Lys Ala Lys Leu Asp Tyr Phe Tyr Phe Met Leu Thr
555 560 565
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 Met Gly Leu Ala Leu Leu Val Val Gly Ala Gly Gly Ile Arg Pro Cys
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 Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu Ser Gly
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 Lys Lys Gly Ile Asn Ser Phe Phe Asn Trp Tyr Phe Phe Thr Phe Thr
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 Val Ser Trp Thr Ile Gly Leu Ser Ile Pro Val Gly Leu Met Phe Leu
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 Trp Phe Ala Cys Ala Ile Tyr Tyr Leu Ala Ile Ser Met Gln Met Thr
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 Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly Ser Gly
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 Gly Phe Lys Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met Ser Gly
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 Met Thr Val Phe Ile Ile Ile Tyr Asp Arg Val Leu Val Pro Ser Leu
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Lys Arg Val Thr Gly Leu Asp Thr Gly Ile Thr Leu Leu Gln Arg Ile
420 425 430

Gly Ala Gly Ile Phe Phe Ala Val Leu Ser Leu Leu Val Ser Gly Phe
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Ile Glu Glu Arg Arg Arg Thr Phe Ala Leu Thr Arg Pro Thr Leu Gly
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545 550 555 560

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Ser Phe Asp Glu Asp Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val
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Leu Thr Gln Val Phe Asn Leu Lys Lys Tyr Thr Ala Ala Thr Ile Ile
75 80 85

aat gcc ttt agt ggc acc atc aac ttc ggc act ttc ctc gct gct ttc 820
Asn Ala Phe Ser Gly Thr Ile Asn Phe Gly Thr Phe Leu Ala Ala Phe
90 95 100 105

ctc tgc gac act tac ttt ggt cgc tac aag act ctc agt gtt gct gtc 868
Leu Cys Asp Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Ser Val Ala Val
110 115 120

atc gct tgt ttt ctg gtacctacta gtactaatgc tgtccttaac ggttttgttt 923
Ile Ala Cys Phe Leu
125

tttcgtcaag gctctattct ttttttcttt ttgctaaacc gtgtttttatc gtttgtag 981

gga tcg ctt gcg ata cta ctc acg gca gca gtt ccg gga ctg cac ccg 1029
Gly Ser Leu Ala Ile Leu Leu Thr Ala Ala Val Pro Gly Leu His Pro
130 135 140

act cct tgt gga aca aaa agt tca tgc gaa ggg cca ggt gcg ggg cag 1077
Thr Pro Cys Gly Thr Lys Ser Ser Cys Glu Gly Pro Gly Ala Gly Gln
145 150 155

att ttg ttt ctg atg ttg ggt tta gcg ctt ctt gtg gtt ggt gct ggt 1125
Ile Leu Phe Leu Met Leu Gly Leu Ala Leu Leu Val Val Gly Ala Gly
160 165 170

ggt atc agg ccg tgt aac ttg gcg ttt ggt gcc gat cag ttc aac ccc 1173
Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro
175 180 185 190

aag tcc gaa tca gga aag aaa gga atc aac agt ttc ttc aac tgg tac 1221
Lys Ser Glu Ser Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn Trp Tyr
195 200 205

bc5 10-2012_ST25.txt

ttc ttc act ttc acg ttc gcg cag atc atc tcg ctc acg cta gtt gtg Phe Phe Thr Phe Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu Val Val 210 215 220	1269
tat atc cag tcg aat gtg agc tgg acc atc ggt ttg agt atc ccc gtg Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Ser Ile Pro Val 225 230 235	1317
ggt ctc atg ttc ttg gct tgc gtc att ttc ttc gct ggt cac aaa ctt Gly Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly His Lys Leu 240 245 250	1365
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gtt ata gca gcc gcg atc tcg aaa cga gga ttg aag ccg gtt aag cag Val Ile Ala Ala Ala Ile Ser Lys Arg Gly Leu Lys Pro Val Lys Gln 275 280 285	1461
cct tgg gtc gat ctt tac aat cac att cct cgt aac tat gca aac tta Pro Trp Val Asp Leu Tyr Asn His Ile Pro Arg Asn Tyr Ala Asn Leu 290 295 300	1509
acc cta aaa tac acc gac cag ttc ag gtaaaactgaa tagttctgtc Thr Leu Lys Tyr Thr Asp Gln Phe Arg 305 310	1555
tctattgctt tatatcttgg cacagccgga tggatgcctt gacttctaaa tatttttaaa	1615
atggggtcgta tagactccaa gttgtcaaat ttgttgacca aaatatatat tttttattta	1675
ccaaaatatt tttaaaatgg gcctggttgg aaacaaaatg ctgaaaacta aatgttggtt	1735
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gag gac aag ttg aac tct gat gga aca gct tcg gat cca tgg aaa cta Glu Asp Lys Leu Asn Ser Asp Gly Thr Ala Ser Asp Pro Trp Lys Leu 325 330 335	1833
tgt acg atg cag caa gtg gaa gaa gtg aaa tgc att ata aga gtg att Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Ile Arg Val Ile 340 345 350	1881
ccg atc tgg ttt gct tgc gct atc tac tac ctt gca ata agc att caa Pro Ile Trp Phe Ala Cys Ala Ile Tyr Tyr Leu Ala Ile Ser Ile Gln 355 360 365	1929
atg act tat ccc gtc ttc caa gcg caa cag agc gac agg aga tta ggt Met Thr Tyr Pro Val Phe Gln Ala Gln Gln Ser Asp Arg Arg Leu Gly 370 375 380 385	1977
acc ggt ggc ttc aag atc ccc gca gcc acc tac gta gtt ttc ttg atg Thr Gly Gly Phe Lys Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met 390 395 400	2025
acc ggt atg acg gtt ttc atc ata atc tac gac cgt gtc ctt gtc ccg Thr Gly Met Thr Val Phe Ile Ile Ile Tyr Asp Arg Val Leu Val Pro 405 410 415	2073
tcg ctc aaa aga gtg acc ggt cta gac act ggt ata aca ctc ttg caa Ser Leu Lys Arg Val Thr Gly Leu Asp Thr Gly Ile Thr Leu Leu Gln 420 425 430	2121
agg atc gga gcg ggg atc ttc ttt gcc gtg ttg agt tta ttg gtc tcc Arg Ile Gly Ala Gly Ile Phe Phe Ala Val Leu Ser Leu Leu Val Ser 435 440 445	2169
ggg ttc ata gag gaa cgt aga aga agc att gcg ctg aca aaa cag act Gly Phe Ile Glu Glu Arg Arg Arg Ser Ile Ala Leu Thr Lys Gln Thr 450 455 460 465	2217
cta ggg atg gag cct cga aca gga gag atc tca tca atg tcg gcg atg	2265

bcs 10-2012_ST25.txt
 Leu Gly Met Glu Pro Arg Thr Gly Glu Ile Ser Ser Met Ser Ala Met
 470 475 480
 tgg ctg att ccg cag ctg gtt ctt gca ggg ata gct gaa gcg ttt aca 2313
 Trp Leu Ile Pro Gln Leu Val Leu Ala Gly Ile Ala Glu Ala Phe Thr
 485 490 495
 gcc att gga cag atg gag ttt tac tac aag cag ttt cct gag aac atg 2361
 Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met
 500 505 510
 agg agc ttt gct ggt tct atc ttc tat gtc ggt gcg ggg gtt tct agc 2409
 Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser Ser
 515 520 525
 tac ctc gct agc ttc ttg atc tcc act gtt cat cgg aca act gaa cat 2457
 Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His Arg Thr Thr Glu His
 530 535 540 545
 tca cct tcg ggg aac tgg tta gct gag gat ctg aac aag gcc aag ttg 2505
 Ser Pro Ser Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Ala Lys Leu
 550 555 560
 gat tac ttc tat ttc atg ctc acg ggg ctc atg ttc gtt aac atg gtt 2553
 Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met Phe Val Asn Met Val
 565 570 575
 tac ttc ttg ata atg gct aag ttt tat aga tac aaa ggc agt gat gat 2601
 Tyr Phe Leu Ile Met Ala Lys Phe Tyr Arg Tyr Lys Gly Ser Asp Asp
 580 585 590
 aaa gtc atc tct gct att gag acc agt gaa gac gag acc aag cag aag 2649
 Lys Val Ile Ser Ala Ile Glu Thr Ser Glu Asp Glu Thr Lys Gln Lys
 595 600 605
 caa gcg aag aac tcg gtt taa 2670
 Gln Ala Lys Asn Ser Val
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 <213> Brassica rapa

<400> 40

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

115

120

Leu Ala Ile Leu Leu Thr Ala Ala Val Pro Gly Leu His Pro Thr Pro
130 135 140

Cys Gly Thr Lys Ser Ser Cys Glu Gly Pro Gly Ala Gly Gln Ile Leu
145 150 155 160

Phe Leu Met Leu Gly Leu Ala Leu Leu Val Val Gly Ala Gly Gly Ile
165 170 175

Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser
180 185 190

Glu Ser Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn Trp Tyr Phe Phe
195 200 205

Thr Phe Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu Val Val Tyr Ile
210 215 220

Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Ser Ile Pro Val Gly Leu
225 230 235 240

Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly His Lys Leu Tyr Val
245 250 255

Lys Val Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala Arg Val Ile
260 265 270

Ala Ala Ala Ile Ser Lys Arg Gly Leu Lys Pro Val Lys Gln Pro Trp
275 280 285

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

Lys Tyr Thr Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Ile Met Thr
305 310 315 320

Pro Glu Asp Lys Leu Asn Ser Asp Gly Thr Ala Ser Asp Pro Trp Lys
325 330 335

Leu Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Ile Arg Val
340 345 350

Ile Pro Ile Trp Phe Ala Cys Ala Ile Tyr Tyr Leu Ala Ile Ser Ile
355 360 365

Gln Met Thr Tyr Pro Val Phe Gln Ala Gln Gln Ser Asp Arg Arg Leu
370 375 380

Gly Thr Gly Gly Phe Lys Ile Pro Ala Ala Thr Tyr Val Val Phe Leu
385 390 395 400

Met Thr Gly Met Thr Val Phe Ile Ile Ile Tyr Asp Arg Val Leu Val
405 410 415

Pro Ser Leu Lys Arg Val Thr Gly Leu Asp Thr Gly Ile Thr Leu Leu

420

425

430

Gln Arg Ile Gly Ala Gly Ile Phe Phe Ala Val Leu Ser Leu Leu Val
 435 440 445
 Ser Gly Phe Ile Glu Glu Arg Arg Arg Ser Ile Ala Leu Thr Lys Gln
 450 455 460
 Thr Leu Gly Met Glu Pro Arg Thr Gly Glu Ile Ser Ser Met Ser Ala
 465 470 475 480
 Met Trp Leu Ile Pro Gln Leu Val Leu Ala Gly Ile Ala Glu Ala Phe
 485 490 495
 Thr Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn
 500 505 510
 Met Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser
 515 520 525
 Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His Arg Thr Thr Glu
 530 535 540
 His Ser Pro Ser Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Ala Lys
 545 550 555 560
 Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met Phe Val Asn Met
 565 570 575
 Val Tyr Phe Leu Ile Met Ala Lys Phe Tyr Arg Tyr Lys Gly Ser Asp
 580 585 590
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 595 600 605
 Lys Gln Ala Lys Asn Ser Val
 610 615

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48

bcs 10-2012_ST25.txt

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Tyr Ser Asp Gly Gly Gly Ser Asn Leu Thr Ser Thr Val Asp Ser Ser	20	25	30	
ggc gac gag cag aaa aag ctc gtt tat aga ggc tgg aaa gtc atg cct				144
Gly Asp Glu Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val Met Pro	35	40	45	
tat atc att g gtaacgcttt tctctctctc tagaccgtta tttttaact				194
Tyr Ile Ile	50			
ctgttttctt tttgtcaact aactctgttt tttcgtgtaa cagaacactt ttccccgtga				254
tggttttttt gtcatttaaat aatttggtta tttttatttt gtcacgttgg cttgactgtg				314
acagtgttct agataatcta ccagggttag tgtacagaaa gaaatgttac gttgtgttct				374
ttagtaacgt ttttaaatgt ccgtgaaaag gactttgaat cactggaagt ccaatcttgg				434
ttccaaactg tgttacttta tgagaaaccc atgttggttt gactattcat taacgaaaag				494
aatttgatc ttgatag gt aat gag aca ttt gag aag att ggg atc ata				543
Gly Asn Glu Thr Phe Glu Lys Ile Gly Ile Ile	55		60	
ggg aca tta tca aac ctt cta gtg tac cta act caa gta ttc aac ctt				591
Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Gln Val Phe Asn Leu	65	70	75	
aag aaa tac aca gct gca act att atc agt gcc ttt agt ggc act atc				639
Lys Lys Tyr Thr Ala Ala Thr Ile Ile Ser Ala Phe Ser Gly Thr Ile	80	85	90	
aac ttc ggc act ttc ttc gct gct ttt ctt tgt gac act tac ttt ggt				687
Asn Phe Gly Thr Phe Phe Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly	95	100	110	
cgc tac aag act ctc agt gtg gct gtc atc gct tgt ttt ctg				729
Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu	115	120		
gtactaatgc agctgatctt aatgggtttt ttttcttacg ccaagactct taatgctgtt				789
catttttcgt ctgtgtag gga tcg ctt ttt ata cta atg acg gct gca gtt				840
Gly Ser Leu Phe Ile Leu Met Thr Ala Ala Val	125	130	135	
ccg gga ttg cac ccg act cct tgt gga act aaa agt tcg tgc caa ggg				888
Pro Gly Leu His Pro Thr Pro Cys Gly Thr Lys Ser Ser Cys Gln Gly	140	145	150	
cca aat ggg ggg cag gtt ttg ttt ctg ctg ttg ggt tta gcg ctt ctc				936
Pro Asn Gly Gly Gln Val Leu Phe Leu Leu Gly Leu Ala Leu Leu	155	160	165	
gta gtc ggt gct ggt ggt atc agg ccg tgt aat ttg gcc ttt gga gct				984
Val Val Gly Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala	170	175	180	
gat cag ttc aac ccc aag tca gaa tct gga agg aaa gga atc aac agt				1032
Asp Gln Phe Asn Pro Lys Ser Glu Ser Gly Arg Lys Gly Ile Asn Ser	185	190	195	
ttc ttc aac tgg tac ttc ttc act ttc acg ttt gcg cag atc atc tcg				1080
Phe Phe Asn Trp Tyr Phe Phe Thr Phe Thr Ala Gln Ile Ile Ser	200	205	210	215
ctc acg cta gtt gtg tat atc cag tca aac gtg agc tgg acc att ggc				1128
Leu Thr Leu Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly	220	225	230	
ttg agt atc cct gtg ggt cta atg ttc ttg gcc tgc gtc att tac ttt				1176
Leu Ser Ile Pro Val Gly Leu Met Phe Leu Ala Cys Val Ile Tyr Phe				

235										240										245										
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gct	ggc	atc	gct	cgt	gtt	ata	gct	gca	gcg	atc	aag	aaa	cga	ggg	ttg	1272														
Ala	Gly	Ile	Ala	Arg	Val	Ile	Ala	Ala	Ala	Ile	Lys	Lys	Arg	Gly	Leu															
	265					270					275																			
aag	cct	gtt	aag	aag	cct	tgc	tcc	gat	ctt	tac	aat	cac	atc	ccg	cct	1320														
Lys	Pro	Val	Lys	Lys	Pro	Cys	Ser	Asp	Leu	Tyr	Asn	His	Ile	Pro	Pro															
280					285					290					295															
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Asn	Tyr	Ala	Asn	Ser	Thr	Leu	Lys	Tyr	Ser	Asp	Gln	Phe	Arg																	
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cag	cag	gtg	gaa	gaa	gtg	aaa	tgc	att	gta	aga	gtg	att	cca	atc	tgg	1565														
Gln	Gln	Val	Glu	Glu	Val	Lys	Cys	Ile	Val	Arg	Val	Ile	Pro	Ile	Trp															
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tta	gct	tgc	gca	gtt	tac	tac	ctg	gca	ata	aca	ttg	caa	atg	act	tat	1613														
Leu	Ala	Cys	Ala	Val	Tyr	Tyr	Leu	Ala	Ile	Thr	Leu	Gln	Met	Thr	Tyr															
	355				360					365					370															
ccg	gtc	ttc	caa	gcg	ctc	cag	agc	gac	cgg	aga	ttg	ggt	tca	ggt	ggc	1661														
Pro	Val	Phe	Gln	Ala	Leu	Gln	Ser	Asp	Arg	Arg	Leu	Gly	Ser	Gly	Gly															
				375					380					385																
ttc	aag	att	ccc	ggc	gcc	acc	tat	gta	gtg	ttc	ttg	atg	tcc	ggt	atg	1709														
Phe	Lys	Ile	Pro	Gly	Ala	Thr	Tyr	Val	Val	Phe	Leu	Met	Ser	Gly	Met															
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Thr	Val	Phe	Ile	Ile	Phe	Tyr	Asp	Arg	Val	Leu	Val	Pro	Ser	Leu	Arg															
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Arg	Val	Thr	Trp	Leu	Asp	Asn	Gly	Ile	Thr	Leu	Leu	Gln	Arg	Ile	Gly															
	420					425					430																			
tca	ggc	att	ttc	ttc	gcg	ctt	ttg	agt	ttg	ttg	gtt	tct	ggg	ttc	gtt	1853														
Ser	Gly	Ile	Phe	Phe	Ala	Leu	Leu	Ser	Leu	Leu	Val	Ser	Gly	Phe	Val															
	435				440					445					450															
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Glu	Glu	Arg	Arg	Arg	Ala	Ile	Ala	Leu	Thr	Lys	Pro	Thr	Leu	Gly	Ile															
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gag	cct	cga	gca	gga	gaa	atc	tca	gca	atg	tcg	gcg	atg	tgg	ctg	att	1949														
Glu	Pro	Arg	Ala	Gly	Glu	Ile	Ser	Ala	Met	Ser	Ala	Met	Trp	Leu	Ile															
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Pro	Gln	Leu	Val	Leu	Ala	Gly	Ile	Ala	Glu	Ala	Phe	Ala	Ala	Val	Gly															
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caa	atg	gag	ttt	tac	tac	aag	cag	ttt	cct	gaa	aac	atg	aag	agc	ttt	2045														
Gln	Met	Glu	Phe	Tyr	Tyr	Lys	Gln	Phe	Pro	Glu	Asn	Met	Lys	Ser	Phe															
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bcs 10-2012_ST25.txt
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 Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Gly Lys Leu Asp Tyr Phe
 550 555 560
 tat ttc atg ctc act ggc ctc atg ttt gtt aac atg gtt tac ttc ttg 2237
 Tyr Phe Met Leu Thr Gly Leu Met Phe Val Asn Met Val Tyr Phe Leu
 565 570 575
 tta atg gct aaa ttt tat aga tac aaa gtc act aac gat gaa gca aat 2285
 Leu Met Ala Lys Phe Tyr Arg Tyr Lys Val Thr Asn Asp Glu Ala Asn
 580 585 590
 tct gtg att aag acc aat gaa gaa gag acc aag gag aat cag caa caa 2333
 Ser Val Ile Lys Thr Asn Glu Glu Glu Thr Lys Glu Asn Gln Gln Gln
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 gac aag agc tat gtc tga 2351
 Asp Lys Ser Tyr Val
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 Gly Asp Glu Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val Met Pro
 35 40 45
 Tyr Ile Ile Gly Asn Glu Thr Phe Glu Lys Ile Gly Ile Ile Gly Thr
 50 55 60
 Leu Ser Asn Leu Leu Val Tyr Leu Thr Gln Val Phe Asn Leu Lys Lys
 65 70 75 80
 Tyr Thr Ala Ala Thr Ile Ile Ser Ala Phe Ser Gly Thr Ile Asn Phe
 85 90 95
 Gly Thr Phe Phe Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg Tyr
 100 105 110
 Lys Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu Phe
 115 120 125
 Ile Leu Met Thr Ala Ala Val Pro Gly Leu His Pro Thr Pro Cys Gly
 130 135 140
 Thr Lys Ser Ser Cys Gln Gly Pro Asn Gly Gly Gln Val Leu Phe Leu
 145 150 155 160
 Leu Leu Gly Leu Ala Leu Leu Val Val Gly Ala Gly Gly Ile Arg Pro
 165 170 175

bcs 10-2012_ST25.txt

Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu Ser
180 185 190

Gly Arg Lys Gly Ile Asn Ser Phe Phe Asn Trp Tyr Phe Phe Thr Phe
195 200 205

Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu Val Val Tyr Ile Gln Ser
210 215 220

Asn Val Ser Trp Thr Ile Gly Leu Ser Ile Pro Val Gly Leu Met Phe
225 230 235 240

Leu Ala Cys Val Ile Tyr Phe Ala Gly His Asn Leu Tyr Val Lys Val
245 250 255

Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala Arg Val Ile Ala Ala
260 265 270

Ala Ile Lys Lys Arg Gly Leu Lys Pro Val Lys Lys Pro Cys Ser Asp
275 280 285

Leu Tyr Asn His Ile Pro Pro Asn Tyr Ala Asn Ser Thr Leu Lys Tyr
290 295 300

Ser Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Val Met Thr Pro Glu
305 310 315 320

Asp Lys Leu Lys Pro Asp Gly Thr Ala Ser Asp Pro Trp Asn Leu Cys
325 330 335

Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Ile Pro
340 345 350

Ile Trp Leu Ala Cys Ala Val Tyr Tyr Leu Ala Ile Thr Leu Gln Met
355 360 365

Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly Ser
370 375 380

Gly Gly Phe Lys Ile Pro Gly Ala Thr Tyr Val Val Phe Leu Met Ser
385 390 395 400

Gly Met Thr Val Phe Ile Ile Phe Tyr Asp Arg Val Leu Val Pro Ser
405 410 415

Leu Arg Arg Val Thr Trp Leu Asp Asn Gly Ile Thr Leu Leu Gln Arg
420 425 430

Ile Gly Ser Gly Ile Phe Phe Ala Leu Leu Ser Leu Leu Val Ser Gly
435 440 445

Phe Val Glu Glu Arg Arg Arg Ala Ile Ala Leu Thr Lys Pro Thr Leu
450 455 460

Gly Ile Glu Pro Arg Ala Gly Glu Ile Ser Ala Met Ser Ala Met Trp
465 470 475 480

Leu Ile Pro Gln Leu Val Leu Ala Gly Ile Ala Glu Ala Phe Ala Ala
 485 490 495

Val Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met Lys
 500 505 510

Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser Ser Tyr
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Leu Ala Ser Phe Leu Ile Ser Thr Val His Lys Thr Thr Glu His Ser
 530 535 540

Arg Ser Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Gly Lys Leu Asp
 545 550 555 560

Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met Phe Val Asn Met Val Tyr
 565 570 575

Phe Leu Leu Met Ala Lys Phe Tyr Arg Tyr Lys Val Thr Asn Asp Glu
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Gln Gln Asp Lys Ser Tyr Val
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 Pro Ser Ala Val Tyr Asp Gly Ser Val Met Ala Val Asp Ser Val Glu
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gaa gaa gtt gag gag acc aaa gtc gtt tac aga ggc tgg aaa gtc atg 144
 Glu Glu Val Glu Glu Thr Lys Val Val Tyr Arg Gly Trp Lys Val Met
 35 40 45

ccc ttt atc att g gtaacacaaa cttttttttt ataaactttc ttcttttggt 197
 Pro Phe Ile Ile
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ccaagaactt ttttttttaa ttgcttttca tgtttttttt ccaaaataaa taatcaatag 257

bc5 10-2012_ST25.txt

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aaaaaaaaatcg tgagattctc tgtactgttg tcaaaagctt tgacttagtc aaccagtttt	377
ttaagaaaaat taaaaaaaaag agagtgaat ctagaatttg agaaggtttc agaacataac	437
tttgaggcat atgagatcaa agtcttatga tcatcttggt tttgtttggt ggtattatca	497
g ga aat gag acg ttt gag aag ctt ggg atc att gga aca cta tca aac Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile Gly Thr Leu Ser Asn 55 60 65	545
ctt ctg gtt tat tta act gct gtc ttc aac atg aag agt atc aca gct Leu Leu Val Tyr Leu Thr Ala Val Phe Asn Met Lys Ser Ile Thr Ala 70 75 80	593
gca aca atc atc aat gca ttc agt ggc aca atc aac ttc gga acc ttc Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn Phe Gly Thr Phe 85 90 95 100	641
ggt gct gct ttc ctc tgc gac act tac ttc ggt cga tac aag act cta Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg Tyr Lys Thr Leu 105 110 115	689
act gtc gct gtc atc gcc tgt ttt ctt gtaatgatca ttcctttgca Thr Val Ala Val Ile Ala Cys Phe Leu 120 125	736
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caa tta cat cca gct cca tgc gga aca gct ctc tca tgt atc ggg cca Gln Leu His Pro Ala Pro Cys Gly Thr Ala Leu Ser Cys Ile Gly Pro 140 145 150	895
agt ggt ggc cag ata gcg ttt cta ctg ctg ggt ctc ggc ttt ctt gta Ser Gly Gly Gln Ile Ala Phe Leu Leu Leu Gly Leu Gly Phe Leu Val 155 160 165	943
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cag ttt aac ccc aag agc gag tca gga aaa cga ggc atc gat agt ttc Gln Phe Asn Pro Lys Ser Glu Ser Gly Lys Arg Gly Ile Asp Ser Phe 190 195 200	1039
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aca cta atc gtc tat atc cag tcc aat gtc agc tgg acc atc ggt tta Thr Leu Ile Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu 220 225 230	1135
acc atc ccg gtc gtt ctc atg ttc ttg gcc tgc gtg att ttc ttt gct Thr Ile Pro Val Val Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala 235 240 245	1183
gga gat aag ttg tat gtg aag atc aaa gca tca ggt agt cca ttg gct Gly Asp Lys Leu Tyr Val Lys Ile Lys Ala Ser Gly Ser Pro Leu Ala 250 255 260 265	1231
ggt ata gct caa gtt ata gcg gtt gca atc aag aaa cgt ggg tta aag Gly Ile Ala Gln Val Ile Ala Val Ala Ile Lys Lys Arg Gly Leu Lys 270 275 280	1279
cca acg aaa gag cct tgg ctt aac ctt tac aat tac tac cca cca aaa Pro Thr Lys Glu Pro Trp Leu Asn Leu Tyr Asn Tyr Tyr Pro Pro Lys 285 290 295	1327
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tgagaaagt tctgttttg gcag g ttt ctt gat aag gct gcg atc ttg gct 1487															
								Phe		Leu		Asp		Lys	
315															
ccc	gaa	gac	aag	ttg	gag	gct	gat	ggt	aag	cct	gcg	gat	cca	tgg	aag
Pro	Glu	Asp	Lys	Leu	Glu	Ala	Asp	Gly	Lys	Pro	Ala	Asp	Pro	Trp	Lys
320				325						330				335	
ctc	cgt	aca	atg	caa	caa	gtt	gaa	gaa	gtg	aag	tgc	att	gtg	aga	gtg
Leu	Arg	Thr	Met	Gln	Gln	Val	Glu	Glu	Val	Lys	Cys	Ile	Val	Arg	Val
				340				345						350	
ctt	cct	ata	tgg	ttt	gct	gca	tcg	att	tat	tac	ttg	acc	atc	acg	caa
Leu	Pro	Ile	Trp	Phe	Ala	Ala	Ser	Ile	Tyr	Tyr	Leu	Thr	Ile	Thr	Gln
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Gln	Met	Thr	Tyr	Pro	Val	Phe	Gln	Ala	Leu	Gln	Ser	Asp	Arg	Arg	Leu
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Gly	Ser	Arg	Gly	Phe	Val	Ile	Pro	Ala	Ala	Thr	Tyr	Val	Val	Phe	Leu
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Met	Thr	Gly	Met	Thr	Val	Phe	Ile	Ile	Phe	Tyr	Asp	Arg	Val	Leu	Val
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cct	acc	tta	aga	aga	ata	acc	ggt	ata	gac	acg	ggg	ata	aca	ctc	ttg
Pro	Thr	Leu	Arg	Arg	Ile	Thr	Gly	Ile	Asp	Thr	Gly	Ile	Thr	Leu	Leu
				420				425						430	
cag	agg	att	gga	acc	ggt	att	ttc	ttc	gcc	ttt	gtt	agc	ttg	ata	gtc
Gln	Arg	Ile	Gly	Thr	Gly	Ile	Phe	Phe	Ala	Phe	Val	Ser	Leu	Ile	Val
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tca	ggt	ttc	gtc	gag	gaa	cgg	agg	aga	acg	ttc	gcg	ctg	act	aaa	cca
Ser	Gly	Phe	Val	Glu	Glu	Arg	Arg	Arg	Thr	Phe	Ala	Leu	Thr	Lys	Pro
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Thr	Leu	Gly	Met	Ala	Pro	Arg	Lys	Gly	Glu	Ile	Ser	Ser	Met	Ser	Ala
		465				470				475					
atg	tgg	cta	atc	cca	caa	ctc	gcc	ctt	gcg	ggt	ata	gcc	gag	gcg	ttt
Met	Trp	Leu	Ile	Pro	Gln	Leu	Ala	Leu	Ala	Gly	Ile	Ala	Glu	Ala	Phe
480				485				490				495			
gga	gct	att	gga	cag	atg	gag	ttt	tac	tac	aag	caa	ttc	cct	gag	aac
Gly	Ala	Ile	Gly	Gln	Met	Glu	Phe	Tyr	Tyr	Lys	Gln	Phe	Pro	Glu	Asn
				500				505				510			
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Met	Arg	Ser	Phe	Ala	Gly	Ser	Ile	Phe	Tyr	Val	Gly	Ala	Gly	Val	Ser
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35 40 45

Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile Gly
50 55 60

Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ala Val Phe Asn Met Lys
65 70 75 80

Ser Ile Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn
85 90 95

Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg
100 105 110

Tyr Lys Thr Leu Thr Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu
115 120 125

Val Ile Leu Leu Thr Ala Ala Val Pro Gln Leu His Pro Ala Pro Cys
130 135 140

Gly Thr Ala Leu Ser Cys Ile Gly Pro Ser Gly Gly Gln Ile Ala Phe
145 150 155 160

Leu Leu Leu Gly Leu Gly Phe Leu Val Val Gly Ala Gly Gly Ile Arg
165 170 175

Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu
180 185 190

Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr
195 200 205

Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Leu Ile Val Tyr Ile Gln
210 215 220

Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro Val Val Leu Met
225 230 235 240

bcs 10-2012_ST25.txt

Phe Leu Ala Cys Val Ile Phe Phe Ala Gly Asp Lys Leu Tyr Val Lys
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 Val Ala Ile Lys Lys Arg Gly Leu Lys Pro Thr Lys Glu Pro Trp Leu
 275 280 285
 Asn Leu Tyr Asn Tyr Tyr Pro Pro Lys Tyr Ala Asn Ser Lys Leu Lys
 290 295 300
 Tyr Thr Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Ile Leu Ala Pro
 305 310 315 320
 Glu Asp Lys Leu Glu Ala Asp Gly Lys Pro Ala Asp Pro Trp Lys Leu
 325 330 335
 Arg Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Leu
 340 345 350
 Pro Ile Trp Phe Ala Ala Ser Ile Tyr Tyr Leu Thr Ile Thr Gln Gln
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 Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly
 370 375 380
 Ser Arg Gly Phe Val Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met
 385 390 395 400
 Thr Gly Met Thr Val Phe Ile Ile Phe Tyr Asp Arg Val Leu Val Pro
 405 410 415
 Thr Leu Arg Arg Ile Thr Gly Ile Asp Thr Gly Ile Thr Leu Leu Gln
 420 425 430
 Arg Ile Gly Thr Gly Ile Phe Phe Ala Phe Val Ser Leu Ile Val Ser
 435 440 445
 Gly Phe Val Glu Glu Arg Arg Arg Thr Phe Ala Leu Thr Lys Pro Thr
 450 455 460
 Leu Gly Met Ala Pro Arg Lys Gly Glu Ile Ser Ser Met Ser Ala Met
 465 470 475 480
 Trp Leu Ile Pro Gln Leu Ala Leu Ala Gly Ile Ala Glu Ala Phe Gly
 485 490 495
 Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met
 500 505 510
 Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser Ser
 515 520 525
 Tyr Leu Gly Ser Phe Leu Ile Ala Met Val His Arg Thr Thr Gln Asn
 530 535 540

bc5 10-2012_ST25.txt

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Asp Tyr Phe Tyr Phe Met Ile Ala Gly Ile Leu Ala Val Asn Phe Ala
565 570 575

Tyr Phe Leu Val Met Ser Arg Trp Tyr Arg Tyr Lys Gly Ser Asp Asp
580 585 590

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595 600 605

Lys Asn Thr Ala
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Ser Ser Ala Val Tyr Asp Gly Ser Ala Thr Ala Val Asp Ser Val Glu
20 25 30

gaa gaa gtt cag gaa acc aaa ctc gtt tat aga ggc tgg aaa gtc atg 144
Glu Glu Val Gln Glu Thr Lys Leu Val Tyr Arg Gly Trp Lys Val Met
35 40 45

cct ttc atc ata g gtaacgcata tgttttaaac atataaaaaa tataaatttt 197
Pro Phe Ile Ile
50

tgataaaaaa aatatatatac attttctttg attggtatat ttccaaagtt ttagaaacta 257

tatttctaga aatttcctgt aattaaattt tgacaatttt cttctctgtt tctagaaact 317

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gacttagtca aacagtaatt taacccaaaa gagtgagatc ttgagtttga agatgtttca 437

gaacacataa atgatcaaga atctcttggt tgattcttcg tttggttgct aagggtcaaag 497

tcttatgatc ttttcttctt gcatgttggt attaccag ga aac gag aca ttt gag 552
Gly Asn Glu Thr Phe Glu
55

aag ctt ggg atc att gga aca cta tca aac ctt ctg gtt tac tta act 600
Lys Leu Gly Ile Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr

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gac Asp	act Thr	tac Tyr	ttc Phe 110	ggg Gly	cgt Arg	tac Tyr	aag Lys	aca Thr 115	cta Leu	acc Thr	gtc Val	gcg Ala	gtc Val 120	atc Ile	gca Ala	744				
tgt Cys	ttt Phe	ctt Leu 125	gtaataatcc atcctctata acctttttctt cctccacaag												793					
caatcttggt ttataaacct aaaaaaaaaa aatctgggtc ttgttttggt ag gga tca															851					
															Gly Ser					
ctt Leu	gtg Val	ata Ile 130	cta Leu	tta Leu	act Thr	gct Ala	gca Ala 135	gta Val	cca Pro	caa Gln	ctg Leu	cat His 140	cca Pro	gct Ala	cca Pro	899				
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aga Arg	ccg Pro	tgt Cys	aat Asn	ctt Leu 180	gct Ala	ttt Phe	gga Gly	gct Ala	gat Asp 185	cag Gln	ttt Phe	aac Asn	cct Pro	aaa Lys 190	agc Ser	1043				
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gtt Val	aac Asn	ctt Leu 290	tac Tyr	aat Asn	tac Tyr	tac Tyr	cca Pro 295	cta Leu	aac Asn	tac Tyr	gca Ala	aac Asn 300	tct Ser	aag Lys	ctc Leu	1379				
aag Lys	tac Tyr 305	acc Thr	gac Asp	cag Gln	ttc Phe	ag Arg	gtaaagacac acggttataa ataatatctt									1429				
tccacttttg tttacttaga aagcaagcct tcttttttttg gtag g ttt ctt gat															1483					
															Phe Leu Asp					
aag Lys	gcg Ala	gcg Ala	atc Ile	ttg Leu	gct Ala	cct Pro	gaa Glu	gac Asp	aag Lys	ttg Leu	gag Glu	gct Ala	gat Asp	ggg Gly	aag Lys	1531				

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315					320					325						
cct Pro 330	acg Thr	gat Asp	cca Pro	tgg Trp	aag Lys 335	cta Leu	tgt Cys	aca Thr	atg Met	caa Gln 340	caa Gln	gtt Val	gaa Glu	gaa Glu	gtg Val 345	1579
aag Lys	tgc Cys	att Ile	gtg Val	aga Arg 350	gtg Val	ctt Leu	cct Pro	ata Ile	tgg Trp 355	ttt Phe	gct Ala	tca Ser	tcc Ser	atc Ile 360	tat Tyr	1627
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acc Thr	tat Tyr 395	gtg Val	gtc Val	ttc Phe	ttg Leu	atg Met 400	acg Thr	gga Gly	atg Met	act Thr	gtt Val 405	ttc Phe	atc Ile	ata Ile	atc Ile	1771
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atc Ile 475	tcc Ser	tca Ser	atg Met	tca Ser	gct Ala	atg Met 480	tgg Trp	ctg Leu	ata Ile	ccg Pro	cag Gln 485	ctc Leu	aca Thr	ctc Leu	gcg Ala	2011
ggt Gly 490	gta Val	gcc Ala	gag Glu	gca Ala	ttt Phe 495	gga Gly	gct Ala	att Ile	gga Gly	cag Gln 500	atg Met	gag Glu	ttt Phe	tac Tyr	tac Tyr 505	2059
aag Lys	cag Gln	ttc Phe	ccc Pro	gag Glu 510	aac Asn	atg Met	agg Arg	agt Ser	ttc Phe 515	gcc Ala	ggc Gly	tcc Ser	atc Ile	ttc Phe 520	tat Tyr	2107
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gat Asp	ttg Leu 555	aac Asn	aaa Lys	gga Gly	aga Arg	ttg Leu 560	gat Asp	ttg Leu	ttt Phe	tac Tyr	ttc Phe 565	atg Met	atc Ile	gct Ala	gga Gly	2251
atc Ile 570	ttg Leu	gcg Ala	gtt Val	aat Asn	ttt Phe 575	gct Ala	tac Tyr	ttc Phe	ttg Leu	gtg Val 580	atg Met	tca Ser	aga Arg	tgg Trp	tat Tyr 585	2299
agg Arg	tac Tyr	aaa Lys	gga Gly	agt Ser 590	gat Asp	gat Asp	gaa Glu	gtg Val	aca Thr 595	agt Ser	tat Tyr	gaa Glu	aca Thr	aat Asn 600	gga Gly	2347
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<212> PRT

<213> Brassica rapa

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35 40 45

Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile Gly
50 55 60

Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ala Val Phe Asn Met Lys
65 70 75 80

Ser Ile Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn
85 90 95

Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg
100 105 110

Tyr Lys Thr Leu Thr Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu
115 120 125

Val Ile Leu Leu Thr Ala Ala Val Pro Gln Leu His Pro Ala Pro Cys
130 135 140

Gly Thr Ala Leu Thr Cys Thr Gly Pro Ser Gly Gly Gln Ile Ala Phe
145 150 155 160

Leu Leu Met Gly Leu Ala Phe Leu Val Val Gly Ala Gly Gly Ile Arg
165 170 175

Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu
180 185 190

Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr
195 200 205

Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Leu Val Val Tyr Ile Gln
210 215 220

Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro Val Val Leu Met
225 230 235 240

Phe Leu Ala Cys Val Ile Phe Phe Ala Gly Asp Lys Leu Tyr Val Lys
245 250 255

Ile Lys Ala Ser Gly Ser Pro Leu Ala Ser Ile Ala Gln Val Ile Thr
260 265 270

Val Ala Ile Lys Lys Arg Gly Leu Lys Ala Val Lys Gln Pro Trp Val
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 Glu Asp Lys Leu Glu Ala Asp Gly Lys Pro Thr Asp Pro Trp Lys Leu
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 Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Leu
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 Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly
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 Ser Gly Gly Phe Val Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met
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 Gly Phe Val Glu Glu Arg Arg Arg Thr Phe Ala Leu Thr Lys Pro Thr
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 Tyr Leu Gly Ser Phe Leu Ile Ala Thr Val His Arg Thr Thr Gln Asn
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Glu Asp Val Gln Glu Thr Lys Val Val Tyr Arg Gly Trp Lys Val Met
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Pro Tyr Ile Ile
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tggtgtctta agttttcact tagtcataat attgaagtct tatgatcttg gttaatcttt 317
gttgttggtta ccaccag ga aat gag aca ttt gag aag ctt ggg atc att 366
Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile
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Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser Val Phe Asn Met
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Lys Ser Val Thr Ala Ala Thr Ile Ile Thr Ala Phe Ala Gly Thr Val
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Asn Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly
100 105 110
cga tac aag act ctt acc gtt gcg gtc ctc gcc tgt ttt ctt 552
Arg Tyr Lys Thr Leu Thr Val Ala Val Leu Ala Cys Phe Leu
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Gly Ser Leu Ala Ile Leu Leu Thr
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tgt Cys 150	atc Ile 150	ggg Gly 150	cca Pro 150	agt Ser 150	ggt Gly 155	ggc Gly 155	cag Gln 155	ata Ile 155	gcg Ala 155	ttt Phe 160	cta Leu 160	ctg Leu 160	atg Met 160	ggt Gly 165	ctt Leu 165	762																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
gga Gly 170	att Ile 170	ctt Leu 170	gtc Val 170	gtg Val 170	gga Gly 170	gca Ala 170	gga Gly 170	ggg Gly 175	att Ile 175	aga Arg 175	ccg Pro 175	tgc Cys 175	aat Asn 180	cta Leu 180	gct Ala 180	810																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
ttc Phe 185	gga Gly 185	gct Ala 185	gat Asp 185	cag Gln 185	ttt Phe 185	aac Asn 185	ccg Pro 190	aag Lys 190	agc Ser 190	ggg Gly 190	tca Ser 190	ggg Gly 195	aag Lys 195	aga Arg 195	ggg Gly 195	858																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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acc Thr 230	atc Ile 230	ggt Gly 230	tta Leu 230	acc Thr 235	atc Ile 235	ccg Pro 235	gtt Val 235	gtt Val 235	cta Leu 240	atg Met 240	ttc Phe 240	ttg Leu 240	gcc Ala 245	tcc Ser 245	gtg Val 245	1002																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
att Ile 250	ttc Phe 250	ttt Phe 250	gcg Ala 250	ggt Gly 250	gct Ala 250	aag Lys 250	ttg Leu 250	tat Tyr 255	gtt Val 255	aag Lys 255	atc Ile 255	gaa Glu 255	gcc Ala 260	tca Ser 260	ggt Gly 260	1050																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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ag Arg	gtaaacacac actttttaaac cggtaaaaaa acaccgttat atatatatat															1246																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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															Phe			Leu			Asp			Lys			315																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			

bcs 10-2012_ST25.txt

Leu	Gly	Ser	Gly	Gly	Phe	Met	Ile	Pro	Ala	Ala	Thr	Tyr	Val	Val	Phe		
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Leu	Gln	Arg	Ile	Gly	Ala	Gly	Ile	Phe	Phe	Ala	Phe	Leu	Ser	Leu	Ile		
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Pro	Thr	Leu	Gly	Leu	Ala	Pro	Arg	Lys	Gly	Glu	Ile	Ser	Ser	Met	Ser		
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Ala	Met	Trp	Leu	Ile	Pro	Gln	Leu	Val	Leu	Ala	Gly	Ile	Ala	Asp	Ala		
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Gln	Asn	Ser	Ala	Gly	Gly	Asn	Trp	Leu	Ala	Glu	Asp	Leu	Asn	Lys	Gly		
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Arg	Leu	Asp	Tyr	Phe	Tyr	Phe	Leu	Leu	Ala	Gly	Ile	Leu	Ala	Val	Asn		
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gat	gat	gaa	gag	aca	agt	tat	gaa	acc	agt	gga	gat	atc	atc	aaa	gaa	2283	
Asp	Asp	Glu	Glu	Thr	Ser	Tyr	Glu	Thr	Ser	Gly	Asp	Ile	Ile	Lys	Glu		
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35

40

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Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser Val Phe Asn Met Lys
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Ser Val Thr Ala Ala Thr Ile Ile Thr Ala Phe Ala Gly Thr Val Asn
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Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg
100 105 110

Tyr Lys Thr Leu Thr Val Ala Val Leu Ala Cys Phe Leu Gly Ser Leu
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Gly Thr Ala Ser Ser Cys Ile Gly Pro Ser Gly Gly Gln Ile Ala Phe
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165 170 175

Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Gly
180 185 190

Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr
195 200 205

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Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro Val Val Leu Met
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260 265 270

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290 295 300

Tyr Thr Gln Gln Phe Arg Phe Leu Asp Lys Ala Ala Ile Leu Thr Pro
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Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Met Arg Val Leu

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Asp Glu Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val Met Pro Phe
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ccagtccaac actgaaagtc caatctttga tttcaacatt gtgaattaaa tgtaaaaagg 561

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gt aat gag aca ttt gag aag ata ggg atc att ggg aca cta tca aac 665
Gly Asn Glu Thr Phe Glu Lys Ile Gly Ile Ile Gly Thr Leu Ser Asn
55 60 65

ctt ctg gtg tac cta act tca gta ttc aac ctt cag agt gtt aca gct 713
Leu Leu Val Tyr Leu Thr Ser Val Phe Asn Leu Gln Ser Val Thr Ala
70 75 80

gca acc atc atc aac gcc ttc agt ggc act atc aat ttc ggc act ttc 761
Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn Phe Gly Thr Phe
85 90 95

ctc gct gct ttc ctc tgc gac act tac ttt ggt cgc tac aag act ctc 809
Leu Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg Tyr Lys Thr Leu
100 105 110

tct gtt gct gtc atc gcc tgt ttt ctg gtactcta ccaatgacca 856
Ser Val Ala Val Ile Ala Cys Phe Leu
115 120

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ttgtag gga tcg ctt gtg ata cta ctg acg gct gca gtt cca gga ttg Gly Ser Leu Val Ile Leu Leu Thr Ala Ala Val Pro Gly Leu 125 130 135	1324
cac cct att cct tgt gga aca caa agt tct tgc caa ggc cca agc gag His Pro Ile Pro Cys Gly Thr Gln Ser Ser Cys Gln Pro Ser Glu 140 145 150	1372
ggc cag att gcg ttt ctg ctg atg ggt tta gcg ctt ctt gtg gtg ggt Gly Gln Ile Ala Phe Leu Leu Met Gly Leu Ala Leu Val Val Gly 155 160 165	1420
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cct gtg ggt ctt atg ttc ttg gcc tgc gtc att ttc ttt gct ggt cac Pro Val Gly Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly His 235 240 245	1660
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gcc att tac tac ctt gca ata agt atg caa atg act tat cca gtc ttc Ala Ile Tyr Tyr Leu Ala Ile Ser Met Gln Met Thr Tyr Pro Val Phe 360 365 370	2109
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bcs 10-2012_ST25.txt

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bcs 10-2012_ST25.txt

Ile Ile Gly Asn Glu Thr Phe Glu Lys Ile Gly Ile Ile Gly Thr Leu
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Ser Asn Leu Leu Val Tyr Leu Thr Ser Val Phe Asn Leu Gln Ser Val
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Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn Phe Gly
85 90 95

Thr Phe Leu Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg Tyr Lys
100 105 110

Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu Val Ile
115 120 125

Leu Leu Thr Ala Ala Val Pro Gly Leu His Pro Ile Pro Cys Gly Thr
130 135 140

Gln Ser Ser Cys Gln Gly Pro Ser Glu Gly Gln Ile Ala Phe Leu Leu
145 150 155 160

Met Gly Leu Ala Leu Leu Val Val Gly Ala Gly Gly Ile Arg Pro Cys
165 170 175

Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu Ser Gly
180 185 190

Lys Lys Gly Ile Asn Ser Phe Phe Asn Trp Tyr Phe Phe Thr Phe Thr
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Phe Ala Gln Ile Ile Ser Leu Thr Leu Val Val Tyr Ile Gln Ser Asn
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Val Ser Trp Thr Ile Gly Leu Ser Ile Pro Val Gly Leu Met Phe Leu
225 230 235 240

Ala Cys Val Ile Phe Phe Ala Gly His Lys Leu Tyr Val Lys Val Lys
245 250 255

Ala Ser Gly Ser Pro Leu Ala Gly Ile Gly His Val Ile Ala Ala Ala
260 265 270

Ile Lys Lys Arg Gly Leu Lys Pro Val Lys Gln Pro Trp Ile Asp Leu
275 280 285

Tyr Asn His Ile Pro Pro Asn Tyr Ala Asn Ser Thr Leu Lys Tyr Thr
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Asp Gln Leu Arg Phe Leu Asp Lys Ala Ala Ile Met Thr Pro Glu Asp
305 310 315 320

Lys Leu Asn Ser Asp Gly Thr Ala Ser Asp Pro Trp Lys Leu Cys Thr
325 330 335

Met Gln Lys Val Glu Glu Val Lys Cys Ile Leu Arg Val Ile Pro Ile
340 345 350

bcs 10-2012_ST25.txt

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Gly Phe Lys Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met Ser Gly
385 390 395 400

Met Thr Val Phe Ile Ile Ile Tyr Asp Arg Val Leu Val Pro Ser Leu
405 410 415

Lys Arg Val Thr Gly Leu Asp Thr Gly Ile Thr Leu Leu Gln Arg Ile
420 425 430

Gly Ala Gly Ile Phe Phe Ala Val Leu Ser Leu Leu Val Ser Gly Phe
435 440 445

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450 455 460

Ser Glu Pro Arg Thr Gly Glu Ile Ser Ser Met Ser Ala Met Trp Leu
465 470 475 480

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485 490 495

Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met Lys Ser
500 505 510

Phe Ala Gly Ser Ile Phe Tyr Val Gly Gly Gly Val Ser Ser Tyr Leu
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Ala Ser Phe Leu Ile Ser Thr Val His Arg Thr Thr Glu His Ser Pro
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Thr Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Ala Lys Leu Asp Tyr
545 550 555 560

Phe Tyr Phe Met Leu Thr Gly Leu Met Phe Val Asn Phe Leu Tyr Phe
565 570 575

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Asn Ser Val
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tca ttt gat gaa gat cag aaa aag ctc gtg tat aga gga tgg aaa gtc 144
 Ser Phe Asp Glu Asp Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val
 35 40 45

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 Met Pro Phe Ile Ile
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ataaactaga acatgtcgtc cgtgaatttt aaaagtactt ttcttttctc ttcttctctt 320

tgactgaaaa cgaatgaaac caggatcaac caaatctacc agatctagag aaagagatat 380

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cttcgattcg tgtgtgtttc ggtttaaaag ttgtgaatta aaaagtttga tactttatgg 560

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 Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Gln Val Phe Asn Leu
 65 70 75 80

aag aaa tac aca gct gca acc atc atc aat gcc ttt agt ggc acc atc 765
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 85 90 95

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 Asn Phe Gly Thr Phe Leu Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly
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cgc tac aag act ctc agt gtt gct gtc gtc gct tgt ttt ctg 855
 Arg Tyr Lys Thr Leu Ser Val Ala Val Val Ala Cys Phe Leu
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 Gly Ser Leu Ala Ile
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 135 140 145

aaa agt tca tgc gaa ggg cca ggt gcg ggc cag att ttg ttt ctg atg 1065

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Lys	Lys	Gly	Ile	Asn 200	Ser	Phe	Phe	Asn	Trp 205	Tyr	Phe	Phe	Thr	Phe 210	Thr	
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Phe	Ala	Gln	Ile 215	Ile	Ser	Leu	Thr	Leu 220	Val	Val	Tyr	Ile	Gln 225	Ser	Asn	
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Asp	Gln	Phe 310	Arg													
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Ala	Ile	Ser	Ile	Gln	Met 370	Thr	Tyr	Pro	Val	Phe 375	Gln	Ala	Gln	Gln	Ser 380	
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Phe	Val	Asn	Met	Val	Tyr	Phe	Leu	Ile	Met	Ala	Lys	Phe	Tyr	Arg	Tyr	
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Lys	Gly	Ser	Asp	Asp	Lys	Val	Ile	Ser	Ala	Ile	Glu	Thr	Asn	Glu	Asp	
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370

375

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Met Thr Gly Met Thr Val Phe Ile Ile Ile Tyr Asp Arg Val Leu Val
405 410 415

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

Gln Arg Ile Gly Ala Gly Ile Phe Phe Ala Val Leu Ser Leu Leu Val
435 440 445

Ser Gly Phe Ile Glu Glu Arg Arg Arg Ser Ile Ala Leu Thr Lys Gln
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Thr Leu Gly Met Glu Pro Arg Thr Gly Glu Ile Ser Ser Met Ser Ala
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Thr Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn
500 505 510

Met Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser
515 520 525

Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His Arg Thr Thr Glu
530 535 540

His Ser Pro Ser Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Ala Lys
545 550 555 560

Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met Phe Val Asn Met
565 570 575

Val Tyr Phe Leu Ile Met Ala Lys Phe Tyr Arg Tyr Lys Gly Ser Asp
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Lys Gln Glu Lys Asn Ser Val
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Tyr Ser Asp Gly Gly Gly Ser Asp Leu Thr Ser Thr Val Asp Ser Ser
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ggc gac gag cag aaa aag ctc gtt tat aga ggc tgg aaa gtc atg cct 144
Gly Asp Glu Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val Met Pro
35 40 45

tat atc att g gtaacgcttt tctctctctc tctagaccgt tatttttaaa 194
Tyr Ile Ile
50

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gttggttttt tttgtcattt aataattttg tttattttta tcttgtcacg ttggcttgac 314

tgtgtcagtg ttctagataa tctaccaggt gtagtgtaca gaaagaaatg ttaccttgat 374

ttcttttagta acgtttttta atgtccgtgg aaaggacttt gaatcactgg aagtccaatc 434

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Gly Asn Glu Thr Phe Glu Lys Ile Gly Ile
55 60

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Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Gln Val Phe Asn
65 70 75

ctt aag aaa tac aca gct gca act att atc aat gcc ttc agt ggc act 640
Leu Lys Lys Tyr Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr
80 85 90

atc aac ttc ggc act ttc ttc gct gct ttt ctg tgt gac act tac ttt 688
Ile Asn Phe Gly Thr Phe Phe Ala Ala Phe Leu Cys Asp Thr Tyr Phe
95 100 105

ggc cgc tac aag act ctc agt gtg gct gtc atc gct tgt ttt ctg 733
Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu
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catttttcgt ctgtgttag gga tcg gtt ttt ata cta atg acg gct gca gtt 844
Gly Ser Val Phe Ile Leu Met Thr Ala Ala Val
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ccg gga ttg cac ccg act cct tgt gga act aaa agt tcg tgc caa ggg 892
Pro Gly Leu His Pro Thr Pro Cys Gly Thr Lys Ser Ser Cys Gln Gly
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cca aat ggg ggg cag gtt ttg ttt ctg ctg ttg ggt tta gcg ctt ctc 940
Pro Asn Gly Gly Gln Val Leu Phe Leu Leu Gly Leu Ala Leu Leu
155 160 165

gta gtc ggt gct ggt ggt atc agg ccg tgt aat ttg gcc ttt gga gct 988
Val Val Gly Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala
170 175 180

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bcs 10-2012_ST25.txt

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 Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Gly Gly Val Ser Ser Tyr 515 520 525
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 Leu Ala Ser Phe Leu Ile Ser Thr Val His Lys Thr Thr Glu His Ser 530 535 540
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 Arg Ser Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Gly Lys Leu Asp 545 550 555 560
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 Phe Leu Leu Met Ala Lys Phe Tyr Arg Tyr Lys Val Thr Asn Asp Glu 580 585 590
 gca aat tct gtg att aag act tat gaa gaa gag acc aag gag aat caa 2341
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 Tyr Ile Ile Gly Asn Glu Thr Phe Glu Lys Ile Gly Ile Ile Gly Thr
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 Leu Ser Asn Leu Leu Val Tyr Leu Thr Gln Val Phe Asn Leu Lys Lys
 65 70 75 80
 Tyr Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn Phe
 85 90 95
 Gly Thr Phe Phe Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg Tyr
 100 105 110
 Lys Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu Gly Ser Val Phe
 115 120 125

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Ile Leu Met Thr Ala Ala Val Pro Gly Leu His Pro Thr Pro Cys Gly
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Leu Leu Gly Leu Ala Leu Leu Val Val Gly Ala Gly Gly Ile Arg Pro
165 170 175

Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu Ser
180 185 190

Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn Trp Tyr Phe Phe Thr Phe
195 200 205

Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu Val Val Tyr Ile Gln Ser
210 215 220

Asn Val Ser Trp Thr Ile Gly Leu Ser Ile Pro Val Gly Leu Met Phe
225 230 235 240

Leu Ala Cys Val Ile Tyr Phe Ala Gly His Asn Leu Tyr Val Lys Val
245 250 255

Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala Arg Val Ile Ala Ala
260 265 270

Ala Ile Lys Lys Arg Gly Leu Lys Pro Val Lys Lys Pro Cys Ser Asp
275 280 285

Leu Tyr Asn His Ile Pro Pro Asn Tyr Ala Asn Ser Thr Leu Lys Tyr
290 295 300

Ser Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Val Met Thr Pro Asp
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Asp Lys Leu Lys Pro Asp Gly Thr Ala Ser Asp Pro Trp Asn Leu Cys
325 330 335

Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Ile Pro
340 345 350

Ile Trp Phe Ala Cys Ala Val Tyr Tyr Leu Ala Ile Thr Leu Gln Met
355 360 365

Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly Ser
370 375 380

Asp Gly Phe Lys Ile Pro Gly Gly Thr Tyr Val Val Phe Leu Met Ser
385 390 395 400

Gly Met Thr Val Phe Ile Ile Phe Tyr Asp Arg Val Leu Val Pro Ser
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Leu Arg Arg Val Thr Gly Leu Asp Asn Gly Ile Thr Leu Leu Gln Arg
420 425 430

bcs 10-2012_ST25.txt

Ile Gly Ser Gly Ile Phe Phe Ala Leu Leu Ser Met Leu Ile Ser Gly
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Gly Ile Glu Pro Arg Ala Gly Glu Ile Ser Ser Met Ser Ala Met Trp
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Leu Ile Pro Gln Leu Val Leu Ala Gly Ile Ala Glu Ala Phe Ala Ala
485 490 495

Val Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met Lys
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Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Gly Gly Val Ser Ser Tyr
515 520 525

Leu Ala Ser Phe Leu Ile Ser Thr Val His Lys Thr Thr Glu His Ser
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Arg Ser Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Gly Lys Leu Asp
545 550 555 560

Tyr Phe Tyr Phe Met Ile Thr Gly Leu Met Phe Val Asn Met Gly Tyr
565 570 575

Phe Leu Leu Met Ala Lys Phe Tyr Arg Tyr Lys Val Thr Asn Asp Glu
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bcs 10-2012_ST25.txt

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Pro	Phe	Ile	Ile														
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Gly	Ile	Ile	Gly	Thr	Leu	Ser	Asn	Leu	Leu	Val	Tyr	Leu	Thr	Ala	Val		
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Phe	Asn	Met	Lys	Ser	Ile	Thr	Ala	Ala	Thr	Ile	Ile	Asn	Ala	Phe	Ser		
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Gly	Thr	Ile	Asn	Phe	Gly	Thr	Phe	Val	Ala	Ala	Phe	Leu	Cys	Asp	Thr		
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Tyr	Phe	Gly	Arg	Tyr	Lys	Thr	Leu	Thr	Val	Ala	Val	Ile	Ala	Cys	Phe		
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Leu																	
	125																
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					Gly	Ser	Leu	Val									
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Ile	Leu	Leu	Thr	Ala	Ala	Val	Pro	Gln	Leu	His	Pro	Ala	Pro	Cys	Gly		
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aca	gct	ctc	tca	tgt	atc	ggg	cca	agt	ggc	ggc	cag	ata	gcg	ttt	cta	943	
Thr	Ala	Leu	Ser	Cys	Ile	Gly	Pro	Ser	Gly	Gly	Gln	Ile	Ala	Phe	Leu		
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Leu	Leu	Gly	Leu	Gly	Phe	Leu	Val	Val	Gly	Ala	Gly	Gly	Ile	Arg	Pro		
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Gly	Lys	Arg	Gly	Ile	Asp	Ser	Phe	Phe	Asn	Trp	Tyr	Phe	Phe	Thr	Phe		
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Thr	Phe	Ala	Gln	Ile	Leu	Ser	Leu	Thr	Leu	Ile	Val	Tyr	Ile	Gln	Ser		
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gca atc aag aaa cgt ggg tta aag cca acg aaa gag cct tgg ctt aac Ala Ile 275 Lys Lys Arg Gly Leu 280 Lys Pro Thr Lys Glu 285 Pro Trp Leu Asn	1327
ctt tac aac tac tac cca cca aaa tac gca aac tcc aaa ctc aaa tac Leu Tyr Asn Tyr Tyr Pro 295 Pro Lys Tyr Ala Asn 300 Ser Lys Leu Lys Tyr 305	1375
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gga gaa atc tcc tca atg tca gct atg tgg ctg atc cca caa ctc gcc Gly Glu Ile Ser 475 Ser Met Ser Ala 480 Met Trp Leu Ile Pro Gln Leu Ala	2015
ctt gcg ggt ata gcc gag gcg ttt gga gct att gga cag atg gag ttt Leu Ala Gly 490 Ile Ala Glu Ala Phe 495 Gly Ala Ile Gly 500 Gln Met Glu Phe	2063
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gct gag gat ttg aac aaa gga aga ttg gat tac ttc tat ttc atg atc Ala Glu Asp Leu Asn Lys Gly Arg Leu Asp Tyr Phe Tyr Phe Met Ile 555 560 565	2255
gct gga atc ttg gcg gtt aat ttt gct tac ttc ttg gtc atg tca aga Ala Gly Ile Leu Ala Val Asn Phe Ala Tyr Phe Leu Val Met Ser Arg 570 575 580	2303
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Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ala Val Phe Asn Met Lys 65 70 75 80
Ser Ile Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn 85 90 95
Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg 100 105 110
Tyr Lys Thr Leu Thr Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu 115 120 125
Val Ile Leu Leu Thr Ala Ala Val Pro Gln Leu His Pro Ala Pro Cys 130 135 140
Gly Thr Ala Leu Ser Cys Ile Gly Pro Ser Gly Gly Gln Ile Ala Phe 145 150 155 160
Leu Leu Leu Gly Leu Gly Phe Leu Val Val Gly Ala Gly Gly Ile Arg 165 170 175

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Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Leu Ile Val Tyr Ile Gln
210 215 220

Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro Val Val Leu Met
225 230 235 240

Phe Leu Ala Cys Val Ile Phe Phe Ala Gly Asp Lys Leu Tyr Val Lys
245 250 255

Ile Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala Gln Val Ile Ala
260 265 270

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

Tyr Thr Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Ile Leu Ala Pro
305 310 315 320

Glu Asp Lys Leu Glu Ala Asp Gly Lys Pro Ala Asp Pro Trp Lys Leu
325 330 335

Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Leu
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370 375 380

Ser Arg Gly Phe Val Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met
385 390 395 400

Thr Gly Met Thr Val Phe Ile Ile Phe Tyr Asp Arg Val Leu Val Pro
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Thr Leu Arg Arg Ile Thr Gly Ile Asp Thr Gly Ile Thr Leu Leu Gln
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Arg Ile Gly Thr Gly Ile Phe Phe Ala Phe Val Ser Leu Ile Val Ser
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Gly Phe Val Glu Glu Arg Arg Arg Thr Phe Ala Leu Thr Lys Pro Thr
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bcS 10-2012_ST25.txt

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Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met
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Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser Ser
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Tyr Leu Gly Ser Phe Leu Ile Ala Met Val His Arg Thr Thr Gln Asn
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Ser Ala Gly Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Gly Arg Leu
545 550 555 560

Asp Tyr Phe Tyr Phe Met Ile Ala Gly Ile Leu Ala Val Asn Phe Ala
565 570 575

Tyr Phe Leu Val Met Ser Arg Trp Tyr Arg Tyr Lys Gly Ser Asp Asp
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gaa gaa gtt cag gaa acc aaa ctc gtt tat aga ggc tgg aaa gtc atg 144
Glu Glu Val Gln Glu Thr Lys Leu Val Tyr Arg Gly Trp Lys Val Met
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Pro Phe Ile Ile
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ttctaagggtc aaagtcttat gatcttttct tcttgcatgt tgttattacc ag ga aac Gly Asn	554
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 Lys Leu Lys Tyr Thr Asp Gln Phe Arg
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 aataatatct ttccactttt gtttacttag aaagcaagct ttctattttt ggcag g 1487
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 Phe Leu Asp Lys Ala Ala Ile Leu Ala Pro Glu Asp Lys Leu Glu Ala
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 Asp Gly Lys Pro Thr Asp Pro Trp Lys Leu Cys Thr Met Gln Gln Val
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 Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly Ser Gly Gly Phe Val Ile
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 Pro Ala Ala Thr Tyr Val Val Phe Leu Met Thr Gly Met Thr Val Phe
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 Ile Ala Thr Val His Arg Thr Thr Gln Asn Ser Ala Gly Gly Asn Trp
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Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ala Val Phe Asn Met Lys	65 70 75 80		
Ser Ile Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn	85 90 95		
Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg	100 105 110		
Tyr Lys Thr Leu Thr Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu	115 120 125		
Val Ile Leu Leu Thr Ala Ala Val Pro Gln Leu His Pro Ala Pro Cys	130 135 140		
Gly Thr Ala Leu Thr Cys Thr Gly Pro Ser Gly Gly Gln Ile Ala Phe	145 150 155 160		
Leu Leu Met Gly Leu Ala Phe Leu Val Val Gly Ala Gly Gly Ile Arg	165 170 175		
Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu	180 185 190		
Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr	195 200 205		
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Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro Val Val Leu Met	225 230 235 240		

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 Val Ala Ile Lys Lys Arg Gly Leu Lys Ala Val Lys Gln Pro Trp Val
 275 280 285
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 Tyr Thr Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala Ile Leu Ala Pro
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 Glu Asp Lys Leu Glu Ala Asp Gly Lys Pro Thr Asp Pro Trp Lys Leu
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 Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Leu
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 Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly
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 Thr Gly Met Thr Val Phe Ile Ile Ile Tyr Asp Arg Val Leu Val Pro
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 Arg Ile Gly Thr Gly Ile Phe Phe Ala Phe Leu Ser Leu Val Val Ser
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 Gly Phe Val Glu Glu Arg Arg Arg Thr Phe Ala Leu Thr Lys Pro Thr
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 Leu Gly Met Ala Pro Arg Lys Gly Glu Ile Ser Ser Met Ser Ala Met
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Asp Leu Phe Tyr Phe Met Ile Ala Gly Ile Leu Ala Val Asn Phe Ala
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Glu Asp Val Gln Glu Thr Lys Val Val Tyr Arg Gly Trp Lys Val Met
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Pro Phe Ile Ile
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Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile Gly
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bc5 10-2012_ST25.txt

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bcs 10-2012_ST25.txt

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Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile Gly
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Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser Val Phe Asn Met Lys
65 70 75 80

Ser Val Thr Ala Ala Thr Ile Ile Asn Ala Phe Ala Gly Thr Val Asn
85 90 95

Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg
100 105 110

Tyr Lys Thr Leu Thr Val Ala Val Leu Ala Cys Phe Leu Gly Ser Leu
115 120 125

Ala Ile Leu Leu Thr Ala Ala Val Pro Gln Leu His Pro Ala Pro Cys
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Gly Thr Ala Ser Ser Cys Ser Gly Pro Ser Gly Gly Gln Ile Ala Phe
145 150 155 160

Leu Leu Met Gly Leu Gly Ile Leu Val Val Gly Ala Gly Gly Ile Arg
165 170 175

Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Gly
180 185 190

Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr
195 200 205

Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Val Val Val Tyr Val Gln
210 215 220

Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro Val Val Leu Met
225 230 235 240

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

Ile Glu Ala Ser Gly Ser Pro Leu Ala Ser Ile Ala His Val Ile Thr
260 265 270

Ala Ala Ile Lys Lys His Gly Leu Lys Ser Val Glu Gln Pro Trp Leu
275 280 285

Asn Leu Tyr Asn Tyr Tyr Pro Ser Lys His Ala Asn Ala Lys Leu Lys

290

295

Tyr Thr Glu Gln Phe Arg Phe Leu Asp Lys Ala Ala Ile Leu Thr Pro
305 310 315 320

Glu Asp Lys Leu Asp Ala Asp Gly Lys Pro Val Asn Pro Trp Asn Leu
325 330 335

Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile Met Arg Val Leu
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Pro Ile Trp Phe Ala Ser Ser Ile Tyr Tyr Leu Thr Ile Ala Gln Gln
355 360 365

Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly
370 375 380

Ser Gly Gly Phe Met Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met
385 390 395 400

Thr Gly Met Thr Leu Phe Ile Ile Phe Tyr Asp Arg Val Leu Val Pro
405 410 415

Thr Leu Lys Arg Ile Thr Gly Ile Glu Thr Gly Ile Thr Leu Leu Gln
420 425 430

Arg Ile Gly Ala Gly Ile Phe Phe Ala Leu Leu Ser Leu Ile Ile Ser
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Gly Phe Val Glu Glu His Arg Arg Thr Ser Ala Leu Thr Lys Pro Thr
450 455 460

Leu Gly Leu Ala Pro Arg Lys Gly Glu Ile Ser Ser Met Ser Ala Met
465 470 475 480

Trp Leu Ile Pro Gln Leu Val Leu Ala Gly Ile Ala Asp Ala Phe Gly
485 490 495

Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met
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Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser Ser
515 520 525

Tyr Ile Ser Ser Phe Leu Ile Thr Thr Val His Arg Met Thr Gln Asn
530 535 540

Ser Ala Gly Gly Asn Trp Leu Ala Glu Asp Leu Asn Lys Gly Arg Leu
545 550 555 560

Asp Tyr Phe Tyr Phe Leu Leu Ala Gly Ile Leu Ala Val Asn Phe Ala
565 570 575

Tyr Phe Leu Val Met Ala Arg Trp Tyr Arg Tyr Lys Gly Ser Asp Asp
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Thr Asp Val Val Asp Ser Phe Glu Glu Glu Gln Arg Lys Ile Val Tyr
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aga gga tgg aaa gtc atg cct ttt atc att g gtaacgctcc tttttacttg 147
Arg Gly Trp Lys Val Met Pro Phe Ile Ile
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gtgtaacatt ttgtccgtga tgttttttaa tttcgtttct tttctcttct ctttgacttg 267

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ttaaaactga gatttcgttg aaacaatgaa acccagataa tcttacagat ctgtctaata 387

gaaattatat tttttacaat tgttttcatt ttattttcaa agagactttt gaaatcttta 447

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acattaaatg taaaaaaaaa actgtaactg tattcttaat ttcttatcat taatttgcta 687

ttgtag gt aat gag aca ttt gag aag ctt ggg atc ata ggg aca tta 734
Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile Gly Thr Leu
45 50 55

tca aac ctt ctt gtg tac cta act tct gta ttc aac ctt aag agc tac 782
Ser Asn Leu Leu Val Tyr Leu Thr Ser Val Phe Asn Leu Lys Ser Tyr
60 65 70

aca gct gca act atc atc aat gcc ttt agt ggt aca atc aat ttc ggg 830
Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn Phe Gly
75 80 85

act ttt att gct gcc ttt ctt tgc gac act tac ttt ggt cgc tac aag 878
Thr Phe Ile Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg Tyr Lys
90 95 100

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Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu	
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ctttcatgac tccggtttcg ttttcgccaa tgttttctaa accatttttc atctctgtag	991
gga tgc ttt gtg ata cta ctt act gct gca att ccg tgc ttg cac ccc	1039
Gly Ser Phe Val Ile Leu Leu Thr Ala Ile Pro Ser Leu His Pro	
120 125 130	
gtt gct tgc gga aac aaa atc tgc tgc gaa ggg cca agt gtg gga cag	1087
Val Ala Cys Gly Asn Lys Ile Ser Cys Glu Gly Pro Ser Val Gly Gln	
135 140 145	
ata ctg ttt ctg ctc atg ggt tta ggc ttt ctt gtg gta ggc gct ggt	1135
Ile Leu Phe Leu Leu Met Gly Leu Gly Phe Leu Val Val Gly Ala Gly	
150 155 160	
ggt atc aga ccg tgt aat tta gcg ttt ggt gct gat cag ttc aac ccc	1183
Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro	
165 170 175	
aaa tcc gaa tca gga aag aaa ggg atc aac agt ttc ttc aac tgg tat	1231
Lys Ser Glu Ser Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn Trp Tyr	
180 185 190 195	
ttc ttc act ttc acg ttc gcg cag atc atc tgc ctc aca gca gtt gtg	1279
Phe Phe Thr Phe Thr Phe Ala Gln Ile Ile Ser Leu Thr Ala Val Val	
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Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Ile Ile Pro Val	
215 220 225	
gct ctt atg ttc ttg gcg tgt gtg att ttc ttt gct ggc gat aga ttg	1375
Ala Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly Asp Arg Leu	
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Tyr Val Lys Val Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala Arg	
245 250 255	
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Val Ile Ala Ala Ala Ile Lys Lys Arg Gly Leu Lys Pro Val Lys Gln	
260 265 270 275	
cct tgg gtc aat ctt tac aac cat atc ccg tct aac tat gca aat act	1519
Pro Trp Val Asn Leu Tyr Asn His Ile Pro Ser Asn Tyr Ala Asn Thr	
280 285 290	
act cta aaa tac acc gac cag ttc ag gtaaattgat atctacttat	1565
Thr Leu Lys Tyr Thr Asp Gln Phe Arg	
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tgttgccag a ttt cta gac aaa gca gca att atg acc ccc gag gag aag	1674
Phe Leu Asp Lys Ala Ala Ile Met Thr Pro Glu Glu Lys	
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Leu Asn Ser Asp Gly Thr Ala Ser Asp Pro Trp Lys Leu Cys Thr Leu	
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Gln Gln Val Glu Glu Val Lys Cys Ile Val Arg Val Ile Pro Ile Trp	
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Phe Ala Ser Thr Ile Tyr Tyr Leu Ala Ile Thr Ile Gln Met Thr Tyr	
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ccg gtc ttc caa gcg ctc cag agc gac cga cga tta ggt tct ggt ggc	1866
Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly Ser Gly Gly	
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bcs 10-2012_ST25.txt

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aga gtg acc ggg tta gaa acc ggt ata tca ctc tta caa aga atc gga Arg Val Thr Gly Leu Glu Thr Gly Ile Ser Leu Leu Gln Arg Ile Gly	2010
gct ggg ttt aca ttt gcg ata atg agt tta tta gtt tcc ggg ttt ata Ala Gly Phe Thr Phe Ala Ile Met Ser Leu Leu Val Ser Gly Phe Ile	2058
gag gaa agg aga aga aac ttt gca ttg acc aaa ccg aca ctc ggg atg Glu Glu Arg Arg Asn Phe Ala Leu Thr Lys Pro Thr Leu Gly Met	2106
gcg cct cgg aca gga gaa atc tca tca atg tca gcg ttg tgg ctg att Ala Pro Arg Thr Gly Glu Ile Ser Ser Met Ser Ala Leu Trp Leu Ile	2154
ccg cag ctt aca ctt gca ggc ata gca gaa gct ttt gct gcc att gga Pro Gln Leu Thr Leu Ala Gly Ile Ala Glu Ala Phe Ala Ile Gly	2202
caa atg gag ttt tac tac aag cag ttt cct gaa aac atg aag agc ttc Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met Lys Ser Phe	2250
gcg ggt tct atc ttt tat gtc ggt gca ggg gtt tcg agc tac ctc gct Ala Gly Ser Ile Phe Tyr Val Gly Ala Gly Val Ser Ser Tyr Leu Ala	2298
agc ttc ttg ata tca act gtt cat cga aca acc gcg cat tca cct tca Ser Phe Leu Ile Ser Thr Val His Arg Thr Thr Ala His Ser Pro Ser	2346
ggg aat tgg tta gct gag gat ctg aac aaa gcg aaa ttg gat tac ttc Gly Asn Trp Leu Ala Glu Asp Gln Asn Lys Ala Lys Leu Asp Tyr Phe	2394
tac ttc atg ctc aca gga ctc atg gtt gtt aac atg gct tac ttc ttg Tyr Phe Met Leu Thr Gly Leu Met Val Val Asn Met Ala Tyr Phe Leu	2442
ttg atg gct aga tgg tat aga tac aaa gga ggt aat gat gaa gac atc Leu Met Ala Arg Trp Tyr Arg Tyr Lys Gly Gly Asn Asp Glu Asp Ile	2490
act gag att gag acc aat gaa gaa gaa acc aag caa cag cag cta caa Thr Glu Ile Glu Thr Asn Glu Glu Glu Thr Lys Gln Gln Gln Leu Gln	2538
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Ser Val Phe Asn Leu Lys Ser Tyr Thr Ala Ala Thr Ile Ile Asn Ala
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Phe Ser Gly Thr Ile Asn Phe Gly Thr Phe Ile Ala Ala Phe Leu Cys
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Asp Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala
100 105 110

Cys Phe Leu Gly Ser Phe Val Ile Leu Leu Thr Ala Ala Ile Pro Ser
115 120 125

Leu His Pro Val Ala Cys Gly Asn Lys Ile Ser Cys Glu Gly Pro Ser
130 135 140

Val Gly Gln Ile Leu Phe Leu Leu Met Gly Leu Gly Phe Leu Val Val
145 150 155 160

Gly Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln
165 170 175

Phe Asn Pro Lys Ser Glu Ser Gly Lys Lys Gly Ile Asn Ser Phe Phe
180 185 190

Asn Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Ile Ser Leu Thr
195 200 205

Ala Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Ile
210 215 220

Ile Pro Val Ala Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly
225 230 235 240

Asp Arg Leu Tyr Val Lys Val Lys Ala Ser Gly Ser Pro Leu Ala Gly
245 250 255

Ile Ala Arg Val Ile Ala Ala Ala Ile Lys Lys Arg Gly Leu Lys Pro
260 265 270

Val Lys Gln Pro Trp Val Asn Leu Tyr Asn His Ile Pro Ser Asn Tyr
275 280 285

Ala Asn Thr Thr Leu Lys Tyr Thr Asp Gln Phe Arg Phe Leu Asp Lys
290 295 300

Ala Ala Ile Met Thr Pro Glu Glu Lys Leu Asn Ser Asp Gly Thr Ala
305 310 315 320

Ser Asp Pro Trp Lys Leu Cys Thr Leu Gln Gln Val Glu Glu Val Lys
325 330 335

bcs 10-2012_ST25.txt

Cys Ile Val Arg Val Ile Pro Ile Trp Phe Ala Ser Thr Ile Tyr Tyr
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Leu Ala Ile Thr Ile Gln Met Thr Tyr Pro Val Phe Gln Ala Leu Gln
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Ser Asp Arg Arg Leu Gly Ser Gly Gly Phe Arg Ile Pro Ala Ala Thr
370 375 380

Tyr Val Val Phe Leu Met Thr Gly Met Thr Val Phe Ile Ile Phe Tyr
385 390 395 400

Asp Arg Val Leu Val Pro Ser Leu Arg Arg Val Thr Gly Leu Glu Thr
405 410 415

Gly Ile Ser Leu Leu Gln Arg Ile Gly Ala Gly Phe Thr Phe Ala Ile
420 425 430

Met Ser Leu Leu Val Ser Gly Phe Ile Glu Glu Arg Arg Arg Asn Phe
435 440 445

Ala Leu Thr Lys Pro Thr Leu Gly Met Ala Pro Arg Thr Gly Glu Ile
450 455 460

Ser Ser Met Ser Ala Leu Trp Leu Ile Pro Gln Leu Thr Leu Ala Gly
465 470 475 480

Ile Ala Glu Ala Phe Ala Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys
485 490 495

Gln Phe Pro Glu Asn Met Lys Ser Phe Ala Gly Ser Ile Phe Tyr Val
500 505 510

Gly Ala Gly Val Ser Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val
515 520 525

His Arg Thr Thr Ala His Ser Pro Ser Gly Asn Trp Leu Ala Glu Asp
530 535 540

Leu Asn Lys Ala Lys Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu
545 550 555 560

Met Val Val Asn Met Ala Tyr Phe Leu Leu Met Ala Arg Trp Tyr Arg
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cct	tcc	tcc	gcc	gta	tac	ggt	ggc	tct	gtt	acg	gcg	gtt	gac	tct	gtt	96
Pro	Ser	Ser	Ala	Val	Tyr	Gly	Gly	Ser	Val	Thr	Ala	Val	Asp	Ser	Val	
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gaa	gaa	gat	gtt	cag	aat	cag	aag	aaa	gtc	gtt	tat	aga	ggc	tgg	aaa	144
Glu	Glu	Asp	Val	Gln	Asn	Gln	Lys	Lys	Val	Val	Tyr	Arg	Gly	Trp	Lys	
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gtc	atg	ccc	ttt	att	att	g	gtaacactaa	tttgatcatt	tgcttttctt	193
Val	Met	Pro	Phe	Ile	Ile					
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Lys	Leu	Gly	Ile	Ile	Gly	Thr	Leu	Ser	Asn	Leu	Leu	Val	Tyr	Leu	Thr	
			65						70					75		

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Ala	Val	Phe	Asn	Leu	Lys	Ser	Ile	Thr	Ala	Ala	Thr	Ile	Ile	Asn	Ala	
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Phe	Ser	Gly	Thr	Ile	Asn	Phe	Gly	Thr	Phe	Val	Ala	Ala	Phe	Leu	Cys	
		95					100					105				

gac	act	tac	ttc	ggt	cga	tac	aag	act	cta	agt	gtc	gcg	gtc	atc	gca	740
Asp	Thr	Tyr	Phe	Gly	Arg	Tyr	Lys	Thr	Leu	Ser	Val	Ala	Val	Ile	Ala	
	110				115						120					

tgt	ttt	ctt	gtaacgatcc	ttcctctttt	ttaatatttt	ctttctctac	789
Cys	Phe	Leu					
	125						

aacattcggt	ttaaagtcaa	acaaatctga	tcagtaaatt	cggttttgta	g	gga	tca	846
						Gly	Ser	

ttt	gtg	ata	cta	ttg	act	gca	gca	gtg	cca	caa	ctg	cat	cca	gct	gca	894
Phe	Val	Ile	Leu	Leu	Thr	Ala	Ala	Val	Pro	Gln	Leu	His	Pro	Ala	Ala	
130					135					140					145	

tgt	gga	aca	gcg	gcg	gat	agc	ata	tgt	aac	ggg	cca	agt	gga	ggc	cag	942
Cys	Gly	Thr	Ala	Ala	Asp	Ser	Ile	Cys	Asn	Gly	Pro	Ser	Gly	Gly	Gln	
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bc5 10-2012_ST25.txt

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aaa agc gaa tca ggg aaa aga ggg att gac agt ttc ttt aat tgg tat Lys Ser Glu Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr	1086
ttc ttt acc ttc act ttc gcg cag atc ctg tgc ctg act cta gtc gtc Phe Phe Thr Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Leu Val Val	1134
tac gtt cag tct aat gtc agt tgg acg atc ggt cta acc atc cct gcc Tyr Val Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro Ala	1182
gtt cta atg ttt ttg gcc tgc ttg att ttc ttt gcg ggc gat aag ttg Val Leu Met Phe Leu Ala Cys Leu Ile Phe Phe Ala Gly Asp Lys Leu	1230
tat gtg aag atc aaa gcc tcg ggt agt cca ttg gcc ggt ata gct caa Tyr Val Lys Ile Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala Gln	1278
gtt ata gcg gtt gcg atc aag aaa cgc gga tta aag ccc gcg aaa cag Val Ile Ala Val Ala Ile Lys Lys Arg Gly Leu Lys Pro Ala Lys Gln	1326
cct tgg ctt aac ctt tac aat tac tac cca cca aaa tac gca aac tcc Pro Trp Leu Asn Leu Tyr Asn Tyr Tyr Pro Pro Lys Tyr Ala Asn Ser	1374
aag ctc aaa tac aca gac caa ttc ag gtaaaaaaaaaa cacaccccat Lys Leu Lys Tyr Thr Asp Gln Phe Arg	1420
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cca gat ggt aag cct gct gat cct tgg aag ctc tgt aca atg caa caa Pro Asp Gly Lys Pro Ala Asp Pro Trp Lys Leu Cys Thr Met Gln Gln	1577
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ttc atc gta gtc tac gac cgt gta ctt gtg cca acc atg aga aga att Phe Ile Val Val Tyr Asp Arg Val Leu Val Pro Thr Met Arg Arg Ile	1817
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bcs 10-2012_ST25.txt

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Arg	Arg	Arg	Thr	Phe	Ala	Leu	Thr	Lys	Pro	Thr	Leu	Gly	Met	Ala	Pro		
		460					465					470					
aga	aag	gga	gaa	atc	tcg	tcg	atg	tca	gct	atg	tgg	ctg	att	ccg	cag	2009	
Arg	Lys	Gly	Glu	Ile	Ser	Ser	Met	Ser	Ala	Met	Trp	Leu	Ile	Pro	Gln		
	475					480					485						
ctc	tca	ctg	gcg	ggt	gta	gca	gag	gca	ttt	gca	gcc	att	gga	caa	atg	2057	
Leu	Ser	Leu	Ala	Gly	Val	Ala	Glu	Ala	Phe	Ala	Ala	Ile	Gly	Gln	Met		
				495						500					505		
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Ser	Ile	Phe	Tyr	Val	Gly	Gly	Gly	Val	Ser	Ser	Tyr	Leu	Gly	Ser	Phe		
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Leu	Ile	Ala	Thr	Val	His	Arg	Thr	Thr	Gln	Asn	Ser	Ser	Gly	Gly	Asn		
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gaa	acc	aat	gaa	aat	atc	atc	aaa	cag	caa	gac	aag	aac	gtt	gcc	tga	2393	
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Glu	Glu	Asp	Val	Gln	Asn	Gln	Lys	Lys	Val	Val	Tyr	Arg	Gly	Trp	Lys
		35					40					45			
Val	Met	Pro	Phe	Ile	Ile	Gly	Asn	Glu	Thr	Phe	Glu	Lys	Leu	Gly	Ile
	50					55					60				
Ile	Gly	Thr	Leu	Ser	Asn	Leu	Leu	Val	Tyr	Leu	Thr	Ala	Val	Phe	Asn
	65				70					75					80
Leu	Lys	Ser	Ile	Thr	Ala	Ala	Thr	Ile	Ile	Asn	Ala	Phe	Ser	Gly	Thr
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Ile	Asn	Phe	Gly	Thr	Phe	Val	Ala	Ala	Phe	Leu	Cys	Asp	Thr	Tyr	Phe

Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys Phe Leu Gly
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130 135 140

Ala Cys Gly Thr Ala Ala Asp Ser Ile Cys Asn Gly Pro Ser Gly Gly
145 150 155 160

Gln Ile Ala Phe Leu Leu Met Gly Leu Gly Phe Leu Val Val Gly Ala
165 170 175

Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn
180 185 190

Pro Lys Ser Glu Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp
195 200 205

Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Leu Val
210 215 220

Val Tyr Val Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro
225 230 235 240

Ala Val Leu Met Phe Leu Ala Cys Leu Ile Phe Phe Ala Gly Asp Lys
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Leu Tyr Val Lys Ile Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala
260 265 270

Gln Val Ile Ala Val Ala Ile Lys Lys Arg Gly Leu Lys Pro Ala Lys
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Gln Pro Trp Leu Asn Leu Tyr Asn Tyr Tyr Pro Pro Lys Tyr Ala Asn
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Ser Lys Leu Lys Tyr Thr Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala
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Ile Leu Thr Pro Glu Asp Lys Leu Gln Pro Asp Gly Lys Pro Ala Asp
325 330 335

Pro Trp Lys Leu Cys Thr Met Gln Gln Val Glu Glu Val Lys Cys Ile
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Val Arg Val Leu Pro Ile Trp Phe Ala Ser Ser Ile Tyr Tyr Leu Thr
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Ile Thr Gln Gln Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp
370 375 380

Arg Arg Leu Gly Ser Gly Gly Phe Val Ile Pro Ala Ala Thr Tyr Val
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Val Phe Leu Met Thr Gly Met Thr Val Phe Ile Val Val Tyr Asp Arg

405

Val Leu Val Pro Thr Met Arg Arg Ile Thr Gly Leu Asp Thr Gly Ile
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Thr Leu Leu Gln Arg Ile Gly Thr Gly Ile Phe Phe Ala Thr Ala Ser
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Leu Val Val Ala Gly Phe Val Glu Glu Arg Arg Arg Thr Phe Ala Leu
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Thr Lys Pro Thr Leu Gly Met Ala Pro Arg Lys Gly Glu Ile Ser Ser
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Met Ser Ala Met Trp Leu Ile Pro Gln Leu Ser Leu Ala Gly Val Ala
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Glu Ala Phe Ala Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe
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Pro Glu Asn Met Arg Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Gly
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Gly Val Ser Ser Tyr Leu Gly Ser Phe Leu Ile Ala Thr Val His Arg
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Lys Gly Arg Leu Asp Leu Phe Tyr Phe Met Ile Ala Gly Ile Leu Ala
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Val Asn Phe Ala Tyr Phe Leu Val Met Ser Arg Trp Tyr Arg Tyr Lys
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Ser Ser Ala Val Tyr Asp Gly Ser Ala Thr Ala Val Asp Ser Val Glu
20 25 30

gaa gaa gtt cag gaa acc aaa ctc gtt tat aga ggc tgg aaa gtc atg 144
Glu Glu Val Gln Glu Thr Lys Leu Val Tyr Arg Gly Trp Lys Val Met
35 40 45

cct ttc atc ata g gtaacgcata tgtttttaaa catattaaaa atataaattt 197
Pro Phe Ile Ile
50

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tttctagaaa tttcctgtaa ttaaattttg acaatttttct tctctgtttc tagaaactat 317
attttggtgc tttgatttta tcattctttg tggtgttgct ttaagctttg acttagtcaa 377
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tttcttcttg catgttggtta ttaccag ga aac gag aca ttt gag aag ctt ggg 550
Gly Asn Glu Thr Phe Glu Lys Leu Gly
55 60

atc att gga aca cta tca aac ctt ctg gtt tac tta act gct gtc ttc 598
Ile Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ala Val Phe
65 70 75

aac atg aag agt atc aca gcc gca aca atc atc aac gcc ttt agt ggc 646
Asn Met Lys Ser Ile Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser Gly
80 85 90

aca atc aac ttc gga acc ttc gtt gct gcc ttc ctt tgc gac act tac 694
Thr Ile Asn Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr
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ttc ggt cgt tac aag aca cta acc gtc gcg gtc atc gca tgt ttt ctt 742
Phe Gly Arg Tyr Lys Thr Leu Thr Val Ala Val Ile Ala Cys Phe Leu
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Gly Ser Leu Val Ile Leu Leu Thr
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gct gca gta cca caa ctg cat cca gct cca tgc gga ata gcc ctc acg 904
Ala Ala Val Pro Gln Leu His Pro Ala Pro Cys Gly Ile Ala Leu Thr
135 140 145

tgt aca ggc cca agt ggc ggc cag ata gcc ttt cta cta atg ggt ctt 952
Cys Thr Gly Pro Ser Gly Gly Gln Ile Ala Phe Leu Leu Met Gly Leu
150 155 160 165

gcc ttt ctt gtg gtg gga gca ggt ggg att aga ccg tgt aat ctt gct 1000
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170 175 180

ttt gga gct gat cag ttt aac cct aaa agc gag tca ggg aag aga ggg 1048
Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu Ser Gly Lys Arg Gly
185 190 195

att gat agt ttc ttt aac tgg tac ttc ttc acc ttc acg ttc gcg cag 1096
Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln
200 205 210

atc ttg tcg ctg aca cta gtt gtc tac atc cag tct aac gtc agt tgg 1144
Ile Leu Ser Leu Thr Leu Val Val Tyr Ile Gln Ser Asn Val Ser Trp

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agt cca ttg gct agt ata gct caa gtt ata acg gtt gct atc aag aaa Ser Pro Leu Ala Ser Ile Ala Gln Val Ile Thr Val Ala Ile Lys Lys 265 270 275			1288
cgt ggg tta aag gct gtg aag cag cct tgg gtt aac ctt tac aat tac Arg Gly Leu Lys Ala Val Lys Gln Pro Trp Val Asn Leu Tyr Asn Tyr 280 285 290			1336
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gga gct att gga cag atg gag ttt tac tac aag cag ttc ccc gag aac Gly Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn			2065

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	530	535	
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	580	585	
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Pro	Phe	Ile	Ile	Gly	Asn	Glu	Thr	Phe	Glu	Lys	Leu	Gly	Ile	Ile	Gly
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Ser	Ile	Thr	Ala	Ala	Thr	Ile	Ile	Asn	Ala	Phe	Ser	Gly	Thr	Ile	Asn
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Phe	Gly	Thr	Phe	Val	Ala	Ala	Phe	Leu	Cys	Asp	Thr	Tyr	Phe	Gly	Arg
			100					105					110		
Tyr	Lys	Thr	Leu	Thr	Val	Ala	Val	Ile	Ala	Cys	Phe	Leu	Gly	Ser	Leu
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Val	Ile	Leu	Leu	Thr	Ala	Ala	Val	Pro	Gln	Leu	His	Pro	Ala	Pro	Cys
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Gly	Ile	Ala	Leu	Thr	Cys	Thr	Gly	Pro	Ser	Gly	Gly	Gln	Ile	Ala	Phe
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 Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn Pro Lys Ser Glu
 180 185 190
 Ser Gly Lys Arg Gly Ile Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr
 195 200 205
 Phe Thr Phe Ala Gln Ile Leu Ser Leu Thr Leu Val Val Tyr Ile Gln
 210 215 220
 Ser Asn Val Ser Trp Thr Ile Gly Leu Thr Ile Pro Val Val Leu Met
 225 230 235 240
 Phe Leu Ala Cys Val Ile Phe Phe Ala Gly Asp Lys Leu Tyr Val Lys
 245 250 255
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 260 265 270
 Val Ala Ile Lys Lys Arg Gly Leu Lys Ala Val Lys Gln Pro Trp Val
 275 280 285
 Asn Leu Tyr Asn Tyr Tyr Pro Leu Asn Tyr Ala Asn Ser Lys Leu Lys
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 Glu Asp Lys Leu Glu Ala Asp Gly Lys Pro Thr Asp Pro Trp Lys Leu
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 Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp Arg Arg Leu Gly
 370 375 380
 Ser Gly Gly Phe Val Ile Pro Ala Ala Thr Tyr Val Val Phe Leu Met
 385 390 395 400
 Thr Gly Met Thr Val Phe Ile Ile Ile Tyr Asp Arg Val Leu Val Pro
 405 410 415
 Thr Leu Arg Arg Ile Thr Gly Ile Asp Thr Gly Ile Thr Leu Leu Gln
 420 425 430
 Arg Ile Gly Thr Gly Ile Phe Phe Ala Phe Leu Ser Leu Val Val Ser
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485 490 495

Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met
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Asp Leu Phe Tyr Phe Met Ile Ala Gly Ile Leu Ala Val Asn Phe Ala
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Tyr Phe Leu Val Met Ser Arg Trp Tyr Arg Tyr Lys Gly Ser Asp Asp
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Ser Cys Ile Gly Pro Ser Gly Gly Gln Ile Ala Phe Leu Leu Leu Gly	160
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Gln Ile Leu Ser Leu Thr Leu Ile Val Tyr Ile Gln Ser Asn Val Ser	225
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Phe Gly Thr Phe Val Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg
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Tyr Lys Thr Leu Thr Val Ala Val Ile Ala Cys Phe Leu Gly Ser Leu
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Gly Ile Ala Leu Thr Cys Thr Gly Pro Ser Gly Gly Gln Ile Ala Phe
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Thr	Leu	Leu	Gln	Arg	Ile	Gly	Thr	Gly	Ile	Phe	Phe	Ala	Phe	Leu	Ser	
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Thr	Lys	Pro	Thr	Leu	Gly	Met	Ala	Pro	Arg	Lys	Gly	Glu	Ile	Ser	Ser	
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Met	Ser	Ala	Met	Trp	Leu	Ile	Pro	Gln	Leu	Ala	Leu	Ala	Gly	Ile	Ala	
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Pro	Glu	Asn	Met	Arg	Ser	Phe	Ala	Gly	Ser	Ile	Phe	Tyr	Val	Gly	Ala	
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Thr	Thr	Gln	Asn	Ser	Ala	Gly	Gly	Asn	Trp	Leu	Ala	Glu	Asp	Leu	Asn	
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Lys	Gly	Arg	Leu	Asp	Leu	Phe	Tyr	Phe	Met	Ile	Ala	Gly	Ile	Leu	Ala	
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Gly	Ser	Asp	Asp	Glu	Val	Lys	Thr	Tyr	Glu	Thr	Asn	Gly	Asp	Ala	Ile	
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 Ile Phe Phe Ala Gly Asp Lys Leu Tyr Val Lys Ile Lys Ala Ser Gly
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 Ser Pro Leu Ala Ser Ile Ala Gln Val Ile Ala Val Ala Ile Lys Lys
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 Arg Phe Leu Asp Lys Ala Ala Ile Leu Ala Pro Glu Asp Lys Leu Glu
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 Ala Asp Gly Lys Pro Ala Asp Pro Trp Lys Leu Cys Thr Met Gln Gln
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His Gln Lys Pro Ser Ser Ala Val Tyr Asp Gly Ser Ala Thr Ala Val
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gat tct gtt caa gaa gaa gtt cag gag acg aaa gtc gtt tac aga ggc 505
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Trp Lys Val Met Pro Phe Ile Ile
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 Gly Asn Glu Thr Phe Glu Lys Leu Gly Ile Ile Gly Thr
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 Leu Ser Asn Leu Leu Val Tyr Leu Thr Ala Val Phe Asn Met Lys Ser
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 80 85 90
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Gly Ser Leu Ala Ile Leu Leu Thr Ala Ala Val Pro	
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Gln Leu His Pro Ala Pro Cys Gly Thr Ala Ser Ser Cys Ile Gly Pro	
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Ser Gly Gly Gln Ile Ala Phe Leu Leu Met Gly Leu Gly Ile Leu Val	
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Val Gly Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp	
165 170 175	
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Gln Phe Asn Pro Lys Ser Gly Ser Gly Lys Arg Arg Gly Ile Asp Ser Phe	
180 185 190 195	
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Phe Asn Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Leu Ser Leu	
200 205 210	
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Thr Val Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu	
215 220 225	
acc atc ccg gtc gtt cta atg ttc ttg gcc tcc gtg att ttc ttt gcg	1853
Thr Ile Pro Val Val Leu Met Phe Leu Ala Ser Val Ile Phe Phe Ala	
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245 250 255	
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<212> PRT

<213> Brassica juncea

<400> 130

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35 40 45

Glu Thr Phe Glu Lys Leu Gly Ile Ile Gly Thr Leu Ser Asn Leu Leu
50 55 60

Val Tyr Leu Thr Ala Val Phe Asn Met Lys Ser Ile Thr Ala Ala Thr
65 70 75 80

Ile Ile Asn Ala Phe Ala Gly Thr Val Asn Phe Gly Thr Phe Val Ala
85 90 95

Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Thr Ala
100 105 110

Ala Val Ile Ala Cys Phe Leu Gly Ser Leu Ala Ile Leu Leu Thr Ala
115 120 125

Ala Val Pro Gln Leu His Pro Ala Pro Cys Gly Thr Ala Ser Ser Cys
130 135 140

Ile Gly Pro Ser Gly Gly Gln Ile Ala Phe Leu Leu Met Gly Leu Gly
145 150 155 160

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165 170 175

Gly Ala Asp Gln Phe Asn Pro Lys Ser Gly Ser Gly Lys Arg Gly Ile
180 185 190

Asp Ser Phe Phe Asn Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile
195 200 205

Leu Ser Leu Thr Val Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr
210 215 220

Ile Gly Leu Thr Ile Pro Val Val Leu Met Phe Leu Ala Ser Val Ile
225 230 235 240

Phe Phe Ala Gly Ala Lys Leu Tyr Val Lys Ile Glu Ala Ser Gly Ser
245 250 255

Pro Leu Ala Ser Ile Ala His Val Ile Thr Ala Ala Ile Lys Lys His
260 265 270

Gly Leu Lys Ser Val Glu Gln Pro Trp Leu Asn Leu Tyr Asn Tyr Tyr
275 280 285

Pro Ala Lys Tyr Ala Asn Ala Lys Leu Lys Tyr Thr Asp Gln Phe Arg
290 295 300

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305 310 315 320

Asp Gly Lys Pro Val Asn Pro Trp Lys Leu Cys Thr Met Gln Gln Val
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435 440 445

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465 470 475 480

Val Leu Ala Gly Ile Gly Asp Ala Phe Gly Ala Ile Gly Gln Met Glu
485 490 495

Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met Arg Ser Phe Ala Gly Ser
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Leu Ala Glu Asp Leu Asn Lys Gly Arg Leu Asp Tyr Phe Tyr Phe Leu
545 550 555 560

Leu Ala Gly Ile Ser Ala Val Asn Phe Ala Tyr Phe Leu Val Met Ala
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aggatttgaa caaaggaaga ttggatttgt tttacttcat gatcgtgga atcttggcgg	1560
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ccagctccat gcggaacagc cttacgtgt acaggaccaa gtggtggcca gatagcggtc	480
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aagcctgtga agcagccttg gcttaacctt tacaattact acccactaaa ctacgcaaac	900
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tcaaaccttc tggtttattt aactgctgtc ttcaacatga agagtatcac agctgcaaca	240
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ttctttgcgg gtgctaagtt gtatgttaag atcgaagcct caggtagtcc attggctagt	780
atagctcatg ttataacagc tgcaatcaag aaacacgggt taaagtcagt ggaacagcct	840

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gatggaagc ctgtgaatcc atggaagcta tgcacaatgc aacaagttga agaagtgaag	1020
tgcacatga gagtgcttcc tatatcggtt gcttcgtcga tctattactt aaccatcacg	1080
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Tyr Ser Ser Val Asp Gly Gly Gly Ser Asp Ser Val Asp Ser Phe Glu
20 25 30

gac gag cag aaa aag ctc gtt tat aga ggc tgg aaa gtc atg ccc ttt 144
Asp Glu Gln Lys Lys Leu Val Tyr Arg Gly Trp Lys Val Met Pro Phe
35 40 45

atc att g gtaacgcttt cttcttctct tcagacaact tttttttttt agttttattct 201
Ile Ile
50

gttttgtttt gttgtgtccc ttttgtcggg ttatagaacg ttttgcccgt gatgttttta 261
ttttaatttc gtttcttttg tcttcttagt cttgactggt gaaaatcttg atttgagatt 321
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agtttcctag ataaatctac catggaaagt gagagacttt gaatcatgca agttttcagt 441
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gt aat gag aca ttt gag aag ata ggg atc att ggg aca cta tca aac 666
Gly Asn Glu Thr Phe Glu Lys Ile Gly Ile Ile Gly Thr Leu Ser Asn
55 60 65

ctt ctg gtg tac cta act tca gta ttc aac ctt aag agt gtt aca gct 714
Leu Leu Val Tyr Leu Thr Ser Val Phe Asn Leu Lys Ser Val Thr Ala
70 75 80

gca acc atc atc aac gcc ttc agt ggc act atc aat ttc ggc act ttc 762
Ala Thr Ile Ile Asn Ala Phe Ser Gly Thr Ile Asn Phe Gly Thr Phe
85 90 95

ctc gct gct ttc ctc tgc gac act tac ttt ggt cgc tac aag act ctc 810
Leu Ala Ala Phe Leu Cys Asp Thr Tyr Phe Gly Arg Tyr Lys Thr Leu
100 105 110

tct gtt gct gtc atc gcc tgt ttt ctg gtactctaata caaatgacca 857
Ser Val Ala Val Ile Ala Cys Phe Leu
115 120

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Gly Ser Leu Val Ile Leu Leu Thr Ala Ala Val Pro Gly Leu
125 130 135

cac cct att cct tgt gga aca caa agt tct tgc caa ggc cca agc gag 1253
His Pro Ile Pro Cys Gly Thr Gln Ser Ser Cys Gln Gly Pro Ser Glu
140 145 150

ggc cag att gcg ttt ctg ctg atg ggt tta gcg ctt ctt gtg gtg ggt 1301
Gly Gln Ile Ala Phe Leu Leu Met Gly Leu Ala Leu Leu Val Val Gly
155 160 165

gct ggt gga atc agg ccg tgt aac ttg gcc ttt ggt gct gac cag ttc 1349
Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe

bcs 10-2012_ST25.txt

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tgg tac ttc ttc act ttc acg ttc gcg cag atc atc tcc ctc aca cta	Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu	205	210	215	1445
gtt gtg tat atc cag tca aat gtg agc tgg acc atc ggt ttg agt atc	Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Ser Ile	220	225	230	1493
cct gtg ggt ctt atg ttc ttg gcc tgc gtc att ttc ttt gct ggt cac	Pro Val Gly Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly His	235	240	245	1541
aaa ctg tat gtg aaa gtg aaa gcc tct ggt agt cca ttg gct ggt ata	Lys Leu Tyr Val Lys Val Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile	250	255	260	1589
ggt cat gtt ata gcc gca gct atc aag aaa cgt ggc ttg aag cca gtt	Gly His Val Ile Ala Ala Ala Ile Lys Lys Arg Gly Leu Lys Pro Val	270	275	280	1637
aag cag cct tgg atc gat ctt tac aac cac att cct cct aac tat gca	Lys Gln Pro Trp Ile Asp Leu Tyr Asn His Ile Pro Pro Asn Tyr Ala	285	290	295	1685
aac tct act ctt aaa tac acc gac cag ctt ag gtaaagtcgg aatagttctg	Asn Ser Thr Leu Lys Tyr Thr Asp Gln Leu Arg	300	305		1737
tctctgtctt tctttgttca tttgctttat gctttgtctg aacaaatggt gtattgccag					1797
g ttt cta gac aaa gca gcg att atg acc cct gag gac aag ttg aac tcg	Phe Leu Asp Lys Ala Ala Ile Met Thr Pro Glu Asp Lys Leu Asn Ser	310	315	320	1846
gat gga acg gct tcg gat cca tgg aaa cta tgt acg atg cag aaa gtg	Asp Gly Thr Ala Ser Asp Pro Trp Lys Leu Cys Thr Met Gln Lys Val	325	330	335	1894
gaa gaa gtg aaa tgc att tta aga gtg att cca atc tgg ttc gca tgc	Glu Glu Val Lys Cys Ile Leu Arg Val Ile Pro Ile Trp Phe Ala Cys	345	350	355	1942
gcc att tac tac ctt gca ata agt atg caa atg act tat cca gtc ttc	Ala Ile Tyr Tyr Leu Ala Ile Ser Met Gln Met Thr Tyr Pro Val Phe	360	365	370	1990
caa gct ctc cag agc gac agg cta tta ggt tca ggt ggc ttc aag att	Gln Ala Leu Gln Ser Asp Arg Leu Leu Gly Ser Gly Gly Phe Lys Ile	375	380	385	2038
cca gcc gcc acc tat gtc gtg ttc ttg atg tct ggt atg acg gtt ttc	Pro Ala Ala Thr Tyr Val Val Phe Leu Met Ser Gly Met Thr Val Phe	390	395	400	2086
atc ata atc tac gac cgt gtc ctt gtc ccc tcg ctc aaa aga gtg acc	Ile Ile Ile Tyr Asp Arg Val Leu Val Pro Ser Leu Lys Arg Val Thr	405	410	415	2134
ggt cta gac acg ggg ata aca ctc tta caa aga ata gga gct ggc att	Gly Leu Asp Thr Gly Ile Thr Leu Leu Gln Arg Ile Gly Ala Gly Ile	425	430	435	2182
ttc ttt gcc gtg ttg agt tta ttg gtc tcc ggg ttt ata gaa gaa cgt	Phe Phe Ala Val Leu Ser Leu Leu Val Ser Gly Phe Ile Glu Glu Arg	440	445	450	2230
aga aga acc ttt gcg ctg aca cga cct acg ctc ggg tcg gag cct cga	Arg Arg Thr Phe Ala Leu Thr Arg Pro Thr Leu Gly Ser Glu Pro Arg	455	460	465	2278

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Thr Gly Glu Ile Ser Ser Met Ser Ala Met Trp Leu Ile Pro Gln Leu	
470 475 480	
gtg ctt gca ggg gta gca gaa gct ttt gta gcc att ggg caa atg gag	2374
Val Leu Ala Gly Val Ala Glu Ala Phe Val Ala Ile Gly Gln Met Glu	
485 490 495 500	
ttt tac tac aag cag ttt cct gaa aac atg aag agc ttt gcg ggt tct	2422
Phe Tyr Tyr Lys Gln Phe Pro Glu Asn Met Lys Ser Phe Ala Gly Ser	
505 510 515	
atc ttc tat gtc ggt gga gga gtt tct agc tac ctc gct agc ttc ttg	2470
Ile Phe Tyr Val Gly Gly Gly Val Ser Ser Tyr Leu Ala Ser Phe Leu	
520 525 530	
atc tcg act gtt cat aga aca act gag cat tca cct acg ggg aat tgg	2518
Ile Ser Thr Val His Arg Thr Thr Glu His Ser Pro Thr Gly Asn Trp	
535 540 545	
tta gct gag gat ctg aac aaa gcg aag ctg gac tac ttc tat ttc atg	2566
Leu Ala Glu Asp Leu Asn Lys Ala Lys Leu Asp Tyr Phe Tyr Phe Met	
550 555 560	
ctc aca gga ctc atg ttt gtc aac ttt ctt tac ttc ttg tta atg gct	2614
Leu Thr Gly Leu Met Phe Val Asn Phe Leu Tyr Phe Leu Leu Met Ala	
565 570 575 580	
aga tgg tat aga tac aaa ggc act cat gat gaa gtc agt tat gtg gtt	2662
Arg Trp Tyr Arg Tyr Lys Gly Thr His Asp Glu Val Ser Tyr Val Val	
585 590 595	
gac act gtt gac gaa gag acg aag caa caa gac aag aac tct gtc tga	2710
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600 605 610	

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 <222> (1)..(215)
 <223> Fragment of BnGTR1_A2 (bp 384 to 598 from start codon in sense orientation)

<220>
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 <223> intron 2 from the Pdk gene of Flaveria

<220>
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tcttgtggtt ggtgctggtg gtatcaggcc gtgtaacttg gcgtttggtg ccgatcagtt	180
caacccaag tccgaatcag gaaagaaagg aatcaggtac ccagcttgg taaggaaata	240
attattttct tttttccttt tagtataaaa tagttaagtg atgttaatta gtatgattat	300
aataatatag ttgttataat tgtgaaaaaa taatttataa atatattggt tacataaaca	360

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aatactatag taaaaataag aataaataaa ttaaaataat atttttttat gattaatagt      600
ttattatata attaaatatc tataaccatta ctaaataattt tagtttaaaa gttaataaat      660
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gattgattcc tttctttcct gattcggact tggggttgaa ctgatcggca ccaaacgcca     1080
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acaaaatctg ccccgcacct ggcccttcgc atgaactctt tgttccacaa ggagtcgggt     1200
gcagtcgccg aactgctgcc gtgagtagta tcgcaagc                                1238

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<220>
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gcttcctata tggtttgctg catcgatcta ttacttgacc atcacgcaag gtaccccgag     180
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tgtttacata aacaacatag taatgtaaaa aaatatgaca agtgatgtgt aagacgaaga     360
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gtaacaaaac ataatcta	780
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gatagatcat gtcattgtgt tatcattgat cttacatttg gattgattac agttgggaag	960
ctgggttcga aatcgatttg cgtgatggtc aagtaataga tcgatgcagc aaaccatata	1020
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tcaagg	1146

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tcttggtggtt ggtgctggtg gtatcaggcc gtgtaacttg gcgtttggtg ccgatcagtt	180
caacccaag tccgaatcag gaaagaaagg aatcaccttg ataaggcggc gattttggct	240
cccgaagaca agttggaggc tgatggtaag cctgcggatc cctggaagct ttgtacaatg	300
caacaagttg aagaagtga	360
atctattact tgaccatcac gcaaggtacc ccagcttggt aaggaaataa ttattttctt	420

bcs 10-2012_ST25.txt

ttttcctttt agtataaaat agttaagtga tggttaattag tatgattata ataatatagt	480
tggtataaatt gtgaaaaaat aatttataaa tatattgttt acataaacia catagtaatg	540
taaaaaaata tgacaagtga tgtgtaagac gaagaagata aaagttgaga gtaagtatat	600
tatttttaat gaatttgatc gaacatgtaa gatgatatac tagcattaat atttgtttta	660
atcataatag taattctagc tggtttgatg aattaaatat caatgataaa atactatagt	720
aaaaataaga ataaataaat taaaataata tttttttatg attaatagtt tattatataa	780
ttaaatatct ataccattac taaatatattt agtttaaaag ttaataaata ttttgttaga	840
aattccaatc tgcttgtaat ttatcaataa acaaaatatt aaataacaag ctaaagtaac	900
aaataatatc aaactaatag aaacagtaat ctaatgtaac aaaacataat ctaatgctaa	960
tataacaaag cgcaagatct atcaatttta tatagtatta tttttcaatc aacattctta	1020
ttaatttcta aataatactt gtagttttat taacttctaa atggattgac tattaattaa	1080
atgaattagt cgaacatgaa taaacaaggt aacatgatag atcatgtcat tgtgttatca	1140
ttgatcttac atttggttg attacagttg ggaagctggg ttcgaaatcg atttgctgta	1200
tggtcaagta atagatcgat gcagcaaacc atataggaag cactctcaca atgcacttca	1260
cttcttcaac ttgttgcat gtacaaagct tccagggatc cgcaggctta ccatcagcct	1320
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cat aac aac aac aac acc aat cat tac aca cag gtt gat act atg gag	96
His Asn Asn Asn Asn Thr Asn His Tyr Thr Gln Val Asp Thr Met Glu	
20 25 30	
aga aag cct ctt gag gtt gag cca tct act acg acg act aac acc gat	144
Arg Lys Pro Leu Glu Val Glu Pro Ser Thr Thr Thr Asn Thr Asp	
35 40 45	
gtg gtc gat tct ttc gag gaa gag cag aga aaa atc gtt tat aga gga	192
Val Val Asp Ser Phe Glu Glu Glu Gln Arg Lys Ile Val Tyr Arg Gly	
50 55 60	
tgg aaa gtc atg cct ttt atc att ggt aat gag aca ttt gag aag ctt	240
Trp Lys Val Met Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys Leu	
65 70 75 80	
ggg atc ata ggg aca tta tca aac ctt ctt gtg tac cta act tct gta	288
Gly Ile Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser Val	
85 90 95	

bc5 10-2012_ST25.txt

ttc aac ctt aag agc tac aca gct gca act atc atc aat gcc ttt agt	336
Phe Asn Leu Lys 100 Ser Tyr Thr Ala 105 Thr Ile Ile Asn 110 Phe Ser	
ggg aca atc aat ttc ggg act ttt att gct gcc ttt ctt tgc gac act	384
Gly Thr 115 Asn Phe Gly Thr 120 Phe 125 Ile Ala Ala Phe 125 Leu Cys Asp Thr	
tac ttt ggt cgc tac aag act ctc agt gtc gct gtc atc gct tgt ttt	432
Tyr Phe 130 Gly Arg Tyr Lys Thr 135 Leu Ser Val Ala 140 Ile Ala Cys Phe	
ctg gga tcg ttt gtg ata cta ctt act gct gca att ccg tcg ttg cac	480
Leu Gly Ser Phe Val 150 Ile Leu Leu Thr Ala 155 Ile Pro Ser Leu His 160	
ccc gtt gct tgc gga aac aaa atc tcg tgc gaa ggg cca agt gtg gga	528
Pro Val Ala Cys Gly Asn Lys Ile Ser Cys 170 Glu Gly Pro Ser Val 175 Gly	
cag ata ctg ttt ctg ctc atg ggt tta ggc ttt ctt gtg gta ggc gct	576
Gln Ile Leu Phe 180 Leu Leu Met Gly 185 Leu Gly Phe Leu Val 190 Val Gly Ala	
ggg ggt atc aga ccg tgt aat tta gcg ttt ggt gct gat cag ttc aac	624
Gly Gly Ile Arg Pro Cys Asn Leu 200 Ala Phe Gly Ala 205 Asp Gln Phe Asn	
ccc aaa tcc gaa tca gga aag aaa ggg atc aac agt ttc ttc aac tgg	672
Pro Lys 210 Ser Glu Ser Gly Lys 215 Lys Gly Ile Asn Ser 220 Phe Phe Asn Trp	
tat ttc ttc act ttc acg ttc gcg cag atc atc tcg ctc aca gca gtt	720
Tyr Phe Phe Thr Phe Thr 230 Ala Gln Ile Ile Ser Leu Thr Ala Val 240	
gtg tat atc cag tca aat gtg agt tgg aca atc ggt ttg atc att ccg	768
Val Tyr Ile Gln Ser Asn Val Ser Trp Thr 250 Ile Gly Leu Ile Ile Pro 255	
gtg gct ctt atg ttc ttg gcg tgt gtg att ttc ttt gct ggc gat aga	816
Val Ala Leu Met Phe Leu Ala Cys Val 265 Ile Phe Phe Ala Gly 270 Asp Arg	
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Leu Tyr Val Lys Val Lys Ala Ser 280 Gly Ser Pro Leu Ala Gly Ile Ala	
cgt gtt ata gca gcc gcg atc aag aaa cga ggt ttg aag ccg gtt aag	912
Arg Val Ile Ala Ala Ala Ile 295 Lys Lys Arg Gly Leu Lys Pro Val Lys	
cag cct tgg gtc aat ctt tac aac cat atc ccg tct aac tat gca aat	960
Gln Pro Trp Val Asn Leu Tyr Asn His Ile Pro 315 Ser Asn Tyr Ala Asn 320	
act act cta aaa tac acc gac cag ttc aga ttt cta gac aaa gca gca	1008
Thr Thr Leu Lys Tyr 325 Asp Gln Phe Arg 330 Phe Leu Asp Lys Ala Ala	
att atg acc ccc gag gag aag ttg aac tcc gat gga acg gct tcc gat	1056
Ile Met Thr 340 Glu Glu Lys Leu Asn 345 Ser Asp Gly Thr 350 Ala Ser Asp	
cca tgg aaa cta tgc acg ttg cag caa gtg gaa gaa gtg aaa tgc att	1104
Pro Trp Lys 355 Leu Cys Thr Leu Gln 360 Gln Val Glu Glu Val 365 Lys Cys Ile	
gta aga gtg att cca atc tgg ttt gca tcc acg ata tac tac ctt gca	1152
Val Arg Val Ile Pro Ile Trp 375 Phe Ala Ser Thr 380 Ile Tyr Tyr Leu Ala	
ata act ata caa atg act tat ccg gtc ttc caa gcg ctc cag agc gac	1200
Ile Thr Ile Gln Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp 400	

bc5 10-2012_ST25.txt

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gtg Val	ttc Phe	ttg Leu	atg Met 420	act Thr	ggc Gly	atg Met	aca Thr	gtt Val 425	ttc Phe	atc Ile	ata Ile	ttc Phe	tac Tyr 430	gac Asp	cgt Arg	1296
gta Val	ctt Leu	gtc Val 435	ccg Pro	tcg Ser	ctc Leu	aga Arg	aga Arg 440	gtg Val	acc Thr	ggg Gly	tta Leu	gaa Glu 445	acc Thr	ggt Gly	ata Ile	1344
tca Ser	ctc Leu 450	tta Leu	caa Gln	aga Arg	atc Ile	gga Gly 455	gct Ala	ggg Gly	ttt Phe	aca Thr	ttt Phe 460	gcg Ala	ata Ile	atg Met	agt Ser	1392
tta Leu 465	tta Leu	gtt Val	tcc Ser	ggg Gly	ttt Phe 470	ata Ile	gag Glu	gaa Glu	agg Arg	aga Arg 475	aga Arg	aac Asn	ttt Phe	gca Ala	ttg Leu 480	1440
acc Thr	aaa Lys	ccg Pro	aca Thr	ctc Leu 485	ggg Gly	atg Met	gcg Ala	cct Pro	cgg Arg 490	aca Thr	gga Gly	gaa Glu	atc Ile	tca Ser 495	tca Ser	1488
atg Met	tca Ser	gcg Ala	ttg Leu 500	tgg Trp	ctg Leu	att Ile	ccg Pro	cag Gln 505	ctt Leu	aca Thr	ctt Leu	gca Ala	ggc Gly 510	ata Ile	gca Ala	1536
gaa Glu	gct Ala	ttt Phe 515	gct Ala	gcc Ala	att Ile	gga Gly	caa Gln 520	atg Met	gag Glu	ttt Phe	tac Tyr	tac Tyr 525	aag Lys	cag Gln	ttt Phe	1584
cct Pro	gaa Glu 530	aac Asn	atg Met	aag Lys	agc Ser	ttc Phe 535	gcg Ala	ggt Gly	tct Ser	atc Ile	ttt Phe 540	tat Tyr	gtc Val	ggt Gly	gca Ala	1632
ggg Gly 545	gtt Val	tcg Ser	agc Ser	tac Tyr	ctc Leu 550	gct Ala	agc Ser	ttc Phe	ttg Leu	ata Ile 555	tca Ser	act Thr	gtt Val	cat His	cga Arg 560	1680
aca Thr	acc Thr	gcg Ala	cat His	tca Ser 565	cct Pro	tca Ser	ggg Gly	aat Asn	tgg Trp 570	tta Leu	gct Ala	gag Glu	gat Asp	ctg Leu 575	aac Asn	1728
aaa Lys	gcg Ala	aaa Lys	ttg Leu 580	gat Asp	tac Tyr	ttc Phe	tac Tyr	ttc Phe 585	atg Met	ctc Leu	aca Thr	gga Gly	ctc Leu 590	atg Met	gtt Val	1776
gtt Val	aac Asn	atg Met 595	gct Ala	tac Tyr	ttc Phe	ttg Leu	ttg Leu 600	atg Met	gct Ala	aga Arg	tgg Trp	tat Tyr 605	aga Arg	tac Tyr	aaa Lys	1824
gga Gly	ggt Gly 610	aat Asn	gat Asp	gaa Glu	gac Asp	atc Ile 615	act Thr	gag Glu	att Ile	gag Glu	acc Thr 620	aat Asn	gaa Glu	gaa Glu	gaa Glu	1872
acc Thr 625	aag Lys	caa Gln	cag Gln	cag Gln	cta Leu 630	caa Gln	gac Asp	aag Lys	aac Asn	tct Ser 635	gtc Val	tga				1911

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 <213> Arabidopsis thaliana

<400> 142

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His Asn Asn Asn Asn Thr Asn His Tyr Thr Gln Val Asp Thr Met Glu
 20 25 30

bcs 10-2012_ST25.txt

Arg Lys Pro Leu Glu Val Glu Pro Ser Thr Thr Thr Thr Asn Thr Asp
35 40 45

Val Val Asp Ser Phe Glu Glu Glu Gln Arg Lys Ile Val Tyr Arg Gly
50 55 60

Trp Lys Val Met Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys Leu
65 70 75 80

Gly Ile Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser Val
85 90 95

Phe Asn Leu Lys Ser Tyr Thr Ala Ala Thr Ile Ile Asn Ala Phe Ser
100 105 110

Gly Thr Ile Asn Phe Gly Thr Phe Ile Ala Ala Phe Leu Cys Asp Thr
115 120 125

Tyr Phe Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys Phe
130 135 140

Leu Gly Ser Phe Val Ile Leu Leu Thr Ala Ala Ile Pro Ser Leu His
145 150 155 160

Pro Val Ala Cys Gly Asn Lys Ile Ser Cys Glu Gly Pro Ser Val Gly
165 170 175

Gln Ile Leu Phe Leu Leu Met Gly Leu Gly Phe Leu Val Val Gly Ala
180 185 190

Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe Asn
195 200 205

Pro Lys Ser Glu Ser Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn Trp
210 215 220

Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Ile Ser Leu Thr Ala Val
225 230 235 240

Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Ile Ile Pro
245 250 255

Val Ala Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly Asp Arg
260 265 270

Leu Tyr Val Lys Val Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile Ala
275 280 285

Arg Val Ile Ala Ala Ala Ile Lys Lys Arg Gly Leu Lys Pro Val Lys
290 295 300

Gln Pro Trp Val Asn Leu Tyr Asn His Ile Pro Ser Asn Tyr Ala Asn
305 310 315 320

Thr Thr Leu Lys Tyr Thr Asp Gln Phe Arg Phe Leu Asp Lys Ala Ala
325 330 335

Ile Met Thr Pro Glu Glu Lys Leu Asn Ser Asp Gly Thr Ala Ser Asp
340 345 350

Pro Trp Lys Leu Cys Thr Leu Gln Gln Val Glu Glu Val Lys Cys Ile
355 360 365

Val Arg Val Ile Pro Ile Trp Phe Ala Ser Thr Ile Tyr Tyr Leu Ala
370 375 380

Ile Thr Ile Gln Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser Asp
385 390 395 400

Arg Arg Leu Gly Ser Gly Gly Phe Arg Ile Pro Ala Ala Thr Tyr Val
405 410 415

Val Phe Leu Met Thr Gly Met Thr Val Phe Ile Ile Phe Tyr Asp Arg
420 425 430

Val Leu Val Pro Ser Leu Arg Arg Val Thr Gly Leu Glu Thr Gly Ile
435 440 445

Ser Leu Leu Gln Arg Ile Gly Ala Gly Phe Thr Phe Ala Ile Met Ser
450 455 460

Leu Leu Val Ser Gly Phe Ile Glu Glu Arg Arg Arg Asn Phe Ala Leu
465 470 475 480

Thr Lys Pro Thr Leu Gly Met Ala Pro Arg Thr Gly Glu Ile Ser Ser
485 490 495

Met Ser Ala Leu Trp Leu Ile Pro Gln Leu Thr Leu Ala Gly Ile Ala
500 505 510

Glu Ala Phe Ala Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln Phe
515 520 525

Pro Glu Asn Met Lys Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly Ala
530 535 540

Gly Val Ser Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His Arg
545 550 555 560

Thr Thr Ala His Ser Pro Ser Gly Asn Trp Leu Ala Glu Asp Leu Asn
565 570 575

Lys Ala Lys Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met Val
580 585 590

Val Asn Met Ala Tyr Phe Leu Leu Met Ala Arg Trp Tyr Arg Tyr Lys
595 600 605

Gly Gly Asn Asp Glu Asp Ile Thr Glu Ile Glu Thr Asn Glu Glu Glu
610 615 620

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 <213> Brassica napus

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 Asn Tyr Thr Gln Ile Glu Thr Met Glu Arg Lys Pro Phe Asp Val Glu
 20 25 30
 aca act gag gat cac aaa ctc tac ccc tcc gtc gat ggc ggt ggt tct 144
 Thr Thr Glu Asp His Lys Leu Tyr Pro Ser Val Asp Gly Gly Gly Ser
 35 40 45
 gat tcg gtc gat tca ttt gaa gac gag cag aaa aag ctc gtt tat aga 192
 Asp Ser Val Asp Ser Phe Glu Asp Glu Gln Lys Lys Leu Val Tyr Arg
 50 55 60
 ggc tgg aaa gtc atg ccc ttt atc att ggt aat gag aca ttt gag aag 240
 Gly Trp Lys Val Met Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys
 65 70 75 80
 ata ggg atc att ggg aca cta tca aac ctt ctg gtg tac cta act tca 288
 Ile Gly Ile Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser
 85 90 95
 gta ttc aac ctt aag agt gtt aca gct gca acc atc atc aac gcc ttc 336
 Val Phe Asn Leu Lys Ser Val Thr Ala Ala Thr Ile Ile Asn Ala Phe
 100 105 110
 agt ggc act atc aac ttc ggc act ttc ctt gct gct ttc ctc tgc gac 384
 Ser Gly Thr Ile Asn Phe Gly Thr Phe Leu Ala Ala Phe Leu Cys Asp
 115 120 125
 act tac ttt ggt cgc tac aag act ctc tct gtt gct gtc atc gcc tgt 432
 Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys
 130 135 140
 ttt ctg gga tcg ctt gtg ata cta ctg acg gct gca gtt cca gga ttg 480
 Phe Leu Gly Ser Leu Val Ile Leu Leu Thr Ala Ala Val Pro Gly Leu
 145 150 155 160
 cac ccc att cct tgt gga aca cag agt tct tgc caa ggc cca agc gag 528
 His Pro Ile Pro Cys Gly Thr Gln Ser Ser Cys Gln Gly Pro Ser Glu
 165 170 175
 ggc cag att gcg ttt ctt ctg atg ggt tta gcg ctt ctt gtg gtg ggt 576
 Gly Gln Ile Ala Phe Leu Leu Met Gly Leu Ala Leu Leu Val Val Gly
 180 185 190
 gct ggt gga att agg ccg tgt aac ttg gcc ttt ggt gct gac cag ttc 624
 Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe
 195 200 205
 aac ccc aag tca gaa tct gga aag aaa gga atc aac agt ttc ttc aac 672
 Asn Pro Lys Ser Glu Ser Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn
 210 215 220
 tgg tac ttc ttc act ttc act ttc gcg cag atc atc tct ctc acg cta 720
 Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu
 225 230 235 240
 gtt gtg tat atc cag tca aat gtg agc tgg acc atc ggt ttg agt atc 768
 Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Ser Ile
 245 250 255

bcs 10-2012_ST25.txt																
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aaa Lys	ctg Leu	tat Tyr 275	gtg Val	aaa Lys	gtg Val	aaa Lys	gcc Ala 280	tct Ser	ggt Gly	agt Ser	cca Pro	ttg Leu 285	gct Ala	ggt Gly	ata Ile	864
ggt Gly	cat His 290	gtt Val	ata Ile	gcc Ala	gca Ala	gcg Ala 295	atc Ile	aag Lys	aaa Lys	cgt Arg	ggc Gly 300	ttg Leu	aag Lys	cca Pro	gtt Val	912
aag Lys 305	cag Gln	cct Pro	tgg Trp	atc Ile	gat Asp 310	ctt Leu	tac Tyr	aac Asn	cac His	att Ile 315	cct Pro	cat His	aac Asn	tat Tyr	gca Ala 320	960
aac Asn	tct Ser	act Thr	ctt Leu	aag Lys 325	tac Tyr	acc Thr	gac Asp	cag Gln	cta Leu 330	agg Arg	ttt Phe	cta Leu	gac Asp	aaa Lys 335	gca Ala	1008
gcg Ala	att Ile	atg Met	acc Thr 340	gct Ala	gag Glu	gac Asp	aag Lys	ttg Leu 345	aac Asn	tcg Ser	gat Asp	gga Gly	acg Thr 350	gct Ala	tcg Ser	1056
gat Asp	cca Pro	tgg Trp 355	aaa Lys	cta Leu	tgt Cys	acg Thr	atg Met 360	cag Gln	aaa Lys	gtg Val	gaa Glu	gaa Glu 365	gtg Val	aaa Lys	tgc Cys	1104
att Ile 370	tta Leu	aga Arg	gtg Val	att Ile	cca Pro	atc Ile 375	tgg Trp	ttc Phe	gca Ala	tgc Cys	gcc Ala 380	att Ile	tac Tyr	tac Tyr	ctt Leu	1152
gca Ala 385	ata Ile	agt Ser	atg Met	caa Gln	atg Met 390	act Thr	tat Tyr	cca Pro	gtc Val	ttc Phe 395	caa Gln	gcg Ala	ctt Leu	cag Gln	agc Ser 400	1200
gac Asp	agg Arg	cga Arg	tta Leu	ggt Gly 405	tca Ser	ggt Gly	ggc Gly	ttc Phe 410	aag Lys	att Ile	cca Pro	gcc Ala	gcc Ala	acc Thr 415	tat Tyr	1248
gtc Val	gtg Val	ttc Phe	ttg Leu 420	atg Met	tct Ser	ggt Gly	atg Met	acg Thr 425	ggt Val	ttc Phe	atc Ile	ata Ile	atc Ile 430	tac Tyr	gac Asp	1296
cgt Arg	gtc Val	ctc Leu 435	gtc Val	ccc Pro	tcg Ser	ctc Leu	aaa Lys 440	aga Arg	gtg Val	acc Thr	ggt Gly	cta Leu 445	gac Asp	acg Thr	ggg Gly	1344
ata Ile 450	aca Thr	ctc Leu	tta Leu	caa Gln	aga Arg	ata Ile 455	gga Gly	gct Ala	ggc Gly	att Ile	ttc Phe 460	ttt Phe	gcg Ala	gtg Val	ttg Leu	1392
agt Ser 465	tta Leu	ttg Leu	gtc Val	tcc Ser	ggg Gly 470	ttc Phe	ata Ile	gag Glu	gaa Glu	cgt Arg 475	aga Arg	aga Arg	acc Thr	ttt Phe	gcg Ala 480	1440
ctg Leu	aca Thr	cga Arg	cct Pro	acg Thr 485	ctg Leu	ggg Gly	tcg Ser	gag Glu	cct Pro 490	cga Arg	aca Thr	gga Gly	gag Glu	atc Ile 495	tcc Ser	1488
tca Ser	atg Met	tca Ser	ggg Gly 500	atg Met	tgg Trp	ctg Leu	att Ile	ccg Pro 505	cag Gln	ctg Leu	gtg Val	ctt Leu	gca Ala 510	ggg Gly	gta Val	1536
gca Ala	gaa Glu	gct Ala 515	ttt Phe	gca Ala	gcc Ala	att Ile 520	ggg Gly	caa Gln	atg Met	gag Glu	ttt Phe	tac Tyr 525	tac Tyr	aag Lys	cag Gln	1584
ttt Phe	cct Pro 530	gaa Glu	aac Asn	atg Met	aag Lys	agc Ser 535	ttt Phe	gcg Ala	ggt Gly	tct Ser	atc Ile 540	ttc Phe	tat Tyr	gtc Val	ggt Gly	1632
gga Gly 545	gga Gly	gtt Val	tct Ser	agc Ser	tac Tyr 550	ctc Leu	gct Ala	agc Ser	ttc Phe	ttg Leu 555	atc Ile	tcg Ser	act Thr	gtt Val	cat His 560	1680

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 aac aaa gcg aag ctg gac tac ttc tat ttc atg ctc aca gga ctc atg 1776
 Asn Lys Ala Lys Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met
 580 585 590
 ttt gtt aac ttt ctt tac ttc ttg tta atg gct aga tgg tat aga tac 1824
 Phe Val Asn Phe Leu Tyr Phe Leu Leu Met Ala Arg Trp Tyr Arg Tyr
 595 600 605
 aaa ggc act cat gat gaa gtc agt tat gtg gtt gac act gtt gac gaa 1872
 Lys Gly Thr His Asp Glu Val Ser Tyr Val Val Asp Thr Val Asp Glu
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 Glu Thr Lys Gln Gln Asp Lys Asn Ser Val
 625 630
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 <212> PRT
 <213> Brassica napus
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 35 40 45
 Asp Ser Val Asp Ser Phe Glu Asp Glu Gln Lys Lys Leu Val Tyr Arg
 50 55 60
 Gly Trp Lys Val Met Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys
 65 70 75 80
 Ile Gly Ile Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser
 85 90 95
 Val Phe Asn Leu Lys Ser Val Thr Ala Ala Thr Ile Ile Asn Ala Phe
 100 105 110
 Ser Gly Thr Ile Asn Phe Gly Thr Phe Leu Ala Ala Phe Leu Cys Asp
 115 120 125
 Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys
 130 135 140
 Phe Leu Gly Ser Leu Val Ile Leu Leu Thr Ala Ala Val Pro Gly Leu
 145 150 155 160
 His Pro Ile Pro Cys Gly Thr Gln Ser Ser Cys Gln Gly Pro Ser Glu
 165 170 175
 Gly Gln Ile Ala Phe Leu Leu Met Gly Leu Ala Leu Leu Val Val Gly
 180 185 190

bcs 10-2012_ST25.txt

Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe
195 200 205

Asn Pro Lys Ser Glu Ser Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn
210 215 220

Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu
225 230 235 240

Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Ser Ile
245 250 255

Pro Val Gly Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly His
260 265 270

Lys Leu Tyr Val Lys Val Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile
275 280 285

Gly His Val Ile Ala Ala Ala Ile Lys Lys Arg Gly Leu Lys Pro Val
290 295 300

Lys Gln Pro Trp Ile Asp Leu Tyr Asn His Ile Pro His Asn Tyr Ala
305 310 315 320

Asn Ser Thr Leu Lys Tyr Thr Asp Gln Leu Arg Phe Leu Asp Lys Ala
325 330 335

Ala Ile Met Thr Ala Glu Asp Lys Leu Asn Ser Asp Gly Thr Ala Ser
340 345 350

Asp Pro Trp Lys Leu Cys Thr Met Gln Lys Val Glu Glu Val Lys Cys
355 360 365

Ile Leu Arg Val Ile Pro Ile Trp Phe Ala Cys Ala Ile Tyr Tyr Leu
370 375 380

Ala Ile Ser Met Gln Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser
385 390 395 400

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

Val Val Phe Leu Met Ser Gly Met Thr Val Phe Ile Ile Ile Tyr Asp
420 425 430

Arg Val Leu Val Pro Ser Leu Lys Arg Val Thr Gly Leu Asp Thr Gly
435 440 445

Ile Thr Leu Leu Gln Arg Ile Gly Ala Gly Ile Phe Phe Ala Val Leu
450 455 460

Ser Leu Leu Val Ser Gly Phe Ile Glu Glu Arg Arg Arg Thr Phe Ala
465 470 475 480

Leu Thr Arg Pro Thr Leu Gly Ser Glu Pro Arg Thr Gly Glu Ile Ser
485 490 495

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Ser Met Ser Gly Met Trp Leu Ile Pro Gln Leu Val Leu Ala Gly Val
500 505 510

Ala Glu Ala Phe Ala Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln
515 520 525

Phe Pro Glu Asn Met Lys Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly
530 535 540

Gly Gly Val Ser Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His
545 550 555 560

Arg Thr Thr Glu His Ser Pro Thr Gly Asn Trp Leu Ala Glu Asp Leu
565 570 575

Asn Lys Ala Lys Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met
580 585 590

Phe Val Asn Phe Leu Tyr Phe Leu Leu Met Ala Arg Trp Tyr Arg Tyr
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Lys Gly Thr His Asp Glu Val Ser Tyr Val Val Asp Thr Val Asp Glu
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Glu Thr Lys Gln Gln Asp Lys Asn Ser Val
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<211> 1905
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aat tat aca cag att gaa aca atg gag aga aag ccc ttt gat gtt gag	96
Asn Tyr Thr Gln Ile Glu Thr Met Glu Arg Lys Pro Phe Asp Val Glu	
20 25 30	
aca act gag gat cac aaa gcc tac tcc tcc gtc gat ggc ggt ggt tct	144
Thr Thr Glu Asp His Lys Ala Tyr Ser Ser Val Asp Gly Gly Gly Ser	
35 40 45	
gat tcg gtc gat tca ttt gaa gac gag cag aaa aag ctc gtt tat aga	192
Asp Ser Val Asp Ser Phe Glu Asp Glu Gln Lys Lys Leu Val Tyr Arg	
50 55 60	
ggc tgg aaa gtc atg ccc ttt atc att ggt aat gag aca ttt gag aag	240
Gly Trp Lys Val Met Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys	
65 70 75 80	
ata ggg atc att ggg aca cta tca aac ctt ctg gtg tac cta act tca	288
Ile Gly Ile Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser	
85 90 95	
gta ttc aac ctt aag agt gtt aca gct gca acc atc atc aac gcc ttc	336
Val Phe Asn Leu Lys Ser Val Thr Ala Ala Thr Ile Ile Asn Ala Phe	
100 105 110	
agt ggc act atc aat ttc ggc act ttc ctc gct gct ttc ctc tgc gac	384

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Ser	Gly	Thr	Ile	Asn	Phe	Gly	Thr	Phe	Leu	Ala	Ala	Phe	Leu	Cys	Asp	
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Thr	Tyr	Phe	Gly	Arg	Tyr	Lys	Thr	Leu	Ser	Val	Ala	Val	Ile	Ala	Cys	
	130					135					140					
ttt	ctg	gga	tcg	ctt	gtg	ata	cta	ctg	acg	gct	gca	gtt	cca	gga	ttg	480
Phe	Leu	Gly	Ser	Leu	Val	Ile	Leu	Leu	Thr	Ala	Ala	Val	Pro	Gly	Leu	
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cac	cct	att	cct	tgt	gga	aca	caa	agt	tct	tgc	caa	ggc	cca	agc	gag	528
His	Pro	Ile	Pro	Cys	Gly	Thr	Gln	Ser	Ser	Cys	Gln	Gly	Pro	Ser	Glu	
				165					170					175		
ggc	cag	att	gcg	ttt	ctg	ctg	atg	ggc	tta	gcg	ctt	ctt	gtg	gtg	ggc	576
Gly	Gln	Ile	Ala	Phe	Leu	Leu	Met	Gly	Leu	Ala	Leu	Leu	Val	Val	Gly	
			180					185					190			
gct	ggc	gga	atc	agg	ccg	tgt	aac	ttg	gcc	ttt	ggc	gct	gac	cag	ttc	624
Ala	Gly	Gly	Ile	Arg	Pro	Cys	Asn	Leu	Ala	Phe	Gly	Ala	Asp	Gln	Phe	
		195					200					205				
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Asn	Pro	Lys	Ser	Glu	Ser	Gly	Lys	Lys	Gly	Ile	Asn	Ser	Phe	Phe	Asn	
	210					215					220					
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Trp	Tyr	Phe	Phe	Thr	Phe	Thr	Phe	Ala	Gln	Ile	Ile	Ser	Leu	Thr	Leu	
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ggt	gtg	tat	atc	cag	tca	aat	gtg	agc	tgg	acc	atc	ggc	ttg	agt	atc	768
Val	Val	Tyr	Ile	Gln	Ser	Asn	Val	Ser	Trp	Thr	Ile	Gly	Leu	Ser	Ile	
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cct	gtg	ggc	ctt	atg	ttc	ttg	gcc	tgc	gtc	att	ttc	ttt	gct	ggc	cac	816
Pro	Val	Gly	Leu	Met	Phe	Leu	Ala	Cys	Val	Ile	Phe	Phe	Ala	Gly	His	
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aaa	ctg	tat	gtg	aaa	gtg	aaa	gcc	tct	ggc	agt	cca	ttg	gct	ggc	ata	864
Lys	Leu	Tyr	Val	Lys	Val	Lys	Ala	Ser	Gly	Ser	Pro	Leu	Ala	Gly	Ile	
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ggc	cat	gtt	ata	gcc	gca	gct	atc	aag	aaa	cgt	ggc	ttg	aag	cca	gtt	912
Gly	His	Val	Ile	Ala	Ala	Ala	Ile	Lys	Lys	Arg	Gly	Leu	Lys	Pro	Val	
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aag	cag	cct	tgg	atc	gat	ctt	tac	aac	cac	att	cct	cct	aac	tat	gca	960
Lys	Gln	Pro	Trp	Ile	Asp	Leu	Tyr	Asn	His	Ile	Pro	Pro	Asn	Tyr	Ala	
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aac	tct	act	ctt	aaa	tac	acc	gac	cag	ctt	agg	ttt	cta	gac	aaa	gca	1008
Asn	Ser	Thr	Leu	Lys	Tyr	Thr	Asp	Gln	Leu	Arg	Phe	Leu	Asp	Lys	Ala	
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gcg	att	atg	acc	cct	gag	gac	aag	ttg	aac	tcg	gat	gga	acg	gct	tcg	1056
Ala	Ile	Met	Thr	Pro	Glu	Asp	Lys	Leu	Asn	Ser	Asp	Gly	Thr	Ala	Ser	
			340					345					350			
gat	cca	tgg	aaa	cta	tgt	acg	atg	cag	aaa	gtg	gaa	gaa	gtg	aaa	tgc	1104
Asp	Pro	Trp	Lys	Leu	Cys	Thr	Met	Gln	Lys	Val	Glu	Glu	Val	Lys	Cys	
		355					360					365				
att	tta	aga	gtg	att	cca	atc	tgg	ttc	gca	tgc	gcc	att	tac	tac	ctt	1152
Ile	Leu	Arg	Val	Ile	Pro	Ile	Trp	Phe	Ala	Cys	Ala	Ile	Tyr	Tyr	Leu	
		370				375					380					
gca	ata	agt	atg	caa	atg	act	tat	cca	gtc	ttc	caa	gct	ctc	cag	agc	1200
Ala	Ile	Ser	Met	Gln	Met	Thr	Tyr	Pro	Val	Phe	Gln	Ala	Leu	Gln	Ser	
					390					395					400	
gac	agg	cta	tta	ggc	tca	ggc	ggc	ttc	aag	att	cca	gcc	gcc	acc	tat	1248
Asp	Arg	Leu	Leu	Gly	Ser	Gly	Gly	Phe	Lys	Ile	Pro	Ala	Ala	Thr	Tyr	
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Val	Val	Phe	Leu	Met	Ser	Gly	Met	Thr	Val	Phe	Ile	Ile	Ile	Tyr	Asp	
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Arg	Val	Leu	Val	Pro	Ser	Leu	Lys	Arg	Val	Thr	Gly	Leu	Asp	Thr	Gly	
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Ile	Thr	Leu	Leu	Gln	Arg	Ile	Gly	Ala	Gly	Ile	Phe	Phe	Ala	Val	Leu	
	450					455				460						
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Ser	Leu	Leu	Val	Ser	Gly	Phe	Ile	Glu	Glu	Arg	Arg	Arg	Thr	Phe	Ala	
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ctg	aca	cga	cct	acg	ctc	ggg	tcg	gag	cct	cga	aca	gga	gag	atc	tcc	1488
Leu	Thr	Arg	Pro	Thr	Leu	Gly	Ser	Glu	Pro	Arg	Thr	Gly	Glu	Ile	Ser	
				485					490					495		
tca	atg	tca	gcg	atg	tgg	ctg	att	ccg	cag	ctg	gtg	ctt	gca	ggg	gta	1536
Ser	Met	Ser	Ala	Met	Trp	Leu	Ile	Pro	Gln	Leu	Val	Leu	Ala	Gly	Val	
			500					505					510			
gca	gaa	gct	ttt	gta	gcc	att	ggg	caa	atg	gag	ttt	tac	tac	aag	cag	1584
Ala	Glu	Ala	Phe	Val	Ala	Ile	Gly	Gln	Met	Glu	Phe	Tyr	Tyr	Lys	Gln	
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Phe	Pro	Glu	Asn	Met	Lys	Ser	Phe	Ala	Gly	Ser	Ile	Phe	Tyr	Val	Gly	
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gga	gga	gtt	tct	agc	tac	ctc	gct	agc	ttc	ttg	atc	tcg	act	gtt	cat	1680
Gly	Gly	Val	Ser	Ser	Tyr	Leu	Ala	Ser	Phe	Leu	Ile	Ser	Thr	Val	His	
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Arg	Thr	Thr	Glu	His	Ser	Pro	Thr	Gly	Asn	Trp	Leu	Ala	Glu	Asp	Leu	
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Asn	Lys	Ala	Lys	Leu	Asp	Tyr	Phe	Tyr	Phe	Met	Leu	Thr	Gly	Leu	Met	
			580					585					590			
ttt	gtc	aac	ttt	ctt	tac	ttc	ttg	tta	atg	gct	aga	tgg	tat	aga	tac	1824
Phe	Val	Asn	Phe	Leu	Tyr	Phe	Leu	Leu	Met	Ala	Arg	Trp	Tyr	Arg	Tyr	
		595					600					605				
aaa	ggc	act	cat	gat	gaa	gtc	agt	tat	gtg	gtt	gac	act	gtt	gac	gaa	1872
Lys	Gly	Thr	His	Asp	Glu	Val	Ser	Tyr	Val	Val	Asp	Thr	Val	Asp	Glu	
	610					615					620					
gag	acg	aag	caa	caa	gac	aag	aac	tct	gtc	tga						1905
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 <212> PRT
 <213> Brassica napus

<400> 146

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Thr	Thr	Glu	Asp	His	Lys	Ala	Tyr	Ser	Ser	Val	Asp	Gly	Gly	Gly	Ser
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50

55

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

Ile Gly Ile Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser
85 90 95

Val Phe Asn Leu Lys Ser Val Thr Ala Ala Thr Ile Ile Asn Ala Phe
100 105 110

Ser Gly Thr Ile Asn Phe Gly Thr Phe Leu Ala Ala Phe Leu Cys Asp
115 120 125

Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys
130 135 140

Phe Leu Gly Ser Leu Val Ile Leu Leu Thr Ala Ala Val Pro Gly Leu
145 150 155 160

His Pro Ile Pro Cys Gly Thr Gln Ser Ser Cys Gln Gly Pro Ser Glu
165 170 175

Gly Gln Ile Ala Phe Leu Leu Met Gly Leu Ala Leu Leu Val Val Gly
180 185 190

Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe
195 200 205

Asn Pro Lys Ser Glu Ser Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn
210 215 220

Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu
225 230 235 240

Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Ser Ile
245 250 255

Pro Val Gly Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly His
260 265 270

Lys Leu Tyr Val Lys Val Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile
275 280 285

Gly His Val Ile Ala Ala Ala Ile Lys Lys Arg Gly Leu Lys Pro Val
290 295 300

Lys Gln Pro Trp Ile Asp Leu Tyr Asn His Ile Pro Pro Asn Tyr Ala
305 310 315 320

Asn Ser Thr Leu Lys Tyr Thr Asp Gln Leu Arg Phe Leu Asp Lys Ala
325 330 335

Ala Ile Met Thr Pro Glu Asp Lys Leu Asn Ser Asp Gly Thr Ala Ser
340 345 350

Asp Pro Trp Lys Leu Cys Thr Met Gln Lys Val Glu Glu Val Lys Cys

355

360

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365

Ile Leu Arg Val Ile Pro Ile Trp Phe Ala Cys Ala Ile Tyr Tyr Leu
370 375 380

Ala Ile Ser Met Gln Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser
385 390 395 400

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

Val Val Phe Leu Met Ser Gly Met Thr Val Phe Ile Ile Ile Tyr Asp
420 425 430

Arg Val Leu Val Pro Ser Leu Lys Arg Val Thr Gly Leu Asp Thr Gly
435 440 445

Ile Thr Leu Leu Gln Arg Ile Gly Ala Gly Ile Phe Phe Ala Val Leu
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Ser Leu Leu Val Ser Gly Phe Ile Glu Glu Arg Arg Arg Thr Phe Ala
465 470 475 480

Leu Thr Arg Pro Thr Leu Gly Ser Glu Pro Arg Thr Gly Glu Ile Ser
485 490 495

Ser Met Ser Ala Met Trp Leu Ile Pro Gln Leu Val Leu Ala Gly Val
500 505 510

Ala Glu Ala Phe Val Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln
515 520 525

Phe Pro Glu Asn Met Lys Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly
530 535 540

Gly Gly Val Ser Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His
545 550 555 560

Arg Thr Thr Glu His Ser Pro Thr Gly Asn Trp Leu Ala Glu Asp Leu
565 570 575

Asn Lys Ala Lys Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met
580 585 590

Phe Val Asn Phe Leu Tyr Phe Leu Leu Met Ala Arg Trp Tyr Arg Tyr
595 600 605

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Glu Thr Lys Gln Gln Asp Lys Asn Ser Val
625 630

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Thr	Thr	Glu	Asp	His	Lys	Pro	Tyr	Ser	Ser	Val	Asp	Asp	Gly	Gly	Ser	
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Asp	Ser	Val	Asp	Ser	Phe	Glu	Asn	Glu	Gln	Lys	Lys	Leu	Val	Tyr	Arg	
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Ile	Gly	Ile	Ile	Gly	Thr	Leu	Ser	Asn	Leu	Leu	Val	Tyr	Leu	Thr	Ser	
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gta	ttc	aac	ctc	aag	agt	gtt	aca	gct	gca	acc	atc	atc	aac	gcc	ttc	336
Val	Phe	Asn	Leu	Lys	Ser	Val	Thr	Ala	Ala	Thr	Ile	Ile	Asn	Ala	Phe	
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Ser	Gly	Thr	Ile	Asn	Phe	Gly	Thr	Phe	Leu	Ala	Ala	Phe	Leu	Cys	Asp	
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act	tac	ttt	ggt	cgc	tac	aag	act	ctc	tct	gtt	gct	gtc	atc	gcc	tgt	432
Thr	Tyr	Phe	Gly	Arg	Tyr	Lys	Thr	Leu	Ser	Val	Ala	Val	Ile	Ala	Cys	
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His	Pro	Ile	Pro	Cys	Gly	Thr	Gln	Ser	Ser	Cys	Gln	Gly	Pro	Ser	Glu	
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ggc	cag	att	gcg	ttt	ctt	ctg	atg	ggt	tta	gcg	ctt	ctt	gtg	gtg	ggt	576
Gly	Gln	Ile	Ala	Phe	Leu	Leu	Met	Gly	Leu	Ala	Leu	Leu	Val	Val	Gly	
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Ala	Gly	Gly	Ile	Arg	Pro	Cys	Asn	Leu	Ala	Phe	Gly	Ala	Asp	Gln	Phe	
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aac	ccc	aag	tca	gaa	tct	gga	aag	aaa	gga	atc	aac	agt	ttc	ttc	aac	672
Asn	Pro	Lys	Ser	Glu	Ser	Gly	Lys	Lys	Gly	Ile	Asn	Ser	Phe	Phe	Asn	
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gtt	gtg	tac	atc	cag	tca	aat	gtg	agc	tgg	acc	atc	ggt	ttg	agt	atc	768
Val	Val	Tyr	Ile	Gln	Ser	Asn	Val	Ser	Trp	Thr	Ile	Gly	Leu	Ser	Ile	
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Pro	Val	Gly	Leu	Met	Phe	Leu	Ala	Cys	Val	Ile	Phe	Phe	Ala	Gly	His	
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Lys	Leu	Tyr	Val	Lys	Val	Lys	Ala	Ser	Gly	Ser	Pro	Leu	Ala	Gly	Ile	

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275				280				285								
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aag Lys 305	cag Gln	cct Pro	tgg Trp	atc Ile	gat Asp 310	ctt Leu	tac Tyr	aac Asn	cac His	att Ile 315	cct Pro	cat His	aac Asn	tat Tyr	gca Ala 320	960
aac Asn	tct Ser	act Thr	ctt Leu	aaa Lys 325	tac Tyr	acc Thr	gac Asp	cag Gln	ctt Leu 330	agg Arg	ttt Phe	cta Leu	gac Asp	aaa Lys 335	gca Ala	1008
gcg Ala	att Ile	atg Met 340	acc Thr	cct Pro	gag Glu	gac Asp	aag Lys	ttg Leu 345	aac Asn	tcg Ser	gat Asp	gga Gly	acg Thr 350	gct Ala	tcg Ser	1056
gat Asp	cca Pro	tgg Trp 355	aaa Lys	cta Leu	tgt Cys	acg Thr	atg Met 360	cag Gln	aaa Lys	gtg Val	gaa Glu	gaa Val 365	gtg Val	aaa Lys	tgc Cys	1104
att Ile	tta Leu 370	aga Arg	gtg Val	att Ile	cca Pro	atc Ile 375	tgg Trp	ttc Phe	gca Ala	tgc Cys	gcc Ala 380	att Ile	tac Tyr	tac Tyr	ctt Leu	1152
gca Ala 385	ata Ile	agt Ser	atg Met	caa Gln	atg Met 390	act Thr	tat Tyr	cca Pro	gtc Val	ttc Phe 395	caa Gln	gcg Ala	ctc Leu	cag Gln	agc Ser 400	1200
gac Asp	agg Arg	aga Arg	tta Leu	ggg Gly 405	tca Ser	ggg Gly	ggc Gly	ttc Phe	aag Lys 410	att Ile	cca Pro	gcc Ala	gcc Ala	acc Thr 415	tat Tyr	1248
gtc Val	gtg Val	ttc Phe	ttg Leu 420	atg Met	tct Ser	ggg Gly	atg Met	acg Thr 425	gtt Val	ttc Phe	atc Ile	ata Ile	atc Ile 430	tac Tyr	gac Asp	1296
cgt Arg	gtc Val	ctc Leu 435	gtc Val	ccc Pro	tcg Ser	ctc Leu	aaa Lys 440	aga Arg	gtg Val	acg Thr	ggg Gly	cta Leu 445	gac Asp	acg Thr	ggg Gly	1344
ata Ile	aca Thr 450	ctc Leu	tta Leu	caa Gln	aga Arg	ata Ile 455	gga Gly	gct Ala	ggc Gly	att Ile	ttc Phe 460	ttt Phe	gcg Ala	gtg Val	ttg Leu	1392
agt Ser 465	tta Leu	ttg Leu	gtc Val	tcc Ser	ggg Gly 470	ttc Phe	ata Ile	gag Glu	gaa Glu	cgt Arg 475	aga Arg	aga Arg	acc Thr	ttt Phe	gcg Ala 480	1440
ctg Leu	aca Thr	cga Arg	cct Pro	acg Thr 485	ctg Leu	ggg Gly	tcg Ser	gag Glu	cct Pro 490	cga Arg	aca Thr	gga Gly	gag Glu	atc Ile 495	tcc Ser	1488
tca Ser	atg Met	tca Ser	gcg Ala 500	atg Met	tgg Trp	ctg Leu	att Ile	ccg Pro 505	cag Gln	ctg Leu	gtg Val	ctt Leu	gca Ala 510	ggg Gly	gta Val	1536
gca Ala	gaa Glu 515	gct Ala	ttt Phe	gca Ala	gcc Ala	att Ile	ggg Gly 520	caa Gln	atg Met	gag Glu	ttt Phe	tac Tyr 525	tac Tyr	aag Lys	cag Gln	1584
ttt Phe	cct Pro 530	gaa Glu	aac Asn	atg Met	aag Lys	agc Ser 535	ttt Phe	gcg Ala	ggg Gly	tct Ser	atc Ile 540	ttc Phe	tat Tyr	gtc Val	ggg Gly	1632
gca Ala 545	gga Gly	gtt Val	tct Ser	agc Ser	tac Tyr 550	ctc Leu	gct Ala	agc Ser	ttc Phe	ttg Leu 555	atc Ile	tcg Ser	act Thr	gtt Val	cat His 560	1680
aga Arg	aca Thr	act Thr	gag Glu	cat His 565	tca Ser	cct Pro	acg Thr	ggg Gly	aat Asn 570	tgg Trp	tta Leu	gct Ala	gag Glu	gat Asp 575	ctg Leu	1728
aac Asn	aaa Lys	gcg Ala	aag Lys	ctg Leu	gac Asp	tac Tyr	ttc Phe	tat Tyr	ttc Phe	atg Met	ctc Leu	aca Thr	gga Gly	ctc Leu	atg Met	1776

580	585	590	
ttc gtt aac ttt ctt tac ttc ttg tta atg gct aga tgg tat aga tac			1824
Phe Val Asn Phe Leu Tyr Phe Leu Leu Met Ala Arg Trp Tyr Arg Tyr			
595	600	605	
aaa ggc act cat gat gaa gtc agt tat gtg gtt gac act gtt gac gaa			1872
Lys Gly Thr His Asp Glu Val Ser Tyr Val Val Asp Thr Val Asp Glu			
610	615	620	
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Thr Thr Glu Asp His Lys Pro Tyr Ser Ser Val Asp Asp Gly Gly Ser			
	35	40	45
Asp Ser Val Asp Ser Phe Glu Asn Glu Gln Lys Lys Leu Val Tyr Arg			
	50	55	60
Gly Trp Lys Val Met Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys			
65	70	75	80
Ile Gly Ile Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser			
	85	90	95
Val Phe Asn Leu Lys Ser Val Thr Ala Ala Thr Ile Ile Asn Ala Phe			
	100	105	110
Ser Gly Thr Ile Asn Phe Gly Thr Phe Leu Ala Ala Phe Leu Cys Asp			
	115	120	125
Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys			
	130	135	140
Phe Leu Gly Ser Leu Val Ile Leu Leu Thr Ala Ala Val Pro Gly Leu			
145	150	155	160
His Pro Ile Pro Cys Gly Thr Gln Ser Ser Cys Gln Gly Pro Ser Glu			
	165	170	175
Gly Gln Ile Ala Phe Leu Leu Met Gly Leu Ala Leu Leu Val Val Gly			
	180	185	190
Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe			
	195	200	205
Asn Pro Lys Ser Glu Ser Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn			
	210	215	220

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

Phe Pro Glu Asn Met Lys Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly
530 535 540

Ala Gly Val Ser Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His
545 550 555 560

Arg Thr Thr Glu His Ser Pro Thr Gly Asn Trp Leu Ala Glu Asp Leu
565 570 575

Asn Lys Ala Lys Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met
580 585 590

Phe Val Asn Phe Leu Tyr Phe Leu Leu Met Ala Arg Trp Tyr Arg Tyr
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610 615 620

Glu Thr Lys Gln Gln Asp Lys Asn Ser Val
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Asn Tyr Thr Gln Ile Glu Thr Met Glu Arg Lys Pro Phe Asp Val Glu
20 25 30

aca act gag gat cac aaa ccc tac tcc tcc gtc gat ggc ggt ggt tct 144
Thr Thr Glu Asp His Lys Pro Tyr Ser Ser Val Asp Gly Gly Gly Ser
35 40 45

gat tcg gtc gat tca ttt gaa gac gag cag aaa aag ctc gtt tat aga 192
Asp Ser Val Asp Ser Phe Glu Asp Glu Gln Lys Lys Leu Val Tyr Arg
50 55 60

ggc tgg aaa gtc atg ccc ttt atc att ggt aat gag aca ttt gag aag 240
Gly Trp Lys Val Met Pro Phe Ile Ile Gly Asn Glu Thr Phe Glu Lys
65 70 75 80

ata ggg atc att ggg aca cta tca aac ctt ctg gtg tac cta act tca 288
Ile Gly Ile Ile Gly Thr Leu Ser Asn Leu Val Tyr Leu Thr Ser
85 90 95

gta ttc aac ctt cag agt gtt aca gct gca acc atc atc aac gcc ttc 336
Val Phe Asn Leu Gln Ser Val Thr Ala Ala Thr Ile Ile Asn Ala Phe
100 105 110

agt ggc act atc aat ttc ggc act ttc ctc gct gct ttc ctc tgc gac 384
Ser Gly Thr Ile Asn Phe Gly Thr Phe Leu Ala Ala Phe Leu Cys Asp
115 120 125

act tac ttt ggt cgc tac aag act ctc tct gtt gct gtc atc gcc tgt 432
Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys
130 135 140

bc5 10-2012_ST25.txt

ttt Phe 145	ctg Leu	gga Gly	tcg Ser	ctt Leu	gtg Val 150	ata Ile	cta Leu	ctg Leu	acg Thr	gct Ala 155	gca Ala	gtt Val	cca Pro	gga Gly	ttg Leu 160	480
cac His	cct Pro	att Ile	cct Pro	tgt Cys 165	gga Gly	aca Thr	caa Gln	agt Ser	tct Ser 170	tgc Cys	caa Gln	ggc Gly	cca Pro	agc Ser 175	gag Glu	528
ggc Gly	cag Gln	att Ile	gcg Ala 180	ttt Phe	ctg Leu	ctg Leu	atg Met	ggg Gly 185	tta Leu	gcg Ala	ctt Leu	ctt Leu	gtg Val 190	gtg Val	ggg Gly	576
gct Ala	ggg Gly	gga Gly 195	atc Ile	agg Arg	ccg Pro	tgt Cys	aac Asn 200	ttg Leu	gcc Ala	ttt Phe	ggg Gly	gct Ala 205	gac Asp	cag Gln	ttc Phe	624
aac Asn 210	ccc Pro	aag Lys	tca Ser	gaa Glu	tct Ser	gga Gly 215	aag Lys	aaa Lys	gga Gly	atc Ile	aac Asn 220	agt Ser	ttc Phe	ttc Phe	aac Asn	672
tgg Trp 225	tac Tyr	ttc Phe	ttc Phe	act Thr	ttc Phe 230	acg Thr	ttc Phe	gcg Ala	cag Gln	atc Ile 235	atc Ile	tcc Ser	ctc Leu	acg Thr	cta Leu 240	720
gtt Val	gtg Val	tat Tyr	atc Ile	cag Gln 245	tca Ser	aat Asn	gtg Val	agc Ser	tgg Trp 250	acc Thr	atc Ile	ggg Gly	ttg Leu	agt Ser 255	atc Ile	768
cct Pro	gtg Val	ggg Gly	ctt Leu 260	atg Met	ttc Phe	ttg Leu	gcc Ala	tgc Cys 265	gtc Val	att Ile	ttc Phe	ttt Phe	gct Ala 270	ggg Gly	cac His	816
aaa Lys	ctg Leu	tat Tyr 275	gtg Val	aaa Lys	gtg Val	aaa Lys	gcc Ala 280	tct Ser	ggg Gly	agt Ser	cca Pro	ttg Leu 285	gct Ala	ggg Gly	ata Ile	864
ggg Gly	cat His 290	gtt Val	ata Ile	gcc Ala	gca Ala	gct Ala 295	atc Ile	aag Lys	aaa Lys	cgt Arg	ggc Gly 300	ttg Leu	aag Lys	cca Pro	gtt Val	912
aag Lys 305	cag Gln	cct Pro	tgg Trp	atc Ile	gat Asp 310	ctt Leu	tac Tyr	aac Asn	cac His	att Ile 315	cct Pro	cct Pro	aac Asn	tat Tyr	gca Ala 320	960
aac Asn	tct Ser	act Thr	ctt Leu	aaa Lys 325	tac Tyr	acc Thr	gac Asp	cag Gln	ctt Leu 330	agg Arg	ttt Phe	cta Leu	gac Asp	aaa Lys 335	gca Ala	1008
gcg Ala	att Ile	atg Met	acc Thr 340	cct Pro	gag Glu	gac Asp	aag Lys	ttg Leu 345	aac Asn	tcg Ser	gat Asp	gga Gly	acg Thr 350	gct Ala	tcg Ser	1056
gat Asp	cca Pro	tgg Trp 355	aaa Lys	tta Leu	tgt Cys	acg Thr	atg Met 360	cag Gln	aaa Lys	gtg Val	gaa Glu	gaa Glu 365	gtg Val	aaa Lys	tgc Cys	1104
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gac Asp	agg Arg	cta Leu	tta Leu	ggg Gly 405	tca Ser	ggg Gly	ggc Gly	ttc Phe 410	aag Lys	att Ile	cca Pro	gcc Ala	gcc Ala	acc Thr 415	tat Tyr	1248
gtc Val	gtg Val	ttc Phe	ttg Leu 420	atg Met	tct Ser	ggg Gly	atg Met	acg Thr 425	gtt Val	ttc Phe	atc Ile	ata Ile	atc Ile 430	tac Tyr	gac Asp	1296
cgt Arg	gtc Val	ctt Leu 435	gtc Val	ccc Pro	tcg Ser	ctc Leu	aaa Lys 440	aga Arg	gtg Val	acc Thr	ggg Gly	cta Leu 445	gac Asp	acg Thr	ggg Gly	1344

bc5 10-2012_ST25.txt

ata aca ctc tta caa aga ata gga gct ggc att ttc ttt gcc gtg ttg 1392
 ile Thr 450 Leu Leu Gln Arg Ile 455 Gly Ala Gly Ile Phe 460 Phe Ala Val Leu

agt tta ttg gtc tcc ggg ttt ata gag gaa cgt aga aga acc ttt gcg 1440
 Ser Leu Leu Val Ser Gly Phe Ile Glu Glu Arg 475 Arg Arg Thr Phe Ala 480

ctg aca cga cct acg ctc ggg tcg gag cct cga aca gga gag atc tcc 1488
 Leu Thr Arg Pro Thr Leu Gly Ser Glu Pro 490 Arg Thr Gly Glu Ile Ser 495

tca atg tca gcg atg tgg ctg att ccg cag ctg gtg ctt gca ggg gta 1536
 Ser Met Ser Ala Met Trp Leu Ile Pro Gln Leu Val Leu Ala Gly Val 510

gca gaa gct ttt gca gcc att ggg caa atg gag ttt tac tac aag cag 1584
 Ala Glu Ala Phe Ala Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln 520 525

ttt cct gaa aac atg aag agc ttt gcg ggt tct atc ttc tat gtc ggt 1632
 Phe Pro Glu Asn Met Lys Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly 530 535 540

gga gga gtt tct agc tac ctc gct agc ttc ttg atc tcg act gtt cat 1680
 Gly Gly Val Ser Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His 545 550 555 560

aga aca act gag cat tca cct acg ggg aat tgg tta gct gag gat ctg 1728
 Arg Thr Thr Glu His Ser Pro Thr Gly Asn Trp Leu Ala Glu Asp Leu 565 570 575

aac aaa gcg aag ctg gac tac ttc tat ttc atg ctc aca gga ctc atg 1776
 Asn Lys Ala Lys Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met 580 585 590

ttt gtc aac ttt ctt tac ttc ttg tta atg gct aga tgg tat aga tac 1824
 Phe Val Asn Phe Leu Tyr Phe Leu Leu Met Ala Arg Trp Tyr Arg Tyr 595 600 605

aaa ggc act cat gat gaa gtc agt tat gtg gtt gac act gtt gac gaa 1872
 Lys Gly Thr His Asp Glu Val Ser Tyr Val Val Asp Thr Val Asp Glu 610 615 620

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 Glu Thr Lys Gln Gln Asp Lys Asn Ser Val 625 630

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 <213> Brassica oleracea

<400> 150

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Thr Thr Glu Asp His Lys Pro Tyr Ser Ser Val Asp Gly Gly Gly Ser
 35 40 45

Asp Ser Val Asp Ser Phe Glu Asp Glu Gln Lys Lys Leu Val Tyr Arg
 50 55 60

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

Ile Gly Ile Ile Gly Thr Leu Ser Asn Leu Leu Val Tyr Leu Thr Ser
85 90 95

Val Phe Asn Leu Gln Ser Val Thr Ala Ala Thr Ile Ile Asn Ala Phe
100 105 110

Ser Gly Thr Ile Asn Phe Gly Thr Phe Leu Ala Ala Phe Leu Cys Asp
115 120 125

Thr Tyr Phe Gly Arg Tyr Lys Thr Leu Ser Val Ala Val Ile Ala Cys
130 135 140

Phe Leu Gly Ser Leu Val Ile Leu Leu Thr Ala Ala Val Pro Gly Leu
145 150 155 160

His Pro Ile Pro Cys Gly Thr Gln Ser Ser Cys Gln Gly Pro Ser Glu
165 170 175

Gly Gln Ile Ala Phe Leu Leu Met Gly Leu Ala Leu Leu Val Val Gly
180 185 190

Ala Gly Gly Ile Arg Pro Cys Asn Leu Ala Phe Gly Ala Asp Gln Phe
195 200 205

Asn Pro Lys Ser Glu Ser Gly Lys Lys Gly Ile Asn Ser Phe Phe Asn
210 215 220

Trp Tyr Phe Phe Thr Phe Thr Phe Ala Gln Ile Ile Ser Leu Thr Leu
225 230 235 240

Val Val Tyr Ile Gln Ser Asn Val Ser Trp Thr Ile Gly Leu Ser Ile
245 250 255

Pro Val Gly Leu Met Phe Leu Ala Cys Val Ile Phe Phe Ala Gly His
260 265 270

Lys Leu Tyr Val Lys Val Lys Ala Ser Gly Ser Pro Leu Ala Gly Ile
275 280 285

Gly His Val Ile Ala Ala Ala Ile Lys Lys Arg Gly Leu Lys Pro Val
290 295 300

Lys Gln Pro Trp Ile Asp Leu Tyr Asn His Ile Pro Pro Asn Tyr Ala
305 310 315 320

Asn Ser Thr Leu Lys Tyr Thr Asp Gln Leu Arg Phe Leu Asp Lys Ala
325 330 335

Ala Ile Met Thr Pro Glu Asp Lys Leu Asn Ser Asp Gly Thr Ala Ser
340 345 350

Asp Pro Trp Lys Leu Cys Thr Met Gln Lys Val Glu Glu Val Lys Cys
355 360 365

Ile Leu Arg Val Ile Pro Ile Trp Phe Ala Cys Ala Ile Tyr Tyr Leu
370 375 380



bcs 10-2012_ST25.txt

Ala Ile Ser Met Gln Met Thr Tyr Pro Val Phe Gln Ala Leu Gln Ser
385 390 395 400

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

Val Val Phe Leu Met Ser Gly Met Thr Val Phe Ile Ile Ile Tyr Asp
420 425 430

Arg Val Leu Val Pro Ser Leu Lys Arg Val Thr Gly Leu Asp Thr Gly
435 440 445

Ile Thr Leu Leu Gln Arg Ile Gly Ala Gly Ile Phe Phe Ala Val Leu
450 455 460

Ser Leu Leu Val Ser Gly Phe Ile Glu Glu Arg Arg Arg Thr Phe Ala
465 470 475 480

Leu Thr Arg Pro Thr Leu Gly Ser Glu Pro Arg Thr Gly Glu Ile Ser
485 490 495

Ser Met Ser Ala Met Trp Leu Ile Pro Gln Leu Val Leu Ala Gly Val
500 505 510

Ala Glu Ala Phe Ala Ala Ile Gly Gln Met Glu Phe Tyr Tyr Lys Gln
515 520 525

Phe Pro Glu Asn Met Lys Ser Phe Ala Gly Ser Ile Phe Tyr Val Gly
530 535 540

Gly Gly Val Ser Ser Tyr Leu Ala Ser Phe Leu Ile Ser Thr Val His
545 550 555 560

Arg Thr Thr Glu His Ser Pro Thr Gly Asn Trp Leu Ala Glu Asp Leu
565 570 575

Asn Lys Ala Lys Leu Asp Tyr Phe Tyr Phe Met Leu Thr Gly Leu Met
580 585 590

Phe Val Asn Phe Leu Tyr Phe Leu Leu Met Ala Arg Trp Tyr Arg Tyr
595 600 605

Lys Gly Thr His Asp Glu Val Ser Tyr Val Val Asp Thr Val Asp Glu
610 615 620

Glu Thr Lys Gln Gln Asp Lys Asn Ser Val
625 630