

# SEQUENCE LISTING

<110> Bayer BioScience N.V.  
Ruiter, Rene  
Golds, Timothy

<120> Herbicide tolerant plants

<130> BCS09-2019

<150> EP 09015848.6

<151> 2009-12-22

<150> US 61/288958

<151> 2009-12-22

<160> 6

<170> PatentIn version 3.3

<210> 1

<211> 2010

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (1)..(2010)

<400> 1

atg gcg gcg gca aca aca aca aca aca aca tct tct tcg atc tcc ttc	48
Met Ala Ala Ala Thr Thr Thr Thr Thr Thr Ser Ser Ser Ile Ser Phe	
1 5 10 15	
tcc acc aaa cca tct cct tcc tcc tcc aaa tca cca tta cca atc tcc	96
Ser Thr Lys Pro Ser Pro Ser Ser Ser Lys Ser Pro Leu Pro Ile Ser	
20 25 30	
aga ttc tcc ctc cca ttc tcc cta aac ccc aac aaa tca tcc tcc tcc	144
Arg Phe Ser Leu Pro Phe Ser Leu Asn Pro Asn Lys Ser Ser Ser Ser	
35 40 45	
tcc cgc cgc cgc ggt atc aaa tcc agc tct ccc tcc tcc atc tcc gcc	192
Ser Arg Arg Arg Gly Ile Lys Ser Ser Ser Pro Ser Ser Ile Ser Ala	
50 55 60	
gtg ctc aac aca acc acc aat gtg aca acc act ccc tct cca acc aaa	240
Val Leu Asn Thr Thr Thr Asn Val Thr Thr Thr Pro Ser Pro Thr Lys	
65 70 75 80	
cct acc aaa ccc gaa aca ttc atc tcc cga ttc gct cca gat caa ccc	288
Pro Thr Lys Pro Glu Thr Phe Ile Ser Arg Phe Ala Pro Asp Gln Pro	
85 90 95	
cgc aaa ggc gct gat atc ctc gtc gaa gct tta gaa cgt caa ggc gta	336
Arg Lys Gly Ala Asp Ile Leu Val Glu Ala Leu Glu Arg Gln Gly Val	
100 105 110	
gaa acc gta ttc gct tac cct gga ggt gca tca atg gag att cac caa	384
Glu Thr Val Phe Ala Tyr Pro Gly Gly Ala Ser Met Glu Ile His Gln	
115 120 125	
gcc tta acc cgc tct tcc tca atc cgt aac gtc ctt cct cgt cac gaa	432
Ala Leu Thr Arg Ser Ser Ser Ile Arg Asn Val Leu Pro Arg His Glu	
130 135 140	
caa gga ggt gta ttc gca gca gaa gga tac gct cga tcc tca ggt aaa	480
Gln Gly Gly Val Phe Ala Ala Glu Gly Tyr Ala Arg Ser Ser Gly Lys	

145		150		155		160	
cca ggt atc tgt ata gcc act tca ggt ccc gga gct aca aat ctc gtt	528						
Pro Gly Ile Cys Ile 165		Ala Thr Ser Gly 170		Gly Ala Thr Asn 175		Leu Val	
agc gga tta gcc gat gcg ttg tta gat agt gtt cct ctt gta gca atc	576						
Ser Gly Leu Ala 180		Asp Ala Leu Leu Asp 185		Ser Val Pro Leu Val 190		Ala Ile	
aca gga caa gtc cct cgt cgt atg att ggt aca gat gcg ttt caa gag	624						
Thr Gly Gln Val Pro Arg Arg Met 200		Ile Gly Thr Asp Ala Phe Gln Glu 205					
act ccg att gtt gag gta acg cgt tcg att acg aag cat aac tat ctt	672						
Thr Pro 210		Ile Val Glu Val Thr 215		Ile Thr Lys 220		His Asn Tyr Leu	
gtg atg gat gtt gaa gat atc cct agg att att gag gaa gct ttc ttt	720						
Val Met Asp Val Glu Asp 230		Ile Pro Arg Ile 235		Glu Glu Ala Phe Phe 240			
tta gct act tct ggt aga cct gga cct gtt ttg gtt gat gtt cct aaa	768						
Leu Ala Thr Ser Gly 245		Arg Pro Gly Pro Val 250		Leu Val Asp Val Pro 255		Lys	
gat att caa caa cag ctt gcg att cct aat tgg gaa cag gct atg aga	816						
Asp Ile Gln Gln 260		Leu Ala Ile Pro 265		Asn Trp Glu Gln Ala Met Arg 270			
tta cct ggt tat atg tct agg atg cct aaa cct ccg gaa gat tct cat	864						
Leu Pro Gly Tyr Met Ser Arg Met 280		Pro Lys Pro Pro 285		Glu Asp Ser His			
ttg gag cag att gtt agg ttg att tct gag tct aag aag cct gtg ttg	912						
Leu Glu Gln Ile Val Arg Leu 295		Ile Ser Glu Ser Lys Lys Pro Val Leu 300					
tat gtt ggt ggt ggt tgt ttg aat tct agc gat gaa ttg ggt agg ttt	960						
Tyr Val Gly Gly Gly Cys 310		Leu Asn Ser Ser Asp 315		Glu Leu Gly Arg Phe 320			
gtt gag ctt acg ggg atc cct gtt gcg agt acg ttg atg ggg ctg gga	1008						
Val Glu Leu Thr Gly 325		Ile Pro Val Ala Ser Thr 330		Leu Met Gly Leu Gly 335			
tct tat cct tgt gat gat gag ttg tcg tta cat atg ctt gga atg cat	1056						
Ser Tyr Pro Cys 340		Asp Asp Glu Leu Ser 345		Leu His Met Leu Gly 350		Met His	
ggg act gtg tat gca aat tac gct gtg gag cat agt gat ttg ttg ttg	1104						
Gly Thr Val Tyr Ala Asn Tyr Ala Val Glu His Ser Asp 365				Leu Leu Leu			
gcg ttt ggg gta agg ttt gat gat cgt gtc acg ggt aag ctt gag gct	1152						
Ala Phe Gly Val Arg Phe 375		Asp Asp Arg Val Thr Gly 380		Lys Leu Glu Ala			
ttt gct agt agg gct aag att gtt cat att gat att gac tcg gct gag	1200						
Phe Ala Ser Arg Ala Lys 390		Ile Val His Ile Asp 395		Ile Asp Ser Ala Glu 400			
att ggg aag aat aag act cct cat gtg tct gtg tgt ggt gat gtt aag	1248						
Ile Gly Lys Asn Lys 405		Thr Pro His Val Ser Val 410		Cys Gly Asp Val Lys 415			
ctg gct ttg caa ggg atg aat aag gtt ctt gag aac cga gcg gag gag	1296						
Leu Ala Leu Gln Gly Met Asn Lys 425		Val Leu Glu Asn Arg Ala Glu Glu 430					

ctt aag ctt gat ttt gga gtt tgg agg aat gag ttg aac gta cag aaa Leu Lys Leu Asp Phe Gly Val Trp Arg Asn Glu Leu Asn Val Gln Lys 435 440 445	1344
cag aag ttt ccg ttg agc ttt aag acg ttt ggg gaa gct att cct cca Gln Lys Phe Pro Leu Ser Phe Lys Thr Phe Gly Glu Ala Ile Pro Pro 450 455 460	1392
cag tat gcg att aag gtc ctt gat gag ttg act gat gga aaa gcc ata Gln Tyr Ala Ile Lys Val Leu Asp Glu Leu Thr Asp Gly Lys Ala Ile 465 470 475 480	1440
ata agt act ggt gtc ggg caa cat caa atg tgg gcg gcg cag ttc tac Ile Ser Thr Gly Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr 485 490 495	1488
aat tac aag aaa cca agg cag tgg cta tca tca gga ggc ctt gga gct Asn Tyr Lys Lys Pro Arg Gln Trp Leu Ser Ser Gly Gly Leu Gly Ala 500 505 510	1536
atg gga ttt gga ctt cct gct gcg att gga gcg tct gtt gct aac cct Met Gly Phe Gly Leu Pro Ala Ala Ile Gly Ala Ser Val Ala Asn Pro 515 520 525	1584
gat gcg ata gtt gtg gat att gac gga gat gga agc ttt ata atg aat Asp Ala Ile Val Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn 530 535 540	1632
gtg caa gag cta gcc act att cgt gta gag aat ctt cca gtg aag gta Val Gln Glu Leu Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Val 545 550 555 560	1680
ctt tta tta aac aac cag cat ctt ggc atg gtt atg caa tgg caa gat Leu Leu Leu Asn Asn Gln His Leu Gly Met Val Met Gln Trp Gln Asp 565 570 575	1728
cgg ttc tac aaa gct aac cga gct cac aca ttt ctc ggg gat ccg gct Arg Phe Tyr Lys Ala Asn Arg Ala His Thr Phe Leu Gly Asp Pro Ala 580 585 590	1776
cag gag gac gag ata ttc ccg aac atg ttg ctg ttt gca gca gct tgc Gln Glu Asp Glu Ile Phe Pro Asn Met Leu Leu Phe Ala Ala Ala Cys 595 600 605	1824
ggg att cca gcg gcg agg gtg aca aag aaa gca gat ctc cga gaa gct Gly Ile Pro Ala Ala Arg Val Thr Lys Lys Ala Asp Leu Arg Glu Ala 610 615 620	1872
att cag aca atg ctg gat aca cca gga cct tac ctg ttg gat gtg att Ile Gln Thr Met Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile 625 630 635 640	1920
tgt ccg cac caa gaa cat gtg ttg ccg atg atc ccg agt ggt ggc act Cys Pro His Gln Glu His Val Leu Pro Met Ile Pro Ser Gly Gly Thr 645 650 655	1968
ttc aac gat gtc ata acg gaa gga gat ggc cgg att aaa tac Phe Asn Asp Val Ile Thr Glu Gly Asp Gly Arg Ile Lys Tyr 660 665 670	2010

<210> 2  
 <211> 670  
 <212> PRT  
 <213> Arabidopsis thaliana  
 <400> 2

Met Ala Ala Ala Thr Thr Thr Thr Thr Thr Ser Ser Ser Ile Ser Phe  
 1 5 10 15  
 Ser Thr Lys Pro Ser Pro Ser Ser Ser Lys Ser Pro Leu Pro Ile Ser  
 20 25 30  
 Arg Phe Ser Leu Pro Phe Ser Leu Asn Pro Asn Lys Ser Ser Ser Ser  
 35 40 45  
 Ser Arg Arg Arg Gly Ile Lys Ser Ser Ser Pro Ser Ser Ile Ser Ala  
 50 55 60  
 Val Leu Asn Thr Thr Thr Asn Val Thr Thr Thr Pro Ser Pro Thr Lys  
 65 70 75 80  
 Pro Thr Lys Pro Glu Thr Phe Ile Ser Arg Phe Ala Pro Asp Gln Pro  
 85 90 95  
 Arg Lys Gly Ala Asp Ile Leu Val Glu Ala Leu Glu Arg Gln Gly Val  
 100 105 110  
 Glu Thr Val Phe Ala Tyr Pro Gly Gly Ala Ser Met Glu Ile His Gln  
 115 120 125  
 Ala Leu Thr Arg Ser Ser Ser Ile Arg Asn Val Leu Pro Arg His Glu  
 130 135 140  
 Gln Gly Gly Val Phe Ala Ala Glu Gly Tyr Ala Arg Ser Ser Gly Lys  
 145 150 155 160  
 Pro Gly Ile Cys Ile Ala Thr Ser Gly Pro Gly Ala Thr Asn Leu Val  
 165 170 175  
 Ser Gly Leu Ala Asp Ala Leu Leu Asp Ser Val Pro Leu Val Ala Ile  
 180 185 190  
 Thr Gly Gln Val Pro Arg Arg Met Ile Gly Thr Asp Ala Phe Gln Glu  
 195 200 205  
 Thr Pro Ile Val Glu Val Thr Arg Ser Ile Thr Lys His Asn Tyr Leu  
 210 215 220  
 Val Met Asp Val Glu Asp Ile Pro Arg Ile Ile Glu Glu Ala Phe Phe  
 225 230 235 240  
 Leu Ala Thr Ser Gly Arg Pro Gly Pro Val Leu Val Asp Val Pro Lys  
 245 250 255  
 Asp Ile Gln Gln Gln Leu Ala Ile Pro Asn Trp Glu Gln Ala Met Arg  
 260 265 270  
 Leu Pro Gly Tyr Met Ser Arg Met Pro Lys Pro Pro Glu Asp Ser His

275					280					285					
Leu	Glu	Gln	Ile	Val	Arg	Leu	Ile	Ser	Glu	Ser	Lys	Lys	Pro	Val	Leu
	290					295					300				
Tyr	Val	Gly	Gly	Gly	Cys	Leu	Asn	Ser	Ser	Asp	Glu	Leu	Gly	Arg	Phe
305					310					315					320
Val	Glu	Leu	Thr	Gly	Ile	Pro	Val	Ala	Ser	Thr	Leu	Met	Gly	Leu	Gly
				325					330					335	
Ser	Tyr	Pro	Cys	Asp	Asp	Glu	Leu	Ser	Leu	His	Met	Leu	Gly	Met	His
			340					345					350		
Gly	Thr	Val	Tyr	Ala	Asn	Tyr	Ala	Val	Glu	His	Ser	Asp	Leu	Leu	Leu
		355					360					365			
Ala	Phe	Gly	Val	Arg	Phe	Asp	Asp	Arg	Val	Thr	Gly	Lys	Leu	Glu	Ala
	370					375					380				
Phe	Ala	Ser	Arg	Ala	Lys	Ile	Val	His	Ile	Asp	Ile	Asp	Ser	Ala	Glu
385					390					395					400
Ile	Gly	Lys	Asn	Lys	Thr	Pro	His	Val	Ser	Val	Cys	Gly	Asp	Val	Lys
				405					410					415	
Leu	Ala	Leu	Gln	Gly	Met	Asn	Lys	Val	Leu	Glu	Asn	Arg	Ala	Glu	Glu
			420					425					430		
Leu	Lys	Leu	Asp	Phe	Gly	Val	Trp	Arg	Asn	Glu	Leu	Asn	Val	Gln	Lys
		435					440					445			
Gln	Lys	Phe	Pro	Leu	Ser	Phe	Lys	Thr	Phe	Gly	Glu	Ala	Ile	Pro	Pro
	450					455					460				
Gln	Tyr	Ala	Ile	Lys	Val	Leu	Asp	Glu	Leu	Thr	Asp	Gly	Lys	Ala	Ile
465					470					475					480
Ile	Ser	Thr	Gly	Val	Gly	Gln	His	Gln	Met	Trp	Ala	Ala	Gln	Phe	Tyr
				485					490					495	
Asn	Tyr	Lys	Lys	Pro	Arg	Gln	Trp	Leu	Ser	Ser	Gly	Gly	Leu	Gly	Ala
			500					505					510		
Met	Gly	Phe	Gly	Leu	Pro	Ala	Ala	Ile	Gly	Ala	Ser	Val	Ala	Asn	Pro
		515					520					525			
Asp	Ala	Ile	Val	Val	Asp	Ile	Asp	Gly	Asp	Gly	Ser	Phe	Ile	Met	Asn
	530					535					540				
Val	Gln	Glu	Leu	Ala	Thr	Ile	Arg	Val	Glu	Asn	Leu	Pro	Val	Lys	Val
545					550					555					560

Leu Leu Leu Asn Asn Gln His Leu Gly Met Val Met Gln Trp Gln Asp  
 565 570 575  
 Arg Phe Tyr Lys Ala Asn Arg Ala His Thr Phe Leu Gly Asp Pro Ala  
 580 585 590  
 Gln Glu Asp Glu Ile Phe Pro Asn Met Leu Leu Phe Ala Ala Ala Cys  
 595 600 605  
 Gly Ile Pro Ala Ala Arg Val Thr Lys Lys Ala Asp Leu Arg Glu Ala  
 610 615 620  
 Ile Gln Thr Met Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile  
 625 630 635 640  
 Cys Pro His Gln Glu His Val Leu Pro Met Ile Pro Ser Gly Gly Thr  
 645 650 655  
 Phe Asn Asp Val Ile Thr Glu Gly Asp Gly Arg Ile Lys Tyr  
 660 665 670

<210> 3  
 <211> 1965  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(1965)

<400> 3	
atg gcg gcg gca aca tcg tct tct ccg atc tcc tta acc gct aaa cct	48
Met Ala Ala Ala Thr Ser Ser Ser Pro Ile Ser Leu Thr Ala Lys Pro	
1 5 10 15	
tct tcc aaa tcc cct cta ccc att tcc aga ttc tcc ctt ccc ttc tcc	96
Ser Ser Lys Ser Pro Leu Pro Ile Ser Arg Phe Ser Leu Pro Phe Ser	
20 25 30	
tta acc cca cag aaa gac tcc tcc cgt ctc cac cgt cct ctc gcc atc	144
Leu Thr Pro Gln Lys Asp Ser Ser Arg Leu His Arg Pro Leu Ala Ile	
35 40 45	
tcc gcc gtt ctc aac tca ccc gtc aat gtc gca cct cct tcc cct gaa	192
Ser Ala Val Leu Asn Ser Pro Val Asn Val Ala Pro Pro Ser Pro Glu	
50 55 60	
aaa acc gac aag aac aag act ttc gtc tcc cgc tac gct ccc gac gag	240
Lys Thr Asp Lys Asn Lys Thr Phe Val Ser Arg Tyr Ala Pro Asp Glu	
65 70 75 80	
ccc cgc aag ggt gct gat atc ctc gtc gaa gcc ctc gag cgt caa ggc	288
Pro Arg Lys Gly Ala Asp Ile Leu Val Glu Ala Leu Glu Arg Gln Gly	
85 90 95	
gtc gaa acc gtc ttt gct tat ccc gga ggt gct tcc atg gag atc cac	336
Val Glu Thr Val Phe Ala Tyr Pro Gly Gly Ala Ser Met Glu Ile His	
100 105 110	

caa Gln	gcc Ala	ttg Leu 115	act Thr	cgc Arg	tcc Ser	tcc Ser	acc Thr 120	atc Ile	cgt Arg	aac Asn	gtc Val	ctt Leu 125	ccc Pro	cgt Arg	cac His	384
gaa Glu	caa Gln 130	gga Gly	gga Gly	gtc Val	ttc Phe	gcc Ala 135	gcc Ala	gag Glu	ggg Gly	tac Tyr	gct Ala 140	cgt Arg	tcc Ser	tcc Ser	ggc Gly	432
aaa Lys 145	ccg Pro	gga Gly	atc Ile	tgc Cys	ata Ile 150	gcc Ala	act Thr	tcg Ser	ggg Gly	ccc Pro 155	gga Gly	gct Ala	acc Thr	aac Asn	ctc Leu 160	480
gtc Val	agc Ser	ggg Gly	tta Leu	gca Ala 165	gac Asp	gcg Ala	atg Met	ctt Leu	gac Asp 170	agt Ser	gtt Val	cct Pro	ctt Leu	gtc Val 175	gcc Ala	528
att Ile	aca Thr	gga Gly	cag Gln 180	gtc Val	cct Pro	cgc Arg	cgg Arg	atg Met 185	atc Ile	ggg Gly	act Thr	gac Asp	gcc Ala 190	ttc Phe	caa Gln	576
gag Glu	aca Thr	cca Pro 195	atc Ile	gtt Val	gag Glu	gta Val	acg Thr 200	agg Arg	tct Ser	att Ile	acg Thr	aaa Lys 205	cat His	aac Asn	tat Tyr	624
ttg Leu	gtg Val 210	atg Met	gat Asp	gtt Val	gat Asp	gac Asp 215	ata Ile	cct Pro	agg Arg	atc Ile	gtt Val 220	caa Gln	gaa Glu	gct Ala	ttc Phe	672
ttt Phe 225	cta Leu	gct Ala	act Thr	tcc Ser	ggg Gly 230	aga Arg	ccc Pro	gga Gly	ccg Pro	gtt Val 235	ttg Leu	gtt Val	gat Asp	gtt Val	cct Pro 240	720
aag Lys	gat Asp	att Ile	cag Gln	cag Gln 245	cag Gln	ctt Leu	gcg Ala	att Ile	cct Pro 250	aac Asn	tgg Trp	gat Asp	caa Gln	cct Pro 255	atg Met	768
cgc Arg	tta Leu	cct Pro	ggc Gly 260	tac Tyr	atg Met	tct Ser	agg Arg	ttg Leu 265	cct Pro	cag Gln	cct Pro	ccg Pro	gaa Glu 270	gtt Val	tct Ser	816
cag Gln	tta Leu	ggg Gly 275	cag Gln	atc Ile	gtt Val	agg Arg	ttg Leu 280	atc Ile	tcg Ser	gag Glu	tct Ser	aag Lys 285	agg Arg	cct Pro	gtt Val	864
ttg Leu	tac Tyr 290	gtt Val	ggg Gly	ggg Gly	gga Gly	agc Ser 295	ttg Leu	aac Asn	tcg Ser	agt Ser	gaa Glu 300	gaa Glu	ctg Leu	ggg Gly	aga Arg	912
ttt Phe 305	gtc Val	gag Glu	ctt Leu	act Thr	ggg Gly 310	atc Ile	ccc Pro	gtt Val	gcg Ala	agt Ser 315	act Thr	ttg Leu	atg Met	ggg Gly	ctt Leu 320	960
ggc Gly	tct Ser	tat Tyr	cct Pro	tgt Cys 325	aac Asn	gat Asp	gag Glu	ttg Leu	tcc Ser 330	ctg Leu	cag Gln	atg Met	ctt Leu	ggc Gly 335	atg Met	1008
cac His	ggg Gly	act Thr	gtg Val 340	tat Tyr	gct Ala	aac Asn	tac Tyr	gct Ala 345	gtg Val	gag Glu	cat His	agt Ser	gat Asp 350	ttg Leu	ttg Leu	1056
ctg Leu	gcg Ala	ttt Phe 355	ggg Gly	gtt Val	agg Arg	ttt Phe	gat Asp 360	gac Asp	cgt Arg	gtc Val	acg Thr	gga Gly 365	aag Lys	ctc Leu	gag Glu	1104
gct Ala	ttc Phe 370	gct Ala	agc Ser	agg Arg	gct Ala	aaa Lys 375	att Ile	gtg Val	cac His	ata Ile	gac Asp 380	att Ile	gat Asp	tct Ser	gct Ala	1152
gag	att	ggg	aag	aat	aag	aca	cct	cac	gtg	tct	gtg	tgt	ggg	gat	gta	1200

Glu 385	Ile	Gly	Lys	Asn	Lys 390	Thr	Pro	His	Val	Ser 395	Val	Cys	Gly	Asp	Val 400	
aag Lys	ctg Leu	gct Ala	ttg Leu	caa Gln 405	ggg Gly	atg Met	aac Asn	aag Lys	gtt Val 410	ctt Leu	gag Glu	aac Asn	cgg Arg	gcg Ala 415	gag Glu	1248
gag Glu	ctc Leu	aag Lys	ctt Leu 420	gat Asp	ttc Phe	ggt Gly	gtt Val	tgg Trp 425	agg Arg	agt Ser	gag Glu	ttg Leu	agc Ser 430	gag Glu	cag Gln	1296
aaa Lys	cag Gln	aag Lys 435	ttc Phe	cct Pro	ttg Leu	agc Ser	ttc Phe 440	aaa Lys	acg Thr	ttt Phe	gga Gly	gaa Glu 445	gcc Ala	att Ile	cct Pro	1344
ccg Pro	cag Gln 450	tac Tyr	gcg Ala	att Ile	cag Gln	atc Ile 455	ctc Leu	gac Asp	gag Glu	cta Leu	acc Thr 460	gaa Glu	ggg Gly	aag Lys	gca Ala	1392
att Ile 465	atc Ile	agt Ser	act Thr	ggt Gly	gtt Val 470	gga Gly	cag Gln	cat His	cag Gln	atg Met 475	tgg Trp	gcg Ala	gcg Ala	cag Gln	ttt Phe 480	1440
tac Tyr	aag Lys	tac Tyr	agg Arg	aag Lys 485	ccg Pro	aga Arg	cag Gln	tgg Trp	ctg Leu 490	tcg Ser	tca Ser	tca Ser	ggc Gly	ctc Leu 495	gga Gly	1488
gct Ala	atg Met	ggt Gly	ttt Phe 500	gga Gly	ctt Leu	cct Pro	gct Ala	gcg Ala 505	att Ile	gga Gly	gcg Ala	tct Ser	gtg Val 510	gcg Ala	aac Asn	1536
cct Pro	gat Asp	gcg Ala 515	att Ile	gtt Val	gtg Val	gat Asp	att Ile 520	gac Asp	ggt Gly	gat Asp	gga Gly	agc Ser 525	ttc Phe	ata Ile	atg Met	1584
aac Asn	gtt Val 530	caa Gln	gag Glu	ctg Leu	gcc Ala	aca Thr 535	atc Ile	cgt Arg	gta Val	gag Glu	aat Asn 540	ctt Leu	cct Pro	gtg Val	aag Lys	1632
ata Ile 545	ctc Leu	ttg Leu	tta Leu	aac Asn	aac Asn 550	cag Gln	cat His	ctt Leu	ggg Gly	atg Met 555	gtc Val	atg Met	caa Gln	tgg Trp	gaa Glu 560	1680
gat Asp	cgg Arg	ttc Phe	tac Tyr	aaa Lys 565	gct Ala	aac Asn	aga Arg	gct Ala	cac His 570	act Thr	tat Tyr	ctc Leu	ggg Gly	gac Asp 575	ccg Pro	1728
gca Ala	agg Arg	gag Glu	aac Asn 580	gag Glu	atc Ile	ttc Phe	cct Pro	aac Asn 585	atg Met	ctg Leu	cag Gln	ttt Phe	gca Ala 590	gga Gly	gct Ala	1776
tgc Cys	ggg Gly	att Ile 595	cca Pro	gct Ala	gcg Ala	aga Arg	gtg Val 600	acg Thr	aag Lys	aaa Lys	gaa Glu	gaa Glu 605	ctc Leu	cga Arg	gaa Glu	1824
gct Ala	att Ile 610	cag Gln	aca Thr	atg Met	ctg Leu	gat Asp 615	aca Thr	cca Pro	gga Gly	cca Pro	tac Tyr 620	ctg Leu	ttg Leu	gat Asp	gtg Val	1872
ata Ile 625	tgt Cys	ccg Pro	cac His	caa Gln	gaa Glu 630	cat His	gtg Val	tta Leu	ccg Pro	atg Met 635	atc Ile	cca Pro	agt Ser	ggt Gly	ggc Gly 640	1920
act Thr	ttc Phe	aaa Lys	gat Asp	gta Val 645	ata Ile	aca Thr	gaa Glu	ggg Gly	gat Asp 650	ggt Gly	cgc Arg	act Thr	aag Lys	tac Tyr 655		1965



<211> 655  
 <212> PRT  
 <213> Brassica napus

<400> 4

```

Met Ala Ala Ala Thr Ser Ser Ser Pro Ile Ser Leu Thr Ala Lys Pro
1      5      10      15

Ser Ser Lys Ser Pro Leu Pro Ile Ser Arg Phe Ser Leu Pro Phe Ser
      20      25      30

Leu Thr Pro Gln Lys Asp Ser Ser Arg Leu His Arg Pro Leu Ala Ile
      35      40      45

Ser Ala Val Leu Asn Ser Pro Val Asn Val Ala Pro Pro Ser Pro Glu
      50      55      60

Lys Thr Asp Lys Asn Lys Thr Phe Val Ser Arg Tyr Ala Pro Asp Glu
65      70      75      80

Pro Arg Lys Gly Ala Asp Ile Leu Val Glu Ala Leu Glu Arg Gln Gly
      85      90      95

Val Glu Thr Val Phe Ala Tyr Pro Gly Gly Ala Ser Met Glu Ile His
      100      105      110

Gln Ala Leu Thr Arg Ser Ser Thr Ile Arg Asn Val Leu Pro Arg His
      115      120      125

Glu Gln Gly Gly Val Phe Ala Ala Glu Gly Tyr Ala Arg Ser Ser Gly
      130      135      140

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

Val Ser Gly Leu Ala Asp Ala Met Leu Asp Ser Val Pro Leu Val Ala
      165      170      175

Ile Thr Gly Gln Val Pro Arg Arg Met Ile Gly Thr Asp Ala Phe Gln
      180      185      190

Glu Thr Pro Ile Val Glu Val Thr Arg Ser Ile Thr Lys His Asn Tyr
      195      200      205

Leu Val Met Asp Val Asp Asp Ile Pro Arg Ile Val Gln Glu Ala Phe
      210      215      220

Phe Leu Ala Thr Ser Gly Arg Pro Gly Pro Val Leu Val Asp Val Pro
225      230      235      240

Lys Asp Ile Gln Gln Gln Leu Ala Ile Pro Asn Trp Asp Gln Pro Met
      245      250      255

```

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

Asn Val Gln Glu Leu Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys  
 530 535 540  
 Ile Leu Leu Leu Asn Asn Gln His Leu Gly Met Val Met Gln Trp Glu  
 545 550 555 560  
 Asp Arg Phe Tyr Lys Ala Asn Arg Ala His Thr Tyr Leu Gly Asp Pro  
 565 570 575  
 Ala Arg Glu Asn Glu Ile Phe Pro Asn Met Leu Gln Phe Ala Gly Ala  
 580 585 590  
 Cys Gly Ile Pro Ala Ala Arg Val Thr Lys Lys Glu Glu Leu Arg Glu  
 595 600 605  
 Ala Ile Gln Thr Met Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val  
 610 615 620  
 Ile Cys Pro His Gln Glu His Val Leu Pro Met Ile Pro Ser Gly Gly  
 625 630 635 640  
 Thr Phe Lys Asp Val Ile Thr Glu Gly Asp Gly Arg Thr Lys Tyr  
 645 650 655

<210> 5  
 <211> 1956  
 <212> DNA  
 <213> Brassica napus

<220>  
 <221> CDS  
 <222> (1)..(1956)

<400> 5	
atg gcg gcg gca aca tcg tct tct ccg atc tcc tta acc gct aaa cct	48
Met Ala Ala Ala Thr Ser Ser Ser Pro Ile Ser Leu Thr Ala Lys Pro	
1 5 10 15	
tct tcc aaa tcc cct cta ccc att tcc aga ttc tcc ctt ccc ttc tcc	96
Ser Ser Lys Ser Pro Leu Pro Ile Ser Arg Phe Ser Leu Pro Phe Ser	
20 25 30	
tta acc cca cag aaa ccc tcc tcc cgt ctc cac cgt cct ctc gcc atc	144
Leu Thr Pro Gln Lys Pro Ser Ser Arg Leu His Arg Pro Leu Ala Ile	
35 40 45	
tcc gcc gtt ctc aac tca ccc gtc aat gtc gca cct gaa aaa acc gac	192
Ser Ala Val Leu Asn Ser Pro Val Asn Val Ala Pro Glu Lys Thr Asp	
50 55 60	
aag atc aag act ttc atc tcc cgc tac gct ccc gac gag ccc cgc aag	240
Lys Ile Lys Thr Phe Ile Ser Arg Tyr Ala Pro Asp Glu Pro Arg Lys	
65 70 75 80	
ggg gct gat atc ctc gtg gaa gcc ctc gag cgt caa ggc gtc gaa acc	288
Gly Ala Asp Ile Leu Val Glu Ala Leu Glu Arg Gln Gly Val Glu Thr	
85 90 95	
gtc ttc gct tat ccc gga ggt gcc tcc atg gag atc cac caa gcc ttg	336
Val Phe Ala Tyr Pro Gly Gly Ala Ser Met Glu Ile His Gln Ala Leu	

100								105				110					
act Thr	cgc Arg	tcc Ser 115	tcc Ser	acc Thr	atc Ile	cgt Arg	aac Asn 120	gtc Val	ctc Leu	ccc Pro	cgt Arg	cac His 125	gaa Glu	caa Gln	gga Gly	384	
gga Gly	gtc Val 130	ttc Phe	gcc Ala	gcc Ala	gag Glu	ggg Gly 135	tac Tyr	gct Ala	cgt Arg	tcc Ser	tcc Ser 140	ggc Gly	aaa Lys	ccg Pro	gga Gly	432	
atc Ile 145	tgc Cys	ata Ile	gcc Ala	act Thr	tcg Ser 150	ggg Gly	ccc Pro	gga Gly	gct Ala	acc Thr 155	aac Asn	ctc Leu	gtc Val	agc Ser	ggg Gly 160	480	
tta Leu	gcc Ala	gac Asp	gcg Ala	atg Met 165	ctt Leu	gac Asp	agt Ser	gtt Val	cct Pro 170	ctc Leu	gtc Val	gcc Ala	atc Ile	aca Thr 175	gga Gly	528	
cag Gln	gtc Val	cct Pro	cgc Arg 180	cgg Arg	atg Met	atc Ile	ggg Gly	act Thr 185	gac Asp	gcc Ala	ttc Phe	caa Gln	gag Glu 190	acg Thr	cca Pro	576	
atc Ile	gtt Val	gag Glu 195	gta Val	acg Thr	agg Arg	tct Ser	att Ile 200	acg Thr	aaa Lys	cat His	aac Asn	tat Tyr 205	ctg Leu	gtg Val	atg Met	624	
gat Asp	gtt Val 210	gat Asp	gac Asp	ata Ile	cct Pro	agg Arg 215	atc Ile	gtt Val	caa Gln	gaa Glu	gca Ala 220	ttc Phe	ttt Phe	cta Leu	gct Ala	672	
act Thr 225	tcc Ser	ggg Gly	aga Arg	ccc Pro	gga Gly 230	ccg Pro	gtt Val	ttg Leu	gtt Val	gat Asp 235	gtt Val	cct Pro	aag Lys	gat Asp	att Ile 240	720	
cag Gln	cag Gln	cag Gln	ctt Leu	gcg Ala 245	att Ile	cct Pro	aac Asn	tgg Trp	gat Asp 250	caa Gln	cct Pro	atg Met	cgc Arg	ttg Leu 255	cct Pro	768	
ggc Gly	tac Tyr	atg Met	tct Ser 260	agg Arg	ctg Leu	cct Pro	cag Gln	cca Pro 265	ccg Pro	gaa Glu	gtt Val	tct Ser	cag Gln 270	tta Leu	ggc Gly	816	
cag Gln	atc Ile	gtt Val 275	agg Arg	ttg Leu	atc Ile	tcg Ser	gag Glu 280	tct Ser	aag Lys	agg Arg	cct Pro	gtt Val 285	ttg Leu	tac Tyr	gtt Val	864	
ggg Gly	ggg Gly 290	gga Gly	agc Ser	ttg Leu	aac Asn	tcg Ser 295	agt Ser	gaa Glu	gaa Glu	ctg Leu	ggg Gly 300	aga Arg	ttt Phe	gtc Val	gag Glu	912	
ctt Leu 305	act Thr	ggg Gly	atc Ile	cct Pro	gtt Val 310	gcg Ala	agt Ser	acg Thr	ttg Leu	atg Met 315	ggg Gly	ctt Leu	ggc Gly	tct Ser	tat Tyr 320	960	
cct Pro	tgt Cys	aac Asn	gat Asp	gag Glu 325	ttg Leu	tcc Ser	ctg Leu	cag Gln	atg Met 330	ctt Leu	ggc Gly	atg Met	cac His	ggg Gly 335	act Thr	1008	
gtg Val	tat Tyr	gct Ala	aac Asn 340	tac Tyr	gct Ala	gtg Val	gag Glu	cat His 345	agt Ser	gat Asp	ttg Leu	ttg Leu	ctg Leu 350	gcg Ala	ttt Phe	1056	
ggg Gly	gtt Val	agg Arg 355	ttt Phe	gat Asp	gac Asp	cgt Arg	gtc Val 360	acg Thr	gga Gly	aag Lys	ctc Leu	gag Glu 365	gcg Ala	ttt Phe	gcg Ala	1104	
agc Ser	agg Arg 370	gct Ala	aag Lys	att Ile	gtg Val	cac His 375	ata Ile	gac Asp	att Ile	gat Asp	tct Ser 380	gct Ala	gag Glu	att Ile	ggg Gly	1152	

aag Lys 385	aat Asn	aag Lys	aca Thr	cct Pro	cac His 390	gtg Val	tct Ser	gtg Val	tgt Cys	ggg Gly 395	gat Asp	gta Val	aag Lys	ctg Leu	gct Ala 400	1200
ttg Leu	caa Gln	ggg Gly	atg Met	aac Asn 405	aag Lys	gtt Val	ctt Leu	gag Glu	aac Asn 410	cgg Arg	gcg Ala	gag Glu	gag Glu	ctc Leu 415	aag Lys	1248
ctt Leu	gat Asp	ttc Phe	ggg Gly 420	gtt Val	tgg Trp	agg Arg	agt Ser	gag Glu 425	ttg Leu	agc Ser	gag Glu	cag Gln	aaa Lys 430	cag Gln	aag Lys	1296
ttc Phe	ccg Pro	ttg Leu 435	agc Ser	ttc Phe	aaa Lys	acg Thr	ttt Phe 440	gga Gly	gaa Glu	gcc Ala	att Ile	cct Pro 445	ccg Pro	cag Gln	tac Tyr	1344
gcg Ala	att Ile 450	cag Gln	gtc Val	cta Leu	gac Asp	gag Glu 455	cta Leu	acc Thr	caa Gln	ggg Gly	aag Lys 460	gca Ala	att Ile	atc Ile	agt Ser	1392
act Thr 465	ggg Gly	gtt Val	gga Gly	cag Gln	cat His 470	cag Gln	atg Met	tgg Trp	gcg Ala	gcg Ala 475	cag Gln	ttt Phe	tac Tyr	aag Lys	tac Tyr 480	1440
agg Arg	aag Lys	ccg Pro	agg Arg	cag Gln 485	tgg Trp	ctg Leu	tcg Ser	tcc Ser	tca Ser 490	gga Gly	ctc Leu	gga Gly	gct Ala	atg Met 495	ggg Gly	1488
ttc Phe	gga Gly	ctt Leu	cct Pro 500	gct Ala	gcg Ala	att Ile	gga Gly	gcg Ala 505	tct Ser	gtg Val	gcg Ala	aac Asn	cct Pro 510	gat Asp	gcg Ala	1536
att Ile	gtt Val	gtg Val 515	gac Asp	att Ile	gac Asp	ggg Gly	gat Asp 520	gga Gly	agc Ser	ttc Phe	ata Ile	atg Met 525	aac Asn	gtt Val	caa Gln	1584
gag Glu	ctg Leu 530	gcc Ala	aca Thr	atc Ile	cgt Arg	gta Val 535	gag Glu	aat Asn	ctt Leu	cct Pro	gtg Val 540	aag Lys	ata Ile	ctc Leu	ttg Leu	1632
tta Leu 545	aac Asn	aac Asn	cag Gln	cat His	ctt Leu 550	ggg Gly	atg Met	gtc Val	atg Met	caa Gln 555	tgg Trp	gaa Glu	gat Asp	cgg Arg	ttc Phe 560	1680
tac Tyr	aaa Lys	gct Ala	aac Asn	aga Arg 565	gct Ala	cac His	act Thr	tat Tyr	ctc Leu 570	ggg Gly	gac Asp	ccg Pro	gca Ala	agg Arg 575	gag Glu	1728
aac Asn	gag Glu	atc Ile	ttc Phe 580	cct Pro	aac Asn	atg Met	ctg Leu	cag Gln 585	ttt Phe	gca Ala	gga Gly	gct Ala	tgc Cys 590	ggg Gly	att Ile	1776
cca Pro	gct Ala	gcg Ala 595	aga Arg	gtg Val	acg Thr	aag Lys	aaa Lys 600	gaa Glu	gaa Glu	ctc Leu	cga Arg	gaa Glu 605	gct Ala	att Ile	cag Gln	1824
aca Thr	atg Met 610	ctg Leu	gat Asp	aca Thr	cct Pro	gga Gly 615	ccg Pro	tac Tyr	ctg Leu	ttg Leu	gat Asp 620	gtc Val	atc Ile	tgt Cys	ccg Pro	1872
cac His 625	caa Gln	gaa Glu	cat His	gtg Val	tta Leu 630	ccg Pro	atg Met	atc Ile	cca Pro	agt Ser 635	ggg Gly	ggc Gly	act Thr	ttc Phe	aaa Lys 640	1920
gat Asp	gta Val	ata Ile	acc Thr	gaa Glu 645	ggg Gly	gat Asp	ggg Gly	cgc Arg	act Thr 650	aag Lys	tac Tyr					1956

<210> 6  
 <211> 652  
 <212> PRT  
 <213> Brassica napus

<400> 6

Met Ala Ala Ala Thr Ser Ser Ser Pro Ile Ser Leu Thr Ala Lys Pro  
 1 5 10 15

Ser Ser Lys Ser Pro Leu Pro Ile Ser Arg Phe Ser Leu Pro Phe Ser  
 20 25 30

Leu Thr Pro Gln Lys Pro Ser Ser Arg Leu His Arg Pro Leu Ala Ile  
 35 40 45

Ser Ala Val Leu Asn Ser Pro Val Asn Val Ala Pro Glu Lys Thr Asp  
 50 55 60

Lys Ile Lys Thr Phe Ile Ser Arg Tyr Ala Pro Asp Glu Pro Arg Lys  
 65 70 75 80

Gly Ala Asp Ile Leu Val Glu Ala Leu Glu Arg Gln Gly Val Glu Thr  
 85 90 95

Val Phe Ala Tyr Pro Gly Gly Ala Ser Met Glu Ile His Gln Ala Leu  
 100 105 110

Thr Arg Ser Ser Thr Ile Arg Asn Val Leu Pro Arg His Glu Gln Gly  
 115 120 125

Gly Val Phe Ala Ala Glu Gly Tyr Ala Arg Ser Ser Gly Lys Pro Gly  
 130 135 140

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

Leu Ala Asp Ala Met Leu Asp Ser Val Pro Leu Val Ala Ile Thr Gly  
 165 170 175

Gln Val Pro Arg Arg Met Ile Gly Thr Asp Ala Phe Gln Glu Thr Pro  
 180 185 190

Ile Val Glu Val Thr Arg Ser Ile Thr Lys His Asn Tyr Leu Val Met  
 195 200 205

Asp Val Asp Asp Ile Pro Arg Ile Val Gln Glu Ala Phe Phe Leu Ala  
 210 215 220

Thr Ser Gly Arg Pro Gly Pro Val Leu Val Asp Val Pro Lys Asp Ile  
 225 230 235 240

Gln Gln Gln Leu Ala Ile Pro Asn Trp Asp Gln Pro Met Arg Leu Pro

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

Glu Leu Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Ile Leu Leu  
 530 535 540

Leu Asn Asn Gln His Leu Gly Met Val Met Gln Trp Glu Asp Arg Phe  
 545 550 555 560

Tyr Lys Ala Asn Arg Ala His Thr Tyr Leu Gly Asp Pro Ala Arg Glu  
 565 570 575

Asn Glu Ile Phe Pro Asn Met Leu Gln Phe Ala Gly Ala Cys Gly Ile  
 580 585 590

Pro Ala Ala Arg Val Thr Lys Lys Glu Glu Leu Arg Glu Ala Ile Gln  
 595 600 605

Thr Met Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile Cys Pro  
 610 615 620

His Gln Glu His Val Leu Pro Met Ile Pro Ser Gly Gly Thr Phe Lys  
 625 630 635 640

Asp Val Ile Thr Glu Gly Asp Gly Arg Thr Lys Tyr  
 645 650