

PhoenixTemp43053.tmp.txt  
SEQUENCE LISTING

<110> Degussa GmbH

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<170> PatentIn version 3.3

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<212> DNA

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Gln Pro Val Ala Val Phe Leu Gly Val Pro Phe Ala Lys Pro Pro Leu	
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1392	tat Tyr	gag Glu 450	ttt Phe	cag Gln	tat Tyr	cgc Arg	cca Pro 455	agc Ser	ttc Phe	tca Ser	tcg Ser	gac Asp 460	aag Lys	aaa Lys	ccc Pro	aag Lys

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

Trp Lys Ser Tyr Pro Ile Ala Asn Ile Pro Glu Glu Leu Thr Pro Val  
385 390 395 400

Ala Thr Asp Lys Tyr Leu Gly Gly Thr Asp Asp Pro Val Lys Lys Lys  
Page 4

405

410

415

Asp Leu Phe Leu Asp Leu Met Gly Asp Val Val Phe Gly Val Pro Ser  
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Val Thr Val Ala Arg Gln His Arg Asp Ala Gly Ala Pro Thr Tyr Met  
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Tyr Glu Phe Gln Tyr Arg Pro Ser Phe Ser Ser Asp Lys Lys Pro Lys  
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Pro	Pro	Lys	Ile	Lys 565													

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515 520 525

Leu Gln Ile Gly Val Asn Thr Gln Ala Ala Lys Arg Leu Lys Gly Glu  
Page 9

530

535

540

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 cgc ggc agc cat atg ggc cag cca gcc tcg ccg cct gtt gtg gac act 96  
 Arg Gly Ser His Met Gly Gln Pro Ala Ser Pro Pro Val Val Asp Thr  
 20 25 30  
 gcc cag ggc cga gtc ctg ggc aag tac gtc agc tta gaa ggc ctg gca 144  
 Ala Gln Gly Arg Val Leu Gly Lys Tyr Val Ser Leu Glu Gly Leu Ala  
 35 40 45  
 cag ccg gtg gcc gtc ttc ctg gga gtc cct ttt gcc aag ccc cct ctc 192  
 Gln Pro Val Ala Val Phe Leu Gly Val Pro Phe Ala Lys Pro Pro Leu  
 50 55 60  
 gga tcc ttg agg ttt gct ccg ccg cag cct gca gaa cca tgg agc ttc 240  
 Gly Ser Leu Arg Phe Ala Pro Pro Gln Pro Ala Glu Pro Trp Ser Phe  
 65 70 75 80  
 gtg aag aac acc acc tcc tac cct ccc atg tgc tgc cag gac cca gta 288  
 Val Lys Asn Thr Thr Ser Tyr Pro Pro Met Cys Cys Gln Asp Pro Val  
 85 90 95  
 gcg ggc cag atg acc tca gat cta ttt acc aac aga aag gag agg ctc 336  
 Ala Gly Gln Met Thr Ser Asp Leu Phe Thr Asn Arg Lys Glu Arg Leu  
 100 105 110  
 att ccg gag ttt tct gaa gac tgt ctc tac cta aat att tac acc cct 384  
 Ile Pro Glu Phe Ser Glu Asp Cys Leu Tyr Leu Asn Ile Tyr Thr Pro  
 115 120 125  
 gct gac ctg aca aag agg ggc aga ctg ccg gtg atg gtg tgg atc cac 432  
 Ala Asp Leu Thr Lys Arg Gly Arg Leu Pro Val Met Val Trp Ile His  
 130 135 140  
 gga gga ggt ctg gtg gtg ggc ggc gct tcc acc tat gat gga ctg gcc 480  
 Gly Gly Gly Leu Val Val Gly Gly Ala Ser Thr Tyr Asp Gly Leu Ala  
 145 150 155 160  
 ctc gct gcg cat gaa aac gtg gtg gtg gtg gcc atc cag tac cgc ctg 528  
 Leu Ala Ala His Glu Asn Val Val Val Val Ala Ile Gln Tyr Arg Leu  
 165 170 175

PhoenixTemp43053.tmp.txt

ggc atc tgg gga ttc ttc agc aca ggg gac gaa cac agc cgg ggc aac	576
Gly Ile Trp Gly Phe Phe Ser Thr Gly Asp Glu His Ser Arg Gly Asn	
180 185 190	
tgg ggt cac ttg gac cag gtg gcc gca ctg cac tgg gtc cag gag aac	624
Trp Gly His Leu Asp Gln Val Ala Ala Leu His Trp Val Gln Glu Asn	
195 200 205	
atc gcc aac ttt gga ggc gac cca ggc tct gtg acc atc ttt gga gag	672
Ile Ala Asn Phe Gly Gly Asp Pro Gly Ser Val Thr Ile Phe Gly Glu	
210 215 220	
tca gca gga ggg gaa agt gtc tct gtt ctg gtg ttg tct ccc ttg gcc	720
Ser Ala Gly Gly Glu Ser Val Ser Val Leu Val Leu Ser Pro Leu Ala	
225 230 235 240	
aag aac ctc ttc cac cgg gcc atc tct gag agt ggc gtg gcc ttc act	768
Lys Asn Leu Phe His Arg Ala Ile Ser Glu Ser Gly Val Ala Phe Thr	
245 250 255	
gct ggc ctg gtc agg aag gac atg aag gct gca gct aag caa att gct	816
Ala Gly Leu Val Arg Lys Asp Met Lys Ala Ala Ala Lys Gln Ile Ala	
260 265 270	
gtc ctt gct ggg tgt aaa acc acc acc tcg gct gtc ttt gtt cac tgc	864
Val Leu Ala Gly Cys Lys Thr Thr Thr Ser Ala Val Phe Val His Cys	
275 280 285	
ctg cgc cag aag tcg gag gac gag ctc ttg gac tta acg ctg aag atg	912
Leu Arg Gln Lys Ser Glu Asp Glu Leu Leu Asp Leu Thr Leu Lys Met	
290 295 300	
aaa cct tta act ctt gat ttg cat gga gac ccc aga gag agc cat ccc	960
Lys Pro Leu Thr Leu Asp Leu His Gly Asp Pro Arg Glu Ser His Pro	
305 310 315 320	
ttc ctg acc act gtg gtg gat gga gtg ctg ctg ccc aag atg cct gaa	1008
Phe Leu Thr Thr Val Val Asp Gly Val Leu Leu Pro Lys Met Pro Glu	
325 330 335	
gag att ctg gct gaa aag gat ttc aac act gtc ccc tac atc gtg gga	1056
Glu Ile Leu Ala Glu Lys Asp Phe Asn Thr Val Pro Tyr Ile Val Gly	
340 345 350	
atc aac aag caa gag ttt ggc tgg ctt ctg cca acg atg atg ggc ttc	1104
Ile Asn Lys Gln Glu Phe Gly Trp Leu Leu Pro Thr Met Met Gly Phe	
355 360 365	
ccc ctc tct gaa ggc aag ctg gac cag aag acg gcc acg tca ctc ctg	1152
Pro Leu Ser Glu Gly Lys Leu Asp Gln Lys Thr Ala Thr Ser Leu Leu	
370 375 380	
tgg aag tcc tac ccc atc gct aac atc cct gag gaa ctg act cca gtg	1200
Trp Lys Ser Tyr Pro Ile Ala Asn Ile Pro Glu Glu Leu Thr Pro Val	
385 390 395 400	
gcc act gac aag tat ttg ggg ggg aca gac gac ccc gtc aaa aag aaa	1248
Ala Thr Asp Lys Tyr Leu Gly Gly Thr Asp Asp Pro Val Lys Lys Lys	
405 410 415	
gac ctg ttc ctg gac ttg atg ggg gat gtg gtg ttt ggt gtc cca tct	1296
Asp Leu Phe Leu Asp Leu Met Gly Asp Val Val Phe Gly Val Pro Ser	
420 425 430	
gtg acg gtg gcc cgt caa cac aga gat gca gga gcc ccc acc tac atg	1344
Val Thr Val Ala Arg Gln His Arg Asp Ala Gly Ala Pro Thr Tyr Met	
435 440 445	
tat gag ttt cag tat cgc cca agc ttc tca tcg gac aag aaa ccc aag	1392

PhoenixTemp43053.tmp.txt

Tyr	Glu	Phe	Gln	Tyr	Arg	Pro	Ser	Phe	Ser	Ser	Asp	Lys	Lys	Pro	Lys		
	450					455					460						
acg	gtg	atc	ggg	gac	cac	ggg	gat	gag	atc	ttc	tcc	gtc	ttt	ggg	gct	1440	
Thr	Val	Ile	Gly	Asp	His	Gly	Asp	Glu	Ile	Phe	Ser	Val	Phe	Gly	Ala		
	465				470					475					480		
cca	ttt	tta	aga	ggc	gat	gcc	cca	gaa	gag	gag	gtc	agt	ctc	agc	aag	1488	
Pro	Phe	Leu	Arg	Gly	Asp	Ala	Pro	Glu	Glu	Glu	Val	Ser	Leu	Ser	Lys		
				485				490						495			
acg	gtg	atg	aaa	ttc	tgg	gcc	aac	ttt	gct	cgc	agt	ggg	aac	ccc	aat	1536	
Thr	Val	Met	Lys	Phe	Trp	Ala	Asn	Phe	Ala	Arg	Ser	Gly	Asn	Pro	Asn		
			500					505					510				
ggg	gag	ggg	ctg	ccc	cat	tgg	ccg	atg	tac	gac	cag	gaa	gaa	ggg	tac	1584	
Gly	Glu	Gly	Leu	Pro	His	Trp	Pro	Met	Tyr	Asp	Gln	Glu	Glu	Gly	Tyr		
		515					520					525					
ctt	cag	atc	ggc	gtc	aac	acc	cag	gca	gcc	aag	agg	ctg	aaa	ggg	gaa	1632	
Leu	Gln	Ile	Gly	Val	Asn	Thr	Gln	Ala	Ala	Lys	Arg	Leu	Lys	Gly	Glu		
	530					535					540						
gaa	gtg	gcc	ttc	tgg	aac	gat	ctc	ctg	tcc	aag	gag	gca	gca	aag	aag	1680	
Glu	Val	Ala	Phe	Trp	Asn	Asp	Leu	Leu	Ser	Lys	Glu	Ala	Ala	Lys	Lys		
	545				550					555					560		
cca	ccc	aag	ata	aag	tga											1698	
Pro	Pro	Lys	Ile	Lys													
				565													

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 <212> PRT  
 <213> Artificial

<220>  
 <223> Synthetic Construct

<400> 6

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

PhoenixTemp43053.tmp.txt

Ile Pro Glu Phe Ser Glu Asp Cys Leu Tyr Leu Asn Ile Tyr Thr Pro  
115 120 125

Ala Asp Leu Thr Lys Arg Gly Arg Leu Pro Val Met Val Trp Ile His  
130 135 140

Gly Gly Gly Leu Val Val Gly Gly Ala Ser Thr Tyr Asp Gly Leu Ala  
145 150 155 160

Leu Ala Ala His Glu Asn Val Val Val Val Ala Ile Gln Tyr Arg Leu  
165 170 175

Gly Ile Trp Gly Phe Phe Ser Thr Gly Asp Glu His Ser Arg Gly Asn  
180 185 190

Trp Gly His Leu Asp Gln Val Ala Ala Leu His Trp Val Gln Glu Asn  
195 200 205

Ile Ala Asn Phe Gly Gly Asp Pro Gly Ser Val Thr Ile Phe Gly Glu  
210 215 220

Ser Ala Gly Gly Glu Ser Val Ser Val Leu Val Leu Ser Pro Leu Ala  
225 230 235 240

Lys Asn Leu Phe His Arg Ala Ile Ser Glu Ser Gly Val Ala Phe Thr  
245 250 255

Ala Gly Leu Val Arg Lys Asp Met Lys Ala Ala Ala Lys Gln Ile Ala  
260 265 270

Val Leu Ala Gly Cys Lys Thr Thr Thr Ser Ala Val Phe Val His Cys  
275 280 285

Leu Arg Gln Lys Ser Glu Asp Glu Leu Leu Asp Leu Thr Leu Lys Met  
290 295 300

Lys Pro Leu Thr Leu Asp Leu His Gly Asp Pro Arg Glu Ser His Pro  
305 310 315 320

Phe Leu Thr Thr Val Val Asp Gly Val Leu Leu Pro Lys Met Pro Glu  
325 330 335

Glu Ile Leu Ala Glu Lys Asp Phe Asn Thr Val Pro Tyr Ile Val Gly  
340 345 350

Ile Asn Lys Gln Glu Phe Gly Trp Leu Leu Pro Thr Met Met Gly Phe  
355 360 365

Pro Leu Ser Glu Gly Lys Leu Asp Gln Lys Thr Ala Thr Ser Leu Leu  
370 375 380

Trp Lys Ser Tyr Pro Ile Ala Asn Ile Pro Glu Glu Leu Thr Pro Val  
385 390 395 400

Ala Thr Asp Lys Tyr Leu Gly Gly Thr Asp Asp Pro Val Lys Lys Lys  
405 410 415

Asp Leu Phe Leu Asp Leu Met Gly Asp Val Val Phe Gly Val Pro Ser  
420 425 430

Val Thr Val Ala Arg Gln His Arg Asp Ala Gly Ala Pro Thr Tyr Met  
435 440 445

Tyr Glu Phe Gln Tyr Arg Pro Ser Phe Ser Ser Asp Lys Lys Pro Lys  
450 455 460

Thr Val Ile Gly Asp His Gly Asp Glu Ile Phe Ser Val Phe Gly Ala  
465 470 475 480

Pro Phe Leu Arg Gly Asp Ala Pro Glu Glu Glu Val Ser Leu Ser Lys  
485 490 495

Thr Val Met Lys Phe Trp Ala Asn Phe Ala Arg Ser Gly Asn Pro Asn  
500 505 510

Gly Glu Gly Leu Pro His Trp Pro Met Tyr Asp Gln Glu Glu Gly Tyr  
515 520 525

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

Glu Val Ala Phe Trp Asn Asp Leu Leu Ser Lys Glu Ala Ala Lys Lys  
545 550 555 560

Pro Pro Lys Ile Lys  
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<210> 7  
<211> 1698  
<212> DNA  
<213> Artificial

<220>  
<223> Mutante der PLE

<220>  
<221> CDS  
<222> (1)..(1698)

<400> 7  
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Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro  
1 5 10 15

cgc ggc agc cat atg ggg cag cca gcc tcg ccg cct gtt gtg gac act 96  
Arg Gly Ser His Met Gly Gln Pro Ala Ser Pro Pro Val Val Asp Thr  
20 25 30

## PhoenixTemp43053.tmp.txt

gcc Ala	cag Gln	ggc Gly 35	cga Arg	gtc Val	ctg Leu	ggg Gly	aag Lys 40	tac Tyr	gtc Val	agc Ser	tta Leu	gaa Glu 45	ggc Gly	ctg Leu	gca Ala	144
cag Gln	ccg Pro 50	gtg Val	gcc Ala	gtc Val	ttc Phe	ctg Leu 55	gga Gly	gtc Val	cct Pro	ttt Phe	gcc Ala 60	aag Lys	ccc Pro	cct Pro	ctc Leu	192
gga Gly 65	tcc Ser	ttg Leu	agg Arg	ttt Phe	gct Ala 70	ccg Pro	ccg Pro	cag Gln	cct Pro	gca Ala 75	gaa Glu	cca Pro	tggt Trp	agc Ser	ttc Phe 80	240
gtg Val	aag Lys	aac Asn	acc Thr	acc Thr 85	tcc Ser	tac Tyr	cct Pro	ccc Pro	atg Met 90	tgc Cys	tgc Cys	cag Gln	gac Asp	cca Pro 95	gta Val	288
gcg Ala	ggg Gly	cag Gln	atg Met 100	acc Thr	tca Ser	gat Asp	cta Leu	ttt Phe 105	acc Thr	aac Asn	aga Arg	aag Lys	gag Glu 110	agg Arg	ctc Leu	336
att Ile	ccg Pro	gag Glu 115	ttt Phe	tct Ser	gaa Glu	gac Asp	tgt Cys 120	ctc Leu	tac Tyr	cta Leu	aat Asn	att Ile 125	tac Tyr	acc Thr	cct Pro	384
gct Ala	gac Asp 130	ctg Leu	aca Thr	aag Lys	agg Arg	ggc Gly 135	aga Arg	ctg Leu	ccg Pro	gtg Val	atg Met 140	gtg Val	tggt Trp	atc Ile	cac His	432
gga Gly 145	gga Gly	ggt Gly	ctg Leu	gtg Val	gtg Val 150	ggc Gly	ggg Gly	gct Ala	tcc Ser	acc Thr 155	tat Tyr	gat Asp	gga Gly	ctg Leu	gcc Ala 160	480
ctc Leu	gct Ala	gcg Ala	cat His	gaa Glu 165	aac Asn	gtg Val	gtg Val	gtg Val	gtg Val 170	gcc Ala	atc Ile	cag Gln	tac Tyr	cgct Arg 175	ctg Leu	528
ggc Gly	atc Ile	tggt Trp	gga Gly 180	ttc Phe	ttc Phe	agc Ser	aca Thr	ggg Gly 185	gac Asp	gaa Glu	cac His	agc Ser	cggt Arg 190	ggc Gly	aac Asn	576
tggt Trp	ggt Gly	cac His 195	ttg Leu	gac Asp	cag Gln	gtg Val	gcc Ala 200	gca Ala	ctg Leu	cac His	tggt Trp	gtc Val 205	cag Gln	gag Glu	aac Asn	624
atc Ile	gcc Ala 210	aac Asn	ttt Phe	gga Gly	ggc Gly	gac Asp 215	cca Pro	ggc Gly	tct Ser	gtg Val	acc Thr 220	atc Ile	ttt Phe	gga Gly	gag Glu	672
tca Ser 225	gca Ala	gga Gly	ggg Gly	gaa Glu	agt Ser 230	gtc Val	tct Ser	gtt Val	ctg Leu	gtg Val 235	ttg Leu	tct Ser	ccc Pro	ttg Leu	gcc Ala 240	720
aag Lys	aac Asn	ctc Leu	ttc Phe	cac His 245	cggt Arg	gcc Ala	atc Ile	tct Ser	gag Glu 250	agt Ser	ggc Gly	gtg Val	gcc Ala	ttc Phe 255	act Thr	768
gct Ala	ggc Gly	ctg Leu	gtc Val 260	agg Arg	aag Lys	gac Asp	atg Met	aag Lys 265	gct Ala	gca Ala	gct Ala	aag Lys	caa Gln 270	att Ile	gct Ala	816
gtc Val	ctt Leu	gct Ala 275	ggg Gly	tgt Cys	aaa Lys	acc Thr	acc Thr 280	acc Thr	tcg Ser	gct Ala	gtc Val	ttt Phe 285	gtt Val	cac His	tgc Cys	864
ctg Leu	cgct Arg 290	cag Gln	aag Lys	tcg Ser	gag Glu	gac Asp 295	gag Glu	ctc Leu	ttg Leu	gac Asp	tta Leu 300	acg Thr	ctg Leu	aag Lys	atg Met	912

PhoenixTemp43053.tmp.txt

aaa Lys 305	ttt Phe	ttc Phe	gct Ala	ctt Leu	gat Asp 310	ttg Leu	cat His	gga Gly	gac Asp	ccc Pro 315	aga Arg	gag Glu	agc Ser	cat His	ccc Pro 320	960
ttc Phe	ctg Leu	acc Thr	act Thr	gtg Val 325	gtg Val	gat Asp	gga Gly	gtg Val	ctg Leu 330	ctg Leu	ccc Pro	aag Lys	atg Met	cct Pro 335	gaa Glu	1008
gag Glu	att Ile	ctg Leu	gct Ala 340	gaa Glu	aag Lys	gat Asp	ttc Phe	aac Asn 345	act Thr	gtc Val	ccc Pro	tac Tyr	atc Ile 350	gtg Val	gga Gly	1056
atc Ile	aac Asn	aag Lys 355	caa Gln	gag Glu	ttt Phe	ggc Gly	tgg Trp 360	ctt Leu	ctg Leu	cca Pro	acg Thr	atg Met 365	atg Met	ggc Gly	ttc Phe	1104
ccc Pro	ctc Leu 370	tct Ser	gaa Glu	ggc Gly	aag Lys	ctg Leu 375	gac Asp	cag Gln	aag Lys	acg Thr	gcc Ala 380	acg Thr	tca Ser	ctc Leu	ctg Leu	1152
tgg Trp 385	aag Lys	tcc Ser	tac Tyr	ccc Pro	atc Ile 390	gct Ala	aac Asn	atc Ile	cct Pro	gag Glu 395	gaa Glu	ctg Leu	act Thr	cca Pro	gtg Val 400	1200
gcc Ala	act Thr	gac Asp	aag Lys	tat Tyr 405	ttg Leu	ggg Gly	ggg Gly	aca Thr	gac Asp 410	gac Asp	ccc Pro	gtc Val	aaa Lys	aag Lys 415	aaa Lys	1248
gac Asp	ctg Leu	ttc Phe	ctg Leu 420	gac Asp	ttg Leu	atg Met	ggg Gly	gat Asp 425	gtg Val	gtg Val	ttt Phe	ggg Gly 430	gtc Val	cca Pro	tct Ser	1296
gtg Val	acg Thr	gtg Val 435	gcc Ala	cgt Arg	caa Gln	cac His	aga Arg 440	gat Asp	gca Ala	gga Gly	gcc Ala 445	ccc Pro	acc Thr	tac Tyr	atg Met	1344
tat Tyr	gag Glu 450	ttt Phe	cag Gln	tat Tyr	cgc Arg	cca Pro 455	agc Ser	ttc Phe	tca Ser	tcg Ser	gac Asp 460	aag Lys	aaa Lys	ccc Pro	aag Lys	1392
acg Thr 465	gtg Val	atc Ile	ggg Gly	gac Asp	cac His 470	ggg Gly	gat Asp	gag Glu	atc Ile	ttc Phe 475	tcc Ser	gtc Val	ttt Phe	ggg Gly	gct Ala 480	1440
cca Pro	ttt Phe	tta Leu	aga Arg	ggc Gly 485	gat Asp	gcc Ala	cca Pro	gaa Glu	gag Glu 490	gag Glu	gtc Val	agt Ser	ctc Leu	agc Ser 495	aag Lys	1488
acg Thr	gtg Val	atg Met	aaa Lys 500	ttc Phe	tgg Trp	gcc Ala	aac Asn	ttt Phe 505	gct Ala	cgc Arg	agt Ser	ggg Gly 510	aac Asn	ccc Pro	aat Asn	1536
ggg Gly	gag Glu	ggg Gly 515	ctg Leu	ccc Pro	cat His	tgg Trp	ccg Pro 520	atg Met	tac Tyr	gac Asp	cag Gln	gaa Glu 525	gaa Glu	ggg Gly	tac Tyr	1584
ctt Leu	cag Gln 530	atc Ile	ggc Gly	gtc Val	aac Asn	acc Thr 535	cag Gln	gca Ala	gcc Ala	aag Lys	agg Arg 540	ctg Leu	aaa Lys	ggg Gly	gaa Glu	1632
gaa Glu 545	gtg Val	gcc Ala	ttc Phe	tgg Trp	aac Asn 550	gat Asp	ctc Leu	ctg Leu	tcc Ser	aag Lys 555	gag Glu	gca Ala	gca Ala	aag Lys	aag Lys 560	1680
cca Pro	ccc Pro	aag Lys	ata Ile	aag Lys 565	tga											1698



&lt;210&gt; 8

&lt;211&gt; 565

&lt;212&gt; PRT

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; Synthetic Construct

&lt;400&gt; 8

Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro  
 1 5 10 15

Arg Gly Ser His Met Gly Gln Pro Ala Ser Pro Pro Val Val Asp Thr  
 20 25 30

Ala Gln Gly Arg Val Leu Gly Lys Tyr Val Ser Leu Glu Gly Leu Ala  
 35 40 45

Gln Pro Val Ala Val Phe Leu Gly Val Pro Phe Ala Lys Pro Pro Leu  
 50 55 60

Gly Ser Leu Arg Phe Ala Pro Pro Gln Pro Ala Glu Pro Trp Ser Phe  
 65 70 75 80

Val Lys Asn Thr Thr Ser Tyr Pro Pro Met Cys Cys Gln Asp Pro Val  
 85 90 95

Ala Gly Gln Met Thr Ser Asp Leu Phe Thr Asn Arg Lys Glu Arg Leu  
 100 105 110

Ile Pro Glu Phe Ser Glu Asp Cys Leu Tyr Leu Asn Ile Tyr Thr Pro  
 115 120 125

Ala Asp Leu Thr Lys Arg Gly Arg Leu Pro Val Met Val Trp Ile His  
 130 135 140

Gly Gly Gly Leu Val Val Gly Gly Ala Ser Thr Tyr Asp Gly Leu Ala  
 145 150 155 160

Leu Ala Ala His Glu Asn Val Val Val Val Ala Ile Gln Tyr Arg Leu  
 165 170 175

Gly Ile Trp Gly Phe Phe Ser Thr Gly Asp Glu His Ser Arg Gly Asn  
 180 185 190

Trp Gly His Leu Asp Gln Val Ala Ala Leu His Trp Val Gln Glu Asn  
 195 200 205

Ile Ala Asn Phe Gly Gly Asp Pro Gly Ser Val Thr Ile Phe Gly Glu  
 210 215 220

Ser Ala Gly Gly Glu Ser Val Ser Val Leu Val Leu Ser Pro Leu Ala  
 225 230 235 240

PhoenixTemp43053.tmp.txt

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

Gly Glu Gly Leu Pro His Trp Pro Met Tyr Asp Gln Glu Glu Gly Tyr  
515 520 525

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

Pro Pro Lys Ile Lys  
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Arg Gly Ser His Met Gly Gln Pro Ala Ser Pro Pro Val Val Asp Thr  
20 25 30  
gcc cag ggc cga gtc ctg ggg aag tac gtc agc tta gaa ggc ctg gca 144  
Ala Gln Gly Arg Val Leu Gly Lys Tyr Val Ser Leu Glu Gly Leu Ala  
35 40 45  
cag ccg gtg gcc gtc ttc ctg gga gtc cct ttt gcc aag ccc cct ctc 192  
Gln Pro Val Ala Val Phe Leu Gly Val Pro Phe Ala Lys Pro Pro Leu  
50 55 60  
gga tcc ttg agg ttt gct ccg ccg cag cct gca gaa cca tgg agc ttc 240  
Gly Ser Leu Arg Phe Ala Pro Pro Gln Pro Ala Glu Pro Trp Ser Phe  
65 70 75 80  
gtg aag aac acc acc tcc tac cct ccc atg tgc tgc caa gag cca att 288  
Val Lys Asn Thr Thr Ser Tyr Pro Pro Met Cys Cys Gln Glu Pro Ile  
85 90 95  
ggg gga cag atg ctc tca gat cta ttt acc aac aga aag gag agg ctc 336  
Gly Gly Gln Met Leu Ser Asp Leu Phe Thr Asn Arg Lys Glu Arg Leu  
100 105 110  
att ccg gag ttt tct gaa gac tgt ctc tac cta aat att tac acc cct 384  
Ile Pro Glu Phe Ser Glu Asp Cys Leu Tyr Leu Asn Ile Tyr Thr Pro  
115 120 125  
gct gac ctg aca aag agg ggc aga ctg ccg gtg atg gtg tgg atc cac 432  
Ala Asp Leu Thr Lys Arg Gly Arg Leu Pro Val Met Val Trp Ile His  
130 135 140  
gga gga ggt ctg gtg gtg ggc ggg gct tcc acc tat gat gga ctg gcc 480  
Gly Gly Gly Leu Val Val Gly Gly Ala Ser Thr Tyr Asp Gly Leu Ala  
145 150 155 160

## PhoenixTemp43053.tmp.txt

ctc gct gcg cat gaa aac gtg gtg gtg gtg gcc atc cag tac cgc ctg Leu Ala Ala His Glu Asn Val Val Val Val Ala Ile Gln Tyr Arg Leu 165 170 175	528
ggc atc tgg gga ttc ttc agc aca ggg gac gaa cac agc cgg ggc aac Gly Ile Trp Gly Phe Phe Ser Thr Gly Asp Glu His Ser Arg Gly Asn 180 185 190	576
tgg ggt cac ttg gac cag gtg gcc gca ctg cac tgg gtc cag gag aac Trp Gly His Leu Asp Gln Val Ala Ala Leu His Trp Val Gln Glu Asn 195 200 205	624
atc gcc aac ttt gga ggc gac cca ggc tct gtg acc atc ttt gga gag Ile Ala Asn Phe Gly Gly Asp Pro Gly Ser Val Thr Ile Phe Gly Glu 210 215 220	672
tca gca gga ggg gaa agt gtc tct gtt ctg gtg ttg tct ccc ttg gcc Ser Ala Gly Gly Glu Ser Val Ser Val Leu Val Leu Ser Pro Leu Ala 225 230 235 240	720
aag aac ctc ttc cac cgg gcc atc tct gag agt ggc gtg gcc ttc act Lys Asn Leu Phe His Arg Ala Ile Ser Glu Ser Gly Val Ala Phe Thr 245 250 255	768
gct ggc ctg gtc agg aag gac atg aag gct gca gct aag caa att gct Ala Gly Leu Val Arg Lys Asp Met Lys Ala Ala Lys Lys Gln Ile Ala 260 265 270	816
gtc ctt gct ggg tgt aaa acc acc acc tcg gct gtc ttt gtt cac tgc Val Leu Ala Gly Cys Lys Thr Thr Thr Ser Ala Val Phe Val His Cys 275 280 285	864
ctg cgc cag aag tcg gag gac gag ctc ttg gac tta acg ctg aag atg Leu Arg Gln Lys Ser Glu Asp Glu Leu Leu Asp Leu Thr Leu Lys Met 290 295 300	912
aaa cct tta act ctt gat ttg cat gga gac ccc aga gag agc cat ccc Lys Pro Leu Thr Leu Asp Leu His Gly Asp Pro Arg Glu Ser His Pro 305 310 315 320	960
ttc ctg acc act gtg gtg gat gga gtg ctg ctg ccc aag atg cct gaa Phe Leu Thr Thr Val Val Asp Gly Val Leu Leu Pro Lys Met Pro Glu 325 330 335	1008
gag att ctg gct gaa aag gat ttc aac act gtc ccc tac atc gtg gga Glu Ile Leu Ala Glu Lys Asp Phe Asn Thr Val Pro Tyr Ile Val Gly 340 345 350	1056
atc aac aag caa gag ttt ggc tgg ctt ctg cca acg atg atg ggc ttc Ile Asn Lys Gln Glu Phe Gly Trp Leu Leu Pro Thr Met Met Gly Phe 355 360 365	1104
ccc ctc tct gaa ggc aag ctg gac cag aag acg gcc acg tca ctc ctg Pro Leu Ser Glu Gly Lys Leu Asp Gln Lys Thr Ala Thr Ser Leu Leu 370 375 380	1152
tgg aag tcc tac ccc atc gct aac atc cct gag gaa ctg act cca gtg Trp Lys Ser Tyr Pro Ile Ala Asn Ile Pro Glu Glu Leu Thr Pro Val 385 390 400	1200
gcc act gac aag tat ttg ggg ggg aca gac gac ccc gtc aaa aag aaa Ala Thr Asp Lys Tyr Leu Gly Gly Thr Asp Asp Pro Val Lys Lys Lys 405 410 415	1248
gac ctg ttc ctg gac ttg atg ggg gat gtg gtg ttt ggt gtc cca tct Asp Leu Phe Leu Asp Leu Met Gly Asp Val Val Phe Gly Val Pro Ser 420 425 430	1296

PhoenixTemp43053.tmp.txt

gtg	acg	gtg	gcc	cgt	caa	cac	aga	gat	gca	gga	gcc	ccc	acc	tac	atg	1344
Val	Thr	Val	Ala	Arg	Gln	His	Arg	Asp	Ala	Gly	Ala	Pro	Thr	Tyr	Met	
		435					440				445					
tat	gag	ttt	cag	tat	cgc	cca	agc	ttc	tca	tcg	gac	aag	aaa	ccc	aag	1392
Tyr	Glu	Phe	Gln	Tyr	Arg	Pro	Ser	Phe	Ser	Ser	Asp	Lys	Lys	Pro	Lys	
	450					455					460					
acg	gtg	atc	ggg	gac	cac	ggg	gat	gag	atc	ttc	tcc	gtc	ttt	ggg	ttt	1440
Thr	Val	Ile	Gly	Asp	His	Gly	Asp	Glu	Ile	Phe	Ser	Val	Phe	Gly	Phe	
465					470					475					480	
cca	ctg	tta	aaa	ggc	gat	gcc	cca	gaa	gag	gag	gtc	agt	ctc	agc	aag	1488
Pro	Leu	Leu	Lys	Gly	Asp	Ala	Pro	Glu	Glu	Glu	Val	Ser	Leu	Ser	Lys	
				485				490						495		
acg	gtg	atg	aaa	ttc	tgg	gcc	aac	ttt	gct	cgc	agt	ggg	aac	ccc	aat	1536
Thr	Val	Met	Lys	Phe	Trp	Ala	Asn	Phe	Ala	Arg	Ser	Gly	Asn	Pro	Asn	
			500					505					510			
ggg	gag	ggg	ctg	ccc	cat	tgg	ccg	atg	tac	gac	cag	gaa	gaa	ggg	tac	1584
Gly	Glu	Gly	Leu	Pro	His	Trp	Pro	Met	Tyr	Asp	Gln	Glu	Glu	Gly	Tyr	
		515					520					525				
ctt	cag	atc	ggc	gtc	aac	acc	cag	gca	gcc	aag	agg	ctg	aaa	ggg	gaa	1632
Leu	Gln	Ile	Gly	Val	Asn	Thr	Gln	Ala	Ala	Lys	Arg	Leu	Lys	Gly	Glu	
	530					535					540					
gaa	gtg	gcc	ttc	tgg	aac	gat	ctc	ctg	tcc	aag	gag	gca	gca	aag	aag	1680
Glu	Val	Ala	Phe	Trp	Asn	Asp	Leu	Leu	Ser	Lys	Glu	Ala	Ala	Lys	Lys	
545					550					555					560	
cca	ccc	aag	ata	aag	tga											1698
Pro	Pro	Lys	Ile	Lys												
				565												

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<220>  
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<400> 10

Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro  
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Arg Gly Ser His Met Gly Gln Pro Ala Ser Pro Pro Val Val Asp Thr  
 20 25 30

Ala Gln Gly Arg Val Leu Gly Lys Tyr Val Ser Leu Glu Gly Leu Ala  
 35 40 45

Gln Pro Val Ala Val Phe Leu Gly Val Pro Phe Ala Lys Pro Pro Leu  
 50 55 60

Gly Ser Leu Arg Phe Ala Pro Pro Gln Pro Ala Glu Pro Trp Ser Phe  
 65 70 75 80

Val Lys Asn Thr Thr Ser Tyr Pro Pro Met Cys Cys Gln Glu Pro Ile  
 85 90 95

PhoenixTemp43053.tmp.txt

Gly Gly Gln Met Leu Ser Asp Leu Phe Thr Asn Arg Lys Glu Arg Leu  
100 105 110

Ile Pro Glu Phe Ser Glu Asp Cys Leu Tyr Leu Asn Ile Tyr Thr Pro  
115 120 125

Ala Asp Leu Thr Lys Arg Gly Arg Leu Pro Val Met Val Trp Ile His  
130 135 140

Gly Gly Gly Leu Val Val Gly Gly Ala Ser Thr Tyr Asp Gly Leu Ala  
145 150 155 160

Leu Ala Ala His Glu Asn Val Val Val Val Ala Ile Gln Tyr Arg Leu  
165 170 175

Gly Ile Trp Gly Phe Phe Ser Thr Gly Asp Glu His Ser Arg Gly Asn  
180 185 190

Trp Gly His Leu Asp Gln Val Ala Ala Leu His Trp Val Gln Glu Asn  
195 200 205

Ile Ala Asn Phe Gly Gly Asp Pro Gly Ser Val Thr Ile Phe Gly Glu  
210 215 220

Ser Ala Gly Gly Glu Ser Val Ser Val Leu Val Leu Ser Pro Leu Ala  
225 230 235 240

Lys Asn Leu Phe His Arg Ala Ile Ser Glu Ser Gly Val Ala Phe Thr  
245 250 255

Ala Gly Leu Val Arg Lys Asp Met Lys Ala Ala Ala Lys Gln Ile Ala  
260 265 270

Val Leu Ala Gly Cys Lys Thr Thr Thr Ser Ala Val Phe Val His Cys  
275 280 285

Leu Arg Gln Lys Ser Glu Asp Glu Leu Leu Asp Leu Thr Leu Lys Met  
290 295 300

Lys Pro Leu Thr Leu Asp Leu His Gly Asp Pro Arg Glu Ser His Pro  
305 310 315 320

Phe Leu Thr Thr Val Val Asp Gly Val Leu Leu Pro Lys Met Pro Glu  
325 330 335

Glu Ile Leu Ala Glu Lys Asp Phe Asn Thr Val Pro Tyr Ile Val Gly  
340 345 350

Ile Asn Lys Gln Glu Phe Gly Trp Leu Leu Pro Thr Met Met Gly Phe  
355 360 365

PhoenixTemp43053.tmp.txt

Pro Leu Ser Glu Gly Lys Leu Asp Gln Lys Thr Ala Thr Ser Leu Leu  
370 375 380

Trp Lys Ser Tyr Pro Ile Ala Asn Ile Pro Glu Glu Leu Thr Pro Val  
385 390 395 400

Ala Thr Asp Lys Tyr Leu Gly Gly Thr Asp Asp Pro Val Lys Lys Lys  
405 410 415

Asp Leu Phe Leu Asp Leu Met Gly Asp Val Val Phe Gly Val Pro Ser  
420 425 430

Val Thr Val Ala Arg Gln His Arg Asp Ala Gly Ala Pro Thr Tyr Met  
435 440 445

Tyr Glu Phe Gln Tyr Arg Pro Ser Phe Ser Ser Asp Lys Lys Pro Lys  
450 455 460

Thr Val Ile Gly Asp His Gly Asp Glu Ile Phe Ser Val Phe Gly Phe  
465 470 475 480

Pro Leu Leu Lys Gly Asp Ala Pro Glu Glu Glu Val Ser Leu Ser Lys  
485 490 495

Thr Val Met Lys Phe Trp Ala Asn Phe Ala Arg Ser Gly Asn Pro Asn  
500 505 510

Gly Glu Gly Leu Pro His Trp Pro Met Tyr Asp Gln Glu Glu Gly Tyr  
515 520 525

Leu Gln Ile Gly Val Asn Thr Gln Ala Ala Lys Arg Leu Lys Gly Glu  
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Glu Val Ala Phe Trp Asn Asp Leu Leu Ser Lys Glu Ala Ala Lys Lys  
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Pro Pro Lys Ile Lys  
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PhoenixTemp43053.tmp.txt

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<223> Primer

<400> 12

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36