

SEQUENCE LISTING

<110> VAXIMM AG

<120> WT1 TARGETING DNA VACCINE FOR COMBINATION THERAPY

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<150> EP16197322.7

<151> 2016-11-04

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<170> BiSSAP 1.3.6

<210> 1

<211> 371

<212> PRT

<213> Homo sapiens

<400> 1

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35     40     45
Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro
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Pro Pro Pro Pro His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly
65     70     75     80
Ala Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe
85     90     95
Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe
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Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe
115    120    125
Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile
130    135    140
Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr
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Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Phe
165    170    175
Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln
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Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser
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Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp
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Asn	Leu	Tyr	Gln	Met	Thr	Ser	Gln	Leu	Glu	Cys	Met	Thr	Trp	Asn	Gln
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Tyr	Gln	Cys	Asp	Phe	Lys	Asp	Cys	Glu	Arg	Arg	Phe	Ser	Arg	Ser	Asp
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<213> Artificial Sequence

<220>

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 <212> DNA
 <213> Homo sapiens

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<400> 4

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Cys	Ala	Leu	Pro	Val	Ser	Gly	Ala	Ala	Gln	Trp	Ala	Pro	Val	Leu	Asp
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Phe	Ala	Pro	Pro	Gly	Ala	Ser	Ala	Tyr	Gly	Ser	Leu	Gly	Gly	Pro	Ala
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	130					135						140			
Ile	Lys	Gln	Glu	Pro	Ser	Trp	Gly	Gly	Ala	Glu	Pro	His	Glu	Glu	Gln
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Cys	Leu	Ser	Ala	Phe	Thr	Val	His	Phe	Ser	Gly	Gln	Phe	Thr	Gly	Thr
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Ala	Gly	Ala	Cys	Arg	Tyr	Gly	Pro	Phe	Gly	Pro	Pro	Pro	Pro	Ser	Gln
			180					185						190	
Ala	Ser	Ser	Gly	Gln	Ala	Arg	Met	Phe	Pro	Asn	Ala	Pro	Tyr	Leu	Pro
		195					200					205			
Ser	Cys	Leu	Glu	Ser	Gln	Pro	Ala	Ile	Arg	Asn	Gln	Gly	Tyr	Ser	Thr
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Ala	Ala	Gln	Phe	Pro	Asn	His	Ser	Phe	Lys	His	Glu	Asp	Pro	Met	Gly
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Gln	Gln	Gly	Ser	Leu	Gly	Glu	Gln	Gln	Tyr	Ser	Val	Pro	Pro	Pro	Val
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Tyr	Gly	Cys	His	Thr	Pro	Thr	Asp	Ser	Cys	Thr	Gly	Ser	Gln	Ala	Leu
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Ile	Leu	Cys	Gly	Ala	Gln	Tyr	Arg	Ile	His	Thr	His	Gly	Val	Phe	Arg
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Gly	Ile	Gln	Asp	Val	Arg	Arg	Val	Pro	Gly	Val	Ala	Pro	Thr	Leu	Val

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385	390	395
Pro Gly Cys Asn Lys Arg Tyr Phe Lys Leu Ser His Leu Gln Met His		400
	405	410
Ser Arg Lys His Thr Gly Glu Lys Pro Tyr Gln Cys Asp Phe Lys Asp		415
	420	425
Cys Glu Arg Arg Phe Ser Arg Ser Asp Gln Leu Lys Arg His Gln Arg		430
	435	440
Arg His Thr Gly Val Lys Pro Phe Gln Cys Lys Thr Cys Gln Arg Lys		445
	450	455
Phe Ser Arg Ser Asp His Leu Lys Thr His Thr Arg Thr His Thr Gly		460
465	470	475
Lys Thr Ser Glu Lys Pro Phe Ser Cys Arg Trp Pro Ser Cys Gln Lys		480
	485	490
Lys Phe Ala Arg Ser Asp Glu Leu Val Arg His His Asn Met His Gln		495
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	515	520

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<211> 630

<212> PRT

<213> Homo sapiens

<400> 5

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	35
Asp Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg	40
	45
	50
Gln Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu	55
65	60
	65
Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu	70
	75
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	85
Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro	90
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	100
Glu Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro	105
	110
	115
Asp Ala Phe Ser Gly Pro Gln Ala Cys Thr Arg Phe Phe Ser Arg Ile	120
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Thr Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln	135
145	140
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Arg Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu	150
	155
	160
	165
Leu Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu	170
	175

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225				230						235					240
Ser	Val	Ser	Thr	Met	Asp	Ala	Leu	Arg	Gly	Leu	Leu	Pro	Val	Leu	Gly
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Gln	Pro	Ile	Ile	Arg	Ser	Ile	Pro	Gln	Gly	Ile	Val	Ala	Ala	Trp	Arg
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Gln	Arg	Ser	Ser	Arg	Asp	Pro	Ser	Trp	Arg	Gln	Pro	Glu	Arg	Thr	Ile
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Pro	Gln	Val	Ala	Thr	Leu	Ile	Asp	Arg	Phe	Val	Lys	Gly	Arg	Gly	Gln
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Leu	Asp	Lys	Asp	Thr	Leu	Asp	Thr	Leu	Thr	Ala	Phe	Tyr	Pro	Gly	Tyr
		435					440					445			
Leu	Cys	Ser	Leu	Ser	Pro	Glu	Glu	Leu	Ser	Ser	Val	Pro	Pro	Ser	Ser
	450					455					460				
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Leu	Asp	Val	Leu	Tyr	Pro	Lys	Ala	Arg	Leu	Ala	Phe	Gln	Asn	Met	Asn
			485					490					495		
Gly	Ser	Glu	Tyr	Phe	Val	Lys	Ile	Gln	Ser	Phe	Leu	Gly	Gly	Ala	Pro
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		515					520					525			
Ala	Thr	Phe	Met	Lys	Leu	Arg	Thr	Asp	Ala	Val	Leu	Pro	Leu	Thr	Val
	530					535					540				
Ala	Glu	Val	Gln	Lys	Leu	Leu	Gly	Pro	His	Val	Glu	Gly	Leu	Lys	Ala
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Glu	Glu	Arg	His	Arg	Pro	Val	Arg	Asp	Trp	Ile	Leu	Arg	Gln	Arg	Gln
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Asp	Asp	Leu	Asp	Thr	Leu	Gly	Leu	Gly	Leu	Gln	Gly	Gly	Ile	Pro	Asn

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Gly	Tyr	Leu	Val	Leu	Asp	Leu	Ser	Met	Gln	Glu	Ala	Leu	Ser	Gly	Thr		
		595					600					605					
Pro	Cys	Leu	Leu	Gly	Pro	Gly	Pro	Val	Leu	Thr	Val	Leu	Ala	Leu	Leu		
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<210> 6
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 <212> PRT
 <213> Homo sapiens

<400> 6

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

		275				280				285					
Ile	Thr	Val	Asn	Asn	Ser	Gly	Ser	Tyr	Thr	Cys	Gln	Ala	His	Asn	Ser
	290					295					300				
Asp	Thr	Gly	Leu	Asn	Arg	Thr	Thr	Val	Thr	Thr	Ile	Thr	Val	Tyr	Ala
305					310					315					320
Glu	Pro	Pro	Lys	Pro	Phe	Ile	Thr	Ser	Asn	Asn	Ser	Asn	Pro	Val	Glu
				325					330					335	
Asp	Glu	Asp	Ala	Val	Ala	Leu	Thr	Cys	Glu	Pro	Glu	Ile	Gln	Asn	Thr
			340					345					350		
Thr	Tyr	Leu	Trp	Trp	Val	Asn	Asn	Gln	Ser	Leu	Pro	Val	Ser	Pro	Arg
		355				360						365			
Leu	Gln	Leu	Ser	Asn	Asp	Asn	Arg	Thr	Leu	Thr	Leu	Leu	Ser	Val	Thr
	370					375					380				
Arg	Asn	Asp	Val	Gly	Pro	Tyr	Glu	Cys	Gly	Ile	Gln	Asn	Lys	Leu	Ser
385					390					395					400
Val	Asp	His	Ser	Asp	Pro	Val	Ile	Leu	Asn	Val	Leu	Tyr	Gly	Pro	Asp
				405					410					415	
Asp	Pro	Thr	Ile	Ser	Pro	Ser	Tyr	Thr	Tyr	Tyr	Arg	Pro	Gly	Val	Asn
			420					425					430		
Leu	Ser	Leu	Ser	Cys	His	Ala	Ala	Ser	Asn	Pro	Pro	Ala	Gln	Tyr	Ser
		435					440					445			
Trp	Leu	Ile	Asp	Gly	Asn	Ile	Gln	Gln	His	Thr	Gln	Glu	Leu	Phe	Ile
	450					455					460				
Ser	Asn	Ile	Thr	Glu	Lys	Asn	Ser	Gly	Leu	Tyr	Thr	Cys	Gln	Ala	Asn
465					470					475					480
Asn	Ser	Ala	Ser	Gly	His	Ser	Arg	Thr	Thr	Val	Lys	Thr	Ile	Thr	Val
				485					490					495	
Ser	Ala	Glu	Leu	Pro	Lys	Pro	Ser	Ile	Ser	Ser	Asn	Asn	Ser	Lys	Pro
			500					505					510		
Val	Glu	Asp	Lys	Asp	Ala	Val	Ala	Phe	Thr	Cys	Glu	Pro	Glu	Ala	Gln
		515					520					525			
Asn	Thr	Thr	Tyr	Leu	Trp	Trp	Val	Asn	Gly	Gln	Ser	Leu	Pro	Val	Ser
	530					535					540				
Pro	Arg	Leu	Gln	Leu	Ser	Asn	Gly	Asn	Arg	Thr	Leu	Thr	Leu	Phe	Asn
545					550					555					560
Val	Thr	Arg	Asn	Asp	Ala	Arg	Ala	Tyr	Val	Cys	Gly	Ile	Gln	Asn	Ser
			565						570					575	
Val	Ser	Ala	Asn	Arg	Ser	Asp	Pro	Val	Thr	Leu	Asp	Val	Leu	Tyr	Gly
			580					585					590		
Pro	Asp	Thr	Pro	Ile	Ile	Ser	Pro	Pro	Asp	Ser	Ser	Tyr	Leu	Ser	Gly
		595				600						605			
Ala	Asn	Leu	Asn	Leu	Ser	Cys	His	Ser	Ala	Ser	Asn	Pro	Ser	Pro	Gln
	610					615					620				
Tyr	Ser	Trp	Arg	Ile	Asn	Gly	Ile	Pro	Gln	Gln	His	Thr	Gln	Val	Leu
625					630					635					640
Phe	Ile	Ala	Lys	Ile	Thr	Pro	Asn	Asn	Asn	Gly	Thr	Tyr	Ala	Cys	Phe
			645						650					655	
Val	Ser	Asn	Leu	Ala	Thr	Gly	Arg	Asn	Asn	Ser	Ile	Val	Lys	Ser	Ile
			660					665					670		
Thr	Val	Ser	Ala	Ser	Gly	Thr	Ser	Pro	Gly	Leu	Ser	Ala	Gly	Ala	Thr

	675		680		685
Val Gly	Ile Met Ile Gly	Val Leu Val Gly	Val Ala Leu Ile		
690		695	700		

<210> 7
 <211> 561
 <212> PRT
 <213> Cytomegalovirus

<400> 7

Met Glu Ser Arg Gly Arg Arg Cys Pro Glu Met Ile Ser Val Leu Gly	
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Pro Ile Ser Gly His Val Leu Lys Ala Val Phe Ser Arg Gly Asp Thr	
	20 25 30
Pro Val Leu Pro His Glu Thr Arg Leu Leu Gln Thr Gly Ile His Val	
	35 40 45
Arg Val Ser Gln Pro Ser Leu Ile Leu Val Ser Gln Tyr Thr Pro Asp	
	50 55 60
Ser Thr Pro Cys His Arg Gly Asp Asn Gln Leu Gln Val Gln His Thr	
65	70 75 80
Tyr Phe Thr Gly Ser Glu Val Glu Asn Val Ser Val Asn Val His Asn	
	85 90 95
Pro Thr Gly Arg Ser Ile Cys Pro Ser Gln Glu Pro Met Ser Ile Tyr	
	100 105 110
Val Tyr Ala Leu Pro Leu Lys Met Leu Asn Ile Pro Ser Ile Asn Val	
	115 120 125
His His Tyr Pro Ser Ala Ala Glu Arg Lys His Arg His Leu Pro Val	
	130 135 140
Ala Asp Ala Val Ile His Ala Ser Gly Lys Gln Met Trp Gln Ala Arg	
145	150 155 160
Leu Thr Val Ser Gly Leu Ala Trp Thr Arg Gln Gln Asn Gln Trp Lys	
	165 170 175
Glu Pro Asp Val Tyr Tyr Thr Ser Ala Phe Val Phe Pro Thr Lys Asp	
	180 185 190
Val Ala Leu Arg His Val Val Cys Ala His Glu Leu Val Cys Ser Met	
	195 200 205
Glu Asn Thr Arg Ala Thr Lys Met Gln Val Ile Gly Asp Gln Tyr Val	
	210 215 220
Lys Val Tyr Leu Glu Ser Phe Cys Glu Asp Val Pro Ser Gly Lys Leu	
225	230 235 240
Phe Met His Val Thr Leu Gly Ser Asp Val Glu Glu Asp Leu Thr Met	
	245 250 255
Thr Arg Asn Pro Gln Pro Phe Met Arg Pro His Glu Arg Asn Gly Phe	
	260 265 270
Thr Val Leu Cys Pro Lys Asn Met Ile Ile Lys Pro Gly Lys Ile Ser	
	275 280 285
His Ile Met Leu Asp Val Ala Phe Thr Ser His Glu His Phe Gly Leu	
	290 295 300
Leu Cys Pro Lys Ser Ile Pro Gly Leu Ser Ile Ser Gly Asn Leu Leu	

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

<210> 8
 <211> 561
 <212> PRT
 <213> Cytomegalovirus

<400> 8
Met Glu Ser Arg Gly Arg Arg Cys Pro Glu Met Ile Ser Val Leu Gly
1 5 10 15
Pro Ile Ser Gly His Val Leu Lys Ala Val Phe Ser Arg Gly Asp Thr
20 25 30
Pro Val Leu Pro His Glu Thr Arg Leu Leu Gln Thr Gly Ile His Val
35 40 45
Arg Val Ser Gln Pro Ser Leu Ile Leu Val Ser Gln Tyr Thr Pro Asp
50 55 60
Ser Thr Pro Cys His Arg Gly Asp Asn Gln Leu Gln Val Gln His Thr

65					70					75				80	
Tyr	Phe	Thr	Gly	Ser	Glu	Val	Glu	Asn	Val	Ser	Val	Asn	Val	His	Asn
				85					90					95	
Pro	Thr	Gly	Arg	Ser	Ile	Cys	Pro	Ser	Gln	Glu	Pro	Met	Ser	Ile	Tyr
			100					105					110		
Val	Tyr	Ala	Leu	Pro	Leu	Lys	Met	Leu	Asn	Ile	Pro	Ser	Ile	Asn	Val
		115					120					125			
His	His	Tyr	Pro	Ser	Ala	Ala	Glu	Arg	Lys	His	Arg	His	Leu	Pro	Val
	130				135					140					
Ala	Asp	Ala	Val	Ile	His	Ala	Ser	Gly	Lys	Gln	Met	Trp	Gln	Ala	Arg
145				150						155				160	
Leu	Thr	Val	Ser	Gly	Leu	Ala	Trp	Thr	Arg	Gln	Gln	Asn	Gln	Trp	Lys
			165					170						175	
Glu	Pro	Asp	Val	Tyr	Tyr	Thr	Ser	Ala	Phe	Val	Phe	Pro	Thr	Lys	Asp
		180					185						190		
Val	Ala	Leu	Arg	His	Val	Val	Cys	Ala	His	Glu	Leu	Val	Cys	Ser	Met
	195						200					205			
Glu	Asn	Thr	Arg	Ala	Thr	Lys	Met	Gln	Val	Ile	Gly	Asp	Gln	Tyr	Val
	210					215					220				
Lys	Val	Tyr	Leu	Glu	Ser	Phe	Cys	Glu	Asp	Val	Pro	Ser	Gly	Lys	Leu
225				230					235					240	
Phe	Met	His	Val	Thr	Leu	Gly	Ser	Asp	Val	Glu	Glu	Asp	Leu	Thr	Met
			245					250					255		
Thr	Arg	Asn	Pro	Gln	Pro	Phe	Met	Arg	Pro	His	Glu	Arg	Asn	Gly	Phe
		260					265						270		
Thr	Val	Leu	Cys	Pro	Lys	Asn	Met	Ile	Ile	Lys	Pro	Gly	Lys	Ile	Ser
	275					280						285			
His	Ile	Met	Leu	Asp	Val	Ala	Phe	Thr	Ser	His	Glu	His	Phe	Gly	Leu
	290				295						300				
Leu	Cys	Pro	Lys	Ser	Ile	Pro	Gly	Leu	Ser	Ile	Ser	Gly	Asn	Leu	Leu
305				310					315					320	
Met	Asn	Gly	Gln	Gln	Ile	Phe	Leu	Glu	Val	Gln	Ala	Ile	Arg	Glu	Thr
			325					330						335	
Val	Glu	Leu	Arg	Gln	Tyr	Asp	Pro	Val	Ala	Ala	Leu	Phe	Phe	Phe	Asp
		340					345						350		
Ile	Asp	Leu	Leu	Gln	Arg	Gly	Pro	Gln	Tyr	Ser	Glu	His	Pro	Thr	
	355					360					365				
Phe	Thr	Ser	Gln	Tyr	Arg	Ile	Gln	Gly	Lys	Leu	Glu	Tyr	Arg	His	Thr
	370				375						380				
Trp	Asp	Arg	His	Asp	Glu	Gly	Ala	Ala	Gln	Gly	Asp	Asp	Asp	Val	Trp
385				390					395					400	
Thr	Ser	Gly	Ser	Asp	Ser	Asp	Glu	Glu	Leu	Val	Thr	Thr	Glu	Arg	Lys
			405					410						415	
Thr	Pro	Arg	Val	Thr	Gly	Gly	Gly	Ala	Met	Ala	Gly	Ala	Ser	Thr	Ser
		420					425						430		
Ala	Gly	Arg	Asn	Arg	Lys	Ser	Ala	Ser	Ser	Ala	Thr	Ala	Cys	Thr	Ala
	435					440					445				
Gly	Val	Met	Thr	Arg	Gly	Arg	Leu	Lys	Ala	Glu	Ser	Thr	Val	Ala	Pro
	450				455					460					
Glu	Glu	Asp	Thr	Asp	Glu	Asp	Ser	Asp	Asn	Glu	Ile	His	Asn	Pro	Ala

465					470					475					480
Val	Phe	Thr	Trp	Pro	Pro	Trp	Gln	Ala	Gly	Ile	Leu	Ala	Arg	Asn	Leu
				485					490					495	
Val	Pro	Met	Val	Ala	Thr	Val	Gln	Gly	Gln	Asn	Leu	Lys	Tyr	Gln	Glu
			500					505					510		
Phe	Phe	Trp	Asp	Ala	Asn	Asp	Ile	Tyr	Arg	Ile	Phe	Ala	Glu	Leu	Glu
		515					520					525			
Gly	Val	Trp	Gln	Pro	Ala	Ala	Gln	Pro	Lys	Arg	Arg	Arg	His	Arg	Gln
	530					535					540				
Asp	Ala	Leu	Pro	Gly	Pro	Cys	Ile	Ala	Ser	Thr	Pro	Lys	Lys	His	Arg
545					550					555					560
Gly															

<210> 9

<211> 536

<212> PRT

<213> Cytomegalovirus

<400> 9

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

225					230					235				240	
Phe	Met	His	Val	Thr	Leu	Gly	Ser	Asp	Val	Glu	Glu	Asp	Leu	Thr	Met
				245					250					255	
Thr	Arg	Asn	Pro	Gln	Pro	Phe	Met	Arg	Pro	His	Glu	Arg	Asn	Gly	Phe
			260					265						270	
Thr	Val	Leu	Cys	Pro	Lys	Asn	Met	Ile	Ile	Lys	Pro	Gly	Lys	Ile	Ser
		275					280					285			
His	Ile	Met	Leu	Asp	Val	Ala	Phe	Thr	Ser	His	Glu	His	Phe	Gly	Leu
	290					295					300				
Leu	Cys	Pro	Lys	Ser	Ile	Pro	Gly	Leu	Ser	Ile	Ser	Gly	Asn	Leu	Leu
305					310					315					320
Met	Asn	Gly	Gln	Gln	Ile	Phe	Leu	Glu	Val	Gln	Ala	Ile	Arg	Glu	Thr
				325					330					335	
Val	Glu	Leu	Arg	Gln	Tyr	Asp	Pro	Val	Ala	Ala	Leu	Phe	Phe	Phe	Asp
			340					345					350		
Ile	Asp	Leu	Leu	Leu	Gln	Arg	Gly	Pro	Gln	Tyr	Ser	Glu	His	Pro	Thr
	355						360					365			
Phe	Thr	Ser	Gln	Tyr	Arg	Ile	Gln	Gly	Lys	Leu	Glu	Tyr	Arg	His	Thr
	370					375					380				
Trp	Asp	Arg	His	Asp	Glu	Gly	Ala	Ala	Gln	Gly	Asp	Asp	Asp	Val	Trp
385					390					395					400
Thr	Ser	Gly	Ser	Asp	Ser	Asp	Glu	Glu	Leu	Val	Thr	Thr	Glu	Arg	Lys
				405					410					415	
Thr	Pro	Arg	Val	Thr	Gly	Gly	Gly	Ala	Met	Ala	Gly	Ala	Ser	Thr	Ser
			420					425					430		
Ala	Gly	Arg	Asn	Arg	Lys	Ser	Ala	Ser	Ser	Ala	Thr	Ala	Cys	Thr	Ala
		435					440					445			
Gly	Val	Met	Thr	Arg	Gly	Arg	Leu	Lys	Ala	Glu	Ser	Thr	Val	Ala	Pro
	450					455					460				
Glu	Glu	Asp	Thr	Asp	Glu	Asp	Ser	Asp	Asn	Glu	Ile	His	Asn	Pro	Ala
465					470					475					480
Val	Phe	Thr	Trp	Pro	Pro	Trp	Gln	Ala	Gly	Ile	Leu	Ala	Arg	Asn	Leu
				485					490					495	
Val	Pro	Met	Val	Ala	Thr	Val	Gln	Gly	Gln	Asn	Leu	Lys	Tyr	Gln	Glu
			500					505					510		
Phe	Phe	Trp	Asp	Ala	Asn	Asp	Ile	Tyr	Arg	Ile	Phe	Ala	Glu	Leu	Glu
		515					520					525			
Gly	Val	Trp	Gln	Pro	Ala	Ala	Gln								
	530					535									

<210> 10
 <211> 1356
 <212> PRT
 <213> Homo sapiens

<400> 10
 Met Gln Ser Lys Val Leu Leu Ala Val Ala Leu Trp Leu Cys Val Glu
 1 5 10 15
 Thr Arg Ala Ala Ser Val Gly Leu Pro Ser Val Ser Leu Asp Leu Pro

			20					25				30			
Arg	Leu	Ser	Ile	Gln	Lys	Asp	Ile	Leu	Thr	Ile	Lys	Ala	Asn	Thr	Thr
		35					40					45			
Leu	Gln	Ile	Thr	Cys	Arg	Gly	Gln	Arg	Asp	Leu	Asp	Trp	Leu	Trp	Pro
	50					55					60				
Asn	Asn	Gln	Ser	Gly	Ser	Glu	Gln	Arg	Val	Glu	Val	Thr	Glu	Cys	Ser
65					70					75				80	
Asp	Gly	Leu	Phe	Cys	Lys	Thr	Leu	Thr	Ile	Pro	Lys	Val	Ile	Gly	Asn
				85					90					95	
Asp	Thr	Gly	Ala	Tyr	Lys	Cys	Phe	Tyr	Arg	Glu	Thr	Asp	Leu	Ala	Ser
			100					105					110		
Val	Ile	Tyr	Val	Tyr	Val	Gln	Asp	Tyr	Arg	Ser	Pro	Phe	Ile	Ala	Ser
		115					120					125			
Val	Ser	Asp	Gln	His	Gly	Val	Val	Tyr	Ile	Thr	Glu	Asn	Lys	Asn	Lys
	130					135					140				
Thr	Val	Val	Ile	Pro	Cys	Leu	Gly	Ser	Ile	Ser	Asn	Leu	Asn	Val	Ser
145					150					155					160
Leu	Cys	Ala	Arg	Tyr	Pro	Glu	Lys	Arg	Phe	Val	Pro	Asp	Gly	Asn	Arg
				165					170					175	
Ile	Ser	Trp	Asp	Ser	Lys	Lys	Gly	Phe	Thr	Ile	Pro	Ser	Tyr	Met	Ile
			180					185					190		
Ser	Tyr	Ala	Gly	Met	Val	Phe	Cys	Glu	Ala	Lys	Ile	Asn	Asp	Glu	Ser
		195					200					205			
Tyr	Gln	Ser	Ile	Met	Tyr	Ile	Val	Val	Val	Val	Gly	Tyr	Arg	Ile	Tyr
	210					215					220				
Asp	Val	Val	Leu	Ser	Pro	Ser	His	Gly	Ile	Glu	Leu	Ser	Val	Gly	Glu
225					230					235					240
Lys	Leu	Val	Leu	Asn	Cys	Thr	Ala	Arg	Thr	Glu	Leu	Asn	Val	Gly	Ile
				245					250					255	
Asp	Phe	Asn	Trp	Glu	Tyr	Pro	Ser	Ser	Lys	His	Gln	His	Lys	Lys	Leu
			260					265					270		
Val	Asn	Arg	Asp	Leu	Lys	Thr	Gln	Ser	Gly	Ser	Glu	Met	Lys	Lys	Phe
		275					280					285			
Leu	Ser	Thr	Leu	Thr	Ile	Asp	Gly	Val	Thr	Arg	Ser	Asp	Gln	Gly	Leu
	290					295					300				
Tyr	Thr	Cys	Ala	Ala	Ser	Ser	Gly	Leu	Met	Thr	Lys	Lys	Asn	Ser	Thr
305					310					315					320
Phe	Val	Arg	Val	His	Glu	Lys	Pro	Phe	Val	Ala	Phe	Gly	Ser	Gly	Met
				325					330					335	
Glu	Ser	Leu	Val	Glu	Ala	Thr	Val	Gly	Glu	Arg	Val	Arg	Ile	Pro	Ala
			340					345					350		
Lys	Tyr	Leu	Gly	Tyr	Pro	Pro	Pro	Glu	Ile	Lys	Trp	Tyr	Lys	Asn	Gly
		355					360					365			
Ile	Pro	Leu	Glu	Ser	Asn	His	Thr	Ile	Lys	Ala	Gly	His	Val	Leu	Thr
	370					375									

			420					425				430			
Asp	Ser	Tyr	Gln	Tyr	Gly	Thr	Thr	Gln	Thr	Leu	Thr	Cys	Thr	Val	Tyr
		435						440				445			
Ala	Ile	Pro	Pro	Pro	His	His	Ile	His	Trp	Tyr	Trp	Gln	Leu	Glu	Glu
		450						455				460			
Glu	Cys	Ala	Asn	Glu	Pro	Ser	Gln	Ala	Val	Ser	Val	Thr	Asn	Pro	Tyr
465						470					475				480
Pro	Cys	Glu	Glu	Trp	Arg	Ser	Val	Glu	Asp	Phe	Gln	Gly	Gly	Asn	Lys
				485					490					495	
Ile	Glu	Val	Asn	Lys	Asn	Gln	Phe	Ala	Leu	Ile	Glu	Gly	Lys	Asn	Lys
			500					505					510		
Thr	Val	Ser	Thr	Leu	Val	Ile	Gln	Ala	Ala	Asn	Val	Ser	Ala	Leu	Tyr
		515					520					525			
Lys	Cys	Glu	Ala	Val	Asn	Lys	Val	Gly	Arg	Gly	Glu	Arg	Val	Ile	Ser
		530				535					540				
Phe	His	Val	Thr	Arg	Gly	Pro	Glu	Ile	Thr	Leu	Gln	Pro	Asp	Met	Gln
545					550					555					560
Pro	Thr	Glu	Gln	Glu	Ser	Val	Ser	Leu	Trp	Cys	Thr	Ala	Asp	Arg	Ser
				565					570					575	
Thr	Phe	Glu	Asn	Leu	Thr	Trp	Tyr	Lys	Leu	Gly	Pro	Gln	Pro	Leu	Pro
			580					585					590		
Ile	His	Val	Gly	Glu	Leu	Pro	Thr	Pro	Val	Cys	Lys	Asn	Leu	Asp	Thr
		595				600						605			
Leu	Trp	Lys	Leu	Asn	Ala	Thr	Met	Phe	Ser	Asn	Ser	Thr	Asn	Asp	Ile
		610				615					620				
Leu	Ile	Met	Glu	Leu	Lys	Asn	Ala	Ser	Leu	Gln	Asp	Gln	Gly	Asp	Tyr
625					630					635					640
Val	Cys	Leu	Ala	Gln	Asp	Arg	Lys	Thr	Lys	Lys	Arg	His	Cys	Val	Val
				645					650					655	
Arg	Gln	Leu	Thr	Val	Leu	Glu	Arg	Val	Ala	Pro	Thr	Ile	Thr	Gly	Asn
			660					665					670		
Leu	Glu	Asn	Gln	Thr	Thr	Ser	Ile	Gly	Glu	Ser	Ile	Glu	Val	Ser	Cys
		675					680					685			
Thr	Ala	Ser	Gly	Asn	Pro	Pro	Pro	Gln	Ile	Met	Trp	Phe	Lys	Asp	Asn
		690				695					700				
Glu	Thr	Leu	Val	Glu	Asp	Ser	Gly	Ile	Val	Leu	Lys	Asp	Gly	Asn	Arg
705				710						715					720
Asn	Leu	Thr	Ile	Arg	Arg	Val	Arg	Lys	Glu	Asp	Glu	Gly	Leu	Tyr	Thr
				725					730					735	
Cys	Gln	Ala	Cys	Ser	Val	Leu	Gly	Cys	Ala	Lys	Val	Glu	Ala	Phe	Phe
			740					745					750		
Ile	Ile	Glu	Gly	Ala	Gln	Glu	Lys	Thr	Asn	Leu	Glu	Ile	Ile	Ile	Leu
		755					760					765			
Val	Gly	Thr	Ala	Val	Ile	Ala	Met	Phe	Phe	Trp	Leu	Leu	Leu	Val	Ile
		770				775					780				
Ile	Leu	Arg	Thr	Val	Lys	Arg	Ala	Asn	Gly	Gly	Glu	Leu	Lys	Thr	Gly
785				790						795					800
Tyr	Leu	Ser	Ile	Val	Met	Asp	Pro	Asp	Glu	Leu	Pro	Leu	Asp	Glu	His
				805					810					815	
Cys	Glu	Arg	Leu	Pro	Tyr	Asp	Ala	Ser	Lys	Trp	Glu	Phe	Pro	Arg	Asp

			820					825					830			
Arg	Leu		Leu	Gly	Lys	Pro	Leu	Gly	Arg	Gly	Ala	Phe	Gly	Gln	Val	
		835					840					845				
Ile	Glu	Ala	Asp	Ala	Phe	Gly	Ile	Asp	Lys	Thr	Ala	Thr	Cys	Arg	Thr	
	850					855					860					
Val	Ala	Val	Lys	Met	Leu	Lys	Glu	Gly	Ala	Thr	His	Ser	Glu	His	Arg	
865					870					875					880	
Ala	Leu	Met	Ser	Glu	Leu	Lys	Ile	Leu	Ile	His	Ile	Gly	His	His	Leu	
				885					890					895		
Asn	Val	Val	Asn	Leu	Leu	Gly	Ala	Cys	Thr	Lys	Pro	Gly	Gly	Pro	Leu	
			900					905					910			
Met	Val	Ile	Val	Glu	Phe	Cys	Lys	Phe	Gly	Asn	Leu	Ser	Thr	Tyr	Leu	
		915					920					925				
Arg	Ser	Lys	Arg	Asn	Glu	Phe	Val	Pro	Tyr	Lys	Thr	Lys	Gly	Ala	Arg	
		930				935						940				
Phe	Arg	Gln	Gly	Lys	Asp	Tyr	Val	Gly	Ala	Ile	Pro	Val	Asp	Leu	Lys	
945					950					955					960	
Arg	Arg	Leu	Asp	Ser	Ile	Thr	Ser	Ser	Gln	Ser	Ser	Ala	Ser	Ser	Gly	
				965					970						975	
Phe	Val	Glu	Glu	Lys	Ser	Leu	Ser	Asp	Val	Glu	Glu	Glu	Glu	Ala	Pro	
			980					985					990			
Glu	Asp	Leu	Tyr	Lys	Asp	Phe	Leu	Thr	Leu	Glu	His	Leu	Ile	Cys	Tyr	
		995					1000					1005				
Ser	Phe	Gln	Val	Ala	Lys	Gly	Met	Glu	Phe	Leu	Ala	Ser	Arg	Lys	Cys	
	1010					1015					1020					
Ile	His	Arg	Asp	Leu	Ala	Ala	Arg	Asn	Ile	Leu	Leu	Ser	Glu	Lys	Asn	
1025					1030					1035					1040	
Val	Val	Lys	Ile	Cys	Asp	Phe	Gly	Leu	Ala	Arg	Asp	Ile	Tyr	Lys	Asp	
				1045					1050					1055		
Pro	Asp	Tyr	Val	Arg	Lys	Gly	Asp	Ala	Arg	Leu	Pro	Leu	Lys	Trp	Met	
			1060					1065					1070			
Ala	Pro	Glu	Thr	Ile	Phe	Asp	Arg	Val	Tyr	Thr	Ile	Gln	Ser	Asp	Val	
		1075					1080					1085				
Trp	Ser	Phe	Gly	Val	Leu	Leu	Trp	Glu	Ile	Phe	Ser	Leu	Gly	Ala	Ser	
	1090					1095					1100					
Pro	Tyr	Pro	Gly	Val	Lys	Ile	Asp	Glu	Glu	Phe	Cys	Arg	Arg	Leu	Lys	
1105					1110					1115					1120	
Glu	Gly	Thr	Arg	Met	Arg	Ala	Pro	Asp	Tyr	Thr	Thr	Pro	Glu	Met	Tyr	
				1125					1130					1135		
Gln	Thr	Met	Leu	Asp	Cys	Trp	His	Gly	Glu	Pro	Ser	Gln	Arg	Pro	Thr	
			1140					1145				1150				
Phe	Ser	Glu	Leu	Val	Glu	His	Leu	Gly	Asn	Leu	Leu	Gln	Ala	Asn	Ala	
		1155					1160					1165				
Gln	Gln	Asp	Gly	Lys	Asp	Tyr	Ile	Val	Leu	Pro	Ile	Ser	Glu	Thr	Leu	
	1170															

1220					1225					1230					
Pro	Val	Ser	Val	Lys	Thr	Phe	Glu	Asp	Ile	Pro	Leu	Glu	Glu	Pro	Glu
1235					1240					1245					
Val	Lys	Val	Ile	Pro	Asp	Asp	Asn	Gln	Thr	Asp	Ser	Gly	Met	Val	Leu
1250					1255					1260					
Ala	Ser	Glu	Glu	Leu	Lys	Thr	Leu	Glu	Asp	Arg	Thr	Lys	Leu	Ser	Pro
1265					1270					1275					1280
Ser	Phe	Gly	Gly	Met	Val	Pro	Ser	Lys	Ser	Arg	Glu	Ser	Val	Ala	Ser
1285					1290					1295					
Glu	Gly	Ser	Asn	Gln	Thr	Ser	Gly	Tyr	Gln	Ser	Gly	Tyr	His	Ser	Asp
1300					1305					1310					
Asp	Thr	Asp	Thr	Thr	Val	Tyr	Ser	Ser	Glu	Glu	Ala	Glu	Leu	Leu	Lys
1315					1320					1325					
Leu	Ile	Glu	Ile	Gly	Val	Gln	Thr	Gly	Ser	Thr	Ala	Gln	Ile	Leu	Gln
1330					1335					1340					
Pro	Asp	Ser	Gly	Thr	Thr	Leu	Ser	Ser	Pro	Pro	Val				
1345					1350					1355					