

eolf-seq1
SEQUENCE LISTING

<110> NOVARTIS AG
 <120> COMPLEXES OF CYTOMEGALOVIRUS PROTEINS
 <130> PAT054805-WO-PCT
 <140>
 <141> 2013-06-28
 <150> US 61/668,975
 <151> 2012-07-06
 <150> US 61/770,257
 <151> 2013-02-27
 <160> 36
 <170> PatentIn version 3.5
 <210> 1
 <211> 742
 <212> PRT
 <213> Human cytomegalovirus, strain Merlin

<400> 1

Met Arg Pro Gly Leu Pro Ser Tyr Leu Ile Ile Leu Ala Val Cys Leu
 1 5 10 15

Phe Ser His Leu Leu Ser Ser Arg Tyr Gly Ala Glu Ala Val Ser Glu
 20 25 30

Pro Leu Asp Lys Ala Phe His Leu Leu Leu Asn Thr Tyr Gly Arg Pro
 35 40 45

Ile Arg Phe Leu Arg Glu Asn Thr Thr Gln Cys Thr Tyr Asn Ser Ser
 50 55 60

Leu Arg Asn Ser Thr Val Val Arg Glu Asn Ala Ile Ser Phe Asn Phe
 65 70 75 80

Phe Gln Ser Tyr Asn Gln Tyr Tyr Val Phe His Met Pro Arg Cys Leu
 85 90 95

Phe Ala Gly Pro Leu Ala Glu Gln Phe Leu Asn Gln Val Asp Leu Thr
 100 105 110

Glu Thr Leu Glu Arg Tyr Gln Gln Arg Leu Asn Thr Tyr Ala Leu Val
 115 120 125

Ser Lys Asp Leu Ala Ser Tyr Arg Ser Phe Ser Gln Gln Leu Lys Ala
 130 135 140

Gln Asp Ser Leu Gly Glu Gln Pro Thr Thr Val Pro Pro Pro Ile Asp
 145 150 155 160

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Leu Ser Ile Pro His₁₆₅ Val Trp Met Pro Pro₁₇₀ Gln Thr Thr Pro His₁₇₅ Gly

Trp Thr Glu Ser₁₈₀ His Thr Thr Ser Gly₁₈₅ Leu His Arg Pro His₁₉₀ Phe Asn

Gln Thr Cys₁₉₅ Ile Leu Phe Asp Gly₂₀₀ His Asp Leu Leu Phe₂₀₅ Ser Thr Val

Thr Pro₂₁₀ Cys Leu His Gln Gly₂₁₅ Phe Tyr Leu Ile Asp₂₂₀ Glu Leu Arg Tyr

Val₂₂₅ Lys Ile Thr Leu Thr₂₃₀ Glu Asp Phe Phe Val₂₃₅ Val Thr Val Ser Ile₂₄₀

Asp Asp Asp Thr Pro₂₄₅ Met Leu Leu Ile Phe₂₅₀ Gly His Leu Pro Arg₂₅₅ Val

Leu Phe Lys Ala₂₆₀ Pro Tyr Gln Arg Asp₂₆₅ Asn Phe Ile Leu Arg₂₇₀ Gln Thr

Glu Lys His₂₇₅ Glu Leu Leu Val Leu₂₈₀ Val Lys Lys Asp Gln₂₈₅ Leu Asn Arg

His Ser₂₉₀ Tyr Leu Lys Asp Pro₂₉₅ Asp Phe Leu Asp Ala₃₀₀ Ala Leu Asp Phe

Asn Tyr Leu Asp Leu Ser₃₁₀ Ala Leu Leu Arg Asn₃₁₅ Ser Phe His Arg Tyr₃₂₀

Ala Val Asp Val Leu₃₂₅ Lys Ser Gly Arg Cys₃₃₀ Gln Met Leu Asp Arg₃₃₅ Arg

Thr Val Glu Met₃₄₀ Ala Phe Ala Tyr Ala₃₄₅ Leu Ala Leu Phe Ala₃₅₀ Ala Ala

Arg Gln Glu₃₅₅ Glu Ala Gly Ala Gln₃₆₀ Val Ser Val Pro Arg₃₆₅ Ala Leu Asp

Arg Gln₃₇₀ Ala Ala Leu Leu Gln₃₇₅ Ile Gln Glu Phe Met₃₈₀ Ile Thr Cys Leu

Ser Gln Thr Pro Pro Arg₃₉₀ Thr Thr Leu Leu Leu₃₉₅ Tyr Pro Thr Ala Val₄₀₀

Asp Leu Ala Lys Arg₄₀₅ Ala Leu Trp Thr Pro₄₁₀ Asn Gln Ile Thr Asp₄₁₅ Ile

Thr Ser Leu Val₄₂₀ Arg Leu Val Tyr Ile₄₂₅ Leu Ser Lys Gln Asn₄₃₀ Gln Gln

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His Leu Ile Pro Gln Trp Ala Leu Arg Gln Ile Ala Asp Phe Ala Leu
435 440 445

Lys Leu His Lys Thr His Leu Ala Ser Phe Leu Ser Ala Phe Ala Arg
450 455 460

Gln Glu Leu Tyr Leu Met Gly Ser Leu Val His Ser Met Leu Val His
465 470 475 480

Thr Thr Glu Arg Arg Glu Ile Phe Ile Val Glu Thr Gly Leu Cys Ser
485 490 495

Leu Ala Glu Leu Ser His Phe Thr Gln Leu Leu Ala His Pro His His
500 505 510

Glu Tyr Leu Ser Asp Leu Tyr Thr Pro Cys Ser Ser Ser Gly Arg Arg
515 520 525

Asp His Ser Leu Glu Arg Leu Thr Arg Leu Phe Pro Asp Ala Thr Val
530 535 540

Pro Ala Thr Val Pro Ala Ala Leu Ser Ile Leu Ser Thr Met Gln Pro
545 550 555 560

Ser Thr Leu Glu Thr Phe Pro Asp Leu Phe Cys Leu Pro Leu Gly Glu
565 570 575

Ser Phe Ser Ala Leu Thr Val Ser Glu His Val Ser Tyr Ile Val Thr
580 585 590

Asn Gln Tyr Leu Ile Lys Gly Ile Ser Tyr Pro Val Ser Thr Thr Val
595 600 605

Val Gly Gln Ser Leu Ile Ile Thr Gln Thr Asp Ser Gln Thr Lys Cys
610 615 620

Glu Leu Thr Arg Asn Met His Thr Thr His Ser Ile Thr Val Ala Leu
625 630 635 640

Asn Ile Ser Leu Glu Asn Cys Ala Phe Cys Gln Ser Ala Leu Leu Glu
645 650 655

Tyr Asp Asp Thr Gln Gly Val Ile Asn Ile Met Tyr Met His Asp Ser
660 665 670

Asp Asp Val Leu Phe Ala Leu Asp Pro Tyr Asn Glu Val Val Val Ser
675 680 685

Ser Pro Arg Thr His Tyr Leu Met Leu Leu Lys Asn Gly Thr Val Leu
690 695 700

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Glu Val Thr Asp Val Val Val Asp Ala Thr Asp Ser Arg Leu Leu Met
 705 710 715 720

Met Ser Val Tyr Ala Leu Ser Ala Ile Ile Gly Ile Tyr Leu Leu Tyr
 725 730 735

Arg Met Leu Lys Thr Cys
 740

<210> 2
 <211> 742
 <212> PRT
 <213> Human cytomegalovirus, strain Towne

<400> 2

Met Arg Pro Gly Leu Pro Ser Tyr Leu Ile Val Leu Ala Val Cys Leu
 1 5 10 15

Leu Ser His Leu Leu Ser Ser Arg Tyr Gly Ala Glu Ala Ile Ser Glu
 20 25 30

Pro Leu Asp Lys Ala Phe His Leu Leu Leu Asn Thr Tyr Gly Arg Pro
 35 40 45

Ile Arg Phe Leu Arg Glu Asn Thr Thr Gln Cys Thr Tyr Asn Ser Ser
 50 55 60

Leu Arg Asn Ser Thr Val Val Arg Glu Asn Ala Ile Ser Phe Asn Phe
 65 70 75 80

Phe Gln Ser Tyr Asn Gln Tyr Tyr Val Phe His Met Pro Arg Cys Leu
 85 90 95

Phe Ala Gly Pro Leu Ala Glu Gln Phe Leu Asn Gln Val Asp Leu Thr
 100 105 110

Glu Thr Leu Glu Arg Tyr Gln Gln Arg Leu Asn Thr Tyr Ala Leu Val
 115 120 125

Ser Lys Asp Leu Ala Ser Tyr Arg Ser Phe Ser Gln Gln Leu Lys Ala
 130 135 140

Gln Asp Ser Leu Gly Glu Gln Pro Thr Thr Val Pro Pro Pro Ile Asp
 145 150 155 160

Leu Ser Ile Pro His Val Trp Met Pro Pro Gln Thr Thr Pro His Gly
 165 170 175

Trp Thr Glu Ser His Thr Thr Ser Gly Leu His Arg Pro His Phe Asn
 180 185 190

Gln Thr Cys Ile Leu Phe Asp Gly His Asp Leu Leu Phe Ser Thr Val

eo1f-seq1

195						200									205
Thr	Pro	Cys	Leu	His	Gln	Gly	Phe	Tyr	Leu	Ile	Asp	Glu	Leu	Arg	Tyr
	210					215					220				
Val	Lys	Ile	Thr	Leu	Thr	Glu	Asp	Phe	Phe	Val	Val	Thr	Val	Ser	Ile
225					230					235					240
Asp	Asp	Asp	Thr	Pro	Met	Leu	Leu	Ile	Phe	Gly	His	Leu	Pro	Arg	Val
				245					250					255	
Leu	Phe	Lys	Ala	Pro	Tyr	Gln	Arg	Asp	Asn	Phe	Ile	Leu	Arg	Gln	Thr
			260					265					270		
Glu	Lys	His	Glu	Leu	Leu	Val	Leu	Val	Lys	Lys	Asp	Gln	Leu	Asn	Arg
		275					280					285			
His	Ser	Tyr	Leu	Lys	Asp	Pro	Asp	Phe	Leu	Asp	Ala	Ala	Leu	Asp	Phe
	290					295					300				
Asn	Tyr	Leu	Asp	Leu	Ser	Ala	Leu	Leu	Arg	Asn	Ser	Phe	His	Arg	Tyr
305					310					315					320
Ala	Val	Asp	Val	Leu	Lys	Ser	Gly	Arg	Cys	Gln	Met	Leu	Asp	Arg	Arg
				325					330					335	
Thr	Val	Glu	Met	Ala	Phe	Ala	Tyr	Ala	Leu	Ala	Leu	Phe	Ala	Ala	Ala
			340					345					350		
Arg	Gln	Glu	Glu	Ala	Gly	Ala	Gln	Val	Ser	Val	Pro	Arg	Ala	Leu	Asp
		355					360					365			
Arg	Gln	Ala	Ala	Leu	Leu	Gln	Ile	Gln	Glu	Phe	Met	Ile	Thr	Cys	Leu
	370					375					380				
Ser	Gln	Thr	Pro	Pro	Arg	Thr	Thr	Leu	Leu	Leu	Tyr	Pro	Thr	Ala	Val
385					390					395					400
Asp	Leu	Ala	Lys	Arg	Ala	Leu	Trp	Thr	Pro	Asn	Gln	Ile	Thr	Asp	Ile
				405					410					415	
Thr	Ser	Leu	Val	Arg	Leu	Val	Tyr	Ile	Leu	Ser	Lys	Gln	Asn	Gln	Gln
			420					425					430		
His	Leu	Ile	Pro	Gln	Trp	Ala	Leu	Arg	Gln	Ile	Ala	Asp	Phe	Ala	Leu
		435					440					445			
Lys	Leu	His	Lys	Thr	His	Leu	Ala	Ser	Phe	Leu	Ser	Ala	Phe	Ala	Arg
	450					455					460				
Gln	Glu	Leu	Tyr	Leu	Met	Gly	Ser	Leu	Val	His	Ser	Met	Leu	Val	His

eo1f-seq1

740

<210> 3
 <211> 743
 <212> PRT
 <213> Human cytomegalovirus, strain AD169

<400> 3

Met Arg Pro Gly Leu Pro Pro Tyr Leu Thr Val Phe Thr Val Tyr Leu
 1 5 10 15

Leu Ser His Leu Pro Ser Gln Arg Tyr Gly Ala Asp Ala Ala Ser Glu
 20 25 30

Ala Leu Asp Pro His Ala Phe His Leu Leu Leu Asn Thr Tyr Gly Arg
 35 40 45

Pro Ile Arg Phe Leu Arg Glu Asn Thr Thr Gln Cys Thr Tyr Asn Ser
 50 55 60

Ser Leu Arg Asn Ser Thr Val Val Arg Glu Asn Ala Ile Ser Phe Asn
 65 70 75 80

Phe Phe Gln Ser Tyr Asn Gln Tyr Tyr Val Phe His Met Pro Arg Cys
 85 90 95

Leu Phe Ala Gly Pro Leu Ala Glu Gln Phe Leu Asn Gln Val Asp Leu
 100 105 110

Thr Glu Thr Leu Glu Arg Tyr Gln Gln Arg Leu Asn Thr Tyr Ala Leu
 115 120 125

Val Ser Lys Asp Leu Ala Ser Tyr Arg Ser Phe Ser Gln Gln Leu Lys
 130 135 140

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

Asp Leu Ser Ile Pro His Val Trp Met Pro Pro Gln Thr Thr Pro His
 165 170 175

Asp Trp Lys Gly Ser His Thr Thr Ser Gly Leu His Arg Pro His Phe
 180 185 190

Asn Gln Thr Cys Ile Leu Phe Asp Gly His Asp Leu Leu Phe Ser Thr
 195 200 205

Val Thr Pro Cys Leu His Gln Gly Phe Tyr Leu Met Asp Glu Leu Arg
 210 215 220

Tyr Val Lys Ile Thr Leu Thr Glu Asp Phe Phe Val Val Thr Val Ser
 225 230 235 240

eo1f-seq1

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

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His Glu Tyr Leu Ser Asp Leu Tyr Thr Pro Cys Ser Ser Ser Gly Arg
515 520 525

Arg Asp His Ser Leu Glu Arg Leu Thr Arg Leu Phe Pro Asp Ala Thr
530 535 540

Val Pro Ala Thr Val Pro Ala Ala Leu Ser Ile Leu Ser Thr Met Gln
545 550 555 560

Pro Ser Thr Leu Glu Thr Phe Pro Asp Leu Phe Cys Leu Pro Leu Gly
565 570 575

Glu Ser Phe Ser Ala Leu Thr Val Ser Glu His Val Ser Tyr Val Val
580 585 590

Thr Asn Gln Tyr Leu Ile Lys Gly Ile Ser Tyr Pro Val Ser Thr Thr
595 600 605

Val Val Gly Gln Ser Leu Ile Ile Thr Gln Thr Asp Ser Gln Thr Lys
610 615 620

Cys Glu Leu Thr Arg Asn Met His Thr Thr His Ser Ile Thr Ala Ala
625 630 635 640

Leu Asn Ile Ser Leu Glu Asn Cys Ala Phe Cys Gln Ser Ala Leu Leu
645 650 655

Glu Tyr Asp Asp Thr Gln Gly Val Ile Asn Ile Met Tyr Met His Asp
660 665 670

Ser Asp Asp Val Leu Phe Ala Leu Asp Pro Tyr Asn Glu Val Val Val
675 680 685

Ser Ser Pro Arg Thr His Tyr Leu Met Leu Leu Lys Asn Gly Thr Val
690 695 700

Leu Glu Val Thr Asp Val Val Val Asp Ala Thr Asp Ser Arg Leu Leu
705 710 715 720

Met Met Ser Val Tyr Ala Leu Ser Ala Ile Ile Gly Ile Tyr Leu Leu
725 730 735

Tyr Arg Met Leu Lys Thr Cys
740

<210> 4
<211> 715
<212> PRT
<213> Human cytomegalovirus, strain Merlin

<400> 4

eo1f-seq1

Met Arg Pro Gly Leu Pro Ser Tyr Leu Ile Ile Leu Ala Val Cys Leu
1 5 10 15

Phe Ser His Leu Leu Ser Ser Arg Tyr Gly Ala Glu Ala Val Ser Glu
20 25 30

Pro Leu Asp Lys Ala Phe His Leu Leu Leu Asn Thr Tyr Gly Arg Pro
35 40 45

Ile Arg Phe Leu Arg Glu Asn Thr Thr Gln Cys Thr Tyr Asn Ser Ser
50 55 60

Leu Arg Asn Ser Thr Val Val Arg Glu Asn Ala Ile Ser Phe Asn Phe
65 70 75 80

Phe Gln Ser Tyr Asn Gln Tyr Tyr Val Phe His Met Pro Arg Cys Leu
85 90 95

Phe Ala Gly Pro Leu Ala Glu Gln Phe Leu Asn Gln Val Asp Leu Thr
100 105 110

Glu Thr Leu Glu Arg Tyr Gln Gln Arg Leu Asn Thr Tyr Ala Leu Val
115 120 125

Ser Lys Asp Leu Ala Ser Tyr Arg Ser Phe Ser Gln Gln Leu Lys Ala
130 135 140

Gln Asp Ser Leu Gly Glu Gln Pro Thr Thr Val Pro Pro Pro Ile Asp
145 150 155 160

Leu Ser Ile Pro His Val Trp Met Pro Pro Gln Thr Thr Pro His Gly
165 170 175

Trp Thr Glu Ser His Thr Thr Ser Gly Leu His Arg Pro His Phe Asn
180 185 190

Gln Thr Cys Ile Leu Phe Asp Gly His Asp Leu Leu Phe Ser Thr Val
195 200 205

Thr Pro Cys Leu His Gln Gly Phe Tyr Leu Ile Asp Glu Leu Arg Tyr
210 215 220

Val Lys Ile Thr Leu Thr Glu Asp Phe Phe Val Val Thr Val Ser Ile
225 230 235 240

Asp Asp Asp Thr Pro Met Leu Leu Ile Phe Gly His Leu Pro Arg Val
245 250 255

Leu Phe Lys Ala Pro Tyr Gln Arg Asp Asn Phe Ile Leu Arg Gln Thr
260 265 270

eo1f-seq1

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

eo1f-seq1

Pro Ala Thr Val Pro Ala Ala Leu Ser Ile Leu Ser Thr Met Gln Pro
545 550 555 560

Ser Thr Leu Glu Thr Phe Pro Asp Leu Phe Cys Leu Pro Leu Gly Glu
565 570 575

Ser Phe Ser Ala Leu Thr Val Ser Glu His Val Ser Tyr Ile Val Thr
580 585 590

Asn Gln Tyr Leu Ile Lys Gly Ile Ser Tyr Pro Val Ser Thr Thr Val
595 600 605

Val Gly Gln Ser Leu Ile Ile Thr Gln Thr Asp Ser Gln Thr Lys Cys
610 615 620

Glu Leu Thr Arg Asn Met His Thr Thr His Ser Ile Thr Val Ala Leu
625 630 635 640

Asn Ile Ser Leu Glu Asn Cys Ala Phe Cys Gln Ser Ala Leu Leu Glu
645 650 655

Tyr Asp Asp Thr Gln Gly Val Ile Asn Ile Met Tyr Met His Asp Ser
660 665 670

Asp Asp Val Leu Phe Ala Leu Asp Pro Tyr Asn Glu Val Val Val Ser
675 680 685

Ser Pro Arg Thr His Tyr Leu Met Leu Leu Lys Asn Gly Thr Val Leu
690 695 700

Glu Val Thr Asp Val Val Val Asp Ala Thr Asp
705 710 715

<210> 5
<211> 27
<212> PRT
<213> Artificial sequence

<220>
<223> C-terminal extension including myc-tag and his-tag

<400> 5

Gly Thr Lys Leu Gly Pro Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
1 5 10 15

Asn Ser Ala Val Asp His His His His His His
20 25

<210> 6
<211> 742
<212> PRT
<213> Human cytomegalovirus

eo1f-seq1

<400> 6

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Met Arg Pro Gly Leu Pro Ser Tyr Leu Ile Ile Leu Ala Val Cys Leu
1      5      10      15

Phe Ser His Leu Leu Ser Ser Arg Tyr Gly Ala Glu Ala Val Ser Glu
20      25      30

Pro Leu Asp Lys Ala Phe His Leu Leu Leu Asn Thr Tyr Gly Arg Pro
35      40      45

Ile Arg Phe Leu Arg Glu Asn Thr Thr Gln Cys Thr Tyr Asn Ser Ser
50      55      60

Leu Arg Asn Ser Thr Val Val Arg Glu Asn Ala Ile Ser Phe Asn Phe
65      70      75      80

Phe Gln Ser Tyr Asn Gln Tyr Tyr Val Phe His Met Pro Arg Cys Leu
85      90      95

Phe Ala Gly Pro Leu Ala Glu Gln Phe Leu Asn Gln Val Asp Leu Thr
100     105     110

Glu Thr Leu Glu Arg Tyr Gln Gln Arg Leu Asn Thr Tyr Ala Leu Val
115     120     125

Ser Lys Asp Leu Ala Ser Tyr Arg Ser Phe Ser Gln Gln Leu Lys Ala
130     135     140

Gln Asp Ser Leu Gly Glu Gln Pro Thr Thr Val Pro Pro Pro Ile Asp
145     150     155     160

Leu Ser Ile Pro His Val Trp Met Pro Pro Gln Thr Thr Pro His Gly
165     170     175

Trp Thr Glu Ser His Thr Thr Ser Gly Leu His Arg Pro His Phe Asn
180     185     190

Gln Thr Cys Ile Leu Phe Asp Gly His Asp Leu Leu Phe Ser Thr Val
195     200     205

Thr Pro Cys Leu His Gln Gly Phe Tyr Leu Ile Asp Glu Leu Arg Tyr
210     215     220

Val Lys Ile Thr Leu Thr Glu Asp Phe Phe Val Val Thr Val Ser Ile
225     230     235     240

Asp Asp Asp Thr Pro Met Leu Leu Ile Phe Gly His Leu Pro Arg Val
245     250     255

Leu Phe Lys Ala Pro Tyr Gln Arg Asp Asn Phe Ile Leu Arg Gln Thr
260     265     270

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eo1f-seq1

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

eo1f-seq1

Pro Ala Thr Val Pro Ala Ala Leu Ser Ile Leu Ser Thr Met Gln Pro
545 550 555 560

Ser Thr Leu Glu Thr Phe Pro Asp Leu Phe Cys Leu Pro Leu Gly Glu
565 570 575

Ser Phe Ser Ala Leu Thr Val Ser Glu His Val Ser Tyr Ile Val Thr
580 585 590

Asn Gln Tyr Leu Ile Lys Gly Ile Ser Tyr Pro Val Ser Thr Thr Val
595 600 605

Val Gly Gln Ser Leu Ile Ile Thr Gln Thr Asp Ser Gln Thr Lys Cys
610 615 620

Glu Leu Thr Arg Asn Met His Thr Thr His Ser Ile Thr Val Ala Leu
625 630 635 640

Asn Ile Ser Leu Glu Asn Cys Ala Phe Cys Gln Ser Ala Leu Leu Glu
645 650 655

Tyr Asp Asp Thr Gln Gly Val Ile Asn Ile Met Tyr Met His Asp Ser
660 665 670

Asp Asp Val Leu Phe Ala Leu Asp Pro Tyr Asn Glu Val Val Val Ser
675 680 685

Ser Pro Arg Thr His Tyr Leu Met Leu Leu Lys Asn Gly Thr Val Leu
690 695 700

Glu Val Thr Asp Val Val Val Asp Ala Thr Asp Gly Thr Lys Leu Gly
705 710 715 720

Pro Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Ser Ala Val Asp
725 730 735

His His His His His His
740

<210> 7
<211> 278
<212> PRT
<213> Human cytomegalovirus, strain Merlin

<400> 7

Met Cys Arg Arg Pro Asp Cys Gly Phe Ser Phe Ser Pro Gly Pro Val
1 5 10 15

Ile Leu Leu Trp Cys Cys Leu Leu Leu Pro Ile Val Ser Ser Ala Ala
20 25 30

eo1f-seq1

Val Ser Val Ala Pro Thr Ala Ala Glu Lys Val Pro Ala Glu Cys Pro
35 40 45

Glu Leu Thr Arg Arg Cys Leu Leu Gly Glu Val Phe Glu Gly Asp Lys
50 55 60

Tyr Glu Ser Trp Leu Arg Pro Leu Val Asn Val Thr Gly Arg Asp Gly
65 70 75 80

Pro Leu Ser Gln Leu Ile Arg Tyr Arg Pro Val Thr Pro Glu Ala Ala
85 90 95

Asn Ser Val Leu Leu Asp Glu Ala Phe Leu Asp Thr Leu Ala Leu Leu
100 105 110

Tyr Asn Asn Pro Asp Gln Leu Arg Ala Leu Leu Thr Leu Leu Ser Ser
115 120 125

Asp Thr Ala Pro Arg Trp Met Thr Val Met Arg Gly Tyr Ser Glu Cys
130 135 140

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

Gly Tyr Asp Leu Thr Arg Leu Ser Tyr Gly Arg Ser Ile Phe Thr Glu
165 170 175

His Val Leu Gly Phe Glu Leu Val Pro Pro Ser Leu Phe Asn Val Val
180 185 190

Val Ala Ile Arg Asn Glu Ala Thr Arg Thr Asn Arg Ala Val Arg Leu
195 200 205

Pro Val Ser Thr Ala Ala Ala Pro Glu Gly Ile Thr Leu Phe Tyr Gly
210 215 220

Leu Tyr Asn Ala Val Lys Glu Phe Cys Leu Arg His Gln Leu Asp Pro
225 230 235 240

Pro Leu Leu Arg His Leu Asp Lys Tyr Tyr Ala Gly Leu Pro Pro Glu
245 250 255

Leu Lys Gln Thr Arg Val Asn Leu Pro Ala His Ser Arg Tyr Gly Pro
260 265 270

Gln Ala Val Asp Ala Arg
275

<210> 8
<211> 278
<212> PRT

eo1f-seq1

<213> Human cytomegalovirus, strain Towne

<400> 8

Met Cys Arg Arg Pro Asp Cys Gly Phe Ser Phe Ser Pro Gly Pro Val
1 5 10 15

Ala Leu Leu Trp Cys Cys Leu Leu Leu Pro Ile Val Ser Ser Ala Thr
20 25 30

Val Ser Val Ala Pro Thr Val Ala Glu Lys Val Pro Ala Glu Cys Pro
35 40 45

Glu Leu Thr Arg Arg Cys Leu Leu Gly Glu Val Phe Gln Gly Asp Lys
50 55 60

Tyr Glu Ser Trp Leu Arg Pro Leu Val Asn Val Thr Arg Arg Asp Gly
65 70 75 80

Pro Leu Ser Gln Leu Ile Arg Tyr Arg Pro Val Thr Pro Glu Ala Ala
85 90 95

Asn Ser Val Leu Leu Asp Asp Ala Phe Leu Asp Thr Leu Ala Leu Leu
100 105 110

Tyr Asn Asn Pro Asp Gln Leu Arg Ala Leu Leu Thr Leu Leu Ser Ser
115 120 125

Asp Thr Ala Pro Arg Trp Met Thr Val Met Arg Gly Tyr Ser Glu Cys
130 135 140

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

Gly Tyr Asp Leu Thr Arg Leu Ser Tyr Gly Arg Ser Ile Phe Thr Glu
165 170 175

His Val Leu Gly Phe Glu Leu Val Pro Pro Ser Leu Phe Asn Val Val
180 185 190

Val Ala Ile Arg Asn Glu Ala Thr Arg Thr Asn Arg Ala Val Arg Leu
195 200 205

Pro Val Ser Thr Ala Ala Ala Pro Glu Gly Ile Thr Leu Phe Tyr Gly
210 215 220

Leu Tyr Asn Ala Val Lys Glu Phe Cys Leu Arg His Gln Leu Asp Pro
225 230 235 240

Pro Leu Leu Arg His Leu Asp Lys Tyr Tyr Ala Gly Leu Pro Pro Glu
245 250 255

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Leu Lys Gln Thr Arg Val Asn Leu Pro Ala His Ser Arg Tyr Gly Pro
260 265 270

Gln Ala Val Asp Ala Arg
275

<210> 9
<211> 278
<212> PRT
<213> Human cytomegalovirus, strain AD169

<400> 9

Met Cys Arg Arg Pro Asp Cys Gly Phe Ser Phe Ser Pro Gly Pro Val
1 5 10 15

Val Leu Leu Trp Cys Cys Leu Leu Leu Pro Ile Val Ser Ser Val Ala
20 25 30

Val Ser Val Ala Pro Thr Ala Ala Glu Lys Val Pro Ala Glu Cys Pro
35 40 45

Glu Leu Thr Arg Arg Cys Leu Leu Gly Glu Val Phe Gln Gly Asp Lys
50 55 60

Tyr Glu Ser Trp Leu Arg Pro Leu Val Asn Val Thr Arg Arg Asp Gly
65 70 75 80

Pro Leu Ser Gln Leu Ile Arg Tyr Arg Pro Val Thr Pro Glu Ala Ala
85 90 95

Asn Ser Val Leu Leu Asp Asp Ala Phe Leu Asp Thr Leu Ala Leu Leu
100 105 110

Tyr Asn Asn Pro Asp Gln Leu Arg Ala Leu Leu Thr Leu Leu Ser Ser
115 120 125

Asp Thr Ala Pro Arg Trp Met Thr Val Met Arg Gly Tyr Ser Glu Cys
130 135 140

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

Gly Tyr Asp Leu Thr Arg Leu Ser Tyr Gly Arg Ser Ile Phe Thr Glu
165 170 175

His Val Leu Gly Phe Glu Leu Val Pro Pro Ser Leu Phe Asn Val Val
180 185 190

Val Ala Ile Arg Asn Glu Ala Thr Arg Thr Asn Arg Ala Val Arg Leu
195 200 205

Pro Val Ser Thr Ala Ala Ala Pro Glu Gly Ile Thr Leu Phe Tyr Gly

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220

210

215

Leu Tyr Asn Ala Val Lys Glu Phe Cys Leu Arg His Gln Leu Asp Pro
225 230 235 240

Pro Leu Leu Arg His Leu Asp Lys Tyr Tyr Ala Gly Leu Pro Pro Glu
245 250 255

Leu Lys Gln Thr Arg Val Asn Leu Pro Ala His Ser Arg Tyr Gly Pro
260 265 270

Gln Ala Val Asp Ala Arg
275

<210> 10
<211> 472
<212> PRT
<213> Human cytomegalovirus, strain Merlin
<400> 10

Met Gly Lys Lys Glu Met Ile Met Val Lys Gly Ile Pro Lys Ile Met
1 5 10 15

Leu Leu Ile Ser Ile Thr Phe Leu Leu Ser Leu Ile Asn Cys Asn
20 25 30

Val Leu Val Asn Ser Arg Gly Thr Arg Arg Ser Trp Pro Tyr Thr Val
35 40 45

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

Leu Lys Arg Leu Met Ser Thr Ser Ser Asp Gly Tyr Arg Phe Leu Met
65 70 75 80

Tyr Pro Ser Gln Gln Lys Phe His Ala Ile Val Ile Ser Met Asp Lys
85 90 95

Phe Pro Gln Asp Tyr Ile Leu Ala Gly Pro Ile Arg Asn Asp Ser Ile
100 105 110

Thr His Met Trp Phe Asp Phe Tyr Ser Thr Gln Leu Arg Lys Pro Ala
115 120 125

Lys Tyr Val Tyr Ser Glu Tyr Asn His Thr Ala His Lys Ile Thr Leu
130 135 140

Arg Pro Pro Pro Cys Gly Thr Val Pro Ser Met Asn Cys Leu Ser Glu
145 150 155 160

Met Leu Asn Val Ser Lys Arg Asn Asp Thr Gly Glu Lys Gly Cys Gly
165 170 175

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Asn Phe Thr Thr Phe Asn Pro Met Phe Phe Asn Val Pro Arg Trp Asn
 180 185 190
 Thr Lys Leu Tyr Ile Gly Ser Asn Lys Val Asn Val Asp Ser Gln Thr
 195 200 205
 Ile Tyr Phe Leu Gly Leu Thr Ala Leu Leu Leu Arg Tyr Ala Gln Arg
 210 215 220
 Asn Cys Thr Arg Ser Phe Tyr Leu Val Asn Ala Met Ser Arg Asn Leu
 225 230 235 240
 Phe Arg Val Pro Lys Tyr Ile Asn Gly Thr Lys Leu Lys Asn Thr Met
 245 250 255
 Arg Lys Leu Lys Arg Lys Gln Ala Leu Val Lys Glu Gln Pro Gln Lys
 260 265 270
 Lys Asn Lys Lys Ser Gln Ser Thr Thr Thr Pro Tyr Leu Ser Tyr Thr
 275 280 285
 Thr Ser Thr Ala Phe Asn Val Thr Thr Asn Val Thr Tyr Ser Ala Thr
 290 295 300
 Ala Ala Val Thr Arg Val Ala Thr Ser Thr Thr Gly Tyr Arg Pro Asp
 305 310 315 320
 Ser Asn Phe Met Lys Ser Ile Met Ala Thr Gln Leu Arg Asp Leu Ala
 325 330 335
 Thr Trp Val Tyr Thr Thr Leu Arg Tyr Arg Asn Glu Pro Phe Cys Lys
 340 345 350
 Pro Asp Arg Asn Arg Thr Ala Val Ser Glu Phe Met Lys Asn Thr His
 355 360 365
 Val Leu Ile Arg Asn Glu Thr Pro Tyr Thr Ile Tyr Gly Thr Leu Asp
 370 375 380
 Met Ser Ser Leu Tyr Tyr Asn Glu Thr Met Ser Val Glu Asn Glu Thr
 385 390 395 400
 Ala Ser Asp Asn Asn Glu Thr Thr Pro Thr Ser Pro Ser Thr Arg Phe
 405 410 415
 Gln Arg Thr Phe Ile Asp Pro Leu Trp Asp Tyr Leu Asp Ser Leu Leu
 420 425 430
 Phe Leu Asp Lys Ile Arg Asn Phe Ser Leu Gln Leu Pro Ala Tyr Gly
 435 440 445

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Asn Leu Thr Pro Pro Glu His Arg Arg Ala Ala Asn Leu Ser Thr Leu
450 455 460

Asn Ser Leu Trp Trp Trp Ser Gln
465 470

<210> 11
<211> 466
<212> PRT
<213> Human cytomegalovirus, strain AD169
<400> 11

Met Gly Arg Lys Glu Met Met Val Arg Asp Val Pro Lys Met Val Phe
1 5 10 15

Leu Ile Ser Ile Ser Phe Leu Leu Val Ser Phe Ile Asn Cys Lys Val
20 25 30

Met Ser Lys Ala Leu Tyr Asn Arg Pro Trp Arg Gly Leu Val Leu Ser
35 40 45

Lys Ile Gly Lys Tyr Lys Leu Asp Gln Leu Lys Leu Glu Ile Leu Arg
50 55 60

Gln Leu Glu Thr Thr Ile Ser Thr Lys Tyr Asn Val Ser Lys Gln Pro
65 70 75 80

Val Lys Asn Leu Thr Met Asn Met Thr Glu Phe Pro Gln Tyr Tyr Ile
85 90 95

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

Phe Tyr Ser Thr Gln Leu Arg Lys Pro Ala Lys Tyr Val Tyr Ser Gln
115 120 125

Tyr Asn His Thr Ala Lys Thr Ile Thr Phe Arg Pro Pro Pro Cys Gly
130 135 140

Thr Val Pro Ser Met Thr Cys Leu Ser Glu Met Leu Asn Val Ser Lys
145 150 155 160

Arg Asn Asp Thr Gly Glu Gln Gly Cys Gly Asn Phe Thr Thr Phe Asn
165 170 175

Pro Met Phe Phe Asn Val Pro Arg Trp Asn Thr Lys Leu Tyr Val Gly
180 185 190

Pro Thr Lys Val Asn Val Asp Ser Gln Thr Ile Tyr Phe Leu Gly Leu
195 200 205

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Thr Ala Leu Leu Leu Arg Tyr Ala Gln Arg Asn Cys Thr His Ser Phe
210 215 220

Tyr Leu Val Asn Ala Met Ser Arg Asn Leu Phe Arg Val Pro Lys Tyr
225 230 235 240

Ile Asn Gly Thr Lys Leu Lys Asn Thr Met Arg Lys Leu Lys Arg Lys
245 250 255

Gln Ala Pro Val Lys Glu Gln Phe Glu Lys Lys Ala Lys Lys Thr Gln
260 265 270

Ser Thr Thr Thr Pro Tyr Phe Ser Tyr Thr Thr Ser Ala Ala Leu Asn
275 280 285

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

Ser Thr Ser Thr Ile Ala Tyr Arg Pro Asp Ser Ser Phe Met Lys Ser
305 310 315 320

Ile Met Ala Thr Gln Leu Arg Asp Leu Ala Thr Trp Val Tyr Thr Thr
325 330 335

Leu Arg Tyr Arg Gln Asn Pro Phe Cys Glu Pro Ser Arg Asn Arg Thr
340 345 350

Ala Val Ser Glu Phe Met Lys Asn Thr His Val Leu Ile Arg Asn Glu
355 360 365

Thr Pro Tyr Thr Ile Tyr Gly Thr Leu Asp Met Ser Ser Leu Tyr Tyr
370 375 380

Asn Glu Thr Met Phe Val Glu Asn Lys Thr Ala Ser Asp Ser Asn Lys
385 390 395 400

Thr Thr Pro Thr Ser Pro Ser Met Gly Phe Gln Arg Thr Phe Ile Asp
405 410 415

Pro Leu Trp Asp Tyr Leu Asp Ser Leu Leu Phe Leu Asp Glu Ile Arg
420 425 430

Asn Phe Ser Leu Arg Ser Pro Thr Tyr Val Asn Leu Thr Pro Pro Glu
435 440 445

His Arg Arg Ala Val Asn Leu Ser Thr Leu Asn Ser Leu Trp Trp Trp
450 455 460

Leu Gln
465

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<210> 12
 <211> 457
 <212> PRT
 <213> Human cytomegalovirus, strain Towne

<400> 12

Met Gly Arg Lys Gly Glu Met Arg Gly Val Phe Asn Leu Phe Phe Leu
 1 5 10 15

Met Ser Leu Thr Phe Leu Leu Phe Ser Phe Ile Asn Cys Lys Ile Ala
 20 25 30

Val Ala Arg Phe Arg Val Lys Ser Gln Lys Ala Lys Glu Glu Glu Arg
 35 40 45

Gln Leu Lys Leu Arg Ile Leu Gln Glu Leu Ala Ser Lys Thr Gly Asp
 50 55 60

Tyr Tyr Lys Phe Phe Thr Phe Pro Ser Gln Gln Lys Leu Tyr Asn Ile
 65 70 75 80

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

Ile Arg Asn His Ser Ile Thr His Leu Trp Phe Asp Phe His Thr Thr
 100 105 110

Gln Leu Arg Lys Pro Ala Lys Tyr Val Tyr Ser Glu Tyr Asn His Thr
 115 120 125

Gly Gln Lys Ile Thr Phe Arg Pro Pro Ser Cys Gly Thr Ile Pro Ser
 130 135 140

Met Thr Cys Leu Ser Glu Met Leu Asn Val Ser Arg Arg Asn Asn Thr
 145 150 155 160

Gly Glu Glu Asn Cys Gly Asn Phe Thr Thr Phe Asn Pro Met Phe Phe
 165 170 175

Asn Val Pro Arg Trp Asn Thr Lys Leu Tyr Val Gly Pro Ser Lys Val
 180 185 190

Asn Val Asp Ser Gln Thr Ile Tyr Phe Leu Gly Leu Ala Ala Leu Leu
 195 200 205

Leu Arg Tyr Ala Gln Arg Asn Cys Thr Arg Ser Phe Tyr Leu Val Asn
 210 215 220

Ala Met Ser Arg Asn Ile Phe Arg Val Pro Lys Tyr Ile Asn Ser Thr
 225 230 235 240

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Lys Leu Lys Asn Thr Met Arg Lys Leu Lys Arg Lys Gln Ala Pro Val
245 250 255

Lys Ser Ile Ser Lys Lys Ser Arg Val Ser Thr Thr Thr Pro Tyr Ser
260 265 270

Ser Tyr Thr Ser Thr Ile Phe Asn Val Ser Thr Asn Val Thr Tyr Ser
275 280 285

Pro Ile Val Pro Thr Arg Ile Pro Thr Ser Thr Ile Gly Tyr Arg Pro
290 295 300

Asp Glu Asn Phe Met Lys Ser Ile Leu Thr Thr Gln Leu Lys Asp Leu
305 310 315 320

Ala Thr Trp Val Tyr Thr Thr Leu Arg Tyr Arg Asp Glu Pro Phe Cys
325 330 335

Lys Pro Asn Arg Asn Arg Thr Ala Val Ser Glu Phe Met Lys Asn Thr
340 345 350

His Val Leu Ile Arg Asn Glu Thr Pro Tyr Thr Ile Tyr Gly Thr Leu
355 360 365

Asp Met Ser Ser Leu Tyr Tyr Asn Asp Thr Met Pro Val Glu Asn Glu
370 375 380

Thr Ala Ser Asp Asn Asn Lys Thr Thr Pro Thr Ser Pro Ser Thr Arg
385 390 395 400

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

Leu Phe Leu Ser Glu Ile Arg Asn Phe Ser Leu Gln Ser Ser Thr Tyr
420 425 430

Gly Asn Leu Thr Pro Pro Glu His Arg Arg Ala Val Asn Leu Ser Thr
435 440 445

Leu Asn Ser Leu Trp Trp Trp Leu Gln
450 455

<210> 13
<211> 130
<212> PRT
<213> Human cytomegalovirus, strain Merlin

<400> 13

Met Ser Pro Lys Asp Leu Thr Pro Phe Leu Thr Ala Leu Trp Leu Leu
1 5 10 15

Leu Gly His Ser Arg Val Pro Arg Val Arg Ala Glu Glu Cys Cys Glu
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20

25

30

Phe Ile Asn Val Asn His Pro Pro Glu Arg Cys Tyr Asp Phe Lys Met
35 40 45

Cys Asn Arg Phe Thr Val Ala Leu Arg Cys Pro Asp Gly Glu Val Cys
50 55 60

Tyr Ser Pro Glu Lys Thr Ala Glu Ile Arg Gly Ile Val Thr Thr Met
65 70 75 80

Thr His Ser Leu Thr Arg Gln Val Val His Asn Lys Leu Thr Ser Cys
85 90 95

Asn Tyr Asn Pro Leu Tyr Leu Glu Ala Asp Gly Arg Ile Arg Cys Gly
100 105 110

Lys Val Asn Asp Lys Ala Gln Tyr Leu Leu Gly Ala Ala Gly Ser Val
115 120 125

Pro Tyr
130

<210> 14
<211> 171
<212> PRT
<213> Human cytomegalovirus, strain Towne
<400> 14

Met Ser Pro Lys Asn Leu Thr Pro Phe Leu Thr Ala Leu Trp Leu Leu
1 5 10 15

Leu Gly His Ser Arg Val Pro Arg Val Arg Ala Glu Glu Cys Cys Glu
20 25 30

Phe Ile Asn Val Asn His Pro Pro Glu Arg Cys Tyr Asp Phe Lys Met
35 40 45

Cys Asn Arg Phe Thr Val Ala Leu Arg Cys Pro Asp Gly Glu Val Cys
50 55 60

Tyr Ser Pro Glu Lys Thr Ala Glu Ile Arg Gly Ile Val Thr Thr Met
65 70 75 80

Thr His Ser Leu Thr Arg Gln Val Val His Asn Lys Leu Thr Ser Cys
85 90 95

Asn Tyr Asn Pro Leu Tyr Leu Glu Ala Asp Gly Arg Ile Arg Cys Gly
100 105 110

Lys Val Asn Asp Lys Ala Gln Tyr Leu Leu Gly Ala Ala Gly Ser Val
115 120 125

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Pro Tyr Arg Trp Ile Asn Leu Glu Tyr Asp Lys Ile Thr Arg Ile Val
130 135 140

Gly Leu Asp Gln Tyr Leu Glu Ser Val Lys Lys His Lys Arg Leu Asp
145 150 155 160

Val Cys Arg Ala Lys Met Gly Tyr Met Leu Gln
165 170

<210> 15

<211> 171

<212> PRT

<213> Human cytomegalovirus, strain AD196

<400> 15

Met Ser Pro Lys Asp Leu Thr Pro Phe Leu Thr Thr Leu Trp Leu Leu
1 5 10 15

Leu Gly His Ser Arg Val Pro Arg Val Arg Ala Glu Glu Cys Cys Glu
20 25 30

Phe Ile Asn Val Asn His Pro Pro Glu Arg Cys Tyr Asp Phe Lys Met
35 40 45

Cys Asn Arg Phe Thr Val Ala Leu Arg Cys Pro Asp Gly Glu Val Cys
50 55 60

Tyr Ser Pro Glu Lys Thr Ala Glu Ile Arg Gly Ile Val Thr Thr Met
65 70 75 80

Thr His Ser Leu Thr Arg Gln Val Val His Asn Lys Leu Thr Ser Cys
85 90 95

Asn Tyr Asn Pro Leu Tyr Leu Glu Ala Asp Gly Arg Ile Arg Cys Gly
100 105 110

Lys Val Asn Asp Lys Ala Gln Tyr Leu Leu Gly Ala Ala Gly Ser Val
115 120 125

Pro Tyr Arg Trp Ile Asn Leu Glu Tyr Asp Lys Ile Thr Arg Ile Val
130 135 140

Gly Leu Asp Gln Tyr Leu Glu Ser Val Lys Lys His Lys Arg Leu Asp
145 150 155 160

Val Cys Arg Ala Lys Met Gly Tyr Met Leu Gln
165 170

<210> 16

<211> 214

<212> PRT

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<213> Human cytomegalovirus, strain Merlin

<400> 16

Met Leu Arg Leu Leu Leu Arg His His Phe His Cys Leu Leu Leu Cys
1 5 10 15

Ala Val Trp Ala Thr Pro Cys Leu Ala Ser Pro Trp Ser Thr Leu Thr
20 25 30

Ala Asn Gln Asn Pro Ser Pro Pro Trp Ser Lys Leu Thr Tyr Ser Lys
35 40 45

Pro His Asp Ala Ala Thr Phe Tyr Cys Pro Phe Leu Tyr Pro Ser Pro
50 55 60

Pro Arg Ser Pro Leu Gln Phe Ser Gly Phe Gln Arg Val Ser Thr Gly
65 70 75 80

Pro Glu Cys Arg Asn Glu Thr Leu Tyr Leu Leu Tyr Asn Arg Glu Gly
85 90 95

Gln Thr Leu Val Glu Arg Ser Ser Thr Trp Val Lys Lys Val Ile Trp
100 105 110

Tyr Leu Ser Gly Arg Asn Gln Thr Ile Leu Gln Arg Met Pro Arg Thr
115 120 125

Ala Ser Lys Pro Ser Asp Gly Asn Val Gln Ile Ser Val Glu Asp Ala
130 135 140

Lys Ile Phe Gly Ala His Met Val Pro Lys Gln Thr Lys Leu Leu Arg
145 150 155 160

Phe Val Val Asn Asp Gly Thr Arg Tyr Gln Met Cys Val Met Lys Leu
165 170 175

Glu Ser Trp Ala His Val Phe Arg Asp Tyr Ser Val Ser Phe Gln Val
180 185 190

Arg Leu Thr Phe Thr Glu Ala Asn Asn Gln Thr Tyr Thr Phe Cys Thr
195 200 205

His Pro Asn Leu Ile Val
210

<210> 17

<211> 229

<212> PRT

<213> Human cytomegalovirus, strain Towne

<400> 17

Met Leu Arg Leu Leu Leu Arg His His Phe His Cys Leu Leu Leu Cys

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

<210> 18
 <211> 129
 <212> PRT
 <213> Human cytomegalovirus; strain Merlin
 <400> 18

Met	Arg	Leu	Cys	Arg	Val	Trp	Leu	Ser	Val	Cys	Leu	Cys	Ala	Val	Val
1				5					10					15	

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Leu Gly Gln Cys Gln Arg Glu Thr Ala Glu Lys Asn Asp Tyr Tyr Arg
20 25 30

Val Pro His Tyr Trp Asp Ala Cys Ser Arg Ala Leu Pro Asp Gln Thr
35 40 45

Arg Tyr Lys Tyr Val Glu Gln Leu Val Asp Leu Thr Leu Asn Tyr His
50 55 60

Tyr Asp Ala Ser His Gly Leu Asp Asn Phe Asp Val Leu Lys Arg Ile
65 70 75 80

Asn Val Thr Glu Val Ser Leu Leu Ile Ser Asp Phe Arg Arg Gln Asn
85 90 95

Arg Arg Gly Gly Thr Asn Lys Arg Thr Thr Phe Asn Ala Ala Gly Ser
100 105 110

Leu Ala Pro His Ala Arg Ser Leu Glu Phe Ser Val Arg Leu Phe Ala
115 120 125

Asn

<210> 19
<211> 129
<212> PRT
<213> Human cytomegalovirus, strain Towne

<400> 19

Met Arg Leu Cys Arg Val Trp Leu Ser Val Cys Leu Cys Ala Val Val
1 5 10 15

Leu Gly Gln Cys Gln Arg Glu Thr Ala Glu Lys Asn Asp Tyr Tyr Arg
20 25 30

Val Pro His Tyr Trp Asp Ala Cys Ser Arg Ala Leu Pro Asp Gln Thr
35 40 45

Arg Tyr Lys Tyr Val Glu Gln Leu Val Asp Leu Thr Leu Asn Tyr His
50 55 60

Tyr Asp Ala Ser His Gly Leu Asp Asn Phe Asp Val Leu Lys Arg Ile
65 70 75 80

Asn Val Thr Glu Val Ser Leu Leu Ile Ser Asp Phe Arg Arg Gln Asn
85 90 95

Arg Arg Gly Gly Thr Asn Lys Arg Thr Thr Phe Asn Ala Ala Gly Ser
100 105 110

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Leu Ala Pro His Ala Arg Ser Leu Glu Phe Ser Val Arg Leu Phe Ala
115 120 125

Asn

<210> 20
<211> 74
<212> PRT
<213> Human cytomegalovirus, strain AD169

<400> 20

Met Arg Leu Cys Arg Val Trp Leu Ser Val Cys Leu Cys Ala Val Val
1 5 10 15

Leu Gly Gln Cys Gln Arg Glu Thr Ala Glu Lys Lys Arg Leu Leu Pro
20 25 30

Ser Thr Ala Leu Leu Gly Arg Val Leu Ser Arg Ala Ala Arg Pro Asn
35 40 45

Pro Leu Gln Val Cys Gly Thr Ala Arg Gly Pro His Val Glu Leu Pro
50 55 60

Leu Arg Cys Glu Pro Arg Leu Gly Gln Leu
65 70

<210> 21
<211> 907
<212> PRT
<213> Human cytomegalovirus; strain Merlin

<400> 21

Met Glu Ser Arg Ile Trp Cys Leu Val Val Cys Val Asn Leu Cys Ile
1 5 10 15

Val Cys Leu Gly Ala Ala Val Ser Ser Ser Thr Arg Gly Thr Ser
20 25 30

Ala Thr His Ser His His Ser Ser His Thr Thr Ser Ala Ala His Ser
35 40 45

Arg Ser Gly Ser Val Ser Gln Arg Val Thr Ser Ser Gln Thr Val Ser
50 55 60

His Gly Val Asn Glu Thr Ile Tyr Asn Thr Thr Leu Lys Tyr Gly Asp
65 70 75 80

Val Val Gly Val Asn Thr Thr Lys Tyr Pro Tyr Arg Val Cys Ser Met
85 90 95

Ala Gln Gly Thr Asp Leu Ile Arg Phe Glu Arg Asn Ile Val Cys Thr
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100

105

110

Ser Met Lys₁₁₅ Pro Ile Asn Glu Asp₁₂₀ Leu Asp Glu Gly Ile₁₂₅ Met Val Val

Tyr Lys₁₃₀ Arg Asn Ile Val Ala₁₃₅ His Thr Phe Lys Val₁₄₀ Arg Val Tyr Gln

Lys₁₄₅ Val Leu Thr Phe Arg₁₅₀ Arg Ser Tyr Ala Tyr₁₅₅ Ile His Thr Thr Tyr₁₆₀

Leu Leu Gly Ser Asn₁₆₅ Thr Glu Tyr Val Ala₁₇₀ Pro Pro Met Trp Glu₁₇₅ Ile

His His Ile Asn₁₈₀ Ser His Ser Gln Cys₁₈₅ Tyr Ser Ser Tyr Ser₁₉₀ Arg Val

Ile Ala Gly₁₉₅ Thr Val Phe Val Ala₂₀₀ Tyr His Arg Asp Ser₂₀₅ Tyr Glu Asn

Lys Thr₂₁₀ Met Gln Leu Met Pro₂₁₅ Asp Asp Tyr Ser Asn₂₂₀ Thr His Ser Thr

Arg Tyr Val Thr Val Lys₂₃₀ Asp Gln Trp His Ser₂₃₅ Arg Gly Ser Thr Trp₂₄₀

Leu Tyr Arg Glu Thr₂₄₅ Cys Asn Leu Asn Cys₂₅₀ Met Val Thr Ile Thr₂₅₅ Thr

Ala Arg Ser Lys₂₆₀ Tyr Pro Tyr His Phe₂₆₅ Phe Ala Thr Ser Thr₂₇₀ Gly Asp

Val Val Asp₂₇₅ Ile Ser Pro Phe Tyr₂₈₀ Asn Gly Thr Asn Arg₂₈₅ Asn Ala Ser

Tyr Phe₂₉₀ Gly Glu Asn Ala Asp₂₉₅ Lys Phe Phe Ile Phe₃₀₀ Pro Asn Tyr Thr

Ile Val Ser Asp Phe Gly₃₁₀ Arg Pro Asn Ser Ala₃₁₅ Leu Glu Thr His Arg₃₂₀

Leu Val Ala Phe Leu₃₂₅ Glu Arg Ala Asp Ser₃₃₀ Val Ile Ser Trp Asp₃₃₅ Ile

Gln Asp Glu Lys₃₄₀ Asn Val Thr Cys Gln₃₄₅ Leu Thr Phe Trp Glu₃₅₀ Ala Ser

Glu Arg Thr₃₅₅ Ile Arg Ser Glu Ala₃₆₀ Glu Asp Ser Tyr His₃₆₅ Phe Ser Ser

Ala Lys Met Thr Ala Thr Phe Leu Ser Lys Lys Gln Glu Val Asn Met

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380

370

375

Ser 385 Asp Ser Ala Leu Asp 390 Cys Val Arg Asp Glu 395 Ala Ile Asn Lys Leu 400
Gln Gln Ile Phe Asn 405 Thr Ser Tyr Asn Gln 410 Thr Tyr Glu Lys Tyr 415 Gly
Asn Val Ser Val 420 Phe Glu Thr Thr Gly 425 Gly Leu Val Val Phe 430 Trp Gln
Gly Ile Lys 435 Gln Lys Ser Leu Val 440 Glu Leu Glu Arg Leu 445 Ala Asn Arg
Ser 450 Ser Leu Asn Leu Thr His 455 Asn Arg Thr Lys Arg 460 Ser Thr Asp Gly
Asn 465 Asn Ala Thr His Leu 470 Ser Asn Met Glu Ser 475 Val His Asn Leu Val 480
Tyr Ala Gln Leu Gln 485 Phe Thr Tyr Asp Thr 490 Leu Arg Gly Tyr Ile 495 Asn
Arg Ala Leu Ala 500 Gln Ile Ala Glu Ala 505 Trp Cys Val Asp Gln 510 Arg Arg
Thr Leu Glu 515 Val Phe Lys Glu Leu 520 Ser Lys Ile Asn Pro 525 Ser Ala Ile
Leu Ser 530 Ala Ile Tyr Asn Lys 535 Pro Ile Ala Ala Arg 540 Phe Met Gly Asp
Val 545 Leu Gly Leu Ala Ser 550 Cys Val Thr Ile Asn 555 Gln Thr Ser Val Lys 560
Val Leu Arg Asp Met 565 Asn Val Lys Glu Ser 570 Pro Gly Arg Cys Tyr 575 Ser
Arg Pro Val Val 580 Ile Phe Asn Phe Ala 585 Asn Ser Ser Tyr Val 590 Gln Tyr
Gly Gln Leu 595 Gly Glu Asp Asn Glu 600 Ile Leu Leu Gly Asn 605 His Arg Thr
Glu Glu 610 Cys Gln Leu Pro Ser 615 Leu Lys Ile Phe Ile 620 Ala Gly Asn Ser
Ala 625 Tyr Glu Tyr Val Asp 630 Tyr Leu Phe Lys Arg 635 Met Ile Asp Leu Ser 640
Ser Ile Ser Thr Val Asp Ser Met Ile Ala Leu Asp Ile Asp Pro Leu

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645

650

655

Glu Asn Thr Asp Phe Arg Val Leu Glu Leu Tyr Ser Gln Lys Glu Leu
660 665 670

Arg Ser Ser Asn Val Phe Asp Leu Glu Glu Ile Met Arg Glu Phe Asn
675 680 685

Ser Tyr Lys Gln Arg Val Lys Tyr Val Glu Asp Lys Val Val Asp Pro
690 695 700

Leu Pro Pro Tyr Leu Lys Gly Leu Asp Asp Leu Met Ser Gly Leu Gly
705 710 715 720

Ala Ala Gly Lys Ala Val Gly Val Ala Ile Gly Ala Val Gly Gly Ala
725 730 735

Val Ala Ser Val Val Glu Gly Val Ala Thr Phe Leu Lys Asn Pro Phe
740 745 750

Gly Ala Phe Thr Ile Ile Leu Val Ala Ile Ala Val Val Ile Ile Thr
755 760 765

Tyr Leu Ile Tyr Thr Arg Gln Arg Arg Leu Cys Thr Gln Pro Leu Gln
770 775 780

Asn Leu Phe Pro Tyr Leu Val Ser Ala Asp Gly Thr Thr Val Thr Ser
785 790 795 800

Gly Ser Thr Lys Asp Thr Ser Leu Gln Ala Pro Pro Ser Tyr Glu Glu
805 810 815

Ser Val Tyr Asn Ser Gly Arg Lys Gly Pro Gly Pro Pro Ser Ser Asp
820 825 830

Ala Ser Thr Ala Ala Pro Pro Tyr Thr Asn Glu Gln Ala Tyr Gln Met
835 840 845

Leu Leu Ala Leu Ala Arg Leu Asp Ala Glu Gln Arg Ala Gln Gln Asn
850 855 860

Gly Thr Asp Ser Leu Asp Gly Arg Thr Gly Thr Gln Asp Lys Gly Gln
865 870 875 880

Lys Pro Asn Leu Leu Asp Arg Leu Arg His Arg Lys Asn Gly Tyr Arg
885 890 895

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 <212> PRT
 <213> Human cytomegalovirus, strain Towne

<400> 22

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Ala Thr His Ser His His Ser Ser His Thr Thr Ser Ala Ala His Ser
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Arg Ser Gly Ser Val Ser Gln Arg Val Thr Ser Ser Gln Thr Val Ser
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His Gly Val Asn Glu Thr Ile Tyr Asn Thr Thr Leu Lys Tyr Gly Asp
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Val Val Gly Val Asn Thr Thr Lys Tyr Pro Tyr Arg Val Cys Ser Met
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Ala Gln Gly Thr Asp Leu Ile Arg Phe Glu Arg Asn Ile Val Cys Thr
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Ser Met Lys Pro Ile Asn Glu Asp Leu Asp Glu Gly Ile Met Val Val
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Tyr Lys Arg Asn Ile Val Ala His Thr Phe Lys Val Arg Val Tyr Gln
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Lys Val Leu Thr Phe Arg Arg Ser Tyr Ala Tyr Ile His Thr Thr Tyr
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Leu Leu Gly Ser Asn Thr Glu Tyr Val Ala Pro Pro Met Trp Glu Ile
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His His Ile Asn Ser His Ser Gln Cys Tyr Ser Ser Tyr Ser Arg Val
180    185    190

Ile Ala Gly Thr Val Phe Val Ala Tyr His Arg Asp Ser Tyr Glu Asn
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Lys Thr Met Gln Leu Met Pro Asp Asp Tyr Ser Asn Thr His Ser Thr
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Arg Tyr Val Thr Val Lys Asp Gln Trp His Ser Arg Gly Ser Thr Trp
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Leu Tyr Arg Glu Thr Cys Asn Leu Asn Cys Met Val Thr Ile Thr Thr
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Val Val Asp Ile Ser Pro Phe Tyr Asn Gly Thr Asn Arg Asn Ala Ser
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Tyr Phe Gly Glu Asn Ala Asp Lys Phe Phe Ile Phe Pro Asn Tyr Thr
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Ile Val Ser Asp Phe Gly Arg Pro Asn Ser Ala Leu Glu Thr His Arg
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Leu Val Ala Phe Leu Glu Arg Ala Asp Ser Val Ile Ser Trp Asp Ile
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Gln Asp Glu Lys Asn Val Thr Cys Gln Leu Thr Phe Trp Glu Ala Ser
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Glu Arg Thr Ile Arg Ser Glu Ala Glu Asp Ser Tyr His Phe Ser Ser
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Ala Lys Met Thr Ala Thr Phe Leu Ser Lys Lys Gln Glu Val Asn Met
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Ser Asp Ser Ala Leu Asp Cys Val Arg Asp Glu Ala Ile Asn Lys Leu
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Gln Gln Ile Phe Asn Thr Ser Tyr Asn Gln Thr Tyr Glu Lys Tyr Gly
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Asn Val Ser Val Phe Glu Thr Thr Gly Gly Leu Val Val Phe Trp Gln
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Gly Ile Lys Gln Lys Ser Leu Val Glu Leu Glu Arg Leu Ala Asn Arg
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Ser Ser Leu Asn Leu Thr His Asn Arg Thr Lys Arg Ser Thr Asp Gly
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Asn Asn Ala Thr His Leu Ser Asn Met Glu Ser Val His Asn Leu Val
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Tyr Ala Gln Leu Gln Phe Thr Tyr Asp Thr Leu Arg Gly Tyr Ile Asn
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Arg Ala Leu Ala Gln Ile Ala Glu Ala Trp Cys Val Asp Gln Arg Arg
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Thr Leu Glu Val Phe Lys Glu Leu Ser Lys Ile Asn Pro Ser Ala Ile
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 Glu Glu Cys Gln Leu Pro Ser Leu Lys Ile Phe Ile Ala Gly Asn Ser
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 Ala Tyr Glu Tyr Val Asp Tyr Leu Phe Lys Arg Met Ile Asp Leu Ser
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 Ser Tyr Lys Gln Arg Val Lys Tyr Val Glu Asp Lys Val Val Asp Pro
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Ser Val Tyr Asn Ser Gly Arg Lys Gly Pro Gly Pro Pro Ser Ser Asp
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Leu Leu Ala Leu Val Arg Leu Asp Ala Glu Gln Arg Ala Gln Gln Asn
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Gly Thr Asp Ser Leu Asp Gly Gln Thr Gly Thr Gln Asp Lys Gly Gln
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His Leu Lys Asp Ser Asp Glu Glu Glu Asn Val
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Thr Arg Ser Val Tyr Ser Gln His Val Thr Ser Ser Glu Ala Val Ser
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His Arg Ala Asn Glu Thr Ile Tyr Asn Thr Thr Leu Lys Tyr Gly Asp
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Val Val Gly Val Asn Thr Thr Lys Tyr Pro Tyr Arg Val Cys Ser Met
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Ala Gln Gly Thr Asp Leu Ile Arg Phe Glu Arg Asn Ile Ile Cys Thr
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Ser Met Lys Pro Ile Asn Glu Asp Leu Asp Glu Gly Ile Met Val Val
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 Ile Gly Gly Thr Val Phe Val Ala Tyr His Arg Asp Ser Tyr Glu Asn
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 Lys Thr Met Gln Leu Ile Pro Asp Asp Tyr Ser Asn Thr His Ser Thr
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 Ala Lys Met Thr Ala Thr Phe Leu Ser Lys Lys Gln Glu Val Asn Met
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 Ser Asp Ser Ala Leu Asp Cys Val Arg Asp Glu Ala Ile Asn Lys Leu
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Asn Val Ser Val Phe Glu Thr Ser Gly Gly Leu Val Val Phe Trp Gln
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Gly Ile Lys Gln Lys Ser Leu Val Glu Leu Glu Arg Leu Ala Asn Arg
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Ser Ser Leu Asn Ile Thr His Arg Thr Arg Arg Ser Thr Ser Asp Asn
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Asn Thr Thr His Leu Ser Ser Met Glu Ser Val His Asn Leu Val Tyr
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Ala Gln Leu Gln Phe Thr Tyr Asp Thr Leu Arg Gly Tyr Ile Asn Arg
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Ala Leu Ala Gln Ile Ala Glu Ala Trp Cys Val Asp Gln Arg Arg Thr
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Ser Ala Ile Tyr Asn Lys Pro Ile Ala Ala Arg Phe Met Gly Asp Val
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Gln Leu Gly Glu Asp Asn Glu Ile Leu Leu Gly Asn His Arg Thr Glu
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Glu Cys Gln Leu Pro Ser Leu Lys Ile Phe Ile Ala Gly Asn Ser Ala
610 615 620

Tyr Glu Tyr Val Asp Tyr Leu Phe Lys Arg Met Ile Asp Leu Ser Ser
625 630 635 640

Ile Ser Thr Val Asp Ser Met Ile Ala Leu Asp Ile Asp Pro Leu Glu
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Asn Thr Asp Phe Arg Val Leu Glu Leu Tyr Ser Gln Lys Glu Leu Arg
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Tyr Lys Gln Arg Val Lys Tyr Val Glu Asp Lys Val Val Asp Pro Leu
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Pro Pro Tyr Leu Lys Gly Leu Asp Asp Leu Met Ser Gly Leu Gly Ala
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Ala Gly Lys Ala Val Gly Val Ala Ile Gly Ala Val Gly Gly Ala Val
725 730 735

Ala Ser Val Val Glu Gly Val Ala Thr Phe Leu Lys Asn Pro Phe Gly
740 745 750

Ala Phe Thr Ile Ile Leu Val Ala Ile Ala Val Val Ile Ile Thr Tyr
755 760 765

Leu Ile Tyr Thr Arg Gln Arg Arg Leu Cys Thr Gln Pro Leu Gln Asn
770 775 780

Leu Phe Pro Tyr Leu Val Ser Ala Asp Gly Thr Thr Val Thr Ser Gly
785 790 795 800

Ser Thr Lys Asp Thr Ser Leu Gln Ala Pro Pro Ser Tyr Glu Glu Ser
805 810 815

Val Tyr Asn Ser Gly Arg Lys Gly Pro Gly Pro Pro Ser Ser Asp Ala
820 825 830

Ser Thr Ala Ala Pro Pro Tyr Thr Asn Glu Gln Ala Tyr Gln Met Leu
835 840 845

Leu Ala Leu Ala Arg Leu Asp Ala Glu Gln Arg Ala Gln Gln Asn Gly
850 855 860

Thr Asp Ser Leu Asp Gly Gln Thr Gly Thr Gln Asp Lys Gly Gln Lys
865 870 875 880

Pro Asn Leu Leu Asp Arg Leu Arg His Arg Lys Asn Gly Tyr Arg His
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Leu Lys Asp Ser Asp Glu Glu Glu Asn Val
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<210> 24

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Gln Val Ser Val Pro Arg Ala Leu Asp Arg Gln Ala Ala Leu Leu Gln
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Leu Arg Gln Ile Ala Asp Phe Ala Leu Lys Leu His Lys Thr His Leu
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Ala Ser Phe Leu Ser Ala Phe Ala Arg Gln Glu Leu Tyr Leu Met Gly
435 440 445

Ser Leu Val His Ser Met Leu Val His Thr Thr Glu Arg Arg Glu Ile
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465 470 475 480

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Thr Pro Cys Ser Ser Ser Gly Arg Arg Asp His Ser Leu Glu Arg Leu
500 505 510

Thr Arg Leu Phe Pro Asp Ala Thr Val Pro Ala Thr Val Pro Ala Ala
515 520 525

Leu Ser Ile Leu Ser Thr Met Gln Pro Ser Thr Leu Glu Thr Phe Pro
530 535 540

Asp Leu Phe Cys Leu Pro Leu Gly Glu Ser Phe Ser Ala Leu Thr Val
545 550 555 560

Ser Glu His Val Ser Tyr Ile Val Thr Asn Gln Tyr Leu Ile Lys Gly
565 570 575

Ile Ser Tyr Pro Val Ser Thr Thr Val Val Gly Gln Ser Leu Ile Ile
580 585 590

Thr Gln Thr Asp Ser Gln Thr Lys Cys Glu Leu Thr Arg Asn Met His
595 600 605

Thr Thr His Ser Ile Thr Val Ala Leu Asn Ile Ser Leu Glu Asn Cys
610 615 620

Ala Phe Cys Gln Ser Ala Leu Leu Glu Tyr Asp Asp Thr Gln Gly Val
625 630 635 640

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Ile Asn Ile Met Tyr Met His Asp Ser Asp Asp Val Leu Phe Ala Leu
645 650 655

Asp Pro Tyr Asn Glu Val Val Val Ser Ser Pro Arg Thr His Tyr Leu
660 665 670

Met Leu Leu Lys Asn Gly Thr Val Leu Glu Val Thr Asp Val Val Val
675 680 685

Asp Ala Thr Asp Gly Thr Lys Leu Gly Pro Glu Gln Lys Leu Ile Ser
690 695 700

Glu Glu Asp Leu Asn Ser Ala Val Asp His His His His His
705 710 715

<210> 31
<211> 248
<212> PRT
<213> Human cytomegalovirus
<400> 31

Ala Ala Val Ser Val Ala Pro Thr Ala Ala Glu Lys Val Pro Ala Glu
1 5 10 15

Cys Pro Glu Leu Thr Arg Arg Cys Leu Leu Gly Glu Val Phe Glu Gly
20 25 30

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

Asp Gly Pro Leu Ser Gln Leu Ile Arg Tyr Arg Pro Val Thr Pro Glu
50 55 60

Ala Ala Asn Ser Val Leu Leu Asp Glu Ala Phe Leu Asp Thr Leu Ala
65 70 75 80

Leu Leu Tyr Asn Asn Pro Asp Gln Leu Arg Ala Leu Leu Thr Leu Leu
85 90 95

Ser Ser Asp Thr Ala Pro Arg Trp Met Thr Val Met Arg Gly Tyr Ser
100 105 110

Glu Cys Gly Asp Gly Ser Pro Ala Val Tyr Thr Cys Val Asp Asp Leu
115 120 125

Cys Arg Gly Tyr Asp Leu Thr Arg Leu Ser Tyr Gly Arg Ser Ile Phe
130 135 140

Thr Glu His Val Leu Gly Phe Glu Leu Val Pro Pro Ser Leu Phe Asn
145 150 155 160

Val Val Val Ala Ile Arg Asn Glu Ala Thr Arg Thr Asn Arg Ala Val
 165 170 175
 Arg Leu Pro Val Ser Thr Ala Ala Ala Pro Glu Gly Ile Thr Leu Phe
 180 185 190
 Tyr Gly Leu Tyr Asn Ala Val Lys Glu Phe Cys Leu Arg His Gln Leu
 195 200 205
 Asp Pro Pro Leu Leu Arg His Leu Asp Lys Tyr Tyr Ala Gly Leu Pro
 210 215 220
 Pro Glu Leu Lys Gln Thr Arg Val Asn Leu Pro Ala His Ser Arg Tyr
 225 230 235 240
 Gly Pro Gln Ala Val Asp Ala Arg
 245

<210> 32
 <211> 442
 <212> PRT
 <213> Human cytomegalovirus

<400> 32

Cys Asn Val Leu Val Asn Ser Arg Gly Thr Arg Arg Ser Trp Pro Tyr
 1 5 10 15
 Thr Val Leu Ser Tyr Arg Gly Lys Glu Ile Leu Lys Lys Gln Lys Glu
 20 25 30
 Asp Ile Leu Lys Arg Leu Met Ser Thr Ser Ser Asp Gly Tyr Arg Phe
 35 40 45
 Leu Met Tyr Pro Ser Gln Gln Lys Phe His Ala Ile Val Ile Ser Met
 50 55 60
 Asp Lys Phe Pro Gln Asp Tyr Ile Leu Ala Gly Pro Ile Arg Asn Asp
 65 70 75 80
 Ser Ile Thr His Met Trp Phe Asp Phe Tyr Ser Thr Gln Leu Arg Lys
 85 90 95
 Pro Ala Lys Tyr Val Tyr Ser Glu Tyr Asn His Thr Ala His Lys Ile
 100 105 110
 Thr Leu Arg Pro Pro Pro Cys Gly Thr Val Pro Ser Met Asn Cys Leu
 115 120 125
 Ser Glu Met Leu Asn Val Ser Lys Arg Asn Asp Thr Gly Glu Lys Gly
 130 135 140
 Cys Gly Asn Phe Thr Thr Phe Asn Pro Met Phe Phe Asn Val Pro Arg

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145						150	155					160				
Trp	Asn	Thr	Lys	Leu	Tyr	Ile	Gly	Ser	Asn	Lys	Val	Asn	Val	Asp	Ser	
				165					170					175		
Gln	Thr	Ile	Tyr	Phe	Leu	Gly	Leu	Thr	Ala	Leu	Leu	Leu	Arg	Tyr	Ala	
			180					185					190			
Gln	Arg	Asn	Cys	Thr	Arg	Ser	Phe	Tyr	Leu	Val	Asn	Ala	Met	Ser	Arg	
		195					200					205				
Asn	Leu	Phe	Arg	Val	Pro	Lys	Tyr	Ile	Asn	Gly	Thr	Lys	Leu	Lys	Asn	
	210					215					220					
Thr	Met	Arg	Lys	Leu	Lys	Arg	Lys	Gln	Ala	Leu	Val	Lys	Glu	Gln	Pro	
225					230					235					240	
Gln	Lys	Lys	Asn	Lys	Lys	Ser	Gln	Ser	Thr	Thr	Thr	Pro	Tyr	Leu	Ser	
				245					250					255		
Tyr	Thr	Thr	Ser	Thr	Ala	Phe	Asn	Val	Thr	Thr	Asn	Val	Thr	Tyr	Ser	
			260					265					270			
Ala	Thr	Ala	Ala	Val	Thr	Arg	Val	Ala	Thr	Ser	Thr	Thr	Gly	Tyr	Arg	
		275					280					285				
Pro	Asp	Ser	Asn	Phe	Met	Lys	Ser	Ile	Met	Ala	Thr	Gln	Leu	Arg	Asp	
	290					295					300					
Leu	Ala	Thr	Trp	Val	Tyr	Thr	Thr	Leu	Arg	Tyr	Arg	Asn	Glu	Pro	Phe	
305					310					315					320	
Cys	Lys	Pro	Asp	Arg	Asn	Arg	Thr	Ala	Val	Ser	Glu	Phe	Met	Lys	Asn	
				325					330					335		
Thr	His	Val	Leu	Ile	Arg	Asn	Glu	Thr	Pro	Tyr	Thr	Ile	Tyr	Gly	Thr	
			340					345					350			
Leu	Asp	Met	Ser	Ser	Leu	Tyr	Tyr	Asn	Glu	Thr	Met	Ser	Val	Glu	Asn	
		355					360					365				
Glu	Thr	Ala	Ser	Asp	Asn	Asn	Glu	Thr	Thr	Pro	Thr	Ser	Pro	Ser	Thr	
	370					375					380					
Arg	Phe	Gln	Arg	Thr	Phe	Ile	Asp	Pro	Leu	Trp	Asp	Tyr	Leu	Asp	Ser	
385					390					395					400	
Leu	Leu	Phe	Leu	Asp	Lys	Ile	Arg	Asn	Phe	Ser	Leu	Gln	Leu	Pro	Ala	
				405					410					415		
Tyr	Gly	Asn	Leu	Thr	Pro	Pro	Glu	His	Arg	Arg	Ala	Ala	Asn	Leu	Ser	

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420

425

430

Thr Leu Asn Ser Leu Trp Trp Trp Ser Gln
 435 440

<210> 33
 <211> 144
 <212> PRT
 <213> Human cytomegalovirus

<400> 33

Glu Glu Cys Cys Glu Phe Ile Asn Val Asn His Pro Pro Glu Arg Cys
 1 5 10 15

Tyr Asp Phe Lys Met Cys Asn Arg Phe Thr Val Ala Leu Arg Cys Pro
 20 25 30

Asp Gly Glu Val Cys Tyr Ser Pro Glu Lys Thr Ala Glu Ile Arg Gly
 35 40 45

Ile Val Thr Thr Met Thr His Ser Leu Thr Arg Gln Val Val His Asn
 50 55 60

Lys Leu Thr Ser Cys Asn Tyr Asn Pro Leu Tyr Leu Glu Ala Asp Gly
 65 70 75 80

Arg Ile Arg Cys Gly Lys Val Asn Asp Lys Ala Gln Tyr Leu Leu Gly
 85 90 95

Ala Ala Gly Ser Val Pro Tyr Arg Trp Ile Asn Leu Glu Tyr Asp Lys
 100 105 110

Ile Thr Arg Ile Val Gly Leu Asp Gln Tyr Leu Glu Ser Val Lys Lys
 115 120 125

His Lys Arg Leu Asp Val Cys Arg Ala Lys Met Gly Tyr Met Leu Gln
 130 135 140

<210> 34
 <211> 189
 <212> PRT
 <213> Human cytomegalovirus

<400> 34

Ser Pro Trp Ser Thr Leu Thr Ala Asn Gln Asn Pro Ser Pro Pro Trp
 1 5 10 15

Ser Lys Leu Thr Tyr Ser Lys Pro His Asp Ala Ala Thr Phe Tyr Cys
 20 25 30

Pro Phe Leu Tyr Pro Ser Pro Pro Arg Ser Pro Leu Gln Phe Ser Gly
 35 40 45

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Phe Gln Arg Val Ser Thr Gly Pro Glu Cys Arg Asn Glu Thr Leu Tyr
50 55 60

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

Trp Val Lys Lys Val Ile Trp Tyr Leu Ser Gly Arg Asn Gln Thr Ile
85 90 95

Leu Gln Arg Met Pro Arg Thr Ala Ser Lys Pro Ser Asp Gly Asn Val
100 105 110

Gln Ile Ser Val Glu Asp Ala Lys Ile Phe Gly Ala His Met Val Pro
115 120 125

Lys Gln Thr Lys Leu Leu Arg Phe Val Val Asn Asp Gly Thr Arg Tyr
130 135 140

Gln Met Cys Val Met Lys Leu Glu Ser Trp Ala His Val Phe Arg Asp
145 150 155 160

Tyr Ser Val Ser Phe Gln Val Arg Leu Thr Phe Thr Glu Ala Asn Asn
165 170 175

Gln Thr Tyr Thr Phe Cys Thr His Pro Asn Leu Ile Val
180 185

<210> 35
<211> 111
<212> PRT
<213> Human cytomegalovirus

<400> 35

Gln Cys Gln Arg Glu Thr Ala Glu Lys Asn Asp Tyr Tyr Arg Val Pro
1 5 10 15

His Tyr Trp Asp Ala Cys Ser Arg Ala Leu Pro Asp Gln Thr Arg Tyr
20 25 30

Lys Tyr Val Glu Gln Leu Val Asp Leu Thr Leu Asn Tyr His Tyr Asp
35 40 45

Ala Ser His Gly Leu Asp Asn Phe Asp Val Leu Lys Arg Ile Asn Val
50 55 60

Thr Glu Val Ser Leu Leu Ile Ser Asp Phe Arg Arg Gln Asn Arg Arg
65 70 75 80

Gly Gly Thr Asn Lys Arg Thr Thr Phe Asn Ala Ala Gly Ser Leu Ala
85 90 95

Pro His Ala Arg Ser Leu Glu Phe Ser Val Arg Leu Phe Ala Asn
 100 105 110

<210> 36
 <211> 884
 <212> PRT
 <213> Human cytomegalovirus

<400> 36

Val Ser Ser Ser Ser Thr Arg Gly Thr Ser Ala Thr His Ser His His
 1 5 10 15

Ser Ser His Thr Thr Ser Ala Ala His Ser Arg Ser Gly Ser Val Ser
 20 25 30

Gln Arg Val Thr Ser Ser Gln Thr Val Ser His Gly Val Asn Glu Thr
 35 40 45

Ile Tyr Asn Thr Thr Leu Lys Tyr Gly Asp Val Val Gly Val Asn Thr
 50 55 60

Thr Lys Tyr Pro Tyr Arg Val Cys Ser Met Ala Gln Gly Thr Asp Leu
 65 70 75 80

Ile Arg Phe Glu Arg Asn Ile Val Cys Thr Ser Met Lys Pro Ile Asn
 85 90 95

Glu Asp Leu Asp Glu Gly Ile Met Val Val Tyr Lys Arg Asn Ile Val
 100 105 110

Ala His Thr Phe Lys Val Arg Val Tyr Gln Lys Val Leu Thr Phe Arg
 115 120 125

Arg Ser Tyr Ala Tyr Ile His Thr Thr Tyr Leu Leu Gly Ser Asn Thr
 130 135 140

Glu Tyr Val Ala Pro Pro Met Trp Glu Ile His His Ile Asn Ser His
 145 150 155 160

Ser Gln Cys Tyr Ser Ser Tyr Ser Arg Val Ile Ala Gly Thr Val Phe
 165 170 175

Val Ala Tyr His Arg Asp Ser Tyr Glu Asn Lys Thr Met Gln Leu Met
 180 185 190

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

Asp Gln Trp His Ser Arg Gly Ser Thr Trp Leu Tyr Arg Glu Thr Cys
 210 215 220

Asn Leu Asn Cys Met Val Thr Ile Thr Thr Ala Arg Ser Lys Tyr Pro

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

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500

505

510

Lys Pro Ile Ala Ala Arg Phe Met Gly Asp Val Leu Gly Leu Ala Ser
 515 520 525

Cys Val Thr Ile Asn Gln Thr Ser Val Lys Val Leu Arg Asp Met Asn
 530 535 540

Val Lys Glu Ser Pro Gly Arg Cys Tyr Ser Arg Pro Val Val Ile Phe
 545 550 555 560 565 570

Asn Phe Ala Asn Ser Ser Tyr Val Gln Tyr Gly Gln Leu Gly Glu Asp
 565 570 575

Asn Glu Ile Leu Leu Gly Asn His Arg Thr Glu Glu Cys Gln Leu Pro
 580 585 590

Ser Leu Lys Ile Phe Ile Ala Gly Asn Ser Ala Tyr Glu Tyr Val Asp
 595 600 605

Tyr Leu Phe Lys Arg Met Ile Asp Leu Ser Ser Ile Ser Thr Val Asp
 610 615 620

Ser Met Ile Ala Leu Asp Ile Asp Pro Leu Glu Asn Thr Asp Phe Arg
 625 630 635 640

Val Leu Glu Leu Tyr Ser Gln Lys Glu Leu Arg Ser Ser Asn Val Phe
 645 650 655

Asp Leu Glu Glu Ile Met Arg Glu Phe Asn Ser Tyr Lys Gln Arg Val
 660 665 670

Lys Tyr Val Glu Asp Lys Val Val Asp Pro Leu Pro Pro Tyr Leu Lys
 675 680 685

Gly Leu Asp Asp Leu Met Ser Gly Leu Gly Ala Ala Gly Lys Ala Val
 690 695 700

Gly Val Ala Ile Gly Ala Val Gly Gly Ala Val Ala Ser Val Val Glu
 705 710 715 720

Gly Val Ala Thr Phe Leu Lys Asn Pro Phe Gly Ala Phe Thr Ile Ile
 725 730 735

Leu Val Ala Ile Ala Val Val Ile Ile Thr Tyr Leu Ile Tyr Thr Arg
 740 745 750

Gln Arg Arg Leu Cys Thr Gln Pro Leu Gln Asn Leu Phe Pro Tyr Leu
 755 760 765

Val Ser Ala Asp Gly Thr Thr Val Thr Ser Gly Ser Thr Lys Asp Thr

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770 775 780

Ser Leu Gln Ala Pro Pro Ser Tyr Glu Glu Ser Val Tyr Asn Ser Gly
785 790 795 800

Arg Lys Gly Pro Gly Pro Pro Ser Ser Asp Ala Ser Thr Ala Ala Pro
 805 810 815

Pro Tyr Thr Asn Glu Gln Ala Tyr Gln Met Leu Leu Ala Leu Ala Arg
 820 825 830

Leu Asp Ala Glu Gln Arg Ala Gln Gln Asn Gly Thr Asp Ser Leu Asp
 835 840 845

Gly Arg Thr Gly Thr Gln Asp Lys Gly Gln Lys Pro Asn Leu Leu Asp
850 855 860

Arg Leu Arg His Arg Lys Asn Gly Tyr Arg His Leu Lys Asp Ser Asp
865 870 875 880

Glu Glu Glu Asn