

SEQUENCE LISTING

<110> Universität Heidelberg

<120> Malaria vaccines based on apicomplexan Ferlins, Ferlin-like proteins and other C2-domain containing proteins

<130> U30257PCT

<150> US 61/267,026

<151> 2009-12-05

<160> 34

<170> PatentIn version 3.5

<210> 1

<211> 8

<212> PRT

<213> Plasmodium berghei

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Pro Asn Pro Asn Phe Ser Tyr Leu
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Val Pro Ile Glu Tyr Arg Pro Leu
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Leu Asn Thr Cys Phe Leu Gln Leu
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Leu Asn Tyr Val Tyr Ser Lys Val
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Ile Gly Tyr Thr Tyr Ile Asp Met
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Val Gly Thr Ala Tyr Ile Thr Leu
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Leu Leu Ile Gly Thr Ala Tyr Ile Thr Leu
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Ala	Leu	Ile	Gly	Lys	Cys	Ser	Phe	Gly	Leu
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Ala	Tyr	Ile	Ala	Pro	His	Thr	Ile	Ile
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Ala Ile Tyr Arg Phe Asn Ala Ile
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<213> Plasmodium berghei

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Lys Val Glu Asp Lys Glu Leu Leu Asp Pro Leu Val Val Val Arg Cys
 20 25 30

Cys Asn Asn Glu Tyr Ile Thr Lys Lys Lys Lys Lys Tyr Asn Ala
 35 40 45

Val Asn Trp Glu Glu Ser His Val Trp Asn Arg Ile Val Leu Ser Glu
 50 55 60

Ile Glu Trp Asn Val Ala Lys Ile Glu Phe Glu Val Gln Ser Ala Asn
 65 70 75 80

Thr Phe Trp Arg Asn Asp Val Ile Gly Val Ile Ser Phe Glu Leu Lys
 85 90 95

Leu Ile Arg Asn Lys Lys Asn His Gln Ile Tyr Gly Thr Tyr Pro Ile
 100 105 110

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

Ile Val Cys Asn Glu Asn Asp Tyr Thr Ser Ser Ser Glu Ile Tyr Ser
 130 135 140

Ser Leu Ala Gln Tyr Asn Asn Asn Thr Asn Asn Asn Asn Asp Asn Asn
 145 150 155 160

Asn Ser Asp Asn Glu Asn Phe Tyr Glu Asp Leu Thr Lys Ala Val Val
 165 170 175

Glu Glu Asn Thr Ile Ala Leu Arg Asp Val Asn Ser Arg Phe Tyr Tyr
180 185 190

Leu Tyr Ile Asn Ile His Lys Ile Glu Asp Val Tyr Ile Asp Ile Ser
195 200 205

Lys Lys Lys Ser Arg Asp Leu Tyr Ile Thr Cys Glu Phe Asn Gly Cys
210 215 220

His Leu Lys Ser Ser Gln Gly Asn Asn Cys Thr Lys Tyr Thr Phe Asn
225 230 235 240

Glu Cys Phe Lys Ile Pro Ile Asn Thr Pro Ile Leu Glu Asp Thr Ile
245 250 255

Ile Ile Lys Ile Trp Asp Trp Asn Phe Leu Ser Asn Asp Glu Leu Leu
260 265 270

Ala Ile Gly Val Leu Ser Phe Asn Gln Ile Lys Asn Lys Ser Ile Asn
275 280 285

Pro Thr Trp Leu Asn Leu Tyr Gly Phe His Lys Asp Glu Leu Asn Leu
290 295 300

Glu Asn Tyr Tyr Asn Asn Gly Ser Asn Asp Ile Gly Leu Ile Arg Pro
305 310 315 320

Asn Asp Phe Asn Leu Ala Leu Glu Gly Asn Val Tyr Leu Gly Arg Ile
325 330 335

Cys Ile Ser Ala Tyr Val Glu Arg Leu Ser Asn Tyr Asp Ser Leu Ser
340 345 350

Ile Pro Ile Ile Gln Ser Cys Leu Val Tyr Asp Asp Pro Leu Tyr Val
355 360 365

Ser Ile Thr Leu Leu Cys Asp Val Tyr Val Val Thr Gly Leu Leu Ala
370 375 380

Glu Asn Ile Tyr Val Gln Leu Thr Cys Gly Pro His Lys Lys Lys Thr
385 390 395 400

Asp Cys Val Ser Ala Asn Glu Ile Gly Trp Asp Asp Asp Gln Asn Asn

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

Tyr Asp Leu Gln Leu Gly Leu Asn Arg Arg Lys Lys Leu Val Pro Val
 645 650 655

Asn Tyr Glu Leu Arg Cys Tyr Ile Tyr Ala Cys Arg Asn Ile Ile Ser
 660 665 670

Asn Phe Asn Asp Ser Pro Asn Thr Phe Val His Ile Ser Cys Ser Gly
 675 680 685

Lys Met Lys Ile Thr Ser Leu Val Leu Asn Asn Ser Asn Pro Val Phe
 690 695 700

Leu Gln Cys Leu Lys Leu Asn Ile Thr Ile Leu Thr Asp Tyr Ser Val
 705 710 715 720

Gly Leu Pro Thr Ile Pro Phe Ile Val Val Thr Leu Tyr Glu Phe His
 725 730 735

Asn Asn Thr Phe Tyr Phe Ile Gly Arg Cys Phe Cys Asn Tyr Asp Ile
 740 745 750

Tyr Leu Lys Asp Asn His Lys Lys Cys Asn Phe Ala Asn Lys Ser Ser
 755 760 765

Lys Tyr Asn Met Val Glu Gln Ile Gln Pro Arg Trp Ile Lys Leu Lys
 770 775 780

Gly Asn Lys His Ala Lys Ala Met Tyr Pro Asn Ile Leu Trp Gln Gln
 785 790 795 800

Ser Gly Ser Tyr Lys Arg Ile Met Gln Glu Tyr Met Phe Glu Lys Gln
 805 810 815

Lys Asp Phe Tyr Thr Ser Asn Ala Asn Ile Gly Gly Asp Ile Thr Asn
 820 825 830

Gly Asn Asn Ser Thr Asn Arg Ile Asn Ser Gln Val Arg Gln Pro His
 835 840 845

Asn Asp Phe Leu His Gly Glu Arg Val Gly Asp Ile Leu Leu Tyr Phe
 850 855 860

Glu Leu Val Lys Glu Lys Asp Ala Met Lys Ile Pro Ile Tyr Pro Met
865 870 875 880

Ile Thr Glu Ile Lys Lys Cys Thr Leu Ser Phe Phe Cys Met Ser Leu
885 890 895

Glu Asn Leu Val Leu Met Lys Ile Pro Ser Lys Lys Asn Glu His Ile
900 905 910

Ile Pro Asn Gly Tyr Ile Lys Asn Asn Ile Thr Tyr Pro Ile Ile Val
915 920 925

Leu Ser Ile Thr Ser Tyr Ser Ser Tyr Gly Lys Lys Lys Asn Glu Leu
930 935 940

Leu Ile Lys Tyr Ala Lys Ser Leu Lys Thr Asn Lys Arg Thr Gln Leu
945 950 955 960

Lys Asn Trp Lys Asn Ala Phe Asn Gln Gln Ser Phe Glu Met Phe Ala
965 970 975

Ile Glu Asn Phe Asp Ile Asp Val Pro Leu Asp Pro Ile Phe Asp Pro
980 985 990

Thr Leu Asn Ile Lys Val Tyr Asn Lys Lys Val Lys Asp Lys Tyr Phe
995 1000 1005

Ile Gly Glu Thr Asn Ile Ser Leu Ile Pro Tyr Ile Pro Trp Ile
1010 1015 1020

Glu Asn Leu Asp Asp Ala Leu Tyr Tyr Leu Gln Ala Tyr Glu Asp
1025 1030 1035

Tyr Ser Glu Thr Ile Asn Ile Lys Asn Ile Asp Asn Ala Tyr Asn
1040 1045 1050

Ile Tyr Lys Asn Lys Asn Ala Ala Leu Val Val Thr Ala Ile Ser
1055 1060 1065

Leu Ala Asp Tyr Glu His Thr Ile Ser Leu Lys Glu Glu Leu Lys
1070 1075 1080

Arg	Tyr	Glu	Asn	Asp	Asp	Asp	Gln	Asp	Asp	Asp	Trp	Asn	Asn	Ile
	1085					1090					1095			
Pro	Leu	Phe	Arg	Gly	Thr	Phe	Asn	Ala	Lys	Phe	Thr	Gly	Lys	Ala
	1100					1105					1110			
Ala	Gly	Met	Ile	Gly	Gly	Met	Ala	Gly	Gly	Met	Ala	Gly	Gly	Met
	1115					1120					1125			
Ala	Asp	Gly	Met	Ala	Gly	Gly	Met	Ala	Gly	Gly	Met	Ala	Gly	Gly
	1130					1135					1140			
Met	Ala	Gly	Gly	Met	Ala	Gly	Gly	Met	Ala	Gly	Gly	Met	Ala	Gly
	1145					1150					1155			
Gly	Met	Ala	Gly	Gly	Met	Ala	Gly	Gly	Met	Ala	Ala	Asp	Met	Ala
	1160					1165					1170			
Asn	Gly	Met	His	Leu	Gly	Leu	His	Ser	Asn	Phe	Ile	Gly	Tyr	Glu
	1175					1180					1185			
Tyr	Asp	Pro	Arg	Asn	Asp	His	Leu	Ile	Asn	Asn	Thr	Thr	Met	Asn
	1190					1195					1200			
Asn	Phe	Gln	Met	Asn	Met	Met	Tyr	Asn	Arg	Glu	Asn	Phe	Ser	Ser
	1205					1210					1215			
Gly	Asn	Tyr	Lys	Ala	Asn	Cys	Ile	Ala	Glu	Phe	Gly	Glu	Lys	Gly
	1220					1225					1230			
Ser	Lys	Ile	Gly	Asn	Gly	Phe	Asn	Asn	Glu	Gly	Tyr	Ile	Thr	Asn
	1235					1240					1245			
Thr	Arg	His	Tyr	Phe	Ser	Cys	Tyr	Tyr	Asn	Lys	Lys	Asn	Gln	Arg
	1250					1255					1260			
Asn	Ile	Tyr	Asn	Val	Met	Tyr	Asn	Glu	Ser	Val	Tyr	Lys	Leu	His
	1265					1270					1275			
Asp	Asp	Gly	Val	Pro	Glu	Ile	Ile	Lys	Ala	Ser	Tyr	Asn	Val	Lys
	1280					1285					1290			
Asn	Tyr	Pro	Tyr	Ile	Lys	Ile	Leu	Arg	Asn	Lys	Phe	Ile	Leu	Asn

1295						1300						1305			
Val	Tyr	Ile	Pro	Pro	Arg	Phe	Ile	Leu	Tyr	Val	Glu	Gly	Asp	Lys	
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Ile	Asn	Leu	Glu	Lys	Phe	Val	Lys	Asn	Thr	His	Arg	Val	Ser	Val	
1325						1330					1335				
Asp	Gly	Ile	Leu	Glu	Asn	Tyr	Leu	Asp	Asp	Ile	Leu	Ile	Pro	Ser	
1340						1345					1350				
Ile	Pro	Leu	Lys	Lys	Lys	Tyr	Asn	Asn	Asn	Ile	Phe	Leu	Asn	Cys	
1355						1360					1365				
Gly	Tyr	Asn	Gly	Asn	Ile	Gly	Asn	Phe	Asp	Gly	Asn	Asp	Gln	Asn	
1370						1375					1380				
Lys	Ile	Val	Lys	Glu	Gly	Ile	Ser	Phe	Gly	Cys	Phe	Glu	Asn	Ser	
1385						1390					1395				
Pro	Phe	Val	Glu	Leu	Val	Gly	Gly	Gln	Ile	Lys	Cys	Phe	Thr	Lys	
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Ile	Lys	Tyr	Arg	Asp	Ile	Ile	Ser	Glu	His	Ile	Pro	Leu	Lys	Leu	
1415						1420					1425				
Lys	Asp	Ile	Asn	Asn	Gln	Asn	Thr	Phe	Arg	Asn	Lys	Phe	Arg	Gly	
1430						1435					1440				
Ser	Asn	Lys	Ile	Pro	Leu	Tyr	Leu	Lys	Ile	Arg	Val	Tyr	Val	Ile	
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Arg	Gly	Ile	Gly	Ile	Asn	Gly	Val	Asn	Ser	Glu	Cys	Ser	Cys	Asn	
1460						1465					1470				
Pro	Tyr	Leu	Thr	Phe	Ser	Leu	Gly	Glu	Lys	Thr	Thr	Asn	Leu	Arg	
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Asn	Ser	Tyr	Lys	Glu	Asp	Asn	Pro	Asn	Pro	Asn	Phe	Ser	Tyr	Leu	
1490						1495					1500				
Trp	Glu	Ser	Glu	Ala	Ile	Phe	Pro	Glu	Asp	Glu	Ile	Leu	Thr	Ile	
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Ser	Val	Tyr	Ser	Ala	Glu	Ser	Asn	Tyr	Asp	Lys	Gln	Ile	Asn	Asp
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Ile	Tyr	Ile	Gly	Ser	Thr	Glu	Ile	Asn	Leu	Phe	Asp	Arg	Trp	Met
	1535					1540					1545			
Ser	Lys	Glu	Trp	Arg	His	Met	Met	Lys	Lys	Asn	Lys	Val	Pro	Ile
	1550					1555					1560			
Glu	Tyr	Arg	Pro	Leu	Tyr	Asn	Asn	Tyr	Phe	Lys	Asn	Gln	Asn	Leu
	1565					1570					1575			
Ile	Lys	Asn	Ser	Ile	Asn	Gly	Gly	Gly	Asn	Met	Tyr	Asn	Lys	Leu
	1580					1585					1590			
Asn	Thr	Trp	Asn	Asn	Ile	Phe	Ser	Phe	Phe	Asp	Ile	Phe	Thr	Asn
	1595					1600					1605			
Leu	Val	Asn	Phe	Asn	Ile	Met	Asn	Gly	His	Ser	Asn	Asn	Gln	Tyr
	1610					1615					1620			
Tyr	Asn	Gly	Asn	Ser	Phe	Ser	Ser	Cys	Gly	Ile	Asn	Asn	Tyr	Lys
	1625					1630					1635			
Ser	Ile	Ser	Asn	Asn	Gly	Leu	Leu	Glu	Met	Trp	Val	Glu	Ile	Met
	1640					1645					1650			
Gly	Tyr	Glu	Glu	Ala	Ala	Lys	Ile	Pro	Ile	His	Lys	Met	Glu	Pro
	1655					1660					1665			
Pro	Lys	Thr	Ser	Glu	Val	Glu	Ile	Arg	Ile	Ile	Ile	Trp	Arg	Cys
	1670					1675					1680			
Ser	Ile	Leu	Leu	Asn	Gly	Glu	Asn	Pro	Asn	Lys	Thr	Phe	Asp	Leu
	1685					1690					1695			
Val	Val	Ala	Ser	Glu	Leu	Asp	Cys	Val	Asn	Tyr	Asn	Gly	Lys	Asn
	1700					1705					1710			
Pro	Ile	Thr	Gln	Thr	Thr	Asp	Val	His	Tyr	Asn	Cys	Lys	Thr	Gly
	1715					1720					1725			

Asp Ala Ile Phe Asn Trp Arg Met Val Tyr Pro Asn Ile Thr His
 1730 1735 1740

Pro Leu Asn Thr Cys Phe Leu Gln Leu Ala Ala Tyr Asn Asn Ser
 1745 1750 1755

Asn Val Gly Thr Ser Gln Phe Leu Gly Glu Val Asn Leu Glu Leu
 1760 1765 1770

Ser Lys Tyr Ile His Lys Val Leu Gln Ile Val Asn Lys Phe Glu
 1775 1780 1785

Leu Asp Ala Glu Leu Lys Leu Arg Lys Lys Asn Phe Gly Asp Asn
 1790 1795 1800

Thr Asn Gly Asp Asn Asn Cys Ser Gly Thr Ile Gln Val Thr Val
 1805 1810 1815

Gln Phe Ile Pro Gln Ser Lys Ala Asn Ile Lys Pro Ser Gly Leu
 1820 1825 1830

Gly Arg Ser Glu Pro Asn Arg Asn Pro Tyr Leu Arg Thr Pro Lys
 1835 1840 1845

Asn Gly Arg Asp Trp Asn Asp Phe Ala Tyr Ser Ile Gly Phe Asn
 1850 1855 1860

Asp Ile Tyr Lys Pro Phe Trp Ser Gly Leu Arg Val Phe Phe Ile
 1865 1870 1875

Phe Ser Leu Ala Val Trp Val Phe Phe Leu Ser Phe Ile Tyr Pro
 1880 1885 1890

Ala Met Leu Leu
 1895

<210> 27
 <211> 1904
 <212> PRT
 <213> Plasmodium falciparum

<400> 27

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

Ile Ala Thr Pro Ile Leu Asp Asp Ser Ile Ile Leu Lys Ile Trp Asp
245 250 255

Trp Asn Tyr Leu Ser Asn Asp Glu Leu Ile Ala Ile Gly Val Leu Ser
260 265 270

Phe Asn Gln Ile Lys Asn Glu Cys Leu Asn Pro Thr Trp Leu Asn Leu
275 280 285

Tyr Gly Phe His Lys Lys Glu Phe Asp Leu Glu Lys Ile Thr Asn Asn
290 295 300

Tyr Thr Asn Lys Asn Asn Ser Asn Asn Tyr Tyr Asp Ile Cys Asn Asp
305 310 315 320

Tyr Asn Leu Leu Leu Glu Gly Asn Phe Tyr Leu Gly Arg Ile Cys Ile
325 330 335

Ser Ser Tyr Val Glu Arg Ile Asn Asn Phe Asp Asn Leu Asn Ile Ala
340 345 350

Ile Thr Gln Ser Cys Leu Ala Tyr Asp Asp Pro Leu Tyr Ile Pro Ile
355 360 365

Thr Leu Leu Cys Asp Val Tyr Leu Val Thr Gly Ile Leu Ser Lys Asn
370 375 380

Ile Tyr Val Glu Leu Thr Cys Gly Pro His Arg Lys Lys Thr Gln Cys
385 390 395 400

Val Ser Val Asn Glu Met Leu Gln Asp Val Met Gly Lys Gln Thr Asn
405 410 415

Gln Lys Lys Lys Thr Lys Lys Lys Lys Ile Ile Lys Gly Ile His Asn
420 425 430

Ser Tyr Ile Asp Asn Glu Ile Val Asn Asn Asn Tyr Asp Asn Thr Ile
435 440 445

Tyr Thr Tyr Asn Gln Lys Thr Asn Pro Leu Phe Thr Phe Asp Glu Ile
450 455 460

Leu Asn Leu Asp Asn Val Phe Asn Lys Val Thr Glu Lys Gln Gln Ile
 465 470 475 480

Ile Glu Asn Asn Glu His Thr Glu Phe Tyr Phe Ser Ala Asn Lys Gly
 485 490 495

Lys Ile Glu Asn Met Lys Leu Cys Val Val Gln Glu Glu Tyr Gln Gln
 500 505 510

Trp Asp Ile Ile Ile Asn Val Tyr Glu Lys Val Tyr Asn Asn Ser Tyr
 515 520 525

His Glu Asn Asn Phe Leu Pro Ser Leu Leu Tyr Asn Asn Glu Glu Thr
 530 535 540

Lys Asn Asp Asp Tyr Ser Lys Leu Thr Glu Tyr Gln Lys Tyr Gln Lys
 545 550 555 560

Lys Lys Glu Glu Ile Asp Gln Tyr Glu Gln Asn Ile Pro Asn His Ile
 565 570 575

Asp Arg Arg Ile Ala Tyr Tyr Arg Met Pro Leu Lys Asn Val Leu Leu
 580 585 590

Tyr Asn Glu Lys Ile Ser Arg Cys Pro Ile Trp Ile Pro Leu Lys Asn
 595 600 605

Ile Pro Lys Asn Val Gln Gly Asp Phe Asn Cys Met Tyr Asn Ile Phe
 610 615 620

Gln Asn Gly Ser Ile Leu Leu Asn Leu Glu Lys Ser Phe Asp Val Gln
 625 630 635 640

Leu Gly Ile Asn Arg Arg Lys Lys Leu Ile Pro Val Asn Tyr Glu Leu
 645 650 655

Arg Cys Tyr Ile Tyr Ala Cys Arg Asn Val Ile Ser His Phe Asn Asp
 660 665 670

Ser Pro Asn Thr Phe Val His Ile Ser Cys Ala Gly Lys Met Lys Ile
 675 680 685

Thr	Ser	Leu	Ser	Leu	Asn	Ser	Cys	Asn	Pro	Val	Tyr	Leu	Gln	Cys	Leu
690						695					700				
Lys	Leu	Asn	Ile	Asn	Ile	Leu	Thr	Asp	Tyr	Ser	Ile	Gly	Leu	Pro	Thr
705					710					715					720
Ile	Pro	Leu	Ile	Ile	Val	Thr	Leu	Tyr	Glu	Phe	His	Asn	Asp	Thr	Phe
				725					730					735	
Tyr	Tyr	Ile	Gly	Arg	Cys	Tyr	Cys	Asn	Tyr	Asp	Ile	Tyr	Leu	Lys	Gln
			740					745					750		
Ser	Gly	Asn	Lys	Tyr	Asn	Phe	Thr	Glu	Lys	Gly	Ser	Lys	Tyr	Asn	Val
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Thr	Lys	Ala	Met	Tyr	Ala	Asn	Asn	Leu	Trp	Gln	His	Asn	Gly	Asn	Asp
785					790					795					800
Lys	Arg	Ile	Met	Gln	Glu	Tyr	Leu	Tyr	Glu	Lys	Gln	Gln	Glu	Leu	Ile
				805					810					815	
Asn	Asn	Ser	Thr	Ile	Asn	Lys	Asn	Asn	Asn	Asn	Asn	Asn	Lys	Lys	Asp
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Asn	Asn	Asn	Lys	Lys	Asp	Asn	Asn	Asn	Lys	Lys	Asp	Asn	Asn	Asn	Asn
		835					840					845			
Asn	Asn	Asn	Asn	Tyr	Tyr	Tyr	Asn	Ser	Ser	Asn	Val	Tyr	Gln	Tyr	Asn
	850					855					860				
Asp	Leu	Leu	Tyr	Gly	Glu	Arg	Val	Gly	Asp	Ile	Leu	Leu	Tyr	Phe	Glu
865					870					875					880
Leu	Val	Gln	Ser	Lys	Asp	Ala	Met	Lys	Phe	Pro	Ile	Tyr	Pro	Met	Ile
				885					890					895	
Thr	Glu	Ile	Lys	Lys	Cys	Thr	Leu	Ser	Phe	Phe	Cys	Met	Ser	Leu	Glu
			900					905					910		
Asn	Leu	Ile	Leu	Met	Lys	Lys	Ala	Asn	Phe	Leu	Lys	Thr	Leu	Ser	Phe

915		920		925
Glu Arg Asn Asn Lys Tyr Gln Ile Ser Thr Pro Ile Ile Leu Leu Ser				
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Ile Thr Ser Tyr Ser Ser Tyr Gly Lys Lys Lys Asn Glu Leu Met Ile				
945		950		955 960
Lys Tyr Glu Lys Thr Leu Lys Ala Asn Thr Arg Ile Gln Leu Lys Asn				
	965		970	975
Trp Lys Asn Ser Phe Asn Gln Gln Ser Phe Glu Met Phe Ser Ile Glu				
	980		985	990
Asn Met Asn Ile Asp Ile Pro Leu Asp Pro Ile Phe Asp Pro Ile Leu				
	995		1000	1005
Asn Ile Lys Val Tyr Asn Lys Lys Val Lys Ser Lys Tyr Phe Ile				
1010		1015		1020
Gly Glu Thr Asn Ile Ser Leu Val Pro Tyr Leu Pro Trp Ile Lys				
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Asn Ile Asp Glu Val Leu Tyr Tyr Leu Gln Ala His Asp Asp Tyr				
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Ser Glu Thr Ile Asn Met Lys Asn Ile Asp Asn Thr Phe Asn Ile				
1055		1060		1065
Tyr Lys Asn Lys Asn Ala Ala Leu Val Ile Ser Ala Ile Ser Leu				
1070		1075		1080
Ala Asp Cys Glu Asp Thr Leu Ser Leu Lys Glu Glu Ile Asn Lys				
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Tyr Glu Asn Asp Asp Asp Glu Ala Trp Lys Glu Ile Pro Leu Phe				
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Asn Leu Asp Gln Glu Asn Gln Lys Glu Asp Asn Lys Asn Thr Ser				
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Ser Gln His Gly Asn Val Thr Asn Asn Tyr Asp Gly Tyr Asn Asn				
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Gly Ala Tyr Glu Met Gly Met Tyr Asn Met Glu Thr Tyr Asn Ile
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Lys Asn Asn Asp Asn Asn Asn Asn Asn Asn Tyr Asn Asn Tyr Asn
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Asn Asn Ser Tyr Asn Asn Asn Asn Tyr Tyr Tyr Tyr Asn Asn Tyr Ala
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Ala Pro Tyr Thr Ser Tyr Asn Asn Asn Val Leu Gln Asn Asp Thr
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Arg Asn Asn Val Arg Tyr Asn His Ser Asn Asn Met Met Ile Asn
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Asn Met Tyr Lys Asn Asn Ile Tyr Asn Ala Ser Gln Phe Gly Val
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Ile Asn Tyr Asn Asn Tyr Asn Asn Tyr Tyr Asp Lys Gly Asn Thr
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Leu Asn Phe Asn Asn Asn Asn Ile His His Phe Asn Lys Leu Ser
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Asn Asn Lys Phe Asp Ser Tyr Leu Ser Arg Ile Gln Lys Asp Thr
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Tyr Asn Ile Lys Tyr Asn Asn Ser Ile Tyr Lys Leu Phe Asp Asp
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Gly Ile Pro Glu Ile Ile Lys Leu Ser Tyr Asn Val Lys Asn Tyr
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Pro Tyr Ile Lys Ile Leu Thr Ser Lys Tyr Ile Leu Asn Val His
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Ile Pro Pro Arg Phe Ile Leu Tyr Val Glu Gly Asp Lys Leu Asn
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Ile Glu Lys Phe Ile Lys Asn Ile Asn Arg Val Ser Val Asp Gly
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Gln	Phe	Pro	Phe	Val	Glu	Ile	Ile	Gly	Gly	Gln	Ile	Lys	Cys	Phe
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Ala	Asn	Pro	Tyr	Leu	Ile	Phe	Ser	Leu	Gly	Glu	Lys	Thr	Ser	Asn
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Arg	Ile	Val	Tyr	Pro	Asn	Ile	Thr	His	Pro	Leu	Asn	Thr	Cys	Phe
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Leu	Gln	Leu	Ala	Ala	Tyr	Asn	Asn	Asn	Asn	Val	Gly	Val	Ser	Glu
1760						1765					1770			
Phe	Leu	Gly	Glu	Val	Asn	Leu	Glu	Leu	Ser	Lys	Tyr	Ile	Gln	Lys

	1775					1780					1785				
Ala	Ser	Gln	Ile	Leu	Asn	Lys	Phe	Glu	Leu	Asp	Ala	Glu	Leu	Lys	
	1790					1795					1800				
Leu	Arg	Lys	Lys	Thr	Asp	Thr	Asp	His	Asn	Lys	Asn	Thr	Tyr	Asn	
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Gly	Tyr	Ile	Gln	Val	Thr	Val	Gln	Phe	Ile	Pro	Gln	Asn	Lys	Ala	
	1820					1825					1830				
Asn	Ile	Lys	Pro	Val	Gly	Leu	Gly	Arg	Asp	Glu	Pro	Asn	Arg	Asn	
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Pro	Tyr	Leu	Lys	Thr	Pro	Asp	Ser	Gly	Arg	Glu	Trp	Asn	Asp	Phe	
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Cys Asn Asn Glu Tyr Ile Xaa Lys Lys Lys Lys Lys Lys Tyr Asn Ala

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Val	Asn	Trp	Glu	Glu	Thr	His	Val	Trp	Asn	Arg	Ile	Val	Leu	Ser	Glu			
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Thr	Phe	Trp	Arg	Asn	Asp	Val	Ile	Gly	Val	Ile	Ser	Phe	Glu	Leu	Lys			
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Leu	Ile	Arg	Asn	Lys	Lys	Asn	His	Gln	Ile	Tyr	Gly	Thr	Tyr	Pro	Ile			
			100					105					110					
Leu	Tyr	Lys	Asn	Arg	Thr	Glu	Ile	Gln	Gly	Gln	Leu	Arg	Leu	Lys	Val			
		115					120					125						
Ile	Val	Cys	Asn	Glu	Asn	Asp	Tyr	Thr	Ser	Ser	Ser	Glu	Ile	Tyr	Ser			
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Ser	Leu	Thr	Gln	Tyr	Asn	Asn	Asn	Thr	Asn	Asp	Asn	Asn	Gly	Asn	Asn			
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Thr	Ser	Asp	Asn	Glu	Asn	Phe	Tyr	Glu	Asp	Leu	Thr	Lys	Ala	Val	Val			
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Glu	Glu	Asn	Thr	Ile	Ala	Leu	Arg	Asp	Ala	Asn	Ser	Arg	Phe	Tyr	Tyr			
			180					185					190					
Leu	Tyr	Ile	Asn	Ile	His	Lys	Ile	Glu	Asp	Val	Tyr	Ile	Asp	Ile	Ser			
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Lys	Lys	Lys	Ser	Arg	Asp	Leu	Tyr	Ile	Thr	Cys	Glu	Phe	Asn	Gly	Cys			
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His	Leu	Lys	Ser	Ser	Gln	Gly	Asn	Asn	Cys	Thr	Lys	Tyr	Thr	Phe	Asn			
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Glu	Cys	Phe	Lys	Ile	Pro	Ile	Asn	Thr	Pro	Ile	Leu	Glu	Asp	Thr	Ile			
				245					250					255				
Ile	Ile	Lys	Ile	Trp	Asp	Trp	Asn	Phe	Leu	Ser	Thr	Asp	Glu	Leu	Leu			
			260					265					270					

Ala Ile Gly Val Leu Ser Phe Asn Gln Ile Lys Asn Lys Ser Ile Asn
 275 280 285

Pro Thr Trp Leu Asn Leu Tyr Gly Phe His Lys Asp Glu Leu Asn Leu
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Glu Asn Tyr Tyr Asn Asn Gly Ser Asn Asp Thr Ser Leu Ile Arg Pro
 305 310 315 320

Ser Asp Phe Asn Leu Ala Leu Glu Gly Asn Val Tyr Leu Gly Arg Ile
 325 330 335

Cys Ile Ser Ala Tyr Val Glu Arg Leu Ser Asn Tyr Asp Ser Leu Ser
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Ile Pro Ile Ile Gln Ser Cys Leu Val Tyr Asp Asp Pro Leu Tyr Val
 355 360 365

Pro Ile Thr Leu Leu Cys Asp Val Tyr Val Val Thr Gly Leu Leu Ala
 370 375 380

Glu Asn Ile Tyr Val Gln Leu Thr Cys Gly Pro His Lys Lys Lys Thr
 385 390 395 400

Asp Cys Val Ser Ala Asn Glu Ile Gly Trp Asp Asp Asp Gln Asn Asn
 405 410 415

Ala Ile Gly Val Asn Arg Lys Lys Lys Met Arg Lys Lys Asn Ser Asp
 420 425 430

Glu Asn Ile Thr Asp Asn Val Glu Phe Phe Asp Phe Leu Asn Phe Asn
 435 440 445

Gly Ile Leu Asn Thr Asp Asn Phe Phe Asn Thr Leu Thr Glu Lys Gln
 450 455 460

Gln Ile Leu Glu Asn Ser Gly Ser Thr Glu Phe Tyr Phe Ser Ser Arg
 465 470 475 480

Lys Gly Lys Ile Asp Asn Met Lys Leu Cys Ser Val Glu Asp Glu Leu
 485 490 495

Gln Gln Trp Asp Ile Ile Ile Asn Val Tyr Glu Lys Glu Lys Lys Thr
500 505 510

Asn Asn Asp Gly Asn Ile Phe Asn Asn Phe Ile Tyr Ser Gly Gly Asn
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Asn Met Ile Thr Asp Lys Tyr Asn Tyr Tyr Asp Lys Gln Asn Lys Glu
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Ser Lys Leu Thr Asp Tyr Gln Lys Tyr Lys Leu Lys Lys Arg Glu Glu
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Asn Tyr Asp His Arg Lys Tyr Glu Glu Asp Glu Glu Asn Glu Ile Gly
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Val Lys Gln Asn Asn Asp Arg Arg Ile Ala Tyr Tyr Arg Met Pro Leu
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Lys Asn Val Leu Leu His Asn Glu Lys Ile Ser Arg Cys Pro Ile Trp
595 600 605

Leu Pro Leu Lys Asn Ile Ser Lys Asn Val Asp Ser Gly Phe Asn Cys
610 615 620

Met Tyr Asn Ile Phe Gln Asn Gly Ser Ile Leu Val Asn Leu Glu Lys
625 630 635 640

Ser Tyr Asp Leu Gln Leu Gly Leu Asn Arg Arg Lys Lys Leu Val Pro
645 650 655

Val Asn Tyr Glu Leu Arg Cys Tyr Ile Tyr Ala Cys Arg Asn Ile Ile
660 665 670

Ser Asn Phe Asn Asp Ser Pro Asn Thr Phe Val His Ile Ser Cys Ser
675 680 685

Gly Lys Met Lys Ile Thr Ser Leu Val Leu Asn Asn Ser Asn Pro Val
690 695 700

Phe Leu Gln Cys Leu Lys Leu Asn Ile Thr Ile Leu Thr Asp Tyr Ser
705 710 715 720

Val Gly Leu Pro Thr Ile Pro Phe Ile Val Val Thr Leu Tyr Glu Phe
725 730 735

His Asn Asn Thr Phe Tyr Phe Ile Gly Arg Cys Phe Cys Asn Tyr Asp
740 745 750

Ile Tyr Leu Lys Asp Asn His Lys Lys Cys Asn Phe Ala Asn Lys Ser
755 760 765

Ser Lys Tyr Asn Met Val Glu Gln Ile Gln Pro Arg Trp Ile Lys Leu
770 775 780

Lys Gly Asn Lys His Ala Lys Ala Met Tyr Pro Asn Met Leu Trp Gln
785 790 795 800

Gln Ser Gly Ser Tyr Lys Arg Met Met Gln Glu Tyr Met Phe Glu Lys
805 810 815

Gln Lys Asp Phe Tyr Thr Ser Asn Ala Asn Ile Gly Gly Asp Met Ala
820 825 830

Asn Asp Asn Ser Ser Thr Asn Arg Ile Asn Ser Gln Arg Arg Gln Pro
835 840 845

His Asn Asp Phe Leu His Gly Glu Arg Val Gly Asp Ile Leu Leu Tyr
850 855 860

Phe Glu Leu Val Lys Glu Lys Asp Ala Met Lys Ile Pro Ile Tyr Pro
865 870 875 880

Met Ile Thr Glu Ile Lys Lys Cys Thr Leu Ser Phe Phe Cys Met Ser
885 890 895

Leu Glu Asn Leu Val Leu Met Lys Ile Pro Ser Lys Lys Asn Glu His
900 905 910

Ile Ile Pro Asn Asp Tyr Arg Lys Asn Asn Ile Thr His Pro Ile Ile
915 920 925

Val Leu Ser Ile Thr Ser Tyr Ser Ser Tyr Gly Lys Lys Lys Asn Glu
930 935 940

Leu Leu Ile Lys Tyr Ala Lys Ser Leu Lys Ser Asn Thr Arg Thr Gln

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Leu Lys Asn Trp Lys Asn Ala Phe Asn Gln Gln Ser Phe Glu Met Phe						
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Ala Ile Glu Asn Phe Asp Ile Asp Val Pro Leu Asp Pro Ile Phe Asp						
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Pro Thr Leu Asn Ile Lys Val Tyr Asn Lys Lys Val Lys Asp Lys Tyr						
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Phe Ile Gly Glu Thr Asn Ile Ser Leu Ile Pro Tyr Ile Pro Trp						
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Ile Glu Asn Leu Asp Asp Ala Leu Tyr Tyr Leu Gln Ala Tyr Glu						
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Asp Tyr Ser Glu Thr Ile Asn Ile Lys Asn Ile Asp Asn Ala Phe						
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Asn Ile Tyr Lys Asn Lys Asn Ala Ala Leu Val Val Thr Ala Ile						
		1055		1060		1065
Ser Leu Ala Asp Tyr Glu His Thr Ile Ser Leu Lys Glu Glu Leu						
		1070		1075		1080
Lys Lys Tyr Glu Asn Asp Asp Gln Asp Asp Asp Trp Asn Asn Ile						
		1085		1090		1095
Pro Leu Phe Arg Val Asn Ser Asn Ala Lys Phe Thr Gly Lys Val						
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Ser Gly Met Ile Gly Asp Ile Ala Gly Gly Met Ser Gly Gly Met						
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Met Gly Gly Gly Ile Pro Asn Gly Met Gly Gly Gly Met Pro Asn						
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Gly Met Gly Gly Gly Met Pro Asn Gly Met Val Gly Gly Met Pro						
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Pro Asn Gly Met Gly Gly Gly Met Pro Asn Gly Met Gly Gly Gly
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Met Pro Asn Gly Met Gly Gly Asp Ile Pro Asn Gly Ile Gly Gly
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Gly Ile Pro Asn Gly Met Gly Gly Gly Pro His Pro Asn Phe Val
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Gly His Glu Tyr Asp Pro Arg Asn Asp His Leu Ile Asn Asn Thr
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Met Met Asn Asn Phe Gln Met Asn Met Met His Asn Arg Glu Asn
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Tyr Pro Ser Gly Asn Tyr Lys Val Asn Cys Ile Ala Glu Phe Gly
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Lys Lys Gly Ser Lys Ile Gly Asn Gly Phe Asn Asn Glu Gly Tyr
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Thr Thr Asn Met Asn His Tyr Phe Ser Cys Tyr Tyr Asn Lys Lys
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Asn Gln Arg Asn Ile Tyr Asn Val Met Tyr Asn Glu Ser Val Tyr
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Lys Leu His Asp Asp Gly Val Pro Glu Ile Ile Lys Ala Ser Tyr
1325 1330 1335

Asn Val Lys Asn Tyr Pro Tyr Ile Lys Ile Leu Arg Asn Lys Phe
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Ile Leu Asn Val Tyr Ile Pro Pro Arg Phe Ile Leu Tyr Val Glu
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Gly Asp Lys Ile Asn Leu Glu Lys Phe Val Lys Asn Thr His Arg
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Ile	Pro	Ser	Ile	Pro	Leu	Lys	Lys	Lys	Tyr	Asn	Asn	Lys	Ile	Phe
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Arg	Trp	Met	Ser	Lys	Glu	Trp	Arg	His	Met	Met	Lys	Lys	Asn	Lys
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Asn	Lys	Leu	Asn	Thr	Trp	Asn	Asn	Ile	Phe	Ser	Phe	Phe	Asp	Ile
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1685						1690					1695			
Glu	Ile	Met	Ser	Tyr	Glu	Glu	Ala	Ala	Lys	Ile	Pro	Ile	His	Lys
1700						1705					1710			
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1715						1720					1725			
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1730						1735					1740			
Phe	Asp	Leu	Val	Val	Thr	Ser	Glu	Leu	Asp	Cys	Val	Asn	Tyr	Asn
1745						1750					1755			
Gly	Lys	Asn	Pro	Ile	Thr	Gln	Thr	Thr	Asp	Val	His	Tyr	Asn	Cys
1760						1765					1770			
Lys	Thr	Gly	Asp	Ala	Ile	Phe	Asn	Trp	Arg	Met	Val	Tyr	Pro	Asn
1775						1780					1785			
Ile	Thr	His	Pro	Leu	Asn	Thr	Cys	Phe	Leu	Gln	Leu	Ala	Val	Tyr
1790						1795					1800			
Asn	Asn	Ser	Asn	Val	Gly	Thr	Ser	Gln	Phe	Leu	Gly	Glu	Val	Asn

1805		1810		1815
Leu Glu Leu Ser Lys Tyr	Ile His Lys Val Leu	Gln Val Val Asn		
1820	1825	1830		
Lys Phe Glu Leu Asp Ala	Glu Leu Lys Leu Arg	Lys Lys Asn Phe		
1835	1840	1845		
Gly Asp Asn Thr Asn Gly	Asp Asn Asn Cys Ser	Gly Thr Ile Gln		
1850	1855	1860		
Val Thr Val Gln Phe Ile	Pro Gln Ser Lys Ala	Asn Ile Lys Pro		
1865	1870	1875		
Ser Gly Leu Gly Arg Ser	Glu Pro Asn Arg Asn	Pro Tyr Leu Arg		
1880	1885	1890		
Thr Pro Lys Asn Gly Arg	Asp Trp Asn Asp Phe	Ala Tyr Ser Ile		
1895	1900	1905		
Gly Phe Asn Asp Ile Tyr	Lys Pro Phe Trp Gly	Gly Leu Arg Cys		
1910	1915	1920		
Ile Leu Ser Tyr Lys Leu	Thr Phe Phe Lys Phe	Gln Phe Phe Ala		
1925	1930	1935		
Pro His Pro Leu Lys				
1940				
<210> 29				
<211> 1445				
<212> PRT				
<213> Toxoplasma gondii				
<400> 29				
Met Gly Lys Thr Lys Ile Tyr Ser Val Gly Phe Thr Val His Glu Ala				
1	5	10	15	
Gln Thr Leu Val Thr Glu Lys Gly Gln Pro Val Asp Pro Leu Val Val				
20	25	30		
Val Arg Cys Cys Gly Arg Glu Tyr Arg Thr Glu Ile Lys Tyr Ala Lys				
35	40	45		

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

Thr Arg Gln Thr Leu Lys Ser Arg Trp Gly Tyr Gln Met Asp Ser Cys
 275 280 285

Cys Thr Asn Glu Ala Glu Tyr Trp Trp Phe Asn Leu Tyr Gly Phe Asp
 290 295 300

Asp Glu Glu Val Ala Gln Ala Thr Lys Val Ala Gly Gln Gly Gly Arg
 305 310 315 320

Leu Val Ala Asn Cys Tyr Leu Gly Arg Ile Leu Leu Gly Ala Arg Ala
 325 330 335

Glu Arg Leu Thr Lys Glu Asp Asp Leu Met Pro Ala His Thr Val Ala
 340 345 350

Ala Arg Pro Tyr Glu Thr Pro Pro Val Ile Pro Leu Ala Val Leu Ala
 355 360 365

Asp Val Tyr Glu Val Gln Gly Ala Pro Gly Glu Lys Val Ser Val Glu
 370 375 380

Ile Trp Cys Gly Pro Ala Arg Ala Arg Thr Lys Trp Val Thr Gly Leu
 385 390 395 400

Glu Thr Lys Ala Ala Gln Arg Ala Gly Val Ala Pro Gln Ala Phe Asn
 405 410 415

Arg Ala Met Glu Gly Ala Leu Gly Val Ala Ser Tyr Leu Arg Gly Asp
 420 425 430

Ile Pro Glu Gly Glu Asp Arg Phe Pro Phe Asp Asn Thr Glu Gly Arg
 435 440 445

Val Glu Asp Leu Arg Leu Val Val Pro Glu Asp Thr Lys Gln Gln Trp
 450 455 460

Asp Ile Ile Ile Ser Leu Tyr Val Arg Gly Thr Thr Lys Gly Phe Met
 465 470 475 480

Gly Asp Thr Arg Ile Ala Phe Gln Arg Leu Lys Met Ser Lys Ile Pro
 485 490 495

Gly His Val His Asn Asn Pro Arg Ala Pro Ile Trp Val Pro Leu Ile

500					505					510					
Ser	Thr	Pro	Pro	Phe	Glu	Ser	Val	Lys	Pro	Ala	Pro	Ala	Ile	Leu	Met
		515					520					525			
Val	Ile	Glu	Lys	Ser	Lys	Val	Glu	Ala	Phe	Ala	Arg	Ser	Lys	Arg	Lys
	530					535					540				
His	Val	Thr	Ala	Val	Gly	Tyr	Gln	Leu	Arg	Ala	Tyr	Val	Tyr	Ala	Ala
545					550					555					560
Arg	Asn	Leu	Leu	Ser	Pro	Ser	Gly	Ala	Leu	Pro	Asn	Pro	Phe	Val	Gln
				565					570					575	
Val	Ala	Cys	Ala	Gly	Thr	Ser	Arg	Glu	Thr	Glu	Val	Phe	Glu	Gln	Thr
			580					585					590		
Ser	Ser	Pro	Val	Phe	Met	Asp	Cys	Leu	Leu	Leu	Asp	Ile	Thr	Met	Met
		595					600					605			
Thr	Asp	Pro	Val	Ser	Arg	Leu	Pro	Thr	Val	Ala	Pro	Ile	Val	Val	Thr
	610					615					620				
Leu	Phe	Glu	Gln	Arg	Ser	Trp	Gly	Ile	Gln	Phe	Leu	Gly	Arg	Ala	Thr
625					630					635					640
Cys	His	Tyr	Asp	Arg	Leu	Arg	Gly	Arg	Leu	Lys	Pro	Gly	Glu	Ser	Pro
				645					650					655	
Thr	Val	Ala	Glu	Pro	Arg	Trp	Ile	Lys	Leu	Arg	Gly	Gly	Lys	Tyr	Ala
			660					665					670		
Asn	Arg	His	Leu	Gly	Asp	Val	Leu	Leu	Leu	Leu	Glu	Leu	Ile	Arg	Lys
		675					680					685			
Arg	Asp	Ala	Glu	Ile	Ile	Pro	Ala	Phe	Pro	Met	Arg	Pro	Val	Val	Asn
	690					695					700				
Met	Cys	Asn	Leu	Thr	Phe	Ser	Cys	Leu	Gly	Val	Arg	Ser	Leu	Tyr	Met
705					710					715					720
Thr	Gln	Arg	Ala	Lys	Arg	Leu	Asp	Tyr	Val	Ser	Ile	Arg	Lys	Gly	Gln
				725					730					735	

Asp Lys Lys Thr Glu Leu Arg Arg Ile Arg Gly Pro Leu Leu Arg Ile
740 745 750

Ser Val Ser Ser Tyr Ala Ser Ala Gly Arg Gly Asn Asn Glu Ala Ile
755 760 765

Leu Arg Tyr Glu Arg Asn Leu Pro Glu Asp Pro Thr Thr Val Asn Lys
770 775 780

Leu Trp Thr Thr Val Thr Lys Ala Ala Asn Ala Asp Ile Phe Lys Val
785 790 795 800

Val Asn Met Glu Ile Asp Val Pro Val Asp Pro Ile Tyr Asp Pro Arg
805 810 815

Leu Val Val Gln Val Tyr Asp Arg Lys Gln Lys Pro Lys Tyr Phe Ile
820 825 830

Gly Glu Tyr Ser Met Ser Leu Val Pro Leu Ile Pro Trp Val Leu Asp
835 840 845

Gln Gln Ser Ala Ile Glu Ala Val Ser Pro Val Asn Asp Phe Thr Asp
850 855 860

Thr Val Asp Leu Lys His Leu Gly Gly Leu Leu Arg Gly Phe His Gly
865 870 875 880

Asn Ser Lys Asn Arg Gly Thr Gly Gln Ile Gly Leu Glu Ala Leu Ser
885 890 895

Ala Ala Asp Arg Glu Thr Ala Asp Ala His Lys Glu Lys Thr Leu Ala
900 905 910

Gln Ser Arg Phe Ala Thr Tyr Asp Pro Asp Asn Lys Thr Phe Ser Asp
915 920 925

Ser Trp Leu Leu Pro Ser Gly Leu Pro Lys Ile Leu Val Ser Ser Tyr
930 935 940

Ala Val Pro Gly Phe Arg Cys Asp Val Ile Tyr Thr Asn Met Phe Thr
945 950 955 960

Leu Asn Val Tyr Ile Pro Ala Lys Phe Val Leu Phe Ala Glu Gly Lys
 965 970 975

Arg Ala Ala Asp Lys Lys Thr Lys Glu Gln Tyr Ala Arg Pro Ser Val
 980 985 990

Asp Ser Thr Leu Glu Gln Phe Leu Asp Asp Val Ile Phe Pro Ser Asp
 995 1000 1005

Ser Leu Lys Lys Ser Val Met Gly Asp Ile Asp Val Thr Gly Phe
 1010 1015 1020

Val Lys Phe Phe Val Asn Leu Thr His His Glu Glu Pro Asn Pro
 1025 1030 1035

His Val Asp Ser Ser Ala Ala Glu Trp Ala Ser Ser Glu Asp Arg
 1040 1045 1050

Met Arg Arg His Leu Arg Gly Glu Asp Ala Tyr Pro Lys Leu Leu
 1055 1060 1065

Lys Ile Arg Val Tyr Val Ile Arg Ala Ile Ser Leu Tyr Val Gly
 1070 1075 1080

Asp Asp Arg Ile Leu Pro Asn Pro Tyr Leu Leu Phe Asn Leu Gly
 1085 1090 1095

Asp Lys Ser Asp Thr Leu Arg Ala Glu Ala Lys Pro Asn Thr His
 1100 1105 1110

Asn Pro Glu Phe Phe Thr Val Trp Glu Lys Asp Val Met Phe Pro
 1115 1120 1125

Asp Asp Ser Gln Phe Glu Leu Gln Val Trp Ser Ala His Glu Gly
 1130 1135 1140

Thr Ser Gly Gly Leu Asp Asp Ile Phe Ile Gly Ser Thr Cys Ile
 1145 1150 1155

Asp Leu Glu Glu Arg Trp Phe Ser Lys Glu Trp Gln Lys Ser Met
 1160 1165 1170

Ser	Lys	Asn	Gln	Val	Pro	Met	Glu	Tyr	Arg	Pro	Leu	Lys	Gln	Met
1175						1180					1185			
Pro	Ser	Gly	Ser	Phe	Lys	Gly	Thr	Val	Glu	Met	Trp	Val	Glu	Leu
1190						1195					1200			
Met	Asp	Phe	Gln	Lys	Ala	Gly	Glu	Val	Pro	Lys	Phe	Asp	Leu	Gln
1205						1210					1215			
Ser	Pro	Ala	Ala	Thr	Glu	Val	Glu	Ile	Arg	Val	Ile	Val	Trp	Gly
1220						1225					1230			
Ala	Arg	Asn	Leu	Asn	Phe	Lys	Ala	Leu	Gly	Lys	Asp	Phe	Val	Asp
1235						1240					1245			
Ala	Met	Ile	Arg	Cys	Asn	Leu	Asp	Cys	Thr	Gly	Tyr	Arg	Gly	Ser
1250						1255					1260			
Gln	Pro	Ile	Ala	Gln	Gln	Thr	Asp	Val	His	Tyr	Tyr	Ser	Lys	Thr
1265						1270					1275			
Gly	Ala	Ala	Ile	Phe	Asn	Trp	Arg	Met	Val	Tyr	Ser	Arg	Val	Val
1280						1285					1290			
Met	Pro	Val	Ser	Thr	Cys	Val	Leu	Gln	Ile	Ala	Ala	Tyr	Asp	Asn
1295						1300					1305			
Arg	Asn	Met	Gly	Glu	Ser	Pro	Phe	Ile	Gly	Glu	Val	Asn	Leu	Glu
1310						1315					1320			
Leu	Arg	Arg	Tyr	Leu	Glu	Arg	Val	Ala	Ser	Thr	Leu	Asn	Ser	Ile
1325						1330					1335			
Asp	Val	Asp	Ala	Glu	Leu	Lys	Leu	Ile	Asn	Arg	Ser	Arg	Glu	Ser
1340						1345					1350			
Ala	Asp	Val	Ser	Ser	Phe	Gly	Phe	Val	Gln	Val	Ser	Leu	Gln	Phe
1355						1360					1365			
Ile	Ser	Gln	Ser	Glu	Ala	Thr	Ser	Lys	Pro	Val	Gly	Leu	Gly	Arg
1370						1375					1380			
Glu	Pro	Pro	Asn	Arg	Asp	Pro	Arg	Leu	Thr	Thr	Pro	Gln	Glu	Gly

1385 1390 1395
 Arg Lys Trp Glu Asp Val Leu Gly Ser Ala Gly Leu Arg Val Asp
 1400 1405 1410
 Tyr Arg Pro Leu Trp Tyr Trp Val Arg Val Ala Ala Val Val Phe
 1415 1420 1425
 Leu Ser Ile Trp Ile Phe Val Val Ala Phe Leu Tyr Pro Ser Leu
 1430 1435 1440
 Leu Gly
 1445
 <210> 30
 <211> 1641
 <212> PRT
 <213> Plasmodium berghei
 <400> 30
 Met Ser Ile Gly Lys Lys Thr Gln Tyr Asn Ile Lys Val Asp Ile His
 1 5 10 15
 Glu Val Lys Asp Leu Ser Phe Arg Glu Ser Thr Asn Glu Lys Glu Ile
 20 25 30
 Ile Pro Asn Pro Tyr Ile Glu Ile Arg Val Asn Asp Glu Thr Lys Cys
 35 40 45
 Thr Ala Lys Lys Asn Gln Ala Val Asn Val Val Tyr Asn Thr Ser Phe
 50 55 60
 Asn Phe Ser Met Asp Leu Thr Asp Tyr Asp Phe Gln Arg Thr Ser Val
 65 70 75 80
 Glu Val Cys Val Leu His Lys Tyr Thr Ile Gln Ser Ala Leu Ile Gly
 85 90 95
 Lys Cys Ser Phe Ser Leu Asn Tyr Val Tyr Ser Lys Val Gln His Trp
 100 105 110
 Ile Tyr Arg Ile Trp Val Lys Leu Arg Asn Pro Asp Leu Pro Leu Asp
 115 120 125

Asp Val Gly Tyr Leu Leu Ile Ser Val Gly Val Tyr Gly Pro Gly Asp
 130 135 140

Ser Ile Pro Ile Ile Asn Asp Ser Ile Lys Thr Asn Met His Glu His
 145 150 155 160

Glu Ile Cys Ala Asn Asn Lys Gly Ile Asp Met His Ile Thr His Tyr
 165 170 175

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

Asn Ala Asn Ser Leu Phe Gln Asn Asn Leu Glu Pro Tyr Val Arg Val
 195 200 205

Ile His Asn Gly Phe Glu Glu Lys Thr Lys Ile Ile Arg Asn Asp Pro
 210 215 220

Asn Pro Val Trp Asn Leu Ser Val His Leu Pro Thr Cys Thr Pro Cys
 225 230 235 240

Tyr Asp Lys Asn Ile Ile Ile Glu Leu Ile Asn Gly Glu Thr Asn Gly
 245 250 255

Val Val Ile Phe Ser Ile Leu Leu Asp Phe Phe Glu Ile Leu Lys Arg
 260 265 270

Glu Ile Val Pro Arg Trp Phe Asn Ile Tyr Tyr Asn Pro Gln Asn Tyr
 275 280 285

Ile Phe Pro Arg Ser Ser Ile Tyr Ser Gln Asn Val Asn Gln Asn Ser
 290 295 300

Thr Asn Pro His Ala Phe Gly Asn Asn Gln Thr Ser Asn Asn Asn Gln
 305 310 315 320

Ser Val Ala Gly Ile Gly Asn Thr Ile Asn Asn Val Ser Thr Phe Gly
 325 330 335

Asn Tyr Leu Phe Ser Gly Thr Thr Ala Glu Lys Leu Phe Lys Asn Ala
 340 345 350

Ala Gln Gly Ile Asn Ile Asn Asp Ile Leu Gly Ile Thr Lys Val Gln
 355 360 365

Asn Ile Phe Thr Asn Asp Ile Leu Lys Glu Phe Tyr Leu Tyr Gly Gly
 370 375 380

Arg Ile Phe Leu Gly Val Asn Ile Thr Lys Thr His Ala Pro Gly Pro
 385 390 395 400

Ile Cys Ile Lys Ser Ala Lys Ile Glu His Asp Pro Pro Asn Lys Glu
 405 410 415

Tyr Ile Phe Cys Ala Asp Ile Tyr Glu Ile Leu Gly Val Glu Gly Asn
 420 425 430

Asn Lys Gln Gly Glu Tyr Glu Thr Asn Asn Leu Asn Asn Ile Asn Asp
 435 440 445

Gly Asn Val Leu Asn Glu Lys Asn Asn Phe Asn Asn Asn Gly Asp Ser
 450 455 460

Ile Ile Cys Val Cys Gly Leu Gly Pro His Lys Leu Lys Thr Pro Pro
 465 470 475 480

Leu Leu Pro Asn Glu Val Gly Ser Tyr Val Leu Asn Glu Ser Ala Gly
 485 490 495

Arg Ile Asn Glu Phe Arg Ile Phe Leu Pro Gln Asn Asn Asn Glu Gln
 500 505 510

Ile Tyr Asp Ile Phe Leu Tyr Ile Tyr Val Lys Ser Asn Ile Ser Val
 515 520 525

Thr Asp Trp Ile Thr Asn Arg Arg Asn Ile Tyr Asn Ser Ile Leu Asn
 530 535 540

Thr Glu Tyr Glu Asp Gly Asp Ile Asn Lys Ile Gln Lys Ile Asn Lys
 545 550 555 560

Met Ser Ser Ile Asn Gln Ile Ser Asp Asp Met Val Asn Asn Asn Ser
 565 570 575

Glu Ile Leu Asn Asn Tyr Lys Leu Lys Ser Phe Val Arg Ile Pro Phe

580								585				590				
Lys	Tyr	Leu	Leu	Leu	Asn	Glu	Asn	Lys	Pro	Lys	Trp	Phe	Ser	Met	Lys	
		595					600					605				
Asn	Val	Glu	Thr	Asp	Ala	His	Asp	Tyr	Asn	Ile	Ser	Phe	Phe	Ala	Asn	
	610					615					620					
Leu	Ile	Pro	Cys	Asn	Leu	Tyr	Lys	Lys	Arg	Pro	Lys	Arg	Leu	Glu	Tyr	
625					630					635					640	
Lys	Leu	Ser	Arg	Tyr	Phe	Phe	Arg	Ala	Leu	Ile	Tyr	Glu	Gly	Leu	His	
				645					650					655		
Phe	Pro	Ala	Lys	Gly	Tyr	Asn	Ala	Phe	Pro	Asp	Pro	Tyr	Ile	Lys	Ile	
			660						665				670			
Glu	Ile	Ala	Gly	Gln	Thr	Ile	Lys	Thr	Ser	Thr	Ile	Leu	His	Thr	Leu	
		675					680					685				
Asn	Pro	Asn	Tyr	Tyr	Glu	Ala	Tyr	Glu	Val	Glu	Val	Ile	Leu	Pro	Thr	
	690					695					700					
Asn	Leu	Asn	Leu	Ala	Pro	Asp	Ile	Ser	Ile	Glu	Ala	Phe	Ser	Val	Asn	
705					710					715					720	
Lys	Ser	Phe	Leu	Tyr	Asn	Asp	Asp	Ile	Leu	Leu	Gly	Ser	Cys	Thr	Tyr	
				725					730					735		
Pro	Ile	Met	Lys	Val	Pro	Met	Glu	Trp	Lys	Arg	Ser	Pro	Ile	Trp	Ile	
			740						745				750			
Asn	Leu	Lys	Ser	Ser	Gln	Tyr	Lys	Lys	Cys	Lys	Ala	Lys	Leu	Leu	Val	
		755					760					765				
Ala	Phe	Glu	Leu	Val	Pro	Tyr	Glu	Lys	Val	Val	Asn	Asp	Asp	Gln	Tyr	
	770					775					780					
Pro	Phe	Tyr	Asp	Asp	Ile	Arg	Pro	Ser	Thr	Leu	Pro	Gly	His	Val	Ser	
785					790					795					800	
Leu	Phe	Leu	Val	Gly	Ile	Arg	Met	Phe	Lys	Pro	Leu	Lys	Asp	Pro	Ser	
				805					810					815		

Val Thr Val Cys Phe Gly Arg Asp Ile Asp Asp Thr Ser Gln Phe Leu
820 825 830

Trp Tyr Glu Thr Thr Asn Lys Val Ile Ser Gly Lys Glu Gly Asn Trp
835 840 845

Asn Phe Leu Lys Tyr Phe Ser Leu Asp Val Ala Leu Pro Lys Arg Met
850 855 860

Gln His His Ser Phe Leu Glu Val Arg Val Glu Asp Arg Gly Ser Asn
865 870 875 880

Thr Gly Phe Ser Gly Gly Thr Ser Asn Gly Tyr Asn Ser Ile Asn Ala
885 890 895

Ile Asn Asn Asp Asn Leu Val Gly Thr Ala Tyr Ile Thr Leu Asn Pro
900 905 910

Leu Leu Pro Trp Leu Tyr Glu Tyr Glu Gln Arg Glu Cys Ile Glu Leu
915 920 925

Phe Lys Leu His Leu Leu Glu Glu Val Leu Ile Glu Asp Ala Glu Lys
930 935 940

Ala Arg Lys Thr Tyr Asn Ser Ala Leu Ile Tyr Lys Lys Ser Ser Ile
945 950 955 960

Phe Ser Lys Lys Met Ser Asn Asp Ile Phe Glu Ile Gln Gly Thr Asp
965 970 975

Glu Glu Arg Asp Gly Tyr Gly Asn Asn Asn Val Phe His Ala Leu Ser
980 985 990

Leu Asn Met Leu Glu Glu Asn Pro Phe Leu Glu Tyr Gly Asp Glu Asp
995 1000 1005

Val Glu Glu Pro Asp Glu Gly Glu Asn Gly Leu Lys Asn Val Met
1010 1015 1020

His Lys Ile Lys Asp Asp Ile Asn Lys Glu Asp Arg Ala Glu Asn
1025 1030 1035

Lys	Asn	Ser	Val	Thr	Glu	Leu	Glu	Lys	Lys	Ile	Asn	Ser	Asn	Gly
1040						1045					1050			
Ile	Leu	Ser	Pro	Ile	Glu	Thr	Asn	Gly	Met	Arg	Ala	Val	Asn	Glu
1055						1060					1065			
Phe	Glu	Glu	Ile	Pro	Asn	Glu	Asn	Asn	Gln	Lys	Lys	Glu	Ile	Lys
1070						1075					1080			
Lys	Lys	Lys	Lys	Ser	Arg	Lys	Asn	Ile	Asn	Asn	Glu	Tyr	Leu	Pro
1085						1090					1095			
Tyr	Asn	Asp	Pro	Asp	Phe	Ala	Asn	Val	Arg	Ile	Glu	Asp	Pro	Leu
1100						1105					1110			
Glu	His	Val	Cys	Phe	Thr	Gln	Lys	Thr	Gly	Gly	Ile	Asp	Asn	Asp
1115						1120					1125			
Ile	Asp	Val	Thr	Gly	Tyr	Ser	Asn	Asn	Asn	Lys	Ser	Ile	Ser	Asn
1130						1135					1140			
Ile	Asn	Asp	Asn	His	Val	Asn	Lys	Gln	Tyr	Thr	Ser	Ala	Asn	Thr
1145						1150					1155			
Leu	Asp	Asn	Ala	Glu	Asn	Cys	Gly	Lys	Gly	Ile	Tyr	Gly	Phe	Ser
1160						1165					1170			
Glu	Asp	Met	Leu	Asn	Phe	Gln	Leu	Ser	Leu	Ala	Tyr	Asp	Asp	Asp
1175						1180					1185			
His	Asp	Glu	Leu	Gln	Arg	Glu	Glu	Met	Leu	Tyr	Glu	Tyr	Glu	Val
1190						1195					1200			
Asp	Met	Asp	Ile	Asn	Asp	Leu	Pro	Tyr	Leu	Arg	Ala	Thr	Ile	Phe
1205						1210					1215			
Arg	Cys	Thr	Asp	Ser	Gly	Ile	Pro	Glu	Ala	Val	Gly	Tyr	Leu	Lys
1220						1225					1230			
Tyr	Ile	Cys	Asn	Val	Tyr	Asp	Glu	Lys	Thr	Met	His	Lys	Lys	Lys
1235						1240					1245			

Glu	Met	Val	Lys	Ala	Cys	Asp	Asn	Leu	Val	Arg	Glu	Tyr	Lys	Leu
	1250					1255					1260			
Thr	Arg	Asn	Leu	Val	Val	Arg	Ala	Tyr	Ile	Ile	Gln	Ala	Arg	Gly
	1265					1270					1275			
Leu	Asn	Pro	Pro	Ser	Gly	Ala	Thr	Asp	Ile	Thr	Thr	Tyr	Ile	Trp
	1280					1285					1290			
Ile	Lys	Asn	Ser	Asp	Glu	Ile	Thr	Asn	Ile	Pro	Gly	Gly	Leu	Ser
	1295					1300					1305			
His	Asn	Ile	Lys	Asp	Thr	Gly	His	Thr	Lys	Lys	Gln	Gly	Tyr	Lys
	1310					1315					1320			
Pro	Glu	Phe	Asn	Arg	Cys	Tyr	Gln	Leu	Leu	Cys	Ser	Phe	Pro	Asp
	1325					1330					1335			
Glu	Ser	Ile	Ile	Gln	Val	Cys	Val	Met	Asn	Gln	Gly	Ser	Ile	Ser
	1340					1345					1350			
Asp	Glu	Val	Ile	Gly	Tyr	Thr	Tyr	Ile	Asp	Met	Glu	Asp	Arg	Tyr
	1355					1360					1365			
Phe	Asn	Lys	Lys	Ile	Lys	Gln	Leu	Met	Leu	Asp	Asp	Ile	Met	Pro
	1370					1375					1380			
Ile	Glu	Leu	Arg	Ser	Leu	Lys	Leu	Glu	Asn	Ser	Thr	Ile	Ser	His
	1385					1390					1395			
Gly	Ser	Leu	Arg	Cys	Trp	Phe	Glu	Ile	Phe	Thr	Glu	Glu	Phe	Ala
	1400					1405					1410			
Gln	Leu	Asn	Pro	Val	Lys	Ile	Leu	Cys	Ser	Asn	Glu	Pro	Asp	Asp
	1415					1420					1425			
Tyr	Gln	Leu	Arg	Leu	Val	Val	Trp	Lys	Val	Leu	Asn	Val	Ala	Met
	1430					1435					1440			
Asp	Asn	Asn	Ser	Thr	Val	Ser	Leu	Phe	Val	Arg	Cys	Ile	Tyr	Ala
	1445					1450					1455			
Asp	Asp	Asp	Ser	Glu	Asp	Ile	Arg	Asp	Thr	Asp	Ile	His	Tyr	Asn

1460		1465		1470
Ser Lys Asn Gly Lys Gly Ile Phe Asn Trp Arg Phe Val Tyr Asn				
1475		1480		1485
Val Lys Ile Pro Thr Asn Ser Thr Thr Ile Lys Val Gln Ile His				
1490		1495		1500
Asn Tyr Ala Leu Leu Ser Ser Asn Glu Pro Ile Gly Glu Ser Ser				
1505		1510		1515
Leu Asp Leu Ser Ala His Phe Tyr Arg Ala Arg Lys Lys Lys Gly				
1520		1525		1530
Phe Tyr His Ile Pro Arg Phe Ser Ile Ser Cys Lys His Pro Ala				
1535		1540		1545
His Lys Asn Lys Ile Arg Gly Asn Ile Glu Val Glu Ala Cys Ile				
1550		1555		1560
Leu Pro Lys Asn Glu Ala Asp Ile Asp Pro Val Gly Asn Gly Arg				
1565		1570		1575
Asp Glu Pro Asn Lys Asp Pro Phe Leu Pro Pro Ile Thr Glu Asn				
1580		1585		1590
Arg Thr Tyr Val Asp Trp Val Thr Ile Asn Glu Lys Leu Gly Asp				
1595		1600		1605
Ala Thr Ala Ser Ile Met Gln Gly Leu Lys Trp Thr Gly Val Trp				
1610		1615		1620
Val Met Val Ala Phe Ile Val Ile Gly Ile Leu Phe Ile Met Phe				
1625		1630		1635
Leu Leu Lys				
1640				

<210> 31
 <211> 1704
 <212> PRT
 <213> Plasmodium falciparum

 <400> 31

Met Ser Ser Ile Ala Lys Lys Thr Gln Tyr Asn Ile Lys Val Asp Ile
1 5 10 15

His Glu Val Lys Asp Leu Ser Phe Arg Glu Ser Ala Asn Glu Lys Glu
20 25 30

Ile Ile Pro Asn Pro Tyr Ile Glu Val Thr Val Asn Asn Glu Lys Lys
35 40 45

Ser Thr Thr Lys Lys Asn Gln Ala Val Asn Val Val Tyr Asn Thr Ser
50 55 60

Phe Asn Phe Ser Gln Asp Leu Thr Asp Tyr Lys Phe Glu Arg Thr Ser
65 70 75 80

Val Asp Val Cys Val Leu His Lys Tyr Thr Ile Gln Ser Ala Leu Ile
85 90 95

Gly Lys Cys Ser Phe Gly Leu Asn Phe Val Tyr Ser Lys Val Gln His
100 105 110

Trp Leu Tyr Arg Ile Trp Val Lys Leu Arg Asn Pro Asp Leu Pro Leu
115 120 125

Asp Asp Val Gly Phe Leu Leu Ile Ser Val Gly Val Tyr Gly Pro Gly
130 135 140

Asp Ser Ile Pro Ile Val Asn Asp Ser Val Lys Thr Asp Ile His Glu
145 150 155 160

Asp Val Phe Ser Asn Lys Gly Leu Asp Ile His Ile Thr His Tyr Asp
165 170 175

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

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

Asn Gly Phe Glu Glu Cys Thr Lys Val Ile Arg Asn Asp Pro Asn Pro
210 215 220

Val Trp Asn Leu Ser Ile His Ile Pro Thr Cys Thr Pro Cys Tyr Asp
225 230 235 240

Lys Asn Ile Leu Val Glu Leu Ile Asn Gly Glu His Asn Gly Ile Val
245 250 255

Ile Tyr Ser Ile Leu Leu Asp Phe Phe Glu Ile Leu Lys Arg Glu Leu
260 265 270

Ala Pro Arg Trp Phe Asn Ile Tyr Tyr Asn Pro Gln Asn Gln Ile Met
275 280 285

Pro Arg Tyr Ser Glu Tyr Met Gln Asn Gly Ser Ile Gln Ile Asn Leu
290 295 300

Asn Ser Thr Thr Thr Asn Asn Asn Asn Asn Asn Ser Thr Ala Ile Asn
305 310 315 320

Pro Leu Gly Asn Tyr Leu Phe Ser Gly Ala Ala Glu Lys Ile Phe Lys
325 330 335

Asn Ala Thr Gln Ala Ile Asn Ile Asn Asp Ile Leu Gly Val Thr Lys
340 345 350

Val Gln Asn Met Phe Thr Asp Asp Thr Leu Lys Glu Phe Tyr Leu Tyr
355 360 365

Gly Gly Arg Ile Phe Leu Ser Ala Asn Ala Thr Lys Thr His Ser Pro
370 375 380

Gly Pro Ile Cys Ile Lys Ser Ala Lys Val Glu Val Asp Ala Pro Asn
385 390 395 400

Lys Glu Tyr Ile Phe Cys Ala Asp Ile Tyr Glu Ile Leu Ser Val Arg
405 410 415

Asn Asn Lys Met Gly Asn Tyr Asp Asp Tyr Asp Gly Gly Tyr Thr Thr
420 425 430

Thr Asn Asn Asn Asn Lys Asn Lys Asn Asn Asn Asn Glu Asn Asn Asn
435 440 445

Asn Asp Asn Asn Asp Asn Ile Tyr Asn Ser Asn Asn Ile Tyr Asn Ser

450					455					460					
Ala	Ser	Glu	Lys	Arg	Arg	Ser	Arg	Tyr	Asn	Asn	Asn	Tyr	Asp	Ala	Ser
465					470					475					480
Gly	Glu	Ser	Ile	Ile	Cys	Val	Cys	Ala	Leu	Gly	Pro	His	Lys	Leu	Lys
				485					490					495	
Thr	Ile	Pro	Leu	Leu	Pro	Asn	Glu	Val	Gly	Ser	Tyr	Val	Leu	Asn	Glu
			500					505					510		
Asn	Val	Gly	Arg	Ile	Asp	Glu	Phe	Arg	Ile	Phe	Leu	Pro	Gln	Asn	Asn
		515					520					525			
Asn	Glu	Gln	Ile	Tyr	Asp	Ile	Phe	Leu	Tyr	Ile	Tyr	Ile	Lys	Ser	Asn
	530					535					540				
Leu	Ala	Val	Thr	Asn	Trp	Ile	Asn	Asn	Arg	Arg	Ser	Ile	Tyr	Asn	Ser
545					550					555					560
Val	Leu	Leu	Asn	Asn	Glu	Tyr	Glu	Ser	Gly	Asp	Arg	Asn	Lys	Lys	Gln
			565						570					575	
Gly	Leu	His	Lys	Met	Gly	Ser	Ile	Asn	Asn	Ile	Ser	Glu	Asp	Ile	Met
			580					585					590		
Gln	Asp	Ser	Asp	Phe	Leu	Asn	Asn	Tyr	Lys	Leu	Thr	Ser	Tyr	Val	Arg
		595					600					605			
Ile	Pro	Tyr	Lys	Tyr	Leu	Leu	Leu	Asn	Glu	Asn	Lys	Pro	Lys	Trp	Phe
	610					615					620				
Ser	Met	Lys	Asn	Ile	Glu	Thr	Asn	Val	His	Glu	Tyr	Asn	Ile	Ser	Phe
625					630					635					640
Phe	Ala	Asn	Leu	Ile	Pro	Tyr	His	Ala	Tyr	Lys	Lys	Arg	Pro	Lys	Arg
			645						650					655	
Leu	Glu	Tyr	Lys	Leu	Ser	Arg	Tyr	Phe	Phe	Arg	Ala	Leu	Ile	Tyr	Glu
			660					665					670		
Gly	Leu	His	Phe	Pro	Ala	Lys	Gly	Tyr	Asn	Ala	Phe	Pro	Asp	Pro	Tyr
		675					680					685			

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

His Thr Leu Asn Pro Asn Tyr Tyr Glu Ala Tyr Glu Val Gln Val Ile
705 710 715 720

Leu Pro Thr Asn Leu Asn Leu Ala Pro Asp Ile Ser Ile Glu Ala Leu
725 730 735

Ser Val Asn Lys Ser Phe Leu Tyr Asn Asp Asp Ile Leu Leu Gly Ser
740 745 750

Cys Thr Phe Pro Ile Met Lys Val Pro Thr Glu Trp Lys Lys Ser Pro
755 760 765

Ile Trp Ile Pro Leu Lys Ser Ser Gln Tyr Lys Lys Cys Lys Ala Lys
770 775 780

Leu Leu Val Ala Phe Glu Leu Val Pro Val Glu Lys Val Leu Asp Asp
785 790 795 800

Thr Tyr Pro Phe Tyr Asp Asp Ile Arg Pro Ser Thr Leu Pro Gly His
805 810 815

Val Ser Leu Phe Leu Ile Gly Ile Arg Met Phe Lys Pro Leu Lys Asp
820 825 830

Pro Ser Val Thr Val Cys Phe Gly Arg Asp Val Asp Asp Thr Ser Gln
835 840 845

Phe Leu Trp His Glu Thr Thr Asn Lys Val Ile Ser Gly Lys Glu Gly
850 855 860

Asn Trp Asn Phe Leu Lys Tyr Phe Ser Leu Asp Val Met Leu Pro Lys
865 870 875 880

Arg Met Gln His His Ser Phe Leu Glu Val Arg Ile Glu Asp Arg Ile
885 890 895

Leu Asn Ser Gly Phe Thr Gly Thr Ala Ser Ser Asn Met His Ala Val
900 905 910

Asn Ala Thr Asn Asn Asn Leu Leu Ile Gly Thr Ala Tyr Ile Thr Leu
 915 920 925

Asn Pro Leu Leu Pro Trp Leu Asp Asn Tyr Glu Lys Asn Glu Cys Val
 930 935 940

Glu Leu Phe Lys Leu His Leu Leu Glu Glu Val Leu Ile Glu Asp Ala
 945 950 955 960

Glu Met Asp Arg Lys Ser Tyr Asn Ser Ala Leu Ile Tyr Lys Lys Ser
 965 970 975

Ser Ile Met Ser Arg Lys Leu Ser Asn Asp Asn Phe Glu Thr Gln Gln
 980 985 990

Met Gly Glu Glu Asn Gly Ile Phe Asn Asp Ile Pro Met Asn Thr Leu
 995 1000 1005

Glu Glu Asn Val Thr Ile Lys Gly Asp Asp Ser Ser Asp Asp Glu
 1010 1015 1020

Lys Asp Asn Ser Tyr Asp Asp Glu Lys Asp Asn Ser Tyr Asp Asp
 1025 1030 1035

Glu Lys Asp Asn Ser Tyr Asp Asp Glu Lys Asp Asn Ser Tyr Asp
 1040 1045 1050

Gly Asp Asp Lys Ser Gly His Tyr Tyr His Thr Trp Glu Asp Asn
 1055 1060 1065

Asn Asn Asn Asn Asn Asn Asn Val Thr Ser Asp His Thr Cys Lys
 1070 1075 1080

His Lys Asn Glu His Asn Asn Asn Lys Lys Glu Asp Glu Lys Arg
 1085 1090 1095

Lys Arg Glu Lys Lys Asn Thr Tyr Thr Thr Asn His Asp Lys Arg
 1100 1105 1110

Glu Asn Asn Asn Thr His Ile Asn Asn Asn Tyr Lys His Val Ile
 1115 1120 1125

Asp	Ile	Lys	Lys	Lys	Lys	Arg	Lys	Lys	Asn	Ile	Lys	Lys	Tyr	Ile
1130						1135					1140			
Asn	Asn	Glu	Tyr	Val	Pro	Tyr	Asn	Asp	Pro	Asp	Phe	Ser	Asn	Val
1145						1150					1155			
Arg	Ile	Glu	Glu	Thr	Leu	Glu	His	Val	Cys	Phe	Lys	Ile	Asn	Asp
1160						1165					1170			
Leu	Thr	Lys	Lys	Glu	Asn	Thr	Tyr	Ile	Tyr	Tyr	Asn	Asp	Glu	Gln
1175						1180					1185			
Glu	Thr	Leu	Cys	Asp	Ser	Ile	Ser	Ser	Glu	Lys	Arg	Lys	Lys	Leu
1190						1195					1200			
Lys	Asp	Ile	His	Phe	Phe	Lys	Gly	Gly	Lys	His	Asp	Asp	Lys	Glu
1205						1210					1215			
Lys	Lys	Ser	Thr	Ile	Ile	Asp	Gly	Lys	Gln	Pro	Thr	Thr	Ile	Tyr
1220						1225					1230			
Gly	Phe	Asn	Glu	Asp	Met	Leu	Asn	Phe	Gln	Leu	Ser	Leu	Ala	Asp
1235						1240					1245			
Asp	Asp	Glu	Gln	Glu	Glu	Ile	Gln	Arg	Asp	Glu	Met	Leu	Tyr	Glu
1250						1255					1260			
Tyr	Glu	Val	Asp	Met	Asn	Thr	Asp	Asp	Leu	Pro	Tyr	Leu	Arg	Ala
1265						1270					1275			
Thr	Ile	Phe	Arg	Cys	Thr	Asp	Ser	Gly	Val	Pro	Glu	Ala	Val	Gly
1280						1285					1290			
Tyr	Leu	Lys	Tyr	Ile	Cys	Asn	Val	Tyr	Asp	Glu	Lys	Thr	Met	Tyr
1295						1300					1305			
Leu	Lys	Lys	Glu	Met	Ile	Lys	Lys	Cys	Asp	Asp	Leu	Val	Arg	Glu
1310						1315					1320			
Tyr	Arg	Leu	Thr	Arg	Asn	Leu	Val	Val	Arg	Ala	Tyr	Ile	Ile	Gln
1325						1330					1335			
Ala	Arg	Gly	Leu	Asn	Pro	Pro	Ser	Gly	Ala	Thr	Asp	Ile	Thr	Thr

1340		1345		1350
Tyr Ile Trp Ile Lys Asn Ser Asn Asp Met Thr Asn Ile Pro Gly				
1355		1360		1365
Gly Leu Ser His Asn Ile Lys Asp Thr Gly His Thr Lys Lys Gln				
1370		1375		1380
Gly Tyr Lys Pro Glu Phe Asn Arg Cys Tyr Gln Leu Leu Cys Ser				
1385		1390		1395
Phe Pro Asp Glu Ser Ile Val Gln Val Cys Ile Met Asn Gln Gly				
1400		1405		1410
Ser Leu Ser Asp Glu Ile Ile Gly Tyr Thr Tyr Ile Asp Met Glu				
1415		1420		1425
Asp Arg Tyr Phe Asn Gln Lys Ile Arg Gln Leu Met Ile Asp Asp				
1430		1435		1440
Leu Met Pro Ile Glu Leu Arg Ser Leu Lys Leu Glu Asn Ser Thr				
1445		1450		1455
Ile Ser His Gly Ser Leu Arg Cys Trp Phe Glu Ile Phe Asn Glu				
1460		1465		1470
Glu Phe Ala Gln Leu Asn Pro Ile Lys Val Leu Cys Ser Asn Glu				
1475		1480		1485
Pro Asp Asp Tyr Gln Leu Arg Leu Val Ile Trp Lys Val Asn Asn				
1490		1495		1500
Ala Ala Met Asp Asp Asn Ser Thr Ile Ser Leu Phe Val Arg Cys				
1505		1510		1515
Ile Tyr Thr Asp Glu Asp Arg Glu Asp Ile Arg Asp Thr Asp Thr				
1520		1525		1530
His Tyr Asn Ser Lys Asp Gly Lys Gly Ile Phe Asn Trp Arg Phe				
1535		1540		1545
Val Tyr Asn Ile Lys Ile Pro Thr Asn Ala Thr Asn Ile Lys Ile				
1550		1555		1560

Gln Ile His Asn Tyr Ala Leu Leu Ser Ser Asn Glu Pro Ile Gly
 1565 1570 1575

Glu Ala Thr Leu Asp Leu Ser Ala His Phe Tyr Arg Ala Arg Lys
 1580 1585 1590

Lys Lys Gly Tyr Tyr Pro Ile Pro Arg Phe Trp Leu Ser Cys Lys
 1595 1600 1605

His Pro Ala His Lys Asn Lys Val Arg Gly Asn Val Glu Ile Glu
 1610 1615 1620

Gly Ser Ile Leu Ile Lys Ser Glu Ala Glu Leu Asp Pro Val Gly
 1625 1630 1635

Asn Gly Arg Asp Glu Pro Asn Lys Asp Pro Tyr Leu Pro Pro Val
 1640 1645 1650

Thr Glu Asn Arg Thr Tyr Val Asp Trp Val Met Ile Asn Glu Lys
 1655 1660 1665

Phe Gly Ala Ala Thr Ala Ser Ile Met His Gly Leu Lys Trp Thr
 1670 1675 1680

Gly Val Trp Ile Val Val Gly Val Ile Val Ile Gly Ile Phe Phe
 1685 1690 1695

Leu Ile Phe Leu Phe Lys
 1700

<210> 32

<211> 1564

<212> PRT

<213> Plasmodium yoelii

<400> 32

Met Asp Leu Thr Asp Tyr Asp Phe Gln Arg Thr Ser Val Glu Val Cys
 1 5 10 15

Val Leu His Lys Tyr Thr Ile Gln Ser Ala Leu Ile Gly Lys Cys Ser
 20 25 30

Phe Ser Leu Asn Tyr Val Tyr Ser Lys Val Gln His Trp Ile Tyr Arg
35 40 45

Ile Trp Val Lys Leu Arg Asn Pro Asp Leu Pro Leu Asp Asp Val Gly
50 55 60

Tyr Leu Leu Ile Ser Val Gly Val Tyr Gly Pro Gly Asp Ser Ile Pro
65 70 75 80

Ile Ile Asn Asp Ser Ile Lys Thr Asn Met Asn Glu His Glu Ile Tyr
85 90 95

Ala Asn Asn Lys Gly Ile Asp Met His Ile Thr His Tyr Asp Leu Cys
100 105 110

Ile Asn Ile Phe Arg Gly Gln Asp Ile Glu Phe Ile Asn Asn Ala Asn
115 120 125

Ser Leu Phe Gln Asn Asn Leu Glu Pro Tyr Val Arg Val Ile His Asn
130 135 140

Gly Phe Glu Glu Lys Thr Lys Ile Ile Arg Asn Asp Pro Asn Pro Val
145 150 155 160

Trp Asn Leu Ser Val His Leu Pro Thr Cys Thr Pro Cys Tyr Asp Lys
165 170 175

Asn Ile Ile Ile Glu Leu Ile Asn Gly Glu Thr Asn Gly Val Val Ile
180 185 190

Phe Ser Ile Leu Leu Asp Phe Phe Glu Ile Leu Lys Arg Glu Ile Val
195 200 205

Pro Arg Trp Phe Asn Ile Tyr Tyr Asn Pro Gln Asn Tyr Ile Phe Pro
210 215 220

Arg Ser Ser Ile Tyr Ser Gln Asn Val Asn Gln Asn Ser Thr Asn Pro
225 230 235 240

His Ala Phe Gly Asn Asn Gln Asn Ser Ser Asn Asn Gln Ser Val Ala
245 250 255

Gly Ile Gly Asn Thr Ile Asn Asn Val Ser Thr Phe Gly Asn Tyr Leu

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

Ile Asn Lys Ile Ser Asp Asp Met Val Asn Thr Asn Ser Glu Ile Leu
 500 505 510

Asn Asn Tyr Arg Leu Lys Ser Phe Val Arg Ile Pro Phe Lys Tyr Leu
 515 520 525

Leu Leu Asn Glu Asn Lys Pro Lys Trp Phe Ser Met Lys Asn Val Glu
 530 535 540

Thr Asp Ala His Asp Tyr Asn Ile Ser Phe Phe Ala Asn Leu Ile Pro
 545 550 555 560

Cys Asn Leu Tyr Lys Lys Arg Pro Lys Arg Leu Glu Tyr Lys Leu Ser
 565 570 575

Arg Tyr Phe Phe Arg Ala Leu Ile Tyr Glu Gly Leu His Phe Pro Ala
 580 585 590

Lys Gly Tyr Asn Ala Phe Pro Asp Pro Tyr Ile Lys Ile Glu Ile Ala
 595 600 605

Gly Gln Thr Ile Lys Thr Ser Thr Ile Leu His Thr Leu Asn Pro Asn
 610 615 620

Tyr Tyr Glu Ala Tyr Glu Val Glu Val Ile Leu Pro Thr Asn Leu Asn
 625 630 635 640

Leu Ala Pro Asp Ile Ser Ile Glu Ala Phe Ser Val Asn Lys Ser Phe
 645 650 655

Leu Tyr Asn Asp Asp Ile Leu Leu Gly Ser Cys Thr Tyr Pro Ile Met
 660 665 670

Lys Val Pro Met Glu Trp Lys Arg Ser Pro Ile Trp Ile Asn Leu Lys
 675 680 685

Ser Ser Gln Tyr Lys Lys Cys Lys Ala Lys Leu Leu Val Ala Phe Glu
 690 695 700

Leu Val Pro Tyr Glu Lys Val Ile Asn Asp Asp Gln Tyr Pro Phe Tyr
 705 710 715 720

Asp Asp Ile Arg Pro Ser Thr Leu Pro Gly His Val Ser Leu Phe Leu
725 730 735

Val	Gly	Ile	Arg	Met	Phe	Lys	Pro	Leu	Lys	Asp	Pro	Ser	Val	Thr	Val
			740					745					750		

Cys Phe Gly Arg Asp Ile Asp Asp Thr Ser Gln Phe Leu Trp Tyr Glu
755 760 765

Thr Thr Asn Lys Val Ile Ser Gly Lys Glu Gly Asn Trp Asn Phe Leu
770 775 780

Lys Tyr Phe Ser Leu Asp Val Ala Leu Pro Lys Arg Met Gln His His
785 790 795 800

Ser Phe Leu Glu Val Arg Ile Glu Asp Lys Val Ser Asn Ser Gly Phe
805 810 815

Ser Gly Gly Pro Ser Asn Gly Tyr Asn Ser Ile Asn Ala Ile Asn Asn
820 825 830

Asp Asn Leu Val Gly Thr Ala Tyr Ile Thr Leu Asn Pro Leu Leu Pro
835 840 845

Trp Leu Tyr Glu Tyr Glu Gln Arg Glu Cys Ile Glu Leu Phe Lys Leu
850 855 860

His Leu Leu Glu Glu Val Leu Ile Glu Asp Ala Glu Lys Ala Arg Lys
865 870 875 880

Thr Tyr Asn Ser Ala Leu Ile Tyr Lys Lys Ser Ser Ile Phe Ser Lys
885 890 895

Lys Met Ser Asn Asp Ile Phe Glu Ile Gln Gly Thr Asp Glu Glu Arg
900 905 910

Asp Glu Tyr Gly Asn Ser Asn Val Phe His Ala Leu Ser Leu Asn Met
915 920 925

Leu Glu Glu Asn Pro Phe Leu Glu Tyr Gly Asp Glu Asp Ala Glu Glu
930 935 940

Gln Asp Glu Gly Glu Asn Gly Phe Lys Asn Val Met His Lys Ile Lys
 945 950 955 960

Asp Asp Ile Asn Lys Glu Asp Glu Met Glu Thr Lys Asn Ser Val Asn
 965 970 975

Glu Leu Glu Asn Lys Ile Asn Ser Asn Asp Ile Leu Ser Pro Asn Gly
 980 985 990

Ile Arg Thr Gln Asn Gly Phe Glu Lys Ile Gln Asp Gly Asn His Leu
 995 1000 1005

Lys Lys Asp Ile Lys Lys Lys Lys Lys Asn Arg Lys Asn Ile Asn
 1010 1015 1020

Asn Glu Tyr Val Pro Tyr Asn Asp Pro Asp Phe Ala Asn Val Arg
 1025 1030 1035

Ile Glu Asp Pro Leu Glu His Val Cys Phe Thr Gln Lys Thr Gly
 1040 1045 1050

Asn Ile Asp Asn Asp Val Asp Val Ser Gly Tyr Leu Asn Asn Asn
 1055 1060 1065

Lys Ser Leu Ser Asn Ile Asn Glu Asn Asn Met Asn Lys Gln Tyr
 1070 1075 1080

Ala Ser Ala Asn Thr Leu Asp Asn Ala Glu Asn Cys Gly Lys Gly
 1085 1090 1095

Ile Tyr Gly Phe Ser Glu Asp Met Leu Asn Phe Gln Leu Ser Leu
 1100 1105 1110

Ala Tyr Asp Asp Asp His Asp Glu Leu Gln Arg Glu Glu Met Leu
 1115 1120 1125

Tyr Glu Tyr Glu Val Asp Met Asp Ile Asn Asp Leu Pro Tyr Leu
 1130 1135 1140

Arg Ala Thr Ile Phe Arg Cys Thr Asp Ser Gly Ile Pro Glu Ala
 1145 1150 1155

Val Gly Tyr Leu Lys Tyr Ile Cys Asn Val Tyr Asp Glu Lys Thr

1160						1165						1170			
Met	His	Lys	Lys	Lys	Glu	Met	Val	Lys	Ala	Cys	Asp	Asn	Leu	Val	
1175						1180					1185				
Arg	Glu	Tyr	Lys	Leu	Thr	Arg	Asn	Leu	Val	Val	Arg	Ala	Tyr	Ile	
1190						1195					1200				
Ile	Gln	Ala	Arg	Gly	Leu	Asn	Pro	Pro	Ser	Gly	Ala	Thr	Asp	Ile	
1205						1210					1215				
Thr	Thr	Tyr	Ile	Trp	Ile	Lys	Asn	Ser	Asp	Glu	Ile	Thr	Asn	Ile	
1220						1225					1230				
Pro	Gly	Gly	Leu	Ser	His	Asn	Ile	Lys	Asp	Thr	Gly	His	Ile	Lys	
1235						1240					1245				
Arg	Gln	Gly	Tyr	Lys	Pro	Glu	Phe	Asn	Arg	Cys	Tyr	Gln	Leu	Leu	
1250						1255					1260				
Cys	Ser	Phe	Pro	Asp	Glu	Ser	Ile	Ile	Gln	Val	Cys	Val	Met	Asn	
1265						1270					1275				
Gln	Gly	Ser	Ile	Ser	Asp	Glu	Ile	Ile	Gly	Tyr	Thr	Tyr	Ile	Asp	
1280						1285					1290				
Met	Glu	Asp	Arg	Tyr	Phe	Asn	Lys	Lys	Ile	Lys	Gln	Leu	Met	Leu	
1295						1300					1305				
Asp	Asp	Ile	Met	Pro	Ile	Glu	Leu	Arg	Ser	Leu	Lys	Leu	Glu	Asn	
1310						1315					1320				
Ser	Thr	Ile	Ser	His	Gly	Ser	Leu	Arg	Cys	Trp	Phe	Glu	Ile	Phe	
1325						1330					1335				
Thr	Glu	Glu	Phe	Ala	Gln	Leu	Asn	Pro	Val	Lys	Ile	Leu	Cys	Ser	
1340						1345					1350				
Asn	Glu	Pro	Asp	Asp	Tyr	Gln	Leu	Arg	Leu	Val	Val	Trp	Lys	Val	
1355						1360					1365				
Ser	Asn	Val	Ala	Met	Asp	Asn	Asn	Ser	Thr	Val	Ser	Leu	Phe	Val	
1370						1375					1380				

Arg Cys Ile Tyr Ala Asp Asp Asp Ser Glu Asp Ile Arg Asp Thr
 1385 1390 1395

Asp Ile His Tyr Asn Ser Lys Asn Gly Lys Gly Ile Phe Asn Trp
 1400 1405 1410

Arg Phe Val Tyr Asn Val Lys Ile Pro Thr Asn Ser Thr Thr Ile
 1415 1420 1425

Lys Val Gln Ile His Asn Tyr Ala Leu Leu Ser Ser Asn Glu Pro
 1430 1435 1440

Ile Gly Glu Ser Ser Leu Asp Leu Ser Ala His Phe Tyr Arg Ala
 1445 1450 1455

Arg Lys Lys Lys Gly Phe Tyr His Ile Pro Arg Phe Ser Ile Ser
 1460 1465 1470

Cys Lys His Pro Ala His Lys Asn Lys Ile Arg Gly Asn Ile Glu
 1475 1480 1485

Val Glu Ala Cys Ile Leu Pro Lys Asn Glu Ala Asp Val Asp Pro
 1490 1495 1500

Val Gly Asn Gly Arg Asp Glu Pro Asn Lys Asp Pro Phe Leu Pro
 1505 1510 1515

Ala Ile Thr Glu Asn Arg Thr Tyr Val Asp Trp Val Thr Ile Asn
 1520 1525 1530

Glu Lys Leu Gly Asp Ala Thr Ala Ser Ile Met Gln Gly Leu Lys
 1535 1540 1545

Trp Thr Gly Ile Phe Ile Met Phe Val Tyr Ile Cys Val Glu Ser
 1550 1555 1560

Lys

<210> 33
 <211> 1425
 <212> PRT

<213> Toxoplasma gondii

<400> 33

Met Ala Ala Lys Ala Ile Gln Tyr Asn Ile Lys Val Asp Leu His Glu
1 5 10 15

Val Lys Asp Leu Ser Phe Arg Glu Ala Ala Gly Glu Lys Glu Ile Val
20 25 30

Pro Asn Pro Tyr Ile Glu Val Thr Val Asn Gly Val Thr Lys Thr Thr
35 40 45

Ile Gln Lys Thr Gln Val Val Ser Ala Thr Phe Asn Thr Ser Phe Asn
50 55 60

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

Val Ala Val Leu His Lys Tyr Met Leu Ile Gly Gly Val Gly Leu Gln
85 90 95

Ser Ala Val Ile Gly Lys Tyr Val Phe Ser Phe Ala Tyr Val Tyr Thr
100 105 110

Lys Ser Gln His Trp Ile Tyr Arg Gln Trp Val Thr Leu Arg Asn Leu
115 120 125

Asp Gln Pro Gln Asp Glu Thr Gly Leu Leu Leu Ile Thr Val Gly Val
130 135 140

Phe Gly Pro Gly Asp Ala Met Pro Val Val Asp Glu Thr Val Cys Val
145 150 155 160

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

His Tyr Ser Leu Ser Val Asn Ile Phe Lys Gly Gln Asp Ile Pro Ser
180 185 190

Val Ala Gly Gln Phe Ser Thr Val Leu Glu Pro Tyr Val Lys Val Lys
195 200 205

His Gly Gly Ala Glu Leu Gln Thr Arg Pro Leu Pro Asp Ser Asn Pro

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

Gln Asn Thr Pro Glu Pro Ala Glu Thr Pro Trp Thr Arg Leu Ala Trp
 450 455 460

Val Arg Ile Pro Tyr Asp Ser Arg Gln Phe Gln Asn Gly Lys Pro Gln
 465 470 475 480

Trp Tyr Ser Leu Arg Ser Leu Asp Gly Ser Gly Thr Asp Met Phe Ser
 485 490 495

Val Leu Leu Gly Met Glu Met Phe Pro Thr Lys Ala Gly Lys Gln Arg
 500 505 510

Ala Pro Arg Leu Glu Tyr Lys Leu Ala Arg Phe Tyr Phe Arg Ala Leu
 515 520 525

Ile Tyr Glu Gly Leu His Leu Pro Ala Val Gly Tyr Asp Val Phe Pro
 530 535 540

Asp Pro Tyr Ile Gln Val Glu Leu Ala Ser Lys Thr Leu Arg Thr Ser
 545 550 555 560

Thr Ile Arg Gln Thr Leu Asn Pro Ser Tyr Tyr Glu Ala Tyr Glu Ile
 565 570 575

Glu Ile Arg Leu Pro Glu Asn Ile Ser Leu Ala Pro Asp Ile Asn Val
 580 585 590

Glu Val Ile Ser Glu Ser Asn Ser Leu Leu Ser Ser Asp Val Val Leu
 595 600 605

Gly Ser Val Gln Tyr Pro Ile Gln Lys Val Pro Lys Glu Trp Thr Lys
 610 615 620

Ala Pro Val Trp Leu Gln Leu His Ser Lys Ala Tyr Pro Arg Cys Lys
 625 630 635 640

Ala Arg Val Leu Val Ala Phe Glu Leu Val Pro Ala Glu Lys Ala Glu
 645 650 655

Asp Asp Thr Tyr Pro Phe Tyr Asp Asp Ile Arg Pro Ser Thr Lys Glu
 660 665 670

Gly Asn Ile Arg Leu Phe Leu Val Gly Val Arg Leu Phe Lys Pro Ile
 675 680 685

Thr Gln Pro Phe Val Thr Val Cys Phe Gly Arg Asp Val Glu Asn Thr
 690 695 700

Ala Glu Pro Leu Trp Ser Gln Glu Ser Ser Ala Pro Arg Thr Gly Glu
 705 710 715 720

Gly Gly Asn Trp Asn Phe Leu Glu Glu Phe Thr Val Ser Val Ser Leu
 725 730 735

Pro Lys Arg Met Gln His His Ser Phe Leu Glu Val Lys Ile Gln Asp
 740 745 750

Arg Thr Gln Gly Ile Gly Gly Glu Ser Asn Val Asp Val Gly Met Ala
 755 760 765

Tyr Ile Thr Leu Asn Pro Leu Leu Pro Trp Leu Asp Ser Arg Glu Arg
 770 775 780

Ala Glu Ser Leu Glu Thr Phe Arg Leu Gln Met Leu Glu Glu Val Leu
 785 790 795 800

Ile Glu Asp Ala Glu Asn Ala Arg Arg Ser Ala Asp Gly Gly Leu Ala
 805 810 815

Ala Arg Thr Gly Gly Gly Ser Phe Asp Glu Asp Ala Thr Lys Lys Lys
 820 825 830

Glu Met Leu Ala Ala Glu Arg Ser Arg Lys Met Ala Ile Pro Tyr Asn
 835 840 845

Asp Pro Asp Met Ala Asn Leu Lys Ile Glu Glu Val Asp Asp Tyr Val
 850 855 860

Ser Phe Lys Val Ala Pro Arg Pro Gln Ala Ser Arg Leu Ser Arg Glu
 865 870 875 880

Gly Thr Ser Arg Asp Glu Arg Gly Lys Ala Pro Gly Lys Ser Leu Ser
 885 890 895

Gly Met Pro Gly Pro Val Ala Arg Ala Ser Pro Gly Ala Gly Glu Glu
 900 905 910

Thr Glu Lys Lys Gly Asp Pro Val Ala Glu Lys Lys Glu Gly Ser Ala
 915 920 925

Gln Ala Ala Pro Pro Ala Ala Pro Ser Ala His Gln Arg Glu Ala Leu
 930 935 940

Ala Ala Ser Pro Glu Glu Glu Thr Tyr Gly Phe Thr Pro Glu Gln Leu
 945 950 955 960

Asn Phe Val Leu Ala Asp Leu Glu Glu Asp Asp Ala Glu Glu Met Thr
 965 970 975

Arg Asp Glu Val Pro Tyr Glu Leu Glu Ala Asp Phe Thr Val Asp Asp
 980 985 990

Leu Pro Tyr Leu Arg Thr Pro Ile Phe Arg Pro Thr Asp Ala Gly Val
 995 1000 1005

Pro Glu Thr Val Gly Tyr Leu Lys Tyr Val Cys Arg Val Phe Gln
 1010 1015 1020

Ser Thr Asp Glu Asp Glu Gly Ala Glu Met Asp Ala Val Cys Lys
 1025 1030 1035

Ser Leu Ile Glu Thr Tyr Asn Ser Thr Arg Asp Leu Val Val Arg
 1040 1045 1050

Ala Tyr Val Leu Ala Ala Arg Gly Leu Val Pro Pro Ser Gly Ala
 1055 1060 1065

Ser Asp Ile Gln Thr Tyr Val Trp Ile Gln Asp Ser Glu Asn Ala
 1070 1075 1080

Ala Thr Leu Pro Gly Gly Leu Ser Tyr Asn Ile Arg Asp Thr Gly
 1085 1090 1095

Tyr Thr Lys Lys Gln Gly Phe Lys Pro Glu Phe Asn Arg Cys Tyr
 1100 1105 1110

Thr Leu Ala Cys Ser Leu Pro Glu Asn Ser Ile Val Gln Ile Ala

1115						1120						1125			
Val	Met	Asn	Met	Gly	Arg	Leu	Thr	Asp	Glu	Cys	Ile	Gly	Arg	Thr	
1130						1135					1140				
Tyr	Leu	Asp	Val	Glu	Asp	Arg	Phe	Phe	Asn	Lys	Lys	Val	Glu	Gln	
1145						1150					1155				
Met	Val	Ile	Glu	Glu	Ser	Thr	Pro	Ile	Glu	Leu	Arg	Thr	Leu	Lys	
1160						1165					1170				
Asn	Glu	Gly	Ser	Thr	Val	Ser	His	Gly	Ser	Leu	Arg	Gly	Phe	Phe	
1175						1180					1185				
Glu	Ile	Met	Arg	Ala	Asp	Tyr	Ala	Gln	Leu	His	Pro	Pro	Tyr	Thr	
1190						1195					1200				
Leu	Ala	Ser	Ala	Glu	Pro	Asp	Glu	Tyr	Gln	Leu	Arg	Val	Val	Ile	
1205						1210					1215				
Trp	Arg	Val	Lys	Ala	Val	Pro	Leu	Asp	Asp	Asn	Ser	Ser	Ile	Ser	
1220						1225					1230				
Leu	Phe	Val	Arg	Thr	Ile	Tyr	Gln	Leu	Glu	Asp	Ser	Ser	Glu	Ile	
1235						1240					1245				
Val	Lys	Asp	Thr	Asp	Thr	His	Tyr	Asn	Ser	Thr	Asp	Gly	Thr	Ala	
1250						1255					1260				
Val	Tyr	Asn	Trp	Arg	Met	Val	Phe	Asp	Val	Leu	Ile	Pro	Ala	Gln	
1265						1270					1275				
Ile	Pro	Val	Leu	Lys	Leu	Gln	Ile	Trp	Asn	Tyr	Ala	Leu	Leu	Ser	
1280						1285					1290				
Ser	Thr	Glu	Pro	Ile	Gly	Glu	Ala	Asn	Phe	Asp	Leu	Thr	Ala	Asp	
1295						1300					1305				
Phe	Phe	Arg	Ala	Arg	Lys	Arg	Gln	Gln	His	Tyr	Arg	Val	Pro	Arg	
1310						1315					1320				
Met	Trp	Val	Arg	Cys	Ser	His	Pro	Ala	His	Lys	Gly	Lys	Leu	Arg	
1325						1330					1335				

Gly Thr Ile Glu Ile Glu Ala Ser Ile Leu Pro Arg Glu Glu Ala
1340 1345 1350

Glu Tyr Thr Pro Val Gly Asn Gly Arg Asp Glu Pro Asn Arg Asp
1355 1360 1365

Pro Phe Leu Pro Ala Val Thr Thr Asn Arg Thr Tyr Ile Asp Trp
1370 1375 1380

Gln Gln Ile Gly Glu Thr Val Gly Ala Ala Ser Ser Ala Ile Met
1385 1390 1395

Ser Gly Leu Lys Trp Thr Gly Val Trp Met Thr Val Ala Gly Ile
1400 1405 1410

Ile Ala Leu Val Ile Phe Val Met Phe Leu Leu Lys
1415 1420 1425

<210> 34

<211> 1280

<212> PRT

<213> Plasmodium berghei

<400> 34

Met Pro Thr Leu Thr Thr Lys Ile Lys Gly Ser Asn Asn Tyr Phe Ser
1 5 10 15

Leu Ile Ser Leu Asn Ile Asn Gly Leu Asn Ser Pro Ile Lys Arg His
20 25 30

Arg Leu Thr Asp Trp Leu His Lys Gln Asp Pro Thr Phe Cys Cys Leu
35 40 45

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

Gly Trp Lys Thr Ile Phe Gln Ala Asn Gly Leu Lys Lys Gln Ala Gly
65 70 75 80

Val Ala Ile Leu Ile Ser Asp Lys Ile Asp Phe Gln Pro Lys Val Ile
85 90 95

Lys Lys Asp Lys Glu Gly His Phe Ile Leu Ile Lys Gly Lys Ile Leu
 100 105 110

Gln Glu Glu Leu Ser Ile Leu Asn Ile Tyr Ala Pro Asn Ala Arg Ala
 115 120 125

Ala Thr Phe Ile Arg Asp Thr Leu Val Lys Leu Lys Ala Tyr Ile Ala
 130 135 140

Pro His Thr Ile Ile Val Gly Asp Phe Asn Thr Pro Leu Ser Ser Lys
 145 150 155 160

Asp Arg Ser Trp Lys Gln Lys Leu Asn Arg Asp Thr Val Lys Leu Thr
 165 170 175

Glu Val Met Lys Gln Met Asp Leu Thr Asp Ile Tyr Arg Thr Phe Tyr
 180 185 190

Pro Lys Thr Lys Gly Tyr Thr Phe Phe Ser Ala Pro His Gly Thr Phe
 195 200 205

Ser Lys Ile Asp His Ile Ile Gly His Lys Thr Gly Leu Asn Arg Tyr
 210 215 220

Lys Asn Ile Glu Ile Val Pro Cys Ile Leu Ser Asp His His Gly Leu
 225 230 235 240

Arg Leu Ile Phe Asn Asn Asn Ile Asn Asn Gly Lys Pro Thr Phe Thr
 245 250 255

Trp Lys Leu Asn Asn Thr Leu Leu Asn Asp Thr Leu Val Lys Glu Gly
 260 265 270

Ile Lys Lys Glu Ile Lys Asp Phe Leu Glu Phe Asn Glu Asn Glu Ala
 275 280 285

Thr Thr Tyr Pro Asn Leu Trp Asp Thr Met Lys Ala Phe Leu Arg Gly
 290 295 300

Lys Leu Ile Ala Leu Ser Ala Ser Lys Lys Lys Arg Glu Thr Ala His
 305 310 315 320

Thr Ser Ser Leu Thr Thr His Leu Lys Ala Leu Glu Lys Lys Glu Ala

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

His Ile Lys Ala Ile Ile His Pro Asp Gln Val Gly Phe Ile Pro Gly
565 570 575

Met Gln Gly Trp Phe Asn Ile Arg Lys Ser Ile Asn Val Ile His Tyr
580 585 590

Ile Asn Lys Leu Lys Asp Lys Asn His Met Ile Ile Ser Leu Asp Ala
595 600 605

Glu Lys Ala Phe Asp Lys Ile Gln His Pro Phe Met Ile Lys Val Leu
610 615 620

Glu Arg Ser Gly Ile Gln Gly Pro Tyr Leu Asn Met Ile Lys Ala Ile
625 630 635 640

Tyr Ser Lys Pro Val Ala Asn Ile Lys Val Asn Gly Glu Lys Leu Glu
645 650 655

Ala Ile Pro Leu Lys Ser Gly Thr Arg Gln Gly Cys Pro Leu Ser Pro
660 665 670

Tyr Leu Phe Asn Ile Val Leu Glu Val Leu Ala Arg Ala Ile Arg Gln
675 680 685

Gln Lys Glu Ile Lys Gly Ile Gln Ile Gly Lys Glu Glu Val Lys Ile
690 695 700

Ser Leu Phe Ala Asp Asp Met Ile Val Tyr Ile Ser Asp Pro Lys Asn
705 710 715 720

Ser Thr Arg Glu Leu Leu Asn Leu Ile Asn Ser Phe Gly Glu Val Ala
725 730 735

Gly Tyr Lys Ile Asn Ser Asn Lys Ser Met Ala Phe Leu Tyr Thr Lys
740 745 750

Asn Lys Gln Ala Glu Lys Glu Ile Arg Glu Thr Thr Pro Phe Ser Ile
755 760 765

Val Thr Asn Asn Ile Lys Tyr Leu Gly Met Thr Leu Thr Lys Glu Val
770 775 780

Lys Asp Leu Tyr Asp Lys Asn Phe Lys Ser Leu Lys Lys Glu Ile Lys
 785 790 795 800

Asp Leu Arg Arg Trp Lys Asp Leu Pro Cys Ser Trp Ile Gly Arg Ile
 805 810 815

Asn Ile Val Lys Met Ala Ile Leu Pro Lys Ala Ile Tyr Arg Phe Asn
 820 825 830

Ala Ile Pro Ile Lys Ile Pro Thr Gln Phe Phe Asn Glu Leu Glu Arg
 835 840 845

Ala Ile Cys Lys Phe Ile Trp Asn Asn Lys Lys Pro Arg Ile Ala Lys
 850 855 860

Thr Leu Leu Lys Asp Lys Arg Thr Ser Gly Gly Ile Thr Met Pro Asp
 865 870 875 880

Leu Lys Leu Tyr Tyr Arg Ala Ile Val Ile Lys Thr Ala Trp Tyr Trp
 885 890 895

Tyr Ser Asp Arg Gln Val Asp Gln Trp Asn Arg Ile Glu Asp Pro Glu
 900 905 910

Met Asn Pro His Thr Tyr Gly His Leu Ile Phe Asp Lys Gly Ala Lys
 915 920 925

Thr Ile Gln Trp Lys Lys Asp Ser Ile Phe Asn Lys Trp Cys Trp His
 930 935 940

Asn Trp Leu Leu Ser Cys Arg Arg Met Arg Ile Asp Pro Phe Leu Ser
 945 950 955 960

Pro Cys Thr Lys Val Lys Ser Lys Trp Ile Lys Glu Leu His Ile Lys
 965 970 975

Pro Glu Thr Leu Lys Leu Ile Glu Glu Lys Val Gly Lys Ser Leu Glu
 980 985 990

Asp Met Gly Thr Gly Glu Lys Phe Leu Asn Arg Thr Ala Met Ala Cys
 995 1000 1005

Ala	Val	Arg	Ser	Arg	Ile	Asn	Lys	Trp	Asp	Leu	Ile	Lys	Leu	Gln
1010						1015					1020			
Ser	Phe	Cys	Lys	Ala	Lys	Asp	Thr	Val	Asn	Lys	Thr	Lys	Arg	Pro
1025						1030					1035			
Pro	Thr	Asp	Trp	Glu	Arg	Ile	Phe	Thr	Asn	Pro	Lys	Ser	Asp	Arg
1040						1045					1050			
Glu	Leu	Ile	Ser	Asn	Ile	Tyr	Lys	Glu	Leu	Lys	Lys	Leu	Asp	Ser
1055						1060					1065			
Arg	Asn	Ser	Asn	Asn	Pro	Ile	Lys	Lys	Trp	Gly	Ile	Glu	Leu	Asn
1070						1075					1080			
Lys	Glu	Phe	Ser	Pro	Glu	Glu	Tyr	Gln	Met	Ala	Glu	Lys	His	Leu
1085						1090					1095			
Lys	Lys	Cys	Ser	Thr	Ser	Leu	Ile	Ile	Arg	Glu	Met	Gln	Ile	Lys
1100						1105					1110			
Thr	Thr	Leu	Arg	Phe	His	Leu	Thr	Pro	Val	Arg	Met	Ala	Lys	Ile
1115						1120					1125			
Lys	Asn	Ser	Gly	Asp	Ser	Arg	Cys	Trp	Arg	Arg	Gly	Gly	Glu	Arg
1130						1135					1140			
Gly	Thr	Leu	Phe	His	Cys	Trp	Trp	Asp	Tyr	Lys	Leu	Val	Gln	Pro
1145						1150					1155			
Leu	Trp	Lys	Ser	Val	Trp	Arg	Phe	Leu	Arg	Lys	Leu	Asp	Ile	Val
1160						1165					1170			
Leu	Leu	Glu	Asp	Pro	Ala	Ile	Pro	Leu	Leu	Gly	Ile	Tyr	Pro	Glu
1175						1180					1185			
Asp	Val	Pro	Thr	Gly	Lys	Lys	Asp	Thr	Cys	Ser	Thr	Met	Phe	Ile
1190						1195					1200			
Ala	Ala	Leu	Phe	Ile	Ile	Ala	Arg	Ser	Trp	Lys	Glu	Pro	Arg	Cys
1205						1210					1215			
Pro	Ser	Thr	Glu	Glu	Trp	Ile	Gln	Lys	Met	Trp	Tyr	Ile	Tyr	Thr

[illegible]