

P.gonderi	MKVL	LF	SL	IF	FT	KC	QSE	TI	ENYK	QALLAK	LNKLEEL	VVEGYDL	FKQK	IT	PNVST	GN	60
P.fragile NIH n=2	A				F		I	T	H	G	D						60
P.coatneyi	A				F						D		V	D	A		59
P.knowlesi H n=4	A				F						D		V	D	A		59
Phylotabi	A				F						D		V	D	A		59
P.inui A.hackeri n=13	A				F						D		V	D	A		59
P.fieldi N-3 n=4	A				F						D		V	D	A		59
P.vivax Sal-1 n=43	A				F						D		V	D	A		59
P.cynomolgi Smithsonian n=10	A				F						D		V	D	A		59
P.gonderi	DPSS	SN	NT	LT	GY	KIR	GF	VN	KF	LE	QIT	GH	GN	LL	H	LI	116
P.fragile NIH n=2	S	D	G	T	R	V	P	A									114
P.coatneyi	N	D	D	G	S	V	A	A									114
P.knowlesi H n=4	N	D	D	G	S	V	A	A									114
Phylotabi	I	N	D	P	K	N	E	V	A	F	D	A					115
P.inui A.hackeri n=13	I	N	D	P	K	N	E	V	A	F	D	A					115
P.fieldi N-3 n=4	I	N	D	P	K	N	E	V	A	F	D	A					115
P.vivax Sal-1 n=43	N	A	S	A	N	N	N	N	N	N	N	N	N	N	N	N	119
P.cynomolgi Smithsonian n=10	N	A	S	A	N	N	N	N	N	N	N	N	N	N	N	N	114
P.gonderi	F	N	Q	L	M	H	I	N	F	H	Y	D	L	R	A	K	176
P.fragile NIH n=2	L	V															174
P.coatneyi	V	V															174
P.knowlesi H n=4	V	V															174
Phylotabi	V	V															175
P.inui A.hackeri n=13	V	V															175
P.fieldi N-3 n=4	V	V															175
P.vivax Sal-1 n=43	V	V															179
P.cynomolgi Smithsonian n=10	V	V															174
P.gonderi	D	I	N	K	M	E	A	F	I	T	K	N	K	T	V	E	206
P.fragile NIH n=2	G																220
P.coatneyi	G																233
P.knowlesi H n=4	G																239
Phylotabi	G																222
P.inui A.hackeri n=13	G																222
P.fieldi N-3 n=4	G																222
P.vivax Sal-1 n=43	G																230
P.cynomolgi Smithsonian n=10	G																220
P.gonderi	G																224
P.fragile NIH n=2	G																241
P.coatneyi	G																274
P.knowlesi H n=4	G																256
Phylotabi	G																259
P.inui A.hackeri n=13	G																260
P.fieldi N-3 n=4	G																241
P.vivax Sal-1 n=43	G																276
P.cynomolgi Smithsonian n=10	G																253
P.gonderi	T	E	E	Y	T	N	K	K	K	Q	F	A	V	N	T	I	277
P.fragile NIH n=2	N	Q	D														298
P.coatneyi	V	A	P	S	T	G	D										332
P.knowlesi H n=4	V	A	P	S	T	G	D										314
Phylotabi	V	T	V	S	A	S	T	G	D								319
P.inui A.hackeri n=13	V	T	V	S	A	S	T	G	D								320
P.fieldi N-3 n=4	V	T	V	S	A	S	T	G	D								300
P.vivax Sal-1 n=43	V	T	V	S	A	S	T	G	D								336
P.cynomolgi Smithsonian n=10	V	T	V	S	A	S	T	G	D								313
P.gonderi	I	A	O	E	K	A	K	L	P	V	O						332
P.fragile NIH n=2	V	T															346
P.coatneyi	V	T															379
P.knowlesi H n=4	V	T															361
Phylotabi	V	T															367
P.inui A.hackeri n=13	V	T															367
P.fieldi N-3 n=4	V	T															347
P.vivax Sal-1 n=43	V	T															383
P.cynomolgi Smithsonian n=10	V	T															360
P.gonderi	D	G	L	F	T	D	P	E	L	D	Y	L	R	E	K	G	366
P.fragile NIH n=2	G	V															380
P.coatneyi	N	A	E														413
P.knowlesi H n=4	N	A	E														395
Phylotabi	N	A	E														401
P.inui A.hackeri n=13	N	A	E														412
P.fieldi N-3 n=4	N	A	E														381
P.vivax Sal-1 n=43	N	A	E														417
P.cynomolgi Smithsonian n=10	N	A	E														394
P.gonderi	E	I	G	G	E	N	A	P	T	F	N	Q	I	Y	P	N	422

Pfragile NIH n=2	- - - - A P K I V . M K E T . H I T . . . T L . N I E . Q E S . . . D G Q Q . N . G .	436
Pcoatneyi Pknowlesi H n=4	- - - - T P O K A V . L K T . Y H I . P . . S F . . G . F . E E S . . . H D G K Q . S . G . V	461
Phylobati Pinui A.hackeri n=13	- - - - A P K K E V . S M K D S . H I T G G . S F . . L . E E T . F E . D A E L . . .	457
Pfieldi N-3 n=4	T E K A V . M K E T . H I A T . . . L Y . . G I . D E S . . . D G K Q . . G T	472
Pvivax Sal-1 n=43	- - - - T P K T V . L K E T . H I . . . A N S . . . I . D E T . . . D G K Q . . G I L	437
Pcynomalgi Smithsonian n=10	T E K T V . M K E T . H I T . . . T F . . Q . N A S G . Q E T . . . D G K Q . K . G	473
Pgonderi Pfragile NIH n=2	T D E N E R K D L L D K I A N K I K L E E E K L P K L K E E Y E K K L K E Y N E K V K E F L P L L E K F Y E A R L E N T	482
Pcoatneyi Pknowlesi H n=4	I S T K . L . N T . M A . . . D A M E M L K Q . Q A . . T T N H . . K D	496
Phylobati Pinui A.hackeri n=13	G S E K . M . M . M . G . D N K K . D E V N N . S Q Q T H K . . . N .	529
Pfieldi N-3 n=4	I S T K . E . Q D K T . . I . D . . D . K . E . F . V E K . N D . K . I N H . . D .	511
Pvivax Sal-1 n=43	I N I S K . E . E . M . . I . D . . D N . K . E . Y F T . E A Q . N E . K . A F N H . . D .	517
Pcynomalgi Smithsonian n=10	I S N H K . E . L . . I . . L . D . . D . K . D E I A V E K . E E Q . T H H . G . A	532
Pgonderi Pfragile NIH n=2	M E G N K F D E F K N K R S E Y M N K K N D L E K C P Y E Q I T N L I N K L K K Q L T Y L E D Y I L R K E I A N D E I N	497
Pcoatneyi Pknowlesi H n=4	F V D . K . T N E A E M K E . T E K Q . N . D T D .	533
Phylobati Pinui A.hackeri n=13	I D K Q . D . A . D . K . G E . E T . E A D T K D . D .	510
Pfieldi N-3 n=4	L V E T . D A . T H E A . K E . E . . T . N T . M . . . S . D V S D . .	542
Pvivax Sal-1 n=43	L V G N . G E K . E A . E K K . S S . N S T . L . . . V . D . D . K	546
Pcynomalgi Smithsonian n=10	L D . D . Q . . A . . E . K E K E . . T . N A L M . . . N . D V N . D .	557
Pgonderi Pfragile NIH n=2	H F S A M E W L K K E I Y K L E K E I K K N E S K I T I D N Q F E L S D V V E L Q V Q K V L I M K K I E A L K N V K N	552
Pcoatneyi Pknowlesi H n=4	Y . H K . S . F E A . R . . L I V E . K D F . G . L . M I . . A Q .	568
Phylobati Pinui A.hackeri n=13	S . S . K . S R . E S . V R . N M V L E D K . D F G . . . I . I Q .	571
Pfieldi N-3 n=4	Y F L D . K . N E . G A K . Q . . N K L V E K . D F G . . . I . I Q .	577
Pvivax Sal-1 n=43	. . F . K . S . D A Q . R . N L T E V E K . D F G . . . I . Q .	589
Pcynomalgi Smithsonian n=10	Y F Y H . K . N . E S K . R . S L V E K K . D F G V . . . N . V Q .	592
Pgonderi Pfragile NIH n=2	L L K N A K V K D L Y I P K V Y K T V O K P E P Y Y L I V L K R E V D K L K D F I P K I H K M I E A E K A K O . S . - V T	597
Pcoatneyi Pknowlesi H n=4	 L . D G . . . G E K I . . . E T . A T . N S . - A T	602
Phylobati Pinui A.hackeri n=13	H G E . H . . . K I . . . E A T T . N L . - A K	616
Pfieldi N-3 n=4	L H T K I . . . E T T T . T . - P T	631
Pvivax Sal-1 n=43	 I V . . . S E . M . . . I . . . E S . A T . N . P T V A A	637
Pcynomalgi Smithsonian n=10	 D G . . . G E K I . . . E T T T . T . - G T	652
Pgonderi Pfragile NIH n=2	- T A P A T G T I V A Q D E R S T S S T P S S A A A P T E T S . . .	617
Pcoatneyi Pknowlesi H n=4	E P V N V S Q S L R G A S E T V T G A V T . T V G T . G S O T A S E T S E Q S G N O S Q G P P P Q G G N K P O G P P P	630
Phylobati Pinui A.hackeri n=13	E A A A T O S Q S L R G E S E T V T V A G G T . T . T A N A S E N A A G T . . .	657
Pfieldi N-3 n=4	S A V Q I R . Q S L R G A S E T G A T G V T . D V G T S A A . A S .	668
Pvivax Sal-1 n=43	A D I V A K I . Q S L R G A S E T G T T G N T	674
Pcynomalgi Smithsonian n=10	E A V Q I K . Q S L R G A S E T G V T P T P P . P . A L S P A V G A T . . .	689
Pgonderi Pfragile NIH n=2	- M Q O T S S D G S Q Q P Q	695
Pcoatneyi Pknowlesi H n=4	P P A S V . P Q A E S S T P Q	701
Phylobati Pinui A.hackeri n=13	- . . P A V N T . A T P A E N	711
Pfieldi N-3 n=4	- Q . S Q Q T Q V E T A . A A	717
Pvivax Sal-1 n=43	- V N A Q T A V V Q P . H . V	722
Pcynomalgi Smithsonian n=10	- T . T A Q G A A T P G A A	724
Pgonderi Pfragile NIH n=2	- A H V E S T I Q S T P V Q G S O P N	726
Pcoatneyi Pknowlesi H n=4	- V T E T E T P T P . A O T E K S E S V V E K S T H	728
Phylobati Pinui A.hackeri n=13	- T A S L P A V P G E A P A T T Q V . A	737
Pfieldi N-3 n=4	- A A G T T S T . A P A E G G A Q E V T Q	741
Pvivax Sal-1 n=43	- A D A T A P . N A D A T P A E N A D A T P	746
Pcynomalgi Smithsonian n=10	- A T E I S T S D T T T S N T A T S N T A T E I S T P A T T T S N T A T . I S T P A . T T P A T T T S	748
Pgonderi Pfragile NIH n=2	- S V S N P G A E E G T S A P E T N N E A T E V Q E Q A S	752
Pcoatneyi Pknowlesi H n=4	- E T T T T G P T V E . S A I T D K P Q A E S E A T H E T P P A	756
Phylobati Pinui A.hackeri n=13	- Q P A P P E E P P V A O A T V . V P E T . E Q S A P T E P A	767
Pfieldi N-3 n=4	- S E E T A T P P G P E V P . T P . . V P G E T . Q Q	771
Pvivax Sal-1 n=43	- K A M S V E D L K A M T K E M . E T L R . I T T P T T . E	776
Pcynomalgi Smithsonian n=10	- A T T S A T T T S A . T T S A . T T S . T T S A T T S A T	782
Pgonderi Pfragile NIH n=2	- T A S S P E E P T E A E A	788
Pcoatneyi Pknowlesi H n=4	- E T A A P G K S A T T A E P A	791
Phylobati Pinui A.hackeri n=13	- Q E Q E A A A A A P O E S Q O P P T E P A G	796
Pfieldi N-3 n=4	- T T S S P E E P T E A E A	801
Pvivax Sal-1 n=43	- T T S S P E E P T E A E A	804
Pcynomalgi Smithsonian n=10	- T T S S P E E P T E A E A	804
Pgonderi Pfragile NIH n=2	- T T S S P E E P T E A E A	804
Pcoatneyi Pknowlesi H n=4	- T T S S P E E P T E A E A	804
Phylobati Pinui A.hackeri n=13	- T T S S P E E P T E A E A	804
Pfieldi N-3 n=4	- T T S S P E E P T E A E A	804
Pvivax Sal-1 n=43	- T T S S P E E P T E A E A	804
Pcynomalgi Smithsonian n=10	- T T S S P E E P T E A E A	804

P.knowlesi H n=4	-----GAAEEG-----SQENNAQQEG-----	820
Phylobati	TDTAATGVIT-----O-----E-----	817
Pinui A.hackeri n=13	ATTTPAETTPAETTPAETTPAETTPATTTEISIPITTPPAAATPATTT-----	914
P.fieldi N-3 n=4	EPAVPEGESE-----SEEEATEGG-----	794
P.vivax Sal-1 n=43	VAST-----QTISQAPAPT-----	805
P.cynomolgi Smithsonian n=10	SAPQPAGAS-----PPVAPEEP-----	801
P.gonderi	-----SENPENASPAAPPA-----QAAPAMTKLEYLEK	780
P.fragile NIH n=2	-----KQT.A.AD.AA.K.TD.PAPV-----P.V.T.S.	854
P.coatneyi	GAAAPAEYEDVTTQEAPAQPAEPT.AATA.V.TAPATTT-----P.V.P.S.Q	923
P.knowlesi H n=4	-----GSATPTETT.VETT.VT.PATTA-----P.S.S	858
Phylobati	-----VDTI.TTTTPA-----P.E.A.S.S.V	841
Pinui A.hackeri n=13	-----EISI.TTTTPT.AALSPALS-----P.S.S.S.V	948
P.fieldi N-3 n=4	-----ETPPAV.GA.T.G.T.GATPA-----P.S.S	830
P.vivax Sal-1 n=43	-----QA.PE.AP.A.PST.AAV-----AP.T.A.S.E	838
P.cynomolgi Smithsonian n=10	-----APEEPVG-----PVT.VTTTPQPTSQPAAPTA-----P.T.S	841
P.gonderi	LLLEFLKSAYRGCHKHIFVNRSTMGKEALTKEYLNTLESRLINVSFGDELDDLFLNVQNNLPA	840
P.fragile NIH n=2	-----D-----A-----LNTI.NP.L.K.Q.K.TD.QNR.HNS-----I-----	914
P.coatneyi	-----S.A-----LTN.SPOL.EQ.K.TAD.ETQ.K.T.Q-----I-----	983
P.knowlesi H n=4	-----S.A-----LTN.NP.L.K.Q.A.T.D.EKK.K.E.A-----S	918
Phylobati	-----N-----A-----TN.K.L.K.E.T.D.EKK.KO.N.I.V.L.A	1008
Pinui A.hackeri n=13	-----N-----A-----TN.K.L.K.E.T.D.EKK.KO.N.I.V.L.A	918
P.fieldi N-3 n=4	-----D-----S.A-----ITN.N.D.L.SQ.TAE.KNK.K.E.T.Q-----I-----	890
P.vivax Sal-1 n=43	-----D-----A-----TN.K.L.K.E.T.D.EKK.KO.N.I.V.L.A	898
P.cynomolgi Smithsonian n=10	-----D-----S.A-----TN.N.L.K.K.E.T.D.EKK.KO.N.I.V.L.A	901
P.gonderi	MYSIYESMSNDLQNLNLYIELEYEKEMIYSIYKNKKKKDDKKIKKALLET	900
P.fragile NIH n=2	-----D.T.I-----D-----Q-----N-----R.D.T.T-----F.A.SN.AAAAVAP.PAS	973
P.coatneyi	-----M.D.T.T-----Q-----L.N-----D.D.T.S-----F.KPST.AAAEAAA.PAQS	1042
P.knowlesi H n=4	-----D.T.I-----Q-----V.N-----D.T.T-----F.LK.AAAAVTPPAVV	977
Phylobati	-----L.T.GD-----N-----D.T.T-----R.L.V-----	945
Pinui A.hackeri n=13	-----D.T.D-----N-----E.T.T-----R.L-----	1052
P.fieldi N-3 n=4	-----D.T.I.S-----Q-----V.N-----D.T.D.T-----F.E.D.LT.AAAAP.AVA	949
P.vivax Sal-1 n=43	-----D-----N.E.S-----Q-----V.N-----D.T.K.M.I.L.F.LK.KAAAP-----	950
P.cynomolgi Smithsonian n=10	-----D.T.I-----D-----Q-----L.V.N-----D.T.A.T-----F.LT.AAA.SAAA	957
P.gonderi	ST-----NTEVSSPPVAP-----SVPASPDPATAVETLNTAASTTPQDAQTSDDS	944
P.fragile NIH n=2	AA-----PPT.TPSTIS-----PTT.AV.P.QSAVNVD.VVTNPVATTT	1014
P.coatneyi	AE-----NDQVV.NPEPT-----TTTTTTTTTTTTT.TTVDQ.NT.E.VTNEVSTATP	1091
P.knowlesi H n=4	P-----AP.AE.VTTP-----AAPAVVTIETEPAAAPITTNQS.TP.G.TTN.VSPIT	1025
Phylobati	-----P-----N-----D-----N-----TNPV.TTTT	954
Pinui A.hackeri n=13	-----P-----N-----D-----N-----TNPV.TGGA	1061
P.fieldi N-3 n=4	PV-----SAP.A-----SASAA.PVQSAANLN.QVVTNPV.TTTT	973
P.vivax Sal-1 n=43	-----QSAAKPSGQAGTTPV.TTAP	971
P.cynomolgi Smithsonian n=10	AA-----P.A.AVV-----ATAVTP.GPAEDSNEEVVT.LANTTT	992
P.gonderi	-----ATPGGTSQV-----	1034
P.fragile NIH n=2	TTTTPTTTTTTTTT-----V.L.TQDS-----	953
P.coatneyi	-----VA.TQGA-----SADTQA	1106
P.knowlesi H n=4	-----V.L.AQDT-----	1033
Phylobati	-----VSQDNST-----	962
Pinui A.hackeri n=13	-----VSQ.NST-----	1069
P.fieldi N-3 n=4	-----VSQNNPTSGTIVNTVSTTTQTVPAGTQAPAATS-----T	1016
P.vivax Sal-1 n=43	-----V.TTTVTP-----	979
P.cynomolgi Smithsonian n=10	-----TA.NPES-----	1000
P.gonderi	-----GAVDTATTTT-----TQNEQKVYASSSSDDVTQENAINDKELY	991
P.fragile NIH n=2	-----D.TN.Q.L-----QTQENQSVIA.NE.EPKVTIVQMEKP	1070
P.coatneyi	S-----PVA.QASPVYETQDTTQAEQNGT-----EEDSVYQA.EEESET.IVOMDKI	1156
P.knowlesi H n=4	-----AQTT.EAS.AE-----EESVYQA.EEESET.IVOMDKI	1070
Phylobati	-----VVT.REAAP-----Q.AGEOLVKANC.NPEDLLMQMEMI	997
Pinui A.hackeri n=13	-----VVTN.Q.P-----HEEGSVKANC.NPEDLLMQMEMI	1105
P.fieldi N-3 n=4	QPSVVTNTPASVETNAQ.P.PGEGSLTVQAN.EEEAEA.NVKLEDI	1063
P.vivax Sal-1 n=43	-----SPQTSVVTS.PP.P.QAEEENRQVRVGGN.EEKPEADTALQVEKF	1020
P.cynomolgi Smithsonian n=10	-----AVTN.Q.P.QAEGDLQAVRGG.EEESVVKIEELKNI	1036
P.gonderi	EKHLSEVGKYDYFFKFKVESKKDEINKMDDTNWNKLGEEIEELLKKLQVSLDHFQKYKLK	1051
P.fragile NIH n=2	DRH.QMDI.ND.A.L.Q.EN.N.NKEQET.A.Q.E.I.YG	1130
P.coatneyi	-----N.QMDQ.E.M.L.Q.E.N.TNEK.EA.T.A.V.YG	1216
P.knowlesi H n=4	-----QMD.ND.I.L.Q.EK.TS.TEEQA.A.A.V.V.YG	1130
Phylobati	-----I.MD.NEN.N.L.N.EK.TT.TEQEAKA.A.T.O.I.YG	1057
Pinui A.hackeri n=13	-----I.MD.NEN.N.L.N.EK.TT.TEQEAKA.A.T.O.I.YG	1165
P.fieldi N-3 n=4	-----QID.NDH.Y.L.Q.E.R.TG.PAQ.KV.V.V.E.I.QV.L.G	1123
P.vivax Sal-1 n=43	-----QID.ND.Q.L.Q.D.T.T.E.K.K.A.K.A.YG	1080
P.cynomolgi Smithsonian n=10	-----H.QIDN.ND.K.L.K.E.I.D.N.K.A.V.KV.I.D.YE	1096
P.gonderi	LERLLTKKNKISSSKGNVKNLAKLAKLERRONLLNPTNLVKNYTIFFNKKRESEKTTI	1111
P.fragile NIH n=2	-----FMK.K.N.N.EHI.K.TS.N.K.KKF.SS.V.V.K.A.R.EV	1190
P.coatneyi	-----F.E.N.N.EHI.K.TS.N.KL.F.S.S.AV.K.A.EV	1276
P.knowlesi H n=4	-----F.E.N.N.EHI.K.TS.N.KL.F.S.S.AV.K.A.EV	1190
Phylobati	-----F.K.E.VTD.RQI.R.TI.N.R.I.S.FSV.MEV	1117
Pinui A.hackeri n=13	-----F.K.E.VTD.RQI.R.TI.N.R.I.S.FSV.MEV	1225
P.fieldi N-3 n=4	-----FLK.M.N.EQI.K.TS.N.S.AV.A.EV	1183
P.vivax Sal-1 n=43	-----L.K.N.N.DQI.K.TS.N.S.A.T.EV	1140
P.cynomolgi Smithsonian n=10	-----D.FMK.N.N.EQI.K.TS.N.Q.E.S.V	1156
P.gonderi	ENTLKNTDILLKYYKARAKYYIGESFPLKNIISKESIQKEENFNLNEKFRVLSRMESRLGK	1171
P.fragile NIH n=2	-----EL-----Q-----P-----TL.E.FL-----D.Y-----G-----N	1250
P.coatneyi	-----E-----P-----TL.E.FL-----D.Y-----G-----N	1350

P.knowlesi H n=4	 E P T L E . . L . . . D Y G . . . N	1250
Phyllobati	 E . . N . . L . . . S P . . . T E . . L . . D Y . . K G . . N	1177
Pinui A.hackeri n=13	 E . . N . . L . . . M S P . . . T E . . L . . D Y . . K G . . D	1285
P.fieldi N-3 n=4	A E P T L E . . L . . D Y M G . . N	1243
P.vivax Sal-1 n=43	 E I . . P . . . T L E . . M . . D Y L G . .	1200
P.cynomolgi Smithsonian n=10	 E P . . . T L E . . M . . D Y R . . . M G . . N	1216
P.gonderi	N I D L E K E N I S Y L S S G L H H V L T E L K E I I K N K S Y T G S D Y S K N I E E V K K A L E E Y K D L L P K V E T	1231
P.fragile NIH n=2	 N T F S R H K S . . A . . Q . . Q . . A .	1310
P.coatneyi	 N F V M S K . . S . . E H A . . T A A . . E . . Q A . Q E . . . A .	1396
P.knowlesi H n=4	 N F K N . . H A . . T T A . . E . . Q A . E E . . . A .	1310
Phyllobati	 K F Q T D . K . S . K . H N . . A Q . . . E . . A . Q E . I . . A .	1237
Pinui A.hackeri n=13	 Q F Q D . . K . S . N . H N . . A . K . . R . . Q . . E . . K . . M . A .	1345
P.fieldi N-3 n=4	 F S . . R Y T . N E H A . . T A A . . E . . Q A . Q E . . . G .	1303
P.vivax Sal-1 n=43	 E H K N . G F P . S D . N . H T . . A A . . E . . Q A . Q E . I . . T S	1260
P.cynomolgi Smithsonian n=10	 F N . . R . S . N . H A . . T A A . . V . . Q A . Q E . . . T .	1276
P.gonderi	T . . T A S P A Q . . V T P P A Q V T P P A Q A E A	1253
P.fragile NIH n=2	K A S P S L P A A P . A P V T P A E E T E E	1339
P.coatneyi	Q . . A S L P A P P A T P P V A . A T T Q V Q A P P E E P S . A . S T V P V . V P E T	1438
P.knowlesi H n=4	Q . . A S L P P V A P A . V . V A P E A E . E	1335
Phyllobati	Q E . A R V P V T P A I T Q G P E Q P V A P E A P E E E A G E E T A . E E A A V E A V A G E T T P V T T . .	1289
Pinui A.hackeri n=13	Q E . A R V P V A L A A T Q G P A S A V T P A V A P E A P T A E E A . E E A A V E A . A G A P A S G . .	1395
P.fieldi N-3 n=4	Q V S A S V P A L P A G A G . A . A V P V P V A E G . P A A S A D V P A A P A V P G . G	1347
P.vivax Sal-1 n=43	Q E G A S T T A A T L P V T V P S . V P G G L P G . G	1287
P.cynomolgi Smithsonian n=10	Q E G A S V P A A G A G V V G T P . A V I A A A G A G	1306
P.gonderi	 S O T S E V A V E P V . P O E G A A E G T S G A A T	1278
P.fragile NIH n=2	 S E E S A P T . P P V K Q E A . G P T . E S P V A A E T A	1367
P.coatneyi	 E T E . E Q P A . E S E G . G . G G A A A P . P	1466
P.knowlesi H n=4	 G A G . P T S . E P A T A D T . A D T . D T A A P T Q T S	1363
Phyllobati	 V T D A A T P A . T . T P A E T A T P D A P P A E V P A Q V P A A G P G S A P E P A . P	1334
Pinui A.hackeri n=13	 E A P A G A A P A . T . P S A T V R A G A T T T T T Q G G V G E A . A T T T T I	1435
P.fieldi N-3 n=4	 A P A A . A D . Q A A S . A G A P E A S A G A S E A	1372
P.vivax Sal-1 n=43	 V P G A A A G L T P . P P . G . . S V P . T G	1308
P.cynomolgi Smithsonian n=10	 A G P A A G Q T P G A . A P A P E T A P A A P G T .	1331
P.gonderi	 P A P I P T S P S T A E S T S T L . S	1296
P.fragile NIH n=2	A P A A P A Q P V T P P V T P . A E E . A A G . V Q T . P A A G G E G Q T G Q T T	1407
P.coatneyi	G E P E A S L P A P E G E T S E E T . A Q A Q . . A Q A Q A Q . P A Q . P A G E T A P L A Q P E A	1514
P.knowlesi H n=4	A A Q P A T A D T A A Q P A T A D T . A A Q . . T A D . A A Q P . I A P A A V P E N G E T A E V K	1411
Phyllobati	A P E P A P A A A A A V P T A A P A P E P A P A A . V A V . E A E V P E V . T . T O S G Q G E G L V	1387
Pinui A.hackeri n=13	T T Q G G V G E A G A T T T T T T T T T T Q E D E G S T T T T . T T I . T T T . T Q G G A G S T S V I	1487
P.fieldi N-3 n=4	S A G A P A A L P A G A P T T G E T . T G E . T G E . A T V T T	1403
P.vivax Sal-1 n=43	 P G A A A G S T E E N . V A A K	1323
P.cynomolgi Smithsonian n=10	P A P E V A A A V A E G . T P G A E G E G L T Q Q	1355
P.gonderi	G Q D D T E D D E K V I A L P L F E E K M D A Y D E E Q V T M G E A E E . R Q V E V I V P R D L N E	1345
P.fragile NIH n=2	Q D V Q A Q . Y D E G N D D D G S D . E D T N A . P E G I S .	1459
P.coatneyi	A . V S G D . Y D Q V G N D . E D . E N E E V N T N A . P E G I	1566
P.knowlesi H n=4	A . E Y G . . Y D V G N D . D D V E D Q E N K . I I T N A . P E G I .	1463
Phyllobati	A . N Y E D . Y D . F R F H . F V N K N D D Y V E E E E E N K E D A D T A E E T P L E G I	1445
Pinui A.hackeri n=13	A . Y D . . Y D . F R F H . F V Y K N D D E G Y D E E E E E N . K E V D T D . N Q E T P P G I .	1546
P.fieldi N-3 n=4	A . . Y A . . Y D G N N D D D G E E E A E O . I . S T . N A E P . I Q G I .	1454
P.vivax Sal-1 n=43	A . . Y A . . Y D G N N D D D G E E V D H . I . S T . N S . E A P . I . L A G I S D	1372
P.cynomolgi Smithsonian n=10	A . . Y A . . Y D A G N N D D D G S D D K E A D S E A P . I Q G I .	1407
P.gonderi	Y E V V Y M K P L A E V Y K T I K K Q L E N H L N A F N N N T M D M L E S R L K K R N Y F L S V L N S D L A P Y E R A S	1405
P.fragile NIH n=2	 I G I . N A . V A T . I I D N S E . F N . F K Y S .	1519
P.coatneyi	 I G M A . V A T . I T D D D . E . N . F K Y P .	1626
P.knowlesi H n=4	 I G M S V A T . I T D D D . E . N . F K Y S .	1523
Phyllobati	 I G M H H V T L . T . I T D F G F T . F K Y S .	1505
Pinui A.hackeri n=13	 I G M K R V T . L . T . I T D F G F N . F K Y A .	1606
P.fieldi N-3 n=4	 I G K R E . V T . T . I I D G I N . F K Y P A	1514
P.vivax Sal-1 n=43	 D L G M D V T . I T D E N . F K Y S P	1432
P.cynomolgi Smithsonian n=10	 D I G M V L . T . I I D D N K Y S .	1467
P.gonderi	S G D Y I I K D P Y K L L N L E K K K K L L G S Y K Y I D G S I D K D M A T A K D G L E Y F E K M T K L Y K E H L V S V	1465
P.fragile NIH n=2	 E M D Y . Q K S A N S E N . M D A .	1579
P.coatneyi	 E D F Q Q S T N E M Y K G E Q D T	1686
P.knowlesi H n=4	 E D F Q Q S T N E M Y K G E Q E A	1583
Phyllobati	T . E N P D M G V T . E Q L N M A Y N S D K O F D A	1565
Pinui A.hackeri n=13	T . N P S D F M G N G M E L A N G A Y N N D K O E D A	1666
P.fieldi N-3 n=4	 G E V Y D L F G A M V N A Y N G D K D A	1574
P.vivax Sal-1 n=43	 E E D F I G A M L V N V T A Y N G E T D G	1492
P.cynomolgi Smithsonian n=10	 E D D I S I E I S E F N G D K D E	1527
P.gonderi	N E E I E K N O K E I . D E A K K E P S D T N P S T K V O E L E K Y I P F L N S I K N	1507
P.fragile NIH n=2	H A H . Q S I E N D . D S T T D G D Q L N A . N E . A K L Q K	1617
P.coatneyi	 K K E I E T S . A A S E N N Q V D A O K E K L Q K	1723
P.knowlesi H n=4	 A Q K E I E T S . V P S G S Q S L N A E K E K L Q K	1620
Phyllobati	 K K D L E D O K E Q E E E I K I R Q E E I O R T S N D T N E T D E I N Q L I A O K E S K L K	1625
Pinui A.hackeri n=13	 K K E M E D I E K K I P . G E P N S A I K N N Q L I A V K E E S K L K	1712
P.fieldi N-3 n=4	 A Q K E V . D N N K Q D E E I K K L G T G . S N N Q N N Q F S I K A E L S Q K	1626
P.vivax Sal-1 n=43	 K T E I K . V E D D K K Q D E E L K K L G N V N S Q D S K K N E F I A . K A E L L Q K	1545
P.cynomolgi Smithsonian n=10	 A Q K E V E A N N K H D E E I K K I G S S . A N D K N Q L N A . K E Q L S Q K	1580
P.gonderi	A Y E A L L N K V N N Y T Y N L K T V N N N L O L E K N R T E I L I R K L D D Y T K M D E K L E D F K K Q K K E I N A E	1567
P.fragile NIH n=2	E . . T . M H I D K F M . K Y P I K E I V N E N I Q S T D V R	1677
P.coatneyi	E . Q S V . T . T . E K L M . Y . I K E D V I V K . E Y G S S N D V K	1783
P.knowlesi H n=4	E . S . V . M A H T . K E K F I C . I K E D V I V K . E Y I N I Y S S D V R	1680
Phyllobati	E . . S . V S M A T T D K F I C . I R E I L K E I L Y R E S D T D V I	1685

P.inui A.hackeri n=13	E . . T . V S M . T T . . N . . . K F I . . C . I . . R E . . . I . K . . E . N . . . E K . . N Y R Q S . E E A N V I S N F . . . K . . . S R . . . N T . . . K E . . . Q K . . D V	1772
P.fieldi N-3 n=4	E . G S . V S . . H S . . E . . . K F L . . C E I . . K E T D . I . K . . E . Y S . M . . K . . V Y . R S . . . T D V R N G D . . S . . Q . . . N E . . . C . . I . . N . . L . . S . . . N . . I	1686
P.vivax Sal-1 n=43	E . . S . V S . . . T . . D . . . K I N . C . . . K E A . . T V K . . Q . . C . . I . . N . . L . . S . . . E Y . . S E . K N E V K S S	1605
P.cynomolgi Smithsonian n=10	E . S T . V . . H S . . D T . . K I I . . C . I . . K E . E T I V N . . E . . S . . . E . D V Y . K S . . . D D V K N G . . A . . Q . . E N . . F L . . Y D I . . K N . . . K . . I . . Q N . . L R	1640
P.gonderi	H . D L L K K L K V S E V M K G N E S K A I L S E L L N V N T T L L N M D S E H K C I D T V V P E N A A C Y R L D G R	1626
P.fragile NIH n=2	S S G . . E . F . S . K L I N E E . . . K V . . K . . Q . . Q . . H L S . D I D T	1737
P.coatneyi	S S G . . E . F . N . K L I N E E . . . K V . . Q . . M Q . K M . . . G T T	1843
P.knowlesi H n=4	S S G . . E . . K N . K L I N E E . . . K V . . Q . . Q . Q M . . . S . A N T	1740
Phyllobati	S S V . . E . . K . K F I N E E . . . K . . . V . K M E . Y . . . I G T G Q T	1745
P.inui A.hackeri n=13	S S G . . D . . . K . K L I N E E . . . K . . . V . . M G . H . . . G . E T . . D L F	1832
P.fieldi N-3 n=4	S T G . . E . . . N . K L I N E E . . . K V Q . Q M . . . G N . . E T	1746
P.vivax Sal-1 n=43	S S G . . E K . M K . K L I . E Q . . . Q . . T . S N . . D T	1665
P.cynomolgi Smithsonian n=10	S S G . . E . . M N . K L I N Q E . . . K A Q . Q M . . . S . . R N T	1700
P.gonderi	E E W R C L L K F K L D G G K C V A A T D I V T C E D N N G G C A P D A E C K Q M D N K I D I V C K C T N E G S Q P L F D G	1686
P.fragile NIH n=2	 T . . E V S . . . P . P N M . . M E . . . S M P E R Q	1797
P.coatneyi	 N . . E L E . . . I P . P . . M . . N E E M T E S . . . K E	1903
P.knowlesi H n=4	 G . . E V . . . P . S E E T M D . K . . E V E . . . K E	1799
Phyllobati	 K . N . . K E . D . . P . P N M . . S E N M N E . . . K V . . T . . K E	1804
P.inui A.hackeri n=13	 N . . K E . D . . A . S N T E N M N E . . . N Q V K E Y D	1892
P.fieldi N-3 n=4	 N F K E E G P . P . . M . . K E M N E . . . E K E Q	1806
P.vivax Sal-1 n=43	 T . . E E P . S N K E M T . S N . . . K K E E	1725
P.cynomolgi Smithsonian n=10	 Y F . E . A P . P N M . . K . K E M N D K N . . . E K E Q	1760
P.gonderi	V F C S S S S F L S L S F L L L L I L F I L L L C S E L	1712
P.fragile NIH n=2	 L L F M	1823
P.coatneyi	 L F M	1929
P.knowlesi H n=4	 I F F . . S M	1825
Phyllobati	 L A L F . . M	1830
P.inui A.hackeri n=13	 S L L F L F . . . M	1918
P.fieldi N-3 n=4	 Y F L L L . . . M	1831
P.vivax Sal-1 n=43	 M M L F . . . M	1751
P.cynomolgi Smithsonian n=10	 L F M	1786

Additional figure S1: Amino acid sequence alignment of MSP-1 from *P. vivax* and *P. vivax*-related simian malaria parasite species. Sequences were divided into 9 blocks according to sequence similarity: 5 interspecies conserved blocks and 4 variable blocks (gray-shaded). Excluding short unaligned regions (blue-shaded), 4176 bp in the 5 conserved blocks were used for constructing phylogenetic trees and inferring evolutionary analyses. Borders between the 5'- and central regions and between the central- and 3'-regions are marked with vertical red lines. Amino acid sites under selection as detected by the omegaMap (Wilson and McVean 2006) are red-boxed for *P. vivax*, *P. inui* and *P. cynomolgi*, and those as detected by the HyPhy/Datamonkey (Kosakovsky Pond and Frost 2005) are pink-or beige-shared. For *P. vivax*, 5 computations were done to detect positively selected sites using HyPhy/Datamonkey for 14 randomly selected msp1 sequences from 43 sequences, due to a technical reason inherent to the program. Positively selected sites repeatedly detected 3 times or more are pink-shaded and those less than 2 are beige-shaded.