

T. brucei

T. brucei
T. congolense
T. vivax
A. deanei
C. andersoni
C. tyzzeri
B. alexandrina
B. straminea
B. glabrata
A. californica
P. calliculate
O. hupensis
P. maximus
M. yessoensis
C. gigas X2
C. gigas X1
C. virginica X2
C. virginica X1
B. floridiae
A. planci
P. miniata
A. rubens
A. japonica X1
S. pistillata
O. faveolata
A. tenebrosa
E. diaphana
N. vectensis
A. millepora
P. damicornis
D. gigantea
L. anatina
P. dicentrarchi
A. udagawae
P. citri
H. capsulatum
E. crescens
P. hystricis
T. interdigitale H6
E. mesophile
A. bisporus
P. conissans
C. cinerea
G. lividus
P. ammoniavirescens
S. rosetta
C. cylindracea
H. sp. ATCC 50920
O. tauri
I. sp. A28L
A. shirensis
M. indica
C. papaya
C. olitorius
G. max
V. unguiculata
M. sativa
D. carota
S. lycopersicum
A. thaliana
A. tauschii subsp. *strangulata*
T. aestivum
H. vulgare subsp. *spontaneum*
P. hallii
S. officinarum
P. dactylifera
E. guineensis
P. equestris
M. alkaliphilum

1 10
.....MFRNHASRITAAAAAPVW
.....MLRINASCINAAAAATTT
.....MLRYRTPTLAAAAAMKV
.....MFPLRRQVTARLTGTQRFGATT
.....MNFQSNISRNIISNFNQLFFNCNYIKAT
.....MYVVRNLLNTKLRIFYGRHLWLLSSKVNLI
.....MNVVSIIRGLTKFGSSNSLVASLLPSTSTFT
.....MNVVSIIRGLTKFGSSNSLVASLLPSTSTFT
.....MNRVSIIRGFTKFGSSNSIASLLPSTFN..T
.....MMLSPLPSTMRAFAAHGSNFSMATAFVSTTTGRSFSSSVSGTVRSSSKTLP
.....MSSSTIFLRSSARTLCASRIVI SAAELNLSAP
.....MSLCFSALTIRPSACAVGALRSSFGASALKLSAHL
.....MLTSRMLVRCGAENALKNITAIAPP
.....MLTSRMLVRCGAENALKNVTIIAPS
.....MGSRLQITKLSENGVR
.....MGSRLQITKLSENGVR
.....MGSRLQITRLENGVR
.....MGSRLQITRLENGVR
.....MATRGALRLRTAAVGGMLSRSSFHLSAAPLNSCLLTPRERQ
MLTVTAKQASLCANN.LIHVWPRFSFVAVRALND.SITGRPLGLRDPSPCQAAGACRPYSLITGGLSRPCTAKLTSTRTA
MLKVTVKQASLLSANNLVVWPRCFGLAVHSSSD.SFPSAPR.RPKVSPRLAAVPCRPFSLIAGGSSGCTAGFALTRAV
MLPLTSSKSLPSSITRVIHVAVNLSCESGRLATRKFLCVISTGSHHTPSVVVSHGRASPLNHGYSYCDPDKTITAGFGCS
.....MVASSMLYKGSFCARMSTMIGLSPA
.....MATIGLQRPFSVIRGIANCSTFVKP
.....MATIGLRRISVIRGIINCSFVKH
.....MIVPKLGRFHSFGSAGSRVLAII
.....MTTIRIGRVYGSGRLLNAYVALAQ
.....MSVREFHRAIPLSRILNRSTRSCT
.....MALLKSHRLLSPVVNVVRSAGSTR.
.....MLPTKTRQFFSPTILFALKSSLNR
.....MKSVSRSLSFFRQHFGRKASSRFITATGKRWDLP
.....MAARGFRQLAGTCRTGCLHCLRLLV
.....MQSFARKFCTSSALVHSSNNALF
.....MNSITATMPLRATALPKT
.....MYPTSAGCARVLMACAPAML
.....MYPTSAGSTRILMACAPSML
.....MSGTTPSICIYKSLRGA
.....MHAPTAPFPALVQSGGARLL
.....MNPSTRATLLPSL
.....MRYVGTVSTLSYLPRR
.....MLKSTLLRTTAVQLRTPPTLLSTARLLA
.....MTTLLRSALAHSPARHSLIFRSLLIDHGAYRSTPELRLV
.....MSVLLRSTLIHSATRHHPLIFRSALIGCGAYRRTPELRLVA
.....MTVLLRASRSLLLQVLLRRP
.....MLSTSRRFASFYGRFVAVSEQLTHG
.....MLRASLTSVSGLLARNAASVSIIRNEFVTASTTALR
.....MMRRVAQTLARSHLHASTTSQTTTARALWSSGMTRTFNENSIATTHR
.....MNRFFVARSVIRALMVNSRSCGGSNRMLYAATTATVR
.....MNRFFVRSVMQGLINGRSSIINGQVCRAAVVGRGVQ
.....MKLTALNSTVRRALLNQRNGNRLGSAALMPYAA
.....MKFIALSCTVRRALLNQRNCG..LGSTAVMAYAA
.....MKHSALCYMARRALIGRNSNRQSSAVVRSFAAAE
.....MNQMVARSVIRRLINSQKSPISTFRSHDDIA
.....MNQLLVRLLVMRRLVSGGTRNGCISSSSAAMFREVHKPS
.....MSQLITKAALRVLLVCGRGNCFVSSVSTSVMKSPYEITA
.....MSSRMAGSVLLRRAGAGASRLFATTPSPA
.....MSSRMAGSVLLRRAGAGASRLFATTPSPA
.....MSSRMAGSAILRRAGVAGSRLFATTPSPA
.....MSSRAAGSVLLHLLGPRVFGPVSSPAAAAA
.....MMSRMRGASALIRQLGPRLF.SAG...ATRAA
.....MMSRMTGSALLRQLGPRLFSVSSAAPTRAA
.....MMSQVRRSVTLVRQLGLRSFSTSPSADRVGA

T. brucei

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T. brucei LRTACRQKSDA K
T. congolense LWSAMRLRSDG K
T. vivax QQMFTHSSSSSN K
A. deanei LRCCAATQESAI P
C. andersoni NKCLTTSRYVSTIDTRVGGTQSVYSPLHQP SQPHPD
C. tyzzeri NLCSIVHSNKGQKITSKLYITLEKDRSNN NOGDFS
B. alexandrina YKNGKLLCQRTALRSSVIGSYQFLVMQN RGIADDKQ
B. straminea YKNGKLLCQRTALRSSVIGSYQFLVMQN RGIADDKQ
B. glabrata HKNGKLLCQRTGFRTSFIEGYQFVVVQI RGIADDKQ
A. californica IRHASCVMCTTDQAKPAHKVTSFFVGLQQ YRGLADKKEINEK
P. canaliculate AVGR LVCAPAPQVRHLTTQR EIREN
O. hupensis SSCARTVDVGAVGASIQFPQIRTLDGRIITERTFASKPKHTKCADCTCATCSNKVRLSTTETQLQQVEGNLKKQIQEN
P. maximus VKVKQGFVNV . HLWLHRAVVRPDMCSVRN YVATKEEVDH
M. yessoensis QSVKVKQGCVGHHLAPARPTLCSATVRN YAATKQEVDEH
C. gigas X2 IFCSQLKNLENNISILLRVSGIRTSNGLR NAGTKADVNDEN
C. gigas X1 IFCSQLKNLENNISILLRVSGIRTSNGLR NAGTKADVNDEN
C. virginica X2 IFCKQMKDAENASILLRINGIRTSGLR TAATKADDEN
C. virginica X1 IFCKQMKDAENASILLRINGIRTSGLR TAATKADDEN
B. floridae ISLVQRMYLSSATQTSPKPVTEKKVEKVT VVSTPAQKDEIQMKDAR
A. planci GKNILAQPPFNLSSSSTLTKQRFVSTTSPQ DET
P. miniata GSNVVLPFNVINPPTHQIKIQLSTASQQ DEKVRVDMP
A. rubens STSSAGLKRLLALVGCIIHQAKLLSTSP P
A. japonica X1 KTSLWLKGGQLTKACRNHKQLLSTSCMAL QG
S. pistillata ISAVDFFG . . KLGWSARPRRTGVS . . QF STNTILKRSS
O. faveolata INVTLAESDSEFKLRGILLPQRTAIS . LL STNAIKR
A. tenebrosa LARGP . . RLGAVNIRSCCQMGGYFPKIS TPSAPYSVR
E. diaphana QRACFGQTAHLANNIQIQRSHAGKSSGDF VVSVPPVR
N. vectensis RLVLRG . . LRSSSFASSLKQRTAFFTANR LTPAYLTTN
A. millepora SGFLLGIRSQESL RKPILCRLL
P. damicornis ILPGFR ALQDGGLLLETP SNSCTVRL
D. gigantea HSTCHINIWPGHRFSFHVVRQKHSSPA ARNKFOKYS
L. anatina MEMQRITPVVSTIHRQICYTQPRPAVSA I
P. dicentrarchi KQSIINYTPLY
A. udagawae YLRFITRTYASAVGASGCSRPLASSN H
P. citri MLSRQSATAQIRVITNSTLPLNASRAI F
H. capsulatum RGPLLRPSTTAIRGLRGS . . LLYHYA T
E. crescens RG . ALRPSTSAMRGLRSSP . . MIYHYT A
P. hystricis AGGMRLRQSTAVGTGLRGS . . VLLHQF G
T. interdigitale H6 SQKCLASGFRPSTLAIGLRGNSASLYN Q
E. mesophile TTNISRVASKGLYCSAATTGLRASYS L
A. bisporus IGFMFAGRRTLLTSSDKETLNSSAVEK H
P. conissans
C. cinerea RPLVCRGLHSTGYLRSALSASAKTRET H
G. lividus VTKRSNIHTGRVDQNFLLTKKGPNEKAA T
P. ammoniavirescens VIQGSNIHTGRIDQNSLIKKRLNEEAD T
S. rosetta CVRVVTASNALAASTQVRGVHTSKDNE Q
C. cylindracea PLQNTYFSTQQQLRKTLDLEWDEDKH D
H. sp. ATCC 50920 GRLEFTTSPSTWSDLPPMAEPPAPHAGL R
O. tauri DEVAMDGSARRARAHSRAPGAPLASGR S
I. sp. A28L
A. shirensis
M. indica MLSNAGGAEAQVK EQK
C. papaya PWEISDVGRGDFGAFNWRMMSSQESSAVEEVK KEKSAVEQ
C. olitorius LSGQQNGMPFASVELRRMSTASAPASMGKVP TEEKKNP
G. max AETRLLCAGGANWFFYWKRTMVSPAIAKVP EKEKE
V. unguiculata PETRFLCAGAANGFLFYWRMSMASQAEAKLP EKDKE
M. sativa IGQRHLYADGGNGFFYWKRRMSSQAAPSKPSAEE TEAKSTEKNEK
D. carota IANRQRLGIIGGARVFGTRMMSAAGE
S. lycopersicum SESVMMSSQRLRFSGRWRMMCSSTSKNSTKSSD VRKEDKLSGDS
A. thaliana PMRIHDWCGGFGDFKIGSKHVQGNFNLRWGMSSA SAMEKKDENLTV
A. tauschii subsp. strangulata RAVLG GEGAWVRLMSTSAAS QVKDEAAKAVKAEA
T. aestivum RTDLG GGGAWVRMMSTSAAS QVKDEAAKGVKAEA
H. vulgare subsp. spontaneum RTDLG GGGAWVRMMSTSAAS PIKDEAAKVNDAEA
P. hallii RPLIALAGGGERGAAAVVRLSTAAEAEKAAAAASKGS AGSTVAAKAEAAAAKGNAGSTAAAKAEAAAA
S. officinarum
E. dactylifera AAGEPSYTLTLLTGSAGPAAAKPPVAALMRLFFPAR MASTTAAAPADGSEEASEPSKSAAAAADAAKE
E. guineensis AAVEPSYTLTLLTGSASPATAKSPVAALFRLFFPAR MASTTAAKPAVGGEESEPSK PAEE
P. equestris PLNSFLFGSGTSSAAPTAVRLLQVRMASTALP EPIGGEDDRSP
M. alkaliphilum

	α1	η1	η2
	0000	000	0000
T. brucei	30	40	50
	60		
T. brucei	TPVWGHTQLNRLSFLFETVVPVPLRVSDSESSE		
T. congolense	APVWGHTQLNRLSFLFIDAVPAVPQRAGDESSE		
T. vivax	TPVWGYTQVNRLSFVLDLVRVPAREEDESSE		
A. deanei	QHQWGSRQLNQLSFLSFAKRLSTKEHVEIAEN		SY
C. andersoni	KSMNGTHYHHMNNESQOQLYSAPHFRKGIOTL		KSEDEGEVKEYS
C. tyzzeri	KKR1LECKSDQINKFDAENEKVGSHFMKKS		HAASILEGKEYGF
B. alexandrina	...TESNYGKLPNPS..DLAHFRSSSSPPVQ		KDDKEKDNPPIGIYAM
B. straminea	...TESNYGKLPNPS..DLAHFRSSSSPPVQ		KDDKEKDNPPIGIYAM
B. glabrata	...TETKYDKLPNPS..DLAHFRSSSSPPVK		KDDKEKDNPPIGIYAM
A. californica	VDEYRKGDFDITPDPG..NLVHFKTDALEKTP		KTDVQDKGKKDKEMPPIGTYVL
P. canaliculata	IKDYREGKFDKIPDPG..HLEHFRNKSERKVKVAEEGERSQOQAQVQGVQVNVPGVDGEGVQVQAQGHINEEPPMGVYAM		
O. hupensis	VKQAELEGKFNTPDPG..HLEHFMKRSQK...TEVSSVHQSATPKSGISQSSDSRSSVNSQSATDISIFESEPPMGVYTL		
P. maximos	VKKYKEGNFEKIPDPG..HLEHFKTSEALK		SVS..TTTAATTVTKVTGSTSEVETYPHPPGTHAL
M. yessoensis	VRKYKEGNFDKIPDPE..RLEHFKTSEALK		TASSATVATAAGKAKVGTGSTDVTDVNSPPPVGTHAL
C. gigas X2	IKKFKEENFEKIPDPE..QLDHFRRK		TQSTDQLVESMKNPPPMGTHTL
C. gigas X1	IKKFKEENFEKIPDPE..QLDHFRRK		TQSTDQLVESMKNPPPMGTHTL
C. virginica X2	IKKFKEGNFEKIPDPN..HLDHFRK		SQSTETLVESLKDPPPMGTHTL
C. virginica X1	IKKFKEGNFEKIPDPN..HLDHFRK		SQSTETLVESLKDPPPMGTHTL
B. floridae	GTTVPLDLVLSVDPDHRPDLAHFRTG		LSPKDDLEKHHVKKDDGTMGQYSL
A. planci	AGDSTKQKPKLAPHFRISSGK...TSAGDIHPHKAT		TDEDENGEDSRRYLL
P. miniata	AEDDKKEAKKHAPHFRIALKKQPEFSGDEMSPHKAT		TDDSKEGEDDQYLL
A. rubens	QGDDKGVHKKQEGDVGIEIAPAPHFRRTGIEKKAEEEE		KSKLEKLEKDDGQYLL
A. japonica X1	VQKKQTSSGLAPHFKR		NLDTN...KGNQEAATDVTDYLL
S. pistillata	ASEVQQSTPAVTTQSKKPLGHFGKNGSTAG		...DENYRM
O. faveolata	EPADEQSTPQVTTQFKEIVIDHFGKDGNTG		...NEEYRM
A. tenebrosa	TMYTSSYCCQNLPHFKESQNDAAACKDSKKE		...DSPYLL
E. diaphana	SLFTTTTNQQNLPHFKES..LDAKPSSANAD		...DRSYLL
N. vectensis	LFHLSVSDAQHLPHFKENPQQPTGKSNDDP		...DRPYLL
A. millepora	SISIVCTEKDSSPHFRERTLANEAEGGDQTLG		...NEVYRM
P. damicornis	STTGVSQRKD..LKHFKAGAEEKDSDVNDHTRG		...NEIYRM
D. gigantea	SSSNVSNQQSTPTHFKELTGKHLPEVEEEKQIE		...REKAKDYIL
L. anatina	AEAKERSKREDEYEHFRMKEYREADEKAGKHTS		...GDDYLL
P. dicentrarchi	...QMSVKQHFKVTKKAMAQQEKQITDS		...KKLYSF
A. udagawae	FQSIITKRPISSPTQTIKDYFPPPK..APHIK		...EVETAW
P. citri	VNPSSRRDFSTSKPAMKKEFFPEAD..APHVK		...RTQAAW
H. capsulatum	TSNNNVRYFSSSTRRWIKKEFFAPPK.ETDHIV		...ESVTTW
E. crecens	SNNNTRCFSSSPSRPIREFFPKNTKHLV		...ESVTTW
P. hystricis	ISNN.RRCFSITSPSRIKEYFPPIVK..TKHIV		...ETETTW
T. interdigitale H6	NNHDQGRNFSTTSPARLKEFFAAPK.QTKRIV		...ETESAF
E. mesophile	RLASSRRHRNFSSSQQTQLDFPFPKKNLPNIK		...FTPPSW
A. bisporus	AAERRNIASTSPAKETSELTQSAATTIPTMV		...RGDWVL
P. coissans	...MV		...RGDWVL
C. cinerea	TETRSTKSETKEAPKADPLTTESAVSTVPTMV		...RGDWVL
G. lividus	GTEGFHREDLAPSKKALTDKSLDVTVTPVEV		...RGDWVL
P. ammoniavirescens	GTEGFHPGDLTSPKKALTEP..DAVSTVPVEV		...RGDWVL
S. rosetta	LEGKVHVDVSVQHFRRSNNPHPLFSKVDHGNP		...VWVNPV
C. cylindracea	FAK.SKESTSKTPLLSPSSQKREHGD		...TYFL
H. sp. ATCC 50920	GGG.LGQPSLNEGDGSAKVSDAEDAAGG		...GYML
O. tauri	FASSAAQPAPKEDKATEVANAKRLDDPPRGAS		...QGSYML
I. sp. A28L			
A. shirensis			
M. indica	...EEKKDAMVSNYWGIS..RPKITREDGSE		...WPWNCF
C. papaya	AKKDSSGDKMMLSSYWGIS..RPKITRKDGTE		...WPWNCF
C. olitorius	ATEEQKAKDMVVSSYWGIS..RPKITREDGTE		...WPWNCF
G. max	KEKAKAEKSVVSSYWGIS..RPKVREDGTE		...WPWNCF
V. unguiculata	K..AEAESVVESSYWGIS..RPKIMREDGTE		...WPWNCF
M. sativa	EESSTGKNNVVSSYWGIS..RPKIMREDGTE		...WPWNCF
D. carota	..NEAAKENKVSVTSYWGVA..RPKVKREDGSD		...WPWNCF
S. lycopersicum	VEKMEGEDEVALSSYWGVS..RPKITKEDGSV		...WPWNCF
A. thaliana	KKGQNGGGSVAVPSYWGIEATAMKMITRKDGSD		...WPWNCF
A. tauschii subsp. strangulata	AKGDGEKKEVAISSYWGIE.QSKKLVREDGTE		...WKWSCF
T. aestivum	AKGDGEKKEVAISSYWGID.QSKKLVREDGTE		...WKWSCF
H. vulgare subsp. spontaneum	AKDEGEKKDVAISSYWGID.QLRKCLARDGTE		...WKWSCF
P. hallii	VKEGDGKKSPPVNSYWGIE.PS.KLVNKDQVVE		...WKWSCF
S. officinarum	...MSKDGVE		...WRWSCF
P. dactylifera	PSAAPANERKAITSYWGIN.PN.KVVKEDGTE		...WRWSCF
E. guineensis	SSDASPSPERKAITASYWDIN.PN.KIVKEDGTE		...WKWSCF
P. equestris	KGOANPFGSNQMTSYWGVA.PR.KLFKEDGSE		...WRWSCF
M. alkaliphilum			

T. brucei	α5				α6			α7																																													
	130	140	150	160	170	180	190	200																																													
T. brucei	LETVA	GVP	GMV	GGMLR	HLH	LS	RYM	TRDK	GW	INTLL	LEA	ENERM	HLM	T	F	I	E	L	R	.QP	GLPL	R	V	S	I	I	T	O	A	I	M	Y	L	F	L	L	V	A	V	I													
T. congolense	LETVA	AGV	P	GMV	GGMLR	HLH	LS	RYM	TRDK	GW	INTLL	LEA	ENERM	HLM	T	F	I	E	L	R	.QP	GFAP	R	V	S	I	I	V	T	O	A	I	M	Y	L	F	L	L	V	A	V	I											
T. vivax	LETVA	AGV	P	GMV	GGMLR	HLH	LS	RYM	TRDK	GW	INTLL	LEA	ENERM	HLM	T	F	I	E	L	R	.QP	GVVF	R	S	I	K	I	T	O	A	I	M	Y	L	F	L	L	V	A	V	I												
A. dexanei	LETVA	AGV	P	GMV	GGMLR	HMT	S	IRRM	EADL	GW	IQTLL	EEA	ENERM	HLM	T	F	V	E	I	E	R	.QP	GLVF	R	C	L	I	V	A	O	G	I	M	F	N	L	L	L	A	I	V												
C. andersoni	LETVA	AGV	P	GMV	GGAMR	HLH	LS	IRRM	RDN	GW	IHTLL	EEA	ENERM	HLM	T	F	I	S	L	L	RH	P	PSL	V	R	S	L	V	L	G	A	O	F	G	L	I	Y	I	T	L	C	Y	A										
C. tyzzeri	LETVA	AGV	P	GMV	GGAMR	HLH	FSS	IRRM	KRDY	GW	IHTLL	EEA	ENERM	HLM	T	F	I	S	L	L	L	IN	P	S	I	L	T	V	S	V	I	G	T	O	F	A	F	L	I	F	Y	T	L	C	Y	A							
B. alexandrina	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	Q	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	S	L	M	F	R	L	C	V	I	G	S	O	G	F	F	V	T	W	F	G	I	S	Y	L	
B. straminea	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	Q	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	S	L	M	F	R	L	C	V	I	G	S	O	G	F	F	V	T	W	F	G	I	S	Y	L	
B. glabrata	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	Q	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	S	L	L	F	R	L	C	V	I	G	S	O	G	F	F	V	T	W	F	G	I	S	Y	L	
A. californica	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	Q	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	S	L	F	F	R	L	C	V	I	G	S	O	G	F	F	V	T	W	F	G	I	S	Y	L	
P. canaliculata	LETVA	AAV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	S	T	L	F	R	M	S	V	I	G	O	G	F	F	V	T	M	F	V	W	Y	A	V		
O. hupensis	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	S	W	F	F	R	T	A	V	I	G	S	O	G	F	F	V	T	L	F	S	Y	A	V		
P. maximus	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	T	W	L	F	R	G	C	V	I	G	A	O	G	F	F	V	T	F	S	F	A	Y	L		
M. yessoensis	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	T	R	L	F	R	G	C	V	I	G	A	O	G	F	F	V	T	F	S	F	A	Y	L		
C. gigas X2	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	S	W	L	F	R	S	G	V	I	G	O	G	F	F	V	T	M	F	S	I	A	Y	L		
C. gigas X1	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	S	W	L	F	R	S	G	V	I	G	O	G	F	F	V	T	M	F	S	I	A	Y	L		
C. virginica X2	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	T	W	L	F	R	M	G	V	I	G	O	G	F	F	V	T	M	F	S	I	A	Y	L		
C. virginica X1	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	T	W	L	F	R	M	G	V	I	G	O	G	F	F	V	T	M	F	S	I	A	Y	L		
B. floridae	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	N	S	A	L	F	R	W	C	V	V	F	A	O	G	T	F	V	T	L	F	S	A	A	Y	L
A. planci	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	K	R	L	F	T	M	A	V	L	T	O	G	I	F	V	N	M	F	L	A	Y	L			
P. miniata	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	F	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	K	G	L	F	T	M	G	V	L	L	T	O	G	I	F	V	N	M	F	L	A	Y	L		
A. rubens	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	K	G	L	F	T	M	G	V	L	L	T	O	G	I	F	V	N	M	F	L	A	Y	L		
A. japonica X1	LETVA	AGV	P	GMV	GGMLR	HLH	S	IRRM	RDN	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	E	L	K	.Q	P	K	S	K	F	T	L	A	V	L	G	A	O	G	I	F	V	N	I	F	F	A	Y	L		
S. pistillata	LETVA	AGV	P	GMV	GGMLR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	E	M	K	.Q	P	G	I	L	F	R	G	A	V	L	L	A	O	G	I	F	V	N	L	F	F	A	Y	L		
O. faeulata	LETVA	AGV	P	GMV	GGMLR	HMR	S	IRRM	RDN	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	E	M	K	.Q	P	G	V	I	F	R	G	T	I	L	L	A	O	G	I	F	V	N	L	F	F	A	Y	L		
A. tenebrosa	LETVA	AGV	P	GMV	GGMAR	HLH	S	IRRM	RDN	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	E	M	K	.Q	P	G	A	L	F	R	G	V	I	A	A	O	G	I	F	V	N	M	F	L	A	Y	L			
E. diaphana	LETVA	AGV	P	GMV	GGMAR	HLH	S	IRRM	RDN	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	E	L	K	.Q	P	G	T	L	F	R	G	V	I	L	A	O	G	I	F	V	N	M	F	L	A	Y	L			
N. vectensis	LETVA	AGV	P	GMV	GGMLR	HMR	S	IRRM	RDN	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	E	L	K	.Q	P	G	I	L	F	R	G	V	I	L	A	O	G	I	F	V	N	M	F	L	A	Y	L			
A. millepora	LETVA	AGV	P	GMV	GGMAR	HMR	S	IRRM	RDN	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	E	L	K	.Q	P	G	M	L	F	R	G	V	I	L	L	A	O	G	I	F	V	N	M	F	L	A	Y	L		
P. damicornis	LETVA	AGV	P	GMV	GGMAR	HMR	S	IRRM	RDN	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	E	L	K	.Q	P	G	A	L	F	R	G	V	I	L	L	A	O	G	I	F	V	N	M	F	L	A	Y	L		
D. gigantea	LETVA	AGV	P	GMV	GGMAR	HMR	S	IRRM	RDN	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	E	L	K	.Q	P	G	L	I	F	R	G	M	V	L	L	A	O	G	I	F	V	N	M	F	L	A	Y	L		
L. anatina	LETVA	AGV	P	GMV	AAAMR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	I	Q	L	R	.Q	P	G	L	P	F	R	G	V	I	L	A	O	G	I	F	V	N	M	F	L	A	Y	L			
P. dicentrarchi	LETVA	AGV	P	GMV	GGMAR	HMR	S	IRRM	QRD	H	GW	IHTLL	EEA	ENERM	HLM	T	F	I	L	L	T	A	L	Q	L	K	.Q	P	S	N	I	F	R	M	G	V	I	F	A	O	G	I	F	V	N	M	F	L	A	Y	L		
A. udagawae	LESVA	AGV	P	GMV	GGMLR	HLH	S	IRRM	RDN	Q	GW	IETLL	EEA	ENERM	HLM	T	F	L	K	L	A	.E	P	G	W	F	M	R	L	M	V	L	G	A	O	G	I	F	V	N	M	F	L	A	Y	L							
P. citri	LESVA	AGV	P	GMV	GGMLR	HLH	S	IRRM	RDN	Q	GW	IETLL	EEA	ENERM	HLM	T	F	L	K	L	M	A	.E	P	G	W	F	M	R	L	M	V	L	G	A	O	G	I	F	V	N	M	F	L	A	Y	L						
H. capsulatum	LETVA	AGV	P	GMV	GGMLR	HLH	S	IRRM	RDN	Q	GW	IETLL	EEA	ENERM	HLM	T	F	L	K	L	A	.E	P	G	W	F	M	R	L	M	V	L	G	A	O	G	I	F	V	N	M	F	L	A	Y	L							
E. crescens	LETVA	AGV	P	GMV	GGMLR	HLH	S	IRRM	RDN	Q	GW	IETLL	EEA	ENERM	HLM	T	F	L	K	L	A	.E	P	G	W	F	M	R	L	M	V	L	G	A	O	G	I	F	V	N	M	F	L	A	Y	L							
P. hystricis	LETVA	AGV	P	GMV	GGMLR	HLH	S	IRRM	RDN	Q	GW	IETLL	EEA	ENERM	HLM	T	F	L	K	L	A	.E	P	G	W	F	M	R	L	M	V	L	G	A	O	G	I	F	V	N	M	F	L	A	Y	L							
T. interdigitale H6	LETVA	AGV	P	GMV	GGMLR	HLH	S	IRRM	RDN	Q	GW	IETLL	EEA	ENERM	HLM	T	F	L	K	L	A	.E	P	G	W	F	M	R	L	M	V	L	G	A	O	G	I	F	V	N	M	F	L	A	Y	L							
E. mesophile	LETVA	AGV	P	GMV	GGMLR	HLH	S	IRRM	RDN	Q	GW	IETLL	EEA	ENERM	HLM	T	F	L	K	L	M	A	.E	P	G	W	F	M	R	L	M	V	L	G	A	O	G	I	F	V	N	M	F	L	A	Y	L						
A. bisporus	LESVA	AGV	P	GMV	AAATL	RH	L	S	IRRM	RDN	Q	GW	IHTC	LEA	ENERM	HLM	T	F	M	S	L	R	.K	P	S	I	F	F	R	A	L	V	L	G	A	O	G	I	F	V	N	M	F	L	A	Y	L						
P. conissans	LETVA	AGV	P	GMV	AAATL	RH	L	S	IRRM	RDN	Q	GW	IHTC	LEA	ENERM	HLM	T	F	M	S	L	R	.K	P	S	I	F	F	R	A	L	V	L	G	A	O	G	I	F	V	N	M	F	L	A	Y	L						
C. cinerea	LESVA	AGV	P	GMV	AAATL	RH	L	S	IRRM	RDN	Q	GW	IHTC	LEA	ENERM	HLM	T	F	M	S	L	R	.K	P	S	I	F	F	R	A	L	V	L	G	A	O	G	I	F	V	N	M	F	L	A	Y	L						
G. lividus	LETVA	AGV	P	GMV																																																	

T. brucei	α8										α9					T. T		α10																																																							
	210			220				230			240		250					260					270																																																		
T. brucei	SPRFV	HRF	VGYLEE	BAV	ITY	T	GV	MR	AID	E	G	..	RLR	P	T	K	N	D	V	E	V	A	R	V	Y	W	N	L	S	K	.	N	A	T	F	R	D	L	I	N	V	I	R	A	D	E	A	H	R	V	V	N	H	T	F																		
T. congolense	SPRFV	HRF	VGYLEE	BAV	ITY	T	S	L	R	A	I	D	E	G	..	RLR	P	T	K	S	D	V	E	V	A	R	V	Y	W	N	L	S	K	.	N	A	T	F	R	D	L	I	N	V	I	R	A	D	E	A	H	R	V	V	N	H	T	F															
T. vivax	SPRFV	HRF	VGYLEE	BAV	V	T	T	G	L	R	A	I	D	E	G	..	RLP	M	K	N	A	V	P	D	V	A	R	V	Y	W	G	L	N	K	.	D	A	T	F	R	D	L	I	N	V	I	R	A	D	E	A	H	R	V	V	N	H	T	F														
A. deanei	SPRFV	HRF	VGYLEE	QAV	ITY	T	D	L	G	H	I	E	K	G	..	E	L	Q	F	S	A	T	R	V	P	L	A	I	T	Y	W	G	L	N	K	.	K	A	S	F	H	D	L	I	N	V	I	R	A	D	E	A	H	R	V	V	N	H	T	F													
C. andersoni	SPKYC	HRF	VGYLEE	BAV	R	T	T	R	L	I	A	D	I	D	G	..	K	L	P	E	T	S	P	A	P	C	R	A	K	L	Y	Y	G	L	P	K	.	D	A	T	L	K	D	V	I	L	A	M	R	R	D	E	S	H	R	D	V	N	H	L													
C. tyzzeri	SPKYS	HRF	VGYLEE	BAV	T	T	H	L	I	E	I	D	K	G	..	L	L	P	E	F	E	R	K	A	P	F	A	S	V	Y	Y	G	L	P	K	.	D	A	T	I	R	D	L	I	L	A	M	R	R	D	E	S	H	R	D	V	N	H	L														
B. alexandrina	SPKYC	HRF	VGYLEE	BAV	K	T	T	N	C	L	K	D	I	E	Q	G	..	N	M	Q	H	W	K	T	Q	P	A	D	V	A	V	Y	W	K	L	P	K	.	D	A	T	M	K	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	C	L											
B. straminea	SPKYC	HRF	VGYLEE	BAV	K	T	T	N	C	L	K	D	I	E	Q	G	..	N	M	K	H	W	K	T	Q	P	A	D	V	A	V	Y	W	K	L	P	K	.	D	S	T	M	K	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	C	L											
B. glabrata	SPKYC	HRF	VGYLEE	BAV	K	T	T	N	C	L	K	D	I	E	Q	G	..	N	M	Q	H	W	K	T	Q	P	A	D	V	A	V	Y	W	K	L	P	K	.	D	S	T	M	K	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	C	L											
A. californica	SPKF	CHR	VGYLEE	BAV	K	T	T	K	C	L	E	D	I	N	D	G	..	P	M	Q	H	W	K	T	Q	P	A	D	V	A	I	Y	W	K	L	P	K	.	E	A	T	M	K	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	S	L											
P. canaliculate	SPRF	CHR	VGYLEE	BAV	K	T	S	K	C	L	E	D	M	E	H	G	..	S	I	I	H	W	T	L	P	A	P	V	A	I	Y	W	R	L	P	K	.	N	A	K	L	R	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L												
O. hupensis	SPRF	CHR	VGYLEE	BAV	K	T	S	K	C	L	E	D	I	R	G	..	P	M	K	H	W	T	V	P	A	P	V	A	I	Y	W	K	L	P	K	.	D	A	K	M	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L														
P. maximus	SPRF	CHR	VGYLEE	BAV	K	T	S	K	C	L	K	D	I	K	D	G	..	P	M	K	H	W	T	Q	E	A	P	D	L	A	I	Y	W	K	L	P	K	.	N	A	T	M	L	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L											
M. yessocensis	SPRF	CHR	VGYLEE	BAV	ITY	T	K	C	I	K	D	I	K	D	G	..	P	M	K	H	W	T	Q	E	A	P	D	L	A	I	Y	W	K	L	P	K	.	N	A	T	M	L	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L												
C. gigas X2	SPRF	CHR	VGYLEE	BAV	T	T	S	K	C	L	D	I	E	S	G	..	S	L	K	H	W	T	Q	E	A	P	D	V	A	I	Y	W	K	L	P	N	K	.	N	G	T	M	K	D	V	I	F	N	I	R	A	D	E	A	H	R	V	K	V	N	H	V	L										
C. gigas X1	SPRF	CHR	VGYLEE	BAV	F	T	S	K	C	L	K	D	I	E	S	G	..	S	L	K	H	W	T	I	K	A	A	P	D	V	A	I	Y	W	K	L	P	K	.	T	A	S	M	K	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L										
C. virginica X2	SPRF	CHR	VGYLEE	BAV	F	T	S	K	C	L	K	D	I	E	S	G	..	P	L	K	H	W	T	Q	K	A	P	D	V	A	I	Y	W	K	L	P	K	.	P	A	T	M	K	D	V	I	F	N	I	R	A	D	E	A	H	R	V	K	V	N	H	V	L										
C. virginica X1	SPRF	CHR	VGYLEE	BAV	F	T	S	K	C	L	K	D	I	E	S	G	..	P	L	K	H	W	T	Q	K	A	P	D	V	A	I	Y	W	K	L	P	K	.	T	A	S	M	K	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L											
B. floridae	SPRF	CHR	VGYLEE	BAV	K	T	T	K	C	L	E	D	F	D	S	G	..	R	L	P	L	W	S	D	M	E	A	P	L	A	K	R	Y	W	S	L	P	K	.	D	A	M	M	R	D	V	I	L	A	I	R	A	D	E	A	H	R	L	V	N	H	T	L										
A. planci	SPRF	CHR	VGYLEE	BAV	ITY	T	K	L	I	Q	D	L	N	K	.	K	L	L	V	W	G	N	M	A	P	D	L	A	I	Y	W	K	L	P	K	.	D	A	N	M	R	D	I	L	A	I	R	A	D	E	A	H	R	V	K	V	N	H	F	L													
P. miniata	SPRF	CHR	VGYLEE	BAV	ITY	T	K	L	I	Q	D	L	D	D	G	..	K	L	S	V	W	G	N	M	A	P	D	L	A	I	Y	W	K	M	K	.	D	A	N	M	R	D	I	L	A	I	R	A	D	E	A	H	R	V	E	N	H	S	L														
A. rubens	SPRF	CHR	VGYLEE	BAV	ITY	T	K	L	I	Q	D	L	D	D	G	..	K	L	K	V	W	G	N	M	A	P	D	L	A	V	Y	W	K	L	P	K	.	D	A	L	M	R	D	M	L	A	I	R	A	D	E	A	H	R	V	E	N	H	S	L													
A. japonica X1	SPCF	CHR	VGYLEE	BAV	K	T	T	M	L	I	Q	E	I	D	D	G	..	T	M	A	E	W	N	K	A	S	P	D	I	A	T	Y	W	K	L	P	K	.	D	A	M	M	R	D	V	I	L	A	I	R	A	D	E	A	H	R	D	V	N	H	T	L											
S. pistillata	SPKF	CHR	VGYLEE	BAV	K	T	T	H	C	I	E	C	I	D	G	..	K	L	P	L	W	E	N	L	L	A	P	K	I	A	V	Y	W	K	L	P	K	.	G	S	K	M	R	D	V	I	L	A	I	R	A	D	E	A	H	R	V	N	H	T	L												
O. faveolata	SPKF	CHR	VGYLEE	BAV	K	T	T	H	C	L	E	C	I	D	S	G	..	K	L	P	L	W	E	N	L	L	A	P	K	I	A	V	Y	W	K	L	P	K	.	G	S	T	M	R	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L										
A. tenebrosa	SPRF	CHR	VGYLEE	BAV	K	T	T	Y	C	L	K	C	I	D	E	G	..	K	L	P	K	W	E	Q	M	K	A	P	I	A	V	Y	W	K	L	P	K	.	D	A	M	M	R	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L											
E. diaphana	SPRF	CHR	VGYLEE	BAV	K	T	T	Y	C	L	E	C	I	D	N	G	..	K	L	P	V	W	K	L	A	P	I	A	V	Y	W	K	L	P	K	.	D	A	M	M	R	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L													
N. vectensis	SPRF	CHR	VGYLEE	BAV	K	T	T	Y	C	L	E	C	I	D	N	G	..	K	L	P	T	W	N	L	L	A	P	I	A	S	N	Y	W	K	L	P	K	.	D	A	V	M	R	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L											
A. millepora	SPRF	CHR	VGYLEE	BAV	K	T	T	Y	C	L	E	C	I	D	E	G	..	T	L	L	I	W	T	K	P	A	P	L	A	V	Y	W	R	L	P	K	.	G	A	V	M	R	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L												
P. damicornis	SPRF	CHR	VGYLEE	BAV	K	T	T	Y	C	L	E	C	I	D	D	G	..	T	L	P	V	W	S	T	R	P	A	P	L	A	I	Y	W	R	L	P	K	.	D	A	V	M	R	D	V	I	L	A	I	R	A	D	E	A	H	R	V	V	N	H	T	L											
D. gigantea	SPRF	CHR	VGYLEE	BAV	K	T	T	Y	C	L	E	S	I	D	S	G	..	A	L	S	V	W	E	N	K	P	A	P	I	A	K	R	Y	W	R	L	P	K	.	D	C	T	M	R	D	V	I	L	A	I	R	A	D	E	A	H	R	V	K	V	N	H	T	L									
L. anatina	SPRY	CHR	VGYLEE	BAV	K	T	T	K	L	D	I	D	I	A	G	..	C	L	T	E	W	N	I	K	P	A	P	I	A	I	Y	W	N	M	S	P	.	N	A	V	M	R	D	V	I	L	N	L	R	A	D	E	T	H	R	E	V	N	H	S	F												
P. dicentrarchi	FPR	V	T	H	R	V	G	Y	L	E	E	B	A	V	K	T	Y	T	H	C	L	E	S	I	E	K	E	N	S	P	L	S	H	W	T	K	A	P	E	I	A	K	Y	W	N	L	G	E	.	N	A	T	M	K	D	V	V	Y	A	V	R	K	D	E	H	H	K	D	V	N	E	D	F
A. udagawae	SPRI	CHR	VGYLEE	BAV	ITY	T	T	R	A	I	K	D	I	E	T	..	G	K	L	P	W	E	K	L	D	A	P	E	I	A	I	Y	W	N	M	P	E	G	R	.	K	M	D	L	L	Y	V	R	A	D	E	A	K	H	R	E	V	N	H	T	L												
P. citri	SPRI	A	H	R	F	V	G	Y	L	E	E	B	A	V	M	T	Y	R	E	I	E	D	I	D	A	..	G	R	L	P	N	W	A	K	M	Q	A	P	E	I	A	V	Y	W	N	M	P	E	G	K	R	S	M	D	L	L	Y	I	R	A	D	E	S	K	H	R	E	V	N	H	T	L	
H. capsulatum	SPRT	CHR	VGYLEE	BAV	M	T	Y	H	A	I	K	D	L	E	S	..	G	K	L	P	N	W	A	N	Q	A	P	D	I	A	V	Y	W	M	P	E	G	R	.	I	L	D	L	L	Y	I	R	A	D	E	A	K	H	R	E	V	N	H</															

T. brucei	η3				
	00000	290	300	310	320
	280	290	300	310	320
T. brucei	AD	MHEKRLQNSVNF	FVVLKKNPEEMYS	NQPSGKTRTDFG	SEGAKTASNVNKHV
T. congolense	AD	MHEHHLQNSVNF	FVVLKKNPAELYND	QGAIKGAAACAAG	ATTKSS
T. vivax	AD	MHAKRLQNCVNF	FVVLKTNPELLYANA	APVADKTMSERES	GLKDGKLSH
A. deanei	AD	MHSHNLCRNP	NPFVAVLKQ	TDSK	
C. andersoni	AI	LKPG.DPNP	FASKV		
C. tyzzeri	AD	IRLN.GE			
B. alexandrina	AS	LKRD.DFNP	YKPGH		
B. straminea	AS	LKRD.DFNP	YKPGQ		
B. glabrata	AS	LKRD.DFNP	YKPGH		
A. californica	AS	LKRD.EFNP	YKPGK		
P. canaliculate	AS	LKRD.EFNP	YKPGH		
O. hupensis	AS	LKAN.QFNP	YKPGQ		
P. maximus	AS	LKED.DYNP	YKPGK		
M. yessoensis	AS	LKED.DYNP	YKPGK		
C. gigas X2	AS	MKTD.QYNP	FLPGQ		
C. gigas X1	AS	MKED.EYNP	YEPGK		
C. virginica X2	AS	LPTD.KYNP	FLPGQ		
C. virginica X1	AS	MKED.EYNP	YEPGK		
B. floridae	SD	LKRD.DPNP	FQPGK		
A. planci	SD	LKPD.DSNP	FPPGQ		
P. miniata	SD	LKPD.ESNP	FPPGQ		
A. rubens	SD	LKSD.DSNP	FPPGQ		
A. japonica X1	GT	LNLT.DQNP	FPPGK		
S. pistillata	SS	LPLC.APNP	FHPGK		
O. faveolata	SS	LPLC.APNP	FHPGK		
A. tenebrosa	GT	LNPH.EPNP	FLPGRK		
E. diaphana	SS	IHL.DPNP	FHPGRK		
N. vectensis	SS	IHL.DPNP	FHPGRK		
A. millepora	SS	IHLN.EKNP	FSPGK		
P. damicornis	SS	IHLN.EKNP	FSPGK		
D. gigantea	AS	MHLD.QQNP	FEPWERK		
L. anatina	ANN	MNRN.PHVHNQ	KPGDKKAINAD	QCRHTG	PCKCKV
P. dicentrarchi	AD	YTYQ.QQNP	YSPEQ		
A. udagawae	GN	LQONADPNP	YAAKYKDP	SKPHPTKGIEN	LKPTGWERDEII
P. citri	GN	LQKNDPNP	YVSEYKKG	TKPHPTKDL	SYRPHGWERDDAI
H. capsulatum	AN	LKQGVDPNP	YASKYDNPE	APHPTKS	AEIVKPTGWERDEVI
E. crescens	AN	LNAQAVDPNP	YAVKYDNPE	PHPTKS	AAIKPTGWERKDV
P. hystricis	AN	LNOGTDPNP	YASKYDDP	KEVRPTK	TAEVVKTGWERDEV
T. interdigitale H6	AN	LNQKIDPNP	YAAKYENPE	KPHPTKS	AEIVKPTGWRQDVI
E. mesophile	AN	LKAE.DPNP	FVSVYKDP	TKPHPGPS	IEHIKSKGWEREDVI
A. bisporus	AN	LQQRSDVNP	FALREPD	MHVKGS	RVEFKRQSESEYAKV
P. conissans	AN	LNHSTDVNP	FALREPD	MVLKQKIE	FQRSESEYVKQSHDL
C. cinerea	AN	LNHSTDVNP	FALREPD	MHTKGGKIE	FERHEAEAYIKES
G. lividus	AN	LNPAAADVNP	FALSEPDM	FVKGKLG	FERSEAEKYVQES
P. ammoniavirescens	AN	LNQSTDVNP	FAFSEPD	MVLKGGKLG	FERSEAEKYVQETH
S. rosetta	S	LTKTTD	VNPVYSGK		
C. cylindracea	GN	MGKE.QTNP	FDKHSHTVP		
H. sp. ATCC 50920	SQ	MKAS.DENP	FVPGTHQIS		
O. tauri	SS	MGIR.QANP	FHVGHTELP	ENFVDP	PPPGFVPEHCR
I. sp. A28L	AD	E	LKSGARK		
A. shirensis	AD	E	LKARK		
M. indica	SD	VYQGGKEL	RDAPAPVGYH		
C. papaya	SD	IHYQGGKEL	REAPAPVGYH		
C. olitorius	SD	IHFQGGKEL	REAPAPVGYH		
G. max	SD	IHFQGGKEL	REAPAPVGYH		
V. unguiculata	SD	IHFQGGKEL	REAPAPVGYH		
M. sativa	SD	IHFQGGKEL	RDAPAPVGYH		
D. carota	SD	IHFQGGKEL	RDAPAPVGYH		
S. lycopersicum	SD	IHYQGGKEL	QEAAPVGYH		
A. thaliana	SD	IRNQGGKEL	REAAAPVGYH		
A. tauschii subsp. strangulata	SD	VYYQGMQL	KATPAPVGYH		
T. aestivum	SD	VYYQGMQL	KATPAPVGYH		
H. vulgare subsp. spontaneum	SD	VYYQGMQL	KATPAPVGYH		
P. hallii	SD	VHYQGMEL	KETPAPIEYH		
S. officinarum	SD	IHFQGMQL	KETPAPVGYH		
P. dactylifera	SD	VHYQGMNL	KEAPAPVGYH		
E. guineensis	SD	VHYQGMNL	KQTPAPVGYH		
P. equestris	SD	VYQGM	DLKQTPAPVGYH		
M. alkaliphilum	AN	QLS			