

Fig S9

Giardia_AbcB	MLEEGGLCSAVNVPEVNGKVGCTGGGQYEARRRASEKDGPCIYGLIVKIAKNRRKPVALTSGRTIMSKAATAPSVSEDK	80
Saccharomyces_Atm1	-----MLLLPRCFVIGRIVRSKF	18
Saccharomyces_Mdl1	-----MIVRM	5
Homo_AbcB7	-----MALLAMHSWRWAAAAAAFEKRRHSAILIRPLVSVSGSGPQWRPHQLGA	48
Homo_AbcB10	-MRGPPAWPLRLLLEPPSPAEPGRLLPVACVWAAASRVPSGLSPTGLRPARLWAGAPALLWGVGAARRWRSGCRGGGPGA	79
Arabidopsis_Atm3	-----MSRGSRFVRAPGLLLCRVNLQPQPKIPSFYSLSRSDYRLHNGFSNYIRRN	50
Naegleria_Atm1	-----	1
Rhodobacter_AbcB	-----	1
Halobacterium_AbcB	-----	1
Giardia_AbcB	SIVQHSSTFRASPFHKRQRRESILTMLAILYMDAGKILLYLLKILQSIILSFWMSTLSITINAYAIASQNTGFYRLTRRH	160
Saccharomyces_Atm1	RSGLIRNHSFVIFTVSKLSTQRPLLEFNSAVNLNQAQKDI THKKSVEQFSSAPKVKTQVKKTSKAPTLSELKILKDLFRY	98
Saccharomyces_Mdl1	IRLCKGPKLLRSQFASASALYSTKSLFKPMYQKAEINLI I PHRRKSIRLQSDIAQGGKSTKPTLKLNSNANSKSSGFKDIKR	85
Homo_AbcB7	LGTARAYQQIIPESLKSITWQRLGKGNQSGFLDAAKALQVWPLIEKRTCWGHAGGGLHTDPKEGLKVDVTRKIIKAMLSY	128
Homo_AbcB10	SRGVLGLARLLGLWARGPGSCRCGAFAGPGAPRLPRARFPGGPAAAAWAGDEAWRRGPAAPPDGDKRLRPAAGLPEARL	159
Arabidopsis_Atm3	SIRTSFVINAFLSDNSPSPSPSPPIRFVQRSSMLNGLRFLSTSPNPDQTTTKEIKTSSSDSDSAMADMKILRTLGLAY	130
Naegleria_Atm1	-----	1
Rhodobacter_AbcB	-----MSEARQRPQPTPADPPELSGWATMKRMAY	30
Halobacterium_AbcB	-----MSTAPDNEGDDDFEEQRADVDNAMVQ	27
Giardia_AbcB	IHQEYFKTFEEGYRAGFSWLVRMIDRFLNQKSLAVHLSNEVVENPFG-----DTVCGMEHALVYMCVQFFILSFWSFC	234
Saccharomyces_Atm1	IWPKGNKVRIRVLIAGLLISAKILNVQVPPFFKQTIIDSMN-----IAWDDPTVALPAAIGLTILCYGVAR-	165
Saccharomyces_Mdl1	LFVLSKPEISKY-IGLALLLILISSVSMVPSVIGKLLDLASESDGEDE-----EGSKSNKLYGFTKKQFFALGAVF-	157
Homo_AbcB7	VWPKDRPDLRARVAISLGLGGAKAMNIVVPMFKYAVDSLQMSGN-----MLNLSDAPNTVATMATAVLIGYGVSR-	201
Homo_AbcB10	LLGLAYPERRR-LAAAVGFLTMSSVIMSAPFFLGKIIDVIYNTPTVD-----YSDNLRCLGLSAV-	222
Arabidopsis_Atm3	LWMRDNPEFRFRVIAALGFLVGAQVNLVQVFFLKLAVDWLASATGTGASLTTFAATNPTLLTFVATPAVLIGYGIAR-	209
Naegleria_Atm1	-----MGLLIGAKIFNVSVPPFFKRAVDSFGPATET-----IIQDPVAVFMTMG-PISMIIGYGIK-	55
Rhodobacter_AbcB	LWPKGQTVVKKRVI IAMVMLVLAKVISVSTPFFYKAAVDALAG-----DAPSPAFMLGLGAVGMTVAYGLAR-	97
Halobacterium_AbcB	LFDEYGRDHSFQAVAVLASVFARVLDLAPPVLLGLAIDSVIQNK-----FLPFLPQSVVPSKPDRLFLMGGLIAG	101
Giardia_AbcB	YSILQAYIQRISNVIKDIINNRIYISFSLVLLTRHLSQPYQQLEQESSGERASTLNEYSQTMANLITGLEKAI PSVSYF	314
Saccharomyces_Atm1	--FGSVLFGELRNVAFAKVAQNAIRTVSLQTFQHLMKLDLGGWHLRSQTGGLTRAMDRGTKGISQVLTAMVFHII P----	238
Saccharomyces_Mdl1	--IIGAVANASRI IILKVTGERLVARLRTRTKAALDQDATFLDTNRVGDLSIRLSSDASIVAKSVTQNVSDGTR----	230
Homo_AbcB7	--AGAAFFNEVRNAVFGKVAQNSIRRIAKNVFLHLHNLDFLHLSRQTGALSKAIDRGRTRGISVFLVFNLLP----	274
Homo_AbcB10	--LCGAAANAIRVYLMQTSQGRIVNRLRSLFSSILRQEVAFDQKTRTRELINRSLSDTALLGRSVTENLSDGLR----	295
Arabidopsis_Atm3	--TGSSAFNELRTAVFSKVALRTIRSVSRKVFSLHLDLRLYHLSRETGGLNRIIDRGSRAINFILSAMVFNVP----	282
Naegleria_Atm1	--TLSSLFTELRGAVFAKVTQASIRLISLGVFSKLLNMDLNFHLQRKTGALTSTMDRGRKGINFLMTSLLFNIVP----	128
Rhodobacter_AbcB	--LGAVAFGELRDAIFVRVQQRALRQLALETFTHIRLSLRYHISRKTTGGLSRIIERGVKGVDFLLRFLMFSIGP----	170
Halobacterium_AbcB	SFLLGAAFWIRNWFNSFSQHIQHRVRTDITYDKMQRNLNMDFFATKQTGEMMSILSNDVNRLEFLNDGLNSAFR----	176
Giardia_AbcB	LIMLVTTLLREKPSLNSLNDEKTNVANRKPKRKDSKPKQFSSIASTIHDRHALALILIALLPVPFNVFVVASVERQRFAL	394
Saccharomyces_Atm1	-----ISFEISVVCGILTYQFGASFAAIFSTMLLYSIFTIKTAWRTHF	283
Saccharomyces_Mdl1	-----AI IQGFVFGMMSFLS-WKLTVMMLIAPPLGAMALIYGRKIRNL	274
Homo_AbcB7	-----IMFEVMLVSGVLYKCGAQFALVTLGTLGTYTAVTAVTRWRTRF	319
Homo_AbcB10	-----AGAQAQSVGISMMFFVS-PNLATFVLSVVPVSI IAVIYGRYLRKL	339
Arabidopsis_Atm3	-----TILEISVSGILAYKFGAFAWIITSLSGSYIVFTLAVQWRKF	327
Naegleria_Atm1	-----TMLELSIVTAIFYINYGPSFALTALGVSVTLAAWTITVTQWRTKI	173
Rhodobacter_AbcB	-----LILELTLVAIIFAVVFGLSYMAVVVATIALYVAFTFKVTEWRVQI	215
Halobacterium_AbcB	-----LSVMVLAIG-VYLFVVNWQLAVLTMPLVPIIALFTYRFVNAIQPK	220
Giardia_AbcB	SSSRNSAKMQSVALLTEVTSRYRLIKLYDAVSYEISNVCKLMHKFKSVDIVNILLRSTSRKVKSLTKRYTSSVLTLSGSAI	474
Saccharomyces_Atm1	RRDANKADNKAASVALDLSLINFVAVKYFNNEKYLADKYNGSLMNYR-----DSQIKVQSFLAFLNSGQNLIFTTA	353
Saccharomyces_Mdl1	SRQLQTSVGGTLKVAEEQLNATRITQAYGGEKNEVRRYAKEVRNVF-----HIGLKEAVTSGLFFGSTGLVGNTA	344
Homo_AbcB7	RIEMNKADNDAGNAIDSLLNYETVKYFNNEREYQRYDGLFKTYE-----TASLKSTSLAMLNFGQSAIFSVG	389
Homo_AbcB10	TKVTQDSLQATQLAEERIGNVRTVRAFGEKTEIEKYASKVDHVM-----QLARKEAFARAGFFGATGLSGNLI	409
Arabidopsis_Atm3	RKAMNKADNDASTRADSLINYEYVVKYFNNEGYEAEKYDQFLKKYE-----DAALQTRSLAFLNFGQSIIFSTA	397
Naegleria_Atm1	RKQMNKAENEASGVVDSLINYEYVVKYFQNEKYESEKYDEHLKKYE-----QTSLSIASLSALNFGQTFIFSCA	243
Rhodobacter_AbcB	RRQMNEQDNDANQKAI DLSLNFETVKYFGAEQREARYDVAMAGYE-----KAAVKTGQSLAFLNAGQSLITITAG	285
Halobacterium_AbcB	YADVRSSVGHLSRLENNLGGIQVIKTSNTERYESDRVDDVSQGYF-----DANWGAITIRIKFFPALRIISGVG	290
Giardia_AbcB	YLSLNLISYRQIQQIRYIVSTVTQITKLEIIPGVIVDIHEHFVVIKELSKPQEAAGLSSDNTVGFAATCAYLQQHWTDI	554
Saccharomyces_Atm1	LTAMMYMGCTGVIGG-----NLTVGDLVLINQLVFLQSLVPL-----NFLGSVYRDL	399
Saccharomyces_Mdl1	MLSLLLVTGSMIQSG-----SMTVGLSSFFMYAVYTGSSL-----FGLSIFYSEL	390
Homo_AbcB7	LTAIMVLSAQGIVAG-----TLTVGDLVMVNGLLFQLSLPL-----NFLTGVYRET	435
Homo_AbcB10	VLSVLYKGGLLMGS-----HMTVGLSSFLMYAFWVGISI-----GGLSIFYSEL	455
Arabidopsis_Atm3	LSTAMVLCSQGIMNG-----QMTVGDLMVNGLLFQLSLPL-----NFLGSVYRET	443
Naegleria_Atm1	LTYIMYITANKITTG-----ELTVGDLVMVNTLLFQLSIPL-----NFLTGMTYRET	289
Rhodobacter_AbcB	LVAVMVMMAAYGVQAG-----QLTVGDFVMVNAIYMIQITLPL-----GFLTGVYREI	331
Halobacterium_AbcB	FVLTFVIGGIWVATGPPMFFSGTIDPGEFVTFILLSQQFIWPM-----AQFQIINMY	343

Giardia_AbcB	TRSSCKADSSFSLKAWTRSFFKRAACYINIGIIKIIPPVFRYKYPASLVTSTSPDINERMYVQELMAESQQYVTLQEPFP	634
Saccharomyces_Atm1	KQSLIDMETLFLKLRKNE-----VKIKNAER--PLMLPEN-----	431
Saccharomyces_Mdl1	MKGAGAAARVFELNDRK-----PLIRPTIGKDP-VSLAQ-----	423
Homo_AbcB7	RQALIDMNTLFTLLKVD-----TQIKDKVMASPLQITP-----	468
Homo_AbcB10	MKGLGAGGRLWELLERE-----PKLPFNEGVLNKEFSQ-----	489
Arabidopsis_Atm3	IQSLVDMKSMFQLLEEK-----SDITNTSDAKPLVLKG-----	476
Naegleria_Atm1	SQAITDIENLFTLLDSK-----NDTQDSSD-KELIIGGP-----	322
Rhodobacter_AbcB	RQALVDMGQMFGLLGQP-----AEVTDAPDAKPLAVAG-----	364
Halobacterium_AbcB	QRARASSERIFGLMNEP-----SRIENPDADDELVVDD-----	376
Giardia_AbcB	LTRPIQPCTPTSIEFRDVCFSY--KTGCDILHGLTLSVHPGQKVAIVGRSGIGKSTIINLLTRLYTTPQPDTSPPGIYL	712
Saccharomyces_Atm1	-----VPYDITFENVTFGY--HPDRKILKNASFTIPAGWKTAIVGSSGSGKSTILKLVFRFYDP-----ESGRILI	495
Saccharomyces_Mdl1	-----KPIVFKNVSFYTPTRPKHQIFKDLNITIKPGEHVCAVGPSSGSGKSTIASLLLRYYDV-----NSGSIEF	487
Homo_AbcB7	-----QTATVAFDNVHFY--IEGQKVLSGISFEVPAGKKAIVGSSGSGKSTIVRLLFRFYEP-----QKGSYIL	532
Homo_AbcB10	-----GALEFKNVHFAYPARPEVPIFQDFSLSPSGSVTALVGPSSGSGKSTVLSLLLRYYDP-----ASGTISL	553
Arabidopsis_Atm3	-----GNIEFENVHFSY--LPERKILDGISFVVPAGKSAIVGTSGSGKSTILRMLFRFFDT-----DSGNIRI	538
Naegleria_Atm1	-----TDTEIEFRNVSFY--DPNRKILDNVSFVKVAGTMTGICGPSSGSGKSTILKLIYRFYDP-----TEGQIFI	386
Rhodobacter_AbcB	-----GTVELENVHFGY--DPGRIILKGISLVEAGETVALVGPSSGSGKSTIGRLLFRFYDV-----NEGAIIRI	426
Halobacterium_AbcB	-----GGVYDDVRFY--DDDDAIVEHIDFQVDGGDTLALVGPSTGAGKSTVLKLLLRMYDV-----DAGAVRV	438
Giardia_AbcB	NGRAIGSIPREELRRLITVVPQDNILIRGSATDNIAYGQPRKLPGSHAEERQRYIREVIRLCYEASRVA	792
Saccharomyces_Atm1	NGRDIKEYDIDALRKVIGVVPQDTPLFNDTIWENVKFR----IDATDEEVITVVEKAQLAPLIKKLPQGFDTIVGERG	570
Saccharomyces_Mdl1	GDEDIRNFNLRKYRRLIGVQCEPLLNGTILDNILYCI PP--EIAEQDDRIRRAIGKANCTKFLANFPDGLQTMVGARG	565
Homo_AbcB7	AGQNIQDVLSLESLRAVGVVPQDAVLFHNTIYYNLLYGN----ISASPEEVYAVAKLAGLHDAILRMPHGYDTQVGERG	607
Homo_AbcB10	DGHDIRQLNPVWLRSKIGVVSQEPILFSCSIAENIAYGADD--PSSVTAEIQRVAEVANAVAFIRNFPQGFNTVVGERG	631
Arabidopsis_Atm3	DGQDIKEVRLDSLRSIGVVPQDTPVLFNDTIFHNIHYGR----LSATEEEVYEAARRAAIHETISNFPDKYSTIVGERG	613
Naegleria_Atm1	NGQDIKTVLSLESLRKHIGVVPQDCVLFNDTLRHNIEYGR----LGCSEEDIKMAASKAKLSEIERLPGLETVPVGERG	461
Rhodobacter_AbcB	DGQDLRSVTQDSLHARIGVVPQDTPVLFNDTIFYNIAYGR----PDATPEEVEAAARAAKIHDFILRLPDGYRTMVGARG	501
Halobacterium_AbcB	DGQDISGVTLP SLRRHVGVVSDTFLFYGTVEENITYGT----FDADREAVVDAKAAEAHEFIQNLDPGYDTEVGERG	513
Giardia_AbcB	YSGTLQGLSGGQQRVGIARAVARGGSVLVLDDEATSSALDEETEKRVLQQLFRSLDR-NQSVVITSHLSTLRHVLDLIYIL	871
Saccharomyces_Atm1	LM-----LSGGEQRLAIAARVLLKNARIMFFDDEATSSALDTHTEQALLRTIRDNFTSGSRTSVYIAHRLRTIADADKIIVL	645
Saccharomyces_Mdl1	AQ-----LSGGQQRIALARAFLLDPAVILLDDEATSSALDSQSEEVAKNLQRRVER-GFTTISIAHRLSTIKHSTRVIVL	639
Homo_AbcB7	LK-----LSGGEQQRVAIARAILKDPPEVILYDDEATSSALDSITEETILGAMKDVK--HRTSIFIAHRLSTVVDADEIIVL	680
Homo_AbcB10	VL-----LSGGQQRVIAIARALLKNPKILLDDEATSSALDAENEYLVEALDRLMD--GRTVLVIAHRLSTIKNANMVAVL	704
Arabidopsis_Atm3	LK-----LSGGEQQRVALARTFLKSPAILLCCDEATSSALDSTTEAEILNALKALAS--NRTSIFIAHRLTTAMQCDEIIVL	686
Naegleria_Atm1	LK-----LSGGEQQRVAIARAILKSPKILCCDEATSSALDSNTEKEIMKSEELFG--KTTSIMIAHRLSTIQRADQIIVL	534
Rhodobacter_AbcB	LK-----LSGGEQQRVGIARTLLKNPPEILLDDEATSSALDTQTERDIQDSLREMG--GRTVITIAHRLSTIADADRIIVL	574
Halobacterium_AbcB	VK-----LSGGQQRVIDIARAILKDPPEVILVLDDEATSSALDTETEMLIQRSLDRLTE--DRTTESIAHRLSTIKDADQIVL	586
Giardia_AbcB	DNPDGSGARVVEESGSYDWFVAESQYLKDAQDISDLVSNCGCSSAGVTPGFSHATLDAKGD-----	933
Saccharomyces_Atm1	DN-----GRVREEGKHLELLAMPGLSRELTWTIQEDLDHLENELKDQQL-----	690
Saccharomyces_Mdl1	GKH----GSVVTGSRFDLIAIPNSELNALLAEQQDEEGKGGVIDLNSVAREV-----	689
Homo_AbcB7	DQ-----GKVAERGTHHGLLANPHSIYSEMHWTQSSRVQNHDPKWEAKKENISKEERKQLQEEIVNSVKGCNCSC	753
Homo_AbcB10	DQ-----GKITEYKHEELLSKPNGIYRKL MNKQS-----FISA-----	738
Arabidopsis_Atm3	EN-----GRVVEQGPHELLGK-SGRYAQLWTTQQNSVMDLDAIKLE-----	728
Naegleria_Atm1	NNT----GSIAECGSHEELISKHEGIYVEMWKRQVH-----	566
Rhodobacter_AbcB	EE-----GRIIEEGRHEQLLAR-GGRYAAMWLRQSAEEEEAA-----	610
Halobacterium_AbcB	ED-----GEIVERGTHADLLGD-EGLYANLWGVQAGEIDELPDEFIERAAKQATVDDQDDD-----	642