

Table 1. Giardia homologs of flagellar-associated proteins

	GiardiaDB	Gene Name	Family	PFAM	Molecular function	disease/svmtoms	FABP	FlixCut	Proteomes			References
									Cre	Hs	Tt	
microtubules (MTs)	GLS0803_103676	alpha-tubulin 1	tubulin	PF00091	MT Metabolism							Morrison et al. (2007)
	GLS0803_112079	alpha-tubulin 2	tubulin	PF00091	MT Metabolism							Morrison et al. (2007)
	GLS0803_101291	beta-tubulin 1	tubulin	PF00091	MT Metabolism							Morrison et al. (2007)
	GLS0803_136021	beta-tubulin 2	tubulin	PF00091	MT Metabolism							Morrison et al. (2007)
	GLS0803_136020	beta-tubulin 3	tubulin	PF00091	MT Metabolism							Morrison et al. (2007)
gamma Turc/Tusc complex (3)	GLS0803_17429	gcp-2	Spc97_Spc98	PF04130	MT Metabolism							Morrison et al. (2007)
	GLS0803_12057	gcp-3	Spc97_Spc98	PF04130	MT Metabolism							Morrison et al. (2007)
	GLS0803_114218	gamma-tubulin	tubulin	PF00091	MT Metabolism							Morrison et al. (2007)
Basal-body associated (11)	GLS0803_104685	caltractin	caltractin	PF00036	Signalling							Meng et al. (1996)
	GLS0803_6744	centrin	centrin	PF00036	Signalling							Belhadri et al. (1995)
	GLS0803_5462	delta-tubulin	tubulin	PF00091	MT Metabolism							Morrison et al. (2007)
	GLS0803_6336	epsilon-tubulin	tubulin	PF00091	MT Metabolism							Morrison et al. (2007)
	GLS0803_5167	VFL3	centriole positioning	none		C8 deficiency, type I	Y	MotileCut only				Merchant et al. (2007)
	GLS0803_15956	FAP52	Basal body proteome BUG14	SSF50978	Protein interaction	Radin antigen; Scianna system; Bone mineral density variability 3		CentricOnly	Y			Keller et al. (2005)
	GLS0803_15455	PACRG1	basal body proteome as BUG21; PACRG parkin co-regulated gene. E04F6.2 like protein	PF10274		Iq36 deletion syndrome; Bone mineral density variability 3	Y	CentricOnly	Y	Y		Keller et al. (2005)
	GLS0803_13372	FAP45	BUG28	SSF50978		Leukemia, acute pre-B-cell; Atherosclerosis		Centric+Motile	Y	Y		Keller et al. (2005)
	GLS0803_32375	POC18	Basal body proteome	none	Protein interaction	Epilepsy; Macular dystrophy	Y	MotileCut only				Keller et al. (2005)
	GLS0803_33762	POC1	Basal body proteome WD repeat protein	SSF50978	Protein interaction			MotileCut only	Y	Y	Y	Keller et al. (2005)
	GLS0803_14135	NDK7	(BUG5) in basal body proteome as BUG5.									
BBSome (5)	GLS0803_8738	BBS1		none		BBS, C8 deficiency, type I						Morrison et al. (2007)
	GLS0803_23934	BBS2		none		BBS, C8 deficiency, type I	Y	CiliaCut only				Morrison et al. (2007)
	GLS0803_10529	BBS4	TPR_1 Tetratricopeptide repeat	PF01515	Protein interaction	BBS, C8 deficiency, type I	Y	CiliaCut only				Morrison et al. (2007)
	GLS0803_8146	BBS5	DUF1448 domain of unknown function	PF07289	Protein interaction	BBS, C8 deficiency, type I	Y	CiliaCut only				Morrison et al. (2007)
	GLS0803_8508	BBS8	TPR_1 Tetratricopeptide repeat	PF01515	Protein interaction	BBS, C8 deficiency, type I						Morrison et al. (2007)
Axoneme structure (30) axonemal dyneins (IDAs)	GLS0803_100906	IAD-1alpha	IAD-1alpha dynein heavy chain (DHC) family	PF03028	Flagellar structure							Wickstead et al. (2007)
	GLS0803_94440	IAD-1beta	IAD-1beta dynein heavy chain (DHC) family	PF03028	Flagellar structure							Wickstead et al. (2007)
	GLS0803_40496	IAD-4	IAD-4 dynein heavy chain (DHC) family	PF03028	Flagellar structure							Wickstead et al. (2007)
	GLS0803_37985	IAD-4	IAD-4 dynein heavy chain (DHC) family, partial	PF03028	Flagellar structure							Wickstead et al. (2007)
	GLS0803_111950	IAD-5	IAD-5 dynein heavy chain (DHC) family	PF03028	Flagellar structure							Wickstead et al. (2007)
axonemal dyneins (ODAs)	GLS0803_17265	OAD-alpha	OAD-alpha dynein heavy chain (DHC) family	PF03028	Flagellar structure							Wickstead et al. (2007)
	GLS0803_17243	OAD-beta	OAD-beta dynein heavy chain (DHC) family	PF03028	Flagellar structure							Wickstead et al. (2007)
radial spokes	GLS0803_16450	rsp3	radial spoke protein 3	PF06098	Flagellar structure		Y	CentricOnly				Morrison et al. (2007)
	GLS0803_17278	RSP9	radial spoke protein 9; A subunit in the radial spoke head; (pf17)	none	Flagellar structure		Y	MotileCut only	Y	Y		Morrison et al. (2007)
	GLS0803_114462	axonemal p66 (RSP6)	outer dynein arm-docking complex subunit 2 (ODA-DC 2)	none	Flagellar structure		Y	Centric+Motile	Y	Y		Morrison et al. (2007)
dynein regulatory complex	GLS0803_16540	PF2	Component of dynein regulatory complex (DRC) of flagellar axoneme; trypanin	PD936484	Flagellar structure		Y	Centric+Motile	Y	Y		Morrison et al. (2007)
central pair	GLS0803_16500	PF20	Central Pair-WD-repeat protein of the central pair; associates with the intermicrotubule bridge.	PF00400	Flagellar structure		Y	MotileCut only	Y			Morrison et al. (2007)
	GLS0803_16202	PF16	Central pair associated protein	PF00514	Flagellar structure	Bone mineral density variability 3		MotileCut only	Y	Y		Morrison et al. (2007)
	GLS0803_137712	HY3 (FAP74)	(HYD3) Similar to mouse hydrocephaly protein hyd3 HY3	SSF52540	Flagellar structure	Mouse: Hydrocephaly	Y	MotileCut only	Y	Y		Morrison et al. (2007)
	GLS0803_14568	PP1	Ser/Thr protein phosphatase PPI-alpha 2 catalytic subunit	SSF56300	Signalling			MotileCut only	Y	Y		Morrison et al. (2007)
axoneme-associated	GLS0803_11867	RIB43a	associated with protofilament; ribbons of flagellar microtubules	PF05914	Flagellar structure		Y	Centric+Motile	Y	Y		Morrison et al. (2007)
	GLS0803_41512	RIB72	novel component of the ribbon compartment of flagellar MTs	P551336	Flagellar structure		Y	Centric+Motile	Y	Y		Morrison et al. (2007)
	GLS0803_16263	DIP13	Diffusible/inducible protein; Sjogren's syndrome nuclear autoantigen 1.	PD968187	MT Metabolism	Amyotrophic lateral sclerosis-4; Leukemia	Y	CentricOnly	Y	Y		Morrison et al. (2007)
	GLS0803_102248	MBO2	Move backward only mutant defective in ciliary waveform.	PD936484	Protein interaction	Aneurysm, intracranial berry	Y	Centric+Motile	Y	Y		Morrison et al. (2007)
	GLS0803_14048	EB1	EB1	PF03271	MT Metabolism							Dawson et al. (2007)
	GLS0803_5333	calmodulin	EF-hand domain	SSF47473	Signalling							Morrison et al. (2007)
	GLS0803_7439	PP2A	Ser/Thr phosphatase 2A, 65kDa reg sub A; ARM repeat domain	SSF48371	Signalling							Morrison et al. (2007)
GLS0803_14004	long-flagella protein LF4	protein kinase domain (MAP kinase)	PF00069	Flagellar regulation							Morrison et al. (2007)	
axoneme-associated (Giardia)	GLS0803_137716	GASP-180	ankyrin repeat family	PF00023	Protein interaction							Elmendorf et al. (2005)
	GLS0803_5649	alpha 10-giardin	anexin	PF00191	Protein interaction							Weiland et al. (2005)
	GLS0803_15097	alpha 14-giardin	anexin	PF00191	Protein interaction							Weiland et al. (2005)
	GLS0803_15101	alpha 17-giardin	anexin	PF00191	Protein interaction							Weiland et al. (2005)
	GLS0803_7796	alpha 2-giardin	anexin	PF00191	Protein interaction							Weiland et al. (2005)
	GLS0803_7797	alpha 5-giardin	anexin	PF00191	Protein interaction							Weiland et al. (2005)
	GLS0803_103437	alpha 9-giardin	anexin	PF00191	Protein interaction							Weiland et al. (2005)
Axoneme-associated (40 putative)	GLS0803_12046	SPEF1		SSF47576	Signalling		Y	MotileCut only				Merchant et al. (2007)
	GLS0803_24423	SSA17		SSF51045	Protein interaction			CentricOnly				Merchant et al. (2007)
	GLS0803_13809	TEX9	(FBB15)	SSF46966	Protein interaction	C8 deficiency, type I	Y	MotileCut only				Merchant et al. (2007)
	GLS0803_4538	DPY30	(FBB12) chromatin modifying protein complex member; C. elegans defective in male sensory behavior.	PF05186	Protein interaction		Y	CentricOnly		Y		Merchant et al. (2007)
	GLS0803_15834	CTO59	(FBB5) Similar to C21orf59 (CTO59)				Y	MotileCut only				Merchant et al. (2007)
	GLS0803_2523	FAP100		none		Renal cell carcinoma; Glaucoma 1C, primary open angle	Y	Centric+Motile	Y			Merchant et al. (2007)
	GLS0803_87817	FAP118	Tubby superfamily protein	SSF50978	Protein interaction		Y	CiliaCut only	Y			Merchant et al. (2007)
	GLS0803_9865	FAP122		PD968187	Signalling		Y	MotileCut only	Y			Merchant et al. (2007)
	GLS0803_17567	FAP134	Protein phosphatase PPI regulatory subunit SDS22	SSF52075	Protein interaction	Bone mineral density variability 3	Y	MotileCut only	Y			Merchant et al. (2007)
	GLS0803_6245	FAP155		SSF52047	Protein interaction		Y	MotileCut only	Y			Merchant et al. (2007)
	GLS0803_22806	FAP184		SSF46579	Protein modification		Y	MotileCut only	Y	Y		Merchant et al. (2007)

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GLS0803_17116	FAP198	cyt-b5-like domain in the N terminus	SSF55856	Metabolism	Radix antigen; Scianna system; Bone mineral density variability 3	Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_15364	FAP251		SSF50978	Protein interaction		Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_6455	FAP263		none		C8 deficiency, type I	Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_16768	FAP43		SSF50978	Protein interaction		Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_21048	FAP47		none			Y	CiliaCut only	Y		Merchant et al. (2007)
GLS0803_102438	FAP44	WD40-repeat like	SSF50978	Protein interaction		Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_37452	FAP50		none			Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_11321	FAP57	WD40-repeat like	SSF50978	Protein interaction	Deafness, autosomal dominant 2	Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_95653	FAP59		none			Y	MotileCut only	Y		Li et al. (2004)
GLS0803_5186	FAP61		none			Y	MotileCut only	Y	Y	Merchant et al. (2007)
GLS0803_16709	FAP66	TPR repeat domain	SSF48452	Protein interaction		Y	CiliaCut only	Y		Merchant et al. (2007)
GLS0803_10924	FAP73		none		Radix antigen; Scianna system; Bone mineral density variability 3	Y	Centric+Motile	Y		Merchant et al. (2007)
GLS0803_9283	FAP74		none		Ip36 deletion syndrome; Bone mineral density variability 3	Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_10879	FAP253	FBB4	none			Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_8423	FBB11		none			Y	Centric+Motile	Y		Merchant et al. (2007)
GLS0803_8942	FBB5		none			Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_102438	FBB17		PF00246	Protein metabolism		Y	MotileCut only	Y		Li et al. (2004)
GLS0803_21110	FBB9		none			Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_5787	MOT12		SSF52540	Protein metabolism		Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_24043	MOT16	CH domain	SSF47576	Signalling		Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_23330	MOT17		SSF52540	Signalling	Rippling muscle disease-1	Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_11638	MOT18	Topoisomerase I-related protein	SSF81301	RNA metabolism		Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_7792	MOT37		SSF52075	Protein interaction	Ip36 deletion syndrome; Bone mineral density variability 3	Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_4897	MOT39		SSF57850	Protein turnover	Triphalangeal thumb-polysyndactyly syndrome	Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_15868	MOT4		SSF57850	Protein turnover		Y	MotileCut only	Y		Merchant et al. (2007)
GLS0803_13441	MOTS2	Microtubule Regulation and Metabolism (FAP106)	none		Flagellar structure	Y	Centric+Motile	Y		Merchant et al. (2007)
GLS0803_16996	NKRIN1		none		Signalling	Y	Centric+Motile	Y		Merchant et al. (2007)
GLS0803_27147	UNC119	Signal transduction protein	SSF81296	Trafficking	Bone mineral density variability 3 Bone mineral density variability 3	Y	CiliaCut only	Y		Merchant et al. (2007)
Intraflagellar transport, IFT (18)										
IFT complex A (2)										
GLS0803_17251	IFT140	Intraflagellar transport protein IFT140	none	Flagellar transport	Ip36 deletion syndrome; Bone mineral density variability 3		CiliaCut only			Hoeng et al. (2008)
GLS0803_16547	IFT122	Intraflagellar transport protein IFT122	none	Flagellar transport						Briggs et al. (2004)
IFT complex B (8)										
GLS0803_17105	IFT172	Intraflagellar transport protein IFT172	none	Flagellar transport		Y	CiliaCut only	Y	Y	Briggs et al. (2004)
GLS0803_7664	IFT46	Intraflagellar transport protein IFT46; FAP32	none	Flagellar transport		Y		Y	Y	Briggs et al. (2004)
GLS0803_112963	IFT52	Intraflagellar transport protein IFT52; osm-6	none	Flagellar transport		Y		Y	Y	Briggs et al. (2004)
GLS0803_14713	IFT57	Intraflagellar transport protein IFT57	none	Flagellar transport		Y		Y	Y	Briggs et al. (2004)
GLS0803_9750	IFT74/72	Intraflagellar transport protein IFT74/72	none	Flagellar transport		Y		Y	Y	Briggs et al. (2004)
GLS0803_17223	IFT80	Intraflagellar transport protein IFT80; WD domain, G-beta repeat	PF00400	Flagellar transport		Y	CiliaCut only	Y	Y	Briggs et al. (2004)
GLS0803_15428	IFT81	Intraflagellar transport protein IFT81	none	Flagellar transport		Y		Y	Y	Hoeng et al. (2008)
GLS0803_16660	IFT88	Intraflagellar transport protein IFT88	none	Flagellar transport	Bone mineral density variability 3; Mouse model: PKD, RP	Y		Y	Y	Briggs et al. (2004)
IFT complex B associated (4)										
GLS0803_87202	DYF-1	PR axonin;TPRS (FAP259)	SSF48452	Protein interaction	Duane retraction syndrome 2	Y	CentricOnly		Y	Merchant et al. (2007)
GLS0803_16707	DYF-3	Dl.erio cystic kidney disease gene alin; FAP22; Clusterin associated protein	PF10234	Protein interaction		Y	CentricOnly		Y	Merchant et al. (2007)
GLS0803_9098	DYF-11	MT Associated TRAF3 Interacting Protein (FAP116)	PF10243	Trafficking		Y	CentricOnly		Y	Merchant et al. (2007)
GLS0803_16375	DYF-13	(FBB2) required for ciliogenesis in C. elegans.	SSF48452	Protein interaction	Thromboxane synthase deficiency	Y	CiliaCut only		Y	Merchant et al. (2007)
IFT motors (4)										
GLS0803_114885	KAP	kinesin-associated protein; non-motor subunit of kinesin-II complex	PF05804	Flagellar transport		Y	CentricOnly			Morrison et al. (2007)
GLS0803_16456	GIKIN2a	kinesin-2	PF00225	Flagellar transport						Hoeng et al. (2008)
GLS0803_17333	GIKIN2b	kinesin-2	PF00225	Flagellar transport						Hoeng et al. (2008)
GLS0803_93736	cytoDHC-1b	cytoDHC1b, putative IFT cytoplasmic dynein 1b family	PF03028	Flagellar transport						Wickstead et al. (2007)
MT motor proteins										
Other Flagellar Kinesins (3)										
GLS0803_16945	GIKIN13	kinesin-13	PF00225	MT Metabolism						Dawson et al. (2007)
GLS0803_10137	GIKIN9a	kinesin-9	PF00225	MT Metabolism	Aicardi-Goutieres syndrome 1		MotileCut only	Y		Wickstead et al. (2006)
GLS0803_6404	GIKIN9b	kinesin-9	PF00225	MT Metabolism	Aicardi-Goutieres syndrome 1		MotileCut only	Y		Wickstead et al. (2006)
Other Dynein Heavy Chains (7)										
GLS0803_17478	cytoDHC	cytoDHC cytoplasmic dynein heavy chain family	PF03028	MT Metabolism						Wickstead et al. (2007)
GLS0803_103059		dynein heavy chain (DHC) family	PF03028	MT Metabolism						Wickstead et al. (2007)
GLS0803_8172		dynein heavy chain (DHC) family, partial	PF03028	MT Metabolism						Wickstead et al. (2007)
GLS0803_16804		dynein heavy chain (DHC) family	PF03028	MT Metabolism						Wickstead et al. (2007)
GLS0803_101138		dynein heavy chain (DHC) family	PF03028	MT Metabolism						Wickstead et al. (2007)
GLS0803_10538		dynein heavy chain (DHC) family	PF03028	MT Metabolism						Wickstead et al. (2007)
GLS0803_29256		axonemal dynein heavy chain, partial	PF03028	MT Metabolism						Wickstead et al. (2007)
Dynein light chains (10)										
GLS0803_4236	DYNLT1 (Tctex1/LC9)	Tctex-1 family	PF03645	MT Metabolism						Wickstead et al. (2007)
GLS0803_4463	LC1	dynein light chain (DLC) family	PF01221	MT Metabolism						Wickstead et al. (2007)
GLS0803_7578	LCS?	dynein light chain (DLC) family	PF01221	MT Metabolism						Wickstead et al. (2007)
GLS0803_9848	LC8	dynein light chain (DLC) family	PF03645	MT Metabolism						Wickstead et al. (2007)
GLS0803_13575	DYNLT2 (Tctex2/LC19)	Tctex-1 family	PF01221	MT Metabolism						Wickstead et al. (2007)
GLS0803_14270	roadblock/LC7	roadblock-related dynein light chain	PD03259	MT Metabolism						Wickstead et al. (2007)
GLS0803_27308	LC4	dynein light chain (DLC) family	PF01221	MT Metabolism						Wickstead et al. (2007)
GLS0803_15606	Tctex-1	Tctex-1 family	PF03645	MT Metabolism						Wickstead et al. (2007)
GLS0803_17371	DYNLT1 (Tctex1/LC9)	Tctex-1 family	PF03645	MT Metabolism						Wickstead et al. (2007)
GLS0803_15124	roadblock/LC7	roadblock/LC7 domain family	PD03259	MT Metabolism						Wickstead et al. (2007)
Dynein light intermediate chain (1)										
GLS0803_13273	axonemal DLIC	axonemal dynein light chain family, p28	PF10211	MT Metabolism	Deafness, autosomal dominant 2	Y	CentricOnly	Y	Y	Wickstead et al. (2007)
Dynein intermediate chain (3)										
GLS0803_6939	IC70	dynein intermediate chain (DIC) family	PF05783	MT Metabolism						Wickstead et al. (2007)
GLS0803_10254	IC138	dynein intermediate chain (DIC) family	PF05783	MT Metabolism						Wickstead et al. (2007)
GLS0803_33218	IC78	dynein intermediate chain (DIC) family; Flagellar outer dynein arm intermediate chain, ODA-IC1	PF05783	MT Metabolism		Y	CentricOnly	Y	Y	Wickstead et al. (2007)