

PfVps34	mkirydkcsstkdlnyffhlklgfvcyknhndkysfkncilqkndtilffkkkkfm	60
PfVps34	rkkkkkkkkkiliqiqikeynkyneyfkynsnlegnqgfnkpeknkntkgnvtdhtnqn	120
PfVps34	akskiynydmnddsysnyvnnnnvfrissflilneffgyp1qfvctegrsrnhehypd	180
PfVps34	vhdniyknkcddnkynkcddnkycdkcddnkynkcddnkkydtcddnkkydtcd	240
PfVps34	dnkynkydddkydtcddnkynkydddkydkynkyddkyeksrrkklnnlykti	300
PfVps34	ltkkkrkkmmsnlcvinkiykypikyceelnksafvffiiknvgvhkityysynklfskd	360
PfVps34	vlnqgiqicklyhvnknkkikqiifealknkitsydnppnnikkkiykflkkncayhdl	420
PfVps34	iklfyfkghkqrekcnklnmektfgvhcssrynyktykkkkidmcknycddildtyns	480
ScVps34	-----MSLNNTF	8
PfVps34	kyykgelsgqkhkhikmtgeqkeehhikythlnfnhgkdefykelykcnvieKYISSVNY	540
ScVps34	CVSQDLDVPLKV KIKSLEGHKPLLKPSQK	37
PfVps34	FLLERRRMFN KYKQQELCVNKNEENKNK NDDDNKNDNNKNDDDNKNDDDN	600
ScVps34	-----ILNPELMLIGSNVFPS	53
PfVps34	KNDDDNKNDDDNKNDDDNKNDDDNKNNIQCDSHSDNIYMCGTYGNMENY NVPHSTNNTNLQSI	660
ScVps34	SDLIVSLOVFDKERNRNLTLPIYTPYIPFRNSRTWDYLTLPIRIKQLTFSSHILR	108
PfVps34	KKRIINMNILDNIRCNKTYKYIDKNFKCFTYYSCKNYNVCKKIEKYKLYKF KKKIE	720
ScVps34	-- IILWEYNGSKQIPFF --	123
PfVps34	GYM ILNFLNFnKELIYYNEHKDMSTLHDNLFDViSNNQNENVKYNHIC NNNKYDWFFNS	780
ScVps34	----- NLET SI FNLKDCTLKRGFESLK -----FRYDVIDHCEVVTD NKDQE ENLN KYFQG	172
PfVps34	FDVGN LEESITCFNNHKKENMKNIKNIKKKKKNLFYNEQHNIKN NKNDYHF DKYPSS	840
ScVps34	EFT RL PWLDEITISKLQR REN-----	194
PfVps34	LYSH LTNKVMVNNTEVNNIKDENSLQMYI INKDVTKNKDGNLLLNSYNSKLGKSINTCS	900
ScVps34	-----RTWPQGTFVL NLEFPMLELPVVFIEREIMN -----	224
PfVps34	KEIYKEEHKNVYIY NKKITKMNIKMTEQKYICVDSKRNT RTYNSKNIRTYSKNIRTYN	960
ScVps34	-----TQMNIPTLK-----NNPGLSTD REP NRNDPQ IKISLG -----DKYHSTLK	265
PfVps34	SKNIRTYSRK NIRTYNRKNIRTYNRKNIRTYNRKNIR CNNRKKFHLNRNKKNGCVKKYK	1020
ScVps34	FYD -----PDQP N DPIE E KYRR LER ASKNA NLD KQVK PD I	301
PfVps34	LYDERNTLVYKNKIGSNHFLKEEIGKST KLND IFE HIS YTNR RIS KNIN IT TKNKNRYDD	1080
ScVps34	KKRDYLN -----KI INYPG T KLT A EKG SIW KYRYYLMNNKKAL	341
PfVps34	YPFDFLSKD KIEYISML SP TINEIKTLNT ILT PI LIK MNEYEKNCIWRFRFQ LLNR KETL	1140
ScVps34	TKL QSTNLREES ER VE V LE LMDS WAE ID DD A ELL G ST FK NL S VR S YAV NRL KK ASDK	401
PfVps34	GKFL K SIN WNN KEEEE AI II LL NK W AKPGI ENC I EL FY SHLHHYVIKKYI IDI IK NSK KE	1200
ScVps34	ELELYLLQLV EA VC F NL ST FS -----	423
PfVps34	EIKLYLF QL V SLRT F NY QH ID NL F INT LI Q K C I K SK KL SI Y F W FL SE A K D K I G K L	1260
ScVps34	-----DKSNSEFT IV DAVSS Q K LSG DS M LL S T SHAN -----	454
PfVps34	LHI H KL F INK LMT SN R KN KI IL D IL KN Q NR FR N Q LLY LT K IA KN K TDR I Q N KTR LR N F	1320
PfVps34	1fyrrtnygyinikdfiknnifisdhnvdydf1dickmkrensltpmrgdnigqpsylgm	1380
PfVps34	vpgmgkstddsknvygdnnknvygdnnknvygddsknviyccddnknygddsk	1440
ScVps34	----- OKLLKSISSESE -----TSGTESLPI	475
PfVps34	niygddnnknifsddnnknlysdsnlnnkhiry NKYVKN ISYEHFNEPYDNKKSRSNIYTCNK	1500
ScVps34	VISPLAEFLIRRALVNPRLG SFFY WYLKSE SED KPYLDQI LS-----FWSRLD KKSRN	529
PfVps34	DICNSIYYLDNELTINYDIKDDLYFFQYKRSSDEKLLNTDLSNDSNDMIHYIDDS KNV KI	1560
ScVps34	ILNDQ VRLINVLREC CETIKRLKD TTAKKM ELLV HLLET KVRPLV K-----VRPIALPL	583
PfVps34	ERNRD N SSFSNF LQ FL ND LF FLN AT Y SD E D NN YE I LL D DS I NF V Q KQ K IK K TP LI L PI	1620
ScVps34	DPDVLICDVC PETSKV FK SSL S-----	605
PfVps34	DPNIELLSFL PEQS Y VL RSS LY PI VI AC LR K IK LYN EN Y NN LI I NNHTFY K ND Q N K DN	1680
ScVps34	-----PLKITFKTTLNQ XP HL -----	621

PfVps34	IINNL SYDKSYHSYYNSQFIKT LQNSFESTTSLN YHYNFLKCSNNNIFYKNKKIERIKPN	1740
PfVps34	tsiqkafpsnenilnrnqhvyysnnqivhnikkmnkhrddyminekvlp cvsnsclgdk	1800
PfVps34	lmpshdkmrsshdkmmpshdklm sphylmsshdkp vapsgvsslgekkskde	1860
ScVps34	----- -MFKVGDDLRQDOLVVQII	663
PfVps34	SLMNELLKNENVDLKLT PYKILAT	1920
ScVps34	GPQECAIEFIPNDTLASILSKYHG - ILGYLKLHYPDENATLGVQGWVL DNFVKSCAGYC	721
PfVps34	STDDGFIEFDYAESISSIKKNYKGEIRQYFIDNSTCSSPLGFDT EILQNFISSCAGYS	1980
ScVps34	VITYIILGVGDRHLDNL LVT PDGHFFADFGYIILGQDPKPFPPLMKLPPQIIEAFGGAESS	781
PfVps34	VITYIILGI GDRHLDNL MVT KDGRFFFIDFGYIFGE DPKPFSPPMKLCKEMIEAMGGAHSI	2040
ScVps34	NYDKFRSYCFVAYSILRRNAGLILNL FELMKTSNIPDIR IDPNGAILRVRERFNLNMSEE	841
PfVps34	GYEQFLKKCCLAYKYLYHSQLI ISLLDAMCDAGLKDMKMSPELCVLKVQEKFRLDNDE	2100
ScVps34	DA TVHFQNLINDSVNALLPIVIDHLHNLAQYWRT	875
PfVps34	A EIYFLSVINASV KTLFPVVVDKLHEWA LNWK-	2133

Figure S2. Sequence alignment of Vps34 proteins. The yeast (ScVps34) and *P. falciparum* (PfVps34) Vps34 protein sequences were aligned using the Clustal W2 program. Shown are the conserved residues (red), the putative N-terminal lipid binding C2 domain of the ScVps34 (underlined), phosphatidylinositol 3-phosphate kinase accessory (PI3Ka) domain of unknown function (yellow shaded), phosphatidylinositol 3-kinase domain (grey shaded bold letters), and PfVsp34-specific large inserts (lower case).