

Supplementary File S6: Details of different modules found in model organisms

Domains Architecture of *Arabidopsis thaliana*

<i>No</i>	<i>Accession Number</i>	<i>Domains</i>
1	NP_001031110.1	Las17-binding protein actin regulator, FYVE zinc finger
2	NP_174273.3	Las17-binding protein actin regulator, FYVE zinc finger
3	NP_176362.3	FYVE zinc finger
4	NP_189909.1	Las17-binding protein actin regulator, FYVE zinc finger
5	NP_001320122.1	Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, FYVE zinc finger
6	NP_001328750.1	Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, FYVE zinc finger
7	NP_001190899.1	Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, FYVE zinc finger
8	NP_001078484.4	Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, FYVE zinc finger
9	NP_001328749.1	Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, FYVE zinc finger
10	NP_564103.1	FYVE zinc finger

11	NP_001319548.1	Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, FYVE zinc finger
12	NP_001328535.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
13	NP_001328536.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
14	NP_001154232.2	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
15	NP_001328534.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
16	NP_001327882.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
17	NP_188968.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
18	NP_001318728.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
19	NP_568268.3	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
20	NP_001322526.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain
21	NP_177129.2	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain
22	NP_001190338.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
23	NP_197443.3	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH

24	NP_001330907.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
25	NP_565144.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
26	NP_001320309.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain, PH
27	NP_176767.1	Regulator of chromosome condensation (RCC1) repeat, Transcription factor regulating root and shoot growth via Pin3, FYVE zinc finger, Transcription factor BRX N-terminal domain
28	NP_196834.3	BAR domain of APPL family, Putative GTPase activating protein for Arf, Ankyrin repeats (many copies), Ankyrin repeat, PH domain, Ankyrin repeats

Retrieved sequences of *Arabidopsis thaliana*

>NP_001031110.1 RING/FYVE/PHD-type zinc finger family protein [*Arabidopsis thaliana*]

MDERDREIRASHGDSNAGNVVSQSIENTREEDSGSCEGFVEESKRLEPEQQKHGKYFFYDTPLSEETGVWIPVSVPPMLE
PDHEEWSRGLSFNGGYFPEGDMGWDQIFDEDEKELTMWDVIVDMLLAARGKASALSSGNLERCGINFLSGHLLEQAWQDM
A

HTLTEANFGNAREILETEPPKWLPDSAASACMLCSVRFHPIIMCSRHHCRYCGGIFCRDCSKGKSLVPVKFRVSDPQQRVCD
VCFVRLESVQPYLMDQVSPAAQLPTHDLTDLSTLRSWVNFPWQGSMEYEIYKATNTLRGYITKVGSSRTERSIPDAILRQ
AKGLAVITVARVGVMTYKIGTGLVVARDDGSWSPPSAISSFGLGWGAQAGGEFIDFIIVLRTREAIQTFGSNTHLVVG
AGLSAAVGVTGRAVEADIRAGSGGYAACYTYSCKGAFVGCSEGSIFTTRTSENSRFYGSQSLAASDILLGSLPRPPAA
AALYRALGDLYQKMGR

>NP_174273.3 RING/FYVE/PHD-type zinc finger family protein [*Arabidopsis thaliana*]

MDERDREIRASHGDSNAGNVVSQSIENTREEDSGSCEGFVEESKRLEPEQQKHGKYFFYDTPLSEETGVWIPVSVPPMLE
PDHEEWSRGLSFNGGYFPEGDMGWDQIFDEDEKELTMWDVIVDMLLAARGKASALSSGNLERCGINFLSGHLLEQAWQDM
A

HTLTEANFGNAREILETEPPKWLPDSAASACMLCSVRFHPIIMCSRHHCRYCGGIFCRDCSKGKSLVPVKFRVSDPQQRVCD
VCFVRLESVQPYLMDQVSPAAQLPTHDLTDLSTLRSWVNFPWQGSMEYEIYKATNTLRGYITKVGSSRTERSIPDAILRQ
AKGLAVITVARVGVMTYKIGTGLVVARDDGSWSPPSAISSFGLGWGAQAGGEFIDFIIVLRTREAIQTFGSNTHLVVG
AGLSAAVGVTGRAVEADIRAGSGGYAACYTYSCKGAFVGCSEGSIFTTRTSENSRFYGSQSLAASDILLGSLPRPPAA
AALYRALGDLYQKMGETVRSPAISPLSED

>NP_176362.3 phosphoinositide binding protein [Arabidopsis thaliana]

MLEKIGLPPKPSLRGNSWVVDASHCQGCSSQFTFINRKHHCRRCGGLFCGTCTQQRSLRGQGDSPVRICEPCKKIEEAA
RFELRHGYKNRAAKGGSSKRTVKNEDDVLSEILGSDVDVSSSESVSSTDNRNASKEMASSSSNKGMELDASPEELRKQAV
EAKNKYRILKGEGKSDEALKAFKRGRELEREADALEISLRNRKRELSMRNVAETQNKAAATKESSKSQKPLRQGGKGND
LAADLRELGWSDDEDKKPATISLEGEFSSLLREIPRSANPQKTGGIDKSQVIALKRKALTLKREGKLAELAKDELKKAKIL
ERELEEQELLGGADGSDDLSALINSMDDDKEDDLLAQYEGSHDFDISNLVGNLDDIGVHGEYDVTDEDMEDPAIAAALK
SLGWSEDPGHHENVHSRPSPKNRDESLAEIQTALKREALNLKRAGNVVEAMATLKKAKLLEKELEAADTSSETVDTTRAER
DTSLKPPPRSRLAIQKELLAVKKKALTLRREGKFNEAEEELKKGAVLQNQLDELNDSSKLAATGKATREKGNLDPDISSL
DDDGEVDVKDEELNDPNYLSMLKSLGWNDENNNPAGPSSEKSDPLNSRPGKTAEAQGA YEVRVTKPRRTKAEIQRELLGL
KRKALTLRRQGNVDEAEVNLNQTQILEAQIMEIDSGKNLYADSDQPKKRSNDLATDSRLNGGDDSVTENDMKDPALLSTL
KNLGWEDEEPKKEEASFGSVQSSGPRIAAKSKGQIQRELLDLKRKALAFKRQGTGDADELYSKASVLEAQLAELETPKM
EMKGSASAIKPENYMDVDLLVGSQMEDKAIKSASVSHAPQDSYDLLGDFISPAKSGSSGVVSQPGQQQPSMMDLLTGEHS
ERSQIHAEKGNAETMSGFRSGNNHGAEQRVAREESEPSHIQSASIQNTSPQNTLKQEILAHKKKALALKREGNISEAKKA
LQEAKLLERRLQEGENPSPEKLGRDDMVSTTEDPPAREKENSPPSSAPKAMSGRDRFKLQQESLSHKRQAMKLRREGKMQ
EAEAEFEIAKTLEAQLEDSTSSKPEPVDDVAVEDFLDPQLLSALKAIGLDNPVNPVSKTDTTQAAAKPNPVKESNRNT
NNQERSQLEERIKAEKVAVTFKRAGKQAEALDALRRAKLYEKKLNALASS

>NP_189909.1 RING/FYVE/PHD-type zinc finger family protein [Arabidopsis thaliana]

MATLNGKASPYSEENIKFKYDDYDDDDDDDDGSGSGSGGGYEDGPKWSVQSIPTKKEVEYPIIDSGDYVDDGYDSSGELS
TTTTPIQGNEKPEVNLKNVLTGLIAIVTGRNKNPLDQKNPSSNVSFLGSGTNGDTFVHSSVYIPSAPPLLEPSGINYSV
YKELLEAEPPPEWLPDSLASTCMQCSTPFTAITCGRHHCRFCGGIFCRNCSKGRCLMPSRFRERNPQRVCDSCYERLDPLQ
CVLINSISNAVQVAKHDVVDWTC SRGWLNLVGLSMEDEIYKAANTLRGYCQVARLDPEKSIPHAVLSRAKGLAITVAK
AGALLSYKLGTGLVISRRPDGWSAPSAILSVGLGWGAQIGGELMDFIIVLHDVKAVKTFCSR MHFSLGAGCSAAAGPIG
RVLEADLRAGDKGSGVCYTYSRSKGAFVGVSLGNLVATRDMNVKIFYGDPYLSTSDILLGMVDQPKAAEPLYTALRELY
ARLRP

>NP_001320122.1 1-phosphatidylinositol-3-phosphate 5-kinase FAB1A [Arabidopsis thaliana]

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SSNMDSKSEQQNAKSRSSDHYGHVLDSSDNQVEFFVNSSGRSDGEADDDDDYQSDFAQSYAQGNDYYGAINLDEV DHI
YGSHEAHDVGVKIEPNISGFPPDQDLDSLNTETIDKTRQQENGWNDVKEGSPPCEESFEPEVVD FESDGLLWLPPEPENE
EDEREAVLSDDDGDEGDRGDWGYLRPSNSFNEKDFHSKDKSSGAMKNVVEGHFRALVAQLLEV DNLPMVNEGDEEGWLD
I
ITSLSWEAATLLKPDTSKSGGMDPGGYVKVKCIPCGRRSESMVVKGVVCKKNVAHRRMTSKIEKPRLLILGGALEYQRIS
NQLSSFD TLLQQEMDHLKMAVAKIDSHNP DILLVEKS VSRFAQEYLLAKDISLV LNIKRSLLERISRCTGAQIVPSIDQL

TSPKLG YCDLFHVEKFVETHVSPCQVAKKMAKTLMFFDGC PKPLGCTILLKGAHEDELKKVKHVIQYGVFAAYHLAETS
 FLADEGASIH ELPQT PITVALPDKPSMVNRSISTIPGFTVSSAEKSPTTELRGEPHKANGDLTGNFTSSKTHFQ GKLDG
 NDRIDPSE RLLHNLDTVYCKPPETITSKDDGLVPTLESRQLSFHVEEPSVQKDQWSVLSGATEQVTDGGYTND SAVIGNQ
 NFN RQEQMESSK GDFHPSASDHQSILVSLSTRCVWKGSVCERAHLLRIKYYGSFDKPLGRFLRDNLFDQDQCCPSCTMPA
 EAH IHCYTHRQGS LTISVKKLPELLPGQREGKIWMWHRCLKCPRINGFP PATRIVMSDAAWGLSFGKFLELSFSNHAAA
 SRVANCGHSLHRDCLRFYGFGRMVACFRYASINIYAVTLPPAKLYFN YENQEWLQESKEVIKKA EVLFNEVQEALSQIS
 AKTMGAGSKGSTPNKIKLSLEELAGLLEQRKKEYKDSLQQMLNVVKD GQPTIDILLINKLRRLIIFDSYAWDECLAGAA N
 MVRNNYLEAPKNSAPKVMGRNVSLEKLSDEKVKSIPTHV AICNDSLLQDADYETCLNQGKS FADTSGKFAIPEDVGS DRP
 PDCRMEFDPSEGGKDNFVESSQVVKPAHTESQFQATDLSDTL DAAWIGEQTTSENGIFRPPSRAASTNGTQIPDLRLLGS
 ESELNFKGGPTNDEHTTQVQLPSPSFYYSLNKNYSLNSRKHIMAEDRPVYVSSYRELEWRSGARLLLPLGCNDLVLPVYD
 DEPTSIIAYALT SSEYKAQMSGSDKSRDRLDSGGSFSLFDSVNLLSLNSLSDLSVDMRSLS SAADEQVSQLLHSSLYLKD
 LHARISFTDEGPPGKV KYSVTCYYAKEFEALRMICCPSETDFIRSLGR CRKWGAQGGKSNVFFAKSLDDRFIKQVTKTE
 LESFIKFGPAYFKYLTESISTKSPTSLAKILGIYQVSSKHLKGGKEFKMDVLVMENLLFKRNFTRLYDLKGSTRARYNPD
 TSGSNTVLLDQNLVEAMPTSPIFVGSKAKRLLERAVWNDTSFLASIHVMDYSLLVGVDEERNELVLGIIDFMRQYTWDKH
 LETWVKTSGLLGPKNSTPTVISPPQQYKKRFRKAMTAYFLMVPDQWSPA AVVPSNSSSAEVKEEEEKDNPQAVGNKS
 >NP_001328750.1 1-phosphatidylinositol-3-phosphate 5-kinase FAB1A [Arabidopsis thaliana]
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 TKDSHEEPERIRVCNYCYKQWEQGI VPPDNGASII SLHFSSPSARSVASTTSNSSNCTIDSTAGPSRPMKNPRASRRV
 SSNM DSEKSEQQNAKSRSSDHYGHVLDSSDNQVEFFVN RSDGEADDDDDYQSDFAQSYAQGNDYYGAINLDEV DHIYGS
 HEAHDVG VKIEPNISGFPPDQDLDSLNTETIDKTRQQENGWNDVKEGSP PCEESFEPEVVD FESDGLLWLPPEPENEDE
 REAVLSDDDGD EGDRGDWGYLRPSNSFNEKDFH SKDKSSGAMKNVVEGHFRALVAQLLEV DNLPMVNEGDEEGWLDIITS
 LSWEAATLLKPDTSKSGGMDPGGYVKVKCIPCGR RSESMVVKGVVCKKNVAHRRMTSKIEKPRLLILGGALEYQRISNQL
 SSFDTLLQQEMDHLKMAVAKIDSHNP DILLVEKSVSRFAQEYLLAKDISLV LNIKRSLLERISRCTGAQIVPSIDQLTSP
 KLG YCDLFHVEKFVETHVSPCQVAKKMAKTLMFFDGC PKPLGCTILLKGAHEDELKKVKHVIQYGVFAAYHLAETSFLA
 DEGASIH ELPQT PITVALPDKPSMVNRSISTIPGFTVSSAEKSPTTELRGEPHKANGDLTGNFTSSKTHFQ GKLDGNDR
 IDPSE RLLHNLDTVYCKPPETITSKDDGLVPTLESRQLSFHVEEPSVQKDQWSVLSGATEQVTDGGYTND SAVIGNQNFN
 RQEQMESSK GDFHPSASDHQSILVSLSTRCVWKGSVCERAHLLRIKYYGSFDKPLGRFLRDNLFDQDQCCPSCTMPAEAH
 IHCYTHRQGS LTISVKKLPELLPGQREGKIWMWHRCLKCPRINGFP PATRIVMSDAAWGLSFGKFLELSFSNHAAA SRV
 ANCGHSLHRDCLRFYGFGRMVACFRYASINIYAVTLPPAKLYFN YENQEWLQESKEVIKKA EVLFNEVQEALSQISAKT
 MGAGSKGSTPNKIKLSLEELAGLLEQRKKEYKDSLQQMLNVVKD GQPTIDILLINKLRRLIIFDSYAWDECLAGAA NMVR
 NNYLEAPKNSAPKVMGRNVSLEKLSDEKVKSIPTHV AICNDSLLQDADYETCLNQGKS FADTSGKFAIPEDVGS DRPPDC
 RMEFDPSEGGKDNFVESSQVVKPAHTESQFQATDLSDTL DAAWIGEQTTSENGIFRPPSRAASTNGTQIPDLRLLGSESE
 LNFKGGPTNDEHTTQVQLPSPSFYYSLNKNYSLNSRKHIMAEDRPVYVSSYRELEWRSGARLLLPLGCNDLVLPVYDDEP

TSIIAYALTSSEYKAQMSGSDKSRDRLDSGGSFSLFDSVNLLSLNSLSDLSVDMRSRLSSADEQVSQLLHSSLYLKDLHA
RISFTDEGPPGKVYKSVTCYYAKEFEALRMICCPSETDFIRSLGRCRKWGAQGGKSNVFFAKSLDDRFFIKQVTKTELES
FIKFGPAYFKYLTESISTKSPTSLAKILGIYQVSSKHLKGGKEFKMDVLVMENLLFKRNFTRL YDLKGSTRARYNPDTSG
SNTVLLDQNLVEAMPTSPIFVGSKAKRLLERAVWNDTSFLASIHVMDYSLLVGVDEERNELVLGIIDFMRQYTWDKHLET
WVKTSGLLGGPKNSTPTVISPPQQYKKRFRKAMTAYFLMVPDQWSPA AVVPSNSSSAEVKEEEEKDNPPQAVGNKS
>NP_001190899.1 1-phosphatidylinositol-3-phosphate 5-kinase FAB1A [Arabidopsis thaliana]
MDSQDHKAPGFVDIVKSWIPRKSESSNMSRDFWMPDQSCPVCYECDAQFTVFNRHHCRLCGRVFCAKCAANSIPSPSDE
TKDSHEEPERIRVCNYCYKQWEQGIVPPDNGASIISLHFSSSPSARSVASTTSNSSNCTIDSTAGPSRPKMNPRASRRV
SSNMDSEKSEQQNAKSRSSDHYGHVLDSSDNQVEFFVNSSGRSDGEADDDDDYQSDFAQSYAQGNDYYGAINLDEV DHI
YGSHEAHDVGVKIEPNISGFPPDQDLDSLNTETIDKTRQQENGWNDVKEGSPPCEESFEPEVDFESDGLLWLPPEPENE
EDEREAVLSDDDGDGDRGDWGYLRPSNSFNEKDFHSDKSSGAMKNVVEGHFRALVAQLLEV DNLPMVNEGDEEGWLD
I
ITSLSWEAATLLKPDTSKSGGMDPGGYVKVKCIPCGRRSESMVVKG VVCKKNVAHRRMTSKIEKPRLLILGGALEYQRIS
NQLSSFD TLLQQEMDHLKMAVAKIDSHNP DILLVEKSVSRFAQEYLLAKDISLV LNIKRSLLERISRCTGAQIVPSIDQL
TSPKLG YCDLFHVEK FVETHVSPCQVAKKMAKTLMFFDGC PKPLGCTILLKGAHEDELKKVKHVIQYGVFAAYHLAETS
FLADEGASIH ELPQTPTVALPDKPSMVNRSISTIPGFTVSSAEKSPTTELRGEPHKANGDLTGNFTSSKTHFQGKLDG
NDRIDP SERLLHNLDTVYCKPPETITSKDDGLVPTLESRQLSFHVEEPSVQKDQWSVLSGATEQVTDGGYTND SAVIGNQ
NFNREQE QMESSKGFHPSASDHQSILVSLSTRCVWKGSV CERAHLLRIKYYGSFDKPLGRFLRDNLFDQDCCP SCTMPA
EAHIHCYTHRQGS LTISVKKLPELLPGQREGKIWMWHRCLKCPRINGFP PATRIVMSDAAWGLSFGKFLELSFSNHAAA
SRVANCGHSLHRDCLRFYGFGRMVACFRYASINIYAVTLPPAKLYFN YENQEWLQESKEVIKKA EVLFNEVQEALSQIS
AKTMGAGSKGSTPNKIKLSLEELAGLLEQRKKEYKQMLNVVKD GQPTIDILLINKLRRLIIFDSYAWDECLAG AANMVRN
NYLEAPKNSAPKVMGRNVSLEKLSDEKVKSIPTHVAICNDSLLQDADYETCLNQGKS FADTSGKFAIPEDVGS DRPPDCR
MEFDPSEGGKDNFVESSQVVKPAHTESQFQATDLSDTLDA AWIGEQTTSENGIFRPPSRAASTNGTQIPDLRLLGSESEL
NFKGGPTNDEHTTQVQLPSPSFYYSLNKNYSLNSRKHIMAEDRPVYVSSYRELEWRSGARLLLPLGCNDLVLPVYDDEPT
SIIAYALTSSEYKAQMSGSDKSRDRLDSGGSFSLFDSVNLLSLNSLSDLSVDMRSRLSSADEQVSQLLHSSLYLKDLHAR
ISFTDEGPPGKVYKSVTCYYAKEFEALRMICCPSETDFIRSLGRCRKWGAQGGKSNVFFAKSLDDRFFIKQVTKTELESF
IKFGPAYFKYLTESISTKSPTSLAKILGIYQVSSKHLKGGKEFKMDVLVMENLLFKRNFTRL YDLKGSTRARYNPDTSGS
NTVLLDQNLVEAMPTSPIFVGSKAKRLLERAVWNDTSFLASIHVMDYSLLVGVDEERNELVLGIIDFMRQYTWDKHLETW
VKTSGLLGGPKNSTPTVISPPQQYKKRFRKAMTAYFLMVPDQWSPA AVVPSNSSSAEVKEEEEKDNPPQAVGNKS
>NP_001078484.4 1-phosphatidylinositol-3-phosphate 5-kinase FAB1A [Arabidopsis thaliana]
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 TSLSWEAATLLKPDTSKSGGMDPGGYVKVKCIPCGRRSESMVVKGVVCKKNVAHRRMTSKIEKPRLLILGGALEYQRISN
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 DRIDPSE RLLHNLDTVYCKPPETITSKDDGLVPTLESRQLSFHVEEPSVQKDQWSVLSGATEQVTDGGYTND SAVIGNQN
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 AHIHCYTHRQGS LTISVKKLPELLPGQREGKIWMWHRCLKCPRINGFP PATRRIVMSDAAWGLSFGKFLELSFSNHAAAS
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 VRNNYLEAPKNSAPKVMGRNVSLEKLSDEKVKSIPTHVAICNDSLQDADYETCLNQGKSFADTSGKFAIPEDVGS DRPP
 DCRMEFDPSEGGKDNFVESSQVVKPAHTESQFQATDLSDTLDAAWIGEQTTSENGIFRPPSRAASTNGTQIPDLRLLGSE
 SELNFKGGPTNDEHTTQVQLPSPSFYYSLNKNYSLSNRKHIMAEDRPVYVSSYRELEWRS GARLLLPLGCNDLVLPVYDD
 EPTSIIAYALTSSEYKAQMSGSDKSRDRLDSGGSFSLFDSVNLLSLNSLSDLSVDMRSRLSSADEQVSQLLHSSLYL KDL
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 ESFIKFGPAYFKYLTESISTKSPTSLAKILGIYQVSSKHLKGGKEFKMDVLVMENLLFKRNFTRL YDLKGSTRARYNPDT
 SGSNTVLLDQNLVEAMPTSPIFVGSKAKRLLERAVWNDTSFLASIHVMDYSLLVGVDEERNELVLGIIDFMRQYTWDKHL
 ETWVKTSGLLGGPKNSTPTVISPPQYKKRFRKAMTAYFLMVPDQWSPA AVVPSNSSSAEVKEEEEKDNPPQAVGNKS
 >NP_001328749.1 1-phosphatidylinositol-3-phosphate 5-kinase FAB1A [Arabidopsis thaliana]
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 EDEREAVLSDDDGDGDRGDWGYLRPSNSFNEKDFHSDKSSGAMKNVVEGHFRALVAQLLEVDNLPMVNEGDEEGWLD
 I
 ITSLSWEAATLLKPDTSKSGGMDPGGYVKVKCIPCGRRSESMVVKGVVCKKNVAHRRMTSKIEKPRLLILGGALEYQRIS
 NQLSSFDTLQEQEMDHLKMAVAKIDSHNPDILLVEKSVSRFAQEYLLAKDISLVNLIKRSLLERISRCTGAQIVPSIDQL
 TSPKLG YCDLFHVEK FVETHVSPCQVAKKMAKTLMFFDGC PKPLGCTILLKGAHEDELKKVKHVIQYGVFAAYHLALETSE
 FLADEGASIHPLQTPITVALPDKPSMVNRSISTIPGFTVSSAEKSPTTELRGEPHKANGDLTGNFTSSKTHFQ GKLDG
 NDRIDPSE RLLHNLDTVYCKPPETITSKDDGLVPTLESRQLSFHVEEPSVQKDQWSVLSGATEQVTDGGYTND SAVIGNQ
 NFNRQEQMESSKGDFHPSASDHQSILVSLSTRCVWKGVCERAHLLRIKYYGSFDKPLGRFLRDNLFDDQDQCCPSCTMPA
 EAHIIHCYTHRQGS LTISVKKLPELLPGQREGKIWMWHRCLKCPRINGFP PATRRIVMSDAAWGLSFGKFLELSFSNHAAA

SRVANCGHSLHRDCLRFYGFGRMVACFRYASINIYAVTLPPAKLYFNENQEWLQKESKEVIKKAEVLFNEVQEALSQIS
AKTMGAGSKGSTPNKIKLSLEELAGLLEQRKKEYKDSLQQMLNVVKDGQPTIDILLINKLRRLIIFDSYAWDECLAGAN
MVRNNYLEAPKNSAPKVMGRNVSLEKLSDEKVKSIPTHTVAICNDSLLQDADYETCLNQESSQVVKPAHTESQFQATDLSD
TLDAAWIGEQTTSENGIFRPPSRAASTNGTQIPDLRLLGSESELNFKGGPTNDEHTTQVQLPSPSFYYSLNKNYSLNSRK
HIMAEDRPVYVSSYRELEWRSGARLLLPLGCNDLVLPVYDDEPTSIIAYALTSSEYKAQMSGSDKSRDRLDSGGSFSLFD
SVNLLSLNSLSDLSVDMRSRLSSADEQVSQQLHSSLYLKDLHARISFTDEGPPGKVKYSVTCYYAKEFEALRMICCPSET
DFIRSLGRCRKWGAQGGKSNVFFAKSLDDRFIIKQVTKTELESFIKFGPAYFKYLTESISTKSPTSLAKILGIYQVSSKH
LKGGKEFKMDVLVMENLLFKRNFTRLYDLKGSTRARYNPDTSGSNTVLLDQNLVEAMPTSPIFVGSKAKRLLERAVWNDT
SFLASIHVMDYSLLVGVDEERNELVLGIIDFMRQYTWDKHLETWVKTSGLLGPKNSTPTVISPQQYKKRFRKAMTAYFL
MVPDQWSPAADVPSNSSSAEVKEEEEKDNPAVGNKS

>NP_564103.1 RING/FYVE/PHD zinc finger superfamily protein [Arabidopsis thaliana]

MQQGDYNSYYHHQYSQFQNPPTNPNNPNSPPAPATVAGPTDLTRNTYASAPPFTGGYGSADYSNYSQNYTPYGQNSEH
VPPSAPSFTSPSQPPSPPATSLNPNSYSTFNQPPPPPTIHPQLSSYGSFSDSTAPYQQPTSQHMYSPYDQHQTSGYSS
APPPSSAPAPNPNPAPYSSSLYSAPPYSSGGSSIPPSYEKPSVKFDQSGYDGYNRSRSDLGSDLYGKRSDSGEYPAFEDS
YGDGVYAYQGGKVEPYGSRGTAPKSSNSTLFDYGRSISFSSSGRDSSVSSNSAKIVRAVPKADVQEDSTGGVQKFRVKL
LAETYGQTTTDLVLCQIGLDGLRMLDPSTSRTLRIYPLENITRCEKLDSSILAFWSKTPVDIEAKRIRLQSNSYTTNTLLD
TVTAAMFQAKEIGGSSRPPTSGKLIETAEKKKGLGDWMNIIKPVNEEKDHWVPDEAVSKCTSCGSDFGAFIRRHHCRC
GDVFCDKCTQGRIALTAEDNAPQVRVCDRCMAEVSQRLSNAKETTGRNVSLQSHEDLARKLQEEMERNRKSSSGLREGSG
RRMKEVACPTCTVHLQVQVPVSGSETIECGVCQNPFLVSAH

>NP_001319548.1 phosphatidylinositol-4-phosphate 5-kinase family protein [Arabidopsis thaliana]

MGTRDSNNRTFSEIVGLIKSWLPWRSEPATVSRDFWMPDQSCRVCYECDCQFTLINRRHHCRHCGRVFCGKCTANSIPFA
PSDLRTPREDWERIRVCNYCFRQWEQGDGGPHVSNITELSTSPSETSLSSKTSTTANSSSFALGSMPLIGLNQRVHHG
SDVSLHGVSSMETSVTKQGKETSRRSSFIATDVEDPSRFALNSIRSDDEYDEYGAYQTDIETSHSPRANEYYGPMYNGM
GIDDVPCKHLGGETADQKSLSGSPLIHQCLESIREGSEQFQKKSEHDGRDECEASSPADISDDQVVEPVDFENGLLWV
PPEPENEEDERESALFDEEDNEGDAERGEWGYLRPSTSFSGSGEYRGEDRTTEEHKKAMKNVVDGHFRALLAQLLQVENISV
SDEEGKESWLEIITSLSWEAANLLKPDMSKSGGMDPGGYVKVKCLASGRHDSMVVKGVVCKKNVVRMRMSTKIEKARLL
ILGGGLEIYQRVSNQLSSFDTLQKEKDHLKMAVAKIHAERPNIILVEKSVSRFAQEYLLAKDISLVNLIKRPILLDRIARC
TGAQIIPSDHLSSQKLGYCENFRVDRYPEEHGSTGQVGKKVVKTLMYFEHCPKPLGFTILLRGANEDELKKVKHVQYQG
VFAAYHLALETSLADEGASPELPLNSPITVALPKDSTSIERSISTVPGFTVSTYEKSPTMLSCAEPQRANSVPVSELLS
TTTNLSIQKDIPPIPYGSGWQAREINPSFVFSRHNLNLPDRVIESRNSDLSGRSVVPDTPADKSNPIVVADETTNNSL
HLSGQGFVRKSSQIGTSIMVENQDNGSELTAQQQNNEKPKETQSQKEEFPPSPSDHQSLVSLSSRSVWKGTVCERSHL
FRIKYYGSFDKPLGRFLRDHLFDQSYRCRSCEMPSEAHVHCYTHRQGSALTISVKKLQDYLLPGEKEGKIWMWHRCLRCPR
LNGFPATLRVVMSDAAWGLSFGKFLSFSNHAASRVACCGHSLHRDCLRFYGFGRMVACFRYATIDVHSVYLPPSIL

SFNYENQDWIQRETDEVIERAELLFSEVLNAISQIAEKGFRRRIGELEEVLQKEKAEFEENMQKILHREVNNEGQPLVDIL
 ELYRIHRQLLFQSYMWDHRLINASTLHKLENSDDTKREENEKPLAKSQTLPENAGTNSLLTGSEVNLNPDGDSTGDTG
 SLNNVQKEADTNSDLYQEKDDGGEVSPSKTLPDTSYPLENKVDVRRRTQSDGQIVMKNLSATLDAAWIGERQTSVEIPTNN
 KVSLLPSTMSNSSTFPPISEGLMPIDLPEQQNEFKVAYPVSPALPSKNYENSEDSVSWLSVPFLNFYRSINKNFLSSQK
 LDTFGEHSPIYISSFREAEQGGPRLLLPVGLNDIVVPVYDDEPTSMIAAYALMSPEYQRQTSAEGESLSYPSSELNIPRP
 VDDTIFDPSRSNGSVDESILSISSSRSTSLLDPLSYTKALHARVSYGEDGTLGKVKYTVTCYYAKRFEALRGICLPSELE
 YIRSLRCKKWGAQGGKSNVFFAKTLDDRFIKQVTKTELESFIKFAPAYFKYLSEISSTKSPTCLAKILGIYQVATKQL
 KSGKETKMDVLIMENLLFGRTVKRLYDLKGSSRARYNPDSGSGSNKVLLDQNLIEAMPTSPIFVGNAKAKRLLERAVWNTA
 FLALGDVMDYSLLVGVDEEKNELVLGIIDFLRQYTWDKHLESWKFTGILGGPKNEAPTVISPKQYKRRFRKAMTTYFLM
 VPDQWSPPNVVANNSKSDQPEETSQAGTQAE

>NP_001328535.1 Regulator of chromosome condensation (RCC1) family protein [Arabidopsis thaliana]

MKTDGMADPSSYVNHDRDIDQALVSLKKGTTQLLKYSRKGRPKFRSFRSLPDETTLFWLSHGEEKGLKLATVSRILPGQRT
 AVFRRYLREPKDYLSFSLIYHNGDRSLDLICKDKAETEVWFAGLKSIRQNRNKQAKSEIPEIHSDCFSTGRPSTASID
 FAPNNTRRGRTSIDLGIQNSPTKFGSSDVGYERGNMLRPSTDGFRISVSSTPSCSTGTSGPDDIESLGDVYVWGEVWSDG
 ISPDGVVNSTTVKIDVLIPKPLESNVVLVDVHQIACGVRHIALVTRQGEVFTWEEEAGGRLGHGIQVDVCRPKLVEFLALT
 NIDFVACGEYHTCAVSTSGDLFTWGDGIHNVGLLGHGSDLSHWIPKRVS GPVEGLQVLSVACGTWHSALATANGKLFTFG
 DGAFGVLGHGDRESVSYPKVKMLSGLTKLVACGVWHTVAIVEVMNQTGTSTSSRKLFTWGDGDKNRLGHGNKETYLL
 P

TCVSSLIDYNFNQIACGHTFTVALTTSGHVFTMGGTSHGQLGSSNSDGKLPCLVQDRLVGEFVEEISCGDHHVAVLTSRS
 EVFTWKGKSGNRLGHGDKDDRKTPTLVEALRERHVKSISCGSNFTSSICIKWVSGADQSVCSGCRQAFGFTRKRHNCYN
 CGLVHCHACSSKKALKALAPTGPKPHRVCDACYTKLKAGESGYNSNVANRNSTTPTRSLDGTGRPDRDIRSSRILLSPK
 TEPVKYSEVRSSRSESSIVRASQVPALQQLRDVAFPSLSAIQNAFKPVASSSTSTLPSGTRSSRISPPRSSGFSRGM
 DTLKKSNGVINKEMTKLQSQIKNLKEKCDNQGTEIQRLKKTAREASDLAVKHSSKHKAATEVMKSVAEHLRELKEKLPE
 VSRCEAFESMNSQAEAYLNASEASESCLPTTSLGMGQRDPTPTNTQDQNIIEKQSSNGGNMRSQEPSGTTEASSSSKGG
 GKELIEQFEPGVYVTVLHKNGGKIFRRVRFSKRRFDEHQAEEWWNSKKDRLLKRYSHHASSSSPTASDSVPTPTQPQP
 ASDSVPTPTQPQPASDSVPTPTQPQPASPTQPNSDQAEDSKEVLDES

>NP_001328536.1 Regulator of chromosome condensation (RCC1) family protein [Arabidopsis thaliana]

MKTDGMADPSSYVNHDRDIDQALVSLKKGTTQLLKYSRKGRPKFRSFRSLPDETTLFWLSHGEEKGLKLATVSRILPGQRT
 AVFRRYLREPKDYLSFSLIYHNGDRSLDLICKDKAETEVWFAGLKSIRQNRNKQAKSEIPEVSIHSDCFSTGRPSTAS
 IDFAPNNTRRGRTSIDLGIQNSPTKFGSSDVGYERGNMLRPSTDGFRISVSSTPSCSTGTSGPDDIESLGDVYVWGEVWS
 DGISPDGVVNSTTVKIDVLIPKPLESNVVLVDVHQIACGVRHIALVTRQGEVFTWEEEAGGRLGHGIQVDVCRPKLVEFLA
 LTNIDFVACGEYHTCAVSTSGDLFTWGDGIHNVGLLGHGSDLSHWIPKRVS GPVEGLQVLSVACGTWHSALATANGKLFT

FGDGAFGVLGHGDRESVSYPKVKMLSGLKTLKVACGVWHTVAIVEVMNQGTGTSTSSRKLFTWGDGDKNRLGHGNKETY
L

LPTCVSSLIDYNFNQIACGHTFTVALTTSGHVFTMGGTSHGQLGSSNSDGKLPCLVQDRLVGEFVEEISCGDHHVAVLTS
RSEVFTWVGKGSNGRLGHGDKDDRKTPTLVEALRERHVKSISCGSNFTSSICHKWVSGADQSVCSGCRQAFGFRKRHNC
YNCGLVHCHACSSKKALKAALAPTPGKPHRVCDACYTKLKAGESGYNSNVANRNSTTPTRSLDGTGRPDRDIRSSRILLS
PKTEPVKYSEVRSSRSSESSIVRASQVPALQQLRDVAFPSLSAIQNAFKPVASSSTSTLPSGTRSSRISPPRSSGFSRG
MIDTLKKSNGVINKEMTKLQSQIKNLKEKCDNQGTETIQLKKTAREASDLAVKHSSKHKAATEVMKSVAEHLRELKEKLP
PEVSRCEAFESMNSQAEAYLNASEASESCLPTTSLGMGQRDPTSTNTQDQNIIEEKQSSNGGNMRSQEPSGTTEASSSSK
GGGKELIEQFEPGVYVITYVLHKNGGKIFRRVRFSKRRFDEHQAEEWWNSKKDRLLKRYSHHASSSSPTASDSVPTPTQPQ
PPASDSVPTPTQPQPPASDSVPTPTQPQPPASPTQPNSDQAEDSKEVLDES

>NP_001154232.2 Regulator of chromosome condensation (RCC1) family protein [Arabidopsis thaliana]

MKTDGMADPSSYVNHDRDIDQALVSLKKGTLQLKYSRKGRPKFRSFRSLSPDETTLFWLSHGEEKGLKLATVSRILPGQRT
AVFRRYL RPEKDYLSFSLIYHNGDRSLDLICKDKAETEVWFAGLKSIRQNRNKQAKSEIPEVSIHSDCFSTGRPSTAS
IDFAPNNTRRGRTSIDLGIQNSPTKFGSSDVGYERGNMLRPSTDGFRISVSSTPSCSTGTSGPDDIESLGDVYVWGEVWS
DGISPDGVVNSTTVKIDVLIPKPLESNVVDVHQIACGVRHIALVTRQGEVFTWEEEAAGRLGHGIQVDVCRPKLVEFLA
LTNIDFVACGEYHTCAVSTSGDLFTWGDGIHNVGLLGHGSDLSHWIPKRVSGPVEGLQVLSVACGTWHSALATANGKLFT
FGDGAFGVLGHGDRESVSYPKVKMLSGLKTLKVACGVWHTVAIVEVMNQGTGTSTSSRKLFTWGDGDKNRLGHGNKETY
L

LPTCVSSLIDYNFNQIACGHTFTVALTTSGHVFTMGGTSHGQLGSSNSDGKLPCLVQDRLVGEFVEEISCGDHHVAVLTS
RSEVFTWVGKGSNGRLGHGDKDDRKTPTLVEALRERHVKSISCGSNFTSSICHKWVSGADQSVCSGCRQAFGFRKRHNC
YNCGLVHCHACSSKKALKAALAPTPGKPHRVCDACYTKLKAGESGYNSNVANRNSTTPTRSLDGTGRPDRDIRSSRILLS
PKTEPVKYSEVRSSRSSESSIVRASQVPALQQLRDVAFPSLSAIQNAFKPVASSSTSTLPSGTRSSRISPPRSSGFSRG
MIDTLKKSNGVINKEMTKLQSQIKNLKEKCDNQGTETIQLKKTAREASDLAVKHSSKHKAATEVMKSVAEHLRELKEKLP
PEVSRCEAFESMNSQAEAYLNASEASESCLPTTSLGMGQRDPTSTNTQDQNIIEEKQSSNGGNMRSQEPSGTTEASSSSK
GGGKELIEQFEPGVYVITYVLHKNGGKIFRRVRFSFFVANGDLSIKQKNGGIKIGCLRGIVIMLHHRVQRLLIQFQHQ
LNLNHQLLIQFLHQLNLNHQLLIQFLHQLNLNHQLLLHNRIKQRIQKKFLMKASHHVYNSSLAK

>NP_001328534.1 Regulator of chromosome condensation (RCC1) family protein [Arabidopsis thaliana]

MADPSSYVNHDRDIDQALVSLKKGTLQLKYSRKGRPKFRSFRSLSPDETTLFWLSHGEEKGLKLATVSRILPGQRTAVFRR
YL RPEKDYLSFSLIYHNGDRSLDLICKDKAETEVWFAGLKSIRQNRNKQAKSEIPEIHDSDCFSTGRPSTASIDFAPNN
TRRGRTSIDLGIQNSPTKFGSSDVGYERGNMLRPSTDGFRISVSSTPSCSTGTSGPDDIESLGDVYVWGEVWSDGISPDG
VVNSTTVKIDVLIPKPLESNVVDVHQIACGVRHIALVTRQGEVFTWEEEAAGRLGHGIQVDVCRPKLVEFLALTNIDFV
ACGEYHTCAVSTSGDLFTWGDGIHNVGLLGHGSDLSHWIPKRVSGPVEGLQVLSVACGTWHSALATANGKLFTFGDGAFG
VLGHGDRESVSYPKVKMLSGLKTLKVACGVWHTVAIVEVMNQGTGTSTSSRKLFTWGDGDKNRLGHGNKETYLLPTCVSS

LIDYNFNQIACGHTFTVALTTSGHVFTMGGTSHGQLGSSNSDGKLPCLVQDRLVGEFVEEISCGDHHVAVLTSRSEVFTW
GKGSNGRLGHGDKDDRKTPTLVEALRERHVKSISCGSNFTSSICHKWVSGADQSVCSGCRQAFGFTRKRHNHCYNCLVH
CHACSSKKALKALAPTPGKPHRVCDACYTKLKAGESGYNSNVANRNSTTPTRSLDGTGRPDRDIRSSRILLSPKTEPVK
YSEVRSSRSESSIVRASQVPALQQLRDVAFPSLSAIQNAFKPVASSSTLPSGTRSSRISSPPRSSGFSRGMIDTLKK
SNGVINKEMTKLQSQIKNLKEKCDNQGTEIQRLKKTAREASDLAVKHSSKHKAATEVMKSVAEHLRELKEKLPPEVSRCE
AFESMNSQAEAYLNASEASESCLPTTSLGMGQRDPTPTSTNTQDQNIIEKQSSNGGNMRSQEPSGTTEASSSSKGGGKELI
EQFEPGVYVITYVLHKNNGGKIFRRVRFSKRRFDEHQAEEWWNSKKDRLLKRYSHHASSSSPTASDSVPTPTQPQPPASDSV
PTPTQPQPPASDSVPTPTQPQPPASPTQPNSDQAEDSKEVLDES

>NP_001327882.1 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MADPASCYIYHERDVDQALVVLKKGTTQLLKYSRKGGPKFRAFRLSPDEKTLIWFSRGEEKGLKLFEVSRIVPGQRTAVFK
RFLRPEKDHLSFSLLYNNRERSLDLICKDKAETEVWFAALKFLIEKSRNRRARSEIPEIHDSDTFSVGRQSIDFVPSNIP
RGRTSIDLGYQNNSDVGYERGNMLRPSTDGFRISVSSTPSCSSGGSGPDDIESLGDVYVWGEVWTEGILPDGTASNETVK
TDVLTTPRPLESNVVLDVHQIVCGVRHVALVTRQGEVFTWGEEVGGRLGHGIQVDIRPKLVEFLALTNIDFVACGEYHTC
VVSTSGDLFSWGDGIHNVGLLGHGSDISHWIPKRVSGPLEGLQVLSVACGTWHSALATANGKLFTFGDGAFGVLGHGNRE
SVSYYPKEVQSLNGLKTVKVACSIWHTAAIVEVMGQTATSMSSRKLFTWGDGDKNRLGHGNKETYLLPTCVSSLIDYNFHK
IACGHTFTVALTTSGHVFTMGGTAHGQLGNSISDGKLPCLVQDRLVGEFVEEIIACGAHHVAVLTSRSEVFTWGKGANGRL
GHGDTEDKRTPTLVEALRDRHVKSLSGCSNFTSSICHKWVSGADQSICSGCRQAFGFTRKRHNHCYNCLVHCHACSSKK
ALKAALAPTPGKPHRVCDACYSKLKAESGYSSNVNRNVATPGRSIDGSVRTDRETTSSKVLSSANKNSVMSSSRPGFT
PESSNARASQVPSLQQLKDIAFPSSLSAIQNAFKPVVAPTTPPRTLVI GPSSPSPPPPPRSSSPYARRPSPPRTS GF SR
SVIDSLRKTNEVMNQEMTKLHSQVKNLKQRCNNQGTEIERFQKA AKDASELAARQSSKHKAATEALKSVAEQLKELKEKL
PPEVSESEAFESINSQAEAYLNANKVSETSPLTTSGQE QETYQKTEEQVPSNSSITETSSSSRAPSTEASSSRISGKESK
EQFEPGVYVITYEVD MNGNKIFRRVRFSKKRFDEHQAEDWWTKNKDRLLKCYSSNSSSSSSSSNPTASDSPVAPQPPSDPS
VPEQSNEKEPDSET

>NP_188968.1 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MADPASCYIYHERDVDQALVVLKKGTTQLLKYSRKGGPKFRAFRLSPDEKTLIWFSRGEEKGLKLFEVSRIVPGQRTTRFLR
PEKDHLSFSLLYNNRERSLDLICKDKAETEVWFAALKFLIEKSRNRRARSEIPEIHDSDTFSVGRQSIDFVPSNIPRGRT
SIDLGYQNNSDVGYERGNMLRPSTDGFRISVSSTPSCSSGGSGPDDIESLGDVYVWGEVWTEGILPDGTASNETVKTDVL
TPRPLESNVVLDVHQIVCGVRHVALVTRQGEVFTWGEEVGGRLGHGIQVDIRPKLVEFLALTNIDFVACGEYHTCVVST
SGDLFSWGDGIHNVGLLGHGSDISHWIPKRVSGPLEGLQVLSVACGTWHSALATANGKLFTFGDGAFGVLGHGNRESVSY
PKEVQSLNGLKTVKVACSIWHTAAIVEVMGQTATSMSSRKLFTWGDGDKNRLGHGNKETYLLPTCVSSLIDYNFHKIACG
HTFTVALTTSGHVFTMGGTAHGQLGNSISDGKLPCLVQDRLVGEFVEEIIACGAHHVAVLTSRSEVFTWGKGANGRLGHGD

TEDKRTPTLVEALRDRHVKSLSGCSNFTSSICHHKWVSGADQSICSGCRQAFGFTRKRHNCYNCGLVHCHACSSKKALKALAPTGPVKPHRVCDACYSKLKAESGYSSNVNRNVATPGRSIDGSVRTDRETTSSKVLLSANKNSVMSSSRPGFTPESSNARASQVPSLQQLKDIAFPSSLSAIQNAFKPVVAPTTTTPPRTLVI GPSSSPPPPPRSSSPYARRPSPPRTSGFSRSVIDSLRKTNEVMNQEMTKLHSQQRCNNQGTEIERFQKAAKDA SELAARQSSKHKAATEALKSVAEQLKELKEKLPPEVSESEAFESINSQAEAYLNANKVSETSPLTTSGQE QETYQKTEEQVPSNSSITETSSSSRAPSTEASSSRISGKESKEQFEPGVYV TYEVDMNGNKIFRRVRFSKKRFDEHQAEDWWTKNKDRLLKCYSSNSSSSSSSSSNPTASDSPVAPQPPSDPSVPEQSNEKE PDSET

>NP_001318728.1 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MADLVSYGNVVRDIEQALIALKKGAQLLKYGRKGKPKFCPFRLSNDETSLIWISNGGEKRLKLATVSKIVPGQRTAVFQRYLRPKDYLSFSLIYSNRKRTLDLICKDKVEAEVWIAGLKALISGQAGRSKIDGWSDGGLSIADSRDLTLSSPTNSSVCA SRDFNIADSPYNSTNFPRTSRTENS SVSSERSHVASDSPNMLVRGTGSDAFRVS SVSSVQSSSSHGSAPDDCDALGDVYIWGEVLCENVTKFGADKNIGYLGSRSDVLIPKPLESNVVDVHHIACGVKHAALVSRQGEVFTWGEASGGRLGHGMGKDVTGPQLIESLAATSIDFVACGEFHTCAVTMTGEIYTWGDGTHNAGLLGHGTDVSHWIPKRISGPLEGLQIASVSCGPWHTALITSTGQLFTFGDGTFGVLGHGDKETVFYPREVESLSGLRTIAVACGVWHAAAIVEVIVTHSSSSVSSGKLFTWGDGDKSRLGHGDKEPRLKPTCVSALIDHTFHRVACGHSLTVGLTTS GKVYTMGSTVYGQLGNPNADGKL PCLVEDKLT KDCVEE IACGAYHVAVLTSRNEVFTWKGKANGRLGHG DVEDRKAPTLVDALKERHVKN IACGSNFTAICLHKWVSGTEQSQC SACRQAFGFTRKRHNCYNCGLVHCHSCSSKKSLKAALAPNPGKPYRVCD SCHSKLSKVSEANIDS RKNVMPRLSGENKDR LDKTEIRLAKSGIPSNIDLIKQLDNRAARQGKKADTFSLVRTSQTPLTQLKDALTNVADLRRGPPKPAVTPSSSRPVSPFSRRSSPPRSVTPIPLNVGLGFSTSI AESLKKTNELLNQEVVRLRAQAESLRHRCEVQEF EVQKSVKKVQEAMSLAAEESAKSEAAKEV IKS LTAQVKDIAALLPPGAYEAETTRTANLLNGFEQNGFHFTNANGQRQSRSDSMSDTSLASPLAMPARSMNGLWRNSQS PRNTDASMGELLSEGVRISNGFSEDGRNSRSSAASASNASQVEAEWIEQYEPGVYITLLALGDGTRDLKRVFRSRRRFRE QQAETWWSENRRERVYEKYNIRGTDRSSVATSPISQSQF

>NP_568268.3 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MSRNGRMASDLSRAGPVERDIEQAIALKKGAYLLKYGRRGKPKFCPFRLSNDETVLIWFSGNEEKHLKLSHVSRISGQRTPIFQRYPRPEKEYQSFSLIYSERSLDVICKDKDEAEVWFTGLKALISHCHQRNRRTESRSDGTPSEANSPTYTRSSPLHSPFSSNDLQKDGSNHLRIHSPFESPPKNGLDKAFSDMALYAVPPKGFYPSDSATISVHSGGSDSMHGHMRGMGMDA FRVSMSSAVSSSSHGSGHDDGDALGDVFIWGEIGEGVLGGGNRRVGSSFDIKMDSLLPKALESTIVLDVQNIACGGQHAVLVTKQGESFSWGEESEGR LGHGVD SNIQQPKLIDALNTTNIELVACGEFHSCAVTLSGDLYTWGKGDFGV LGHGNEVSHWVPKRNVNLFLEGIHVSSIACGPYHTAVVTSAGQLFTFGDGTFGVLGHGDKKS VFIPREVDSLKGLRTVRAACGVWHTAAVVEVMVGSSSSSSNCSSGKLFTWGDGDKGRLGHGNKEPKLVPTCVAALVEPNFCQVACGHSLTVALTTSGHVYTMGSPVYGG LGNSHADGKTPNRVEGKLHKS FVEE IACGAYHVAVLTSRTEVYTWGKGSNGRLGHGDVDDRNSPTLVESLKDKQVKS IAC

GTNFTAAVCIHRWASGMDQSMCSGCRQPFSSFKRKRHNCYNCGLVFCHSCTSKKSLKACMAPNPKNKPYRVCDKCFNKLKKT
METDPSSHSSLSRRGSINQGS DPIDKDDKFDSRSDGQLARFSLMESMRQVDSRHKKNNKKYEFNSSRVSPIPSGSSQRGAL
NIAKSFNPVFGASKKFFSASVPGSRIVSRATSPISRRPSPRSTTPTPTLSGLATPKFVVDDTKRTNDNLSQEVVKLRSQ
VESLTRKAQLQEVELERTTKQLKEALAITNEETTRCKAAKEVIKSLTAQLKDMAERLPVGSARTVKSPPSLNSFGSSPGR
IDPFNILNQANSQESEPNGITTPMFSNGTMTPAFGNGEATNEARNEKEWVEQDEPGVYITLTALAGGARDLKRVRFSRKR
FSEIQAEQWWADNRGRVYEQYNVRMVDKASEDLPR

>NP_001322526.1 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MADSLRTSFSERDVEQAITSLLKKGSYLLKYGRRGKPKFCPFQLTSDDESALVWYSGKEEKQIKLSQVLRIVPGQRTPTFKR
YPRPEKEYQSFSLICPDRSLDLICKDKDEAEVWVVGKSLITRVKVS KWKTTIKPEITSAECPTPHARRVSPFVTILDQV
IQPSNETSTQTRLGKVFS DIVAITAPPSNNNQTEASGNLFCPFSPTPANVENS NLRFSTNDPFRSLSSAVSTSSHGSYH
EDFDALGDVFWGESISDGVLSGTGNSLNSTTEDALLPKALESTIVLDAQNIACGKCHAVLVTKQGEIFSWGEGKGGKLG
HGLETDAQKPKFISSVRGLGFKSLACGDFHTCAITQSGDLYSWG DGT HNVDLLGHGNESSCWIPKRVTGDLQGLYVSDVA
CGPWHTAVVASSGQLFTFGDGTFGALGHGDRRSTSVPREVESLIGLIVTKVACGVWHTAAVVEVTNEASEAEVDSSRGQV
FTWGDGEKQQLGHGDNDTKLLPECVISLTNENICQVACGHSLTVSRTSRGHVYTMGSTAYGQLGNPTAKGNFPERVEGDI
VEASVEEIACGSYHVAVLTSKSEIYTWGKGLNGQLGHGNVENKREPAVVGFLREKQVKAITCGSNFTAVICVHKWVPGSE
HSLCAGCRNPFNFRKRHNCYNCGLVFCKVCSSRKSLRAALAPDMNKPYRV CYGCFTKLKKSRESSPSTPTSRTKLLNM
RKSTDVSE RDSL TQKFLSVNARLSSADSSLHYSERRHRRDLKPEVNNSNVFPSMNGSLQPVGSPFSKGSTALPKIPKNM
MVKIPGSGMSSRTTSPVSVKSTSPRRSYEVA AAESKQLKDSFNQDMAGLKEQVEQLASKAHQLEEELEKTKRQLKVVTAM
AADEAEENRSAKEVIRSLTTQLKEMAEKQSQKDSISTNSKHTDKEKSETVTQTSNQTHIRSMVSQDSQNENNLTSKSFAN
GHRKQNDKPEKVVQDEPGVYLTLLSLPGGGTELKRVFRSRKQFTEEQAEKWWGENGAKVCERHNILVS

>NP_177129.2 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MCILELRLFAAASMADSLRTSFSERDVEQAITSLLKKGSYLLKYGRRGKPKFCPFQLTSDDESALVWYSGKEEKQIKLSQVL
RIVPGQRTPTFKRYPRPEKEYQSFSLICPDRSLDLICKDKDEAEVWVVGKSLITRVKVS KWKTTIKPEITSAECPTPHA
RRVSPFVTILDQVIQPSNETSTQTRLGKVFS DIVAITAPPSNNNQTEASGNLFCPFSPTPANVENS NLRFSTNDPFRSL
SSAVSTSSHGSYHEDFDALGDVFWGESISDGVLSGTGNSLNSTTEDALLPKALESTIVLDAQNIACGKCHAVLVTKQGE
IFSWGEGKGGKLGHGLETDAQKPKFISSVRGLGFKSLACGDFHTCAITQSGDLYSWG DGT HNVDLLGHGNESSCWIPKR
VTGDLQGLYVSDVACGPWHTAVVASSGQLFTFGDGTFGALGHGDRRSTSVPREVESLIGLIVTKVACGVWHTAAVVEVTNE
ASEAEVDSSRGQVFTWGDGEKQQLGHGDNDTKLLPECVISLTNENICQVACGHSLTVSRTSRGHVYTMGSTAYGQLGNPT
AKGNFPERVEGDIVEASVEEIACGSYHVAVLTSKSEIYTWGKGLNGQLGHGNVENKREPAVVGFLREKQVKAITCGSNFT
AVICVHKWVPGSEHSLCAGCRNPFNFRKRHNCYNCGLVFCKVCSSRKSLRAALAPDMNKPYRV CYGCFTKLKKSRESSP
STPTSRTKLLNMRKSTDVSE RDSL TQKFLSVNARLSSADSSLHYSERRHRRDLKPEVNNSNVFPSMNGSLQPVGSPFS

KGSTALPKIPKNMMVKIPGSGMSSRTTSPVSVKSTSPRRSYEVAAAESKQLKDSFNQDMAGLKEQVEQLASKAHQLEEL
EKTKRQLKVVTAMAADEAEENRSAKEVIRSLTTQLKEMAEKQSQKDSISTNSKHTDKEKSETVTQTSNQTHIRSMVSQDS
QNENLTSKSFANGHRKQNDKPEKVVQDEPGVYLTLLSLPGGGTELKRVRFSRKQFTEEQA EKWWGENGAKVCERHNILV
S

>NP_001190338.1 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MWSGFRDCTRNGRMTPSDLSRAGPVTRDIEQLKIELYSTFGVSKLDSSYILENKNALHAITALKKGAYLLKYGRRGKPKF
CPFRLSNDESVLWFSGKEEKHLKLSHVSRIISGQRTPIFQRYPRPEKEYQSFSLIYDERSLDLICKDKDEAEVWFSGLK
ALISRCHQRKWRTESRSDGTPSEANSPTYTRRSSPLHSPFSSNESFQKEGSNHLRLHSPYESPPKNGVDKAFSDMSLYA
VPPKGFPPPGSATMSVHSLSSGGSDTLHGMMKGMGMDAFRVSLSSAIISSSSHGSGHDDGDTLGDVFMWGEIGEGVLGGG
NHRVGSSLEIKMDSLLPKALESTIVLDVQNIACGGQHAVLVTKQGESFSWGESEGLRGHGVDSNVQHPKLIDALNTTNI
ELVACGEYHSCAVTLSGDLYTWGKGDFGILGHGNEVSHWVPKRVNFLMEGIHVSSIACGPYHTAVVTSAGQLFTFGDGT
FVGLGHGDRKSVFIPREVDLKLGLRTVRAACGVWHTAAVVEVMVGSSSSSNCSSGKLFTWGDGDKSRLGHGDKEPKLVPTC
VAALVEPNFCQVACGHSLTVALTTSGHVYTMGSPVYQGLGNPHADGKVPTRVDGKLHKSFVEEIIACGAYHVAVLTSRTEV
YTWGKGSGNRLGHGDADDRNSPTLVESLKDKQVKSIACGSNFTAACVCLHKWASGMDQSMCSGCRQPFNFKRKRHNCYNC
G

LVFCHSCSNKKSLKACMAPNPKNPYRVCDRCFNKLKKAMETDPSSHSSLSRRESVNQGSDAIDRDEKLDTRSDGQLARFS
LLEPMRQVDSRSKKNKKYEFNSSRVSPISGGSHRGS LNITKSFNPTFGSSKKFFSASVPGSRIASRATSPISRRPSPPR
STTPTPTLSGLTTPKIVVDDTKRSNDNLSQEVVMLRSQVENLTRKAQLQEVELERTTKQLKEALAIASEESARCKAAKEV
IKSLTAQLKDMAERLPVGSARTVKSPSLNSFGSSPDYAAPSSNTLNRPNRSRETDSDSLTTVPMFSNGTSTPVFDSGSYRQ
QANHAAEAINRISTRSEPRNENEVVEQDEPGVYITLTALAGGARDLKRVRFSRKRFSEKQAEWWAENRGRVYEQYN
VRIVVDKSSVGVGSED LGH

>NP_197443.3 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MSRNGRMTPSDLSRAGPVTRDIEQAITALKKGAYLLKYGRRGKPKFCPFRLSNDESVLWFSGKEEKHLKLSHVSRIISG
QRTPIFQRYPRPEKEYQSFSLIYDERSLDLICKDKDEAEVWFSGLKALISRCHQRKWRTESRSDGTPSEANSPTYTRRS
SPLHSPFSSNESFQKEGSNHLRLHSPYESPPKNGVDKAFSDMSLYAVPPKGFPPPGSATMSVHSLSSGGSDTLHGMMKGM
GMDAFRVSLSSAIISSSSHGSGHDDGDTLGDVFMWGEIGEGVLGGGNHRVGSSLEIKMDSLLPKALESTIVLDVQNIACG
GQHAVLVTKQGESFSWGESEGLRGHGVDSNVQHPKLIDALNTTNIELVACGEYHSCAVTLSGDLYTWGKGDFGILGHG
NEVSHWVPKRVNFLMEGIHVSSIACGPYHTAVVTSAGQLFTFGDGTFGVLGHGDRKSVFIPREVDLKLGLRTVRAACGVW
HTAAVVEVMVGSSSSSNCSSGKLFTWGDGDKSRLGHGDKEPKLVPTCVAALVEPNFCQVACGHSLTVALTTSGHVYTMGSP
VYQGLGNPHADGKVPTRVDGKLHKSFVEEIIACGAYHVAVLTSRTEVYTWGKGSGNRLGHGDADDRNSPTLVESLKDKQV
K

SIACGSNFTA AVCLHKWASGMDQSMCSGCRQPFNFKRKRHNCYNCGLVFCHSCSNKKSLKACMAPNPNKPYRVCDRCFNK
LKKAMETDPSSHSSLSRRESVNQGSDAIDRDEKLDTRSDGQLARFSLLEPMRQVDSRSKKNKKYEFNSSRVSPISGGSH
RGS LNITKSFNPTFGSSKKFFSASVPGSRIASRATSPISRRPSPPRSTTPTPTLSGLTTPKIVVDDTKRSNDNLSQEVVM
LRSQVENLTRKAQLQEVELERTTKQLKEALAIASEESARCKAAKEVIKSLTAQLKDMAERLPVGSARTVKSPSLNSFGSS
PDYAAPSSNTLNRPNRSRETDSDSLTTVPMFSNGTSTPVFDSGSYRQQANHA AEAINRISTRSESEPRNENEWVEQDEPG
VYITLTALAGGARDLKRVRFSRKRKFSEKQAEWWAENRGRVYEQYNVRIVVDKSSVGVGSED LGH

>NP_001330907.1 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MSRNGRMTPSDLSRAGPVTRDIEQAITALKKGAYLLKYGRRGKPKFCPFRLSNDES VLIWFSGKEEKHLKLSHVSRIISG
QRTPIFQRYPRPEKEYQSFS LIYDERSLDICKDKDEAEVWFSGLKALISRCHQRKWRTESRSDGTPSEANSRPTYTRRS
SPLHSPFSSNESFQKEGSNHLRLHSPYESPPKNGVDKAFSDMSLYAVPPKGFFPPGSATMSVHSLSSGGSDTLHGMMKGM
GMDAFRVSLSAIASSSSHGSGHDDGDTLGDVFMWGE GIGEGVLGGGNHRVGSSLEIKMDSLLPKALESTIVLDVQNIACG
GQHAVLVTKQGESFSWGESEGR LGHGVD SNVQH PKLIDALNTTNIELVACGEYHSCAVTLSGDLYTWGKGDFGILGHGN
EVSHWVPKRVNFLMEGIHVSSIACGPYHTAVVTSAGQLFTFGDGTFGVLGHGDRKSVFIPREVD SLKGLRTVRAACGVWH
TAAVVEVMVGSSSSSNCSSGKLFTWGDGDKSRLGHGDKEPKLVPTCVAALVEPNFCQVACGHSLTVALTTSGHVYTMGSP
VYGQLGNPHADGKVPTRVDGKLHKS FVEE IACGAYHVAVLTSRTEVYTWGKG SNGRLGHGDADDRNSPTLVESLKDKQV
K

SIACGSNFTA AVCLHKWASGMDQSMCSGCRQPFNFKRKRHNCYNCGLVFCHSCSNKKSLKACMAPNPNKPYRVCDRCFNK
LKKAMETDPSSHSSLSRRESVNQGSDAIDRDEKLDTRSDGQLARFSLLEPMRQVDSRSKKNKKYEFNSSRVSPISGGSH
RGS LNITKSFNPTFGSSKKFFSASVPGSRIASRATSPISRRPSPPRSTTPTPTLSGLTTPKIVVDDTKRSNDNLSQEVVM
LRSQVSCFPRFNCSLLLCI

>NP_565144.1 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MADLV TYSNADHNLEQALITLKKGTQLLKYGRKGKPKFYPPFRLSSDEKSLIWISSSGEKRLKLASVSKIVPGQRTAVFQR
YLRPEKDYLSFSLLYNGKKKSLDLICKDKVEAEIWIGGLKTLISTGQGGRSKIDGWSGGGLSVDASRELTSSSPSSSSAS
ASRGHSSPGTGFNIDPITSPKSAEPEVPPTDSEKSHVALDNKNMQTKVSGSDGFRVSVSSAQSSSSHGSAADDS DALGDV
YIWGEVICDNVVKVGIDKNASYLTTRTDVLVPKPLESNIVLDVHQIACGVRHA AFVTRQGEIFTWGEESGGR LGHGIGKD
VFHPRLVESLTATSSVDFVACGEFHTCAVTLAGELYTWGDGTHNVGLLGHS DISHWIPKRIAGSLEGLHVASVSCGPWH
TALITSYGR LFTFGDGTFGVLGHGDKETVQYPREVESLSGLRTIAVSCGVWHTAAVVEIIVTQSNSSSVSSGKLFTWGDG
DKNRLGHGDKDPRLKPTCVPALIDYNFHKIACGHSLTVGLTTSGQVFTMGSTVYGQLGNLQTDGKLPCLVEDKLASEFVE
EISCGAYHVAALTSRNEVYTWGKGANGRLGHGDLED RKVPTIVEALKDRHV KYIACGSNYTAAICLHKWVSGAEQSQ CST
CRLAFGFTRKRHNCYNCGLVHCHSCSSKKA FRAALAPSAGRLYRVCDSCYVKLSKVSEINDTNRRNSAVPRLSGENRDRL
DKSEIRLAKFGTSNMDLIKQLDSKAAKQGKKTDTFSLGRNSQLPSLLQLKDAVQSNIGDMRRATPKLAQAPSGISSRSVS

PFSRRSSPPRSATPMPSTSGLYFPVGIADNMKKTNEILNQEIVKLRTQVDSLTKQCEFQEVELQNSVKKTQEALALAE
SAKSRAAKEAIKSLIAQLKDVAEKLPPGESVKLACLQNGLDQNGFHFPEENGHPSRSESMTSSISSVAPFDFAFANASW
SNLQSPKQTPRASERNNSNAYPADPRLSSSGSVISERIEPFQFQNNSDNGSSQTGVNNTNQVEAEWIEQYEPGVYITLVAL
HDGTRDLRRVRFSSRRRFGEHQAETWWSENREKVYEKYNVRVSEKSTASQTHRDRDEEEEDIPH

>NP_001320309.1 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MDEKYLIWYSGEEERQLRLSSVITIVRGQITPNFQKQAQSDRKEQSFSLIYANGEHTLDLICKDKAQADSWFKGLRAVIT
KHHNIRNSVNHRSRGAQSCINSPAGFMRRKQNLGLLEETPDVTQIRSLCGSPSTLLEERCLSNGLSCSSDSFAESDALG
PVSSYYETDYDFRNSDCDRSTGSELCRFSSQRFASPPLSIITQPVTRSNVLKDIMIWGAIITGLIDGSKNQNDALSPKLL
ESATMFDVQSSISLGAKHAALVTRQGEVFCWGNGNSGKLGLKVNIDIDHPKRVESLEDVAVRSVACSDHQTCAVTESGELY
LWGIDGGTIEQSGSQFLTRKISDVLGGSLLTVLSVACGAWHTAIVTSSGQLFTYGSFTFGVLGHGSLESVTKPKEVESLRR
MKVISVSCGPWHTAAIVETANDRKFYNAKSCGKLFTWGDGDKGRLGHADSKRKLVPCTVTELIDHDFIKVSCGWTLTVAL
SISGTVYTMGSSIHGQLGCPRAKDKSNNVVLGNLTRQFVKDIASGSHHVAVLTSFGNVYTWGKGMNGQLGLGDVRDRNSP
VLVEPLGDRLVESACGLNLTAAICLHKEISLNDQTACSSCKSAFGFTRRKHNHCYNCGLLFCNACSSKKAVNASLAPNKS
KLSRVCDSCFDHLWSITEFSRNVKMDNHTPRMQMVTRRVSEDLTEKQSENEMQNLPQANRSSDGQPRWGQVSGPSLFRFD
KISTSSSLNLSVSARRTSSTKISTSSSENKILTEEIERLKA VIKNLQRQCELGNEKMEECQQELDKTWEVAKEEAEKSKA
AKEIICALASKLQANKEKPSNPLKTGIACNPSQVSPIFDDSMSIPYLTPIITARSQHETKQHVEKCVTKSSNRDSNIKLL
VDASPAITRTGYLQNETQDSSAEQVEQYEPGVYITFTALPCGQKTLKRVRFSSRKRKFSEKEAQRWEEKQVLVYNKYDAEI

>NP_176767.1 Regulator of chromosome condensation (RCC1) family with FYVE zinc finger domain-containing protein
[Arabidopsis thaliana]

MGEQQISVTVPRDRTDEQAILALKKGAQLLKCRRRGNPKFCPFKLSMDEKYLIWYSGEEERQLRLSSVITIVRGQITPNF
QKQAQSDRKEQSFSLIYANGEHTLDLICKDKAQADSWFKGLRAVITKHHNIRNSVNHRSRGAQSCINSPAGFMRRKQNL
GLLEETPDVTQIRSLCGSPSTLLEERCLSNGLSCSSDSFAESDALGPVSSYYETDYDFRNSDCDRSTGSELCRFSSQRF
ASPPLSIITQPVTRSNVLKDIMIWGAIITGLIDGSKNQNDALSPKLLESATMFDVQSSISLGAKHAALVTRQGEVFCWGNGN
SGKLGLKVNIDIDHPKRVESLEDVAVRSVACSDHQTCAVTESGELYLWGIDGGTIEQSGSQFLTRKISDVLGGSLLTVLSV
ACGAWHTAIVTSSGQLFTYGSFTFGVLGHGSLESVTKPKEVESLRRMKVISVSCGPWHTAAIVETANDRKFYNAKSCGKL
FTWGDGDKGRLGHADSKRKLVPCTVTELIDHDFIKVSCGWTLTVALSISGTVYTMGSSIHGQLGCPRAKDKSNNVVLGNL
TRQFVKDIASGSHHVAVLTSFGNVYTWGKGMNGQLGLGDVRDRNSPVLVEPLGDRLVESACGLNLTAAICLHKEISLND
QTACSSCKSAFGFTRRKHNHCYNCGLLFCNACSSKKAVNASLAPNKS KLSRVCDSCFDHLWSITEFSRNVKMDNHTPRMQM
VTRRVSEDLTEKQSENEMQNLPQANRSSDGQPRWGQVSGPSLFRFDKISTSSSLNLSVSARRTSSTKISTSSSENKILTE
EIERLKA VIKNLQRQCELGNEKMEECQQELDKTWEVAKEEAEKSKAAKEIICALASKLQANKEKPSNPLKTGIACNPSQV
SPIFDDSMSIPYLTPIITARSQHETKQHVEKCVTKSSNRDSNIKLLVDASPAITRTGYLQNETQDSSAEQVEQYEPGVYI
TFTALPCGQKTLKRVRFSSRKRKFSEKEAQRWEEKQVLVYNKYDAEI

>NP_196834.3 ARF GTPase-activating protein [Arabidopsis thaliana]

MHFTKLDDSPMFRKQLQSMEESAELRERSLKFYKGCRKYTEGLGEAYDGDIAFASALETFGGGHNDPISVAFGGPVMTK
FTIALREIGTYKEVLRSQVEHILNDRLLQFANMDLHEVKEARKRFDKASLTQAREKFLSLRKGTKSDVAAALEQELHT
SRSMFEQARFNLVTALSNVEAKKRFEFLEAVSGTMDAHLRYFKQGYELLHQMEPYINQVLTYAQQSRERSNYEQAALNEK
MQEYKRQVDRESRWGSNGSNGSPNGDGIQAIGRSSHKMIDAVMQSAARGKVQTIHQGYLSKRSSNLRGDWKRFFVLDSE
GMLYYYRKQCSKPSGSGSQLSGQRNSSELGSGLLSRWLSSNNHGHGGVHDEKSVARHTVNLLTSTIKVDADQSDLRFCFR
IISPTKNYTLQAESALDQMDWIEKITGVIASLLSSQVPEQRLPGSPMGSGHHRSAESSYESSEYDHPTEEFVCERSF
LGYNERPSRSFQPQRSIRKGEKPIDALRKVCGNDKCADCGAPEPDWASNLGVLVCIECSGVHRNLGVHISKVRSLTLDV
KVWEPSVISLQALGNTFANTVWEELLHSRSAIHFDPLTVSDKSRVMVTGKPSYADMISIKEKYIQAKYAEKLFVRRSR
DSDFPQSAAQQMWDVAVSGNDKKA VYRLIVNGDADVNYVYDQTSSSSLTLRVILVPERPKREDVLLRLRNELLDRGTSSS
NISPEGSGGSSLLHCACEKADLGMVELLLQYGANVNASDSSGQTPLHCCLLRGKVTIARLLLTRGADPEAMNREGKTALD
IAAESNFTDPEVLALLSDTNGYNHRQC

Domains Architecture of *Drosophila melanogaster*

<i>No</i>	<i>Accession Number</i>	<i>Domains</i>
1	NP_001284784.1	FYVE zinc finger, PH domain
2	NP_524729.2	Domain of unknown function (DUF3480), FYVE zinc finger, Smad anchor for receptor activation (SARA)
3	NP_001287560.1	RUN domain, FYVE zinc finger
4	NP_733203.1	RUN domain, FYVE zinc finger
5	NP_001287556.1	FYVE zinc finger

6	NP_001097943.1	FYVE zinc finger
7	NP_525099.3	Hepatocyte growth factor-regulated tyrosine kinase substrate, VHS domain, FYVE zinc finger
8	NP_722831.1	Hepatocyte growth factor-regulated tyrosine kinase substrate, FYVE zinc finger
9	NP_001096997.1	Myotubularin-like phosphatase domain, FYVE zinc finger
10	NP_001096996.1	Myotubularin-like phosphatase domain, FYVE zinc finger
11	NP_608968.2	Beige/BEACH domain, FYVE zinc finger, PH domain associated with Beige/BEACH WD domain, G-beta repeat
12	NP_001104451.1	Ankyrin repeats (3 copies), FYVE zinc finger, BTB/POZ domain
13	NP_001015359.1	Ankyrin repeats (3 copies), FYVE zinc finger, BTB/POZ domain
14	NP_001015360.1	Ankyrin repeats (3 copies), FYVE zinc finger, BTB/POZ domain
15	NP_730882.2	RhoGEF domain, FERM C-terminal PH-like domain, FERM N-terminal domain, FERM central domain, PH domain, FERM adjacent (FA)
16	NP_001036676.1	RhoGEF domain, FERM C-terminal PH-like domain, FERM N-terminal domain, FERM central domain, PH domain, FERM adjacent (FA)

17	NP_609186.1	FYVE zinc finger, Rabenosyn Rab binding domain
18	NP_611545.1	Rabaptin-like protein, FYVE zinc finger
19	NP_611269.1	Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, FYVE zinc finger
20	NP_731570.2	FYVE zinc finger
21	NP_001188779.1	WD domain, G-beta repeat, WD domain, G-beta repeat, FYVE zinc finger
22	NP_611791.2	Myotubularin-like phosphatase domain, FYVE zinc finger
23	NP_726322.1	Myotubularin-like phosphatase domain, FYVE zinc finger
24	NP_001097433.1	Myotubularin-like phosphatase domain, FYVE zinc finger
25	NP_647623.1	Zinc finger, C3HC4 type (RING finger)

Retrieved Sequences of *Drosophila melanogaster*

>NP_001284784.1 rush hour, isoform B [*Drosophila melanogaster*]

MVDRLVNSEANTRRIASVENCFGSSGVPLAMQGRVLVGEGVLTKMCRKRPKSRQFFLFNDILVYGNIVIGKKKYNKQHIM
 PLEEVSLESIADNQTYRNGWYIRTTTTSFVVFAATSTEKQEWMAHINKCVEDLLRKSGKKPVENHAAVWVPDTDASVCMH
 CKKTQFTFIQRRHHCRNCGAVVCAGCSAKKFLPQQSTKALRVCDACYERLKHVPSSLGSGEDSAAATGAASGNKLNTTA

GDSSNDEDSDEETASPGGESHDPRFYGDNSVLSAVEDSSTITSPSSATTGSLEAPQVTPSVQSSPAAVATTGSHC

>NP_524729.2 smad anchor for receptor activation [Drosophila melanogaster]

MDLVDIDQVLDNLELSIAADEQLSRNAAAAAAGANPGRFLGDGASASISGVGAGAGVSGAAGVTPTPASGKSFVGVSVQV
FNSLDDYRENVKSLQVDAQLPYDWQTEAEHEDDIHKFSEQASKNNGQTIVSSSESLTSSCSTFSSGSPVSNNGSHSEE
LATPPEDEKTSEVQVEPKEQDQQPEQVKHEDQHQDQAVPPPTQSKQTVEELAVGLSSISITASGTESQSLLPEEVTASSV
LGQVLEELSEESSPSREPETEMTNGIDVPLANLPASVAEVPVPKEMECPVQTEEDVELPQEQHPRRSQPLTFCSTMDEI
SDTELDSMLQEMDADDNQADDQQMPDDEKSCSASPVTSEESVRILSDEQETTSNDQMNVDNFSQASTVEFADLKQPESTP
VTAMGEDVASSFSSTESDSLSGRKLDGEVEVDREHEDASLATDALETQEQRQPQRPTLNLNLCQAESSTPSQDENPEIQQ
ETLQPTTEVREGAAGVGVIPGEDDEESPIYEAVGYSDPHANLGKVPPIWVPDNMAGQCMQCQKFTMIKRRHHCRACGKVL
CSVCCSQRFRLEFATEPESRVCVQCYMILSERQANGLNSESAPGSALPPTPIRSPNPNNPMEYCSTIPPHRQVANSPGAP
PPSVIVPVGVLLKKTGDSSSNSSSSDGQKGQRKRKSVMFSDGIAPGSELASTMEQQWGESKHSRRGLSRSGSGAGQKPPTP
ATEEPPRSIDTSSTLGLVAQLFRGSIPPSAAAATLSATETSAGRSSSSQSAQTSPRRKAESSRNRKLPPNGDAQGCYLPP
EENGLPPICISSKEGGEVDYKVVVRNDGSLDLRLQNETLKFIIKNNFFVLVKIVNMSCCMNRWVLNFTTSLHMHMGSDLI
ILLEIKQPKQEEYVKGEVAIPKDLFQHLYEIIYVEAEHARSGTHELAFTSPRANFLGSREHGGFIFIRPTYQCLQGIVVP
DNPYLGVVLIHRHEVPWAKVLPLRLILRLGAQYRYPCPLISVRGRESVYGEIAQTIINFLVDFRNYSYSLPAIRGLYIH
MEDRQTTVIIPKYRQQDVIKAINNASDHILAFAGNFSKVADGHLVCMQNINDDRSEMYSYSTQAINIQGQPRKITGASFF
VLNEALKSSSGLSGKCSIVEDGLMVQIMPAKMEEVRQALRNQNDIDIVCGPIDATDDQSEIVSIKWVDNNRDINVGKSP
IDDQPMDGISNMRVLKWFNFYSNTNYAIRLSDIYIICKEDWYATNGGNCEEITRIAEQLARSASMLPLDLLAAAGI
NKLGLRATLDQDNVGYEAGARGSKLPPLYMNALDNHLIATLHGESSGIQEPHILELIFYILNA

>NP_001287560.1 uncharacterized protein Dmel_CG31064, isoform G [Drosophila melanogaster]

MRGLVEDTKRTLSSANNNNLSSTSGSGRIKSSSLATGSSASGSSSKPLRSAVKTPTSGSATSLSSGTMAAKKAPQTGQQ
QVGKSAKSATAATPTGTTATAIGATATTRAQAAAAKSQKGNPPSQVQPKQPPQPPQQTQQQPLVLQQQQASNSSNTIA
LPKASHANTSEELAGGVQDTIYLCNFRVSVSDGEWLCLKELQDIDVAGGTGNQAAQTSEKLAGGSSSQTTGGFGSNYNVGSS
SSKRNSKRFSGLSTGSGSGGNAGGGGGGLDITDNARDTAEIERSNLVNICKLVVKELLEQSLRYGRMLDSHPLQHFIV
IEHVLGHGLRPPKGLLGPRKELWDLQSVHYCPAQDITASVRDLPTVRTHIGRARAWLRIALMQKKLSDYLQALIEHR
EDSLFDYYEPHALMMSDEIVVIMGILVGLNVIDCNLCVKEEDLDSQQGVIDFSLYLRSSSRNADAAPEDSAPPALLDATG
QGNMIAVLDQKNYIEELNRHLNATVGNLQAKVESLTTTNALMKEDLAIARNSLALQAENQAMRQSTSAGDNNSTGSGGS
SDKDKEKASEELVEERRKNSELEKELKLQVSLKAESDMAMKLLKEDIHEKQDTIVSLRRQLDDIKQINLEMYRKLQDCKA
SLTHKTELMTKLEVQKEDMASTIDQLEKKWSHDKSNLGEILKTTSQTLTTQVTASEERAARAEAESRIEREWRISLQEKE
LKLKEKIANLQGCLKELSEEKERNGLKADLDKVRTQWSEAQTTLEELGIQLSVSKLVSEMQDQERRQRQLLSGSAQSL
QAMPEAVGSPGIWAPDSIATHCTACEREFNLTRRKHHCRSCGEIFCKACSEHTLPLNAQGGQPGKPVVCDNCYAAK

>NP_733203.1 uncharacterized protein Dmel_CG31064, isoform B [Drosophila melanogaster]

MSTDDLVRRESEDSQSSSVSIPVTPTTGGAAPAPSAPTSSLDLRLNTRFRRTESISQIFSHISTQFSNAAAAAASSEV

IDGTTTYPYPDEPAPPVVPVAPDTVASASASSPSPSKLKAKRLKRARDTAEIERSNLVNICKLVVKELLEQSLRYGRMLD
SDHLPLQHFFIVIEHVLGHGLRPPKGLGPRKELWDLQSV EHYCPEAQDITASVRDLPTVRTHIGRARAWLRIALMQKK
LSDYLQALIEHREDSLFDYYEPHALMMSDEIVVIMGILVGLNVIDCNLCVKEEDLDSQQGVIDFSLYLRSSSRNADAPE
DSAPPALLDATGQGNMIAVLDQKNYIEELNRHLNATVGNLQAKVESLTTNALMKEDLAIARNSLLALQAENQAMRQSTS
AGDNNSTGSGGSSDKDEKASEELVEERRKNSELEKELKLQVSLKAESDMAMKLEKDIHEKQDTIVSLRRQLDDIKQIN
LEMYRKLQDCKASLTHKTELMTKLEVQKEDMASTIDQLEKKWSHDKSNLGEILKTTSQTLTTQVTASEERAARAEAESRI
EREWISLQEKELKLKEKIANLQGCKELSEEKERNGLKADLDKVRTQWSEAQTTLLEELGIQLSVSKLKVSEMQDQERR
QRQLLSGSAQSLQAMPEAVGSPGIWAPDSIATHCTACEREFNLTRRKHHCRCSCGEIFCKACSEHTLPLLNAQGQPGKPVR
VCDNCYAAK

>NP_001287556.1 uncharacterized protein Dmel_CG6051, isoform D [Drosophila melanogaster]

MDTFKRWLNKPKADDSKLLARFFHADRSALTAVASELDSFDGRAEPDRCTRLVSRLRQNQDKVLAITNLIMEELLGEDRDP
RAFRAKFPEEVLQENLAGQLWFGAECLAAGSSIMNRETESKEMRPLAQAVTKSLGNVRVLLRDQCLKNNVPNSKTLHLDL
NDSTTEQLYESLKIFDRLFAEFELSYVSAMVQVKS RHEYEMQQWIGVLFSETLQ RALKIGLLDQEMVDAFDPGLMFSIPR
LAIVAGLVVYAKGPLNMDMPGDQLSEMFRPFRTILIKIRDLLRNLNQELYQLEKLLCTNEDINTKVPLGSSSIEAPSPE
HSSHPTTSSSQNNNNSSNNNHSSSSSTNTTSTTTT TAGTTNTHRTVERLVDQRNNNHNSNSNSSTNPTVEAATLRSPSMLS
LSATSTPTASPAPSPTPSHSIASSTSSAATSSSTNPPADWSDGDDEDEDEDDDDIDVDEEDIESSDDGTDEEQLLKDIVSADCA
SGYLIPNTNLGNLLQPQEVPLTDNFVASEDDEYGTAEQQGHQGLEEDEPSTSAAMLAAATRTLQRLRLPSSDNEPLAEPTT
IKASEEHMQQPSGRHRDSSHRRHHQRHHHHHHHRHPHQHQHRQPHPHRTTRSGRKRC SLEAADPERIQPDREQNLASGDT
SAASSLSDDVSLAMRNTTARLKFN TENLLHRLFVCIAGVADQLQTNFASDLRQILRSVFLMNMSTAQEEIDIPEKTKESE
LFEFRASENDVIQESAGSNQSIYSAEEVNPELDNVFSAGGGNQATGQRHSAGASMQRNNTIDLASQPGEGSPSGATTATS
RSHVTRSRSLGDQEAASSATSSTAQLRQLEQQQQQQQLQIQLQRQRNNSVGSNTPSSASSTSSSSEQNSPVSARS GSRRR
LQSNNETQMPSSATSTSATLSPPAWIPDGKAPRCMACQTPFTAFRRRHHCRCNCGGVFCGVCSNASAPLPKYGLTKAVRVC
RDCYVREVRSGMGVQGVQSVQSVQASAS

>NP_001097943.1 uncharacterized protein Dmel_CG6051, isoform B [Drosophila melanogaster]

MDTFKRWLNKPKADDSKLLARFFHADRSALTAVASELDSFDGRAEPDRCTRLVSRLRQNQDKVLAITNLIMEELLGEDRDP
RAFRAKFPEEVLQENLAGQLWFGAECLAAGSSIMNRETESKEMRPLAQAVTKSLGNVRVLLRDQCLKNNVPNSKTLHLDL
NDSTTEQLYESLKIFDRLFAEFELSYVSAMVQVKS RHEYEMQQWIGVLFSETLQ RALKIGLLDQEMVDAFDPGLMFSIPR
LAIVAGLVVYAKGPLNMDMPGDQLSEMFRPFRTILIKIRDLLRNLNQELYQLEKLLCTNEDINTKVPLGSSSIEAPSPE
HSSHPTTSSSQNNNNSSNNNHSSSSSTNTTSTTTT TAGTTNTHRTVERLVDQRNNNHNSNSNSSTNPTVEAATLRSPSMLS
LSATSTPTASPAPSPTPSHSIASSTSSAATSSSTNPPADWSDGDDEDEDEDDDDIDVDEEDIESSDDGTDEEQLLKDIVSADCA
SGYLIPNTNLGNLLQPQEVPLTDNFVASEDDEYGTAEQQGHQGLEEDEPSTSAAMLAAATRTLQRLRLPSSDNEPLAEPTT
IKASEEHMQQPSGRHRDSSHRRHHQRHHHHHHHRHPHQHQHRQPHPHRTTRSGRKRC SLEAADPERIQPDREQNLASGDT
SAASSLSDDVSLAMRNTTARLKFKSTENLLHRLFVCIAGVADQLQTNFASDLRQILRSVFLMNMSTAQEEIDIPEKTKES

ELFEFRASENDVIQESAGSNQSIYSAEEVNPELDNVFSAGGGNQATGQRHSAGASMQRNNTIDLASQPGEGSPSGATTAT
SRSHVTRSRLGDQEAASSATSSTAQLRQLEQQQQQQQLQIQLQRQRNNSVGSNTPSSASSTSSSSEQNSPVARSRSR
RLQSNNETQMPSSATSTSATLSPPAWIPDGKAPRCMACQTPFTAFRRRHHCRNCGGVFCGVCSNASAPLPKYGLTKAVRV
CRDCYVREVRSGMGVQGVQSVQSVQASAS

>NP_525099.3 hepatocyte growth factor regulated tyrosine kinase substrate, isoform B [Drosophila melanogaster]

MFRSSFKNLENATSHLRLEPDWPSILLICDEINQKDVTPKNAFAAIAKKKMNSPNPHSSCYSLLVLESIVKNCGAPVHEE
VFTKENCEMFSSFLESTPHENVQRQKMLELVQTWAYAFRSSDKYQAIKDTMTILKAKGHTFPELREADAMFTADTAPNWAD
GRVCHRCRVEFTFTNRKHHCRNCGQVFCGQCTAKQCPLPKYGIEKEVRVCDGCFAALQRPTSGSGGAKSGPRPADSELPA
EYLNSTLAQQVQTPARKTEQELKEEEEELQLALALSQSEAEQQKPKLQSLPPAAYRMQQRSPSEAPPEPKEYHQPEEAT
NPELAKYLNRSYWEQRKISESSSMASPSAPSPMPPTPQQQIMPLQVKSADDEVQIDEFAANMRTQVEIFVNRMKSNSSRG
RSISNDSSVQTLFMTLTSLSHQQLSYIKEMDDKRMWYEQQLQDKLTQIKDSRAALDQLRQEHVEKLRRIAEEQERQRQMOM
AQKLDIMRKKKQEYLQYQRQLALQRIQEQUEREMQLRQEQQKAQYLMGQSAPFPYMPPSAVPQHGSPPSHQLNNVYNPYAA
GVPGYLPQGPAPAPNGHGQFQAIPPGMYNPAIQQPMPPNLQPGGLMQQPAPPGNPQMMPPMPENQFANNPAAILQLPQQH
SIAQPPQIPFQPQPQQIPGQQPQQIPGQQPQQIPGQQPQQIPGQQPQQIPVQQPQPQPMGHVMLQQHQAPPAAQAPPVT
EIANNVQAVAAAPAPPQNEPGPAPVKAEEPATAELISFD

>NP_722831.1 hepatocyte growth factor regulated tyrosine kinase substrate, isoform A [Drosophila melanogaster]

MSSEEELSIEEESLDTMTILKAKGHTFPELREADAMFTADTAPNWADGRVCHRCRVEFTFTNRKHHCRNCGQVFCGQCTA
KQCPLPKYGIEKEVRVCDGCFAALQRPTSGSGGAKSGPRPADSELPAEYLNSTLAQQVQTPARKTEQELKEEEEELQLALA
LSQSEAEQQKPKLQSLPPAAYRMQQRSPSEAPPEPKEYHQPEEATNPELAKYLNRSYWEQRKISESSSMASPSAPSPM
PPTPQQQIMPLQVKSADDEVQIDEFAANMRTQVEIFVNRMKSNSSRGRSISNDSSVQTLFMTLTSLSHQQLSYIKEMDDK
RMWYEQQLQDKLTQIKDSRAALDQLRQEHVEKLRRIAEEQERQRQMMAQKLDIMRKKKQEYLQYQRQLALQRIQEQUERE
M

QLRQEQQKAQYLMGQSAPFPYMPPSAVPQHGSPPSHQLNNVYNPYAAGVPGYLPQGPAPAPNGHGQFQAIPPGMYNPAIQ
QPMPPNLQPGGLMQQPAPPGNPQMMPPMPENQFANNPAAILQLPQQHSIAQPPQIPFQPQPQQIPGQQPQQIPGQQPQQI
PGQQPQQIPGQQPQQIPVQQPQPQPMGHVMLQQHQAPPAAQAPPVTEIANNVQAVAAAPAPPQNEPGPAPVKAEEPAT
AELISFD

>NP_001096997.1 uncharacterized protein Dmel_CG3632, isoform F [Drosophila melanogaster]

MSDGSPPPSICFIRAAESYPKSQMEKEDSQLFVPFQELAGESIKYLGRTDDGILALSNYRIFLSKQSTGYETYVPLGLIE
SVQVRDLFQLIVNCKDASTVRCSEFSAEQCSDWQRRHLMIGVPESLETLFAPPFYSWTCDVLGSGNGSGIVSAQANGNG
LIAKDRCLTLHNGLAKPTANVTASNPLPDPASETISAAMSNRLQRSVRYESDFKNEVARLGFDLKGSWRISTANADFKLC
PSYPPKLLVPCCITDEMLHNVANFRGSRRLPAVVWRHQKSGAILARCSQPEVGWLGWNRNTRDEQLLKALADACAFDRGEH
ARHSTCANAKAQPTKGSKETNGQSGLSGKSSPSLDDSSHEELTLDEIKKILIVDARSYTSAVTNRARGGGCECIEYYPCA
EIEFMNLGNIHAIRKSFHAVRQLCASSPDDPNWYGQLEKTMWMQHLSGLLGATMTVVHTIEKNRPVLVHCSDGWDRTPO

IVATAQLCLDPYYRTVEGFRVLVEREWLNFGHKFADRSNGNPNSDEVNERCPVFLQWLDLVHQIHRQYPCSFESISYLI
KLAQHSLSCFLGTFLCNSLRERIENSVFDRFTSVWPFLAETMYRNPLYKHETEKVLWPAHSVRFLYFWSDVYLGSLGNKN
GTDLPLLSNERQSGHNGLMAKTRSSDLTTNELGQSTISRRSSDPNLTVESIVTDCFNANSNSMFDIRSEANNSVSENVQ
ESVKDSKEVELDVTDATEDVGPCGRSNNPIPDFHNDQSTASKRDILEVESQTQRRSSLESSQLIPGSVFIFGSSSENDKNAV
PSESEESLATSQKLNSESGRPFFIFGSSSENDQSPVPLKSEDTSDISRALWHGAIETSTDTLIPAEPVQKPNSDNSSRDHI
TSPTMELVSGDRKLESTSTVQASKISQSYNNLPKVHIRPNAVICPQRVDAFPHHLDLQVPRETTGNPDRCKPEKLAKDAN
ANANANGSLLASDGYNGEESLFISPDQLRFVVGQSPFDAPSTGGIRIRNTFGSSYSRDMKFTAENGSAHQFPSSGIISLPP
TPFQERAQFTISCPDGLAHGLSEQNIRLHQIVQEHLREEMLLREIHGMRLALLEKGCPSCNSIVSTNMEHENGSDIVEN
ASTCSWEAVEERSGPASYAPSSIQEKKASSVLWVPDHAVSRCSSCQTEFWLGRRKHHCRSCGEIFCADCSEFWAPLPNEK
LFNPVRLCGSCYTSVTTNVQEYAAVPAESQAKDDETSSAIS

>NP_001096996.1 uncharacterized protein Dmel_CG3632, isoform E [Drosophila melanogaster]

MDFMVPPIHTMSDGSPPPSICFIRAAESYPKSMKEKEDSQLFVPFQELAGESIKYLGRTDDGILALSNYRIFLSKQSTGYE
TYVPLGLIESVQVRDLFQLIVNCKDASTVRCSFPSAEQCSDWQRRIHLMIGVPESLETLFAPPFYSWTCDVLGSGNGSGI
VSAQANGNGLIAKDRCLTLHNGLAKPTANVTASNPLPDPASETISAAMSNRLQRSVRYESDFKNEVARLGFDLKGSWRIS
TANADFKLCPSYPPKLLVPCCITDEMLHNVANFRGSRRLPAVVWRHQKSGAILARCSQPEVGWLGWRNTRDEQLLKALAD
ACAFDRGEHARHSTCANAKAQPTKGSKETNGQSGLSGKSSPSLDDSSHEELTLDEIKKILIVDARSYTSVAVTNRARGGGC
ECIEYYPCAEIEFMNLGNIAIRKSFHAVRQLCASSPDDPNWYGQLEKTMWMQHLSGLLGATMTVVHTIEKNRGPVLVHC
SDGWDRTPQIVATAQLCLDPYYRTVEGFRVLVEREWLNFGHKFADRSNGNPNSDEVNERCPVFLQWLDLVHQIHRQYPCS
FEFSISYLIKLAQHSLSCFLGTFLCNSLRERIENSVFDRFTSVWPFLAETMYRNPLYKHETEKVLWPAHSVRFLYFWSDV
YLGSLGNKNGTDLPLLSNERQSGHNGLMAKTRSSDLTTNELGQSTISRRSSDPNLTVESIVTDCFNANSNSMFDIRSEA
NNSVSENVQESVKDSKEVELDVTDATEDVGPCGRSNNPIPDFHNDQSTASKRDILEVESQTQRRSSLESSQLIPGSVFIFG
SSSENDKNAVSESEESLATSQKLNSESGRPFFIFGSSSENDQSPVPLKSEDTSDISRALWHGAIETSTDTLIPAEPVQKPN
SDNSSRDHITSPTMELVSGDRKLESTSTVQASKISQSYNNLPKVHIRPNAVICPQRVDAFPHHLDLQVPRETTGNPDRCK
PEKLAKDANANANANGSLLASDGYNGEESLFISPDQLRFVVGQSPFDAPSTGGIRIRNTFGSSYSRDMKFTAENGSAHQFP
SSGIISLPPTPFQERAQFTISCPDGLAHGLSEQNIRLHQIVQEHLREEMLLREIHGMRLALLEKGCPSCNSIVSTNMEH
ENGSDIVENASTCSWEAVEERSGPASYAPSSIQEKKASSVLWVPDHAVSRCSSCQTEFWLGRRKHHCRSCGEIFCADCSE
FWAPLPNEKLFNPVRLCGSCYTSVTTNVQEYAAVPAESQAKDDETSSAIS

>NP_608968.2 blue cheese [Drosophila melanogaster]

MNVMRKLGAASAGSVSGSSSGTSTANNSSPGSSRTDAGAPTAANGRNAEEALMDARVQVSLTTLKKLFNEYTHPREPLS
EQERDDKLYEMLPLFCKVFSSCPSNDMSEKFWDVVAFCCQQVSRLMVSEIRKRASNQSTEAASIAIVKFLEVETTEETSSG
WMLLATLNL LANGDVSLIQVMTAAAVPSTLVKCLYLFFDLPIVEDDEPSADGGAVSEFNAHERRTLQKVVFVQLLVKLCS
YPYPAEELARMDDLTLFSAITSPCIHNIVWRKNAAEILTTISRNGLTDAVVSYIHSKGCMAVCVDNMQRLLTFGNPLEI
VEMFVTVFCFLKDSSQVSQILMDDFRASQGYVFLSDFLKFDNNRSQSLEIQAAIRNLVLMISSLCMCGFYELRPPASQF

NTAFKLQNFQLPQATSRETCVRNVYAFQVLQNVFLKSTTPALCCTILDAISRVYHSEANANYFILESEQTLSSFAERIHMK
SPQIQEKFYDLLEFIVFQLNFPCKELISLSLLLKHQNSTSCSILCLKTLLNLRHNAVFKDVYREVGILEIFVGCLTRY
AAHVQKITKGDES VVVELENESEEEELFDTLGKHVLEALTMLLGGGASNNAQLFREYGGAKCVHEL VKFKHCRPQALGIVR
ELILSAGGDDMLHILSLMHSVSPLQVEFKIQILNMLLGCLKDSHRTRTVFRKVGGFVYVTSV FVSLDGSMA LPQPDPQ
QDLILLQIVFQTLATAMRFEPANAKFFHQEISSSSLCDTLRLGCFGSSALQDYTGTYEPQQSLLKYYHEIFSGDILS
VSFSEDVPYPLSYVCIVFRLLYSIALDNFEAPNLSGIITLFSDPPTTLRSPSKELAPPVHPSQLNLTQPSPEPRIVHPGV
VLCMLQLLPAVEYDMAPLQAVQLQVYLSEIISKSLVRSERNNQIMCDHGLAEKLLKLTRRALAEESHPLHVPMQYILERLA
AQALQPTELRQFLRLGEPLSCADIDLQQPYKLGGPVPLTRIKTLVSMTPRDFRAHGSSTLPPFVELDMSAEGFGCLYLP
SLAPQATATAGGTIDANSIGGIGAGDRIFPPQTGLTYSTWFCVEKFSDPKTDPHCVRLLTLVRTIHNPREENLACLSILL
SARDKAIVVSTQETLVTPRKSIGDWEPEGSDDGIARIWCPDLLHEGQWHNLVVVLNRAVLKNSSLFLYLDGVPMTQKLH
YIAQHPAAGNASLTSPTQIFGYIGTPPIWRRYSRLCWKQGVCHLIEDVLTQQTVQTIYQLGPHYMGSLQAPQLGKQSESL
APLVPEDRVLLGLNAKAVSKLTLVKIRKVYSRADNKSIAKQLNMNSHENATPIKILHNSAGHLAGAGRSLGGVVVGYLGV
RVFSPHPVSAMIDTVGGCNVLLGIIAMAQDVESLYAGVKALTCVVRSNRAAQAEMDRKRCYQTLGMFFKKKKHLLNSHIL
HLTFGLVGTVNSGQDMSAIPNVTAQDLLCDLEIWHNAPNGLLRSLLEHLLLVVESSDKKQNVKIMRDLQLLVKLLHII
TQIQDHSTREILFSLLETLLGGQPRHTDLLLFGQYVAAKLPHAHSGGLERAVLLPSMKNPAEDQDGGVAQNIYLRNRCLS
LLHGLLFTPRNTVNYVICDDISKTLGMDWLLLFMQPHVHFTTVIIAVRILVVICANESFLVRFRDATHNGGYLRFTMV
QRKMLGLGAQQLNQRPTNGTGTVIVATPQNTIQHLPTQIAGEVRAAALNIPGFQLEWLMNHHLDVPELYFLITALIMGQ
PVKVLATEHTKFDLDRVWSFLWGAPVSANTQLPKLNICPEGVCVLLAMVRGIVHGGECAPWLHSHPETIQLLFSLYQNL
TDFAPVMMTG DVVTSLVAVLFPLASRPADSEPNSGASTPTDDTGSSFALPPPETLHGAPQPKLTAHPVCNCIIDFLRVIV
VDSLGLNMQGKPTVIDLVLDAAPESAELPLQVQYQTQIIALMDHLLAADVLVGEQAALPLVPLLQSQM QYIAPNVFYL
TARIVDKLWQGCLARNPHDIFDFVIKLVQAKRRSSSLSEHLHHS LNRSILFLLSRPTDDSRADQMSVLEALHKIIQHR
LLIFGAGNHELEFIGCLTYCLLQLTADMKIILEPATSRNTTWHVNPQTETAEPKDEDLNQLQGRNLIVGAAFRVWEELYV
CKKPAIEEVFKVSLTSPPPNSKAPDLQTTREQVMELASKLWFNYVEAERKATYRAPWELHTQIQSKIQKVTGGLSRLTSR
TKTKKEELVRTRSTLTREAA YESTGIHVQLIKDLLDLRAKQYQQMLQHTQRYVYQDWVQSEMELTRERGLWGPTGSCSLD
KWILDTTEGPHRMRKKTM RNDVFYLHYPYRPELELADNRQLKYKVASSLDSKTYALHGPPQPRILAEAGEHHAMQQQSSL
EAVQSHRLETSSSTSTPPPMVLPKL VGHGSTPCPQESVDGNAPEDDEEEEDTSMTSDNETFLRLLEEQEKISFMFRCARV
QGLDTFEGLLLFGKEHCYIVDGFTLLKNREIRDIDTLPPGAYEPIIPNSGGTSSTTSRAVSHKLRQCSKFAYEEIREVHK
RRYLLQPIALEVFSEDGRNYLLSFPRKVRNKVNQRFLALATALNDNAQQSVAGQKRTASVEQTAGIFSGLIGETSVTQRW
VRGEISNFQYLMHLNTLAGRSYNDLMQYPVFPWILADYDSEELDLTNPKTFRDFSRPMGAQAEERLEQFQKRKFKEWDDPH
GETPPYHYGTHYSSAMIVCSYLVRLEPFSQPFLKLQGGHFDLADRMFHSIKEAWLSASKLNMADV KELIPEFFYLPEFLS
NFNNFDLGTKQNGETLNHVILPPWAKHDPREFIRLHRSALCEDYVSQHLHLWIDLIFGCKQQGPAAVD AVNVFHHLFYEG
NVDIYNIDDP LKK NATIGFINNFGQIPKQLFKKAHPAKKMGGSRHSALIDPTSLIQGNSTVLQTDRLFFHNLDNLKPSLQ
PIKELKGPVGQILQPDKTVFAVEQNKVMMPPSYTKYIAWGFADHSLRIGLYDTRASFVSEASAQNSGEILTCACPNAKM

IVTAGTSSVVTIWKFDANRKSLAVKHSLSHGHTDAVTCLAASAAYNVIVSGSRDGTAIWDMTRFTFVRQLRGHAGVVAAV
SINELTGDIATCSATWLHVWSINGDALAMVNTCVGSADRMQQILCVAFSQIREWDQQNVIITGSTDGVVRMWSLEHTQVP
IDRKLKRGTEVSSQDKPDTVSLEGKDNKDDKMSLMKQIKSLSQSEEEMEIVKSASESSISEASQHSHGSSKSAEAGPKAE
VQGERRKSSISGAKSLHEMKSATVEGQGSSYDPKSNEDHAIRPSKSDTSLTDGFVVIDNDRHKGDQILRKGRWQRQLM
FRSKLTMHTAYDRKDNAEPASITALTVSKDHKILYVGDARGRIFSWSVTEQPGRGVADHWLKDEGADQCVKCHVKFTLYE
RKHHCRNCGQVFCNKCSRFESEISRLRILKPVVVCQACYSQLRTNSLDN

>NP_001104451.1 uncharacterized protein Dmel_CG41099, isoform D [Drosophila melanogaster]

MGSNETFSVLKMEKILAVQSDEYTKLQRCYVELQRKYENIENIASSENEESGLSSFLSRLSLTVASLFDKNTYADIIYIRSQT
RVFPAHKIVLHARSEKWGNDLLSNIQQLDWSLDNEDVVLSELLRWIYTDLIDLQNDGLALDLLKAAHRFGLPSLLGICERA
LVTSGVVRSCIRFYCVAAEEVGASTLLEYCSSIISTHWDDLTTDDFQHMMSGPLLFEMLKTKTKHPLHAAVRLLREDVVSLC
IQKYGNLSLVNTFSENGILPLEMALSSKNAKIAKSLVDNGMANINAVNMEGFSLLKSALKNGDAFSANFLLDQNCLLDLPS
KPSSDTALHIICNYGPDNTPEIMEVVKKILQRQLNINIQNIKGETPLHIAIARRNVEMVKLLLKVPNIDINLRTYDEKCA
LELSLSMGDHEFLIASILLSMGARTDRTNSKTGDSLLQVFALDRHRGEKSAIFLADFADLDHINFRGLTALHIAALNNMP
NLVKKLIVNGASSNLKHIDCGLKSALHIAVEANAIDALEAFVELKNKSHDIDFNCQDINGDSPLSLCLSLKRTTLVPTLI
RGGSDVNGKNKNNLSPLHQSIKNEDSDISLFLLEQGADITALTENLDSALDLSIKHDLSEVVDALCRRGIALSINKNGES
PLWSALEKGYEDVAKILVRHGIDTDCWDEGPEGCRQTLLHRAIDENKESVAIFLIQSQCGLDSSRQPGPNGEDEA QDK
ASPLHLCCHWGQTKVLQTLIDHGANVNLIDAESKSPLHVAIESQYDEIISILLCHPDIDLKLRDKSGNTPFATALDFRNH
NAAQRILDRFPTAAEQMDIRGRNFLHLAILKDDLESVLFLLAIQVDVNSRVHDANQSSPLHLAAASQNEMITRNILAGA
RMNERDAVQKLPLHIAIERGNLPAVSALIQQNADYDATDADGNNALHIAVRCAQFFIVRELLTESRVNAEATNLKGRNPL
HELRCRVVEDSTAGLICELFLESMPKYPINIPDMDGNTPLLLSFMRGQSPCKILVKAGACLG TENKDGINIFNFKLATDQ
LLHNLLDQLPQESPWAESDYCQHCTNRFTITMRKHHCRHCGRVLC SKKSCNDVPILKFGINKPVRVCTVCFNVLQCGNGS
LS

>NP_001015359.1 uncharacterized protein Dmel_CG41099, isoform C [Drosophila melanogaster]

MKTGSNETFSVLKMEKILAVQSDEYTKLQRCYVELQRKYENIENIASSENEESGLSSFLSRLSLTVASLFDKNTYADIIYIRS
QTRVFP AHKIVLHARSEKWGNDLLSNIQQLDWSLDNEDVVLSELLRWIYTDLIDLQNDGLALDLLKAAHRFGLPSLLGICE
RALVTSGVVRSCIRFYCVAAEEVGASTLLEYCSSIISTHWDDLTTDDFQHMMSGPLLFEMLKTKTKHPLHAAVRLLREDVVS
LCIQKYGNLSLVNTFSENGILPLEMALSSKNAKIAKSLVDNGMANINAVNMEGFSLLKSALKNGDAFSANFLLDQNCLLDL
PSKPSSDTALHIICNYGPDNTPEIMEVVKKILQRQLNINIQNIKGETPLHIAIARRNVEMVKLLLKVPNIDINLRTYDEK
CALELSLSMGDHEFLIASILLSMGARTDRTNSKTGDSLLQVFALDRHRGEKSAIFLADFADLDHINFRGLTALHIAALNN
MPNLVKKLIVNGASSNLKHIDCGLKSALHIAVEANAIDALEAFVELKNKSHDIDFNCQDINGDSPLSLCLSLKRTTLVPT
LIRGGSDVNGKNKNNLSPLHQSIKNEDSDISLFLLEQGADITALTENLDSALDLSIKHDLSEVVDALCRRGIALSINKNG
ESPLWSALEKGYEDVAKILVRHGIDTDCWDEGPEGCRQTLLHRAIDENKESVAIFLIQSQCGLDSSRQPGPNGEDEA Q
DKASPLHLCCHWGQTKVLQTLIDHGANVNLIDAESKSPLHVAIESQYDEIISILLCHPDIDLKLRDKSGNTPFATALDFR

NHNAAQRILDRFPTAAEQMDIRGRNFLHLAILKDDLESVLFLLAIQVDVNSRVHDANQSSPLHLAAASQNEMITRNLILA
GARMNERDAVQKLPLHIAIERGNLPAVSALIQQNADYDATDADGNNALHIAVRCAQFFIVRELLTESRVNAEATNLKGRN
PLHELRCRVVEDSTAGLICELFLESMPKYPINIPDMDGNTPLLLSFMRGQSPLCKILVKAGACLG TENKDGINIFNFKLAT
DQLLHNLLDQLPQESPWAESDYCQHCTNRFTITMRKHHCRHCGRVLCSCSCNDVPILKFGINKPVRVCTVCFNVLQCGN
GSL

>NP_001015360.1 uncharacterized protein Dmel_CG41099, isoform B [Drosophila melanogaster]

MEKILAVQSDEYTKLQRCYVELQRKYNENIASSENEESGLSSFLSRLSLTVASLFDKNTYADIIYRSQTRVFP AHKIVLH
ARSEKWGNDLLSNIQQLDWSLDNEDVVL SLLRWIYTDLIDLQNDGLALDLLKAAHRFGLPSLLGICERALVTSVGVRSCI
RFYCVAEEVGASTLLEYCSSIISTHWDDLTTDDFQHMSGPLLFEMLKTKTKHPLHAAVRLREDVVS LCIQKYGNSLVNT
FSENGILPLEMALSSKNAKIAKSLVDNGMANINAVNMEGFSLLKSALKNGDAFSANFLLDQNCLLDLP SKPSSDTALHII
CNYGPDNTPEIMEVVKKILQRQLNINI QNIKGETPLHIAIARRNVEMVKLLLKVPNIDINLRTYDEKCALELSLSMGDHE
FLIASILLSMGARTDRTNSKTGDSLLQVFALDRHRGEKSAIFLADFADLDHINFRGLTALHIAALNNMPNLVKKLIVNGA
SSNLKHIDCGLKSALHIAVEANAIDALEAFVELKNKSHDIDFNCQDINGDSPLSLCLSLKRTTLVPTLIRGGSDVNGKNK
NNLSPLHQSIKNEDSDISLFLLEQGADITALTENLDSALDLSIKHDLSEVVDALCRRGIALSINKNGESPLWSALEKGYE
DVAKILVRHGIDTDCWDEGPEGCRQTLLHRAIDENKESVAIFLIQSQCCLDSSRQPGPNGEGGDEA QDKASPLHLCCHWG
QTKVLQTLIDHGANVNLIDAESKSPLHVAIESQYDEIISILLCHPDIDLKLRDKSGNTPFATALDFRNHNAAQRILDRFP
TAAEQMDIRGRNFLHLAILKDDLESVLFLLAIQVDVNSRVHDANQSSPLHLAAASQNEMITRNLILAGARMNERDAVQKL
PLHIAIERGNLPAVSALIQQNADYDATDADGNNALHIAVRCAQFFIVRELLTESRVNAEATNLKGRNPLHELRCRVVEDST
AGLICELFLESMPKYPINIPDMDGNTPLLLSFMRGQSPLCKILVKAGACLG TENKDGINIFNFKLATDQLLHNLLDQLPQ
ESPWAESDYCQHCTNRFTITMRKHHCRHCGRVLCSCSCNDVPILKFGINKPVRVCTVCFNVLQCGNGSL

>NP_730882.2 Chondrocyte-derived ezrin-like domain containing protein, isoform F [Drosophila melanogaster]

MSLADMGTASRSAGGEGGRHYDLATGGAGSGGHPVGGGLPGGRMTHSLSTPSGVDGTPSTPRHRGGKKLTVRIQMLDDSI
TMFQVQAKALGRVLFEQVCRQLNLLEADYFGLEYQEVSTHTKYWLDLEKPMNRQVGLSLIDPVLRFCKIFYTPDPAQLEE
EYTRYLFC LQIKRDLATGSLQCNDNTAALMASYIVQASCGDFVPEDYPDHTYLSSYRFV PNQDATMQRKIMENHKKHV GQ
SPA EADLN LLETARRCELYGMKMHPAKDVEGVPLNLAVAHMGITVFQ NITRINTFSWAKIRKISFKRKRFLVKLHPEGYD
TVEFFFEGRNECKNFWKKCVENHGFFRCTAVQNTPRRKTRVLSRGSSFRYSGKTQKQIIEFVRENYVKRQNFQRSQSFRQ
GPLNASSRSQSHTYVNSSISANPLLPIDTAAWDYRNQCSDSMTPSLTKKAADTLDRRRDNPIGHMRSQVTAAQVEIYQTK
NYAADSPTSQEEAECSAAGAERQHHS AVAMDKLNSNRSLSPQGPQSWTSPSHSSHQQRGPD PARVHPGDHNTDGY YGIN
GNMSLDRRGEITTPTRYDLTLGSDKSSSLSRSEAGTYDVIQAEIQHAKRQELATGVATASHQNGNGNGNGHTLSTQHDI
EAEVKKRKWPTEPSYFLAKELMTERTYKKDLVDLNTTFRQVLSLGDVEQLQPLFELLD SLAQHHNLF LRDIHRMVQWE
GRGGHEAHRIGDVMMKHMAALPIYDEYVQTHLDILHCMNDMYEGDERFRQVYKEFEQQKVCYLP IGE LLLKPLNRLLHYQ
LILERLCDYYGEEHIDYADAMAVHLLVRSTKGIRSQLPDSANFVELCELQRDINFEQLVQPHRRLIRQGCLLKHSKRGL
QQRMFFLFS D LLLYGSKSPLDQSFRI LGHPVRSLLTENAEHNTFSIFGGQCAITVSAGTTAEKTLWLAELSKAAADIKN

RPPNMQLQLTTLKNCSSSEGLDLFGLSNGNSSLNSSVNGGGPLTTQQQKLQLQQQQQNRTQPSRSNTALHVCWHRGAT
VGLGDHLIAAEHQLSGYLLRKFKNSSGWQKLWVVFTSFCLYFYKSYQDEFALASLPLLGYTVGPPGHQDAVQKEFVKLS
FKNHVYFFRAESAHTYNRWLEVL RSTTQTQDFKNVHSHAVLGN

>NP_001036676.1 Chondrocyte-derived ezrin-like domain containing protein, isoform E [Drosophila melanogaster]

MSLADMGTASRSAGGEGGRHYDLATGGAGSGGHPVGGGLPGGRMTHSLSTPSGVDGTPSTPRHRGGKCLTVRIQMLDDSI
TMFQVQAKALGRVLFEQVCRQLNLLEADYFGLEYQEVSHTTKYWLDLEKPMNRQVGLSLIDPVLRFCKFYTPDPAQLEE
EYTRYLFCQLIKRDLATGSLQCNDNTAALMASYIVQASCGDFVPEDYPDHTYLSSYRFVPNQDATMQRKIMENHKKHVGG
SPAEDLNLLTARRCELYGMKMHPAKDVEGVPLNLAVAHMGITVFQNTNITRINTFSWAKIRKISFKRKRFLVKLHPEGYG
YYKDTVEFFFEGRNECKNFWKKCVENHGFFRCTAVQNTPRRKTRVLSRGSSFRYSGKTQKQIIEFVRENYVKRQNFQRSQ
SFRQGPNLASSRSQSHTYVNSSISANPLLPIDTAAWDYRNQCSDSMTPSLTKKAADTLDRRDNPIGHMRSQVTAQAQVEI
YQTKNYAADSPTSQEEAECSAAGAERQHHSAAVAMDKLNSNRSLSPQGPQSWTSPSHSSHQQRGPDPAHVHPGDHNTDGY
YGINGNMSLDRRGEITTPTRYDLTLGSDKSSSLSRSEAGTYDVIQAEIQHAKRQELATGVATASHQNGNGNGNGHTLST
QHDIEAEVKKRKWPTEPSYFLAKELMTERTYKKDLVLNTTFRQVLSLGDVEQLQPLFELLDLSLAQHNNLFLRDIEHRM
VQWEGRGGHEAHRIGDVMMKHMAALPIYDEYVQTHLDILHCMNDMYEGDERFRQVYKEFEQQKVCYLPIGELLKPLNR
L

LHYQLILERLCDYYGEEHIDYADAMAVHHLLVRSTKGI RSQLPDSANFVELCELQRDINFEQLVQPHRRLLIRQGCLLKHS
KRGLQQRMFFLFSDLLYGSKSPLDQSFRILGHVPVRSLLTENAEHNTFSIFGGQCAITVSAGTTAEKTLWLAELSKAAA
DIKNRPPNMQLQLTTLKNCSSSEGLDLFGLSNGNSSLNSSVNGGGPLTTQQQKLQLQQQQQNRTQPSRSNTALHVCWH
RGATVGLGDHLIAAEHQLSGYLLRKFKNSSGWQKLWVVFTSFCLYFYKSYQDEFALASLPLLGYTVGPPGHQDAVQKEFV
FKLSFKNHVYFFRAESAHTYNRWLEVL RSTTQTQDFKNVHSHAVLGN

>NP_609186.1 Rabenosyn-5 [Drosophila melanogaster]

MSGNPFDSDQSSASGEILEGFLCPICRADLKSIDVLTDFHARQHAEEDALKSFKDIFTKAKKKILNPFEDKSGASVS
SPAGSSSSAAGKNPNGNGDRNGPSNARSRLNVFN YMARQQPGAEC SHFEYFQSIRNPRLERYASETNKLIIRLHRLKDL
PADSVQRRQHEQQTVAWLDGSSVKLCPSCAKSFHARRQHHCRLCGGIMCNDCKFLPLEDAMQLASLSTTRSEPLQQLH
QHENAIRLCEHCLWLLDTRKDMHESRTCRLPLLVQVYEQIRQLQKEVTPDLDMYDKIINSLNEGDTIFTLADAGALRGKIG
QVAEAMDMRSKRILAI FCEPGSREEALKKAIRLGC IQAIKERMLSPLPEESHIRQM QERRRMETEQRILTEQRMAMEA
YERNNMAANQSNVGVPGPESGSFAQGS DLQSLNNWSAPQAASKSSLDPLIEQINI IKGYIKQARQDMNFEVVETLELNL
RELQREVYERQRQSQGSTAASPTA

>NP_611545.1 Rabaptin-5 [Drosophila melanogaster]

MEENETRSEAREPTDLPNGEDDATSQHKLSHLQNEMRKMQNEFNTQRAKMRELYIQKEAEVSQSQQERRQLQAELDELKT
HLMVADLKSQNELQLRDLKAQEEISSLQQLVQDTIEETAHYKGEVERLRLELGKYQQIQQTMAQQPQAESSGGIAPQVL
NQVKKTLGSVRKLGTDLSNSSFQQDEDTRASSKGNGKQYAPEEAEMMHSIVEQLQEEMKALKVKLREQDEQLQAKSASDE
SALHKSTSM DVAESACESCSLAEKKTEELGAHINKQKQVDLLQKQLVESRETLVKEAALRKDLEDQWQEKREAHKSEVQ

SLRDQAKTNEQRLLDMQQKFLETKDEVIKQIQRVSDDRERVNKQLETQLADNDFLSGRYLATSEEIDNQYINLPNTVVVEL
QELILRQQSELIQARVSSEYERQKCTSTEDEIQLRAQLEESNNERRAYKRKMQLDIKSLQDRVTEHLVTVQAYETTKTQ
LERKEAELNKQLSECRVEIHELQEANEKYAKTNADYKTKIKTLQEELSTMETVQKDFVKLSQTLQMSLEELRHADTEVRW
QDDDDVNNCPTCNAFYFTVMVRKIHCRHCGHIYCDKCLTKTVPSGPRKRVARVCDICHTLLTPNTAPYFSQGQPPQQQQGQ
QQQQQSN

>NP_611269.1 fab1 kinase, isoform A [Drosophila melanogaster]

MTSNNQNNSSSHQHLHSPSKLTEFARNFEDKPESLFGRVVNKIQNVYNQSYNTVNDISSGSSSSSTQPVQVVGKSQFFS
DSQTSTAEIADVETSSQSSVRPQPPTTLSIRTNSETRGTSTSSNTAAEDSETSDRVETLPLPTSEANQGRTVSNVLKHIS
NIVATKNNNDLRNYKDTTELQRFWMPDSKAKECYDCSQKFSTFRRKHHCRLCGQIFCSKCCNQVVPGMIRCDGDLKVCNY
CSKIVLTFLLKSSSEMGMQDMQELQQHLSNKLEVQDSGSSLAKHPQMQRAPLPRKTSVGYQEERFSSHPTYTTLSIDDRKN
ILQQSNSLITLHEEMQRDLPAQNCGQRLIEFLNSNNKSANEVQAVAILNAMLAAAGFLEPIVPDPEQMDFDSSLHYKFSKS
SSSDTSRTMSPQFEANPHAEPQPPKSMDQSAEEKEKELENELENDRCYTTATSKLLASYCEHEEQLLAQMLRAHNLDQEW
DKVLQMLCSTAANHFKEPHCSNDLMDIRNYVNFKKVPGGRRKDSKIVHGVAFSKNVAHKDMATHVFPFRILLQCPIVYE
RIEGKFVTIETVLLQEKEYLRNVCARIMSFKNVVLVHKNVAGIAQDLLRSYEVTLVLDVKLSVMERLSRTLQCDIVSSI
ESNITMPKLGVCNDFYIRNYNGKTLMFFEKLTPRGYTCLLRGGSNAELTRVKRVASALLFARYNWRLEMSFLLNEFAQP
LSPKPSIFDSKETSPKTETEAEELRSKRPIILERKSEDKITTIVSENVSDFTDPLRASQAEALSTSPCAPPVVEALAVEPR
YDNRFRALTSSLLSVSPFLTFFLPYLETEQGRKCKLRKLFPAELYFSKQWSRTGLERPDSMGDGEAGKSEPGNKENQMQ
LLPAHDFVLMKITAPASSRDIQSKLAEFRSFGGRLPKGKAPMLRPKKKNAEVIQRPQKVSEEQLYKDALDPQNHQRLPVL
FCSFHYNPKGVSFCKLPMLLDMMKFYGYDIMLEQFLQRYCCLFNSMCPSCNLPMLGHVRRYVHSLGCVHVYLTEDLTRS
DPTRIYFTSWCSICNATTPTIPLSDAAKCLSLAKYLEMRFHGHAYKRRPPSTDAEQGGTVCEHSLHRDYVHHFSFRGVGA
KFQYTPVEVWETDLPSLTVQLDLPPQFQSAQVQEEIKNFSIKGHEVYNRIHERIADLATEEENSPLVQHLKTMLTHDQFI
FKQKIEIVHTLLTDNRATAYDTSDALAMARRALAESIELWGPRLQEIEKLTAQAHHIDSGTICTEELRPEQVQTADSSK
VTSSLPKENDPLECPSEDTEGASNSQTVLDKNFSIDQMLASTVNVYSDKKSIRKILTQLPSGNQVNPLQSPFPAQDH
LTLPLGSIPIHVRETDLSSVIAYSLTSMQYQKAIDEAEANSNAAHSSPQLKRKIPLAESVSDAEDSPSLRTSSNTSAAP
NASVPSPATAASESEEKSKERIKQPPSPHITLAFQDHSCQFQCKIYFAREFDAMRSKSLKPPKLDKSLYRRLEKSKMREE
LRISQSRTGSEMELVRKPSDVGAPRTTEDDSNQEEDARIALARSLCKSVQWEARGGKSGSRFCKTLDDRFLKEMNSRDM
TIFEPFAPKYFEYIDRCQQQQQPTLLAKIFGVFRVSVKKKDSFVERSVMV MENLFYGCNIENKFDLKGSENRNLVDPSNQ
QGEIVLLDENLVQMSWSKPLYVLSHSKTVLRDAIQRDSSFLEKNLVMDYSLLVGLDKKNGVLVLGIIDYIRTFTLTKRVE
SIIKSGSILGGKGKDPTVVNPERYKQRFIDAMDRYFLTVPDRWEGLSKV

>NP_731570.2 uncharacterized protein Dmel_CG5270 [Drosophila melanogaster]

MEDQQEENMQQLNLLPKDQRQIFEIFIQWLNGKSSGPIQLHQNALLTVLQASYPALQLLQLLHERSKLHIGQIISTLL
RQLLDGDVASPRSLCVLANFPASVLEASTLRQKLMTRLVVDSTSEHLMLTMLARSDGQLLDDLLHEQQLTMRAQCSEAA
PTKLLVLWLALNEREHFVASVCQHLKDFKCFQDVTLRNNLLILRLANEFALGSQTLEELGCLEKLLAEFDVSAVPEKLQE

VHGFFYADFQRLSTLLNFLRPREISKTLRVDALLRAPGVLPLIHENGIHFKHQELHRLIEDTYKWQQLTPALKCHHQEEV
EILSYTALCHVYDVVLDDQGEQTTKTKLVQLSVQLRQLHQLGALCSLLEDIFLLVFLRWEQLEPNSQRKGEDGENDEEDD
EQYVDDDDVASPPRPTAVHSQRTRYGFICRSASLHALFTFLKAFVTKKIHSQDYKSAPEQQGRFQRLVDAISEALWKLGV
QKIEQSLLKSAPSISCLLEPDQLQLVQLHSTAKKKASSDDESRRSNHASSLNRRKARRQRRAVSFSGGVAGKASADGG
LAMEQLRARAQLLSGSGSRKNSSVTSPCERSIIPKMLSTPEQLAIMALALKNFNDVKKIETFHLEHSQNLRELHFMEQQ
QLVKQKLSAIYANYQILEGQQANSGETTVEQIKGVAAGKFELSKIISVVDNFSQAHRLQQSPELKALIQRHNTSAQQGFL
QQFEERNLNALIICDLIVNLGFNREITSNLLLVIIRQQQKKGGDEASNTPGSSELGAMNLLQNLCECMRLRLERSGQQA
LNELLSLKSYPRLPAVLALQLQREAAFQTLYQKEPSEYSHGHELRSNANQFQQLRSRHNYARFCTYVQQLARLLQLRDP
NLEYHTTQLLRNDPYEVIGELIYECGITPLEIEASVAALHLNLVHVIALNICPQLSEEPTKRLPRVVAPQKQESIHNYS
QHNQLLAHILLAIQLGSLPDGDADVDFSFLGHLVHLSEVNVLASVYDGNRVLAALNAYKLESARLDQLVTDQEQLLQILL
LGMSGQTDSPNRHKSRIIDQLIGDLIEKDPRIHLVVMGNLQGQRAQLLKEHFTRIPSSQQAELIERTLHHRSAAKSIPT
ALRSELEHTLSBITIYARVSALLKFESWPQAYDFGRQTPNVIFEQLLQRRRFGLCLEWSRVVYLAGSAGQQRVCLLTLLD
ALLELRDGEELDESLLGIVEMFPPNPLVNFLDTHKDKFRSLPLLQWVIDYLEGHARDPRLYRNYQLSLEFLRQMDTNS
PFWKLIRHPLLIVEQLVMNARFELLGKLLDAARSKLLKERPLGPCPYCFDKTGHVYDVQSSAGLGSGAGETPAKIRFQLG
QTTSEAFILLNFNSYQQDHVFGQDCLDLLRIYASKALDYHVANVRAASEPSSLGTDVHNSLDSLCAFMVMPKQAPNRQQ
WTRDEEASHCMCCRAAFTMLMRRHHCRRCGRVVCYACSTHRIRIPELYDELEVRIKNDCAACSTPAKDQGDGTSSERSA
ISGQVSKSSGRSDCKWQLSGIITHDKLLREEFSYEHAPSVALSLSILRNHVEQRSCVDLLLHFCRKLKELIVPNPEVDY
GLVAKMINCLAAFAAKVRGAPGELENIREHSEIIMAVVQQGCESLIPTGPLNNHNLRLKLADALVEAEHWTLALEVHLKCGF
ATTGVMAAHGLACL RAGCYDAAREKFAHCMTRLSSQLNSSICKNIFGVASTEAVLLPRKRPQRGPALLQEILQLIAIP
QVQTQPETLHRASLRSSNTSLASLFTRRREPYVQPRPLQEPALNIMNALAGLKNLAKGQYGGQMPTSEESRRQERGFE
SLHYVLTYGSHADILTFLMRREELRAALRYWQHQQLDADLFIHHIFYPQLANGGLNVLMDELQQLDDAQFTAWRLPLLQT
CRHLEQQQQLSSLYQLQLLLKDPIRASMTVCVFYALQCENFQKLHANAQHLLSALRHLQGELDMAEWEHLQRQQARRNSV
SSTASVRGACFAMQMDARALNGHINTIRRQLEVAKFLDKCEREQPPDEPLRTIQTCLKQIRLESSRGTLPTLFEGAADRIQ
ICILILMCGKNIDEGFLAYGIMQDFKLAALKVFGATAKYLSRNQRLGEVERLLDCIGSNNGGDISTESDEILSIANAA
VHSSAPETKQMLDRLIKRIGSVELRVSSYIYIGQLKSAYLLANKHDRLADIRILRQAELTGQVHIKKLCDMKLQLSAAP
TPL

>NP_001188779.1 WD repeat and FYVE domain containing 2, isoform B [Drosophila melanogaster]

MAAEIKPAQRTNNDRFNTSKKPELLSKLEGSSDDVNAAILIPGENGVISVDDKTVRVWLKRDSGQYWPSICQYMPSGCT
AIEYVSESRHLYVGQENGTVTQYALSEDCNRLSFLRDYLSHQARVMVVFVSKTHKWILSAGKDKQFAYHCTESGKRVGGY
NFETPCTALQFDALAKYAFVGDHAGQITMLRCDVQGVQLITTFNGHSAEIRCLKWVEGPQLLFSGACDQSVLVWDVGGKR
GTIYELQGHNSNKVSALSYANHTQQQLISCGEDSVVVFWMENAMRKEVPGWVDTNQCQLCSRPFWFNFRSMMDQKQLGIRQ
H
HCRHCGKAVCDNCSTNRINIPIMGFEFDVRTCDPCYKQLQTVRPSLASFNDAKHSIVYMDLDEDRKRLTLVGQDRLIKI

WDLNIIWA

>NP_611791.2 uncharacterized protein Dmel_CG3530, isoform B [Drosophila melanogaster]

MDEIKLAKVENVRMIDRYNTKNPTVGTLTLTATHLIFVEPDSNKETWILHMHVASIEKLPLSTTGSPILLIRCKTFLSVTF
VIPKDSECHDVYTSLLKLFQPVVSINKLYCFNYQPNKDDFPKNAGWDYFKLEAEFKHMLVPNEAWTLCMNEKEYELCDTYP
RQIYVPKEATTMLLISSSRFRSKGRLPVLTYLHNNKASICRCSQPLSGFSARCLEDEQMLEAIRKTNSTNDYMYVVDTRP
RINAMANRAAGKGYENEAIFYENIKFHLGIENIHVQRASLQKVLEACEQKSPTMSAFINALESSGWLKHRSILDTSSFI
ANAVDKGVSVVVHCSDGWDRTAQVCSLAQLMLNPYYRTIKGFQALIEKDWLAFGHKFSERCGHIQTDAREVSPIFTQFLD
CTWQLMSQRSEAFEFNERFLLILHDHVHSCQFGTFVGNCEKDRLDLKLAERTFSLWGYMANHLNEYINPLYKPNVDEAIK
ANLAPQCIKFWRGMYSRFESGIHPREPLGDVLLDSKEHCNSLEDHVQHLLTKRIASFKNYISKSAKKLQDATSAPGKVNKE
LSSNEINDNKYNYDKKLSLSAADDHPLKASNMSFASLSLSAEQSSPPQALPEEINSVAVDWKPMRNVTTCSCTPFDQ
FSKKTCHWRCGDIFCERCIDKNVALPGHDSGKPVPCRGCFRQMOKQSP

>NP_726322.1 uncharacterized protein Dmel_CG3530, isoform A [Drosophila melanogaster]

MDITRFMNKFNIEERQLSPTSALRLSFDNISPETEPPDGNKRLWGVPPVPPVSEKVVSWIEEEFNAPVFYNGNSVLKK
VENVRMIDRYNTKNPTVGTLTLTATHLIFVEPDSNKETWILHMHVASIEKLPLSTTGSPILLIRCKTFLSVTFVIPKDSEC
HDVYTSLLKLFQPVVSINKLYCFNYQPNKDDFPKNAGWDYFKLEAEFKHMLVPNEAWTLCMNEKEYELCDTYPRIYVPKE
ATTMLLISSSRFRSKGRLPVLTYLHNNKASICRCSQPLSGFSARCLEDEQMLEAIRKTNSTNDYMYVVDTRPRINAMANR
AAGKGYENEAIFYENIKFHLGIENIHVQRASLQKVLEACEQKSPTMSAFINALESSGWLKHRSILDTSSFIANAVDKGV
SVVVHHCSDGWDRTAQVCSLAQLMLNPYYRTIKGFQALIEKDWLAFGHKFSERCGHIQTDAREVSPIFTQFLDCTWQLMSQ
RSEAFEFNERFLLILHDHVHSCQFGTFVGNCEKDRLDLKLAERTFSLWGYMANHLNEYINPLYKPNVDEAIKANLAPQCI
KFWRGMYSRFESGIHPREPLGDVLLDSKEHCNSLEDHVQHLLTKRIASFKNYISKSAKKLQDATSAPGKVNKELSSNEIND
NKYNYDKKLSLSAADDHPLKASNMSFASLSLSAEQSSPPQALPEEINSVAVDWKPMRNVTTCSCTPFDQFSKKTCHW
RCGDIFCERCIDKNVALPGHDSGKPVPCRGCFRQMOKQSP

>NP_001097433.1 uncharacterized protein Dmel_CG3530, isoform C [Drosophila melanogaster]

MHVASIEKLPLSTTGSPILLIRCKTFLSVTFVIPKDSECHDVYTSLLKLFQPVVSINKLYCFNYQPNKDDFPKNAGWDYFKL
EAEFKHMLVPNEAWTLCMNEKEYELCDTYPRIYVPKEATTMLLISSSRFRSKGRLPVLTYLHNNKASICRCSQPLSGFS
ARCLEDEQMLEAIRKTNSTNDYMYVVDTRPRINAMANRAAGKGYENEAIFYENIKFHLGIENIHVQRASLQKVLEACEQK
SPTMSAFINALESSGWLKHRSILDTSSFIANAVDKGVSVVVHCSDGWDRTAQVCSLAQLMLNPYYRTIKGFQALIEKDW
LAFGHKFSERCGHIQTDAREVSPIFTQFLDCTWQLMSQRSEAFEFNERFLLILHDHVHSCQFGTFVGNCEKDRLDLKLA
RTFSLWGYMANHLNEYINPLYKPNVDEAIKANLAPQCIKFWRGMYSRFESGIHPREPLGDVLLDSKEHCNSLEDHVQHLL
TKRIASFKNYISKSAKKLQDATSAPGKVNKELSSNEINDNKYNYDKKLSLSAADDHPLKASNMSFASLSLSAEQSSPPQ
ALPEEINSVAVDWKPMRNVTTCSCTPFDQFSKKTCHWRCGDIFCERCIDKNVALPGHDSGKPVPCRGCFRQMOKQSP

>NP_647623.1 uncharacterized protein Dmel_CG12099, isoform B [Drosophila melanogaster]

MDSNNSSNSKKQPQSSHGKSSSAESQRKSSSELHTNSNKQRHSRRRNQVPTPRNDQQQQPQPAKLRPNVDKRPKARGFG

GGYDFPSPRGQDGASGSSRLAYSATGYSRSGDFDHELNSVYTQGSKKQNLNHLNLFHCVPRELERGHHHQAQQHHGLSGR
KQRYNKEQFLQANFQFVIRSGAKAQVNGSPDALIDWSYIEQINIQTTEELQCPICLYPPVAAKLTRCGHAYCWPCLLHYL
SLSDKTWRKCPICYDAIHAGDLKSC TIEQLRDLQVGEKITFQLMRRRKGS MYIENHVAGLGETIERFPFVSAGEEAKRYS
KFLIAKRMDVAAIHERERNELLAESDVSCPEDVFIQQALVMLQERVEKLGVEKPDPKEDDEEETAPVLCLETETKIDIEKS
DDASISSGEASSLSYSSNHNKYYYFYQSNDGQNIYLHPLNVKMLQACYGTLDLGPLLIEAQIVQMEQHSMDEEHRRKFT
CLGHLPLTCQFSVVEVELQPPVVTGGILKLFKEDILHRKKERQRRDREERKREQHINEINDRQMGKLIASAANLDLSSSH
EFPTCGFEEALPAPSGSVPMNISNQDPGSRYS SVTLGSPKQEMWPTIGSNSPGGGGAPLDVQVGAWGRSAPPPPRAVMVP
RTSDEDFEQRSVGHWGLGELLVGALDQKKQKVGA AKSNGAAPAESKKQKKAKGKKMVPLFATGMNRAP

Domains Architecture of *Danio rerio*

<i>No</i>	<i>Accession Number</i>	<i>Domains</i>
1	NP_956538.1	FYVE zinc finger, PH domain
2	NP_956634.1	FYVE zinc finger, PH domain
3	XP_005164880.1	RhoGEF domain, PH domain, PH domain, FYVE zinc finger
4	XP_017210510.1	RhoGEF domain, PH domain, PH domain, FYVE zinc finger
5	XP_005164879.1	RhoGEF domain, PH domain, PH domain, FYVE zinc finger
6	NP_001093450.1	RhoGEF domain, PH domain, PH domain, FYVE zinc finger
7	XP_005155897.1	RhoGEF domain, FYVE zinc finger, PH domain, PH domain

8	XP_001919894.2	RhoGEF domain, PH domain, PH domain, FYVE zinc finger
9	XP_001332264.7	RhoGEF domain, FYVE zinc finger, PH domain
10	XP_021330870.1	RhoGEF domain, FYVE zinc finger, PH domain
11	NP_001171404.1	RhoGEF domain, PH domain, PH domain, FYVE zinc finger
12	XP_688794.4	RhoGEF domain, PH domain, PH domain, FYVE zinc finger
13	XP_017212899.1	RhoGEF domain, PH domain, PH domain, FYVE zinc finger
14	XP_017212897.1	RhoGEF domain, PH domain, PH domain, FYVE zinc finger
15	XP_017212898.1	RhoGEF domain, PH domain, PH domain, FYVE zinc finger
16	XP_002667361.2	RUN domain, FYVE zinc finger
17	NP_001099151.2	RUN domain, FYVE zinc finger
18	NP_001231848.1	RUN domain, FYVE zinc finger
19	XP_003200485.1	FYVE zinc finger
20	XP_001344504.2	Domain of unknown function (DUF3480), Smad anchor for receptor activation (SARA), FYVE zinc finger

21	XP_005171254.1	Domain of unknown function (DUF3480), Smad anchor for receptor activation (SARA), FYVE zinc finger
22	XP_021328582.1	FYVE zinc finger, FYVE zinc finger
23	XP_009304190.1	Domain of unknown function (DUF3480), FYVE zinc finger
24	NP_001071191.1	FYVE zinc finger
25	XP_005158933.1	FYVE zinc finger
26	XP_691596.6	FYVE zinc finger, FYVE zinc finger , Guanylate-binding protein, N-terminal domain
27	XP_009300450.1	Regulator of chromosome condensation (RCC1) repeats, MORN repeats, Regulator of chromosome condensation (RCC1) repeat, Vacuolar sorting protein 9 (VPS9) domain
28	XP_009300452.1	Regulator of chromosome condensation (RCC1) repeats, MORN repeats, Regulator of chromosome condensation (RCC1) repeat, Vacuolar sorting protein 9 (VPS9) domain
29	XP_009300451.1	Regulator of chromosome condensation (RCC1) repeats, MORN repeats, Regulator of chromosome condensation (RCC1) repeat, Vacuolar sorting protein 9 (VPS9) domain
30	XP_021333894.1	Myotubularin-like phosphatase domain, FYVE zinc finger
31	NP_957158.2	Myotubularin-like phosphatase domain, FYVE zinc finger
32	NP_956162.2	VHS domain, Hepatocyte growth factor-regulated tyrosine kinase substrate, FYVE zinc finger
33	XP_021325300.1	VHS domain, Hepatocyte growth factor-regulated tyrosine kinase substrate, FYVE zinc finger

34	XP_021325297.1	VHS domain, Hepatocyte growth factor-regulated tyrosine kinase substrate, FYVE zinc finger
35	XP_021325293.1	VHS domain, Hepatocyte growth factor-regulated tyrosine kinase substrate, FYVE zinc finger
36	XP_021325291.1	VHS domain, Hepatocyte growth factor-regulated tyrosine kinase substrate, FYVE zinc finger
37	XP_021332790.1	RhoGEF domain, PH domain, PH domain, FERM C-terminal PH-like domain, FERM central domain, FERM adjacent (FA),
38	XP_002667032.4	Myotubularin-like phosphatase domain, FYVE zinc finger
39	XP_021332402.1	Myotubularin-like phosphatase domain, FYVE zinc finger
40	XP_009299405.1	Myotubularin-like phosphatase domain, FYVE zinc finger
41	XP_005155593.1	Domain of unknown function (DUF3480), FYVE zinc finger
42	XP_021325289.1	VHS domain, Hepatocyte growth factor-regulated tyrosine kinase substrate, FYVE zinc finger
43	XP_005164430.1	VHS domain, Hepatocyte growth factor-regulated tyrosine kinase substrate, FYVE zinc finger
44	XP_021325286.1	VHS domain, Hepatocyte growth factor-regulated tyrosine kinase substrate, FYVE zinc finger
45	XP_021325285.1	VHS domain, Hepatocyte growth factor-regulated tyrosine kinase substrate, FYVE zinc finger
46	XP_005155592.1	Domain of unknown function (DUF3480), Smad anchor for receptor activation (SARA), FYVE zinc finger

47	XP_001920918.3	Domain of unknown function (DUF3480), Smad anchor for receptor activation (SARA), FYVE zinc finger
48	XP_005165797.1	Regulator of chromosome condensation (RCC1) repeats, MORN repeats, Regulator of chromosome condensation (RCC1) repeat, Vacuolar sorting protein 9 (VPS9) domain
49	NP_001096142.1	Ankyrin repeats (3 copies), BTB/POZ domain, FYVE zinc finger
50	XP_002662342.2	Regulator of chromosome condensation (RCC1) repeats, MORN repeats, Regulator of chromosome condensation (RCC1) repeat, Vacuolar sorting protein 9 (VPS9) domain
51	XP_005171962.1	Ankyrin repeats (3 copies), BTB/POZ domain, FYVE zinc finger
52	XP_005157097.1	Zinc finger FYVE domain-containing protein 21 C-terminus, FYVE zinc finger
53	NP_001153818.1	Zinc finger FYVE domain-containing protein 21 C-terminus, FYVE zinc finger
54	XP_021336159.1	FYVE zinc finger
55	NP_991308.1	WD domain, G-beta repeat, FYVE zinc finger
56	XP_009295365.1	FYVE zinc finger, RUN domain
57	XP_021332794.1	RhoGEF domain, FERM C-terminal PH-like domain, FERM central domain, FERM adjacent (FA), FERM N-terminal domain, PH
58	XP_021332793.1	RhoGEF domain, PH, FERM C-terminal PH-like domain, FERM central domain, FERM adjacent (FA), FERM N-terminal domain
59	XP_009300696.1	RhoGEF domain, PH, PH, FERM C-terminal PH-like domain, FERM central domain, FERM adjacent (FA), FERM N-terminal domain

60	XP_001344703.1	FYVE zinc finger, FYVE zinc finger
61	XP_021333893.1	Myotubularin-like phosphatase domain, FYVE zinc finger
62	XP_021332792.1	RhoGEF domain, PH, PH, FERM C-terminal PH-like domain, FERM central domain, FERM adjacent (FA), FERM N-terminal domain
63	XP_009302003.1	Myotubularin-like phosphatase domain, FYVE zinc finger
64	XP_017211771.1	Beige/BEACH domain, FYVE zinc finger, PH domain associated with Beige/BEACH, WD domain, G-beta repeat
65	XP_017211770.1	Beige/BEACH domain, FYVE zinc finger, PH domain associated with Beige/BEACH, WD domain, G-beta repeat
66	XP_017211768.1	Beige/BEACH domain, FYVE zinc finger, PH domain associated with Beige/BEACH, WD domain, G-beta repeat
67	XP_005165446.1	Beige/BEACH domain, FYVE zinc finger, PH domain associated with Beige/BEACH, WD domain, G-beta repeat
68	XP_017211769.1	Beige/BEACH domain, FYVE zinc finger, PH domain associated with Beige/BEACH, WD domain, G-beta repeat
69	XP_001921741.4	Beige/BEACH domain, FYVE zinc finger, PH domain associated with Beige/BEACH, WD domain, G-beta repeat
70	NP_001292489.1	FYVE zinc finger
71	XP_003199781.2	FYVE zinc finger
72	XP_021336195.1	FYVE zinc finger

73	XP_021336194.1	FYVE zinc finger
74	XP_005167727.1	Phosphatidylinositol-4-phosphate 5-Kinase, Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, Domain found in Dishevelled, Egl-10, and Pleckstrin (DEP), FYVE zinc finger
75	XP_005167726.1	Phosphatidylinositol-4-phosphate 5-Kinase, Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, Domain found in Dishevelled, Egl-10, and Pleckstrin (DEP), FYVE zinc finger
76	XP_005167724.1	Phosphatidylinositol-4-phosphate 5-Kinase, Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, Domain found in Dishevelled, Egl-10, and Pleckstrin (DEP), FYVE zinc finger
77	XP_009303000.1	Phosphatidylinositol-4-phosphate 5-Kinase, Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, Domain found in Dishevelled, Egl-10, and Pleckstrin (DEP), FYVE zinc finger
78	NP_001120777.1	Phosphatidylinositol-4-phosphate 5-Kinase, Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, Domain found in Dishevelled, Egl-10, and Pleckstrin (DEP), FYVE zinc finger
79	XP_005167722.1	Phosphatidylinositol-4-phosphate 5-Kinase, Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, Domain found in Dishevelled, Egl-10, and Pleckstrin (DEP), FYVE zinc finger
80	XP_009302997.1	Phosphatidylinositol-4-phosphate 5-Kinase, Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, Domain found in Dishevelled, Egl-10, and Pleckstrin (DEP), FYVE zinc finger
81	XP_009302999.1	Phosphatidylinositol-4-phosphate 5-Kinase, Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, Domain found in Dishevelled, Egl-10, and Pleckstrin (DEP), FYVE zinc finger
82	XP_009302996.1	Phosphatidylinositol-4-phosphate 5-Kinase, Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, Domain found in Dishevelled, Egl-10, and Pleckstrin (DEP), FYVE zinc finger

83	XP_009302998.1	Phosphatidylinositol-4-phosphate 5-Kinase, Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, Domain found in Dishevelled, Egl-10, and Pleckstrin (DEP), FYVE zinc finger
84	NP_001007058.2	WD domain, G-beta repeat, FYVE zinc finger
85	NP_571631.2	RhoGEF domain, PH, FYVE
86	XP_021332905.1	RhoGEF domain
87	XP_697706.2	Rabenosyn Rab binding domain, Rabenosyn Rab binding domain, FYVE zinc finger, Rabosyn-5 repeating NPF sequence-motif
88	XP_017211441.1	RhoGEF domain, FERM C-terminal PH-like domain, PH domain, PH domain, FERM N-terminal domain, FERM adjacent (FA), FERM central domain
89	XP_005171779.4	Myotubularin-like phosphatase domain, FYVE zinc finger

Retrieved Sequences of *Danio rerio*

>NP_956538.1 pleckstrin homology domain-containing family F member 2 [*Danio rerio*]

MVDRLANSEANSKRIGVVEACFGTAGQPLAIPGRVLIGEGVLTKLCRKRPKARQFFLFNDILVYGNIVIQKKKYNKQHII
 PLESVTIDTVEDEGELRNGWLIKPTKSFVYAATATEKSEWMSHINKCVSDLLEKSGKSPTGEHAAVWVPDSEATVCMR
 CQKMKFTPVNRRHHCRKCGFVVCGPCSEKKFLLPSQSSKPVRVCEFCYKQLSTGATLPPRSDSYSRQGSDFGSNNISDDD
 DDDDSSD

>NP_956634.1 pleckstrin homology domain-containing family F member 1 [*Danio rerio*]

MAEHLAFTIQNRERIQA VESSFGRTGKMLQKPGRFLVGEGLQKLCRRGPQPRVFYLFNDILVYGSIMLHGRWNNKQNII
 PLEEVQQEDLEDGMAMANQWLIRTPRKSFYVSAESPEEKIAWMGHIEQYRTLHVKNKGLPAKKSGDDFATPWIPDVASAI
 CMRCSKRFTVANRRHHCRRCGYIVCQACSKGRAVLPHISNRPVRVCRNCKNDMTDGMQRVQGKMRAKGNHWKKNKNSVED
 TP

TMPEFENSSDEENENADECHQVPTKWFQSQEEDSFSA YCYIKPEHRNPPVGGH

>XP_005164880.1 FYVE, RhoGEF and PH domain-containing protein 6 isoform X2 [Danio rerio]

MSTGMKKPPVAPKPKLVPLHKPSPPPIAPKPEILLSPSPPTAHKRGKPAVAPKPCLLKAPQKPVQARQDHCKNQHPPVSK
NGGPALLSSNLSHYIIPPCNKVCHLANNKSNDSKEISREATLTTEVGVFKEGDSPEHLFSNDTWEHTARSEHVQE QVPT
DSTQMSTEAQDETNSPSVEKDQTSTQVLTSDHIPRHCPTEPLQERSSEVKETGNVFSSCTSDSVGVPAPPSKPLPVPHPR
RPRRALLRQNVVEIAPSDTQADIPTETPENAQSDGLQETPKNTTCHSHTSTLQNACCPKEDIENTDSDSSTKSDPLHKVD
SFYNAQTEDMPSDLSTHYSVPTNGATLASMDTAVEDGSQPPAPPPRQKSLPQMVDLSLCKASTSVDNLLLHCQSDLQEVT
SNDEDAESDDEDDGAYGDFARYPITRSLPKQIKLSCGSQVIAITKPYIDGDEKSPKVMPKKPQRNSLPASVALRKQGTTP
PLPNSNPPVFGELPAPPQEKPSWRVALPSIPLFSRNQPTRSNSQPQAGVVGSVFVKQRAKSFSSADLQRVDNGSEASEQL
ARSDQTRRSLRKLELRVCARLLPKLLRSGQSLDCTRDTSEYEEHKAVPANQVTSGDDEEAQGDSEADCGVEYENVPLYE
EIPEYMNLPWVYSNQDADTDVYEVQEPCEANRCSVSADLSEDGLSSNEEDGDSSDSSKEDMRHSDKKEEVERAKRNKVH
IAMEIMSSEKVFVDVLKLLHIDFRDAVAKATRASGKPLVEEKVLNQILYYLPQLYELNKDLLKELEERVAHWSDHQRLAD
IFVQKGPYLMYSTYIREFDRNVALLDEQCRKNPPFSSVVRQFETSPRCASLALKHYLLKPVQRIPQYQLLLTDYLKNLP
EDSSDYKDTQTALS VVKEVANHANDIMKQGDNFQKLMQVQYSLNGHHEIVQGRVFLKEGTLMKLSRKVMQPRMFFLFN
D

ILLYTTPVQSGQYKVNMSMLSLAGMKVSKPSQEAYQNELNIESVERSFILSANSATERDEWLEAIAIDAIDYTRKKISFFS
SRSQELEGISDDGLPLGSKAPIWIPDLRTTMCMICTCEFTLTWRRHHCRACGKVVCQACSSNKFYLEYLKNQLARVCDHC
YIKLQHKGDQSNVTFSPSGRGSTFAFSRKQKKIPSALKEVSANTENSSMSGYLHRSKGHKKPWKRLWFIKNKVLYTYAA
SEDVAALESQPLLGFLLREEKTGPAQKLQFKLYHKNTLYYIFRAEDIPTAQRWIEAFQEAMIL

>XP_017210510.1 FYVE, RhoGEF and PH domain-containing protein 6 isoform X3 [Danio rerio]

MKKPPVAPKPKLVPLHKPSPPPIAPKPEILLSPSPPTAHKRGKPAVAPKPCLLKAPQKPVQARQDHCKNQHPPVSKNGGP
ALLSSNLSHYIIPPCNKVCHLANNKSNDSKEISREATLTTEVGVFKEGDSPEHLFSNDTWEHTARSEHVQE QVPTDSTQ
MSTEAQDETNSPSVEKDQTSTQVLTSDHIPRHCPTEPLQERSSEVKETGNVFSSCTSDSVGVPAPPSKPLPVPHPRRPRR
ALLRQNVVEIAPSDTQADIPTETPENAQSDGLQETPKNTTCHSHTSTLQNACCPKEDIENTDSDSSTKSDPLHKVDSFYN
AQTEDMPSDLSTHYSVPTNGATLASMDTAVEDGSQPPAPPPRQKSLPQMVDLSLCKASTSVDNLLLHCQSDLQEVTSNDE
DAESDDEDDGAYGDFARYPITRSLPKQIKLSCGSQVIAITKPYIDGDEKSPKVMPKKPQRNSLPASVALRKQGTTPPLPN
SNPPVFGELPAPPQEKPSWRVALPSIPLFSRNQPTRSNSQPQAGVVGSVFVKQRAKSFSSADLQRVDNGSEASEQLARSD
QTRRSLRKLELRVCARLLPKLLRSGQSLDCTRDTSEYEEHKAVPANQVTSGDDEEAQGDSEADCGVEYENVPLYEEIPE
YMNLPWVYSNQDADTDVYEVQEPCEANSRCSVSADLSEDGLSSNEEDGDSSDSSKEDMRHSDKKEEVERAKRNKVH
IAMEIMSSEKVFVDVLKLLHIDFRDAVAKATRASGKPLVEEKVLNQILYYLPQLYELNKDLLKELEERVAHWSDHQRLADIFV
QKGPYLMYSTYIREFDRNVALLDEQCRKNPPFSSVVRQFETSPRCASLALKHYLLKPVQRIPQYQLLLTDYLKNLPEDS
SDYKDTQTALS VVKEVANHANDIMKQGDNFQKLMQVQYSLNGHHEIVQGRVFLKEGTLMKLSRKVMQPRMFFLFN
DILL
YTTPVQSGQYKVNMSMLSLAGMKVSKPSQEAYQNELNIESVERSFILSANSATERDEWLEAIAIDAIDYTRKKISFFSSRS

QELEGISDDGLPLGSKAPIWIPDLRTTMCMICTCEFTLTWRRHHCACGKVVCQACSSNKFYLEYLKNQLARVCDHCYIK
 LQHKGDQSNVTFSPSGRGSTFAFSRKQKKIPSALKEVSANTENSSMSGYLHRSKGHKPKWKRLWFVIKNKVLYTYAASED
 VAALESQPLLGFLLREEKTGPAQKLQFKLYHKNTLYYIFRAEDIPTAQRWIEAFQEAMIL
 >XP_005164879.1 FYVE, RhoGEF and PH domain-containing protein 6 isoform X1 [Danio rerio]
 MSTGMKKPPVAPKPKLVPLHKPSPPPIAPKPEILLPSPSPTAHKRGPAPVAPKPCLLKAPQKPVQARQDHCKNQHPPVSK
 NGGPALLSSNLSHYIIPPCNKVCHLANNKSNDSKEISREATLTTEVGVFKEGDSPEHLFSNDTWEHTARSEHVQEQVPT
 DSTQMSTEAQDETNSPSVEKDQTSTQVLTSDHIPRHCPTEPLQERSSEVKETGNVFSSCTSDSVGVPAPPSKPLPVPHPR
 RPRRALLRQNVVEIAPSDTQADIPTETPENAQSDGLQETPKNTTCHSHTSTLQNACCPKEDIENTDTDSSTKSDPLHKVD
 SFYNAQTEDMPSDLSTHYSVPTNGATLASMDTAVEDGSQPPAPPPRQKSLPQMVDLSCKASTSVDNLLLHCQSDLQEV
 SNDEDAESDDEDDGAYGDFARYPITRSLPKQIKLSCGSQVIAITKPYIDGDEKSPKVMPPKKPQRNSLPASVALRKQGT
 PLPNSNPPVFGELPAPPQEKPSWRVALPSIPLFSRNQPTRSNSQPQAGVVGSVFVKQRAKSFSSADLQRVDNGSEASEQL
 ARSDQTRRSLRKLELRVCARLLPKLLRSGQSLDCTRDTSEYEEHKAVPANQVTSGDDEEAQGDSEADCGVEYENVPLYE
 EIPEYMNLPWVYSNQDADTDVYEVQEPCEANSRCSVSADLSEDGLSSNEEDGDSSDSSKEDMRHSDKKEEVERAKRNKVV
 HIAMEIMSSEKVFVDVLKLLHIDFRDAVAKATRASGKPLVEEKVLNQILYYLPQLYELNKDLLKELEERVAHWSHDHQLA
 DIFVQKGPYLMYSTYIREFDRNVALLDEQCRKNPPFSSVVRQFETSPRCASLALKHYLLKPVQRIPQYQLLLTDYLNK
 PEDSSDYKDTQTALSVVKEVANHANDIMKQGDNFQKLMQVQYSLNGHHEIVQPGRVFLKEGTLMKLSRKVMQPRMFFLFN
 DILLYTTPVQSGQYKVNSMLSLAGMKVSKPSQEAYQNELNIESVERSFILSANSATERDEWLEAIAIDAIDYTRKKISFF
 SSRSQELEGISDDGLPLGSKAPIWIPDLRTTMCMICTCEFTLTWRRHHCACGKVVCQACSSNKFYLEYLKNQLARVCDH
 CYIKLQHKGDQSNVTFSPSGRGSTFAFSRKQKKIPSALKEVSANTENSSMSGYLHRSKGHKPKWKRLWFVIKNKVLYTYA
 ASEDVAALESQPLLGFLLREEKTGPAQKLQFKLYHKNTLYYIFRAEDIPTAQRWIEAFQEAMIL
 >NP_001093450.1 FYVE, RhoGEF and PH domain-containing protein 6 [Danio rerio]
 MKKPPVAPKPKLVPLHKPSPPPIAPKPEILLPSPSPTAHKRGPAPVAPKPCLLKAPQKPVQARQDHCKNQHPPVSKNGGP
 ALLSSNLSHYIIPPCNKVCHLANNKSNDSKEISREATLTTEVGVFKEGDSPEHLFSNDTWEHTARSEHVQEQVPTDSTQ
 MSTEAQDETNSPSVEKDQTSTQVLTSDHIPRHCPTEPLQERSSEVKETGNVFSSCTSDSVGVPAPPSKPLPVPHPRRPRR
 ALLRQNVVEIAPSDTQADIPTETPENAQSDGLQETPKNTTCHSHTSTLQNACCPKEDIENTDTDSSTKSDPLHKVDSFY
 NAQTEDMPSDLSTHYSVPTNGATLASMDTAVEDGSQPPAPPPRQKSLPQMVDLSCKASTSVDNLLLHCQSDLQEVTSNDE
 DAESDDEDDGAYGDFARYPITRSLPKQIKLSCGSQVIAITKPYIDGDEKSPKVMPPKKPQRNSLPASVALRKQGTPLP
 NPNPPVFGELPAPPQEKPSWRVALPSIPLFSRNQPTRSNSQPQAGVVGSVFVKQRAKSFSSADLQRVDNGSEASEQLARSD
 QTRRSLRKLELRVCARLLPKLLRSGQSLDCTRDTSEYEEHKAVPANQVTSGDDEEAQGDSEADCGVEYENVPLYEYEEIPE
 YMNLPWVYSNQDADTDVYEVQEPSMTVEFVNAFLTFISHWLVCDELSVPAKQRCALAVGFQMHRTLQACGRVFGNVSM
 LPTNIYMSADLSEDGLSSNEEDGDSSDSSKEDMRHSDKKEEVERAKRNKVVHIAMEIMSSEKVFVDVLKLLHIDFRDAV
 KATRASGKPLVEEKVLNQILYYLPQLYELNKDLLKELEERVAHWSHDHQLADIFVQKGPYLMYSTYIREFDRNVALLDE

QCRKNPPFSSVVRQFETSPRCASLALKHYLLKPVQRIPQYQLLLTDYLNLPEDSSDYKDTQTALSVVKEVANHANDIMK
QGDNFQKLMQVQYSLNGHHEIVQPGRVFLKEGTLMLKLSRKVMQPRMFFLFNDILLYTTPVQSGQYKVNMSLSLAGMKVSK
PSQEAYQNELNIESVERSFILSANSATERDEWLEAIATAIDDYTRKKISFFSSRSQELEGISDDGLPLGSKAPIWIPDLR
TTMCMICTCEFTLTWRRHHCACGKVVCQACSSNKFYLEYLKNQLARVCDHCYIKLQHKGDQSNVTFSPSGRGSTFAFSR
KQKKIPSALKEVSANTENSSMSGYLHRSKGHKKPWKRLWFKVKNKVLTYAASEDVAALLESQPLLGFLLREEKTGPAQKL
QFKLYHKNTLYYIFRAEDIPTAQRWIEAFQEAMIL

>XP_005155897.1 FYVE, RhoGEF and PH domain-containing protein 5 isoform X2 [Danio rerio]

MSRPCPSTRGPKPPVAPKPRLASEVSHSIVGNGDITSSDRLELKQDNKSDVAQEESDKSRENCTDDQAENDLYDKEFAVN
YDTTCYDEIEDKLQMAVDETMGEDEDKNVTEIQHATTLSLSEAVDECLDSADEFHSKSADDIKPAESREVIYNVLED TSA
CSENDTSTKACESQSPYEEIEEPPLNSFQCANGQYEEDIGAGANCVHHEAEEDGTGLSSKATNCSQPSLCEEYPYDIIGT
LDDNNTWQAERATKDPSGRFRFAEETEDAFEPYSVIEVVPDLMCTADPETRCTDEESSNVKPMDSSENTTEGTSNQEPYY
VSSEDVEDLEEEQAKLENGVSLPASEVQEMDKNEEVDDYADIEDHEGDDHQVECASSEDYVEIGDEDEPLNMERKTKGKS
VRERSARRRHDLSSQRNSCQPRRLRCNITVPADLDLGRTPELTNRVVF AHTTEAFEEDIEELDCHIVPFFEDSDTESDEH
IYEEAGFDSEGENFISLDRKSIVTRSRLSGKVPGYVPETVPEETGTEYQSHDYTYVALDQNGDPHPKPSDEAEANRIIP
SLKPRRFLSPRSLSVEGRDLQLSGHFEGEKSLREEYRLQRKDDTLSPCVITSSGSFSQRSHQSSSGVSTPTSLVDIPP
PFELAYITKRPVTKSSPSLLIQHDS PDNPKKKKTSFKRFLALKFRKKSESKSRGDGSVRSSRSSSESSHGPIRVLELDR
RSTSGSPKLQSHAGKPQRNSEIPTTFLLYKERQSRQGALKSYNSRGISRVSFEDRTRPPFMPLPLTKPRSISFPSADTS
DYENIPAMSSDYENIQIPHGRPTRAVTITEFFDDHNRTAAPANENDGYVDMNSFAGIENKSTTREQDTE SAYTEPFVCP
VSATVSNEEDHGRTSEEDGCGDHCHDRQIDGRSRAYYVAKDLVDSEREHV KALKVVLQEDFRAAVESGGDDNGPLIENGK
LDEIFSTLPQAYSLHSEILNELETRIKQWEDSPTVVDVILTRRAEFSSFATYISNYDRSMSVLDESCRKSQAFEDVVKQF
ETQNAEGVLVPLKHQLLRVIVRILQYRMLLTDYLNLSLSPDSKEYEDTQAALVIVSEVADQVNDNLKHGENLLRLVHIDYS
VRGKRDLQPGRVFVKEGTLMKVSRKSRQPRHLFLMNDVMLYTYPPQDGKYRLKNTLTLSGMKVSKPIIDNVNLTLRIEV
SDVTITLSASSLGEREDWFHTLSRAIADHAAGLNTFSSSSEAREKLWMSLGEAAPVLVPVSHVMMCMNCTSDFSLT LRRH
HCNACGKVVCRCSCRNRYP LKYLKDRMAKVCDHCY AELRKRGDVP GSCGSVSPRTHRASRPLSAVFQSLQPPSLWRNRK
SSSPLTQVSVGAEGSTMSGSLQRRKKS KRRWKRLWFLLDKDKDVASELSLQGF TVKLSDRSEGEDTDNVFQLYHKKTLY
YTFRADDQPTARRWVNAMEEATVL

>XP_001919894.2 FYVE, RhoGEF and PH domain-containing protein 5 isoform X1 [Danio rerio]

MSRPCPSTRGPKPPVAPKPRLASEVSHSIVGNGDITSSDRLELKQDNKSDVAQEESDKSRENCTDDQAENDLYDKEFAVN
YDTTCYDEIEDKLQMAVDETMGEDEDKNVTEIQHATTLSLSEAVDECLDSADEFHSKSADDIKPAESREVIYNVLED TSA
CSENDTSTKACESQSPYEEIEEPPLNSFQCANGQYEEDIGAGANCVHHEAEEDGTGLSSKATNCSQPSLCEEYPYDIIGT
LDDNNTWQAERATKDPSGRFRFAEETEDAFEPYSVIEVVPDLMCTADPETRCTDEESSNVKPMDSSENTTEGTSNQEPYY
VSSEDVEDLEEEQAKLENGVSLPASEVQEMDKNEEVDDYADIEDHEGDDHQVECASSEDYVEIGDEDEPLNMERKTKGKS
VRERSARRRHDLSSQRNSCQPRRLRCNITVPADLDLGRTPELTNRVVF AHTTEAFEEDIEELDCHIVPFFEDSDTESDEH

IYEEAGFDSEGENFISLDRKSIVTRSRSLSGKVPGYVPETVPEETGTEYQSHDYITVALDQNGDPHPKPSDEAEANRIIP
 SLKPRRFLSPRSLSVEGRDLQLSGHFEGEKSRLREEYRLQRKDDTLSLPCVITSSGSFSQRSHQSSSGVSTPTSLVDIPP
 PFELAYITKRPVTKSSPSLLIQHSDPDNPKKKKTSFKRFLALKFRKKSESKSRGDGSVRSSSRSSSESSHGPIRVLELDR
 RSTSGSPKLQSHAGKPQRNSEIPTTFLLYKERQSRQGALKSYNSRGISRVEFEDRTRPPFMPLPLTKPRSISFPSADTS
 DYENIPAMSSDYENIQIPHGRPTRAVTITEFFDDHNRTAAPANENDGYVDMNSFAGIENKSTTREQDTESAYTEPFPVCP
 VSATVSNEEDHGRTSEEDGCGDHCHDRQIDGRSRAYYVAKDLVDSEREHVKALKVLQEDFRAAVESGGDDNGPLIENGK
 LDEIFSTLPQAYSLHSEILNELETRIKQWEDSPTVVDVILTRAEFSSFATYISNYDRSMSVLDESCRKSQAFEDVVKQF
 ETQNAEGVLVPLKHQLLRVIVRILQYRMLLTDYLNNSPDSKEYEDTQAALVIVSEVADQVNDNLKHGENLLRLVHIDYS
 VRGKRDLQPGRVFVKEGTLMKVSRKSRQPRHLFLMNDVMLYTYPPQDGKYRLKNTLTLSGMKVSKPIIDNVNLTLRIEV
 SDVTITLSASSLGEREDWFHTLSRAIADHAAGLNTFSSSSEAREKLWMSLGEAAPVLVPVSHVMMCMNCTSDFSLTLLRRH
 HCNACGKVVCRCSCRNRYPKYLKDRMAKVCDCYAE LRKRGDVPVSGSGSVSPRTHRASRPLSAVFQSLQPPSLWRNRK
 SSSPLTQVSVGAEGSTMSGSLQRRKKSKRRWKRLWFLKDKVLYTFKAREDKVAESLSLQGFTVKLSRSEGEDTDNVF
 QLYHKKTLYYTFRADDQPTARRWVNAMEEATVL

>XP_001332264.7 FYVE, RhoGEF and PH domain-containing protein 4 isoform X1 [Danio rerio]

MSAVSRSKNVKHSIDAEEKGNVLNSCSDLKHHVHWQKTRFRRAVGGRTSGSQGSAGAQVEDSASSFLKDASSVLRKSAV
 YSVSAMPPPAVLPKPKFQCPPKISAANVIDGEQTDNDKTRERTTSDQSASSECAASSFSASDQSSGWDVWSGWWSEEV RG
 QQEESGRGN GASVEKEEEQSRWKQDGLNEDMENDEDKPSVENDEDQQEQVNKLKLFKISSELLQTERAYVSRLHLLDQVF
 CVRLTEEALKGSFPVDVVKGIFSNVGSITFHSQFLLPDLETRMSQWDSKPRVGDVLAQLAPFLRMYAEYVKNFDSAMEL
 LKLWMERSTQFSAIQDIQSQEVCGSLTLQHMLPEPVQRVPRYEMLLKDYLKKLPEDDED RSQAQKSLNIISMAATHSNM
 AIRKMENLKKLMEIYEMLGGEEDIVNPSNELIKEGQILKLAARNTSSMERYLFLFNNMLLYCVPKFSLVGQRFTVRTRVR
 VEGMKVLETSNEDYPHTFQVSGKERTLELQASSQQDKEDWIKAFQETIEIFQQKNETFKSACKEATDEVSKHEELGKRAPR
 WIRDNEVTMCMKCKEPFNALTRRRHHCACGYVVCYKCSDHKASLRYSNKLNVCKDCYHILTGRADAEPPVCGKKKG
 I

LEIEAAQVSGNSFLCGFLQYSDRTKPSQRVWCVIPQHDAVLVLYYGAPQDVKALCTIPLLGYQVEDVQRSVDHPPTGFRL
 CQSKYIHCFTAETEEVKLRWLKVIRKAVIGEMPECQTPVDGDLVNGCHEGATDGT

>XP_021330870.1 FYVE, RhoGEF and PH domain-containing protein 4 isoform X2 [Danio rerio]

MFEKVRKSAYDVEEFRKTAFRRRSAGLNVEKKKKVRRGSVPGSQGSAGAQVEDSASSFLKDASSVLRKSAVYSVSAMPPP
 AVLPKPKFQCPPKISAANVIDGEQTDNDKTRERTTSDQSASSECAASSFSASDQSSGWDVWSGWWSEEV RGQQEESGRGN
 GASVEKEEEQSRWKQDGLNEDMENDEDKPSVENDEDQQEQVNKLKLFKISSELLQTERAYVSRLHLLDQVFCVRLTEEAL
 KGSFPVDVVKGIFSNVGSITFHSQFLLPDLETRMSQWDSKPRVGDVLAQLAPFLRMYAEYVKNFDSAMELLKLWMERST
 QFSAIQDIQSQEVCGSLTLQHMLPEPVQRVPRYEMLLKDYLKKLPEDDED RSQAQKSLNIISMAATHSNMAIRKMENLK
 KLMEIYEMLGGEEDIVNPSNELIKEGQILKLAARNTSSMERYLFLFNNMLLYCVPKFSLVGQRFTVRTRVRVEGMKVLET
 SNEDYPHTFQVSGKERTLELQASSQQDKEDWIKAFQETIEIFQQKNETFKSACKEATDEVSKHEELGKRAPRWIRDNEVTM

CMKCKEPFNALTRRRHHCRACGYVVCYKCSDHKASLRYDSNKLNVCKDCYHILTGRADAEPPVCGKKKGILEIEAAQVS
GNSFLCGFLQYSDRTKPSQRVWCVIPQHDAVLVLYGAPQDVKALCTIPLLGYQVEDVQRSVDHPPTGFRLCQSKYIHCF
TAETEEVKLRWLKVIRKAVIGEMPECQTPVDGDLVNGCHEGATDGT

>NP_001171404.1 FYVE, RhoGEF and PH domain-containing protein 4a [Danio rerio]

MQEGGLDGAIGKGRVSNLISRFEENRHTDGRREGTPPKQVSRSPNCSPPRKNYQRPREQTSOSSPHHALKPPNGVLAKMN
RDRDRERDMEGVTHAPVPIARINKQGLLNGDSVDLTKREITEEECVDSPDVHLNQAKEEEEEQEKRVSEQSDIVRMNSIP
EQKETNEQKLYKIANELLQTEKAYVARLNLLDKVFYTKLMEEARKDTFPVDVVKSIKSNITSINAFHSQFLPDLEKRMG
EWTSTPRIGDILQKLTPFLKMYAEYVRNFDHAMDLLKQRIDRSPPFKAIILDIQSQEVCGNLTLQHMMLEPVQRVPRYEM
LLKDYLLKKLPPEHMDRRDAEKSLEIIGMAATHSNTAIRKTENLKKLLEIYEMLGEEEDIVNPSNELIKEGHILKLAARNT
SAMDRYLFLFNMLLYCVPKFSLVGQKFTVRTRIGIEGMNVKETFNEDYPHTFQVSGKERTLELQASSKLDKESWIKAF
ETIDISLQKNETFKSAIKDTEEASDLNISELGKRAPRWIRDNEVTMCVKCKEGFNATRHHCRACGYVVCWKCSYKA
TLEYDGNKISKVCKHCYFILTGRDSDREGKKKGILEIEAAQFCGSSIMCGFLQYCERNKPWQKVWCVIPEKEALVLYL
YGAPQDVKAQSTIPLLGYHVEDNPRATDPPASFRLSQSKSIHSFAAESEELKQRWLKVIRMAVTGEVPESPEENSSAEIT
EELNSNGN

>XP_688794.4 FYVE, RhoGEF and PH domain-containing protein 1 isoform X1 [Danio rerio]

MQLNRPKSAHLISSSPHNSSSYSSQFKSMRFSYHISSGLPSPQPALRRTGSSSSSPRLTKSLSLDPGCLGAHETPQRL
CSDPGPLEPQHCHNGTSENGPQDVPPPPPKTRPPLPGPKPQVPPKPPHLQQQNARRPRPPDKPLPPPPSRPLPADPRQSR
ATMPRAEGSSSPTCVLSLIEKFEREQIIVVPDITGGVMCTPRVPDQQAATPGSLSPQTSEFILPCTSLQEPLAELAEDEL
EKEEKEEEEEEDVDETEEDDSELGASCSDKRLSMESGYGASDKLLDNMEMTANQSEIPSDRLSLPPAQMDGKLANRDSGI
DSISSPSHSEELCFVGDEDRVGHIERICPCSPGPGISCSYVEGPDEEGAGGEEAGRDSEGDSDLEEGSGDESEMNPALQ
PLPKAERQDSTEMSVQQRVFNIANELLHTEKAYVSRLHLLDQVFCAQLMEEARARSSFPCEMVMGIFSNICSIYCFHQF
LLPALEKRMEEWDLNPRIGDILQKLAPFLKMYGEYVKNFDRAMELVNTWMQRSSQFKTIHNIQKEEMCGNLTLQHMMLE
PVQRIPRYELLLKDYLLHRLPEDADDFKDAQKSLELIATAAEHSNAAIRKMERMRKLLKVYELLGGEEDIVNPTNELIKEG
HILKLSAKNGTSQDRYLILFNDRLLYCVPKLRLLIGQKFGVRARIDVDGMELKETSSMNVPRFTLVSGKQRSLELQARTEE
EKRDWIAIQAQTIQRHEQTLETFRMLNCSFREEDLTPPNSPNCSELGKRAPTPIREKEVTLCMKCQEPFNSITKRRHHCK
ACGHVVCCKCSEFRARLLYDNNRANRVCIDCYTMLVGVPSPASLSSSTQRRRSILEKQASVAAENSVLCSFLHHMEKGS
GRGWQKAWFVIPENEPLVLYIYGAPQDVKAQRSPLIGFEVSLPESGDRLERRFAFKMSQSHLTVYFSADCEELQRRWME
VLSRAGRGEELQSNGPICEALEEEGEEPAPTGEST

>XP_017212899.1 FYVE, RhoGEF and PH domain-containing protein 1 isoform X4 [Danio rerio]

MTGFVFCCAMYMDKTSVLRGPCLGAHETPQRLCSDPGPLEPQHCHNGTSENGPQDVPPPPPKTRPPLPGPKPQVPPKPPHL
QQQNARRPRPPDKPLPPPPSRPLPADPRQSRATMPRAEGSSSPTCVLSLIEKFEREQIIVVPDITGGVMCTPRVPDQQA
TPGSLSPQTSEFILPCTSLQEPLAELAEDELEKEEKEEEEEEDVDETEEDDSELGASCSDKRLSMESGYGASDKLLDNM
EMTANQSEIPSDRLSLPPAQMDGKLANRDSGIDSISSPSHSEELCFVGDEDRVGHIERICPCSPGPGISCSYVEGPDEEG

AGGEEAGRDSEGSDLEEGSGDESEMNP MALQPLPKAERQDSTEMSVQQRVFNIANELLHTEKAYVSRLHLLDQVFCAQL
MEEARARSSFPCEMVMGIFSNICSIYCFHQQFLLPALEKRMEEWDLNPRIGDILQKLAPFLKMYGEYVKNFDRAMELVNT
WMQRSSQFKTIIHNIQKEEMCGNLT LQHMLPEVQRIPTYELLLKDY LHRLPEDADDFKDAQKSLELIATAAEHSNAAIR
KMERMRKLLKVYELLGGEEDIVNPTNELIKEGHILKLSAKNGTSQDRYLILFNDRLLYCVPKLRLIGQKFGVRARIDVDG
MELKETSSMNVPRTFLVSGKQRSLELQARTEEEKRDWIQAIQATIQRHEQTLETFRMLNCSFREEDLTPPNSPNCSELGK
RAPTPIREKEVTLCMKCQEPFNSITKRRHHCKACGHVVC GKCSEFRARLLYDNNRANRVCIDCYTMLVGVPSPASLSSS
TQRRRSILEKQASVAAENSVLCSFLHHMEKSGRGWQKAWFVIPENEPLVLYIYGAPQDVKAQRS LPLIGFEVSLPESGD
RLERRFAFKMSQSHLTVYFSADCEELQRRWMEVLSRAGRGEELQSNGPICEALEEEGEEPAPTGEST

>XP_017212897.1 FYVE, RhoGEF and PH domain-containing protein 1 isoform X2 [Danio rerio]

MQLNRPKSAHLISSSPHNSSSYSSQFKSMRFSYHISGLPSPQPALRRTGPCLGAHETPQRLCSDPGPLEPQHCNGTSEN
GPQDVPPPPPKTRPPLPGPKPVPPKPPHLQQQNARRPRPPDKPLPPPPPSRPLPADPRQSRATMPRAEGSSSPTCVLSL
IEKFEREQIIVVPDITGGVMCTPRVPDQQATPGSLSPQTSEFILPCTSLQEPLAELAEEDELEKEEKEEEEEEDVDETEE
DDSELGASCSDKRLSMESGYGASDKLLDNMEMTANQSEIPSDRLSLPPAQMDGKLANRDSGIDSISSPSHSEELCFVGDE
DRVGHEREICPCSPGPGISCSYVEGPDEEGAGGEEAGRDSEGSDLEEGSGDESEMNP MALQPLPKAERQDSTEMSVQQR
VFNIANELLHTEKAYVSRLHLLDQVFCAQLMEEARARSSFPCEMVMGIFSNICSIYCFHQQFLLPALEKRMEEWDLNPRIG
DILQKLAPFLKMYGEYVKNFDRAMELVNTWMQRSSQFKTIIHNIQKEEMCGNLT LQHMLPEVQRIPTYELLLKDY LHRL
LPEDADDFKDAQKSLELIATAAEHSNAAIRKMERMRKLLKVYELLGGEEDIVNPTNELIKEGHILKLSAKNGTSQDRYLI
LFNDRLLYCVPKLRLIGQKFGVRARIDVDGMELKETSSMNVPRTFLVSGKQRSLELQARTEEEKRDWIQAIQATIQRHEQ
TLETFRMLNCSFREEDLTPPNSPNCSELGKRAPTPIREKEVTLCMKCQEPFNSITKRRHHCKACGHVVC GKCSEFRARLL
YDNNRANRVCIDCYTMLVGVPSPASLSSSTQRRRSILEKQASVAAENSVLCSFLHHMEKSGRGWQKAWFVIPENEPLV
LYIYGAPQDVKAQRS LPLIGFEVSLPESGDRLEERRFAFKMSQSHLTVYFSADCEELQRRWMEVLSRAGRGEELQSNGPIC
EAL EEEGEEPAPTGEST

>XP_017212898.1 FYVE, RhoGEF and PH domain-containing protein 1 isoform X3 [Danio rerio]

MTGFVFCCAMYMDKTSVLRGSSSSSPRLLT KSLSLDPGPCLGAHETPQRLCSDPGPLEPQHCNGTSENGPQDVPPPPPKT
RPPLPGPKPVPPKPPHLQQQNARRPRPPDKPLPPPPPSRPLPADPRQSRATMPRAEGSSSPTCVLSLIEKFEREQIIVV
PDITGGVMCTPRVPDQQATPGSLSPQTSEFILPCTSLQEPLAELAEEDELEKEEKEEEEEEDVDETEEDDSELGASCSDK
RLSMESGYGASDKLLDNMEMTANQSEIPSDRLSLPPAQMDGKLANRDSGIDSISSPSHSEELCFVGDEDRVGHEREICPC
SPGPGISCSYVEGPDEEGAGGEEAGRDSEGSDLEEGSGDESEMNP MALQPLPKAERQDSTEMSVQQRVFNIANELLHTE
KAYVSRLHLLDQVFCAQLMEEARARSSFPCEMVMGIFSNICSIYCFHQQFLLPALEKRMEEWDLNPRIGDILQKLAPFLK
MYGEYVKNFDRAMELVNTWMQRSSQFKTIIHNIQKEEMCGNLT LQHMLPEVQRIPTYELLLKDY LHRLPEDADDFKDAQ
KSLELIATAAEHSNAAIRKMERMRKLLKVYELLGGEEDIVNPTNELIKEGHILKLSAKNGTSQDRYLILFNDRLLYCVPK
LRLIGQKFGVRARIDVDGMELKETSSMNVPRTFLVSGKQRSLELQARTEEEKRDWIQAIQATIQRHEQTLETFRMLNCSF
REEDLTPPNSPNCSELGKRAPTPIREKEVTLCMKCQEPFNSITKRRHHCKACGHVVC GKCSEFRARLLYDNNRANRVCID

CYTMLVGVPPSPASLSSSTQRRRSILEKQASVAAENSVLCSFLHHMEKSGRGRWQKAWFVIPENEPLVLYIYGAPQDVKA
QRSPLIGFEVSLPESGDRLERRFAFKMSQSHLTVYFSADCEELQRRWMEVLSRAGRGEELQSNGPICEALEEEGEEPAP
TGEST

>XP_002667361.2 RUN and FYVE domain-containing protein 1 [Danio rerio]

MADEDPNTKVESGDVPAKEEEPEVTETGQEDVANNTDELQKDRPADSSWSAPILSFARKATETLSSGVNHYSAGLKTPDT
TQQHSSDPVKIAAVKDPVVVERSNNLSMMKLSIKVLIQSSLSLGRITLDSEYPPLQQFFVVEHCLKHGLKVRKSFGLQN
KSIWAPLEMIEKLCPEADIATSVRDMPGIKTGLGRARAWLHLALMQKKIADYMKVLINRRDLLGEFYEPGALVMEEEGA
VIVGMLVGLNVIDANLCVKGEDLDSQVCVIDFSMYLKDPQATESKQDDSKMTAILDQKHIEELNRHLSCTVTDLQAKMD
SLEKTNSKLIEELTAATDRINALREEQEQLKQENANILQSSQRKEEVTLQDSQVELETYRQTRQGLDEMYSVVWKQYKEE
KRIRQELQKELELQIGLKQEMEVAAMKLLKDTHEKQDTLVALRQQLDQVKNLNLQMFNKAQASDRVAQKKEEDMVHLEK
K
MIQMEAAMKELEQRLQNSQEDVQKNTDEQQNEIRTEMKGKVNALQKRLSDLDTLRAGLETLSAEKEQRQILQKELQREQD
NSAELRTQLQQLQGLQTELLDLRQEKQQLQQLCEEQEALQEMGLHLSQSKLKMEDFKEVNKALKGHAWLKDDEATQCK
Q

CQKEFSISRKHHCRCNGDIYCGNCSSNELALPSYPKPVRVCDVCHSLLLQRSSTGS

>NP_001099151.2 RUN and FYVE domain-containing protein 2 isoform 2 [Danio rerio]

MYSPQSLHRWGITHSESMERLAYSQAFRDPMAMERANLLNMAKLSIKGLIESALSFGRTLDSDYPPLQQFFVVMHCLKH
GLKVKSFLGYNKSLLWGPLEMVEKLCPEAGEIAASVRDLPGLKTPLGRARAWLRLALMQKKLADYLRLITRKDILSEFY
ESSAVMLEEEGAVIVGLLVGLNVIDANLCVKGEDLDTQVGVIDFSMYLKNDIDYRSEERNGQIAAILDQKNYVEELNRQ
LNSTVQGLQGRVESLEKNNSKLIEELAIKNNIILQEENHQLRTENSVILMKAQQRLAVTEGDLSCELDTYKQSRQGLD
EMYNEARRQLKEECQLRQDVENELVVQVSMKQEMEMAMKLLKDIHEKQDTLIGLRHQLDEVKAINVEMYQKMQSDDDS
M

RQKNDMIARLEEKTNQITATMKQLEQRLQDAERERASAEDGVRKFKQDFTNKAESLQKQIVQREKQMTQLETDLKIERDW
RQTLQNELERERETITQLAAEAQQINGLKKEFHRLQDENTQLKGICEEQEHALEELGCKLSESKLIEDIKEANKALQGG
QVWLKDKDATHCKLCEKEFSISRKHHCRCNGEIFCNACSDNELPLPASPKPVRVCDTCHAMLLQRCSSNTT

>NP_001231848.1 RUN and FYVE domain-containing protein 2 isoform 1 [Danio rerio]

MATPAEQDLVLAEAEAGNKERTQVFGILRLQEDKSAGEKASSPAMKSGDGRWQAPIFALARKASETFSGGIHVLPKVTEPK
TSPFTEEWGARAFRDPMAMERANLLNMAKLSIKGLIESALSFGRTLDSDYPPLQQFFVVMHCLKHGLKVKSFLGYNKS
LWGPLEMVEKLCPEAGEIAASVRDLPGLKTPLGRARAWLRLALMQKKLADYLRLITRKDILSEFYESSAVMLEEEGAVI
VGLLVGLNVIDANLCVKGEDLDTQVGVIDFSMYLKNDIDYRSEERNGQIAAILDQKNYVEELNRQLNSTVQGLQGRVES
LEKNNSKLIEELAIKNNIILQEENHQLRTENSVILMKAQQRLAVTEGDLSCELDTYKQSRQGLDEMYNEARRQLKEEC
QLRQDVENELVVQVSMKQEMEMAMKLLKDIHEKQDTLIGLRHQLDEVKAINVEMYQKMQSDDDSMRQKNDMIARLEEK
T

NQITATMKQLEQRLQDAERERASAEDGVRKFKQDFTNKAESLQKQIVQREKQMTQLETDLKIERDWRQTLQNELERERET
ITQLAAEAQQINGLKKEFHRLQDENTQLKGICEEQEHALEELGCKLSESKLKIEDIKEANKALQGGQVWLKDKDATHCKL
CEKEFSISRKHHCRCNCGEIFCNACSDNELPLPASPKPVRVCDTCHAMLLQRCSSNTT

>XP_003200485.1 early endosome antigen 1 [Danio rerio]

MLRRILQMTPGKGGSQSSESEQPSADMNNESSEGFICPQCMKSHNSAEELFKHYEVFHEPGDQSPFSPGREDLTLLRQE
IQDLQASLKEERWFSEELKKELDKVQGRIATNKGQLSDGTSGEDAELEMRLNESETEKFNKQMKDLFEQKAAQLATEIV
DIKSRYDEEKSMREALEQRLANLNQDMQKEKQEKEKLSAELLQRPGVEDVEVLKKELVQVQTLMDNMTREREEESERLKG
QYEQLQANFTTSEKTIAQLKAELEKGPQEAAYVTQQIHQLQSSLNNLQQSQALSEKLSRKEKENQELEERLGHEQASKK
SLQANLHQKELELQESRARVSSGEAALSRAQAEATERGEEAARLRRELGELEKNQQELKAERKQLQQQREDKENQGLQQQ
SEISQLHAKLLEAERQVGELQGRLKEQRQLSGEKLKDREQQAADLQLKLSRLEEELKESSTKSTDQLHQLDKSKQQHQEL
QTLQQSTNGKLREAQNDLEQVLRQIGDKDQKIQNLEALLQKSKESVSQLETEREDLCAKIQAGEGEAALLNQLQEKNHSL
QEQITQLTDKLNQSESHKQAQDNLHEQVQEQTHLRSAQDRCQGLETTVTELNTQLTESREKIAQLDTQLKAKTEMLLS
AEAANKNAQRADLESHLETAQNALQDKQQELSKVQAQLEEQARRLTEKQEQCSQLENGLKDSRDKLMTAEQRIETLQTQTK
KAEVELTELRSGREQAQKEQSSLKKQISELEMKTKELNRLLDSEKQGASTQQEELKKKSSALTETRQKLEKAEQERGAQ
ANLDKLSQEGQKQQAELDKKVQGLSSDLQKTQGEKETLVKEVATVKEALSKASKALKESQTQLDKEKKGSKATLEEKEKV
FQKVQQELQKNSEATSKELSNVKGLLEKSIEAEKSLQSQLTALNAQLKQCQDTLKEKEKSEQQLQAEKTRQGSFSQEVK
KLKTQVSELQASLAKKTEEEAKQKEQITALSKDLSSEKNRCAELQKTSKGESLTALQSDYYGKESELSAVRQDLKVCE
EKLVLAEELVTNRNQLSAYETQIQELKTGHTAMEIDLKRDEKIKQQVETLQKLQKQQGQTEEQKKKEKAQCEELRESQ
SALEKDKNKLADLKTALAEKNEKELKDLQAAKQLLIQKQVEMQGVAAQASVEKEQREHQKTRDSIKQNEQQKKAETNK
IKQQQLASEVKAKEEMVRQREEAEVKMSMQVTALNENVATLKRQWQSSQRRVGELEKQTDDELRGIAVLEATVQNNQDERR
ALLERCQVQEGEMEKLQAKMLEMRRKLDDTTAAMQELGRENQSLQIKQSQSLTRKWTEDEHVQNCMACGKGFSVTVRKH
H

CRHCGNIFCAECSARNALTPSSKKPVRVCDNCFDELQG

>XP_001344504.2 zinc finger FYVE domain-containing protein 9 isoform X2 [Danio rerio]

MENYFQAEAFNLDKVLDEFEQNEDETDTPILSDAKWTQILAPPSHLLSLNPALTHSDLSPRDSPISFKPLLDQTSDGPS
LVEVTRLNGKQGLGQQQEGKSEERPADVYSPPLPQPNIGKL VSTDGQLADLPSFNSGVLENGYPASPDHTVQSDIIRFND
DETNPVIDKKCLKDTGPCELKLEQNGHISDAGRDFISTEESEDKPSILKNGVKMETSKDES VSPSCKVGIRDNSNGLC
PEGSSSHKGV LHKSVNGGGELDCGRENDEGA FQNGVMVENENTEKDNSASNQEEKEKMLKTDHKGMHKESLEGERCLSD
G

LVEDLDGDAQNQLAVSSKEDSVTEEKEIEESKQETCDPVRQLESGRGTGKLNN SRLQPVSIPYGGARPKQPVNLKLQIPQP
LSNQVQNEFGTNSKNKNMEPQSRTGGLDASSEATESGVVQINGEHGNGSSGLIIPSESPDNDLQAGQQGAFSKKPLSSLG
EVAPVWVPDSQAPICMKCEVKFTFTKRRHHCRACGKVFC AACCSLKSRLMYMDRKEARVCVTCHCALINAQTWENTGSG
C

NQSPNPNNPAEYCSTIPPLQQAQASGALSSPPPTVMVPVGVVKQPGSEGLPREQRRVWFADGILPNGEATDSSKAPAA
 PNPSQPVATSQNSNKSSGANASEAVHSGALTTSPVGSSFSFLIPEDGLPPILISTGVKGDYAVEERPSEIALMQQLEEGC
 PDPLVFVLNANLLAMVKLVNYVNRKCWYMTTKGMHAVGQAEVVLLQCLPDEKTIPKDIFTHFVQLYREALAGNVLGHL
 G
 HSFFTQSFLGSKEHGGFLYVNPTFQTLQDLPLPNSPYLFGILVQKWETPWAKVFPRLMLRLGAEYRFYPCPLFSVRFRK
 PLFGETGHTIMNLLADFRNYQYTLPVVKGLVVDMEVRKTCIKIPSNRYNELMKAMNKSNEHVLAMGACFNDRADSHLVCV
 QNDDGNYQTQAISIIHQPRKVTGASFFVFSGALKASSGYLAKTSIVEDGVMVQITAETMEALRQALREMKDFSACGKAD
 QEENQEHVQVQWVDDDHNVNKGVISPIDGKSMESVTSVKIFHGSEYKANGKVIKWTEVFFLRSEDQNNGLSDPADHSRLA
 ENVARAFCMALCPHLKLLKEDGMAKLGLRVTLDSQVGYLAGSNGQPLLQYLSELDALIPVIHSGACQLSEGPVVMEL
 IFYILEIIS
 >XP_005171254.1 zinc finger FYVE domain-containing protein 9 isoform X1 [Danio rerio]
 MENYFQAEAFNLDKVLDEFEQNEDETDTPILSDAKWTQILAPPSHLLSLNPALTHSDLSPRDSPISEKPLLDQTSDGSP
 LVEVTRLNGKQGLGQQQEGKSEERPADVYSPPLPQPNIGKLVSTDGQLADLPSFNSGVLENGYPASPDHTVQSDIIRFND
 DETNPVIDKKCLKDTGPCELKLEQNGHISDAGRDFISTEESEDKPSILKNGVKMETSDESVPSCVKGIRDNSNGLC
 PEGSSSHKGV LHKSVNNGGELDCGRENDEGAQNGVMVENENTEKDNSASNQEEKEKMLKTDHKGMHKESELEGERCLSD
 G
 LVEDLDGDAQNQLAVSSKEDSVTEEKEIEESKQETCDPVRQLESGRGTGKLNNRLQPVSIYPGGARPKQPVNLKLQIPQP
 LSNQVQNEFGTNSKNKNMEPQSRTGGLDASSEATESGVVQINGEHGNGSSGLIIPSESPDNDLQAGQQGAFSKKPLSSLG
 EVAPVWVPDSQAPICMKCEVKFTFTKRRHHCRACGKVFCACCSLKSRLMYMDRKEARVCVTCHCALINAQTWENTGSG
 C
 NQSPNPNNPAEYCSTIPPLQQAQASGALSSPPPTVMVPVGVVKQPGSEGLPREQRRVWFADGILPNGEATDSSKAPAA
 PNPSQPVATSQNSNKSSGANASEAVHSGALTTSPVGSSFSFLIPEDGLPPILISTGVKGGTGGHITDYAVEERPSEIALM
 QQLEEGCPDPLVFVLNANLLAMVKLVNYVNRKCWYMTTKGMHAVGQAEVVLLQCLPDEKTIPKDIFTHFVQLYREALA
 G
 NVLGHLGHSFFTQSFLGSKEHGGFLYVNPTFQTLQDLPLPNSPYLFGILVQKWETPWAKVFPRLMLRLGAEYRFYPCPL
 FSVRFRKPLFGETGHTIMNLLADFRNYQYTLPVVKGLVVDMEVRKTCIKIPSNRYNELMKAMNKSNEHVLAMGACFNDR
 DSHLVCVQNDDGNYQTQAISIIHQPRKVTGASFFVFSGALKASSGYLAKTSIVEDGVMVQITAETMEALRQALREMKDFS
 IACGKADQEENQEHVQVQWVDDDHNVNKGVISPIDGKSMESVTSVKIFHGSEYKANGKVIKWTEVFFLRSEDQNNGLSDP
 ADHSRLAENVARAFCMALCPHLKLLKEDGMAKLGLRVTLDSQVGYLAGSNGQPLLQYLSELDALIPVIHSGACQLSE
 GPVVMELIFYILEIIS
 >XP_021328582.1 zinc finger FYVE domain-containing protein 1-like [Danio rerio]
 MNHRKDGVPHMADGLCQYAHQYNNKVLICKKCYEGGREVIVIPKTSASTDNPWFGLAKYAWSGYVLECASCGIYRSRQY

WMGNQDPRESSVVRPEVKHVVWQGTDAFQTDHQNAAQRVLDGMNYIIQSVTEYSSGPTKAVAAWLTQVAPPYWKPNAEIS
E
CHGCKRVFEEVERKHHCRACGQGFCQACSTHSMVPERGWGGTPVRVCDACYRQGGPQHCGQVSSTEPRTLVARKVTEV
A
QSTLDMVSTAVDYPLCFIKGVARPDYWVPDHEITQCHCCAkvFTPSMSKHHCRACGEGVCGNCSSKTRAVPSRGWDHPVR
VCDTCAEIRDSL

>XP_009304190.1 zinc finger FYVE domain-containing protein 9 [Danio rerio]

MRQAVTATLSVWGERRFGYSTLKDSSESLLDERKLRPGLKEDSVIEEKERAENEQEQLAVLGPPSSPVEDTHQSGTTEP
SDAMLESCQDQKTS DGMEASLVSGPKNIDSGRKGS LGALPVQRCSSLGTTAPQWVPDSQAPACMKCGSKFSFTKRRHHCR
ACGKVFCVCCDLRYKLTHLGGKEGRVCVTCHSTLINRTL RKDQKKVWFADNVLPQSESRSANSSPIHRSVSHTQSAGLA
QADVSDLRAADEVSGLSSNTKPTPKDLPPILTSTGVKGDYTL EEEKRTESSLLEELERGLAEPLVFVLNANLLAVVKIVS
YVNRRCWCVM SKGMH AVGQPEVVILLQCLPEEKRFPTDIFNHFIQIYWDAQTAGKLLNHL SHSLVSRGFLGNNEHAGFVY
VRPTFQSLEGLPLPAPPFLFGLMLLRAEVPWAKAFPLRLMLRLGAEYRFYPCPLFSVRFREPLFGPVNNSIMRLLVD FRF
YRYTLPTVPGLVVDLEARSTCIRIPKTHHPELLKALNKSNERVLALGACFNEQADSHLICVQTADGQYQTQAISIHSQPR
RVTGSCFFVFSGALKPSSGYLAKSSIVEDGLMVQITMETMAELRRCLRDMKDFTVTCGKLHPAERQEYVHIQWQDEEPRF
NKGIVSPIDGKSME SLTNIKTHQRLEFRANGKLIRWTEVYYLLKDQHPNGLNNHTSHNRLTERLARAFCLALCQSLCLLK
EDGMTKLALRVILDGQKMEFLAGSNQRLPAPYQDCLNQSLMSVVQSNSQYQGLAACQLELIFYILEDTS

>NP_001071191.1 lateral signaling target protein 2 homolog [Danio rerio]

MMNRFRKWLYKPKRSDPQLLAQFYYADEELNQVATELDSLDGRKDPQRCTLLVNQFRSCQDNVLNINQIMDECIPEERA
NRDFCVKFPEEIRHDNL AGQLWFGAECLAAGSIIMNREIESMAMRPLAKDLTRSLEEVNITRDQALRDLNHYTERIKEA
LRHFDGLFAEFELSYVSAMVPVKSPKEYYIQQEVIVLFCETVERALKLEYLTQDMIDDYEPALMFTIPRLAIVCGLVIYS
EGPLNLD RKPEDMSE LFRPFR TLLRKIRDLLQTLTEEELMTLERSLCISQDGEFPTSSTNDPSASTGPDSQTEELEKEKG
VEEVVDLTLFVTQEDSVWKEEEEKQVLPESSESESEEEPIDADLACSMQYDEEEIEQLNMMVHQVGDEMSTLLSPPSQNNQ
SPAHRPRPYNGSSLEGSSATSS TQASPRRAPGSYHDDDRVFFMDDLESGLSSEL CRGQLPLPTVCLRSPEGSSCNGWLT V
CQSSDATNLGCQRKLSQSTESVGN SDRMVNGWEGLQDEDSVQTAE EIANRTGGMKLSATVIFNPHSPSLSDLA VVLPQSA
DAPEGGEGGALVATQCLLNSCVCCAGGCVDNHEDAMEPAGRSMALGF EKHKLTITSSVIQSAVAAGSPGKGNGHLPLTLP
PSQGH LTHSVPNCSVQNQAREDEGSQDGIHYPCCEKCS PGVLLAQDRGSGHEGGPSCTLQDTGCQTQHNASVKGRSECFG
KQSKDDNRKINSSSQESPLSSVPSSDIDGVSVTTC SLSSSYAPSPVSSLTSSDMSEDLDHQEIQVALQA AKLAAHNKIR
SRFHSSSDLIHRLFVCISGVADQLQTN YASDLRSILKTLFEVMATKTDQGDNEKPKKG PCLGSAVLEDCALCQETISSE
LAAKAREGQFEDPPEWVPDEACNSCIACKAPFTVIRRKHHCRSCGKIFCSRCS SHSAPLPRYGQM KPVRVCTHCYMFHVT
PFYSDRTGI

>XP_005158933.1 lateral signaling target protein 2 homolog isoform X1 [Danio rerio]

MMNRFRKWLYKPKRSDPQLLAQFYYADEELNQVATELDSLDGRKDPQRCTLLVNQFRSCQDNVLNINQIMDECIPEERA

NRDFCVKFPEEIRHDNLAGQLWFGAECLAAGSIIMNREIESMAMRPLAKDLTRSLEEVNITRDQALRDLNHYTERIKEA
LRHFDGLFAEFELSYVSAMVPVKSPKEYYIQQEVIVLFCETVERALKLEYLTQDMIDDYEPALMFTIPRLAIVCGLVIYS
EGPLNLDKPEDMSELFRPFRTLLRKIRDLLQTLTEEELMTLERSLCISQDGEFPTSSTNDPSASTGPDSQTEELEKEKG
VEEVVDLTLFVTQEDSVWKEEEEKQVLPESSESESEEEPIDADLACSMQYDEEEEIEQLNMMVHQVGDEMSTLLSPPSQNNQ
SPAHRPRPYNGSSLEGSSATSSTQASPRRAPGSYHDDDRVFFMDDLESGLSSELRCGQLPLPTVCLRSPEGSHCRPDASC
NGWLTVCQSSDATNLGCQRKLSQSTESVGNSDRMVNGWEGQLQDEDSVQTAEIEIANRTGGMKLSATVIFNPHSPSLSDLAV
VLPQSADAPEAGEGGALVATQCLLNSCVCCAGGCVDNHEDAMEPAGRSMALGFEEKHKLTTSSVIQSAVAAGSPGKGNH
LPLTLPPSQGHLTHSVNCSVQNAAREDEGSQDGIHYPCCEKCSPGVLLAQDRGSGQEGGPSCTLQDTGCRTQHNASVKG
KSECFGKQSKDDNRKINSPVSSLTSSDMSEDLDHQEIQVALQAAKLAHNKIRSFRHSSSDLIHRLFVCISGVADQLQT
NYASDLRSILKTLFEVMATKTDQGDNEKPKKGPCLGSAVLEDCALCQETISSSELA AKAREGQFEDPPEWVPDEACNSCI
ACKAPFTVIRRKHHCRSCGKIFCSRSSHSAPLPRYGQMKPVRVCTHCYMFHVTPFYSDRTGI
>XP_691596.6 zinc finger FYVE domain-containing protein 1 isoform X1 [Danio rerio]
MSEMLLKDMDEISLGPVKMDEQKENGSRFLLVDENESLQVKNEAHFLQKLGCSGAQGVKVVSI FGNTGDGKSHTLNHVLF
DREEVFATSPSPSSCTVGVAAYDPQLNLIVLDTEGLLGAATQQNRRMRLLLKVLA VSDVVIYRTRAERLHNDMFQFLGS
ASAAYLKHFTPELRLALSSRCGLDVPLSSLGPAIIVFQETSRTQLLGQDVSGLGQADTLLQKRFDLQSTDAFSSVQYVG
TQTITPPTDYSQLQHTVQQQVSNTSQRAPRQPAIVFSALQALSDRFCGEISDDKFSICSFFPDEYFTCPSVCLSCNVRCK
NGMNRKDGVPHEMADGLCQYAHQYNNKVLICKKCYEGGREVIVIPKTSASTDNPWFGLAKYAWSGYVLECA SCGIYRSR
QYWMGNQDPRESSVVRPEVKHVWQGTDAFQTDHQNA AQRVLDGMNYIIQSVTEYSSGPTKAVAAWLTDQVAPPYWKPN
EI
SECHGCKRVFEEVERKHHCRACGQGFCQACSTHSMPPVPERGWGGTPVRVCDACYRQGGPQHCGQVSSTEPRTL VARKVTE
VAQSTLDMVSTAVDYPLCFIKGVARPDYWVPDHEITQCHCCAKVFTPSMSKHHCRACGEGVCGNCSSKTRAVPSRGWDHP
VRVCYTCAEIRDSL
>XP_009300450.1 alsin isoform X1 [Danio rerio]
MEKLISSGEGDSSGERGLLHTWKGYSTAPERVLLSRPVLQAALGARHGVLLVEGGQVYSFGELPWKQNQTSSAEPILE
AVLSEQRVVFVAAGSAHSGVVTE DGGVHMWGENVHGQCGLLGLSVIPNPTVGVLDSEATPPQTVKILEVACGDQHTLAL
SAKHEVWAWGSGCQLGLNTSTFPVWKPKVDHLSGRHVLQVACGSAHSVALVRCLPPPQEPRKPPQDKCGQCHQLLYTM
T
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QVPAYCQESIEAPVEDSAAHEAPAAAGEVCVEASENSIPEPDSCRSSGKSPYPDEQAVKAYLKRLSDHALAEHTIKTSST
IHSAQLSGDPANLFASEPLIPVAQSVTPMGSALNNLVVSCASAVGERVVSTYEALSLRKVIGYWVPGEGRERVEERLRLE
ESMQGKKSSSLGDIREEEAELSRRLSLPGLLSQDNAESEVKASSNTTTEVSPRLLRRTSRPRMRAVPLASGGIPETDAH
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F

PQLTKLSDGIRVWDIGAGLQHTLLLADGDCIQPILYYSGQQVKEVPEPTEEEEQTAEYTQQPVLLPFCMNLGYVSSVYAG
 GRTCAALTDCNVMGFIASLHELAAAERKYYCKLSNIKSLLLQPLLKLDLSSALGQSSAGLLQNLIGRMSRLSQLTGQNS
 ASLTSFLQRSRDIRGLVILED AHLFLD TYSEYSSAVGDLLVMGGFQALVKPCHDVFGKGAEVVQRLSECSEEGTLADVL
 AHLFYLPKHLHEYGRLLLKLATCYEVSSVDYQKLQDACSKFESMALHLKRRRKEAEYTLHFWKSFP GKMTDSL RKPSRR
 LICESSNKAL TLQ NAGRFSVNWFILFNDALVHAQGMVPYKSLFSTHHIFPLATLWVEPISEESTGVYGLKVTSP EESFAL
 LASSPAEKAKWLR SINQAVEQALSGLGHDGIPPSTGMTQRADPPISRTASYTFYKDSRLKDAKYDGRWVSGKPHGRGVVK
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 LNS
 TSPSVFIGQWQYDKKSGYGVFDDITRGEKYMGMWLDDQRQGNGVVVTQFGLYYEGA FSNKMMGTGVLLSEDDTTFEGE
 F
 LEDWTLNGKGVLTMPNGDYIEGSFCGVWGTGLKMSGSYKPSLYDSDKEKGHALKLGR LAVHSEEKWKAVFLECWNRLG
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 DSPVQGQTTTAWDNIAIALTANLRQQRDSPELLSRSHHKTLESLECIPQHVG PVTLEVYHTIRRYLVKACDTPLHPLGRL
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 SSSALLLPVLLPRLYPPLFTLYALEKEKEDDVYWECVLR LNKQPD LALLAFLGVQQKFWPVTVTIHGEKQQVLSSTKDAC
 FASAVETLQQISTTFTPSDKLQVIQLTFEITQEV LALLKQDFLWSMDDLFPVFLFVVLRRIRNLGSEVSLIEDLMDPC
 VQHGEHGIMFTTLKACYYQIQHEKVT
 >XP_009300452.1 alsin isoform X4 [Danio rerio]
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 AVLSEQRVV FVAAGSAHSGVVTE DGGVHMWGENVHGQCGLLGLSVIPNTPVGVLDSEATPPQTVKILEVACGDQHTLAL
 SAKHEVWAWGSGCQLGLNTSTFPVWKPQKVDHLSGRHVLQVACGSAHSVALVRCLPPPQEPRKPPQDKCGQCHQLLYTM
 T
 DKEDHVIISDGHHCPLGVEMDSTEIKSAVEGSPDPGKPGKSSPTEPVPCMSTQISKSP TSSNISESTRPPESTLPFELQN
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 IHS AQLSGDPANLFASEPLIPVAQSVTPMGSALNNLVVSCASAVGERVVSTYEALSLRKVIGYWVPGEGRERVEERLRLE
 ESMQGGKSSSLGDIREEEAELSRRLSLPGLLSQVSPRLLRRTSRPRMRAVPLASGGIPETDAHLPSLQTEVWSWGQGQDG
 QLGHGDLLPRLQPD CVKSLNGKEVLKVAAGAHSLALTAQSQVFSWGCNTSGQLGHMESPTTFPQLTKLSDGIRVWDIGA
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 FSVNWFILFNDALVHAQGMVPYKSLFSTHHIFPLATLWVEPISEESTGVYGLKVTSP EESFALLASSPAEKAKWLR SINQ
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GFGDYVVSNTLNSCDHYQGQWKDGKMHGFGTFRYASGEVYEGSFQDNMRHGHGMLRSGKLNSTSPSVFIGQWQYDKK
 SG
 YGVFDDITRGEKYMGMWLDDQRQGNVVTQFGLYYEGAFSNNKMMGTGVLLSEDDTTFEGEFLEDWTLNGKGVLTMP
 NG
 DYIEGSFCGVWGTGLKMSGSYKPSLYSDKEKGHALKLGR LAVHSEEKWKAVFLECWNRLGCDSPVQGGQTTTAWDNIAI
 ALTANLRQQRDSPELLSRSHHKTLESLECIQHVGPVTLEVYHTIRRYLVKACDTPLHPLGRLVETLVSVYRMTYVGVGA
 NRRLLPQAVNEITSYLSRIFQLVRFLFPELPEEGSLADPPKEKVGTDADGKLLESPKPGCVVSSSALLLPVLLPRLYPP
 LFTLYALEKEKEDDVYWEVLRNLKQPD LALLAFLGVQKFWPVTVTIHGEKQQVLSSTKDACFASAVETLQQISTTFTP
 SDKLQVIQLTFEETQEVLALLKQDFLWSMDDLFPVFLFVVLRARIRNLGSEVSLIEDLMDPCVQHGEHGIMFTTLKACY
 YQIQHEKVT
 >XP_009300451.1 alsin isoform X2 [Danio rerio]
 MEKLISSEGDSSGERGLLHTWKGYSTAPERVLLSRPVLQAALGARHGVLLVEGGQVYSFGELPWKQNQTSSAEPILE
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 SAKHEVWAWGSGCQLGLNTSTFPVWKPQKVDHLSGRHVLQVACGSAHSVALVRCLPPPQEPRKPPQDKCGQCHQLLYTM
 T
 DKEDHVIISDGHHCPLGVEMDSTEIKSAVEGSPDPGKPGKSSPTEPVPCMSTQISKSPSSNISSESTRPPESTLPFELQN
 QVPAYCQESIEAPVEDSAAHEAPAAAGEVCVEASENSIPEPDCRSSGKSPYPDEQAVKAYLKR LSDHALAEHTIKTSST
 IHS AQLSGDPANLFASEPLIPVAQSVTPMGSALNNLVVSCASAVGERVVSTYEALSLRKVIGYWVPGEGRERVEERLRLE
 ESMQGGKSSSLGDIREEEAELSRRLSLPGLLSQGTHALLLHPVSRFLSPRLRRTSRPRMRAVPLASGGIPETDAHLPS
 LQTEVWSWGQGQDGLGHGDL LPR LQPD CVKSLNGKEVLKVAAGAHSLALTAQSQVFSWGCNTSGQLGHMESPTTFPQ
 L
 TKLSDGIRVWDIGAGLQHTLLLADGDCIQPILYYSGQQVKEVPEPTEEEEQTA EYTQQPVLLPFCMNLGYVSSVYAGGRT
 CAAL TDCNVMGFIASLHELAAAERKYYCKLSNIKSLLLQPLLKLDLSSALGQSSAGLLQNLIGRMSRLSQLTGQNSASL
 TSFLQRSRDIRGLVILED AHLFLDYSEYSSAVGDLLVMGGFQALVKPCHDVFGKGA EVVQRLSECSEEGTLADVL AHL
 FYLPIKHLHEYGRLLLKLATCYEVSSVDYQKLQDACSKFESMALHLKRRRKEA EYTLHFWKSFPGKMTDSL RKPSRR LIC
 ESSNKALTLQNAGRFSVNWFILFNDALVHAQGMVPYKSLFSTHHIFPLATLWVEPISEESTGVYGLKVTSP EESFALLAS
 SPAEKAKWLRSINQAVEQALSGLGHDGIPPSTGMTQRADPPISRTASYTFYKDSRLKDAKYDGRWVSGKPHGRGVVKWPD
 GRMYTGTFTKNGFEDGFGDYVVSNTLNSCDHYQGQWKDGKMHGFGTFRYASGEVYEGSFQDNMRHGHGMLRSGKLNST
 SP
 SVFIGQWQYDKKSGYGVFDDITRGEKYMGMWLDDQRQGNVVTQFGLYYEGAFSNNKMMGTGVLLSEDDTTFEGEFLE
 D
 WTLNGKGVLTMPNGDYIEGSFCGVWGTGLKMSGSYKPSLYSDKEKGHALKLGR LAVHSEEKWKAVFLECWNRLGCD S
 P

VQGQTTTAWDNIAIALTANLRQQRDSPELLSRSHHKTLESLECIQHVGPVTLEVYHTIRRYLVKACDTPLHPLGRLVET
LVSVMYRMTYVGVGANRRLLPQAVNEITSYLSRIFQLVRFLPELPEEGGSLADPPKEKVGTDADGKLLESPKPGCVVSS
ALLLPVLLPRLYPPLFTLYALEKEKEDDVYWECVLRNLKQPDALLAFLGVQKFWPVTVTIHGEKQQVLSSTKDACFAS
AVETLQQISTTFTPSDKLQVIQLTFEITQEVALLKQDFLWSMDDLFPVFLFVVLRARIRNLGSEVSLIEDLMDPCVQH
GEHGIMFTTLKACYYQIQHEKVT

>XP_021333894.1 myotubularin-related protein 3 isoform X3 [Danio rerio]

MEEEGQQSLECIQANQIFPRKPPVLEEEDLQVPFPELHGEFTEYVGRAEDAVIAMSSYRLHIKFESVNNCSCEVSVPL
QLIECVECRDMFQLHITCKDCKIVRCQFSTFEQCQEWLKRLLTA AVRPPSRIEELFSFAFHAWCVDLYTGEKEQHGDLCRP
GDHVMSRFHNEVERMGFDTQNAWRVSEINNKYKLCSSYPQLLLVPAWITDKELNVAAFRSWKRIPAVVYRHQSTGAVIA
RCGQPEVSWWGWRNADDEHLVQSIARACAVDSSSCKGVSNGLSREYTNADLSDVDFESSMTNSSEVETLAIQPRKLLI
LDARSYAAAVANRAKGGGCECPEYYPNCEVVFMMGMANIHSIRKSFQSLRFLCTQMPDPANWLSALESTKWLQHL SLLKA
SLLVSNAVDRDHRPVLVHCSGDGWDRTQPIVALAKLLLDPYRTIEGFQVLVETEWLDFGHKFADRCGHGENAEDLNERCP
VFLQWLDCVHQLQRQFPCSFENEAFLVKLVQHTYSCLFGTFLCNSGKEREDRRIQERTCSVWSLLRAANRSFGNMLYSS
HSETVLHPVCHVRNLMLWTAVYLPSSSPTTPSDDSCAPYPAPGANPEDQPLGRRPKTRSFNLP SACEVGNPLTSNRRSS
DPSLNEKWQDHRRSLELNIGAGTDGAASPEPDERVNGQTMVGIMGTFSNGGTENGEGLKDVRLPMIDGVDEAELTVGVAV
GQMENILQEATKDESAPDTRSVAKPNETSAVNGKTDDIAQEGRTEDDLESKSLEDGNVNGHCSEDGNSEASSALSQDTSE
SQDSEEIEKCTTQEDDSSCNPTILTPNGLRTLNGHGV EPSIEQAEKRLSLESSTETLTEDLGVRPESLGPLSIPPLK
ALAESSCLKQGLRTAARTLNNTPKRASLSAFPASTDLLHPMCNGDSPDPEPSTPRTNGERATLSRQVSLASCSLTLHA
RGTCSHHRCLHLGFLGRPSFSPPEPPSSSSRSHLDDDGLTLHTDAIQRLRQIEAGHQLEVEALKRQVQELWSRLESHA
AGMLRLNGDIGDEVTSITDSDFNLEPNCLSRCSTELFSEASWEQVDKQDTEVTRWYPDHLAAQCYGCERGFWLATRKHHC
RNCGNVFCGSCCDQKIPVPSQQLFEPSRVCRSCFSNLQPPAPPLDLELDKPITASSN

>NP_957158.2 myotubularin-related protein 3 [Danio rerio]

MEEEGQQSLECIQANQIFPRKPPVLEEEDLQVPFPELHGEFTEYVGRAEDAVIAMSSYRLHIKFESVNVPLQLIECVE
CRDMFQLHITCKDCKIVRCQFSTFEQCQEWLKRLLTA AVRPPSRIEELFSFAFHAWCVDLYTGEKEQHGDLCRPGDHVMSR
FHNEVERMGFDTQNAWRVSEINNKYKLCSSYPQLLLVPAWITDKELNVAAFRSWKRIPAVVYRHQSTGAVIARCGQPEV
SWWGWRNADDEHLVQSIARACAVDSSSCKGVSNGLSREYTNADLSDVDFESSMTNSSEVETLAIQPRKLLILDARSYA
AAVANRAKGGGCECPEYYPNCEVVFMMGMANIHSIRKSFQSLRFLCTQMPDPANWLSALESTKWLQHL SLLKASLLVNA
VDRDHRPVLVHCSGDGWDRTQPIVALAKLLLDPYRTIEGFQVLVETEWLDFGHKFADRCGHGENAEDLNERCPVFLQWLD
CVHQLQRQFPCSFENEAFLVKLVQHTYSCLFGTFLCNSGKEREDRRIQERTCSVWSLLRAANRSFGNMLYSSHSETVLH
PVCHVRNLMLWTAVYLPSSSPTTPSDDSCAPYPAPGANPEDQPLGRRPKTRSFNLP SACEVGNPLTSNRRSSDPSLNEK
WQDHRRSLELNIGAGTDGAASPEPDERVNGQTMVGIMGTFSNGGTENGEGLKDVRLPMIDGVDEAELTVGVAVGQMENIL
QEATKDESAPDTRSVAKPNETSAVNGKTDDIAQEGRTEDDLESKSLEDGNVNGHCSEDGNSEASSALSQDTSESQDSEEI
EKCTTQEDDSSCNPTILTPNGLRTLNGHGV EPSIEQAEKRLSLESSTETLTEDLGVRPESLGPLSIPPLKALAESSC

LKQGLRTAARTLNNTPKRASLSAFPPASTDLLHPMCNGDSPDPEPSTPRTNGERATLSRQVSLASCGSLTLHARGTCSHH
RCLHLGFLGRPSFSPPEPPSSSSSRSHLDDDGLTLHTDAIQQLRQIEAGHQLEVEALKRQVQELWSRLESHQAAGMLRLN
GDIGDEVTSITDSDFNLEPNCLSRCSTELFSEASWEQVDKQDTEVTRWYPDHLAAQCYGCERGFWLATRKHHCRCNCGNVF
CGSCCDQKIPVPSQQLFEPSRVCRSCFSNLQPPAPPLDLELDKPITASSN

>NP_956162.2 hepatocyte growth factor-regulated tyrosine kinase substrate [Danio rerio]

MGKGGGTFERLLEKATSQLLLETDWESILQICDLIRQGDTQAKYAIGAIAKKLNDKNPHVALYALEVLESVVKNCGQTIH
DEVASKQTMEELKELFKKQPEPNVKNKILYLIQAWAHAFRNEPKYKVVQDTYQIMKVEGHVFPEFKESDAMFAAERAPDW
VDAEECHRCRVQFGVMTRKHHCACGQIFCGKCSSKYSTIPKFGIEKEVRVCEPCFEILNKKAEGKAPSTGPSELPPPEYL
TSPLSQSQSQMPPKRDEAALQEEEEELQLAIALSQSEAEKERMRQKNPYSAYPKADPTPTVTSSAPPVSTLYSSPVNSSAPS
AEEVDPELARYLNRTYWEKKQEEVRKSPTPSAPAPVSLAEPVPVSQPVESHVPVQPINIVEQYQNGESENHEQFLKALQ
NSVTTFNLNRMKSNHMRGRSITNDSAVLSLFQSINNMHPQLLEILNQLDEKRLYYEGLQDKLAQVRDARAALNALREEHRE
KLRRAAEEAERQRQIQLAQKLEIMRQKKQEYLEMQRQLAIQRLQEQEKERQMRLEQQKHTIQMRAQMPAFSLPYAQMQSL
PPNVAGGVVYPPAGPPSYPGTFSPSGSVEGSPMHGVYMNQAGQTAAGGPYQAMPPDPNMVNAYMYQTAGNSGQPAAPGQ
A

PPTTTTPAYTNYQPTPTQGYQNVVSQAQSLPPMSQAAPTNGIAYMGYQQYNMQNMMSALPGQDPNMPPQQPYMPGQQPMY
Q

QMAPPGGPQQQSQQQQQPPPPPQAPPGSAEAQLISFD

>XP_021325300.1 hepatocyte growth factor-regulated tyrosine kinase substrate isoform X8 [Danio rerio]

MGKGGGTFERLLEKATSQLLLETDWESILQICDLIRQGDTQAKYAIGAIAKKLNDKNPHVALYALEVLESVVKNCGQTIH
DEVASKQTMEELKELFKKQPEPNVKNKILYLIQAWAHAFRNEPKYKVVQDTYQIMKVEGHVFPEFKESDAMFAAERAPDW
VDAEECHRCRVQFGVMTRKHHCACGQIFCGKCSSKYSTIPKFGIEKEVRVCEPCFEILNKKAEGKAPSTGPSELPPPEYL
TSPLSQSQSQMPPKRDEAALQEEEEELQLAIALSQSEAEKERMRQKNPYSAYPKADPTPTVTSSAPPVSTLYSSPVNSSAPS
AEEVDPELARYLNRTYWEKKQEEVRKSPTPSAPAPVSLAEPVPVSQPVESHVPVQPINIVEQYQNGESENHEQFLKALQ
NSVTTFNLNRMKSNHMRGRSITNDSAVLSLFQSINNMHPQLLEILNQLDEKRLYYEGLQDKLAQVRDARAALNALREEHRE
KLRRAAEEAERQRQIQLAQKLEIMRQKKQEYLEMQRQLAIQRLQEQEKERQMRLEQQKHTIQMRAQMPAFSLPYAQMQSL
PPNVAGGVVYPPAGPPSYPGTFSPSGSVEGSPMHGVYMNQAGQTAAGGPYQAMPPDPNMVNAYMYQTAGNSGQPAAPGQ
A

PPTTTTPAYTNYQPTPTQGYQNVVSQAQSLPPMSQAAPTNGIAYMGYQQYNMQNMMSALPGQDPNMPPQQPYMPGQQPMY
Q

QVSNYMAPPGGPQQQSQQQQQPPPPPQAPPGSAEAQLISFD

>XP_021325297.1 hepatocyte growth factor-regulated tyrosine kinase substrate isoform X7 [Danio rerio]

MGKGGGTFERLLEKATSQLLLETDWESILQICDLIRQGDTQAKYAIGAIAKKLNDKNPHVALYALEVLESVVKNCGQTIH
DEVASKQTMEELKELFKKQPEPNVKNKILYLIQAWAHAFRNEPKYKVVQDTYQIMKVEGHVFPEFKESDAMFAAERAPDW

VDAEECHRCRVQFGVMTRKHHCRACGQIFCGKCSSKYSTIPKFGIEKEVRVCEPCFEILNKKAEGKAPSTGPELPPPEYL
TSPLSQSQSMPPKRDEAALQEEEEELQLAIALSQSEAEKERMRQKNPYSAYPKADPTPTVTSSAPPVSTLYSSPVNSSAPS
AEEVDPELARYLNRTYWEKKQEEVRKSPTPSAPAPVSLAEPVPVSQPVESHVPVQPINIVEQQYQNGESEENHEQFLKAL
QNSVTTFLNRMKSNHMRGRSITNDSAVLSLFQSINNHPQLLEILNQLDEKRLYYEGLQDKLAQVRDARAALNALREEHR
EKLRRAAEEAERQRQIQLAQKLEIMRQKKQEYLEMQRQLAIQRLQEQEKERQMRLEQQKHTIQMRAQMMPAFSLPYAQMMS
LPPNVAGGVVYPPAGPPSYPGTFSPSGSVEGSPMHGVYMNQAGQTAAGGPYQAMPPDPNMVNAYMYQTAGNSGQPAAPG
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APPTTTPAYTNYQPTPTQGYQNVVSQAQSLPPMSQAAPTNGIAYMGYQQYNMQNMMSALPGQDPNMPPQQPYMPGQQPM
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QQVSNYMAPPGGPQQQSQQQQQPPPPPQAPPGSAEAQLISFD
>XP_021325293.1 hepatocyte growth factor-regulated tyrosine kinase substrate isoform X6 [Danio rerio]
MGKGGGTFERLLEKATSQLLLETDWESILQICDLIRQGDTQAKYAIGAIAKKLNDKNPHVALYALEVLESVVKNCGQTIH
DEVASKQTMEELKELFKKQPEPNVKNKILYLIQAWAHAFRNEPKYKVVQDTYQIMKVEGHVFPEFKESDAMFAAERAPDW
VDAEECHRCRVQFGVMTRKHHCRACGQIFCGKCSSKYSTIPKFGIEKEVRVCEPCFEILNKKAEGKAPSTGPELPPPEYL
TSPLSQSQSVVPTESMPPKRDEAALQEEEEELQLAIALSQSEAEKERMRQKNPYSAYPKADPTPTVTSSAPPVSTLYSSPV
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FLKALQNSVTTFLNRMKSNHMRGRSITNDSAVLSLFQSINNHPQLLEILNQLDEKRLYYEGLQDKLAQVRDARAALNAL
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AAPGQAPPTTTPAYTNYQPTPTQGYQNVVSQAQSLPPMSQAAPTNGIAYMGYQQYNMQNMMSALPGQDPNMPPQQPYMP
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>XP_021325291.1 hepatocyte growth factor-regulated tyrosine kinase substrate isoform X5 [Danio rerio]
MGKGGGTFERLLEKATSQLLLETDWESILQICDLIRQGDTQAKYAIGAIAKKLNDKNPHVALYALEVLESVVKNCGQTIH
DEVASKQTMEELKELFKKQPEPNVKNKILYLIQAWAHAFRNEPKYKVVQDTYQIMKVEGHVFPEFKESDAMFAAERAPDW
VDAEECHRCRVQFGVMTRKHHCRACGQIFCGKCSSKYSTIPKFGIEKEVRVCEPCFEILNKKAEGKAPSTGPELPPPEYL
TSPLSQSQSVVPTESMPPKRDEAALQEEEEELQLAIALSQSEAEKERMRQKNPYSAYPKADPTPTVTSSAPPVSTLYSSPV
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QFLKALQNSVTTFLNRMKSNHMRGRSITNDSAVLSLFQSINNHPQLLEILNQLDEKRLYYEGLQDKLAQVRDARAALNA
LREEHREKLRRAAEEAERQRQIQLAQKLEIMRQKKQEYLEMQRQLAIQRLQEQEKERQMRLEQQKHTIQMRAQMMPAFSLP
YAQMMSLPPNVAGGVVYPPAGPPSYPGTFSPSGSVEGSPMHGVYMNQAGQTAAGGPYQAMPPDPNMVNAYMYQTAGNS
GQ

PAAPGQAPPTTTPAYTNYQPTPTQGYQNVVSQAQSLPPMSQAAPTNGIAYMGYQQYNMQNMMSALPGQDPNMPPQQPYM
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GQQPMYQQVSNYMAPPGGPQQQSQQQQQPPPPPQAPPGSAEAQLISFD

>XP_021332790.1 FERM, RhoGEF and pleckstrin domain-containing protein 2 isoform X2 [Danio rerio]

MGEIEGSYRSLQTPAGSRLGGQHNTGISTLEPGQSLSSAMGAGGKGHNKGLQIRVQGLDEAQEFYELESKADGQLLSDV
FRRINLIESDYFGLEFQNLQMNWVWLDPSKLIVKQVRRPMNTLFRLSVKFFPPDPGQLQEEFTRYLFSLQIKRDLLDGRL
SCTENTAALLASHLVQSEIGDYDDLADREFLKMNKLLPCQEHVQEKIMELHRRHTGQTPAESDFQVLEIARKLEMFGVRF
HPAADREGTKINLAVAHMGLQVFQGHKTINTFNWSKIRKLSFKRKRFLIKLHPEVHGPHQDTLEFLMGSRDQCKIFWKNC
VEHHSFFRLLDQPQPKSKAIFFSRGSSFRYSGRTQKQLVEYVRDSGLRRTPYQRRNSKIRMSTRSLASDVPKQNLSEFND
LRTHIPPSSITASFQSLHAPSVMRAETPNQLLHLHQTHQPLRAPSPMKQDPIKTNSQSTYAFPDSIAIDSPQLSPFND
KGPLCLSPSFQMSTLSLPGQAPSPLQSPILNEVGTAARLDEDEEGRRKRYPTDKAYFIAKEILTERTYLKDLEVITVWFR
SAVIKENAMPEGLMTLLFSNIDPIYEFHRGFLKEIDQRLALWEGRSNAHVKG DYQ RIGDVMLRNMCSLKEFTGYLQKHDE
VLTELEKATKR VKKLET VYKEFELQKVCYLPLNTFLLKPIQRLMHYKLILERLCKHYSPQHRDYDDCKEALKEVAEIATQ
LQSSLIRLENFQKLTTELQRDLIGIENLTAPGREFIREGCLYKLTKKGLQQRMFFLFSDMLLYTSKGV TATNQFKVHGQLP
LHGMIVEESENEWSVPHCF TIYSAQRTIVVAASSKVEMNKWIEDLNMAIEMSKKCKEKS DVLLDPSLCDRSNRSSDEVSL
EQESED DMNSSRCSLDKQSHHRANTTMHVCWHRNTSVSMSDHSLAVENQLSGYLLRKFKNSNGWQKLWVVFTNFCLFFY
K

THQDDFPLASLPLLGYTVSTPGESDSIHKEYVFKLQFKSHVYFFRAESEYTFERWMEVIKSAASATGRMSLLVPKGPAEV
NVGN

>XP_002667032.4 myotubularin-related protein 4 isoform X1 [Danio rerio]

MSRSVSCSMLNCFGEEGPPSLEYIQARDLFPQKELLKEDDTLQVPFPVLQGEWVEFLGRADDAVIAISNYRLHIKFKDSI
INVPLRLIESVESRDMFQLHIICKDSKVVRCHFSTFKQCEEWLKRLQRAITHPARLEELFALAYHAWCLGANTDDEDQHL
HLCRPGDHVRHRLEVEVKRMGFDMQNAWRVSDINTNYKLCSSYPQKLLVPVWITDKELESVASFRSWKRIPVVVYRHQRN
GAVIARCSQPEISWWGWRNTEDEYLVTIAKACQLDGGSRAGRSRGDGPDSDSDFDSSLTGCPAPDSSAAAQKLLILDAR
SYTAAVANRAKGGGCECEEYYPNCEVMFMGMANIHSIRNSFQSLRAVCSQIPDPGNWLSALESTRWLQHLSVMLKAASLV
CSALERDGRPVLVHCSDGWDRTQPQIVALAKILLDPFYRTIEGFQVLVETEWLDFGHKFADRCGHQENGDDVSEQCPVFLQ
WLDCVHQLLKQFPCLFEFNEAFLVKL VQHTYSCLYGTFLCNNGKERETRNVYKRTCSIWSSLRTGNKNFNQFLYIPCHDM
VLQPVCHTRALQLWTA VYLPSSSPCTAAEDA VEVYLSPGAGDREEFSSRSLDRLPKTRSM DNLLSACENGVTLTRTSSDP
NLNKHCP EGRPSLEPNPPLILAPDAGALREELNHQSLPSEQLEDDQGV EPCLTTQPLPSIPRPLAIEQAPPPLISNQSP
PQITHSPLPPSDVHVRTAEITSTASLCNGFAHVENTRESSSDSVETLTEQSVCEVVKKPDEV RN GALVLLRERPHAVEYA
KTARRLISTSPDL SLLGSQWDSVQGMVQSACGGAIQHGSYHGRR LANKLLRAQAGSSVGGGPCCHRDPLRAPGSP IQS
GWFS AVKSSGYAALCSSLGPSLRQLLPSHSCPSAGSSAYLDDDGLPVALDAVQQRLRQIEASYKQEVEVLRRQVRQLQL
KLESKQFCTPPSEPDVDYEDDITCLRESDGSEDSLSRSSEDRFSEGSWDRVERKDTEVTRWVPDHMASHCFNCDFEW

IAKRRHHCRNCGNVFCKDCCHLKLPIPDQQLYDPVLVCNTCYDLLLESRTRELRSQQLKKAATASS

>XP_021332402.1 myotubularin-related protein 4 isoform X3 [Danio rerio]

MFPGVDSEMSVPLRLIESVESRDMFQLHIICKDSKVVRCHFSTFKQCEEWLKRLQRAITHPARLEELFALAYHAWCLGAN
TDDDEDQHLHLCRPGDHVRHRLVEVEVKRMGFDQMNAWRVSDINTNYKLCSSYPQKLLVPVWITDKELESVASFRSWKRIPV
VVYRHQRNGAVIARCSQPEISWWGWRNTEDEYLVTSLIAKACQLDGGSRAGRSRGDGPDSDFSDFSSLTGCPAPDSSAAAQ
KLLILDARSYTA AVANRAKGGGCECEEYYPNCEVMFMGMANIHSIRNSFQSLRAVCSQIPDPGNWLSALESTRWLQHLSV
MLKAASLVCSALERDGRPVLVHCSDGWDRTTPQIVALAKILLDPFYRTIEGFQVLVETEWLDFGHKFADRCGHQENGDDVS
EQCPVFLQWLDCVHQLLKQFPCLFEFNEAFLVKLVQHTYSCLYGTFLCNNGKERETRNVYKRTCSIWSLLRTGNKNFQNF
LYIPCHDMVLQPVCHTRALQLWTAVYLPSSSPCTAAEDAVEVYLSPGAGDREEFSSRSLDRLPKTRSMNLLSACENGVT
LTRTSSDPNLNKHCPGRPSLEPNPPLILAPDAGALREELNHQSLPSEQLEDDQGVEPCLTTQPLPSIPRPLAIEQAPP
PLISNQSPQITHSPLPPSDVHVRTAEITSTASLCNGFAHVENTRESSSDSVETLTEQSVCEVKKPDEVNRNGALVLLRE
RPHAVEYAKTARRLISTSPLPDL SLLGSQWDSVQGMVQSACGGAIQHGSYHGRR LANKLLRAQAGSSVGGGPCCHRDPLR
APGSPIQSGWFS AVKSSGYAALCSSLGPSLRQLLPSHSCPSAGSSAYLDDDGLPVALDAVQQRLRQIEASYKQEVEVLR
RQVRQLQLKLESKQFCTPPSEPDVDYEDDITCLRESDGSEDSDSLSSRSEDRFSEGSWDRVERKDTEVTRWVPDHMASHC
FNCDCEFWIAKRRHHCRNCGNVFCKDCCHLKLPIPDQQLYDPVLVCNTCYDLLLESRTRELRSQQLKKAATASS

>XP_009299405.1 myotubularin-related protein 4 isoform X2 [Danio rerio]

MGEEGPPSLEYIQARDLFPQKELLKEDDTLQVPFPVLQGEWVEFLGRADDAVIAISNYRLHIKFKDSIINVPLRLIESVE
SRDMFQLHIICKDSKVVRCHFSTFKQCEEWLKRLQRAITHPARLEELFALAYHAWCLGANTDDDEDQHLHLCRPGDHVRHRL
LEVEVKRMGFDQMNAWRVSDINTNYKLCSSYPQKLLVPVWITDKELESVASFRSWKRIPVVVYRHQRNGAVIARCSQPEI
SWWGWRNTEDEYLVTSLIAKACQLDGGSRAGRSRGDGPDSDFSDFSSLTGCPAPDSSAAAQKLLILDARSYTA AVANRAK
GGCECEEYYPNCEVMFMGMANIHSIRNSFQSLRAVCSQIPDPGNWLSALESTRWLQHLSVMLKAASLVCSALERDGRPVL
VHCSDGWDRTTPQIVALAKILLDPFYRTIEGFQVLVETEWLDFGHKFADRCGHQENGDDVSEQCPVFLQWLDCVHQLLKQF
PCLFEFNEAFLVKLVQHTYSCLYGTFLCNNGKERETRNVYKRTCSIWSLLRTGNKNFQNF LYIPCHDMVLQPVCHTRALQ
LWTAVYLPSSSPCTAAEDAVEVYLSPGAGDREEFSSRSLDRLPKTRSMNLLSACENGVTLTRTSSDPNLNKHCPGRPS
LEPNPPLILAPDAGALREELNHQSLPSEQLEDDQGVEPCLTTQPLPSIPRPLAIEQAPPPLISNQSPQITHSPLPPSD
VHVRTAEITSTASLCNGFAHVENTRESSSDSVETLTEQSVCEVKKPDEVNRNGALVLLRERPHAVEYAKTARRLISTSPL
PDL SLLGSQWDSVQGMVQSACGGAIQHGSYHGRR LANKLLRAQAGSSVGGGPCCHRDPLRAPGSPIQSGWFS AVKSSGYA
ALCSSLGPSLRQLLPSHSCPSAGSSAYLDDDGLPVALDAVQQRLRQIEASYKQEVEVLR RQVRQLQLKLESKQFCTPPS
EPDVDYEDDITCLRESDGSEDSDSLSSRSEDRFSEGSWDRVERKDTEVTRWVPDHMASHCFNCDCEFWIAKRRHHCRNCG
NVFCKDCCHLKLPIPDQQLYDPVLVCNTCYDLLLESRTRELRSQQLKKAATASS

>XP_005155593.1 zinc finger FYVE domain-containing protein 16 isoform X3 [Danio rerio]

MDSYFKA AVCDLKD LDDFELS AEELESKPGTYVSPPCPDSTLIPGRFIPEQHTVPQTLPDVNALHYGLTSQSIDSNQKD
SYSNEWPLTGVDLLSSVDSRGIKSSAPPCPDRSLKPVC DLVNDTGSANLQQADSQEDFKELDIPDVQSTEGLLVDFESPE

DLSKPSHSEILKRDSEINCNSLSLLDVILPVVGEPYTSSSITLLETSSCPEASNSNGQNDRPWSQMDEDDVCNTCPSTT
 EENISAFSEEHAVSLQPDSTSEDVRNPEDLTGSPTSEKESSLCLPMAVSMCGSLVATLDPQKAAVVETKDEAELETKSA
 IQEAEELTLPLEEPVPPFSSSRPDSSPEDEPEIVQIMSNPAAAGHYPERNFKRTLSPDKLTCRDLGASNPSPSYSESPN
 YSYEFGIANDYLPESDQTVMMVTDEELDAFLMGQGVKINPDAAVEKFSDDGFSEFNGNAERDGFLEELQSCKVETFASP
 ESDGSQYLEESEGSNVSSSSQDSSPLRADSTQTITHETVTSPVEIQSVCSNPQESTYGGARPKQLSNQTVRPPSERHRIS
 HAEADVGGSSANGSQVSPNQDEINCEPPSYQQYDSSYGCDDELSEPPYPGEMLEDGESSVDLSGHGAEGLGSKQPPWVPDS
 EAPNCMNCMQKFTFTKRRHHCRACGKVYCASCCNRKCLKYLDKEARVCVICHVTIQRGFPREQKHVWFADGILPNGEVA
 DTTKLSVQTRRSSQESSPVTDPDPAPDDKFPDEREESVGGRS DSPVEASRPPVRGPWDYGLLCGVGNCVQRDASLVPEDD
 DGLPPLLITGEEEEEGDLLVEERPAACQILLLEEGGPQPLTFVLNANLLVNVKIVTYCGKRCWCLSSNGLQGVGQKELV
 FIIIECLPEENSLPRDVFNLYVSIYQDAQKGKGFIEHLGNVTFTDSFLGSKDHGGVLFATFQPLEGLALPQVSFLCGVLI
 QKLEVPWAKVFPLRLLLALGAKYSVYPCPLMSIRFRESVFKETGHTIMNLLTDLRNYQYSLPVVESLRVHMEMGNSYIEI
 PKSRFNEMLKVVNSSNEHVISFGACFSTEADSHLVCIQNEDGSYQTSANSIPGKTRRVTGASFVVFNGALKASSGFIKS
 SIVEDGLMVQIPPETMEGLRQALRDQNDQFQPCGKTDSEETRENVNVRWVDWTAPVNAGVTSPVDGKSLEGVSSVKIQD
 SEFEMDGRITRCTEVFYLLKSSDVSLPAILTSSAQFQREIATASCAALCPHLSVLMANGFNSLALRVSTDSDMVEYQAGS
 SGRLLPQKYMNDLDGALIPVIHGGSSCVPHQAMDMEFFFYISLSI

>XP_021325289.1 hepatocyte growth factor-regulated tyrosine kinase substrate isoform X4 [Danio rerio]

MGKGGGTFERLLEKATSQLLLETDWESILQICDLIRQGDTQAKYAIGAIAKKLNDKNPHVALYALEVLESVVKNCGQTIH
 DEVASKQTMEELKELFKKQPEPNVKNKILYLIQAWAHAFRNEPKYKVVQDTYQIMKVEGHVFPEFKESDAMFAAERAPDW
 VDAEECHRCRVQFGVMTRKHHCRACGQIFCGKCSSKYSTIPKFGIEKEVRVCEPCFEILNNHPSLSPPPRKAEGKAPSTG
 PSELPEYLTSPLSQSQSQMPKRDEAALQEEEEELQALIALSQSEAEKERMRQKNPYSAYPKADPTPTSSAPPVSTLYS
 SPVNSSAPSAEEVDPELARYLNRTYWEKKQEEVRKSPTPSAPAPVSLAEPVPVSQPVESHVPVQPINIVEQQYQNGESEE
 NHEQFLKALQNSVTTFNLNRMKSNHMRGRSITNDSAVLSLFQSINNMMHPQLLEILNQLDEKRLYYEGLQDKLAQVRDARAA
 LNALREEHREKLRRAAEEAERQRQIQLAQKLEIMRQKKQEYLEMQRQLAIQRLQEKEKERQMRLEQQKHTIQMRAQMPAF
 SLPYAQMQLPPNVAGGVVYPAGPPSYPGTFSPSGSVEGSPMHGVYMNQAGQTAAGGPYQAMPPDPNMVNAYMYQTAG
 N

SGQPAAPGQAPPTTTPAYTNYQPTPTQGYQNVVSQAQSLPPMSQAAPTNGIAYMGYQQYNMQNMMSALPGQDPNMPPQQ
 P

YMPGQQPMYQQVSNYMAPPGGPQQQSQQQQQPPPPPPQAPPGSAEAQLISFD

>XP_005164430.1 hepatocyte growth factor-regulated tyrosine kinase substrate isoform X3 [Danio rerio]

MGKGGGTFERLLEKATSQLLLETDWESILQICDLIRQGDTQAKYAIGAIAKKLNDKNPHVALYALEVLESVVKNCGQTIH
 DEVASKQTMEELKELFKKQPEPNVKNKILYLIQAWAHAFRNEPKYKVVQDTYQIMKVEGHVFPEFKESDAMFAAERAPDW
 VDAEECHRCRVQFGVMTRKHHCRACGQIFCGKCSSKYSTIPKFGIEKEVRVCEPCFEILNNHPSLSPPPRKAEGKAPSTG
 PSELPEYLTSPLSQSQSQVVPTESMPPKRDEAALQEEEEELQALIALSQSEAEKERMRQKNPYSAYPKADPTPTSSAPP

VSTLYSSPVNSSAPSAAEVDPELARYLNRITYWEKKQEEVRKSPTPSAPAPVSLAEPVPVSQPVESHVPVQPINIVEQQYQ
NGESENHEQFLKALQNSVTTFLNRMKSNHMRGRSITNDSAVLSLFQSINNHPQLLEILNQLDEKRLYYEGLQDKLAQV
RDARAALNALREEHREKLRRAAEEAERQRQIQLAQKLEIMRQKKQEYLEMQRQLAIQRLQEKEKERQMRLEQQKHTIQMR
AQMPAFSLPYAQMQSLPPNVAGGVVYPPAGPPSYPGTFSPSGSVEGSPMHGVYMNQAGQTAAGGPYQAMPPDPNMVNAY
M
YQTAGNSGQPAAPGQAPPTTTPAYTNYQPTPTQGYQNVVSQAQSLPPMSQAAPTNGIAYMGYQQYNMQNMMSALPGQDP
N
MPPQQPYMPGQQPMYQQMAPPGGPQQQSQQQQQPPPPPPQAPPGSAEAQLISFD
>XP_021325286.1 hepatocyte growth factor-regulated tyrosine kinase substrate isoform X2 [Danio rerio]
MGKGGGTFERLLEKATSQLLLETDWESILQICDLIRQGDTQAKYAIGAIIKKLNDKNPHVALYALEVLESVVKNCGQTIH
DEVASKQTMEELKELFKKQPEPNVKNKILYLIQAWAHAFRNEPKYKVVQDTYQIMKVEGHVFPEFKESDAMFAAERAPDW
VDAEECHRCRVQFGVMTRKHHCRACGQIFCGKCSSKYSTIPKFGIEKEVRVCEPCFEILNNHPSLSPPPRKAEGKAPSTG
PSELPPEYLTSPLSQQSQVVPTESMPPKRDEAALQEEEEELQLAIALSQSEAEKERMRQKNPYSAYPKADPTPTVTSSAPP
VSTLYSSPVNSSAPSAAEVDPELARYLNRITYWEKKQEEVRKSPTPSAPAPVSLAEPVPVSQPVESHVPVQPINIVEQQYQ
NGESENHEQFLKALQNSVTTFLNRMKSNHMRGRSITNDSAVLSLFQSINNHPQLLEILNQLDEKRLYYEGLQDKLAQVR
DARAALNALREEHREKLRRAAEEAERQRQIQLAQKLEIMRQKKQEYLEMQRQLAIQRLQEKEKERQMRLEQQKHTIQMRA
QMPAFSLPYAQMQSLPPNVAGGVVYPPAGPPSYPGTFSPSGSVEGSPMHGVYMNQAGQTAAGGPYQAMPPDPNMVNAYM
Y
QTAGNSGQPAAPGQAPPTTTPAYTNYQPTPTQGYQNVVSQAQSLPPMSQAAPTNGIAYMGYQQYNMQNMMSALPGQDPN
M
PPQQPYMPGQQPMYQQVSNYMAPPGGPQQQSQQQQQPPPPPPQAPPGSAEAQLISFD
>XP_021325285.1 hepatocyte growth factor-regulated tyrosine kinase substrate isoform X1 [Danio rerio]
MGKGGGTFERLLEKATSQLLLETDWESILQICDLIRQGDTQAKYAIGAIIKKLNDKNPHVALYALEVLESVVKNCGQTIH
DEVASKQTMEELKELFKKQPEPNVKNKILYLIQAWAHAFRNEPKYKVVQDTYQIMKVEGHVFPEFKESDAMFAAERAPDW
VDAEECHRCRVQFGVMTRKHHCRACGQIFCGKCSSKYSTIPKFGIEKEVRVCEPCFEILNNHPSLSPPPRKAEGKAPSTG
PSELPPEYLTSPLSQQSQVVPTESMPPKRDEAALQEEEEELQLAIALSQSEAEKERMRQKNPYSAYPKADPTPTVTSSAPP
VSTLYSSPVNSSAPSAAEVDPELARYLNRITYWEKKQEEVRKSPTPSAPAPVSLAEPVPVSQPVESHVPVQPINIVEQQYQ
NGESENHEQFLKALQNSVTTFLNRMKSNHMRGRSITNDSAVLSLFQSINNHPQLLEILNQLDEKRLYYEGLQDKLAQV
RDARAALNALREEHREKLRRAAEEAERQRQIQLAQKLEIMRQKKQEYLEMQRQLAIQRLQEKEKERQMRLEQQKHTIQMR
AQMPAFSLPYAQMQSLPPNVAGGVVYPPAGPPSYPGTFSPSGSVEGSPMHGVYMNQAGQTAAGGPYQAMPPDPNMVNAY
M
YQTAGNSGQPAAPGQAPPTTTPAYTNYQPTPTQGYQNVVSQAQSLPPMSQAAPTNGIAYMGYQQYNMQNMMSALPGQDP
N

MPPQQPYMPGQQPMYQQVSNYMAPPGGPQQQSQQQQQPPPPQAPPGSAEAQLISFD

>XP_005155592.1 zinc finger FYVE domain-containing protein 16 isoform X1 [Danio rerio]

MDSYFKA AVCDL DKLLD DFELSAEELES KPGTYVSPPCPDSTLIPGRFIPEQHTVPQTL PDVNALHYGLTSQSIDSNQKD
SYSNEWPLTGVDLLSSVDSRGIKSSAPPCPDRSLKPVC DLVNDTGSANLQQADSQEDFKELDIPDVQSTEGLLVDFESPE
DL SKPSHSEILKRDSEINCNSLSLLDVILPVVGEPYTSSSITLLETES SCPEASNSNGQNDRPWSQMDEDDVCNTCPSTT
EENISAFSEEHAVSLQPDSTSEDVRNPEDLTGSPTSEKESLSCLPMAVSMCGSLVATLDPQKAAVVETKDEAELETKSA
IQEAEELTLPLEEPVPPFSSSRPDSSPEDEPEIVQIMSNPAAAGHYPERNFKRTLSPDKLTCDRLGASNPSPSYSESPN
YSYEFGIANDYLPESDQTVMMVTDEELDAFLMGQGVKINPDAAVEKFSDDGFSEFNGNAERDGF LDEELQ SCKVETFASP
ESDGSQYLEESEG SNVSSSSQDSSPLRADSTQTITHETVTSPVEIQSVCS PNQESTYGGARPKQLSNQTVRPPSERHRIS
HAEADVGG SANGSQVSPNQDEINCEPPSYQQYDSSYGCDLSEPPYPGEMLEDGESSVDLSGHGAEGLGSKQPPWVPDS
EAPNCMNCMQKFTFTKRRHHCACGKVYCASCCNRKCRLKYLDKEARVCVICHVTIQRAQAHERMMSPTGSPNPNI PSE
YCSTIPPMQQAARAAGTLNSPPPTVMVPVSVLKHPGNDGFPREQKHVWFADGILPNGEVADTTKLSVQTRRSSQESSPVTP
DPPAPDDKFPDEREESVGG RSDSPVEASRPPVRGPWDYGLLCGVGNCVQRDASLVPEDDDGLPPLLIITGEEEEGDLLVE
ERPAACQILLLL EEGGPQPLTFVLNANLLVNVKIVTYCGKRCWCLSSNGLQGVGQKELVFII ECLPEENSLPRDVFNLYV
SIYQDAQKGKFIEHLGNVTFTDSFLGSKDHGGVLF FTATFQPLEGLALPQVSFLCGVLIQKLEVPWAKVFPLRLL LALGA
KYSVYPCPLMSIRFRESVFKETGHTIMNLLTDLRNYQYSLPVVESLRVHMEMGNSYIEIPKSRFNEMLKVVNSSNEHVIS
FGACFSTEADSHLVCIQNEDGSYQTSANSIPGKTRRV TGASFVVFNGALKASSGFI AKSSIVEDGLMVQIPPETMEGLRQ
ALRDQND FQIPCGKTDSEETRENVNVRWVDWTAPVNAGVTSPVDGKSLEGVSSVKIQQDSEFEMDGR TIRCTEVFYLLKS
SDVSLPAILTSSAQFQREIATASCAALCPHLSVLMANGFN SLALRVSTDSDMVEYQAGSSGRLLPQKYMNDLDGALIPVI
HGGSSCVPHQAMDMEFFFYISLSI

>XP_001920918.3 zinc finger FYVE domain-containing protein 16 isoform X2 [Danio rerio]

MDSYFKA AVCDL DKLLD DFELSAEELES KPGTYVSPPCPDSTLIPGRFIPEQHTVPQTL PDVNALHYGLTSQSIDSNQKD
SYSNEWPLTGVDLLSSVDSRGIKSSAPPCPDRSLKPVC DLVNDTGSANLQQADSQEDFKELDIPDVQSTEGLLVDFESPE
DL SKPSHSEILKRDSEINCNSLSLLDVILPVVGEPYTSSSITLLETES SCPEASNSNGQNDRPWSQMDEDDVCNTCPSTT
EENISAFSEEHAVSLQPDSTSEDVRNPEDLTGSPTSEKESLSCLPMAVSMCGSLVATLDPQKAAVVETKDEAELETKSA
IQEAEELTLPLEEPVPPFSSSRPDSSPEDEPEIVQIMSNPAAAGHYPERNFKRTLSPDKLTCDRLGASNPSPSYSESPN
YSYEFGIANDYLPESDQTVMMVTDEELDAFLMGQGVKINPDAAVEKFSDDGFSEFNGNAERDGF LDEELQ SCKVETFASP
ESDGSQYLEESEG SNVSSSSQDSSPLRADSTQTITHETVTSPVEIQSVCS PNQESTYGGARPKQLSNQTVRPPSERHRIS
HAEADVGG SANGSQVSPNQDEINCEPPSYQQYDSSYGCDLSEPPYPGEMLEDGESSVDLSGHGAEGLGSKQPPWVPDS
EAPNCMNCMQKFTFTKRRHHCACGKVYCASCCNRKCRLKYLDKEARVCVICHVTIQRAQAHERMMSPTGSPNPNI PSE
YCSTIPPMQQAARAAGTLNSPPPTVMVPVSVLKHPGFPREQKHVWFADGILPNGEVADTTKLSVQTRRSSQESSPVTPDP P
APDDKFPDEREESVGG RSDSPVEASRPPVRGPWDYGLLCGVGNCVQRDASLVPEDDDGLPPLLIITGEEEEGDLLVEER P
AACQILLLL EEGGPQPLTFVLNANLLVNVKIVTYCGKRCWCLSSNGLQGVGQKELVFII ECLPEENSLPRDVFNLYVSIY

QDAQKGKFIH LGNVTFTDSFLGSKDHGGVLF FTATFQPLEGLALPQVSFLCGVLIQKLEVPWAKVFPLRLLLALGAKYS
VYPCPLMSIRFRESVFKETGHTIMNLLTDLRNYQYSLPVVESLRVHMEMGNSYIEIPKSRFNEMLKVVNSSNEHVISFGA
CFSTEADSHLVCIQNEDGSYQTSANSIPGKTRRVTGASFVVFNGALKASSGFIKSSIVEDGLMVQIPPETMEGLRQALR
DQND FQIPCGKTDSEETRENVNVRWVDWTAPVNAGVTSPVDGKSLEGVSSVKIQQDSEFEMDGR TIRCTEVFYLLKSSDV
SLPAILTSSAQFQREIATASCAALCPHLSVLMANGFNSLALRVSTDSDMVEYQAGSSGRLLPQKYMNDLDGALIPVIHGG
SSCVPHQAMDMEFFFYISLSI

>XP_005165797.1 alsin isoform X3 [Danio rerio]

MEKLISSGEGDSSGERGLLHTWKGYSTAPERVLLSRPVLQAALGARHGVLLVEGGQVYSFGELPWKQNQTSSAEPIL
AVLSEQRVVFVAAGSAHSGVVTEDEGGVHMWGENVHGQCGLLGLSVIPNPTPVGVLDSEATPPQTVKILEVACGDQHTLAL
SAKHEVWAWGSGCQLGLNTSTFPVWKPQKVDHLSGRHVLQVACGSAHSVALVRCLPPPQEPRKPPQDKCGQCHQLLYTM
T

DKEDHVIISDGHHCPLGVEMDSTEIKSAVEGSPDPGKPGKSSPTEPVPCMSTQISKSPSSNISESTRPPESTLPFELQN
QVPAYCQESIEAPVEDSAAHEAPAAAGEVCVEASENSIPEPDSCRSSGKSPYPDEQAVKAYLKRLSDHALAEHTIKTSST
IHSAQLSGDPANLFASEPLIPVAQSVTPMGSALNNLVVSCASAVGERVVSTYEALSLRKVIGYWVPGEGRERVEERLRLE
ESMQGKKSSSLGDIREEEAELSRRLSLPGLLSQDNAESEVKASSNTTTEVSPRLLRRTSRPRMRAVPLASGGIPETDAH
LPSLQTEVWSWGQGGQDQGLGHGDLLPRLQPDCVKS LNKKEVLKVAAGAHHSLALTAQSQVFSWGCNTSGQLGHMESPTT
F

PQLTKLSDGIRVWDIGAGLQHTLLLADGDCIQPILYYSGQQVKEVPEPTEEEEQTAEYTQQPVLLPFCMNLGYVSSVYAG
GRTCAALTD CNVMGFIASLHELAAAERKYYCKLSNIKSLLLQPLLKLDLSSALGQSSAGLLQNLIGRMSRLSQLTGQNS
ASLTSFLQRSRDIRGLVILEDAHLFLDTYSEYSSAVGDLLVMGGFQALVKPCHDVFGKGAEVVQRLSECSEEGTLADVL
AHLFYLPKHLHEYGRLLLKLATCYEVSSVDYQKLQDACSKFESMALHLKRRRKEAEYTLHFWKSFP GKMTDSL RKPSRR
LICESSNKALTLQNAGRFSVNWFILFNDALVHAQFSTHHIFPLATLWVEPISEESTGVYGLKVTSP EESFALLASSPAEK
AKWLR SINQAVEQALSGLGHDGIPPSTGMTQRADPPISRTASYTFYKDSRLKDAKYDGRWVSGKPHGRGVV KWPDGRMYT
GTFKNGFEDGFGDYVVS NKTLNSCDHYQQQWKDGKMHGFGTFRYASGEVYEGSFQDNMRHGHGMLRSGKLNSTSPSVFI
G

QWQYDKKSGYGVFDDITRGEKYMGMWLDDQRQGNGVVVTQFGLYYEGA FSNKMMGTGVLLSEDDTTFEGEFLEDWTL
NG

KGVLTMPNGDYIEGSFCGVWGTGLKMSGSYKPSLYDS DKEKGHALKLGR LAVHSEEKWKAVFLECWNRLGCDS PVQQG
T

TTAWDNIAIALTANLRQQRDSPELLSRSHHKTLESLECIPQHVG PVTLEVYHTIRRYLVKACDTPLHPLGRLVETLVSVY
RMTYVGVGANRRLLPQAVNEITSYLSRIFQLVRFLFPELPEEGGSLADPPKEKVGTDADGKLLES PKPGCVVSSSALLP
VLLPRLYPPLFTLYALEKEKEDDVYWECVLR LNKQPD LALLAFLGVQQKFWPVTVTIHGEKQQVLSSTKDACFASAVETL
QQISTTFTPSDKLQVIQLTFEITQEV LALLKQDFLWSMDDLFPVFLFVVLRARIRNLGSEVSLIEDLMDPCVQHGEHGI

MFTTLKACYYQIQHEKVT

>NP_001096142.1 rabankyrin-5 [Danio rerio]

MRTEEVQKLQKHLALLRQEYVVKMQKL VETERRCSVLAAQASVPGSSSQASDSFISRLLAIVSDLYQQEQYSDLKVKIGD
QRLSAHKFVLAARSEIWSLANLASTSELDLSDAKPEVAMAMLRWTYTDDLELNGNDGFLIDLMKLANRFQLHLLRERCEK
GVMSSVNVNRCIRFYQTAEELDAATLMNYCGEIIASHWDDLKEDFSTMDAQLLYKMIKSKTEYPLHKAIAKVEREDVVFL
YLIEMDAQLPGLNELDNNGDLALDLALSCKKLESIATTLVNNKADVDMVDQSGWSLLHKAIQRGDEFASFILIRHSAQVN
AATVGAVETPLHLVCSFSPKKHSGEVMAGMARIAEALLKAGANPNMQNSKGRTPLEAVVSGNEPVFNQLLQCKQLDLEL
KDHEGSTALWLALQYITVASDPSVNPFEDEAPVVNGTSFDENSFAARLIQRGSNPDAPDTNGNCLMQRAAVAGSEAAAIF
LATHGAKVNHTNWKWGETPLHTACRCGLAGLTVELLQQGANPNLQTDIALPGGVEKSQGVVSQQSPLHLAIVHNHPDVVSVI
LEQKANALHATNNLQIIPDFSLKDSMDQTVLGLALWTGMHTIAAQLLGSGAAINDTMSDGQTLHMAIKRQDSKSAFLFL
EHQADINVRTQEGQTALQLAISNQLPLVVDIAICTRGADMSVNEKGDPLWLALENGLEDIASTLVRHGCDATCWSSGPG
GCQQTLLHRAIDENNEVTACFLIRSGCDVNSSRRPGPNGEDEEARDGQCPLHLAASWGLEEVAQCLLEFGANVNAQDSE
GRAPIHVAISNQSVIIQLLISHPEIRLNIRDRQGMTPFACAMTHKNNKAAEAILKREPGAAEQVDNKGRNFLHVAVQNS
DIESVLFLISVQANVNSRVQDSAKLSPLHLAVQAGSEIIVRNLLLAGAKVNELTKHRQTALHLAAQQDLSTICSVLIENG
VDFAAVDENGNNALHLAVMQGRLNNVRALLTESNVDAEAYNLSQSPMHVLGQYGKENAAAIFELFLECMPEYPLDKPDNE
GNTVLLLAYMKGANLNCRAIVRAGARLGVTNNQGINIFNYQVATKQLLFRLLDMLSKEPPWCDGSNCYECITKFGVTTRK
HHCRHCGRLLCHKCSIKEIPIKFIDLNPVRVCDICFDVLTGGS

>XP_002662342.2 alsin isoform X5 [Danio rerio]

MEKLSSGEGDSSGERGLLHTWKGYSYSTAPERVLLSRPVLQAALGARHGVLLVEGGQVYSFGELPWKQNQTSSAEPILE
AVLSEQRVVFVAAGSAHSGVVTEDEGGVHMWGENVHGQCGLLGLSVIPNTPVGVLDSEATPPQTVKILEVACGDQHTLAL
SAKHEVWAWGSGCQLGLNTSTFPVWKPQKVDHLSGRHVLQVACGSAHSVALVRCLPPPQEPRKPPQDKCGQCHQLLYTM
T

DKEDHVIISDGHHCPLGVEMDSTEIKSAVEGSPDPGKPGKSSPTEPVPCMSTQISKSPTSSNISESTRPPESTLPFELQN
QVPAYCQESIEAPVEDSAAHEAPAAAGEVCVEASENSIPEPDSRSGSKSPYPDEQAVKAYLKRLSDHALAEHTIKTSST
IHSAQLSGDPANLFASEPLIPVAQSVTPMGSALNNLVVSCASAVGERVVSTYEALSLRKVIGYWVPGEGRERVEERLRLE
ESMQGKKSSSLGDIREEEAELSRRLSLPGLLSQVSPRLLRRTSRPRMRAVPLASGGIPETDAHLPSLQTEVWSWGQGQDG
QLGHGDLLPRLQPCVKSLNGKEVLKVAAGAHSLALTAQSQVFSWGCNTSGQLGHMESPTTFPQLTKLSDGIRVWDIGA
GLQHTLLLADGDCIQPILYYSGQQVKEVPEPTEEEEQTAEYTQQPVLLPFCMNLGYVSSVYAGGRTCAALTDCNVMGFIA
SLHELAAAERKYYCKLSNIKSLLLQPLLKLDLSSALGQSSAGLLQNLIGRMSRLSQLTGQNSASLTSFLQRSRDIRGLV
ILED AHLFLDTYSEYSSAVGDLVMGGFQALVKPCHDVFGKGAEVVQRLSECSEGLTLADVLAHLFYLPKHLHEYGRLL
LLKLATCYEVSSVDYQKLQDACSKFESMALHLKRRRKEAETLHFWSFPGKMTDSLKPSRRLICESSNKALTLQNAGR
FSVNWFI LNDALVHAQFSTHHIFPLATLWVEPISEESTGVYGLKVTSPSESFALLASSPAEKAKWLR SINQAVEQALSG
LGHDGIPPSTGMTQRADPPISRTASYTFYKDSRLKDAKYDGRWVSGKPHGRGVVKWPDGRMYTGTFKNGFEDGFGDYVVS

NKTLNSCDHYQGQWKDGKMHGFGTFRYASGEVYEGSFQDNMRHGHGMLRSGKLNSTSPSVFIGQWQYDKKSGYGVFDDI
T
RGEKYMGMWLDDQRQGNVVTQFGLYYEGAFSNNKMMGTGVLLSEDDTTFEGEFLEDWTLNGKGVLTMPNGDYIEGS
FC
GVWGTGLKMSGSYKPSLYDS DKEKGHALKLGRLAVHSEEKWKAVFLECWNRLGCDSPVQGQTTTAWDNIAIALTANLR
Q
QRDSPPELLSRSHHKTLESLECIPQHVGPVTLEVYHTIRRYLVKACDTPLHPLGRLVETLVSVYRMTYVGVGANRRLLPQA
VNEITSYLSRIFQLVRFLPELPEEGSLADPPKEKVGTDADGKLLESPKPGCVVSSSALLLPVLLPRLYPPLFTLYALE
KEKEDDVYWECEVLRLNKQPD LALLAFLGVQQKFWPVTVTIHGEKQQVLSSTKDACFASAVETLQQISTTFTPSDKLQVQI
LTFEETQEVLALLKQDFLWSMDDLFPVFLFVVLRLRIRNLGSEVSLIEDLMDPCVQHGEHGIMFTTLKACYYQIQHEKV
T

>XP_005171962.1 rabankyrin-5 isoform X1 [Danio rerio]

MAEEEVQKLQKHLALLRQEYVKMQKL VETERRCVLAQAASVPGSSSQASDSFISRLLAIVSDLYQQEQYSDLKVKIGD
QRLSAHKFVLAARSEIWSLANLASTSELDLSDAKPEVAMAMLRWTYTDDLELNGNDGFLIDLMKLANRFQLHLLRERCEK
GVMSSVNVNRNCIRFYQTAEELDAATLMNYCGEIIASHWDDLKEDFSTMDAQLLYKMIKSKTEYPLHKAIVEREDVVFL
YLIEMDAQLPGLNELDNNGDLALDLALS K KLESIAATLVNNKADVDMVDQSGWSLLHKAIRGDEFASFILIRHSAQVN
AATVGAVETPLHLVCSFSPKKHSGEVMAGMARIAEALLKAGANPNMQNSKGRTPLHEAVVSGNEPVFNQLLQCKQLDLEL
KDHEGSTALWLALQYITVASDPSVNPFEDEAPVVGTSFDENSFAARLIQRGSNPDAPDTNGNCLMQRAAVAGSEAAAIF
LATHGAKVNHTNKWGETPLHTACRCGLAGLTVELLQQGANPNLQTDIALPGGVEKSQGVSSQQSPLHLAIVHNHPDVVSVI
LEQKANALHATNNLQIIPDFSLKDSMDQTVLGLALWTGMHTIAAQLLGSGAAINDTMSDGQTLLHMAIKRQDSKSALFLL
EHQADINVRTQEGQTALQLAISNQLPLVVD AICTRGADMSVVNEKGDPPLWLALENGLEDIASTLVRHGCDATCWSSGPG
GCQQTLLHRAIDENNEVTACFLIRSGCDVNSSRRPGPNGEDEEARDGQCPLHLAASWGLEEVAQCLLEFGANVNAQDSE
GRAPIHVAISNQSVIIQLLISHPEIRLNIRDRQGMTPFACAMTHKNNKAAEAILKREPGAAEQVDNKGRNFLHVAVQNS
DIESVLFLISVQANVNSRVQDSAKLSPLHLAVQAGSEIIVRNLLLAGAKVNELTKHRQTALHLAAQQDLSTICSVLIENG
VDFAAVDENGNNALHLAVMQGRLNNVRALLTESNVDAEAYNLRGQSPMHVLGQYGKENAAAFELFLECMPEYPLDKPD
N
EGNTVLLLAYMKGNANLCRAIVRAGARLGVTNNQGINIFNYQVATKQLLFRLLDMLSKEPPWCDGSNCYECITKFGVTTR
KHHCRHCGRLLCHKCSIKEIPIIKFDLNKPVRC DICFDVLT LGGS

>XP_005157097.1 zinc finger FYVE domain-containing protein 21 isoform X1 [Danio rerio]

MSAVPDGKKLVRSPGLRMVPENGAFNSPFTLDEPQWVPDKECPRCMQCDTKFDFITRKHHCRRCGRFCDKCCSQKVAL
PRMCFVDPVRQCAECSLISQKEVEFYDKQLKVLTAGGTFFVKVGSSEKSETMVCRLSNHRYLFLDGNSHFEVELSRISS
MQVLTEGSTPGEKDICSYTSLLDNQISEGGTLRASGMVLQYKPPGSLDLQQLNMDTADDKRIASAWLAAMHKA AKLLYES
KDQ

>NP_001153818.1 zinc finger FYVE domain-containing protein 21 [Danio rerio]
MSAVPDGKKLVRSPSGLRMVPENGAFNSPFTLDEPQWVPDKECPRCMQCDTKFDFITRKHHCCRRCGRFCFDKCCSQKVAL
PRMCFVDPVRQCAECSLISQKEVEFYDKQLKVLTAAGTFVVKVGSSEKSETMVCRLSNHRYLFLDGNSHFEVELSRISS
MQVLTEGSTPGGGTLRASGMVLQYKPPGSLDLQQLNMDTADDKRIASAWLAAMHKAACKLLYESKDQ

>XP_021336159.1 zinc finger FYVE domain-containing protein 21 isoform X2 [Danio rerio]
MSAVPDGKKLVRSPSGLRMVPENGAFNSPFTLDEPQWVPDKECPRCMQCDTKFDFITRKHHCCRRCGRFCFDKCCSQKVAL
PRMCFVDPVRQCAECSLISQKEVEFYDKQLKVLTAERRSSDRFGTNEG

>NP_991308.1 WD repeat and FYVE domain-containing protein 2 [Danio rerio]
MAAEIHPRPQTRKPVLLSKIEGFQDVVNTAVIIPKEDGVISVSQDRTIRVWLKRDSGQYWPSVYHTMPVACSCMSFNPET
RRISVGLENGTVSEFVLSSEDYNQMTPARTYQAHQGGVTVVLFVLEMEWVLSTGQDKSFTWHCSESGQQLGTYRTTAWVSG
LQFDVETRHAFFVGDHSGQVTILKLEQDNCSLVTTFKGHTGNVTALCWDVPVQRVLFSGSSDHSIIMWDIGGRKGTAIELQG
HNDKVQGLCYAPHTRQLISCGSDGGIVIWNMDVTRQETPEWLSDSCQKCEQPFFWNFKQMWDSSKIGLRQHHCRCGQA
VCGKCSSKRSTIPLMGFEFEVRVCDSDCHDLITDEERAPTATFHDSKHSIVHMQYEPTRGWLLTSGTDKVIKLWDMTPVVS

>XP_009295365.1 FYVE and coiled-coil domain-containing protein 1-like isoform X1 [Danio rerio]
MATGAAVGDSQIQRIIRDLRDAVSELTKEYKESGEPITDDSSNLHKFSYKLEYLLQFDQKEKTTFLGSRKDYWDYFSDCL
AKIKGANDGIRFVKISSELKTSLGKGRAFIRYSLVHQRLADTLQQCLMNSRVTSWYNPRSPFLKPHLSVDIISYLYELN
DVQFDVASRGHDLDAEWPTFARRTLGMTSSPSHLWKAPSRSSSINSLASTYSQQHHEFPGPSDFGPGLSDMSMQNSSIL
NDTSMASIDELRLELDQSELKQRELIDRIQQLGDEGSELRGVVVELQRQLDVSLAAQGNHQELQRNLEVLIIESEHALSRE
VEVLRDRETRREVSHKDLQDMLAAERKNEELMTRLDGVLDEKGQRAASDFNSAQKIHLLNELKEAEKKRMDALAECEE
KRRHAEHLAEVVKVDEALKEAEVKMAAWMEKGEQLQTRAVEQRNFMEKLQALAVREKETSNLQRQLRDLQNSLENM
EK
QANVEKKRMQDDKEELEMKMNGLEGLLQSLRTQLKVKESDLLSSTKR VHFLERESEKLRSENQKLEYELNSTKKEAKKI
DEYKDSCAKLIEQNTKLLQTVNKNEESKKELLENKSSLESEL AGLRASEKQLRAQIDDAKVTVDEREQRLREENRNLDES
LQKANMQLEESESSIRQKEQENKDLMEVQVTLKSALAAMQKEIRDINNQIGELEKNLGVARCNEANLNAQLKDKATQLED
REKLCEELQGRVEELESQRDLVEKTKAERAFVKQTEMIQSLEAQRNLA EKTQLEKSTCQAKETKEMALKLTLLLEDQLG
LSAKEVSKLQEEVVNLRAKLHSAVEEKDKTQAKLEVTEASCAELRILTEHLKKQAEQNR LHVSELLQSSEHVDKLTSQL
NQETSAHEKT TAALASAKEDLVALKAQNERMVLENAETRESLHRVNT EMAELGMTICKLTAEREEARERWAAEAVRIQEL
QQHGVKETERLNASLVALHQENSSLQEELQQTDKLSETMLELKQLLDKTEGERDAAREEITAVKFQMSTESMSLKHQMK
LQEEIDGLKDQLDTERKKKSELEAKLSELEGANVEYSRLIEEKDSHITYCETLLRESESETQQLQERASRSKEALS DVEK
EREELKQKLDQVLMETQNQHLRMSAELEDLGQTKVNLEERLIELIRDKDALWQKSDALEFEQKLRAEEQWWLVDKEATHC
LGCQGQFTWWLRRHHCRLCGRIFCYCSNNYVMTKNSKKERCCRECYTQHGA VVERFTKAELNSSSDNQPSNTAAQLPPP
PYIPTPRVTVDTPGERADDGAFDIITDEEVNQIYDSDSRTTNGSHEEEGGQTGDNSVSSDVTSEEQEDMISVQDAEITLL
KSGELSASVPLDIDEIPHFGDGSRELFVKSSCYSTIPITVGDRGPIISWVFSSEPKSISFTVVYRETLDTPVEQAKVLIP

LTRCN SHKETIQGQLKVRNAGVYTLIFDNSFSRFLSKKVNYHLTIEKPVYIDGSDFP

>XP_021332794.1 FERM, RhoGEF and pleckstrin domain-containing protein 2 isoform X5 [Danio rerio]

MGEIEGSYRSLQTPAGSRLGGQHNTGISTLEPGQSLSSAMGAGGKGHNKGLQIRVQGLDEAQEFYELESKADGQLLLSDV
FRRINLIESDYFGLEFQNLQMNWVWLDPSKLIVKQVRRPMNTLFRLSVKFFPPDPGQLQEEFTRYLFSLQIKRDLLDGRL
SCTENTAALLASHLVQSEIGDYDDLADREFLKMNKLLPCQEHVQEKIMELHRRHTGQTPAESDFQVLEIARKLEMFGVRF
HPAADREGTKINLAVAHMGLQVFQGHKINTFNWSKIRKLSFKRKRFLIKLHPEVHGPHQDTLEFLMGSRDQCKIFWKNC
VEHHSFFRLLDQPQPKSKAIFFSRGSSFRYSGRTQKQLVEYVRDSGLRRTPYQRRNSKIRMSTRSLASDVPKQNLSFNDS
LRTHIPPSSITASFQSLHAPSVMRAETPNQLLHLHQTQHQPLRAPSPMKQDPIKTNSQSTYAFPDSIAIDSPQLSPFND
KGPLCLSPSFQMSTLSLPGQAPSPLQSPILNEVG TARLDEDEEGRRKRYPTDKAYFIAKEILT TERTYLKDLEVITVWFR
SAVIKENAMPEGLMTLLFSNIDPIYEFHRGFLKEIDQRLALWEGRSNAHVKG DYQRIGDVMLRNMCSLKEFTGYLQKHDE
VLTELEKATKR VKKLETVYKEFELQKVCYLPLNTFLLKPIQRLMHYKLILERLCKHYSPQHRDYDDCKEALKEVAEIATQ
LQSSLIRLENFQKLTTELQRDLIGIENLTAPGREFIREGCLYKLTKKGLQQRMFLLFSDMLLYTSKGV TATNQFKVHGQLP
LHGMILIVLDAPVEESENENWSVPHCF TIYSAQRTIVVAASSKVEMNKWIEDLNMAIEMSKKCKEQKSDVLLDPSLCDRSNR
SSDEVSLQESEDDMNSSRCSLDKQSHHRANTTMHVCWHRNTSVSMSDHSLAVEYSVLQPCLQSFLAICSVRARDQTPS
HMCAGTATRTCLSVTICA

>XP_021332793.1 FERM, RhoGEF and pleckstrin domain-containing protein 2 isoform X4 [Danio rerio]

MGEIEGSYRSLQTPAGSRLGGQHNTGISTLEPGQSLSSAMGAGGKGHNKGLQIRVQGLDEAQEFYELESKADGQLLLSDV
FRRINLIESDYFGLEFQNLQMNWVWLDPSKLIVKQVRRPMNTLFRLSVKFFPPDPGQLQEEFTRYLFSLQIKRDLLDGRL
SCTENTAALLASHLVQSEIGDYDDLADREFLKMNKLLPCQEHVQEKIMELHRRHTGQTPAESDFQVLEIARKLEMFGVRF
HPAADREGTKINLAVAHMGLQVFQGHKINTFNWSKIRKLSFKRKRFLIKLHPEVHGPHQDTLEFLMGSRDQCKIFWKNC
VEHHSFFRLLDQPQPKSKAIFFSRGSSFRYSGRTQKQLVEYVRDSGLRRTPYQRRNSKIRMSTRSLASDVPKQNLSFNDS
LRTHIPPSSITASFQSLHAPSVMRAETPNQLLHLHQTQHQPLRAPSPMKQDPIKTNSQSTYAFPDSIAIDSPQLSPFND
KGPLCLSPSFQMSTLSLPGQAPSPLQSPILNERYPTDKAYFIAKEILT TERTYLKDLEVITVWFRSAVIKENAMPEGLMT
LLFSNIDPIYEFHRGFLKEIDQRLALWEGRSNAHVKG DYQRIGDVMLRNMCSLKEFTGYLQKHDEV LTELEKATKR VKKL
ETVYKEFELQKVCYLPLNTFLLKPIQRLMHYKLILERLCKHYSPQHRDYDDCKEALKEVAEIATQLQSSLIRLENFQKLT
ELQRDLIGIENLTAPGREFIREGCLYKLTKKGLQQRMFLLFSDMLLYTSKGV TATNQFKVHGQLPLHGMILIVLDAPVEE
SENENWSVPHCF TIYSAQRTIVVAASSKVEMNKWIEDLNMAIEMSKKCKEQKSDVLLDPSLCDRSNRSSDEVSLQESEDDM
NSSRCSLDKQSHHRANTTMHVCWHRNTSVSMSDHSLAVENQLSGYLLRKFKNSNGWQKLWVVF T NFCLFFYKTHQDDFP
L

ASLPLLGYTVSTPGESDSIHKEYVFKLQFKSHVYFFRAESEYTFERWMEVIKSAASATGRMSLLVPKGPAEVNVGN

>XP_009300696.1 FERM, RhoGEF and pleckstrin domain-containing protein 2 isoform X1 [Danio rerio]

MGEIEGSYRSLQTPAGSRLGGQHNTGISTLEPGQSLSSAMGAGGKGHNKGLQIRVQGLDEAQEFYELESKADGQLLLSDV
FRRINLIESDYFGLEFQNLQMNWVWLDPSKLIVKQVRRPMNTLFRLSVKFFPPDPGQLQEEFTRYLFSLQIKRDLLDGRL

SCTENTAALLASHLVQSEIGDYDDLADREFLKMNKLLPCQEHVQEKIMELHRRHTGQTPAESDFQVLEIARKLEMFGVRF
HPAADREGTKINLAVAHMGLQVFQGHKTINTFNWSKIRKLSFKRKRFILKLHPEVHGPHQDTLEFLMGSRDQCKIFWKNC
VEHHSFFRLLDQPQPKSKAIFFSRGSSFRYSGRTQKQLVEYVRDSGLRRTPYQRRNSKIRMSTRSLASDVPKQNLSFNDS
LRTHIPPSSITASFQSLHAPSVMRAETPNQLLHLHQTHQPLRAPSPMKQDPIKTNSQSTYAFPDSIAIDSPQLSPFND
KGPLCLSPSFQMSTLSLPGQAPSPLQSPILNEVG TARLDEDEEGRRKRYPTDKAYFIAKEILT TERTYLKDLEVITVWFR
SAVIKENAMPEGLMTLLFSNIDPIYEFHRGFLKEIDQRLALWEGRSNAHVKG DYQ RIGDVMLRNMCSLKEFTGYLQKHDE
VLTELEKATKR VKKLET VYKEFELQKVCYLPLNTFLLKPIQRLMHYKLILERLCKHYSPQHRDYDDCKEALKEVAEIATQ
LQSSLIRLENFQKLTELQRDLIGIENLTAPGREFIREGCLYKLTKKGLQQRMFFLFSDMLLYTSKGV TATNQFKVHGQLP
LHGMILIVLDAPVEESENEWSVPHCF TIYSAQRTIVVAASSKVEMNKWIEDLNMAIEMSKKCQEKSDVLLDPSLCDRSNR
SSDEVSLQESEDDMNSSRCSL DKQSHHRANTTMHVCWHRNTSVSMSDHS LAVENQLSGYLLRKFKNSNGWQKLWVVFT
N

FCLFFYKTHQDDFPLASLPLLGYTVSTPGESDSIHKEYVFKLQFKSHVYFFRAESEYTFERWMEVIKSAASATGRMSLLV
PKGPAEVNVGN

>XP_001344703.1 zinc finger FYVE domain-containing protein 1 [Danio rerio]

MSGQGSSAEKGLNGVLVCQESYACGGTDEAAFECDCEGSLQCIRCELELHRQDRMRNHDRIAPGHVPYCDSCKG DGGV
PNGGRLRAVVRCQGCKINLCLDCQKRTHSGVSKRKHPLTAYPPPSKPPENNCSTGDEQLDELKAKLEK VTSFLLVDENED
MQVKNEEDFVRKLGC RPEELLKVVSIFGNTGEGKSHTLNHTFFLGREVFKTSPTQESCTVGVWAAMDPVHKVVVVDTEGL
LGAGTNQGGQRT RLLKVLAVSDLVIYRTHADRLHDDLKFGLGDASDAYLKHFTKELKATTARCGLDVPLSTLGP AVIIFH
ETVHTKLLGSDKPSESAERLLQERFRKLGLFPEAFSSIQYRGTRTHNPPTDFSGLLRSVEQQLDNNSTRSPRSAGVIHKA
LQALSECFSGEIPDEHLASNSFFPDEYFTCSSICLSCGSGCKNSMNLREGVVHEAKHRCRYSAHYDNRIYTCKACYESG
KEVIVVPKTTASSDSPWFGLAIYAWSGYVIECPNCSVIYRSRQYWYGNQDPVDTVVRTEIQHVWPGSDKFLKDNNNAAQR
LLDGVNFMAQSVSELSVKPAKAVTAWLTDQIAPAYWKPNLILRCYKCGAGFEDNDTKHHCRACGEGFC DGCSSKTRPVP
ERGWGLAPVRVCDACFQNRGIPEELDDAALEEEEGGTLIARKVGEAVQNTLGAVVTAIDIPLGLVKDAARPAYWVPDQDI
RCCNQCQREFNARLSIHHCRACGQGVCNDCSPDRRAVPSRGWDHPVRVCTTCNQKSGEL

>XP_021333893.1 myotubularin-related protein 3 isoform X1 [Danio rerio]

MEEEGQQSLECIQANQIFPRKPPVLEEDLQVPFPELHGEFTEYVGRAEDAVIAMSSYRLHIKFKESVNNCSCEVSVPL
QLIECVECRDMFQLHITCKDKIVRCQFSTFEQCQEWLKR LTA AVRPPSRIEELFSFAFHAWCVDLYTGEKEQHGDLCRP
GDHVMSRFHNEVERMGFDTQNAWRVSEINNKYKLCSSYPQLLLVPAWITDKELENVAAFRSWKRIPAVVYRHQSTGAVIA
RCGQPEVSWWGWRNADDEHLVQSIARACAVDSSSCKGVSNGSLSREYTN GADLSDVDFESSMTNSSEVETLAIQPRKLLI
LDARSYAAAVANRAKGGGCECPEYYPNCEVVFMMGMA NIHSIRKSFSQSLRFLCTQMPDPANWLSALESTKWLQHL SLLKKA
SLLVSNAVDRDHRPVLVHCSDGWDRTPQIVALAKLLLD PYYRTIEGFQVLVETEWLDFGHKFADRCGHGENAEDLNERCP
VFLQWLDCVHQLQRQFPCSF EFNEAFLVKLVQHTYSCLFGTFLCNSGKEREDRRIQERTCSVWSLLRAANRSFGNMLYSS
HSETVLHPVCHVRNLMLWTAVYLPSSSPTTPSDDSCAPYPAPGANPEDQPLGRRPKTRSF DNLP SACEVGNPLTSNRRSS

DPSLNEKWQDHRRSLELNIGAGTDGAASPEPDERVNGQTMVGIMGTFSNGGTENGEGLKDVRLPMIDGVDEAELTVGVAV
GQMENILQEATKDESAPDTRSVAKPNETSAVNGKTDDIAQEGRTEDDLESKSLEDGNVNGHCSEDGNSEASSALSQDTSE
SQDSEEIEKCTTQEDDSSCNPTILTPNGLRTLNGHGVESIEQAEKRLSLLESSTETLTEDLGVRPESLGPLSIPPLK
ALAESSCLKQGLRTAARTLNNTPKRASLSAFPASTDLLHPMCNGDSPDPEPSTPRTNGERATLSRQVSLASCGSLTLHA
RGTCSHHRCLEHLGFLGRPSFSPPEPPSSSSSRSHLDDDGLTLHTDAIQRLRQIEAGHQLEVEALKRQVQELWSRLESHQA
AGMLRLNGDIGDEVTSITDSDFNLEPNCLSRCSTELFSEASWEQVDKQDTEVTRWYPDHLAAQCYGCERGFWLATRKHHC
RGKERMEEVWNCGNVFCGSCCDQKIPVPSQQLFEPSPVCRSCFSNLQPPAPPLDLELDKPITASSN

>XP_021332792.1 FERM, RhoGEF and pleckstrin domain-containing protein 2 isoform X3 [Danio rerio]

MGEIEGSYRSLQTPAGSRLGGQHNTGISTLEPGQSLSSAMGAGGKGHNKGLQIRVQGLDEAQEFYELESKADGQLLLSDV
FRRINLIESDYFGLEFQNLQMNWVWLDPSKLIVKQVRRPMNTLFRLSVKFFPPDPGQLQEEFTRYLFSLQIKRDLLDGRL
SCTENTAALLASHLVQSEIGDYDDLADREFLKMNKLLPCQEHVQEKIMELHRRHTGQTPAESDFQVLEIARKLEMFGVRF
HPAADREGTKINLAVAHMGLQVFQGHKTINTFNWSKIRKLSFKRKRFLIKLHPEVHGPHQDTLEFLMGSRDQCKIFWKNC
VEHHSFFRLLDQPQPKSKAIFFSRGSSFRYSGRTQKQLVEYVRDSGLRRTPYQRRNSKIRMSTRSLASDVPKQNLSEFND
LRTHIPPSSITASFQSLHAPSVMRAETPNQLLHLHQTQHQLPLRAPSPMKQDPIKTNSQSTYAFPDSIAIDSPQLSPFND
KGPLCLSPSFQMSLTLSPGQAPSPLQSPILNEVGTAARLDEDEEGRRKRYPTDKAYFIAKEILTERTYLKDLEVITVWFR
SAVIKENAMPEGLMTLLFSNIDPIYEFHRGFLKEIDQRLALWEGRSNAHVKGDYQRIGDVMLRNMCSLKEFTGYLQKHDE
VLTELEKATKR VKKLETVYKEFELQKVCYLPNTFLLKPIQRLMHYKLILERLCKHYSPQHRDYDDCKEALKEVAEIAATQ
LQSSLIRLENFQKLTELQRDLIGIENLTAPGREFIREGCLYKLTKKGLQQRMFFLFSDMLLYTSKGVATATNQFKVHGQLP
LHGMLIVLDAPVEESENEWSVPHCFITISAQRTIVVAASSKVEMNKWIEDLNMAIEMSKKCQEKSDVLLDPSLCDRSNI
FSSPAVSPELPPRYLLGQGQRPNTITHVCWYRNQNLSDYLRLMNQNLQSGYLLRKFKNSNGWQKLWVFTNFCLFFYKT
HQDDFPLASLPLLGYTVSTPGESDSIHKEYVFKLQFKSHVYFFRAESEYTFERWMEVIKSAASATGRMSLLVPKGPAEVN
VGN

>XP_009302003.1 myotubularin-related protein 3 isoform X2 [Danio rerio]

MEEEGQQSLECIQANQIFPRKPPVLEEEDLQVPFPELHGEFTEYVGRAEDAVIAMSSYRLHIKFESVNVNPLQLIECVE
CRDMFQLHITCKDCKIVRCQFSTFEQCQEWLKRLTA AVRPPSRIEELFSFAFWCVDLYTGEKEQHGDLCRPGDHVMSR
FHNEVERMGFDTQNAWRVSEINNKYKLCSSYPQLLLVPAWITDKELNVAAFRSWKRIPAVVYRHQSTGAVIARCGQPEV
SWWGWRNADDEHLVQSIARACAVDSSSCKGVSNGLSREYTNAGADLSDVDFESSMTNSSEVETLAIQPRKLLILDARSYA
AAVANRAKGGGCECEPEYYPNCEVVFMGMANIHSIRKSFQSLRFLCTQMPDPANWLSALESTKWQLHL SLLLKASLLVSNA
VDRDHRPVLVHCSDGWDRTQPIVALAKLLLDPYRTIEGFQVLVETEWLDFGHKFADRCGHGENAEDLNERCPVFLQWLD
CVHQLQRQFPCSFENEAFVLVQHTYSCLFGTFLCNSGKEREDRRIQERTCSVWSSLRAANRSFGNMLYSSHSETVLH
PVCHVRNLMLWTA VYLPSSSPTTPSDDSCAPYPAPGANPEDQPLGRRPKTRSFNLP SACEVGNPLTSNRRSSDPSLNEK
WQDHRRSLELNIGAGTDGAASPEPDERVNGQTMVGIMGTFSNGGTENGEGLKDVRLPMIDGVDEAELTVGVAVGQMENIL
QEATKDESAPDTRSVAKPNETSAVNGKTDDIAQEGRTEDDLESKSLEDGNVNGHCSEDGNSEASSALSQDTSESQDSEEI

EKCTTQEDDSSCNPTILTPNGLRTLNGHGVESIEQAEKRLSLLESSTETLTEDLGVRPESLGPLSIPPPLKALAESSC
 LKQGLRTAARTLNNTPKRASLSAFPASTDLLHPMCNGDSPDEPSTPRTNGERATLSRQVSLASCGSLTLHARGTCSHH
 RCLHLGFLGRPSFSPPEPPSSSSSRSHLDDDGLTLHTDAIQQLRQIEAGHQLEVEALKRQVQELWSRLESHQAAGMLRLN
 GDIGDEVTSITDSDFNLEPNCLSRCSTELFSEASWEQVDKQDTEVTRWYPDHLAAQCYGCERGFWLATRKHHCRCRKERME
 EVWNCGNVFCGSCCDQKIPVPSQQLFEPSRVCRSCFSNLQPPAPPLDLELDKPITASSN
 >XP_017211771.1 WD repeat and FYVE domain-containing protein 3 isoform X6 [Danio rerio]
 MLAEHRENSRAGFGLKKPLKMNVMVKRIMGRPRQEECSPQDNALGLMHLRRLFSELCHPPRHMTQKEQEELLYMMLPVFN
 R
 VFGNAPPSTMNEKFSDDLQFTTQVSRLMVTEIRRRASNKSTEAASRAIVQFLEVNQSEETSRGWMLLTINLLASSGQKT
 VDCMTTMSVPSTLVKCLYLFFDLPHMPEVPAATQTELPLADRRALLQKVVFVQILVKLCSFVSPAEEAQAQDDLQLLFSAI
 TSWCPPHNLPWRKSAGEVLTISRHGLSVNVVKYIHEKECLSTCIQNMQQSDDLSPLEIVEMFAGLSCFLKDSSDVSQTL
 LDDFRMCQGYTFLIDLMIRLEQAKEDESKDALKDLVNLVTALTTYGVSELKPAGLTGAPFLLPGFVVPQPSGKGHTVRN
 IQAFSVLQNAFLKAKSGRLARMILEAIANIYAADYANYFILEAQHTLSQFAERVTKLPEVQSKYFELLEFFVVFGLNYVPC
 KELFSVSVLLKSSTSYGCSITATRTLLKLGRHHPVFSDFREVGLLEVLVNLHLYAALLKDPTQTHSDQGDSKNNVAEE
 QKQLAWLVMETLTVLLQGSNTNAGLFREFGGARCVDHIVKYRQCREHALMIIQQLVLSPSGDDDMGTLLGLMHSAPTAEL
 QLKTDILRALLAVLRESHRTRTVFRKVGGFVYVTSLLAMERSLCSPPVIGWEKVNQNKVFELLHTIFCTLTAAAMYEP
 NSHFFRTEIQYEKLADAVRLLGCFSDAKKVGPAATVFPNAQPFQRLLEDEIIPAENVCPTLKHCSKLFYMYKMATDSFD
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>XP_017211770.1 WD repeat and FYVE domain-containing protein 3 isoform X5 [Danio rerio]
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>XP_017211768.1 WD repeat and FYVE domain-containing protein 3 isoform X2 [Danio rerio]

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>XP_005165446.1 WD repeat and FYVE domain-containing protein 3 isoform X1 [Danio rerio]

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>XP_017211769.1 WD repeat and FYVE domain-containing protein 3 isoform X3 [Danio rerio]

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LDDFRMCQGYTFLIDLMIRLEQAKEDESKDALKDLVNLVTALTTYGVSELKPAGLTGAPFLLPGFVVPQPSGKGHTVRN
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NSHFFRTEIQYEKLADAVRLLGCFSDAKKVGPA TVFPSNAQPFQRLLEDEIIPAENVCP TLKHCSKLFYMYKMATDSFD
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FLRLGNPLNCGAWDKLLKQYRVHVKPSSLSYEAEMRNSMTLSMEGFGPDSVFTINEDNSQYRISRSLVRS AEGSTVPLTR
VKCLVSMTPPHDIRLHGSSVTPAFVELDTSLEGFGCLFLPSLAPHNAPSSNANTSGVSDGAVVSGMGNGERFFPPPSGLS
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VEGFGLEAEARMTTWHVAVPSENE SDSVQSQDVSEGRQLLLKAVNRVWTELMH SKRQMLE DIFKVS L P VNDRGHVDIGTA
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REALECDYVSAHLHEWIDLIFGYKQQGPPAVEAVNVFHHLFYEGQVDIYNINDPLKETATIGFINNFQIPKQLFKKPHP
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PRN

>XP_001921741.4 WD repeat and FYVE domain-containing protein 3 isoform X4 [Danio rerio]

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FDLPHMPEVPAATQTELPLADRRALLQKV FVQILVKLCSFVSPA EELAQA KDDLQLLFSAITSWC PPHNLPWRKSAGEVLT
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EQAKEDESKDALKDLVNLVTAL TTYGVSELKPAGLTTGAPFLLPGFVVPQPSGKGHTVRNIQAFSVLQNAFLKAKSGRLA
RMILEA IANIYAADYANYFILEAQHTLSQFAERVTKLPEVQSKYFELLE FVVFGLNYVPCKELFSVSVLLKSSTS YGCSI
TATRTLLKLGRHHPVFSDVFREVGLLEVLVNL LHKYAALLKDPTQTHSDQGD SKNNVAEEQKQLAWLVMETLTVLLQGSN
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RTVFRKVGGFVYVTSLLLAMERSLCSP PVIGWEKVNQNKVFELLHTIFCTLTAA MRYEPANSHFFRTEIQYEKLADAVRL
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>NP_001292489.1 zinc finger FYVE domain-containing protein 26 [Danio rerio]

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>XP_003199781.2 zinc finger FYVE domain-containing protein 26 isoform X3 [Danio rerio]

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 >XP_021336195.1 zinc finger FYVE domain-containing protein 26 isoform X2 [Danio rerio]
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 L R L S V Q Q V V V Q R C C E T L P L W D S R A V N F S Q R V S G L N G G A F C P A S I A S I L Q Q Y A Q D C S P S L D L S D P T T T S D P S S E S E V S V E D
 V S A A S T S L S T S P P S P S S S P S S S F L L T P S A L S F L K S R S P L V A A L A C L S A S R G G V T R V T S S G W S G L P S Y F R G S G R K E A V L D
 G E Q I S R E G E A L L K N F P I L R M Y L R T M A E P V L G V S L E A D E G L G V A L C G K P V V G M L F S G L Q G N A A Q A M A A E A F Q Q A L N N G D L N
 R A L D L L E L Y A Q P C S Q E G A L R D K L L A F T A L Q E S S S A E Q L F R V R D W E L R G R V V L Q G L D R W P L Q Q C L D L L H F C L S D Q N T K D P L
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 L L E H N H T E E A F Q L L E A L S D S M G L E V S E R A L D R R P G L A A C H F L S D Y L T L H F Q S Q M T P A R R R H I H A L H L G S K V L L T L P E A S R
 Q D Y F S L L S D P L L M L E Q M L M N L K V D W A A V A I T T L R S L L L A Q D A G I T T Q H I D T L L A D Y A R K A L D F P Y A P R E W S R S D S V I S L Q
 D A F L Q C P A Q E S C P S S P S H T P P P S T G G T P M Q T P S S E R R P S G K K I R P L A T P F T P P E K T P D R K D W I P D H K Q H I C M V C Q R E R F T
 M F N R R H H C R R C G R L V C H S C S S K K M A V A G F D E P V R V C D Q C Y N F F H T D S D E E L E Q G E V A G S P S I D E V L N G V L S L P E V S R K Q
 Y R L S P N P A E N Q Q L K S E F Y Y E Q A P S A S L C V A I L T L H S D H A A C G Q Q L I D H C R S L S R K L T N P E V D A R L L T D V M R Q L L F S A K L M
 F V N A G C T Q E P A L C D S Y I S K V D V L K I L V T A N Y K Y I P S L D D I Q E T A A V T R L R N Q L L E L E Y Y Q L A V E V S T K S A L D P N G V W Q A W
 A M A S L K A G N L S G A R E K F V R C L K A P V D R N Q L N H G P R L L Q E I I Q H L E S T V K L T L S Q T M D E D I L A S L R E L E E A L S D A P P E G T
 E S K V Q R C N F H Q E C L F Y L F T Y G T H L S L I S F Y L R H D C L K D A L T Y L Q N K G C S D D V F L E G I F Q P C L E R G R L G A L Q G L L E N L D P T
 L E T W G R Y L L S A C Q L L Q R R G H Y H S L Y Q L Q Q F M M D H I R A A M T C I R F F S H G A Q S Y L Q L G E Q Q R W L I R A K E H L R T Y L Q E Q Q S R R
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 N I E E G F G I A Y R V I Q D F Q L E A L A V Y I R V G Q R L V R Q R Q Y S S V R Q L H K C V G E S G T A S K H D C A I V L S C V S V A D K S P A D A K E L E
 T L I L E C K N P E N K I K A Y L Q C S K L R A A Y L Q A V K L K L V K A T P L I Q E V M R A A E S S G D S V M H D I C R Q W L S E H Q E P S S K Q R
 >XP_005167727.1 1-phosphatidylinositol 3-phosphate 5-kinase isoform X10 [Danio rerio]
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 G P R R N W S S P S H S I H G S E T H R K H P E L L R R T S A A S E G R R K S E A P L G S H D P R T A V Q L R T A L K R L K E I M E G K S Q D S D L K Q Y W M P
 D S Q C K E C Y D C N E K F T T F R R R H H C R L C G Q I F C S R C C N Q E I P G K F M G Y T G D L R A C T Y C R K I A L S Y A H S T D S S S I G E D L S A L S
 D S P C S V C V L E P T E P R T P V G G R K A S R N I F L E E D L A W Q S H Q E S Q N S G L N S R L T V V Q E D I G K S P A R K R S A S V T N L S L D R S G S S
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 I S T R A Q A I A I G Q A L V D G R W L D C V T H H D Q I F R D E Y A L Y R P L Q S T E F S E T P S P D S D S V N S L E G H S E P S W F K D I K F D D S D T E Q

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 >XP_005167726.1 1-phosphatidylinositol 3-phosphate 5-kinase isoform X9 [Danio rerio]
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ESSHKDGESPRINKNASITSFSGGEEENIKTSTPLSSFSTFPQVTPPFLISDVKEMSQEVVKGSGEGEKNKYLESTLV
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DYFPEQVYLSPLLNKDSKELDGRRRKQLLKESSPGSGSLTNGSVSHQRAIQILPCHKLTSARIAEQVGSSQQLARMLADY
RAQGGRRIRQREGTQFREAPPPKAPIKADSEEDKGAGVIDMTWSTKLDCLNPINHQRCLCVLFSSSSAQSNAPNPCVSPWI
VTMEFYGKNDLTLGVFLERYCFRPSYQCPSMYCETPMVHHIRRFVHGKGCVQIVLKELDSPVPGYQHTILNYSWCRICKQ
VTPVVPLSNDSSWSMSFAKYELRFGHYTRRANAEPGHSIHKDYHQYFSYNQMVASFYIPVRLLEICLPPPKIIRN
QGPKSSLQQLKDFSQKVAQVYLAIIDRLTSLKTDTFSTREEKMEDMFAQKDMEESELRGWIEKLQVRLQTSVIDSSQ
QLQAVLESVVVKKQGLCETLQSWNNRLQELFQQEKGRKRLSVPPSPGRHRQPTTDESKTSALESSPRNPSPVVPNGDKED
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PIPFDPDPKHLYMYEHERVPIAVCEREPSIIAFALSCKEYKTALEELTKTTAKTGGDDTSQTISAGESRVKNSPA
DNSMSQLSRSSVDADPLKEPESADKQKQTGNPHIELQFSDANAKFYCRIYYAEFHKMREEIMESTEDDFVRSLSHCVN
WQARGGKSGAVFYATEDDRFILKQMPRLEVQSFLDFAPHYFTYITGAVHLKRPTALAKILGVYRIGYKNSQNNTTEKKDL
LVMENLFYGRKMAQVFDLKGSLRNRNVKTDQGKESCEVLLDENLLKLVDNPLYIRSHCKAILRAAIHSDALFLSSHLI
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SGLNLC

>XP_005167724.1 1-phosphatidylinositol 3-phosphate 5-kinase isoform X8 [Danio rerio]

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MEGKSQDSDLKQYWMPDSQCCECYDCNEKFTTFRRRHHCRLCGQIFCSRCCNQEIPGKFMGYTGDLRACTYCRKIALSYA
HSTDSSSIGEDLSALSDSPCSVCVLEPTEPRTPVGGRKASRNIFLEEDLAWQSHQESQNSGLNSRLTVVQEDIGKSPARK
RSASVTNLSLDRSGSSMVPAYESSVSPQNSRALPKTDHSEEERKILLDSFQLKDIWKKICHNTTGMEFQDHRYWLRTPN
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PSWFKDIKFDDSDTEQLADENDYVTPSSSSPSKRTSVSSFHSAVSDSAASISLNMEQDNVNFHIKKQAKYPHVPPYPAE
QKMEVLLSEDGGQHISISDAFIKESLFNRRVEEKAKEMLFTPLGWHHSSLDQLREENGEKKAMERLLSANHSHMMALLQQ
LLYSESLSLSWRDIIVPVVRQVVQTVRPDVRSCDDDDMDIRQFVHIKKIPGGKKFDSAVVNGFVCTKNIAHKKMNSYIKNP
KILLKCSIEYLYREETKFTCIDPIVLQEREFLKNYVQRIVDVRPNLVLVEKTVSRIAQDMLLEHGIAIVINVKPQVLDR
VSRMTQGDLVISMDQLLTKPRLGTCHKFYLSFQLPNSEVKTLMFFEGCPPQLGCTIKLRGASEYELARVKEIIFMVCV
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SREPSTSESSHKDGESPRINKNASITSFSGGEEENIKTSTPLSSFSTFPQVTPPFLISDVKEMSQEVVKGSGEGEKNK
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GLRCP
SRDYFPEQVYLSPLLNKDSKELDGRRRKQLLKESSPGSGSLTNGSVSHQRAIQILPCHKLTSARIAEQVGSSQQL
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PCVSPWIVTMEFYGKNDLTLGVFLERYCFRPSYQCPSMYCETPMVHHIRRFVHGKGCVQIVLKELDSPVPGYQHTILNYS

WCRICKQVTPVPLSNDSWSMSFAKYLELRFYGHQYTRRANAEP CGHSIHKDYHQYFSYNQMVASFSYIPVRLLEICLPP
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SVIDSSQQLQAVLESVVVKQGLCETLQSWNNRLQELFQQEKGRKRLSVPPSPGRHRQPTTDESKTSALESSPRNPSPVV
PNGDKEDRHLNTFPSSSGSSSLQLPSPAEQPSDVITSGPSFPDQDSVSNPEDMFDGHL LGSNDSQVKEKSTMKTILANL
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>XP_009303000.1 1-phosphatidylinositol 3-phosphate 5-kinase isoform X7 [Danio rerio]

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PARKRSASVTNLSLDRSGSSMVPA YESSVSPQNSRALPKTDHSEEERKILLDSFQLKDIWKKICHNTTGMEFQDHR YWLR
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VLDRVSRMTQGD LVISMDQLLTKPRLGTCHKFYLSHFQLPNSEVKTL MFFEGCPPQLGCTIKLRGASEYELARVKEIIF
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SQQLARMLADYRAQGGRI RQREGTQFREAPPPKAPIKADSEEDKGAGVIDMTWSTKLDCLNPINHQR LCVLFSSSSAQSN
NAPNPCVSPWIVTMEFYGKNDLTLGVFLERYCFRPSYQCPSMYCETPMVHHIRRFVHGKGC VQIVLKELDSPVPGYQHTI
LNYSWCRICKQVTPVPLSNDSWSMSFAKYLELRFYGHQYTRRANAEP CGHSIHKDYHQYFSYNQMVASFSYIPVRLLEI
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SPVVPNGDKEDRHLNTFPSSSGSSSLQLPSPAEQPSDVITSGPSFPDQDSVSNPEDMFDGHL LGSNDSQVKEKSTMKTI
LANLLPGNSYNPIPFDPDKHYLMYEHERVPIAVCEREPSSIIAFALSCKEYKTALEELTKTTAKTGGDDTSQTISAGE

SRVKNSPAKPSDNSMSQLSRSSVDADPLKEPESADKQKKQTGNPHIELQFSDANAKFYCRIYYAEFHKMREEIMESTED
DFVRSLSHCNVNWQARGGKSGAVFYATEDDRFILKQMPRLEVQSFLDFAPHYFTYITGAVHLKRPTALAKILGVYRIGYKN
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>NP_001120777.1 1-phosphatidylinositol 3-phosphate 5-kinase [Danio rerio]

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DIGKSPARKRSASVTNLSLDRSGSSMVPAYESVSPQNSRALPKTDHSEEERKILLDSFQLKDIWKKICHNTTGMEFQDH
RYWLRTPNCIVGKELVNWLLRNGTISTRAQAIAIGQALVDGRWLD CVTHHDQIFRDEYALYRPLQSTEFSETPSPSDS
VNSLEGHSEPSWFKDIKFDDSDTEQLADENDYVTPSSSSPSKRTSVSSFHSAVSDSAASISLNMEQDNVNFHIKKQAKY
PHVPPYPAEQKMEVLLSEDGGQHISISDAFIKESLFNRRVEEKAKEMLFTPLGWHHSSLDQLREENGEKKAMERLLSANH
SHMMALLQQLLYSESLSLSWRDIIIVPVVRQVVQTVRPDVRSCDDDDMDIRQFVHIKKIPGGKKFDSA VVNGFVCTKNIAHK
KMNSYIKNPKILLKCSIEYL YREETKFTCIDPIVLQEREFLKNYVQRIVDVRPNLVLVEKTVSRIAQDMLLEHGIAIVI
NVKQPVLDRVSRMTQGDLVISMDQLLTKPRLGTCHKFYLSFQLPNSVKTLMFFEGCPPQLGCTIKLRGASEYELARVK
EIIIFMVCVAYHSQLEISFLMDEFAMPPSLAESSFPCLLESTTLREEDETSGERESQDNDESTLGDDNLTLPVPGDDFET
GFTGTIKAHSREPSTSESSHKDGESPRINKNASITSFSGGEEENIKTSTPLSSFSSTFPQPVTTPFLISDVKEMSQEVVK
GSGEGEKNKYLESTLVHQDSTSSETSLPPTRLFRDPLQDDTGLFVTEHVASSDDRLKSISALFKQELKDIILCISPFITF
REPFLTPAGLRCPSRDYFPEQVYLSPLLNKDSKELDGRRKQRLKESSPGSGSLTNGSVSHQRAIQILPCHKLTSARIA
EQVGSSQQLARMLADYRAQGGRIRQREGTQFREAPPPKAPIKADSEEDKGAGVIDMTWSTKLDCLNPINHQRCLCVLFSSS
SAQSNNA PNPCVSPWIVTMEFYGKNDLT LGVFLERYCFRPSYQCPSMYCETPMVHHIRRFVHGKGC VQIVLKELDSPVPG
YQHTILNYSWCRICKQVTPVVPLSNDSWSMSFAKYLELRFYGHQYTRRANAEP CGHSIHKDYHQYFSYNQMVASFYIPV
RLLEICLPPPKIIIRNQGPSKSSLQQDLKDFSQKVAQVYLAIDDRLTSLKTDTF SKTREEKMEDMFAQKDMEESELRGWI
EKLQVRLQTSVIDSSQQLQAVLESVVVKKQGLCETLQSWNNRLQELFQQEKGRKRLSVPPSPGRHRQPTTDESKTSALES
SPRNPSPVVPNGDKEDRHLNTFPSSSGSSLLQLPSPAEQPSDVITSGPSFPDQDSVSNPEDMFDGHLLGSNDSQVKEKS
TMKTILANLLPGNSYNPIPFDPDKHYLMYEHERVPIAVCEREPSSIIAFALSCKEYKTALEELTKTTAKTGGDDTSQT
ISAGESRVKNSPAKPSDNSMSQLSRSSVDADPLKEPESADKQKKQTGNPHIELQFSDANAKFYCRIYYAEFHKMREEIM
ESTEDDFVRSLSHCNVNWQARGGKSGAVFYATEDDRFILKQMPRLEVQSFLDFAPHYFTYITGAVHLKRPTALAKILGVYR
IGYKNSQNNTEKKLDLLVMENLFYGRKMAQVFDLKGSLRNRNVKTDQGKESCEVVLLDENLLKLVDHNPLYIRSHCKAIL
RAAIHSDALFLSSHLIIDYSLLVGRDDSTDELVVGIIIDYIRTFTWDKKLEMVVKSTGILGGQGKMPTVVSPELYRTRFCE
AMDKYFLMVPDHWWSGLGLNC

>XP_005167722.1 1-phosphatidylinositol 3-phosphate 5-kinase isoform X5 [Danio rerio]

MAADDKASSSSSVMDWSSEPPPSPTSPSHLTHFKPLTPEQDEPLRSAYSSFVSLFRFNKEKTGANIAPAKKLAKLEEGR
PPSVTEKSQSASSSPQGPRRNWSSPSHSIHGSETHRKHPPELLRRTSAASAEWEEGRRKSEAPLGSHDPRTAVQLRTALKR
LKEIMEGKSQSDSLKQYWMPDSQCCECYDCNEKFTTFRRRHHCLCGQIFCSRCCNQEIPGKFMGYTGDLRACTYCRKIA
LSYAHSTDSSSIGEDLSALSDSPCSVCVLEPTEPRTTPVGGRKASRNIFLEEDLAWQRKNSIGMRKNHQESQNSGLNSRLT
VVQEDIGKSPARKRSASVTNLSLDRSGSSMVPAYESSVSPQNSRALPKTDHSEEERKILLDSFQLKDIWKKICHNTTGME
FQDHRYWLRTYPNCIVGKELVNWLLRNGTISTRAQAIAIGQALVDGRWLD CVTHHDQIFRDEYALYRPLQSTEFSETPSP
DSDSVNSLEGHSEPSWFKDIKFDDSDTEQLADENDYVTPSSSSPSKRTSVSSFHSAVSDSDSAASISLNMEQDNVNFHIKK
QAKYPHVPPYPAEQKMEVLLSEDGGQHISISDAFIKESLFNRRVEEKAKEMLFTPLGWHHSSLDQLREENGEKKAMERLL
SANHSHMMALLQQLLYSESLSLSWRDIIVPVVRQVVQTVRPDVRSCDDMDIRQFVHIKKIPGGKKFDSA VVNGFVCTKN
IAHKKMNSYIKNPKILLKCSIEYLYREETKFTCIDPIVLQEREFKKNYVQRIVDVRPNLVLVEKTVSRIAQDMLLEHGI
AIVINVKPQVLDRVSRMTQGDLVISMDQLLTKPRLGTCHKFYLSHFQLPNSEVKTLMMFFEGCPPQLGCTIKLRGASEYEL
ARVKEIIIFMVCVAYHSQLEISFLMDEFAMPPSLAESSFPCLLESTTLREEDETSGERESQDNDESTLGDDNLTLPVPGD
DFETGFTGTIKAHSREPSTSESSHKDGESPRINKNASITSFSGGEEENIKTSTPLSSFSSTFPQPVTPPFLISDVKEMSQ
EVVKGSGEGEKNKYLESTLVHQDSTSSETSLPPTRLFRDPLQDDTGLFVTEHVASSDDRLLKSISALFKQELKDIILCISP
FITFREPFLLTPAGLRCPSRDYFPEQVYLSPLLNKDSKELDGRRKRQLLKESSPGSGSLTNGSVSHQRAIQILPCHKLTS
ARIAEQVGSSQQLARMLADYRAQGGRIQREGTQFREAPPKAPIKADSEEDKGAGVIDMTWSTKLDCLNPINHQRCLCVL
FSSSSAQSNNA NPCVSPWIVTMEFYGKNDLT LGVFLERYCFRPSYQCPSMYCETPMVHHIRRFVHGKGC VQIVLKELDS
PVPGYQHTILNYSWCRICKQVTPVPLSND SWSMSFAKYLELRFYGHQYTRRANAEP CGHSIHKDYHQYFSYNQMVASF S
YIPVRLLEICLPPP KIIIRNQGPSKSSLQ QDLKDFSQKVAQVYLAIDDRLTSLKTDTF SKTREEKMEDMFAQKDMEES E L
RGWIEKLQVRLQTSVIDSSQQLQAVLESVVVKKQGLCETLQSWNNRLQELFQQEKGRKRLSVPPSPGRHRQPTTDESKTS
ALESSPRNPSPVVPNGDKEDRHLNTFPSSSGSSSLQLPSPAEQPSDVITSGPSFPDQDSVSNPEDMFDGHL LGSND S QV
KEKSTMKTILANLLPGNSYNPIPFDPDKHYLMYEHERVPIAVCEREPSIIAFALSCKEYKTALEELTKTTAKTGGDD
TSQTISAGESRVKN SPAKPSDNSMSQLSRSSVDADPLKEPESADKQKKQTGNPHIELQFSDANAKFYCRIYYAE EFHKMR
EEIMESTEDDFVRSLSHCVNWQARGGKSGAVFYATEDDRFILKQMPRLEVQSFLDFAPHYFTYITGAVHLKRPTALAKIL
GVYRIGYKNSQNNTTEKKLDLLVMENLFYGRKMAQVFDLKGSLRNRNVKTDQGKESCEVVLLDENLLKL VHDNPLYIRSHC
KAILRAAIHSDALFLSSHLIIDYSLLVGRDDSTDEL VVGIIIDYIRTFTWDDKKLEMVVKSTGILGGQGKMPTVVSP ELYRT
RFCEAMDKYFLMVPDHW SGLGLNC

>XP_009302997.1 1-phosphatidylinositol 3-phosphate 5-kinase isoform X2 [Danio rerio]

MAADDKASSSSSVMDWSSEPPPSPTSPSHLTHFKPLTPEQDEPLRSAYSSFVSLFRFNKEKTGANIAPAKKLAKLEEGR
PPSVTEKSQSASSSPQGPRRNWSSPSHSIHGSETHRKHPPELLRRTSAASEGRRKSEAPLGSHDPRTAVQLRTALKRLKEI
MEGKSQSDSLKQYWMPDSQCCECYDCNEKFTTFRRRHHCLCGQIFCSRCCNQEIPGKFMGYTGDLRACTYCRKIALSYA
HSTDSSSIGEDLSALSDSPCSVCVLEPTEPRTTPVGGRKASRNIFLEEDLAWQRKNSIGMRKNHQESQNSGLNSRLTVVQE

DIGKSPARKRSASVTNLSLDRSGSSMVPAYESSVSPQNSRALPKTDHSEEERKILLDSFQLKDIWKKICHNTTGMEFQDH
RYWLRTPNCIVGKELVNWLLRNGTISTRAQAIAIGQALVDGRWLD CVTHHDQIFRDEYALYRPLQSTEFSETPSPDSDS
VNSLEGHSEPSWFKDIKFDDSDTEQLADENDYVTPSSSSPSKRTSVSSFHSAVSDSAASISLNMEQDNVNFHIKKQAKY
PHVPPYPAEQKSMEPHDPFTPETDIHAPMEVLLSEDGGQHISISDAFIKESLFNRRVEEKAKEMLFTPLGWHHSSLDQLR
EENGEKKAMERLLSANHSHMMALLQQLLYSESLSLSWRDIIVPVVRQVVQTVRPDVRSCDDDDMDIRQFVHIKKIPGGKKF
DSAVVNGFVCTKNIAHKKMNSYIKNPKILLKCSIEYLYREETKFTCIDPIVLQEREFLKNYVQRIVDVRPNLVLVEKTV
SRIAQDMLLEHGIAIVINVKPQVLDRVSRMTQGDLVISMDQLLTKPRLGTCHKFYLSFQLPNSEVKTLMMFFEGCPPQLG
CTIKLRGASEYELARVKEIIIFMVCVAYHSQLEISFLMDEFAMPPSLAESSFPCLLESTTLREEDETSGERESQDNDES
TLGDDNLTLPVGGDDFETGFTGTIKAHSREPSTSESSHKDGESPRINKNASITSFSGGEEENIKTSTPLSSFSSTFPQPV
PPFLISDVKEMSQEVVKGSGEGEKNKYLESTLVHQDSTSSETSLPPTRLFRDPLQDDTGLFVTEHVASSDDRLLKSISALF
KQELKDIILCISPFITFREPFLLTPAGLRCPSRDYFPEQVYLSPLLNKDSKELDGRRRKQLLKESSPGSGSLTNGSVSHQ
RAIQILPCHKLTSARIAEQVGSSQQLARMLADYRAQGGRRIRQREGTQFREAPPPKAPIKADSEEDKGAGVIDMTWSTKLD
CLNPINHQRCLVLFSSSSAQSNAPNPCVSPWIVTMEFYGKNDLTLGVFLERYCFRPSYQCPSMYCETPMVHHIRRFVHG
KGCVQIVLKELDSPVPGYQHTILNYSWCRIKQVTPVVPVPLSNDWSMSFAKYLELRFYGHQYTRRANAEPGCHSIHKDYH
QYFSYNQMVASFYIPVRLLEICLPPPKIIRNQGPSKSSLQQDLKDFSQKVAQVYLAIDRLTSLKTDTFSTREEKME
DMFAQKDMESELRGWIEKLQVRLQTSVIDSSQQLQAVLESVVVKKQGLCETLQSWNNRLQELFQQEKGRKRLSVPPSPG
RHRQPTTDESKTSALESSPRNPSPVVPNGDKEDRHLNTFPSSSGSSSLQLPSPAEQPSDVITSGPSFPDQDSVSNPEDM
FDGHELLGSNDSQVKEKSTMKTILANLLPGNSYNPIFPDPDKHYLMYEHERVPIAVCEREPSIIAFALSCKEYKTALE
ELTKTTAKTGGDDTSQTISAGESRVKNSPA KPSDNSMSQLSRSSVDADPLKEPESADKQKKQTGNPHIELQFSDANAKFY
CRIYYAEFEHKMREEIMESTEDDFVRSLSHCVNWQARGGKSGAVFYATEDDRFILKQMPRLEVQSFLDFAPHYFTYITGA
VHLKRPTALAKILGVYRIGYKNSQNNTTEKKDLLVMENLFYGRKMAQVFDLKGSLRNRNVKTDQGKESCEVVLLDENLLK
LVHDNPLYIRSHCKAILRAAIIHSDALFLSSHLIIDYSLLVGRDDSTDELVVGIIIDYIRTFTWDKKLEMVVKSTGILGGQG
KMPTVVSPELYRTRFCEAMDKYFLMVPDHW SGLGLNC

>XP_009302999.1 1-phosphatidylinositol 3-phosphate 5-kinase isoform X4 [Danio rerio]

MAADDKASSSSVMDWSSEPPPSPTSPSHLTHFKPLTPEQDEPLRSAYSSFVSLFRFNKEEGRPPSVTEKSQSASSSPQ
GPRRNWSSPSHSIHGSETHRKHPPELLRRTSAASAEEWEEGRRKSEAPLGSHDPRTA VQLRTALKRLKEIMEGKSQDSDLKQ
YWMPDSQCKEYDCNEKFTTFRRRHHCRLCGQIFCSRCCNQEIPGKFMGYTGDLRACTYCRKIALSYAHSTDSSSIGEDL
SALSDSPCSVCVLEPTEPRTPVGGRKASRNIFLEEDLAWQRKNSIGMRKNHQESQNSGLNSRLTVVQEDIGKSPARKRSA
SVTNLSLDRSGSSMVPAYESSVSPQNSRALPKTDHSEEERKILLDSFQLKDIWKKICHNTTGMEFQDHR YWLRTPNCIV
GKELVNWLLRNGTISTRAQAIAIGQALVDGRWLD CVTHHDQIFRDEYALYRPLQSTEFSETPSPDSDSVNSLEGHSEPSW
FKDIKFDDSDTEQLADENDYVTPSSSSPSKRTSVSSFHSAVSDSAASISLNMEQDNVNFHIKKQAKYPHVPPYPAEQKS
MEPHDPFTPETDIHAPMEVLLSEDGGQHISISDAFIKESLFNRRVEEKAKEMLFTPLGWHHSSLDQLREENGEKKAMERL
LSANHSHMMALLQQLLYSESLSLSWRDIIVPVVRQVVQTVRPDVRSCDDDDMDIRQFVHIKKIPGGKKFDSAVVNGFVCTK

NIAHKKMNSYIKNPKILLKCSIEYLYREETKFTCIDPIVLQEREFLKNYVQRIVDVRPNLVLVEKTVSRIAQDMLLEHG
 IAIVINVKPQVLDRVSRMTQGDLVISMDQLLTKPRLGTCHKFYLSHFQLPNSEVKTLMMFFEGCPPQLGCTIKLRGASEYE
 LARVKEIIIFMVCVAYHSQLEISFLMDEFAMPPSLAESSSPCLLESTTLREEDETSGERESQDNDESTLGDDNLTLPVG
 DDFETGFTGTIKAHSREPSTSESSHKGESPRINKNASITSFSGGEEENIKTSTPLSSFSSTFPQPVTTPPFLISDVKEMS
 QEVVKGSGEKEKNKYLESTLVHQDSTSSETSLPPTRLFRDPLQDDTGLFVTEHVASSDDRLKSISALFKQELKDIILCIS
 PFITFREPFLTPAGLRCPSRDYFPEQVYLSPLLNKDSKELDGRRRKQLLKESSPGSGSLTNGSVSHQRAIQILPCHKLT
 SARIAEQVGSSQQLARMLADYRAQGGRRIRQREGTQFREAPPPKAPIKADSEEDKGAGVIDMTWSTKLDCLNPINHQRCLV
 LFSSSSAQSNAPNPCVSPWIVTMEFYGKNDLTLGVFLERYCFRPSYQCPSMYCETPMVHHIRRFVHGKGCVCQIVLKELD
 SPVPGYQHTILNYSWCRICKQVTPVVPLSNDSWSMSFAKYLELRFYGHQYTRRANAEPGCHSIHKDYHQYFSYNQMVASF
 SYIPVRLLEICLPPPKIIRNQGPSKSSLQQDLKDFSQKVAQVYLAIDDRLTSLKTDTFSKTREEMEDMFAQKDMEESE
 LRGWIEKLQVRLQTSVIDSSQQLQAVLESVVVKKQGLCETLQSWNNRLQELFQQEKGRKRLSVPPSPGRHRQPTTDESKT
 SALESSPRNPSPVVPNGDKEDRHLNTFPSSSGSSLLQLPSPAEQPSDVITSGPSFPDQDSVSNPEDMFDGHLGSDNSQ
 VKEKSTMKTILANLLPGNSYNPIFPDPDKHYLMYEHERVPIAVCEREPSIIAFALSCKEYKTALEELTKTTAKTGGD
 DTSQTISAGESRVKNSPA KPSDNSMSQLSRSSVDADPLKEPESADKQKKQTGNPHIELQFSDANAKFYCRIYYAEFFHKM
 REEIMESTEDDFVRSLSHCNVWQARGGKSGAVFYATEDDRFILKQMPRLEVQSFLDFAPHYFTYITGAVHLKRPTALAKI
 LGVYRIGYKNSQNNTEKKLDLLVMENLFYGRKMAQVFDLKGSLRNRNVKTDQGGKESCEVLLDENLLKLVDNPLYIRSH
 CKAILRAAIHSDALFLSSHLIIDYSLLVGRDDSTDELVVGIIIDYIRTFWDDKKLEMMVVKSTGILGGQGMPTVVSPELYR
 TRFCEAMDKYFLMVPDHWGSLGLNC

>XP_009302996.1 1-phosphatidylinositol 3-phosphate 5-kinase isoform X1 [Danio rerio]

MAADDKASSSSSVMDWSSEPPPSPTSPSHLTHFKPLTPEQDEPLRSAYSSFVSLFRFNKEKTGANIAPAKKLAKLEEGR
 PPSVTEKSQSASSSPQGPRRNWSSPSHSIHGSETHRKHPPELLRRTSAASAEWEEGRRKSEAPLGSHDPRTAVQLRTALKR
 LKEIMEGKSQDSDLKQYWMPDSQCCECYDCNEKFTTFRRRHHCRLCGQIFCSRCCNQEIPGKFMGYTGDLRACTYCRKIA
 LSYAHSTDSSSIGEDLSALSDSPCSVCVLEPTEPRTPVGGRKASRNIFLEEDLAWQRKNSIGMRKNHQESQNSGLNSRLT
 VVQEDIGKSPARKRSASVTNLSLDRSGSSMVPAYESSVSPQNSRALPKTDHSEEERKILLDSFQLKDIWKKICHNTTGME
 FQDHRYLWLRTPNCIVGKELVNWLLRNGTISTRAQAIAIGQALVDGRWLDVTHHDQIFRDEYALYRPLQSTEFSETPSP
 DSDSVNSLEGHSEPSWFKDIKFDDSDTEQLADENDYVTPSSSSPSKRTSVSSFHSAVDSDSAASISLNMEQDNVNFHIKK
 QAKYPHPVPPYPAEQKSMEPHDPFTPETDIHAPMEVLLSEDGGQHISISDAFIKESLFNRRVEEKAKEMLFTPLGWHHSSL
 DQLREENGEKKAMERLLSANHSHMMALLQQLLYSELSLSWRDIIVPVVRQVVQTVRPDVRSCDDDDMDIRQFVHIKKIPG
 GKKFDSA VVNGFVCTKNIAHKKMNSYIKNPKILLKCSIEYLYREETKFTCIDPIVLQEREFLKNYVQRIVDVRPNLVLV
 EKTVSRIAQDMLLEHGIAIVINVKPQVLDRVSRMTQGDLVISMDQLLTKPRLGTCHKFYLSHFQLPNSEVKTLMMFFEGCP
 PQLGCTIKLRGASEYELARVKEIIIFMVCVAYHSQLEISFLMDEFAMPPSLAESSSPCLLESTTLREEDETSGERESQD
 NDESTLGDDNLTLPVGDDFETGFTGTIKAHSREPSTSESSHKGESPRINKNASITSFSGGEEENIKTSTPLSSFSSTFP
 QPVTTPPFLISDVKEMSQEVVKGSGEKEKNKYLESTLVHQDSTSSETSLPPTRLFRDPLQDDTGLFVTEHVASSDDRLKSI

SALFKQELKDIILCISPFITFREPFLLTPAGLRCPSRDYFPEQVYLSPLL NKDSKELDGRKRQLLKESSPGSGSLTNGS
VSHQRAIQILPCHKLTSARIAEQVGSSQQLARMLADYRAQGGRRIRQREGTQFREAPPPKAPIKADSEEDKGAGVIDMTWS
TKLDCLNPIHQRLCVLFSSSSAQSNAPNPCVSPWIVTMEFYGKNDLTLGVFLERYCFRPSYQCPSMYCETPMVHHIRR
FVHGKGCVCVIVLKELDSPVPGYQHTILNYSWCRICKQVTPVPLSNDSSWSMSFAKYLELRFYGHQYTRRANAEPCHGSIH
KDYHQYFSYNQMVASFYIPVRLLEICLPPPKIIRNQGPSKSSLQQDLKDFSQKVAQVYLAIDDRLTSLKTDTFSTRE
EKMEDMFAQKDMEESELRGWIEKLQVRLQTSVIDSSQQLQAVLESVVVKQGLCETLQSWNNRLQELFQQEKGRKRSLVP
PSPGRHRQPTTDESKTSALESSPRNPSPVVPNGDKEDRHLNTPSSSGSSSLQLPSPAEQPSDVITSGPSFPDQDSVSN
PEDMFDGHLGSDNSQVKEKSTMKTILANLLPGNSYNPIPFDPDKHYLMYEHERVPIAVCEREPSIIAFALSCKEYK
TALEELTKTTAKTGDDTSQTISAGESRVKNSPA KPSDNSMSQLSRSSVDADPLKEPESADKQKKQTGNPHIELQFSDAN
AKFYCRIYYAEFHKMREEIMESTEDDFVRSLSHCNVNWQARGGKSGAVFYATEDDRFILKQMPRLEVQSFLDFAPHYFTY
ITGAVHLKRPTALAKILGVYRIGYKNSQNNTEKKDLLVMENLFYGRKMAQVFDLKGSLRNRNVKTDQQGESCEVLLDE
NLLKLVDNPLYIRSHCKAILRAAHS DALFLSSHLIIDYSLLVGRDDSTDEL VVGIIIDYIRTFTWDKKLEMVVKSTGIL
GGQGMPTVVSPELYRTRFCEAMDKYFLMVPDHW SGLGLNC

>XP_009302998.1 1-phosphatidylinositol 3-phosphate 5-kinase isoform X3 [Danio rerio]

MAADDKASSSSSVMDWSSEPPPSPTSPSHLTHFKPLTPEQDEPLRSAYSSFVSLFRFNKEKTGANIAPAKKLAKLEEGR
PPSVTEKSQSASSSPQGPRRNWSSPSHSIHGSETHRKHPPELLRRTSAASAEEWEEGRRKSEAPLGSHDPRTAVQLRTALKR
LKEIMEGKSQDSDLKQYWMPDSQCKEYDCNEKFTTFRRRHHCLCGQIFCSRCCNQEI PGKFMGYTGDLRACTYCRKIA
LSYAHSTDSSSIGEDLSALSDSPCSVCVLEPTEPRTPVGGRKASRNIFLEEDLAWQSHQESQNSGLNSRLTVVQEDIGKS
PARKRSASVTNLSLDRSGSSMVPAYESSVSPQNSRALPKTDHSEEEKILLDSFQLKDIWKKICHNTTGMEFQDHR YWLR
TYPNCIVGKELVNWLLRNGTISTRAQAIAIGQALVDGRWLD CVTHHDQIFRDEYALYRPLQSTEFSETPSPDSDSVNSLE
GHSEPSWFKDIKFDDSDTEQLADENDYVTPSSSSPSKRTSVSSFHSAVDSDSAASISLNMEQDNVNFHIKKQAKYPHVPP
YPAEQKSMEPHDPFTPETDIHAPMEVLLSEDGGQHISISDAFIKESLFNRRVEEKAKEMLFTPLGWHHSSLDQLREENGE
KKAMERLLSANHSHMMALLQQLLYSESLSLSWRDIIVPVVRQVVQTVRPDVRSCDDMDIRQFVHIKKIPGGKKFDSAVV
NGFVCTKNIAHKKMNSYIKNPKILLKCSIEYLREETKFTCIDPIVLQEREFLKNYVQRIVDVRPNLVLVEKTVSRIAQ
DMLLEHGIAIVINVKPQVLDRVSRMTQGDLVISMDQLLTKPRLGTCHKFYLSHFQLPNSEVKTLMMFFEGCPPQLGCTIKL
RGASEYELARVKEIIFMVCVAYHSQLEISFLMDEFAMPPSLAESSSPCLLESTTLREEDETSGERESQDNDESTLGDD
NLTLVPGDDFETGFTGTIKAHSREPSTSESHKDGESPRINKNASITSFSGGEEENIKTSTPLSSFSSTFPQPVTTPPFLI
SDVKEMSQEVVKGSGEGEKNKYLESTLVHQDSTSSETSLPPTRLFRDPLQDDTGLFVTEHVASSDDRLKSISALFKQELK
DIILCISPFITFREPFLLTPAGLRCPSRDYFPEQVYLSPLL NKDSKELDGRKRQLLKESSPGSGSLTNGSVSHQRAIQI
LPCHKLTSARIAEQVGSSQQLARMLADYRAQGGRRIRQREGTQFREAPPPKAPIKADSEEDKGAGVIDMTWSTKLDCLNPI
NHQRLCVLFSSSSAQSNAPNPCVSPWIVTMEFYGKNDLTLGVFLERYCFRPSYQCPSMYCETPMVHHIRRFVHGKGCVCV
IVLKELDSPVPGYQHTILNYSWCRICKQVTPVPLSNDSSWSMSFAKYLELRFYGHQYTRRANAEPCHGSIHKDYHQYFSY
NQMVASFYIPVRLLEICLPPPKIIRNQGPSKSSLQQDLKDFSQKVAQVYLAIDDRLTSLKTDTFSTREKMEKMEDMFAQ

KDMESELRGWIEKLQVRLQTSVIDSSQQLQAVLESVVVKKQGLCETLQSWNNRLQELFQQEKGRKRLSVPPSPGRHRQP
TTDESKTSALESSPRNPSPVVPNGDKEDRHLNTPSSSSGSSSLQLPSPAEQPSDVITSGPSFPDQDSVSNPEDMFDGHL
LGSNDSQVKEKSTMKTILANLLPGNSYNPIPFDPDKHYLMYEHERVPIAVCEREPSSIIAFALSCKEYKTALEELTKT
TAKTGGDDTSQTISAGESRVKNSPAKPSDNSMSQLSRSSVDADPLKEPESADKQKKQTGNPHIELQFSDANAKFYCRIYY
AEEFHKMREEIMESTEDDFVRSLSHCVNWQARGGKSGAVFYATEDDRFILKQMPRLEVQSFLDFAPHYFTYITGAVHLKR
PTALAKILGVYRIGYKNSQNNTTEKKLDLLVMENLFYGRKMAQVFDLKGSLRNRNVKTDQGKESCEVVLLDENLLKLVDN
PLYIRSHCKAILRAAIHSDALFLSSHLIIDYSLLVGRDDSTDELVVGIIIDYIRTFTWDKKLEMVVKSTGILGGQGKMPTV
VSPELYRTRFCEAMDKYFLMVPDHWGSLGLNC

>NP_001007058.2 WD repeat and FYVE domain-containing protein 1 [Danio rerio]

MAAEIHSRPQSSRPVLLNKIEGHSDGVNAAVLIPKEDGVITVSEDRTIRVWLKRDSGQYWPSIYHTVSSPCSCVSYHHES
RRIFIGQDNGAVVEFLISEDLNKMNHVKTYPAHQNRVSDLLFSLESQWL VSTGHDKSISWMSTQSGSMLGRHSFGSWASC
LQYDNDTQHAFVGDYSGQITLLKLDEHSCSVITTLKGHEGSVGALYWDVPVHRWLFSGASDHSVIMWDIGGRQGRITLLQG
HHEKVQALRYLPLTRQLVSCSADGGITVWNMDTTRQEAPQWLSDSCQKCEQPFFWNIQMWDTKTLGLRQHHCRKCGK
A

ICGKCSSKRSTYPIMGFEFQVRMCDDCFNTIKEDDRTPLATFHEGKHSHAHMDMDPNRGLMVTGSDRVVKIWDMTQVVG
SSVAAGFSHR

>NP_571631.2 faciogenital dysplasia [Danio rerio]

MMDSPDILHSDAQLSLSDRLSCTPAEISGLSDAVQCSKHTQESSEHTPMLQDVPPEADGETSGKIPNRDSGIDSPSCGGE
GECFPNEEHKQEYTHEEDKREHHTHDVDKQEHTHEERKREYTHDEDKREYTHEEDSDLEEEEEEQEEEEEDQNTGIKASVCDP
QKLLNIAKELLQTEEA YVKRLNLLDQVFCARL TEAGIPADVITGIFSNISCIHRFHQQFLPELHTRITQEWSCNPRIGD
ILQKLAPFLKMYGEYVKNFDRSMELVSLWTQRSGTFKSTVQSIQKQEVCGNLTLQHHMLEPVQRIPRYELLLKDYLLKLP
EGAADHRDAQNALELISTAANHSNAAIRKMEKMHKLLEVYERLGGEE DIVNPANELIKEGHIKKMSAKNGSAQDRYLYLF
NNMVLYCVPKLRLMGQKFSVRERIDIAGMEVHENVKQNPHTFTITGKQRSLELQARTAEERDDWIKVILGTIEKHKQNS
ETFKAFNSSFSREDEHTPDSPLGPCSNTSICETDGAQHERKSSKKREKERETCKGCSEAFNFTKRKHHCKSCGAAVCGKC
LKVCDSRNIRMCRPCAEAEAGAAGGATEHKKRVEKQLSVSQLSSQSRSGKGEEVEQEILHR

>XP_021332905.1 FYVE, RhoGEF and PH domain-containing protein 5-like [Danio rerio]

MPDDVRQEGQSFRSIRRASEDTSRLSHLSLKIVGIIKNPKHKQHSNISVQKKMYFNMLHNSKSLSSPNSREQTPKVHRKI
VVEHKGSQERRTNKIVYPERRLQVDETEVEIILEQGDELGCGDELAHGVDLDAEGLEKDKPLESEDDEVSVDLHSDLYS
KKEVDYNIVAEELQVKDMGKAAWGLTKNGKNKSSRNVLASNAVYESLAHADRLFLDKMCTGKTLIESFYPSGIVADRMF
SSEEDIDVMFPDICDAGEALADKDGLSECDLFEQTEPLQLTETKDNINGDIMMLTIEEGLNSSDLSSVEEEYDEMOMEKE
LMEEQINKSVAGNKA AIPSNSEESDHPSNSSSSSQTCVLSGSDTTLDEITNNNYSKNMTESEDEAISAILNLVLVQQQPE
TQDQNSQQYQDEESNGEDKEEQVVDNLSESEGKELMVDNVYEETEPKIQAKDFLQNRKYFMSRSISVETPGKRADLLSGL
PAGNGRLLLHPQAFYTDQCLFGDSRPALTGSLGCLSQGTRTSKVTRVDIPPPFELASITKPIRKSSPSIPNEISASCKK

PDFGFKRYLLPLRFLRKSDRKSMMDTRSISSRSSSESSPQGSCRRMDFIRHNMGSPELQRSPDCTPPVSPSSFLSHRNRR
KEGLNFSLNNDLACSSISIEPGFLSEPLPLSKPRSFSSPNTDSSEYENVQNVASHYENVQIRLLNPVIQGGQRNQSSPSDT
DGYVDMSSSLPGFQGKSQSSEQETDSL YTF CSPNVRADGT VGVFVG VACAQEKKT TAPDKLTVSCSRAFYS AKELL DSEAQ
HVKTLQLLYESVNADERLMTVWTEVPDICTLHQDIHTLLETRLKEWDQNEGIAEII LAKKTEFSIFSSYISHYDDKLNLY
EHIQSTLSDSVTLKKQLLQVIVRILQYRMLLTDYLNLSPPDSREFENTQDALVVVSDVAYHASDSLKNGADLMRLVHIEH
SVLGLTDLIQPGRVFVKEGTLMKVS RKCKQPRHLFLMNDIMLYTYPQQDGKYRLINRLPLAGMKVSKPPMESAQSAIKIE
VKDISITLSARQETNTSHVLYCVCSVCLMLVFVRAAPALNETAGLSQ

>XP_697706.2 rabenosyn-5 [Danio rerio]

MASIYSPSLED SAEVKEGFLCPLCFKDLQSFYQLQDHYEEEHAGDSRHVGGQLKNLVQKAKKAKDKLLKRDGDERTDSSY
ESFY YGGVDPYMWEPQELGATRSHLDYFKKQRAARIDHYVIEVNKCIIRLEKLTSFDRTNMDAAQIRSLEKSVVSWVNDQ
DVPFCPCDGGKFNLNRHHHCRLCGSIMCRKCTEFVPLPMAYKLTSGTREALWAPGSGGSPVSTGQAVVQQT SRRGSISS
ISSVTSVLEEKDEDRVRCCHHCMDALLRHQRKLEEKDHVPDIVKLYERLRTCMDKVEAKAPEYTRMAESLNAGEKTYSL
STAALRMEIQKY YELIDVLSKKILTLGLKEELQPHPKALQLQRMVRYTATLFIQEKLGLTSLPTKEKYEELKEKRRVEQ
EKRAQQRQVSLESHKRRL ENENRPTVSVNGDVAAPRVTKAGGWLPQSDTRSEQDDPLLQQIENIESFLRQARSANRSD
EVCMLEENLRQLQDEFDAQQTSRAIEISQRLADETDLQQKQIQHLQQREMEHRA LAKTQERPLRGETDRTDEHSVRGDLE
KTDHTRRGGADQAE EQPFRANKAQYQSLRANKAEDPSLRANKTQYQSLRANKAEDPTLRASKTQEHS LRGDTSKTQEHS
PSLENKSPSKNPFDEEFPSPVEEEPTNSQTANGKKEYNPFEEENDDPNAAKNPFEDDDDDDDDRSNPFKEVSDETPASST
NPFDEDDDDDTAIEEELLQQIDNIRAYIFDAKL SGRSDEV ELLSENKELQRTLREQKRKK

>XP_017211441.1 FERM, RhoGEF and pleckstrin domain-containing protein 1 [Danio rerio]

MVEPEERPSVAGQRLGAPESLGISTLEPGQRPTMPPGRQISIRVQMLDDTQE VFEVSQRAPGKALFDLVCSHLNLVEGD
YFGLEFQDQRKMIVWLDLLKPILKQIRRPKNILRFVVKFFPPDHTQLLEELTRYLFALQIKHDLACGRLTCNESSAALL
VAHIVQSEIGDFDEVQCKQHLLNNKYIPEQDTLMDKIIGYHRKHVGQTPAESDYQLLEIARRLEMYGVRLHPAKDREGTR
LSLAVAHSGVLVFQGH TKINAFNWSKVRKLSFKRKRFLIKLRPDLNQSNCQDTLEFMMGSRDCCKVFWKICVEYHAFRL
FEEP KPKPKPVLFTRGSSFRFSGRTQRQVIDYVKDTEFKKVPFERKHSKIQSNSNLSPFPSRQSAEGQGEMLQRNASASG
HQADSPLGRTQVTVENPALQRYTGSLSNSQTNGCRNGTSDEADARLKPSPSKQQA EHLSTGLASHSAKGPVSRSPQHSESP
SAGQMMVNGQKQSLSVGQSPDGRQPSPLTSPLLYDAGFIRADDEDEVRRKRFTDKAYFIAKELLTTERTY LKDLEVITV
SFQKAVLKDEAMPDSLRLNLI FANFEPVYKFHETFLKDVEQRLAQWEGRSNAHIKGDYQRVGDVMLKNIQGLKLLSSHLQK
HSESLLELEQSCRSSRRLEVL CRDFELQKVCYLPLNIFFLRPLHRLHYKQILERLCKHYPPTHDDFRDSRAALADVSEL
VLQLHTTLMKMENFQKLLELKKDLVGIDSLAAPGREFIRLGCLSKLSGKGLQQRMFFLFSDVVMYTSRGLTASNQFKVHG
QLPLYGMTIRESEDEWGV PYSFTLFGQRQSVVVAASSASEMEKWIEDIRMAIELADKSN GPTTEILSSSFSDSKSPEDCS
ADQESDDLSSSRSSLERQTPHRGNTTVHVCWHRSTSVMVDFSVALENQLSGNLLRKFKNSNGWQKLWVFTNFSLFFY
KTHQDEYPLASPLLGYSITIPSESENIHKDYVFKLHFKSHVYYFRSESEYTFERWMEVIRSATC SSSVLRSSSRKDPLV
Y

>XP_005171779.4 myotubularin-related protein 3-like [Danio rerio]

MVEEVQQSLEAHGSSGLQVEQVPFALLGECVDHVEKTQECVLALTSYRLHIKLQENSISVPLQLIESVESHEPTQIQLT
CKDCKVIRCNFLSVDQCQDWLRRISAASGPPARLQELFAFSFLSCSNSVTAEDREVHDGICRAGGHKQRFKRELQRMGFD
THSAWRISNINSNYRVCSSYPEQILVPAAVTDQQLENVAAFRSWKRIPAVVYRHQSSGAVIGRCGQPEVSWWGWRNADDE
HLVQAIKACATDPAANTALANGSCVHNHANGTISGSDPHMANGKVEAEPSATPSQKLLIMDARSYAAAVANRAKGGGCE
CPEYYPNCEVMFMGMANIHSIRKSFQCLRTLCAQVPDPLNWLSALEGTKWLQHLSLLLKASVLVVNAVDRDHRPVLVHCS
DGWDRTPQILALSKLMLDPFYRTIEGFEVLVETEWLDFGHKFSERCGHGERADDVNERCPVFLQWLDCVHQLQRQFPCSF
QFNEAFLVKLVQHTYSCLFGTFLCNSVKEREEQRVQEKTCSVWSLLRPANQSFHNILYSPRSETVLRPVCHVRNLMLWSA
VYLHNSAPSTPSDESCVPQSTPSASPIDTPVSRLPKTRSYENLSTSCENLTPNRRSSDPSVKEKWQDHLLALKINGENTH
TSPLQHTLALNTTAAHTQKTLELSVTDSQIENTEQEVTEELNRKLELLCSTSVSQDSSLNMKNNDQIFPEDISHIDTTSA
DGLHHKITHNPSQSSSQSSMESDSSSNHTAQKNPFHSPSQMSAAGDVSPPSGVWRCSAAFGLERDGLSVHSDAVQVRLQ
QMETGHQLQVETLKKQVQELWSRIHANGKLSSLPDGDNNTESECLQRSGATDLTESSAEHIQQKDTEVSQWFSDQSSRCY
GCERRFWQAARRHHCNRCGNVFCTSCCDQKVASQQLREHKHMCQVCLSHLRPSPVPPALPPADLELEKPITASSN

Domains architecture of *Caenorhabditis elegans*

<i>No</i>	<i>Accession Number</i>	<i>Domains</i>
1	NP_499183.1	FYVE zinc finger, PH domain
2	NP_495565.2	Domain of unknown function (DUF3480), FYVE zinc finger,
3	NP_001379841.1	FYVE zinc finger
4	NP_001024127.1	FYVE zinc finger
5	NP_001024128.1	FYVE zinc finger
6	NP_001022045.1	Domain of unknown function (DUF3480), FYVE zinc finger,

7	NP_508756.2	FYVE zinc finger
8	NP_501375.2	VHS domain, Hepatocyte growth factor-regulated tyrosine kinase substrate, FYVE zinc finger
9	NP_001368458.1	FYVE zinc finger, RhoGEF domain
10	NP_001368457.1	FYVE zinc finger, RhoGEF domain
11	NP_001294046.1	FYVE zinc finger, RhoGEF domain
12	NP_001294045.1	FYVE zinc finger, RhoGEF domain
13	NP_501455.2	FYVE zinc finger, RhoGEF domain
14	NP_001294044.2	FYVE zinc finger, RhoGEF domain

15	NP_510155.3	Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, FYVE zinc finger
16	NP_001382742.1	Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, FYVE zinc finger
17	NP_001255656.1	Beige/BEACH domain, FYVE zinc finger, PH domain associated with Beige/BEACH
18	NP_001255659.1	Beige/BEACH domain, FYVE zinc finger, PH domain associated with Beige/BEACH
19	NP_001255657.1	Beige/BEACH domain, FYVE zinc finger, PH domain associated with Beige/BEACH
20	NP_001255658.1	Beige/BEACH domain, FYVE zinc finger, PH domain associated with Beige/BEACH
21	NP_001252086.1	Ankyrin repeats (3 copies), FYVE zinc finger
22	NP_001252087.1	Ankyrin repeats (3 copies), FYVE zinc finger

23	NP_001252085.1	Ankyrin repeats (3 copies), FYVE zinc finger, BTB/POZ domain
24	NP_001022794.2	Myotubularin-like phosphatase domain, FYVE zinc finger
25	NP_497766.3	Myotubularin-like phosphatase domain, FYVE zinc finger
26	NP_501352.1	FYVE zinc finger, Rabenosyn Rab binding domain
27	NP_001294172.1	FYVE zinc finger, Rabenosyn Rab binding domain
28	NP_495983.1	WD domain, G-beta repeat, FYVE zinc finger

Retrieved sequences of *Caenorhabditis elegans*

>NP_499183.1 Uncharacterized protein CELE_ZK632.12 [Caenorhabditis elegans]
MVDRLVNSEVNSRRMANVEQCFGKMGEQLSVFGRVLVGEGVLVKMCRKKPKQRQFFLFNDILVYGNIVISKKRYNKQRIL
RLEGVQVEDLEDDGIEKHGWIKTPAKSFAVYAATETEKREWMLHIERCVTDLLERGNKQAATAHAAVWVPDGEAVKCMV
CGKTQFNLVQRRHHCRNCGRVVCACSSRTFRIDNVHKKPVRVCDHCFDSLSSATPGQEESEPKTGNRLHHEDSSSDSED
EVNGSGRSSNESRPTFYREDVQQPAT
>NP_495565.2 FYVE-type domain-containing protein [Caenorhabditis elegans]

MEEVPDMDDLLDEMESDLVKKCCSVQSKPLLPTSIGMQPRGIKHNPAVRTVTVSKFVISEDMEQMEGNINIDTSQLP
 NTFQTKSSFPPNSDERNIGKENEVSARQEIAHKLKSVHNYSDATNFDPSKKVITQKFSQESEPESEPEPEEVEEVEED
 TLVPETQIISNLNATARDTEPTATISKPNLDLDTMEDMLAYLNDESVDKSSLKDKPAREEGGRDSIEESANESALYQFA
 DRFSELVISEALNHRKMHYDPAVKEFYEANDSVDPVDFAMSLDSTHSSLNSFNADNHNYLSEPENSSKKERMQSVAEENEA
 SEPTQSSSETEKNLQNEKIDVEFIENSEAIVQNESEDVPESNSTSGTVLENIEDHLESDVVIENGSESSFVNEKMNEAS
 TAHLVAEQSVVDDSEIHLETEDQETLSPETADSSSTNKNNSDEFPDEGSQSEASVNNEEVLENVEHVEDECTVVDAVNENTD
 SSIEENDEENTENRPRFDSSIAIHVLHESDSDESATPRRERRLTESELQLGKTSPYWIPDSECPNCMLCNTRFTIITRR
 HHCRAACGRVLCGSCCNEKAFLEYLQEEGKKLQAVRVCKPCSAAMLARIETHEQDEQRRRESIASENGLSGDETISSIPAAS
 TSIPRGVLKTKPTVHVNEEDGASTSSQAHSTSGNVSDSSRRSVMFRDGVVRGAPADEGNPEEERSTALKPKKKSRKRTSV
 VRRIAELRMEDELACALPKEGITKLLIVKPDCEHPKFEDASTVLETLCNFSVVTVVLKKNLNCNCTVQIFNNPNFGLVWAVS
 TQGFAQIGLDELDFSWTLNDQEKQKVDAEPELDEKSALVVLPLVLRISLIYTQSTEHEYAGVRKVENRLMRVHVSVD
 PTYPLTKHIMFFRPTVQVGLKNMRIPTNPFLIACFLHDELNWATALPNRLLYKLGEKFNVPFPTPFVNSIGRESTYSTDV
 SGTVLKVFDFRSWSYRMRHISGCTVSLTNDKTVIRIPKSAIKELKDVLFNSRSMVAWSCDLHCEDDSVLVCEETDPGLY
 STQVFAKNIGQRESTSASFVILDGGSKVSSLQVNVVEDGVAVRLQSERLETILNAINDGNDAVESSKDMEFRVEFVEDGN
 WICTDSDYYPKSQIDGLYLINKFYGLSLERALTQVLQVQGINDYGIRMSHVYNLGDGRLQPEEPPKIYGMIEIAARECV
 AMLEPHIQHLICAGIGSVSIRLFVSPYEFYDVSKWLGLEAENDKYKQSLDQLIPMLYNMVEYVPNGFEVEFVLSIVSTR
 ALPI

>NP_001379841.1 FYVE-type domain-containing protein [Caenorhabditis elegans]

MEEVPDMDDLLDEMESDLVKKCCSVQSKPLLPTSIGMQPRGIKHNPAVRTVTVSKFVISEDMEQMEGNINIDTSQLP
 NTFQTKSSFPPNSDERNIGKENEVSARQEIAHKLKSVHNYSDATNFDPSKKVITQKFSQESEPESEPEPEEVEEVEED
 TLVPETQIISNLNATARDTEPTATISKPNLDLDTMEDMLAYLNDESVDKSSLKDKPAREEGGRDSIEESANESALYQFA
 DRFSELVISEALNHRKMHYDPAVKEFYEANDSVDPVDFAMSLDSTHSSLNSFNADNHNYLSEPENSSKKERMQSVAEENEA
 SEPTQSSSETEKNLQNEKIDVEFIENSEAIVQNESEDVPESNSTSGTVLENIEDHLESDVVIENGSESSFVNEKMNEAS
 TAHLVAEQSVVDDSEIHLETEDQETLSPETADSSSTNKNNSDEFPDEGSQSEASVNNEEVLENVEHVEDECTVVDAVNENTD
 SSIEENDEENTENRPRFDSSIAIHVLHESDSDESATPRRERRLTESELQLGKTSPYWIPDSECPNCMLCNTRFTIITRR
 HHCRAACGRVLCGSCCNEKAFLEYLQEEGKKLQAVRLLPPQFLAVY

>NP_001024127.1 FYVE-type domain-containing protein [Caenorhabditis elegans]

MLRRLKEQVSQVANDIDGRLNNSRPSISSQGSQSQSQKSENDQEIEGFLCPMCMVELGGPDELTVHFEKEHSDFQTSANR
 NHPDYTPPQQAPLAFATKDQEIEELRIRVNEEKRFARIKEELDNIKSVMIAIASEVTEDEIPYMAQQIQVLTADKGMVTR
 QFLELEKESGQQSRELQQVKQERGDLMALQKMSVTMREITDESESGKVEMEDLKRELKVVKSDVVRYEIEVSRLEKMLD
 QRPSEDDVNVLRTTELVNAQKLMDAISQEKDIEIKEHLNSIRNLSMEREKQHIVNENLEKKIGEGETVKQLQISYDAQSE
 ELKQRNERVVQLEARIEENVFELSENKQNVKRLEDKVQESQDALQMLSNINGSNEEQMISLNSKFERNTAERKRIEAVFE
 EKVTVQGERLKTLEMANLDLTNELASMGSLDKERSLLEKNKEISERDSSINDLKEKLAESEKKATKYKNELKEHADLV

ENLTLQLNKLQENSKDLMEKISAGEGGAKMAIEQLEQEKVKLTNELQTSSEKTKKASGELEAKISELEKKLRDAEASRTD
 KEQKWQEKESFERKLAEAEDEIKRKGERFVEMEKEMEEERQKATDRTLKLKDALVNSEKNLETIKKESEDREKIVREKD
 AHLEENKKRIEDAVQKLEEA EK RARELEASVSSRD TTVSTKESELSELKGKLTESNSFIEELKVQVEKVSNEISEKQQEV
 ENLMAEMRDKEAHWKTKRDEFEAQMLRNQEDNEEASSTLKS VQEQLMKEKETS GEEKNQLISVKSQLEELKTEVERLIRS
 EEEKTQEIEKLKSAVTATTQERDEL TATSESLRTECENLNSKIQSIEESRRHAEEKGSENLERMITEKSRLEKDIEERES
 TIQSIQEALET KDNEIESL KTTQRVVEDEL VSKISHIESFNSRIEEFEKEMASGKRTIERLEAEKAEETEKLVVFTGTQS
 QKQEELEKLQKEIQEKETTIARMTSSKTQFEAMFADVQQTL SKEINDKTEEIERLMERIDSLEKVNHSRIEELESRLTQR
 ERVVESLEADLA A VRNIEQEKLD ELQKLKEEFDELKKAETMWQAEKDMLIERCLGSESDIEYEKERSQENKRRFDDALSA
 MHELGRANQSLQIDADRYSSRKWLDDAEAINCTECGKVFSLTVRKHHCRVCGKIYCNPCSSKSVRIASAKNPVRACNTCF
 TDSQK

>NP_001024128.1 FYVE-type domain-containing protein [Caenorhabditis elegans]

MLRRLEKEQVSQVANDIDGRLNNSRPSISSQGSQSQSQKSENDQEIEGFLCPMCMVELGGPDELTVHFEKEHS DTSANRNH
 PDYTPPQQAPLAFATKDQEIEELRIRVNEEKRF AERIKEELDNIKSVMIAASEVTEDEIPYMAQQIQVLTADKGMVTRQF
 LELEKESGQQSRELQQVKQERGDLM AKLKQMSVTMREITDESESGKVEMEDLKRELKVVKSDVVRYEIEVSRLEKMLDQR
 PSEDDVNVLRTEL VNAQKLMDAISQEKDIEIKEHLNSIRNLSMEREKQHIVNENLEKKIGEGEETVKQLQISYDAQSEEL
 KQRNERVVQLEARIEENVFELSENKQNVKRLEDKVQESQDALQMLS NINGSNEEQMISLNSKFERNTAERKRIEAVFEEK
 VTVQGERLKTLEMANLDLTNELASMGSLDKERSLLEEKNKEISERDSSINDLKEKLAESEKKATKYKNELKEHADLVEN
 LTLQLNKLQENSKDLMEKISAGEGGAKMAIEQLEQEKVKLTNELQTSSEKTKKASGELEAKISELEKKLRDAEASRTDKE
 QKWKQEKESFERKLAEAEDEIKRKGERFVEMEKEMEEERQKATDRTLKLKDALVNSEKNLETIKKESEDREKIVREKDAH
 LEENKKRIEDAVQKLEEA EK RARELEASVSSRD TTVSTKESELSELKGKLTESNSFIEELKVQVEKVSNEISEKQQEVEN
 LMAEMRDKEAHWKTKRDEFEAQMLRNQEDNEEASSTLKS VQEQLMKEKETS GEEKNQLISVKSQLEELKTEVERLIRSEE
 EKTQEIEKLKSAVTATTQERDEL TATSESLRTECENLNSKIQSIEESRRHAEEKGSENLERMITEKSRLEKDIEERESTI
 QSIQEALET KDNEIESL KTTQRVVEDEL VSKISHIESFNSRIEEFEKEMASGKRTIERLEAEKAEETEKLVVFTGTQSQK
 QEELEKLQKEIQEKETTIARMTSSKTQFEAMFADVQQTL SKEINDKTEEIERLMERIDSLEKVNHSRIEELESRLTQRER
 VVESLEADLA A VRNIEQEKLD ELQKLKEEFDELKKAETMWQAEKDMLIERCLGSESDIEYEKERSQENKRRFDDALSAMH
 ELGRANQSLQIDADRYSSRKWLDDAEAINCTECGKVFSLTVRKHHCRVCGKIYCNPCSSKSVRIASAKNPVRACNTCFTD
 SQK

>NP_001022045.1 FYVE-type domain-containing protein [Caenorhabditis elegans]

MEEVPMDDLLDEMESDLVKKCCSVQSKPLLPPTSIGMQPRGIKHNPA PRTVVTVSKFVISED MNEQMEGNINIDTSQLP
 NTFQTKSSFPNSDERNIGKENEVSARQEIAHKLKSVHNYSDATNFDPSKKVITQKFSQESEPESEPEPEPEEVSEVEED
 TLVPETQIISNLNATARDTEPTATISKPNLDLDTMEDMLAYLNDESVDKSSLKDKPAREEGGRDSIEESANESALYQFA
 DRFSELVISEALNHRKMHYDPAVKEFYEANDSVDPVFAMSLDSTHSSLNSFNADNHNYLSEPENS SKKERMQSVAEENEA
 SEEPTQSSSETEKNLQNEKIDVEFIENSEAIVQNESEDVPESNSTSGTVLENIEDHLESDVVIENGSESSFVNEKMNEAS

TAHLVAEQSVVDDSEIHLETEDQETLSPETADSSSTNKNNSDEFPDEGSQSEASVNNEEVLENVEHVEDECTVVDAVNENTD
SSIEENDEENTENRPRFDSSIAIHVLHESDSDESATPRRERRLTESELQLGKTSPYWIPDSECPNCMLFTIITRRHHCR
ACGRVLCGCCNEKAFLEYLQEEGKKLQAVRVCKPCSAMLARIETHEQDEQRRRESIASENGLSGDETISSIPAASTSIP
RGVLKTKPTVHVNEEDGASTSSQAHSTSGNVSDSSRRSVMFRDGVPRGAPADEGNPEEERSTALKPKKKSRKRTSVVRRI
AELRMEDELACALPKEGITKLLIVKPDCEHPKFEDASTVLETLCNFSVVTVVLKKNLNCVQIFNNPNFGLVWAVSTQGF
AQIGLDELMFSWTLNDQEKQKQVDAEEPDELDEKSALVVLPLPVLHRISLIYTQSTEHEYAGVRKVENRLMRVHVSVDPTYP
LTKHIMFFRPTVQVGLKNMRIPTNPFLIACFLHDELNWATALPNRLLYKLGEKFNVFPTPFVNSIGRESTYSTDVSGTV
LKVFTDFRSWSYMRHISGCTVSLTNDKTVIRIPKSAIKELKDVLNFSRSMVAWSCDLHCEDDSVLVCEETDPGLYSTQV
FAKNIGQRESTSASFVILDGGSKVSSLQVNVVEDGVAVRLQSERLETILNAINDGNDAVESSKDMEFRVEFVEDGNWICT
DSDYYPKSQIDGLYLINFQYGLSLERALTQVLQVQGINDYGIRMSHVYNLGDGRLQPEEHPKIYGMIEIAARECVAMLE
PHIQHLICAGIGSVSIRLFVSPYEFYDVSKWLGLEAENDKYKQSLDQLIPMLYNMVEYVPNGFEVEFVLSIVSTRALPI

>NP_508756.2 Lateral signaling target protein 2 [Caenorhabditis elegans]

MQSFRKIWNKPRPDDWMPLARFYADSAALNDIASELDSFDGRRDPDRCNALVTRLRVAQDRVLHIITEMLIHLYPREQDR
ACRDFRVKFPDEILHDTLPGQLWFGAECLSAAGSNIIDHETESDLIRPLAKDVTQKQLDFLRDLLKNQSLRDPSAYNPVIKE
NLLKFDKLFAEFYQYVSAMVPVKSVEKHSQDLVAVLFSEVLSLALVKDLITQDLIDYCDPSVMIAIPRLGIVWGLLVY
SNGALNVDVPAENLSEMFRPFYSLLVKIRNLLRILTPTELTKLETVLCKGESAVPEDTSSTLTMSDFRTNATDEEKAKNN
QRVWMCMDMPSDSTSSLDSSVQDSSSETTSLASSALASPHSGSEENVSQIENEEGDDEAIGTNSNSSNEVTESPETIEEPD
NVDMEESSESEVDTHIDETRNESSDDEITDDVQASDVLQVETKKCKSSRLLEQKKFKDKSVKTIIPMQTDPQRSQIDPKNLRS
RFRSSEDLVHRLFVCIAGVADQLQTNYSSEIRKVLKLILQPSEIIPVYEVVNAQVANSQTEGEETGVEAQETLPLPAFMG
VRWVPDEDECEQCTACSMFPNFVRRRHHCRCNCGRIFCHKCSCNTISIPHEGYDRKVRVCNLCYVHRLNSFGCNEPMSQVNE
NGATVPSVTEQQSAQTASASS

>NP_501375.2 Hepatocyte growth factor-regulated tyrosine kinase substrate [Caenorhabditis elegans]

MATKFQRVLDQATDSTLVEPNWEGIILCTDMIRSGEVPKPSLQAIKRMQHENPHVVNHTLLVLDACVKNCGHKVHAEV
ATREFMEDFKNLVTENKYDEVKNKSLEMLQCWATAFANKPEYKMOVVDTHNLMKLAGDFPSLKEADAMFMAQVAPEWA
DG

PECYRCRSVFSVFTRKHHCRACGQIFCDKCSSRELALPQFGIEKEVRVCETCYEKKVAEVKERYPAVKKQLDAAHGRKGD
SEADKAAKEKLLREKEEEDLALAIASQSEAEAKEKEKQNNLYSMYNGIKPEVDGYKGAAEPVTAPPPDDSSSDPLARYL
NRDYWQKKEGKVEDWSSRSALSATAPPPSEPSIAPSICSTLMGPDDNSLNADIAAMSLGGTNGLNGLTVSDDAKLQADD
TMKWCQSIREQVSVMNIRSNLARGRPVFNDSAIQDLFTKLTELHSHVLSRMHTLDEQRGYYESLQDHLANIGEARQAI
DEMREEHERKRQERMAEEQRLRQAQMQQTLEMMRMKKHAMLMEQREQALQRFQQQQQEMAMRRHQQAYYNPQQM
GYGAP

PPSGPQQPPQSYGYQQGPQSQAPPPSSQYQQSHASTQQQQQQYYQHYQANQTVTQPVQQAQQQYQQQYQGYQQQQP
Y

QQQAGYQNPQQHQNYQNGTTNENGQYQQQQSSEVKQEHQNHGYQQQQAQHPPASVASNGHNGYGNVDQNAHHHQQQQ
PQI

AEQPLISFD

>NP_001368458.1 Uncharacterized protein CELE_C28C12.10 [Caenorhabditis elegans]

MGFVPRMQNGGTGTPSERPISQVSTLSQVSDEFDEGDTASDEESMNSEKHLRRHRHEDDFDELPLPKNERKTTTVAATH
SEIMNEMEHLFVRGGKKNNGVHKQQRQSNIDEIPSDVGKLRDNRKGRHNSLFVSPTSGMSSSSTDDFSRITSMTSDRSS
ILTSHSGGEDSTDGASVPDYETGDEKDDQRLKKLHYAAVEFLKVQNNYVQYLKEMAVLYPEYMERFGKRVGRDLLASHN
GHENVVLQIKKIMVQILPIHEMLLKEIDKVCSNWDSRYPNMSKTIGTFADFLKCCQPFLDNKADFLNKLLQLRNEDKEFD
EATYMFETEVFKRGKKGAVIQQLDQVHQNFMYKLLMLRYSEYLIDDCDEKEKAQEAIQKLENTQAVNQKMGLPTTEEL
TKLYYRFQCQFNVLEPGRVLRQSEVMKQTRKELQPRYLVLFDTYLVICRVSSSGQFDINRSYRIPLEYMKFERMEEDER
IRCLQIRSRVKSALIIFSSEKERNQWTDDLTKAQYDRKSYKRRQSTAVQRHDENKKKMKNKLLMLTPEVPDASDLERPQLI
DSRSRSMSCESQDELSSVPVTPLDNGEIDETLGFGVTRNGSGKKPPSEMIKPVWLPDNISNECLMEGCSTEFNIINRRH
HCRDCGWLICKFCKGQAPLSKYDFTKQNVCSCECFDRHYKAYKDGVLFPKSNMIVQSDETILVKIGKRNDKEIVDPRKLFK
APVNYGFRHRNVEEKRAQSIVFGRVYLSRKTETVRHALLRRDDLKLVFYKAELDSKSVLELLIYGIFYRETPLDDGWLF
ELVHRNQIRTDDTKDDVISFRVDNSASAKKWSAAFADKLELDPTRG

>NP_001368457.1 Uncharacterized protein CELE_C28C12.10 [Caenorhabditis elegans]

MGFVPRMQNGGTGTPSERPISQVSTLSQVSDEFDEGDTASDEESMNSEKHLRRHRHEDDFDELPLPKNERKTTTVAATH
SEIMNEMEHLFVRGGKKNNGVHKQQRQSNIDEIPSDVGKLRDNRKGRHNSLFVSPTSGMSSSSTDDFSRITSMTSDRSS
ILTSHSGGEDSTDGASVPDYETGDEKDDQRLKKLHYAAVEFLKVQNNYVQYLKEMAVLYPEYMERFGKRVGRDLLASHN
GHENVVLQIKKIMVQILPIHEMLLKEIDKVCSNWDSRYPNMSKTIGTFADFLKCCQPFLDNKADFLNKLLQLRNEDKEFD
EATYMFETEVFKRGKKGAVIQQLDQVHQNFMYKLLMLRYSEYLIDDCDEKEKAQEAIQKLENTQAVNQKMGLPTTEEL
TKLYYRFQCQFNVLEPGRVLRQSEVMKQTRKELQPRYLVLFDTYLVICRVSSSGQFDINRSYRIPLEYMKFERMEEDER
IRCLQIRSRVKSALIIFSSEKERNQWTDDLTKAQYDRKSYKRRQSTAVQRHDENKKKMKNKLLMLTPEVPDASDLERPQLI
DSRSRSMSCESQDELSSVPVTPLDNGEIDETLGFGVTRNGSGKKPPSEMIKPVWLPDNISNECLMEGCSTEFNIINRRH
HCRDCGWLICKFCKGQAPLSKYDFTKQNVCSCECFDRHYKAYKDGVLFPKSNMIVQSDETILVKIGKRNDKEIVDPRKLFK
APVNYGFRHRNVEEKRAQSIVFGRVYLSFRSRTETVRHALLRRDDLKLVFYKAELDSKSVLELLIYGIFYRETPLDDGW
LFELVHRNQIRTDDTKDDVISFRVDNSASAKKWSAAFADKLELDPTRG

>NP_001294046.1 Uncharacterized protein CELE_C28C12.10 [Caenorhabditis elegans]

MNFELPSSSTSDVSSQNSPKCDPHPSCTTPTILVSPATSEYSNGVFFGANETNGSGVKDRARQLVNMGFVPRMQNGGTGT
PSEIPISQVSTLSQVSDEFDEGDTASDEESMNSEKHLRRHRHEDDFDELPLPKNERKTTTVAATHSEIMNEMEHLFVRG
GKKNNGVHKQQRQSNIDEIPSDVGKLRDNRKGRHNSLFVSPTSGMSSSSTDDFSRITSMTSDRSSILTSHSGGEDSTDG
ASVPDYETGDEKDDQRLKKLHYAAVEFLKVQNNYVQYLKEMAVLYPEYMERFGKRVGRDLLASHNGHENVVLQIKKIM
V

QILPIHEMLLKEIDKVCSNWDSRYPNMSKTIGTFADFLKCCQPFLDNKADFLNKLQLRNEDKEFDEATYMFETEVFKRG
KKGAVIQQLDQVHQNFMYKLLMLRYSEYLIDDCDEKEKAQEAIQKLENTQAVNQKMGLPTTEELTKLYYRFQCQFNVL
EPGRVLIRQSEVMKQTRKELQPRYLVLFTDYLWICRVSSSGQFDINRSYRIPLEYMKFERMEEDERIRCLQIRSRVKSAL
IIFSSEKERNQWTDDLTKAQYDRKSYKRRQSTAVQRHDENKKKMNKLMLTPEVPDASDLERPQLIDSRSRMSMSCESQDE
LSSVPVTPLDNGEIDETLGFGEVTRNGSGKKPPSEMIKPVWLPDNISNECLMEGCSTEFNIINRRHHCRDCGWLICKFCK
GQAPLSKYDFTKQNVCSCECFDRHYKAYKDGVLFPSKNMIVQSDETILVKIGKRNDKEIVDPRKLFKAPVNYGFRHRNVEE
KRAQSIVFGRVYLSFRSRKTETVRHALLRRDDLKL VFYKAELDSKSVLELLIYGIFYRETPLDDGWL FELVHRNQIRTDD
TKDDVISFRVDNSASAKKWSAAFADKLELDPTRG

>NP_001294045.1 Uncharacterized protein CELE_C28C12.10 [Caenorhabditis elegans]

MNFELPSSSTSDVSSQNSPKCDPHPSCTTPTILVSPATSEYSNGVFFGANETNGSGVKDRARQLVNMGFVPRMQNGGTGT
PSERPISQVSTLSQVSDEFDEGDTASDEESMNSEKHLRRHRHEDDFDELPLPKNERKTTTVAATHSEIMNEMEHLFVRG
GKKNNGVHKKQRRQSNIDEIPSDVGKLRDNRKGRHNSLFVSPTSGMSSSSTDDFSRITSMTSDRSSILTSHSGGEDSTDG
ASVVPDYETGDEKDDQRLKKLHYAAVEFLKVQNNYVQYLKEMAVLYPEYMERFGKRVGRDLLASHNGHENVVLQIKKIM
V

QILPIHEMLLKEIDKVCSNWDSRYPNMSKTIGTFADFLKCCQPFLDNKADFLNKLQLRNEDKEFDEATYMFETEVFKRG
KKGAVIQQLDQVHQNFMYKLLMLRYSEYLIDDCDEKEKAQEAIQKLENTQAVNQKMGLPTTEELTKLYYRFQCQFNVL
EPGRVLIRQSEVMKQTRKELQPRYLVLFTDYLWICRVSSSGQFDINRSYRIPLEYMKFERMEEDERIRCLQIRSRVKSAL
IIFSSEKERNQWTDDLTKAQYDRKSYKRRQSTAVQRHDENKKKMNKLMLTPEVPDASDLERPQLIDSRSRMSMSCESQDE
LSSVPVTPLDNGEIDETLGFGEVTRNGSGKKPPSEMIKPVWLPDNISNECLMEGCSTEFNIINRRHHCRDCGWLICKFCK
GQAPLSKYDFTKQNVCSCECFDRHYKAYKDGVLFPSKNMIVQSDETILVKIGKRNDKEIVDPRKLFKAPVNYGFRHRNVEE
KRAQSIVFGRVYLSRKTETVRHALLRRDDLKL VFYKAELDSKSVLELLIYGIFYRETPLDDGWL FELVHRNQIRTD
DDVISFRVDNSASAKKWSAAFADKLELDPTRG

>NP_501455.2 Uncharacterized protein CELE_C28C12.10 [Caenorhabditis elegans]

MKYDMNHRKNSDDTPPASRTVKEMMAEFQNKLLDDGDNFRKQPPPPSPRRAPPPPPHRKPASLSPPPDDENTIRPPSSS
ESSENIPEEPQELITPNTTRSLGPKPTVAPKPLFLNGLLPSSSTSDVSSQNSPKCDPHPSCTTPTILVSPATSEYSNGV
FFGANETNGSGVKDRARQLVNMGFVPRMQNGGTGTPSERPISQVSTLSQVSDEFDEGDTASDEESMNSEKHLRRHRHED
DFDELPLPKNERKTTTVAATHSEIMNEMEHLFVRGGKKNNGVHKKQRRQSNIDEIPSDVGKLRDNRKGRHNSLFVSPTSG
MSSSSTDDFSRITSMTSDRSSILTSHSGGEDSTDGASVVPDYETGDEKDDQRLKKLHYAAVEFLKVQNNYVQYLKEMAVL
YPEYMERFGKRVGRDLLASHNGHENVVLQIKKIMVQILPIHEMLLKEIDKVCSNWDSRYPNMSKTIGTFADFLKCCQPFL
DNKADFLNKLQLRNEDKEFDEATYMFETEVFKRGKKGAVIQQLDQVHQNFMYKLLMLRYSEYLIDDCDEKEKAQEAIQ
KLENTQAVNQKMGLPTTEELTKLYYRFQCQFNVL EPGRVLIRQSEVMKQTRKELQPRYLVLFTDYLWICRVSSSGQFDI
NRSYRIPLEYMKFERMEEDERIRCLQIRSRVKSALIIFSSEKERNQWTDDLTKAQYDRKSYKRRQSTAVQRHDENKKKMN
KLLMLTPEVPDASDLERPQLIDSRSRMSMSCESQDELSSVPVTPLDNGEIDETLGFGEVTRNGSGKKPPSEMIKPVWLPDN

ISNECLMEGCSTEFNIINRRHHCRDCGWLICKFCKGQAPLSKYDFTKQNVCECFDRHYKAYKDGVLFP SKNMIVQSDET
ILVKIGKRNDKEIVDPKLFKAPVNYGFRHRNVEEKRAQSIVFGRVYLSRKTETVRHALLRRDDLKLVFYKAELDSKSV
LELLIYGYFYRETPLDDGWLFELVHRNQIRTDDTKDDVISFRVDNSASAKKWSAAFADKLELDPTRG
>NP_001294044.2 Uncharacterized protein CELE_C28C12.10 [Caenorhabditis elegans]
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ESSENIPEEPQELITPNTTRRSLGPKPTVAPKPLFLNGLLPSSSTSDVSSQNSPKCDPHPSCTTPTILVSPATSEYSNGV
FFGANETNGSGVKDRARQLVNMGFVPRMQNGGTGTPSERPISQVSTLSQVSDEFDEGDTASDEESMNSEKHLRRHRHED
DFDELPLPKNERKTTTVAATHSEIMNEMEHLFVRGGKKNNGVHKQQRQSNIDEIPSDVGKLRDNRKGRHNSL FVSPTSG
MSSSSTDDFSRITSMTSDRSSILTSHSGGEDSTDGASVPDYETGDEKDDQRLKKLHYAAVEFLKVQNNYVQYLKEMAVL
YPEYMERFGKRVGRDLLASHNGHENVVLQIKKIMVQILPIHEMLLKEIDKVCSNWDSRYPNMSKTIGTFADFLKCCQPFL
DNKADFLNKLQLRNEDKEFDEATYMFETE VFVRGKKGAVIQQLDQVHQNFMR YKLLMLRYSEYLIDDCDEKEKAQEAIQ
KLENTVQAVNQKMGLPTTEELTKLYYRFQCQFNVLPEGRVLIRQSEVMKQTRKELQPRYLVLFTDYLWICRVSSSGQFDI
NRSYRIPLEYMKFERMEEDERIRCLQIRSRVKSALIIFSEKERNQWTDLTAKAYDRKSYKRRQSTAVQRHDENKKKMN
KLLMLTPEVPDASDLERPQLIDSRSRSMSCSQDELSSVPVTPLDNGEIDETLGFGEVTRNGSGKKPPSEMIKPVWLPDN
ISNECLMEGCSTEFNIINRRHHCRDCGWLICKFCKGQAPLSKYDFTKQNVCECFDRHYKAYKDGVLFP SKNMIVQSDET
ILVKIGKRNDKEIVDPKLFKAPVNYGFRHRNVEEKRAQSIVFGRVYLSFRSRKTETVRHALLRRDDLKLVFYKAELDSK
SVLELLIYGYFYRETPLDDGWLFELVHRNQIRTDDTKDDVISFRVDNSASAKKWSAAFADKLELDPTRG
>NP_510155.3 1-phosphatidylinositol-3-phosphate 5-kinase [Caenorhabditis elegans]
MGDASELQFFEKLEPPPETEEPTPVSGGYFSNIIGQIFRSDGSPQPNGVVPPTTEERQNLERTESGESRTSEESGFQSRSLT
DKFTGLLKSKVNPQLKDYND SNFKQYWMPDSTGRECYQCEERFTTFRRRHHCRLCGQIFCAKCCSSHIDGAALGYMGELR
LCDYCARKVQRLAEEGKQTPTTSTTRSQTPVNSRKISFDRNTAHKNSDTVRTVSNGAIWSLCPPESSMPPEITSPPQLGS
RRNSLAQSSNGPGVPTILSVADLCASNSAMLTNSHSHPMITEEEESGPDWFRMTMHPGMDGVINNETSDSADV FAYANLAG
AITNEFTEMMDARAAEPTSATTDKITFPSLSLDESVMNAAKEEQRDNLEELFRNTERILDEV MKREYIREDKWRDLIL
KSVYEVVENVTNVNPSGDTMNIADYVHVKKVHKKEGKVDSEIHWGVACSRSLVYKSLSEEDESSHTTESIMIVSGSIEYE
RVSNKLSSIEPIVQEEKFLEKQIDRIATKRASLILVEGGVSHIAAQLLHKGRIKVA VNVKMSILQRISRATGADIVSNS
DSQLVEQNLGCCPEFQQRNMQQEDGRIKTL MIFADCQKETGCTVLLHGDDLKELVAVKR VVQFLVTIVYSNYLEQSYLNA
FNTTIARRQSDCVVCEKRAIVYSQGEKTEFEKNLYATMLSSSPVIEFEPPLLETATGRECPLIAYFKQPLYKLLKPGDV
ELIKQGYEEDIVPIPKKEPLLVD RRHAFQAQCNRGAILDNVARSFRLFGGINFRRTAQIVKHKRIVETEKQPFRAKDVL D
PRVHQTLAVLFGSFSRKSPNAPYFCVRPWVVS MQYYKDHDMTIGEFLVKFCFNRSYEC PSSNCEVPMLDHSRKL VYGKVC
VEISTQTVNEAENAIESEQQKSIMTWRNCGKCNCSQMVKFDKAIWHL SFAKFLEYIGNSCFTTDTIYPITNQNC SHCF
FHEKLYFFAMDNLVTTFKVIAIRPYSVVFSPHICSVKVLKVS RKELSDDVSRIATLALTACEDTNKQLAELDEEVQITPI
VVKLAGAIRNTMALASESRMFAKNILSGDEDLIRSNDRLYREVTGT FMKVREVTYNLIALWNENCAA IKYPKRTPEDIQE
IATLQKLENPFPSHLHLAIKLQPRLGVVVRDIQDTRGNFKPDIGSIIAYALSAVDY NKIPEAADTVSMDSASSSLKFSQM

DDGENLASSQHLEVEFEDESASYVVKMLYAEKFRKLRELLIAEGEETFIRSLSNSTFWTPQGGKSGSFFYRTQDDRFVVK
QMSRFEIQSFVKFAPNYFDYLTTSATESKLTTLCKVYGVFRIGYKSKTTTLKVDILVMEYLFYNHNVSQVWDLKGSLRNR
LASTGKSANEMVLLDENFVKDLWNQQLYVLPHKAAMNQAISNDSHFLSSQYIMDYSLLVGVDDDNGELILGIVDYMRTY
TLDKKLESWVKIVAIPGAHLPTILSPEMYCARFSEAIDSYFPVVPDQWTGLGSIRSY

>NP_001382742.1 PIP Kinase [Caenorhabditis elegans]

MGDASELQFFEKLEPPPETEPTVSVSSGGYFSNIIGQIFRSDGSPQPNGVVPPTTEERQNLERTESGESRTSEESGFQR
SLTDKFTGLLKSKVNPQLKDYNDSNFKQYWMPDSTGRECYQCEERFTTFRRRHHCRLCGQIFCAKCCSSHIDGAALGYMG
ELRLCDYCARKVQRLAEEGKQTPTTSTTRSQTPVNSRKISFDRNTAHKNSDTVRTVSNGAIWSLCPPESSMPPEITSPQ
LGSRRNSLAQSSNGPGVPTILSVADLCASNSAMLTNSHSHPMITEEEESGPDWFRMTMHPGMDGVINNETSDSADVFAVAN
LAGAITNEFTEMMDARAAEPTSATTDKITFPSLSLDESVMNAAKEEQRDNLEELFRNTERILDEVKREYIREDKWRD
LILKSVYEVVENVTNVPSGDTMNIADYVHVKKVHKKEGKVDSEIHWGVACSRSLVYKSLSEEDESSHTTESIMIVSGSI
EYERSVSNKLSSIEPIVQEEKFLEKQIDRIATKRASLILVEGGVSHIAAQLLHKRGIKVAVNVKMSILQRISRATGADIV
SNSDSQLVEQNLGCCPEFQQRNMQQEDGRIKTLMIFADCQKETGCTVLLHGDDLKELVAVKRVVQFLVTIVYSNYLEQSY
LNAFNTTIARRQSDCVVCEKRRRAIVYSQGEKTEFEKNLYATMLSSSPVIEFEPPLLETATGRECPLIAYFKQPLYKLLKP
GDVELIKQGYEEDIVPIPKKEPLLVDRRHAFACQNRGAILDNVARSFRLFGGINFRRTAQIVKHKIVETEKQPFRAKD
VLDPRVHQTALVLFSGFSRKSPNAPYFCVRPWVSMQYYKDHDMTIGEFLVKFCFNRSYECPSNCEVPMLDHSRKL VYG
KVCVEISTQTVNEAENAIESEQQKSIMTWRNCGKCNCSQMVKFDKAIWHL SFAKFLEYIGNSCFTTDTIYPITNQNQCS
HCFEHEKLYFFAMDNLVTTFKVIAIRPYSVVFSPHICSVKVLKVSRELSDDVSRATLALTACEDTNKQLAELDEEVQI
TPIVVKLAGAIRNTMALASESRMFAKNILSGDEDLIRSNDRLYREVTGTGMKVREVTYNLIALWNENCAAIKYPKRTPED
IQEIATLQKLENPFPSHLHLAIKLQPLRGVVVRDIQDTRGNFKPDIGSIIAYALSAVDYNKIPEAADTVSMDSASSSLKF
SQMDDGENLASSQHLEVEFEDESASYVVKMLYAEKFRKLRELLIAEGEETFIRSLSNSTFWTPQGGKSGSFFYRTQDDRF
VVKQMSRFEIQSFVKFAPNYFDYLTTSATESKLTTLCKVYGVFRIGYKSKTTTLKVDILVMEYLFYNHNVSQVWDLKGSL
RNRRLASTGKSANEMVLLDENFVKDLWNQQLYVLPHKAAMNQAISNDSHFLSSQYIMDYSLLVGVDDDNGELILGIVDYM
RTYTLDKKLESWVKIVAIPGAHLPTILSPEMYCARFSEAIDSYFPVVPDQWTGLGSIRSY

>NP_001255656.1 WD40 and FYVE domain protein [Caenorhabditis elegans]

METRDERTLSLLHLRKTFFSEYLKIPVSGSRSDPSRLLPLFHKVMSMYTPQQLNAEFKEVVHFATFLCSVLVKEVRQRAA
STGTIEAAQSIAEFLRPGTELKGYTILEAIRFLSSSEDEIMIDAACKVSLPSTLVKTIYLFDDLPA AATTVTVDLTENA
TETEDMLKNNEKLHDMIGQIMEGLCRFKCVSEELVRKDDLLLLFVGTT SQVAEANN CWRLCARLLEVIADKSITNAVI
KYVIVKKCVRIFVKNLSSAPSNSHSDAQKTAESIICLSCFLKNSAYLTDQLLDEFYEADGYTVIKDFLLKSETDNEIVRN
ILLMAISLVNSGKFEITPQYTSGLVQLPAFQLPIPAGNGLSVRNLFALLYHV FLESTSEST SCTVIDILHSIYTC DPA
NYFILDKEYPLSIFIDQLERKPHAVRVKLELIEFAVFQLSHIPCRELISLCVLLKTEISAGKTAMCTIIVQMCFLITV
DAIKDAFREVGLLDALCFIIRRMFEMEYKNIQNASFTVTSTSSRSQDQLKLSLLTTDLLTIIKNNTENGKLFTECFGA
KLLIEIVCEVNEEWRSSLLQLVKQLLIVAPTDQYIMHLVNTLQDRIPENLEVMFSLKALLGVVRESHKVRIQFRKSGG

FLALSALLLGLEKRFTDLHPAGDGRIPREQCQMLEFVHIIFKVFTLSMRFEPSNAKYFSTEITWDSITSLLRLTSIFNES
TVISIEETEWKSLTHTDLASEIAACHEVFRLDDNIEAGNVPKGMPFNIFYGCVCRILFNMALDNYEKMSTDIRWNDDGA
SLEESIVSWTSSLLVHPGAIISMLCLLPSISASSMKWTIAAQYYVSLLLKAILKSERNNQIMCQVDMPKHLLRIA EKLFL
TENHILLQPFYYLLERLSYQSLTPNQLRSFLRLDSPLCCRSRDDDDDDDDSKIEIADNEG GPVPLQRVKALVSMMPTRD
QYIGTAPSFVEFDMSVEGFAALYLPSLAPMFSTTKAERIFPPLNGFSFCTWIYLDALSDKKADAHPIRLLTVTRAVAPPN
SDPPSKKPSQTAHLACFQCQFSAFDRSLLISTEESDQPGADLEKTANFQTDKLRITLADQVRCGEWFHLAVVFNRSVLK
SSQVSLYLNGRHISTQKLMYVAQNAGGAATQLAQTYSVNAVVGTLPALRRPSRLRFRLASIFLAEEPMTAETVRAVVQLQ
PHYIGNYQTASTAPLFHEEKIVFSLSAAATQELTLAKIRTMYGKMDAEILSQHLGISPNDHSTPLRVLCNTISHAPGAGR
TFGGVIVGYLGMRTFTPRPVPSLLDSIGGFASVYGLIAMAVDSEGLYASLKSLSVAIRSQPRLLATWNNNRSYQILAVLL
EDKAKMLNSHIMHMFVNVTGTADTSREHAPTISNPSAFEDLLCDLKVWKGAPSELHKMLLEHFYELITDHQLNNLQVVRK
SSLLSRILLIHHDEPTMIKNTDEIIFNLISAIMQPQCDSRSILKIGQSIAATLPTSESECYEDSHLPFHISEIQKLFIES
SDPPEALHQVYIRNRLNIIANFLANSNTQVQQQMCDQLVRTLGFDWLFALMSPGVHSGTIYLALRILLILNQPSLLA
RFKEGSANGGWLSEADSVVRNRAAVVLGFSVSAHGGAVGSKIDINPELSNCGGFAALEHLMMAHADKPYPYYAMLSLLVG
QPISALRFCDQFNMELVWTHVFGLNSTSSVF EAINSANFCFDAIIPLFAMIRTSIYHQSSIHQPWTVTNPSTVVQMITFM
YQNSPAFFNIAHTDEFILALFSTLIEDTNAMGVKSEVANRRSQDGGGSPDAEYFQAFLAQPNVRIVMDLLKKICCDNLQV
NTSKNDTIIDAILDNISESGNTRKTQIACLTSLHLSVLEHTVGTDLSSSALPPNTQAQNVQIVANISLLSSRAVD AFW
NGLVFGSESMRMLSTLYHLQVIASKKV NKA VNAEPITGCIMRMTL FILSRPIDSVPVQLSVLDALSTLVSKRYLFLSSNE
AWFFASLTHLIFMLS VTPDVL FQDNSSSSDLDR TSAQVAMCACRVWSDVICA KQALIEETFKKQSVTDINAARALLSHA
GVYWQQFVDSQLRAIQTGGSSAQGS AVTAKDIIQQQISSKFNRVASGITRFAAKRSMSTTTALPSSGSVA AWKSTSTD KQ
VIFMWLRVHVSLIKELVRAQSTRYTEWHAHV RKWCLHDWHQWEAELTRERGIWGPERASKLEKFKLDL TEGPTTRMRRKL
IPNRNFYHIYPFRPHLEAPSAKAQRAKVAISFDSKPY YETCLRHRRTLDTRIIDSSNVSTASPEDGSGSSNLLGYSFTD
LSQINSSLIRRLSTTAPATSNVSGTSLELNEEECETSERKEDDESISSEKTD SNGVQSSGPSTSSNTTKEAKKEEKE
EKKAGPDNQTLRLLEQGEQLHSMFRCARIQGLETAEGLLL FGRDHFYVVDGFTLLKTKEIRDLDFLSQEMHDPVPYPA
TGATQPPKSSRLCSKFSYNMIREVHKRRYLLQPIALEVFSSDGRNYLLAFPKKIRDRVFDKLTSMALN LSSGGSDSLGGQ
KANVAIETTGRGASLLSSLIGQQSVTQRWLSGNISNFQYLMHLNTLAGRCYNDLSQYPIFPWVLADYTSSQLDFNNISTF
RDFSKPMGAQSPDRLEQFLKRFR EWDDPSGETPPYMYGTHYSSAMIVVSYLVRLEPFTQQFLSLQGGHFDLADRMFHSVG
DAWTSASRNNMADV KELIPEFFTLPEMFTNTNHFDLGVKQNGIHVNDVLLPAWCHGDPREFIRLHRQALES DYVSSHLHE
WIDLIFGYKQNGEEAVKNSNLFHHLFYEGSVDFERIDDPLTRNATIGFVNNFGQIPTQLFKKPHPQKKVNILEGFSNTPG
VTTSRLFYHAIHNMSAPQTPFKELRSAIGSIHQNDKIGVVVALEQNKVFIGTNRYITWGLPDRSVRMGQIDNDKSVCVHEM
CEVDEMTCAAAGDETTLFCGNTSGCITVWKVNNKPLSMKKLSVLNGHSDAITCLVSCQSHAVLVSASRD LTVLVWHLSEM
FLIRQLPKHPHAVLAVAVNDATGDIATACSTLLHVWTLNGELLAVLNTCDVAPAIDPQQMIISLAFSTMNEW DNDNVIMC
GTSDGIVKIYSCVVFENDGSVSEHPALENPNSNSNENHDRSAAIAARLEKQRKRLKNSSTTATSSSVSGSGSASLTSPGP
ASPSAGGS RATNIDVGGAQFVRVLVQRTALTMHTAFNRPDNVHPAPITAIAPSRDHRSLYVGDGIGRVWCWQSAEGGGRA

DHWVQDVTRQRCDDCEHKFTLADRKHHCRNCGQIFCSTCSRFEHITRMNISRPVRVCRKCFQRLQQSSNLHNL
 >NP_001255659.1 WD40 and FYVE domain protein [Caenorhabditis elegans]
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 STGTIEAAQSIAEFLRPGTELKGYTILEAIRFLLSSEDEIMIDAACKVSLPSTLVKTIYLFDDLPA AATTVTVDLTENA
 TETEDMLKNNEKLHDMIGQIMEGLCRFKCVSEELVRKDDLLLLFVGTT SQVAEANN CWRKLCARLLEVIADKSITNAVI
 KYVIVKKCVRIFVKNLSSAPSN SHSDAQKTAESIICLSCFLKNSAYLTDQLLDEFYEADGYTVIKDFLLKSETDNEIVRN
 ILLMAISLVNSGKFEITPQYTSGLVQLPAFQLPIPAGNGLSVRN LNAFALLYHVFLESTSEST SCTVIDILHSIYTC DPA
 NYFILDKEYPLSIFIDQLERKPHAVRVK LLELIEFAVFQLSHIPCRELISLCVLLKTEISAGKTAMCTIIVQMCFKLITV
 DAIKDAFREVGLLDALCFIIRRMFEMEYKNIQNASFTVTSTSSRSQDQLKLSLLTTDLLTIIKNNTENGKLFTECFGA
 KLLIEIVCEVNEEWRSLLQLVKQLLIVAPT DQYIMHLVNTLQDRIPENLEV MFSLKALLGVVRESHKVRIQFRKSGG
 FLALSALLGLEKRFTDLHPAGDGRIPREQCQM LEFVHIIFKVFTLSMRFEPSNAKYFSTEITWDSITSLLRLTSIFNES
 TVISIEETEWKSLTHTDLASEIAACHEVFRLDDNIEAGNVPKGM PFNIYFGCYVCRLIFNMALDNYEKM TSDIRWNDDGA
 SLEESIVSWTSSLLVHPGAIISMLCLLPSISASSMKWTIAAQYYV SLLLKAILKSERNQQIMCQVDM PKHLLRIA EKLFL
 TENHILLQPFYYLLERLSYQSLTPNQLRSFLRLDSPLCCRS LDDDEDDDDDDSKIEIADNEG GPVPLQRVKALVSM MTPRD
 QYIGTAPSFVEFDMSVEGFAALY LPSLAPMFSTTKAERIFPPLNGFSFCTWIYLDALSDKKADAHPIRLLTVTRAVAPPN
 SDPPSKKPSQTAHLACFQCQFSAFDRSLLISTEESDQPGADLEKTANFQTDK LIRITLADQVRCGEWFHLAVVFNRSVLK
 SSQVSLYLNGRHISTQKLMYVAQNAGGAATQLAQ TYSVNAVVGTLPALRRPSRLRFRLASIFLAEEPMTAETVRAVVQLQ
 PHYIGNYQTASTAPLFHEEKIVFSLSAAATQELTLAKIRTMYGKMDAEILSQHLGISPN DHSTPLRVLCNTISHAPGAGR
 TFGGVIVGYLGMRTFTPRPVPSLLDSIGGFASVYGLIAMAVDSEGLYASLKS LVS AIRSQPRLLATWNNNR SYQILAVLL
 EDKAKMLNSHIMHMFVNTGTADTSREHAPTISNPSAFEDLLCDLK VWK GAPSELHKMLLEHFYELITDHQLNNLQVV RK
 SSLLSRILLIHHDEPTMIKNTDEIIFNLISAIMQPQCDSRSILKIGQSIAATLPTSESECYEDSHLPFHISEIQKLFIES
 SDPPPEALHQVYIRNRLLNIIANFLANSNTQVQQQMCDQLVRTLGFDFWLFALMSPGVHSGTIYLALRILLILNQPSLLA
 RFKEGSANGGWLSEADSVVRNRAAVVLGFSVSAHGGAVGSKIDINPELSNCGGFAALEHLM AAHADKPYPYYAMLSLLVG
 QPISALRFCDQFN MELVWTHVFGLNSTSSVFEAIN SANFCFDAIIPLFAMIRTSIYHQSSIHQPWTVTNPSTVVQMITFM
 YQNSPAFFNIAHTDEFILALFSTLIEDTNAMGVKSEVANRRSQDGGGSPDAEYFQAFLAQPNVRIVMDLLKKICCDNLQV
 NTSKNDTIIDAILDNISESGNTRKTQIACLTSL LHSVLEHTVGTDLLSSSALPPNTQAQNIVQIVANISLLSSRAVD AFW
 NGLVFGSESMRMLSTLYHLQVIASKKV NKA VNAEPITGCIMRMTL FILSRPIDSVPVQLSVLDALSTLVSKRYLFLSSNE
 AWWFASLTHLIFMLS VTPDVL FQDNSSSSDLDR TSAQVAMCACRVWSDVICA KQALIEETFKKQSVTDINAARALLSHSA
 GVYWQQFVDSQLRAIQTGGSSAQGS AVTAKDIIQQQISSKFNRVASGITRFAAKRSMSTTTALPSSGSVA AWKSTSTDKQ
 VIFMWLRVHVSLIKELVRAQSTRYTEWHAHV RKWCLHDWHQWEAELTRERGIWGP ERASKLEKFKLDL TEGPTTRMRRL
 IPNRNFYHIYPFRPHLEAPSAKAQRAKVAISFDSKPY YETCLRHRRTLDTRIIDSSNVSTASPEDGSGSSNLLGYSFTD
 LSLSEINSSLIRRLSTTAPATSNVSGTSLELNEEECETSERKEDDESIS SISEKTDSNGVQSSGPSTSSNTTKEAKKEEK
 KEEKKAGPDNQTLRLLEQGEQLHSMFRCARIQGLETAEGLLLFGRDHFYVVDGFTLLKTKEIRDLD FL SQEMHDPVPY

PATGATQPPKSSRLCSKFSYNMIREVHKRRYLLQPIALEVFSSDGRNYLLAFPKKIRDRVFDKLTSMALNLSGGSDSLG
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HEWIDLIFGYKQNGEEAVKNSNLFHHLFYEGSVDFERIDDP LTRNATIGFVNNFGQIPTQLFKKPHPQKKVNILEGFSNT
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GPASPSAGGS RATNIDVGGAQFVRVLVQRTALTMHTAFNRPDNVHPAPITAIAPSRDHRSLYVGDGIGRVWCWQSAEGGG
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>NP_001255657.1 WD40 and FYVE domain protein [Caenorhabditis elegans]
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TETED EMLKNNEKLHDMIGQIMEGLCRFKCVSEELVRKDDLLLLFVGTT SQVAEANN CWRKLCARLLEVIADKSITNAVI
KYVIVKKCVRIFVKNLSSAPSN SHSDAQKTAESIICLSCFLKNSAYLTDQLLDEFYEADGYTVIKDFLLKSETDNEIVRN
ILLMAISLVNSGKFEITPQYTSGLVQLPAFQLPI PAGNGLSVRN LNAFALLYHV FLESTSEST SCTVIDILHSIYTC DPA
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SLEESIVSWTSSLLVHPGAIISMLCLLPSISASSMKWTIAAQYYV SLLLKAILKSERNNQQIMCQVDM PKHLLRIA EKLFL
TENHILLQPFYLLERLSYQSLTPNQLRSFLRLDSPLCCRS LDDDEDDDDDDSKIEIADNEG GPVPLQRVKALVSM MTPRD
QYIGTAPSFVEFDMSVEGFAALYLPSLAPMFSTTKAERIFPPLNGFSFCTWIYLDALSDKKADAHPIRLLT VTRAVAPPN
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PHYIGNYQTASTAPLFHEEKIVFSLSAAATQELTLAKIRTMYGKMDAEILSQHLGISPN DHSTPLRVLCNTISHAPGAGR
TFGGVIVGYLGMRTFTPRPVPSLLDSIGGFASVYGLIAMAVDSEGLYASLKS LVS AIRSQPRLLATWNNNR SYQILAVLL
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QPISALRFCDQFNMELVWTHVFGLNSTSSVFEAINSANFCFDAIIPLFAMIRTSIYHQSSIHQPWTVTNPSTVVQMITFM
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 NTSKNDTHIDAILDNISESGNTRKTQIACLTSLHHSVLEHTVGTDLSSSALPPNTQAQNIVQIVANISLLSSRAVDFAW
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 SAGVYWQQFVDSQLRAIQTGGSSAQGSAVTAKDIIQQQISSKFNRVASGITRFAAKRSMSTTTALPSSGSVAAWKSTSTD
 KQVIFMWLRVHVSLIKELVRAQSTRYTEWHAHVVRKWCLHDWHQWEALTRERGIWGPERSKLEKFKLDL TEGPTTRMR
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 KLIPNRNFYHIYPFRPHLEAPSAKAQRAKVAISFDSKPYEYETCLRHRRTLDTRIIDSSNVSTASPEDGSGSSNLLGYSF
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 VGDAWTSASRNNMADVKELIPEFFTLPEMFTNTNHFIDLGVKQNGIHVNDVLLPAWCHGDPREFIRLHRQALES DYVSSH
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 MCGTSDGIVKIYSCVVFENDGSVSEHPALENPNNSNENHDSAAIAARLEKQRKRLKNSSTTATSSSVSGSGSASLTSP
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 >NP_001255658.1 WD40 and FYVE domain protein [Caenorhabditis elegans]
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 TETEDMLKNNEKLHDMIGQIMEGLCRFKCVSEELVRKDDLLLLFVGTT SQVAEANN CWRKLCARLLEVIADKSITNAVI
 KYVIVKKCVRIFVKNLSSAPSN SHSDAQKTAESIICLSCFLKNSAYLTDQLLDEFYEADGYTVIKDFLLKSETDNEIVRN
 ILLMAISLVNSGKFEITPQYTSGLVQLPAFQLPIAGNGLSVRN LNAFALLYHV FLESTSEST SCTVIDILHSIYTC DPA
 NYFILDKEYPLSIFIDQLERKPHAVRVK LLELIEFAVFQLSHIPCRELISLCVLLKTEISAGKTAMCTIIVQMCFKLITV
 DAIKDAFREVGLLDALCFIIRRMFEMEYKNIQNASFTVTSTSSRSQDQLKLSLLTTDLLTIIKNNTENGKLFTECFGA
 KLLIEIVCEVNEEWRSSLLQLVKQLLIVAPT DQYIMHLVNTLQDRIPENLEV MFSLKALLGVVRESHKVRIQFRKSGG
 FLALSALLGLEKRFTDLHPAGDGRIPREQCQMLEFVHIIFKVFTLSMRFEPSNAKYFSTEITWDSITSLLRLTSIFNES
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SLEESIVSWTSSLLVHPGAIISMLCCLPSISASSMKWTIAAQYYVSLLLKAILKSERNQQIMCQVDMPKHLLRIA EKLFL
TENHILLQPFYLLERLSYQSLTPNQLRSFLRLDSPLCCRS LDDDEDDDDDDSKIEIADNEG GPVPLQRVKALVSMMPTRD
QYIGTAPSFVEFDMSVEGFAALYLP SLAPMFSTTKAERIFPPLNGFSFCTWIYLDALSDKKADAHPIRLLTVTRAVAPPN
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TFGGVIVGYLGMRTFTPRPVPSLLDSIGGFASVYGLIAMAVDSEGLYASLKSLSVAIRSQPRL LATWNNNRSYQILAVLL
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SDPPPEALHQVYIRNRLLNIIANFLANSNTQVQQQMCDQLVRTLGFDWLFALMSPGVHSGTIYLA LRILLILNQPSLLA
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SAGVYWQQFVDSQLRAIQ TGGSSAQGSAVTAKDIIQQQISSKFNRV ASGITRFAAKRSMSTTTALPSSGSVA AWKSTSTD
KQVIFMWLRVHVSLIKELVRAQSTRYTEWHAHV RKWCLHDWHQWEAELTRERGIWGP ERASKLEKFKLDL TEGPTTRMR
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KLIPNRNFYHIYPFRPHLEAPSAKAQRAKVAISFDSKPY YETCLRHRRTLDTRIIDSSNVSTASPEDGSGSSNLLGYSF
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PYPATGATQPPKSSRLCSKF SYNMIREVHKRRYLLQPIALEVFSSDGRNYLLAFPKKIRDRVFDKLTSMALNSSGSDS
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ISTFRDFS KPMGAQSPDRLEQFLKRFREWDDPSGETPPYMYGTHYSSAMIVVSYLVRLEPFTQQFLSLQGGHFDLADRMF
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HLHEWIDLIFGYKQNGEEAVKNSNLFHHLFYEGSVDFERIDDP LTRNATIGFVNNFGQIPTQLFKKPHPQKKVNILEGFS
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VHEMCEVDEMTC AAAGDETTLFCGNTSGCITVWKVNNKPLSMKKLSVLNGHSDAITCLVSCQSHAVLVSASRD LTVLVWH
LSEMFLIRQLPKHPH AVLA VAVNDATGDIATACSTLLHVWTLNGELLA VLN TCDVAPAIDPQQMIISLAFSTMNEWDNDN
VIMCGTSDGIVKIYSCVVFENDGSVSEHPALENPNSNSNENHDRSAAIAARLEKQRKRLKNSSTTATSSSVSGSGSASLT
SPGPASPSAGGS RATNIDVGGAQFVRVLVQRTALTMHTAFNRPDNVHPAPITAIAPSRDHRSLYVGDGIGRVWCWQSAEG
GGRADHWVQDVTRQRCDDCEHKFTLADRKHHCRCNCGQIFCSTCSR FESHITRMNISRPVRVCRKCFQRLQQSSNLHNL

>NP_001252086.1 Uncharacterized protein CELE_F22G12.4 [Caenorhabditis elegans]

MTAALLYRLIDGNTKNVLHSIVSIGREDVLFLYFMQNSAKIPKILNDLDPQGASALEIALCSEHEKSRQIAAQLVEKGAD
VNVKDAERGETILMRMCRKENLSAMDFLLGNGADGRDSQSPGDYNVHVASRIPSPALATWISENKEKLDLDKVD AEERT
PLICAVMANNHIMCETLIRSGVNCDVTTSEGHTALSTCLLMSDAPNRRIAELLMLNGAGVNF AICDSKTPFFNEIVSRKD
VASVEALLAANVDCHVADGRGQTACHVAAEAGAPEILSKIVEARRGLKWPRDADDRTALDIAVEKRD LKSARICIKGGAD
VNARDANGQTLLVKAILANDDEMGMVFLIEHDAKAKNDERISSKTYVEAACERGLLNTVRSFISNGCKLNSRCSTGYSL LH
SALSHQKLDVASLLVNFGCDVESRVALGAGGEVLDDGDESWITKQTLLHRLIDDGDQQS AVFLIESGADV NARKEYRNPT
DDDQFTPAHMAVSWAQNDVLRALRDHSANLCDVDS DGRTPAHIGVREQNVDGVKILLDAENVEFIPIRDKFGQTILSQAM
AMKDHQIASLIVARQPHAAVQTNGNGENLLHQAIRQNDIESVLFLLA VAKADPCRPTDGS LKTPHLAAIAKDEMILRN
LILVNDDVNVTSADGTTPLLEALKARNDKHAAILMENGAEPNVKDEYGENAMLC AVRSGSLDCIRAVADSSRTNRYARNK
IGYTS LHICALLTIDKLPKRTSSSDVIELVLIYAEEEEAAQNEKQFAGFIDARDADGNTALMIAYSQGNAGVCRSLLKRR
ACMGQRNNGDVNVFTYETATKQLLLGLLESLEAEPRWSDGDT CDCGARFSLTSRKHHCRHCGRHVCSKCSETTMPIAKYG
EEKRVRVCDVCAHVISTGTAPRR

>NP_001252087.1 Uncharacterized protein CELE_F22G12.4 [Caenorhabditis elegans]

MRMCRKENLSAMDFLLGNGADGRDSQSPGDYNVHVASRIPSPALATWISENKEKLDLDKVD AEERTPLICAVMANNHIM
CETLIRSGVNCDVTTSEGHTALSTCLLMSDAPNRRIAELLMLNGAGVNF AICDSKTPFFNEIVSRKDVASVEALLAANVD
CHVADGRGQTACHVAAEAGAPEILSKIVEARRGLKWPRDADDRTALDIAVEKRD LKSARICIKGGADV NARDANGQTLLV
KAILANDDEMGMVFLIEHDAKAKNDERISSKTYVEAACERGLLNTVRSFISNGCKLNSRCSTGYSL LHSALSHQKLDVASL
LVNFGCDVESRVALGAGGEVLDDGDESWITKQTLLHRLIDDGDQQS AVFLIESGADV NARKEYRNPTDDDQFTPAHMAVS
WAQNDVLRALRDHSANLCDVDS DGRTPAHIGVREQNVDGVKILLDAENVEFIPIRDKFGQTILSQAMAMKDHQIASLIVA
RQPHAAVQTNGNGENLLHQAIRQNDIESVLFLLA VAKADPCRPTDGS LKTPHLAAIAKDEMILRN LILVNDDVNV TSA
DGTTPLLEALKARNDKHAAILMENGAEPNVKDEYGENAMLC AVRSGSLDCIRAVADSSRTNRYARNKIGYTS LHICALLT
IDKLPKRTSSSDVIELVLIYAEEEEAAQNEKQFAGFIDARDADGNTALMIAYSQGNAGVCRSLLKRRACMGQRNNGDVNV
FTYETATKQLLLGLLESLEAEPRWSDGDT CDCGARFSLTSRKHHCRHCGRHVCSKCSETTMPIAKYGE EKRVRVCDVCAH
VISTGTAPRR

>NP_001252085.1 Uncharacterized protein CELE_F22G12.4 [Caenorhabditis elegans]

MGSNKEPKIDYLDILKEQFNALQSEHLELRRKYELECSSSTPDSFPSRLLSLTSSLLEKPRFSDVTFKFAGNSLKSVPAH
KYVLAARTDFWK FENG GDEKSEIQISDDVD FEAHV AIRWIYTDEIDLKMEDEKLLKVCETATSFRLEQLKNVCVQQLGA
RLHVDNCIKIYEF AEKQSLRQLSTVAGSMIAGAWPKLGPAHF AQMTAALLYRLIDGNTKNVLHSIVSIGREDVLFLYFMQ
NSAKIPKILNDLDPQGASALEIALCSEHEKSRQIAAQLVEKGADV NVKDAERGETILMRMCRKENLSAMDFLLGNGADGR
DSQSPGDYNVHVASRIPSPALATWISENKEKLDLDKVD AEERTPLICAVMANNHIMCETLIRSGVNCDVTTSEGHTALS
TCLLMSDAPNRRIAELLMLNGAGVNF AICDSKTPFFNEIVSRKDVASVEALLAANVDCHVADGRGQTACHVAAEAGAPEI
LSKIVEARRGLKWPRDADDRTALDIAVEKRD LKSARICIKGGADV NARDANGQTLLVKAILANDDEMGMVFLIEHDAKAKN

DERISSKTYVEAACERGLLNTVRSFISNGCKLNSRCSTGYSLLSALSHQKLDVASLLVNFGCDVESRVALGAGGEVLDD
GDESWITKQTLHLRLIDDGDQQSAVFLIESGADVNRKEYRNPTDDDDQFTP AHMAVSWAQNDVLRALRDHSANLCDVDSD
GRTPAHIGVREQNVDGVKILLDAENVEFIPIRDKFGQTILSQAMAMKDHQIASLIVARQPHAAVQTNGNGENLLHQAIRQ
NDIESVLFLLA VAKADPCR PITDGS LKTPHLAAIAKDEMILRNILVNDDVNVTSADGTTPLLEALKARNDKHAAILME
NGAEPNVKDEYGENAMLC AVRSGSLDCIRAVADSSRTNRYARNKIGYTS LHICALLTIDKLPKRTSSSDVIELVLIY AEE
EAQAQNEKQFAGFIDARDADGNTALMIAYSQGNAGVCRSLLKRRACMGQRNNGDVNVFTYETATKQLLLGLLESLEAEPR
WSDGDTCDCGARFSLTSRKHHCRHCGRHVCSKCSETTMPIAKYGEERKVRVCDVCAHVISTGTAPRR

>NP_001022794.2 Myotubularin-related protein 3 [Caenorhabditis elegans]

MTVTSSAAIDIGGGGGGRRSDRLSDRTSEDMSFIAS PANESFQIGASFVDVQNESSGSIDTATATLHELNYTFGMPPVT
E ESENMPQNYETVVELLPGEERAPINKL TEFPIEGGSLFVTNFRIVVILKDKEVEEALRFLVFPLQDIEQIDLAIPAFIH
LSLKIGRMFTICFKTAEDAALVHKILYTA FQRLNRPIS SIYTSRPQDWTSKNTDNPMQSLNAFAWK FSEA VDELDRDGKL
PSWLLRADSV AQEITHIDFNRLGMSEHFQISSVNENFEVCPTYPEKIIVPKGITDDDIRKGAPYRSIGRFP AVIWRCRKT
RAVLMRSSQPQVGILSWRNPTDEKIIIEEAVKASRIEGEEKKQFIIMDARGYTS AFANRARS GGFENTEYYQQA KLEFLGL
PNIHAVRG SFNNVRTMLHNLGPNEQLLTS LQTTGWLLNLSNLLVNAANCADHLSKGHSVLVHCSDGWDRTTQVTTLAKIM
LDEYYRTVKGFEE LIRRDWIAFGHKLYDRQLVAFGNWGTS DERSPVFLQFLEAVRHLQREQPTLFQFTHAYLIK LAKHAY
SGLFGSFLFN SHKERREAMEKCKGTLVDIWRFIGPHNEEYVNQSFDEHYTGAVKPVNVSVINLRVWHEVFAD EEEHYTQI
FSPKEERPLSGCTTPMNTSTSTNLVKS KSSESINSLNVDGSAKES SQQHPTCSTTPSDNTNSLPMSTSFIQQSLYQPKVR
GVAAIDRDGVIRFEDDEQAMLRKKKNKLRAEEIRRKDEKIEELRRRAVLDTNKVSPGQRQSYSESDVETTGT LERVMSDVS
MVDPVNELPHFKPNTTWEGESGHCA YCKKEFNKLSVYVEDRQHHCRCNCGRVVCEDCSKNRFSVIEEGKSVQKRACDSCYD
SMHETDLKLSSSSTTTTSSSTKIENDSNVPGLDNNSDNVSENVSENAIPDIIVEEKEAEDPIKEAESPSKETKCPKTLRN
FISFSPKSSMRKNKVHSRDPLKSIDEGSSSQQAESDDVLDVNEQPL

>NP_497766.3 Myotubularin-related protein 3 [Caenorhabditis elegans]

MTVTSSAAIDIGGGGGGRRSDRLSDRTSEDMSFIAS PANIGASFVDVQNESSGSIDTATATLHELNYTFGMPPVTEESE
NMPQNYETVVELLPGEERAPINKL TEFPIEGGSLFVTNFRIVVILKDKEVEEALRFLVFPLQDIEQIDLAIPAFIHLSLK
IGRMFTICFKTAEDAALVHKILYTA FQRLNRPIS SIYTSRPQDWTSKNTDNPMQSLNAFAWK FSEA VDELDRDGKLPSWL
LRADSV AQEITHIDFNRLGMSEHFQISSVNENFEVCPTYPEKIIVPKGITDDDIRKGAPYRSIGRFP AVIWRCRKT
RAVLMRSSQPQVGILSWRNPTDEKIIIEEAVKASRIEGEEKKQFIIMDARGYTS AFANRARS GGFENTEYYQQA KLEFLGLPNIH
AVRG SFNNVRTMLHNLGPNEQLLTS LQTTGWLLNLSNLLVNAANCADHLSKGHSVLVHCSDGWDRTTQVTTLAKIMLDEY
YRTVKGFEE LIRRDWIAFGHKLYDRQLVAFGNWGTS DERSPVFLQFLEAVRHLQREQPTLFQFTHAYLIK LAKHAYSGLF
GSFLFN SHKERREAMEKCKGTLVDIWRFIGPHNEEYVNQSFDEHYTGAVKPVNVSVINLRVWHEVFAD EEEHYTQIFSPK
EERPLSGCTTPMNTSTSTNLVKS KSSESINSLNVDGSAKES SQQHPTCSTTPSDNTNSLPMSTSFIQQSLYQPKVRGVAA
IDRDGVIRFEDDEQAMLRKKKNKLRAEEIRRKDEKIEELRRRAVLDTNKVSPGQRQSYSESDVETTGT LERVMSDVS
MVDPVNELPHFKPNTTWEGESGHCA YCKKEFNKLSVYVEDRQHHCRCNCGRVVCEDCSKNRFSVIEEGKSVQKRACDSCYDSMHE

TDLKLSRATSLSEMSSFDSFGPSSPPASSTSSSSLNMLASMSPTRPQPIPIICKSSSNSISSPRPSPGEFSRHSSTQAVK
G

>NP_501352.1 FYVE-type domain-containing protein [Caenorhabditis elegans]

MIGATGSGGTGGHNDVVRQGFICPFCMEDFGAYERLICHVENDHPEEDSSDLAGMFVSNVKGFFDKAKRGIQKLDAKKSI
ADLASNVETEFTETTEKLVERAPLPRIPKPLPPDEILPGTRRSKTREFLSTRELNINEVAVRTNMLIIRLDRLINGGPKD
KDPVKRKEFEREVVPWLDDAEAVCCPLCASRFGLTRRRHHCRLCGRVLCHSCSKFLSFDATAKTLTSSSNPLGDTHIIVEE
PNTVENEQELLQPEENGRRSFFSLSQKSMDKMKRAMAGAVQKVHSAATGEEIIAGALNEQDLSEHMRVCNLCLRDLHFRE
SQMDKKEPPEFVQQYDLMKVMIEEVKNLVPTYVRVVTSLKNGESVYSHKHGEELRSKCLEIQKSIDYVSKKIAEGANDKP
NSAKEQQLRKNIRLYAVQALQGLIGQMESLPTAEECNLIIRKERRAKDFARVNRTVMKMSSSMPQLQEQHSHLNTSS
VSSFGGPSSIDDGWSAEDNDLVFEPSSIEDDTIQTDHPLYEQREQLRKFLFQASATGKLDDEMDILERNLKEIEEEMMRLG
LSC

>NP_001294172.1 FYVE-type domain-containing protein [Caenorhabditis elegans]

MIGATGSGGTGGHNDVVRQGFICPFCMEDFGAYERLICHVENDHPEEDSSDLAGMFVSNVKGFFDKAKRGIQKLDAKKSI
ADLASNVETEFTETTEKLVERAPLPRIPKPLPPDEILPGTRRSKTREFLSTRELNINEVAVRTNMLIIRLDRLINGGPKD
KDPVKRKEFEREVVPWLDDAEAVCCPLCASRFGLTRRRHHCRLCGRVLCHSCSKFLSFDATAKTLTSSSNPLGDTHIIVEE
PNTVENEQELLQPEENGRRSFFSLSQKSMDKMKRAMAGAVQKVHSAATGEEIIAGALNEQDLSEHMRVCNLCLRDLHFRE
SQMDKKEPPEFVQQYDLMKVMIEEVKNLVPTYVRVVTSLKNGESVYSHKHGEELRSKCLEIQKSIDYVSKKIAEGANDKP
NSAKEQQLRKNIRLYAVQALQGLIGQMESLPTAEECNLIIRKERRAKDFARVNRTVMKMSSSMPQLQEQHSHLNTSS
VSSFGGPSSIDDGWSAEDNDLSRVFEPSSIEDDTIQTDHPLYEQREQLRKFLFQASATGKLDDEMDILERNLKEIEEEMMR
LGLSC

>NP_495983.1 WD repeat and FYVE domain-containing protein 2 [Caenorhabditis elegans]

MAAIINQRVEQGESSMGGAKPALLHRITGHVARINDVILLSKDEGVWTASDDRSVRLYLKRDNDQFWPSIHFFMPVAPTS
LYYSEETYKLLVGLINGNVYEFSVADDFNSMTESRKWTCHAGPISGLGFALSSSELIFSCSRDKSIVWHCESENSNKMGSYL
LENSCTAMVIDLPFVFVGHDHGGHVTVLRIVDNQPNLVSKLSAHTNAITSLTWDGNKKVLYSGSSDHLIIMWDIGGGRGEA
YELNGHNGKVTTLCAAPAAKRLFSADHEHGKLMCWDNMCKRVETPEWKTSDCCQKCNQPFFWNLQAMWQRKVVGRLRQH
HCRTCBSAVCGSCCDNWTTPPMGYETKIRICNDCNARMKDNPNQNFNLTPLAIPHEIHTGITAMHLQETLGLLVTSGQNRVI
MIWDVRSVCSAPSGSQ

Domain Architecture of *Saccharomyces cerevisiae*

<i>No</i>	<i>Accession Number</i>	<i>Domains</i>
1	NP_014403.3	VHS domain, FYVE zinc finger Ubiquitin interaction motif Ubiquitin interaction motif
2	NP_010599.1	FYVE zinc finger, Ring finger domain
3	NP_011492.3	FYVE zinc finger
4	NP_116674.2	Phosphatidylinositol-4-phosphate 5-Kinase, TCP-1/cpn60 chaperonin family, FYVE zinc finger
5	NP_010610.3	FYVE zinc finger, Rabenosyn Rab binding domain

Retrieved Sequences of *Saccharomyces cerevisiae*

>NP_014403.3 ESCRT-0 subunit protein VPS27 [Saccharomyces cerevisiae S288C]
MSVSTPSELDALIEQATSEIPNGDLPLIALEISDVLRSSRVNPKDSMRCIKKRILNTADNPNTQLSSWKLTNICVKNG
GTPFIKEICREFMDTMEHVILREDSNEELSELVKTILYELYVAFKNSQLNYVAKVYDKLISRGIKFPEKLTLSNSPTA

MFDSKTPADWIDSDACMICKSKFSLNLRKHHCRSCGGVFCQEHSSNSIPLPDLGIYEPVRVCDSCFEDYDLKRHDDSKKS
KKHRHKKRKKDRDYSTPEDEEELIRKAIELSLKESRNSASSEPIVPVVESKNEVKRQEIEEEEDPDLKAAIQESLREAEAA
KLRSERQKASRQMPPQPPQPIHSVDLSDEEKDSIYMFASLVEKMKSRPLNEILED SKLQNLAQRVFASKARLNYAL
NDKAQKYNTLIEMNGKISEIMNIYDRLLLEQQLSINLSQQYTLPQVPSDPYNYLTENVQNP AESYQTPPLQQLSSHQYKP
QQDVSRRQQSVKANSSPTTNIHLKTIDVTPHAQQKPQSHVELAPSDPPYPKEEADEGTQAVQDEESSTQESRERPYPVE
TENGETSINKRPQGITRYDFPTVPARKFVQPESTVPLPASSSEIPIKEERPPSPQEELLIEL

>NP_010599.1 phosphatidylinositol-3-phosphate-binding ubiquitin-protein ligase [Saccharomyces cerevisiae S288C]

MVIKEDCINNLRWQADEEAHSCFQCKTNFSFLVRRHHCRCCGRIFCSSCTENFVNYNKKRVHALQKKNSDVESPPYRTC
NECYDNLLHLNLLVSSTNRDVRLSQTSPPNALALSAPDSNTDEDAEILEDSDVQSGTACRSEESSQNEEDHFCPICNSD
LTQFPDEEETRKHVEDCIQRAENAQQHTNTSDAADD SVKESPAFQNRMLVYKISPNTTDNAIKECPICFENMEPEGKVG
LECLCVFHYKCIKNWFHKRAQMTAAQKGNGHAFVKRNFCPFHDAVF

>NP_011492.3 Pib2p [Saccharomyces cerevisiae S288C]

MTALHSVSKTPAIKEEEEDGDERDGRGVPLGPRNHDYRGRKGDEESGADTVTSPITFEKKKIAPRASTHSEQSILSSISL
KSMVNQHRQQQLQQESSTGAGTGFVDRKQQIQSPAMVSILRKNSAEENVRSSHSSKLGEQIDGRKASASKEIGKTLPT
DDQRSNPELDPTNSVVDVSRGKNTKSKTVFNELEDDADDDDEVQKNLTTQALRKLSSFKMNASSNLRLSKENKAKESS
SSTSSVSSSSTSKVENIVDKLTTTNSSSMSQLRFGNTNVIIDSVNHAAPPHQQMLRKPSLEFLPQPASSTNLNFNSNKH
KSNVRQISNPKKPLYIPAVLRKVSETNITNDDLLNATLSSYYKKASNLEHGFNPSKSSQASVQNANNLRISSQSSVQSN
TSSILESYKNKISSYLFPSNIPNSDRINLIPTISNRNSARVNPPTKDHWPDSKRNSCRYCHKPFTLWERKHHCRHCGDI
FCQDHLRHPLYLDSQANFIMINELNNGGINGGGTLCCKICDDCLVEYENLSTTNHNANTNEDNINVEEGEDDDNDNRKKLR
NYYKNRQMNALFRPKKGGSSQEHA TVDRDTTTPIQVKSNDEEADNENTGGEQEEGNDVLGSGVIGSV PANWNWSSF

>NP_116674.2 1-phosphatidylinositol-3-phosphate 5-kinase [Saccharomyces cerevisiae S288C]

MSSEEPHASISFPDGSHVRSSSTGTSSVNTIDATLSRPNYIKKPSLHIMSTSTTSTTTDLVTNPILSNISVPKISPPTSS
SIATATSTSHVTGTASHSNIKANANTSTSVNKKNLPTTSGRIPSSTIKRYPSRYKPSHSLQLPIKNDSNFKRSSIYASK
STVTAIPIRNNRPISMQNSYARTPDSHDHDDVGDEVSSIKSASSSLTASLSKSFLFAFYNNRKKDKTSNNGVLSKEYWMKD
ESSKECFSCGKTFNTFRRKHHCRICGQIFCSSCTLLIDGDRFGCHAKMRVCYNCYEHADTYEDSSDEENDSTMQLNEPRS
RSR SRSSNTNPYSHSHSLHLISQDNHNGTDLHDPVAATDNPQQQNEVYLLNDDDDVQSIMTSGEDSKLFISTPPPPPKMA
IPATKQGSLEISFDSENDRALHYQDDNPGRHHHLDSPTRYTIRDMDNISHYDTNSNSTLRPHYNTNNSTITINNLNNT
TSNNSNYNNTNSNSNINNPASLSRRSIFHYVSSNSVNKDSNNSSATPASSAQSSSILDPANRIIGNYAHRNYKFKFNYS
KGPSQQNDTANGNNDNNNNNNNNNNNNNNNSASGIADNNNIPSNDNGTFTLTKKKRNPLTKSKSTSALEYPLNEEDSS
EDEGSMYSIYVLNDDHKTDNPIRSMRNSTKS FQRAQASLQRMFRFRKSKSKHFPNNSKSSYRDLNFLTNP NLLSVVS
DDNLYDDSSPLQDKASSSAASRLTDRKFSNSSGSNNNSNSNSNINTDPWKRIASISGFKLKKKEKKRELNEVSLLHMHALL
KQLLNDQEISNLQEWITLLD GALRKVLR TILNARDLNTLDFRQTYVKIKRISGGSPQNSEYIDGVVFSKALPSKTMPRHL
KNPRILLIMFPLEYQKNNNHFLSIESVFRQEREYLDKLV SRLKSLHPDIIYVGANVSGYALELLNDSGIVVQFNMKPQVI

ERIAKLTEADIAISVDKLATNIKMGECEVKSYYGNISKTYTFLRGCNPELGGTILLRGDSLENLRKIKQVSEFMVY
AIFSLKLESSFFNDNFIQLSTDVYLKRAESKKLQVFEGYFADFLIKFNNRILTVSPTVDFPIPFLLKARGLEKKLIERI
NQYESESDLDRQTQLNMLQGLESTITKKHLGNLIKFLHEMEIENLELEFQKRSRQWEVSYSSSQNLLGTGSHQSITVLYS
MVSTKTATPCVGPQIVTIDYFWDSDISIGQFIENVVGTARYPCQQGCNGLYLDHYRSYVHGSGKVDVLEKFQTRLPLKL
DIILTWSYCKKCGTSTPILQISEKTWNHSFGKYLEVMFWSYKDSVTGIGKCPHDFTKDHVKYFGYNDLVVRLEYSDELVH
ELITPPRKIKWKPHIDIKLKVELYYKILEKINNIFYGSVLSRLERIKLDSMTKDKVLSGQAKIHELKSNATEEQKLMLQDL
DTFYADSPCDQHLPLNLVIKSLYDKAVNWNSTFAIFAKSYLPSETDISRITAKQLKKLFYDSSRKDSSEDKKSLHDEKAKT
RKPEKNELPLEGLKDVEKPKIDSKNTTENNRDRTNEPQNAVTTITTFKDDTPIIPTSGTSHLTVTPSASSVSSSLTPQTEER
PPISRSRGISMTHDKSTRPNIRKMSSDSSLCGLASLANEYSKNNKVSKLATFFDQMHFDALSKEFELERERERLQLNKD
KYQAIRLQTSTPIVEIYKNVKDAVDEPLHSRSSGNLSSANVKLEAPVGEHSRANNCNPPNLDQNLETELENSISQWGE
NILNPSGKTTASTHLNSKPVVKETSENPKSIVRESDNSKSEPLPPVITTTTVNKVESTPQPEKSLLMKTLSNFWADRSA
LWKPLVYPTCPSEHIFTDSVDVIREDPSSLIAFCLSTSDYRNKMMNLNVQQQQQQQTAEAAPAKTGGNSGGTTQTGDP
VNISPSVSTTSHNKGRDSEISSLVTTKEGLLNTPIEGARDRTQPESQTHSQANLDTLQELEKIMTKKTATHLRYQFEEG
LTVMSCKIFFTEHFDVFRKICDCQENFIQSLSRCVKWDSNGGKSGSGFLKTLDDRFIKELSHAELEAFIKFAPSIFYEYM
AQAMFHDLPTTLAKVFGFYQIQVKSSISSSKSYKMDVIIMENLFYEKKTTRIFDLKGSMRNRHVEQTGKANEVLLDENMV
EYIYESPIHVREYDKLLRASVWNDTLFLAKMNVMDYSLVIGIDNEGYTLTVGIIDFIRTFWTDKKLESWVKEKGLVGA
SVIKQPTVVTPRQYKKRFREAMERYILMVPDPWYREGN

>NP_010610.3 Pep7p [*Saccharomyces cerevisiae* S288C]

MDLENVSCPICLRKFDNLQALNAHLDVEHGFNDNEDSLGSNDSRLVNGKQKKARSVDSSAQKLKRSHWEKFKKGKSCCHT
CGRTLNNNIGAINCRKCGKLYCRRHLPNMIKLNLSAQYDPRNGKWYNCHDCFVTKPGYNDYGEVIDLTPEFFKVRNIKR
EDKNLRLQLLENRFVRLVDGLITLYNTYSRSIIHNLKMNSEMSKLERTVTPWRDDRSVLCNICSEPFGLLLRKHHCLC
GMVVCDDANRNCSEISIGYLMASADLPFEYNIQKDDLHPIISIRLCSHCIDMLFIGRKFNKDVRMPLSGIFAKYDSM
QNISKVIDSLLPIFEDSLNSLVETAKDSENTLDPKNLNDLARLRHKLLNSFNLYNTLTRQLLSVEPQSHLERQLQNSIK
IASAAYINEKILPLKSLPAILNPEGHKTNEDGQKAEPEVKKLSQLMIENLTIKEVKELREELMVLKEQSYLIESTIQDYK
KQRRLEEIVTLNKNLEELHSRIHTVQSKLGDHGFN