

Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511  
Egranulosus.XP\_024350401.1\_Phosphatidylinositol4ph  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572  
Hsapieus.NP\_001275701.1\_phosphatidylinositol\_4-pho  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp  
Aplanci.LOC10975484\_phosphatidylinositol\_4phospha  
Hsapieus.NP\_001364263.1\_phosphatidylinositol\_4-pho  
Hsapieus.NP\_002636.2\_phosphatidylinositol\_4-phosph  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase  
Egranulosus.XP\_024352417.1\_Phosphatidylinositol45b  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45  
Aplanci.LOC10976503\_phosphatidylinositol\_45bispho  
Hsapieus.NP\_006209.2\_phosphatidylinositol\_4,5-bisp  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis  
Hsapieus.NP\_001269355.1\_phosphatidylinositol\_4,5-b  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase  
Aplanci.LOC10979051\_phosphatidylinositol\_45bispho  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph  
Hsapieus.NP\_006210.1\_phosphatidylinositol\_4,5-bisp  
Hsapieus.NP\_005017.3\_phosphatidylinositol\_4,5-bisp  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis  
Egranulosus.XP\_024352493.1\_Phosphatidylinositol\_3k  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase  
Hsapieus.NP\_002638.2\_phosphatidylinositol\_3-kinase  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina  
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Egranulosus.XP\_024350401.1\_Phosphatidylinositol4ph  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572  
Hsapieus.NP\_001275701.1\_phosphatidylinositol\_4-pho  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp  
Aplanci.LOC10975484\_phosphatidylinositol\_4phospha  
Hsapieus.NP\_001364263.1\_phosphatidylinositol\_4-pho  
Hsapieus.NP\_002636.2\_phosphatidylinositol\_4-phosph  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase  
Egranulosus.XP\_024352417.1\_Phosphatidylinositol45b  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45  
Aplanci.LOC10976503\_phosphatidylinositol\_45bispho  
Hsapieus.NP\_006209.2\_phosphatidylinositol\_4,5-bisp  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis  
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Cintestinalis.LOC100180112\_phosphatidylinositol\_45  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase  
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Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph  
Hsapieus.NP\_006210.1\_phosphatidylinositol\_4,5-bisp  
Hsapieus.NP\_005017.3\_phosphatidylinositol\_4,5-bisp  
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Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis  
Egranulosus.XP\_024352493.1\_Phosphatidylinositol\_3k  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase  
Hsapieus.NP\_002638.2\_phosphatidylinositol\_3-kinase  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina  
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Egranulosus.XP\_024350401.1\_Phosphatidylinositol4ph  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572  
Hsapieus.NP\_001275701.1\_phosphatidylinositol\_4-pho  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp  
Aplanci.LOC10975484\_phosphatidylinositol\_4phospha  
Hsapieus.NP\_001364263.1\_phosphatidylinositol\_4-pho  
Hsapieus.NP\_002636.2\_phosphatidylinositol\_4-phosph  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase

Egranulosus.XP\_024352417.1\_Phosphatidylinositol45b ---VLTLPDPDISL-----ADLKA-----HLWDLASAE---PLYECLG-----  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho ---FISLETSSRECLG---FELKE---TVWNMAKEQ---PLYDRLL-----  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 ---LVQLFVNDRATL---ESIKA---NVWIEARKF---PLYHLLL-----  
Aplanci.LOC10976503\_phosphatidylinositol\_45bispho ---IVPLECVREATL---ENVKA---LLWREARKL---PLANRLG-----  
Hsapies.NP\_006209.2\_phosphatidylinositol\_4,5-bisph ---IVTLECLREATL---ITIKH---ELFKEARLY---PLHQLLQ-----  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha ---MITLDVPREATL---EHIKG---DLWREARKY---PLFHKLG-----  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis ---IVCLRCNRDATL---ESIKG---DLWKEAKKY---PLFYLLS-----  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis ---KSPETALLHVAGHGNV---EQMKA---QVWLRALETSVAADFYHRLG-----  
Hsapies.NP\_001269355.1\_phosphatidylinositol\_4,5-b ---TVTLNCVGNQTV---GOIKS---DLLEIRIDQY---LAYEKVW-----  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 ---YIPIDIPRNSTI---KEVKN---LLWQEAHHH---PLFSKLL-----  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase ---LLELRVNPANTI---QVIKV---EMVNOAQKM---PLGYVVK-----  
Aplanci.LOC10979051\_phosphatidylinositol\_45bispho ---VIPLKCKRDATI---TSIKR---DLWREAKTY---PLYQTLL-----  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph ---YIPLTCSKDATI---EQIKK---DLWQEARTY---PLYSELA-----  
Hsapies.NP\_006210.1\_phosphatidylinositol\_4,5-bisph ---YIQLEVPREATI---SYIKQ---MLWKQVHNY---PMFNLLM-----  
Hsapies.NP\_005017.3\_phosphatidylinositol\_4,5-bisph ---YLNFPVSRNANL---STIKQ---LLWHRAQYE---PLFHMLS-----  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 ---MCVLYC-----MRN-----PVFPRLG-----  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis ---DLKEEFKGKSAL---PHIQI---LSLTGFKPED-----  
Egranulosus.XP\_024352493.1\_Phosphatidylinositol\_3k ---IFSHELEDRI---QIKI---GSLDGERP-----  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 ---YVSCDLNASV---QIKV---GTLEGKR-----  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 ---YSCDLNINV---QLKI---GSLGKR-----  
Aplanci.LOC10987621\_phosphatidylinositol\_3kinase ---YVSCDLNVNV---EIKI---GTLEGER-----  
Hsapies.NP\_002638.2\_phosphatidylinositol\_3-kinase ---YVSCDLNVNV---QLKI---GTLEGKR-----  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k ---YVSCDLNVNV---QLKI---GTLEGKR-----  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina  
200a 220a 240a 260a 280a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 ---ITHFTFNETGDIL-LDEQSQSLDILGLV---YPFVRVSDKGE-----  
Egranulosus.XP\_024350401.1\_Phosphatidylinositol4ph ---SHSSALPNL---TVRSTSNPEVKP-QQKQNFSPLOQANITIDTSLNFAKAVENCTPWLPG---  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 ---PEDNATNF---SCRNSPSSDNLID-VSNFNDLSPDFIDPLKQTASVTSNIAQVTSALLP---SS  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 ---DSSRFSILAPSF---TSLDKINLEKELE-NENNYHIGFESSIPPTNSFSSSDFMPKEENKRSRGH---VN  
Hsapies.NP\_001275701.1\_phosphatidylinositol\_4-pho ---GQPDASSLNFSAQMSVGAASSSRPQ---SLSSSSSGERTSM-AANFASLTDELFTDYRNPFAISVTKTAPGAGAAAA---AA  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45 ---MFT-LSAGKTEAARVF-----  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp ---DYLKIFDGDGSGVSSSPGPG---DIEGCKKLSPPP-LPPRASIDWTPPLPPRKGSPPSSSKISQPSDINTFSL---VE  
Aplanci.LOC10975484\_phosphatidylinositol\_4phospha ---PGQSPYFSPLYT---PATPFHPQGSGLPI-YRPVSVTMAKLFDKIASTSEFLKNGKARTDLEITD---SK  
Hsapies.NP\_001364263.1\_phosphatidylinositol\_4-pho ---ADFNVTVLPPL---TSTGVHGNVSNLS-QSSTNASHLQNLFELDNISQWERDLSEGKSNSSEKSN---DL  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p ---TSSEDMFFTKTSV---DSRVKFPFAVNYR-NNSTQQSQMDLNNWKKLHNLMLPRTQSFTHOPFKRS---NQ  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p ---SRNPAPRWSSGSSSRSTSWSGLVNSSSHPPQAGSCLVSPRQASGMPLNLTTTLPALNPM---SRSDQSLNSLSSW---DPQSHNSNSNSAVSSTSE---QD  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos ---DQKNYYL---ESVTSQAQVPLP---YDEQVRLNLELNF---YGYISLREHDAFLNEKDD---LR  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 ---PQPNAYMYYPGAVVPTYPTAPVPGSAAFMPQYPQACQYGGF---GAYTHMDLRRPQS-QPAPQQTAPTTSSHHSQPSNNHSTSSPAEANGVAFA---RA  
Egranulosus.XP\_024352417.1\_Phosphatidylinositol45b ---PNNDYLF---QGSSPKAEKEEF-YDEQCKFAGLQLL---LPFMRLKLVADDQTQIEQKRNA---Q  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho ---ENNAVYF---GVGVTKDAETEEF---YDEHRRLCDHLF---QPILKLTAAKNREKML-KQ  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 ---DPASYIF---VSIQTDAEKEEF---YDETRRLCDLRLF---QPVL-KVVEPKGNR---E-E-EK  
Aplanci.LOC10976503\_phosphatidylinositol\_45bispho ---DASSYIF---VTITQDAEKEEF---YDEGRRLCDLRLF---QPWL-KVVEPAGNR---E-EK  
Hsapies.NP\_006209.2\_phosphatidylinositol\_4,5-bisph ---DESSYIF---VSVTQAEKEEF---YDETRRLCDLRLF---QPFL-KVIEPVGNR---E-EK  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha ---DETMYIF---ISITQAEKEEF---YDETRRFCDLRLF---QPWL-KVTEPRGNR---E-EK  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis ---DPASYIF---VSIQTDAEKEEF---YDETRRLCDLRLF---QPIL-KLVEPKGNR---A-E-EK  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis ---PHHFL---LYQKKGQWYIEIDKYQVVTLDCLRYKWRATHRSQGIHLVGRHPPSEESQAFQR  
Hsapies.NP\_001269355.1\_phosphatidylinositol\_4,5-b ---EHELLTY---TIDGKTYEIDCM-HQTFQTLRVINMW---TKTGLGTLDRVRLHTAESNE---ER  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45 ---PNESYTF---TYITISFGLPEEI---VDESRLHSEFDIF---HELPVLKLVQSRHNLAEKRV---IQ  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase ---EACEY---QVYGISTFNIIEPY-TDETCKRLSEVQPY-FGLISLGERDITTSFSSSYEL-TK  
Aplanci.LOC10979051\_phosphatidylinositol\_45bispho ---DLNFYIF---QCVNQSAEQEEL---LDGNRRLCDVKKF---WPML-RVVRKASDV---E-DK  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph ---EIQSYVF---MCINQTAEQEEL---HEEQRRLCDVRF---RPVL-KLVQKKDPAA-V-EK  
Hsapies.NP\_006210.1\_phosphatidylinositol\_4,5-bisph ---DIDSYMF---ACVNQTAVEEL---EDTRRLCDVRF---LPVL-KLVTRSCDPGEKL-DS  
Hsapies.NP\_005017.3\_phosphatidylinositol\_4,5-bisph ---GPEAYVF---TCINQTAEQEEL---EDEQRRLCDVQPF---LPVL-RLVAREGDR---V-KK  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 ---LPTPLCKWLS---VDQSME---SLIQTEQLVE-----  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis ---PFSVGLESLPAPQPPVS---LNAYIFDAIYGSASSYCLRNYK-----  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 ---IKRLRLKLTSCI---EMKFPNQLVEQIRNECQTKQTS-----  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 ---MS-----  
Aplanci.LOC10987621\_phosphatidylinositol\_3kinase ---IVEPS---LMLL---KGSLLQPMWESTWQKN---IESIGCSI---QLVEVPQSSNT-----  
Hsapies.NP\_002638.2\_phosphatidylinositol\_3-kinase ---MQII---CNDVTCHRIEDQ-----  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p ---GSDPS---SGLSAFDLDFLEKLTMKESVAPGVNLLDKD---KAPGGKLAESGRGSMGELSKPGVLNLSNLLAVSTTGLSHSTGELYNVNSADTAAPQP  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 ---QLPKG---LLEHRILEEVEVLGGGGQGRLLGSDVYDGINDAITRLNLKSTYDAEMLRDATRGWKEGRGLDFSKDTSGPK  
Bbelcheri.LOC10975484\_phosphatidylinositol\_4phospha ---VSNLQVSPKSEDI---SKFDWLDDPLPSKPVNDNVEVLDHEEKNVSNLLAKDPMDAVLLEERSTANCH  
Hsapies.NP\_006210.1\_phosphatidylinositol\_4,5-bisph ---MDFSP---SEEM---EYLSLDSFDPFLYERTRRESFTSKDKVP SYLIG ISAREVTPGLRQLSEDQMR  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p ---ASFSLQNPVNLSSIQNKAAPKRAPSCGSFNGLRPGSFENVTYPATNPFSTANGTQLNFFEMKAPT---KVLQPAETEVEKQVGGWSGNYDVHFDWFK  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos ---TLNKIKNNRINSNADLMEFGDITLTPKHNEFSWESFDP LYSLTGNMISAEQG---PVTLPD---APKEASDSDNKDEKFKQSKSHTYENVVLLD  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 ---LMSLL---LGFPLDDFASS---LEREACEARSLNRLADMLVIESQK  
Egranulosus.XP\_024352417.1\_Phosphatidylinositol45b ---MIAKI---STISQAHLKAA---EGGNPELAWARQ---CLLGMSEANMR---  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho ---SITQA---VGVSIDFVVR---RNPVEDDFRR---DVASFCKSEVEA---  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 ---MLNVE---IGMT---IGIPTNDFNEM---KDLEIVTFRR---NILDICKDCVDL---  
Aplanci.LOC10976503\_phosphatidylinositol\_45bispho ---MLNVE---IGTA---IGMPVTEFDSM---KDPEVDFRR---NILTLCKEVEE---  
Hsapies.NP\_006209.2\_phosphatidylinositol\_4,5-bisph ---ILNRE---IGFA---IGMPVCEFDMM---KDPEVDFRR---NILNVCKEAVDL---  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha ---ILNSE---ISLA---ISMPVTEFGTV---KDPEVDFRR---NILTLCLQSQVE---  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis ---MLNSE---ISLA---LGISVNEFNEC---KDLEVMTFRR---NVNLNVCKEAVER---  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis ---QTLAL---IGYDVTDVSNV---HDELEFTRR---GLVTPRMAEASV---  
Hsapies.NP\_001269355.1\_phosphatidylinositol\_4,5-b ---LFNLI---LGLS---MGVINGKYGSM---VKHNTAVTD---DEVYTVR---KLTNVRRALRS---  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45 ---EINHL---TCIKNETELNV---DESERSFRK---DMRELAQAACKD---  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase ---VLMNQ---IGLL---IGKSLHEWDM---KNEPVEDFRG---NNRRCMTIQRD---  
Aplanci.LOC10979051\_phosphatidylinositol\_45bispho ---Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph ---RIGVL---IGKGLHEFDSL---KDEPVEDEFRG---RMRQMVEIADS---  
Hsapies.NP\_006210.1\_phosphatidylinositol\_4,5-bisph ---RIGVL---IGKGLHEFDSL---KDEPVEDEFRG---KMRKFSSEKILS---

Hsapiens.NP\_005017.3\_phosphatidylinositol\_4,5-bispho  
 Myoensis.XP\_021346814.1\_phosphatidylinositol\_45b  
 Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis  
 Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis  
 Egranulosus.XP\_024352493.1\_Phsphatidylinositol\_3k  
 Avaga.UJR09391.1\_hypothetical\_protein\_14U23\_013634  
 Avaga.UJR36681.1\_hypothetical\_protein\_14U23\_029398  
 Aplanci.LOC110987621\_phosphatidylinositol\_3kinase\_3  
 Hsapiens.NP\_002638.2\_phosphatidylinositol\_3-kinase  
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 Egranulosus.XP\_024350401.1\_Phsphatidylinositol\_4ph  
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 Avaga.UJR28330.1\_hypothetical\_protein\_14U23\_009572  
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 Myoensis.XP\_021346813.1\_phosphatidylinositol\_45  
 Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp  
 Aplanci.LOC110975484\_phosphatidylinositol\_4phospha  
 Hsapiens.NP\_001346263.1\_phosphatidylinositol\_4-pho  
 Hsapiens.NP\_002636.2\_phosphatidylinositol\_4-phosph  
 Myoensis.XP\_021340378.1\_phosphatidylinositol\_4p  
 Cintestinalis.LOC100175620\_phosphatidylinositol\_4p  
 Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos  
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 Egranulosus.XP\_024352417.1\_Phsphatidylinositol\_45b  
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 Aplanci.LOC110976503\_phosphatidylinositol\_45bispho  
 Hsapiens.NP\_006209.2\_phosphatidylinositol\_4,5-bisph  
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 Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis  
 Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis  
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 Cintestinalis.LOC100180112\_phosphatidylinositol\_45  
 Cintestinalis.LOC100183611\_phosphatidylinositol\_45  
 Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase  
 Aplanci.LOC110979051\_phosphatidylinositol\_45bispho  
 Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph  
 Hsapiens.NP\_006210.1\_phosphatidylinositol\_4,5-bisph  
 Hsapiens.NP\_005017.3\_phosphatidylinositol\_4,5-bisph  
 Myoensis.XP\_021346814.1\_phosphatidylinositol\_45  
 Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis  
 Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis  
 Egranulosus.XP\_024352493.1\_Phsphatidylinositol\_3k  
 Avaga.UJR09391.1\_hypothetical\_protein\_14U23\_013634  
 Avaga.UJR36681.1\_hypothetical\_protein\_14U23\_029398  
 Aplanci.LOC110987621\_phosphatidylinositol\_3kinase\_3  
 Hsapiens.NP\_002638.2\_phosphatidylinositol\_3-kinase  
 Myoensis.XP\_021360544.1\_phosphatidylinositol\_3k  
 Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina  
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 Avaga.UJR33052.1\_hypothetical\_protein\_14U23\_020511  
 Egranulosus.XP\_024350401.1\_Phsphatidylinositol\_4ph  
 Avaga.UJR21159.1\_hypothetical\_protein\_14U23\_024258  
 Avaga.UJR28330.1\_hypothetical\_protein\_14U23\_009572  
 Hsapiens.NP\_001275701.1\_phosphatidylinositol\_4-pho  
 Myoensis.XP\_021346813.1\_phosphatidylinositol\_45  
 Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp  
 Aplanci.LOC110975484\_phosphatidylinositol\_4phospha  
 Hsapiens.NP\_001346263.1\_phosphatidylinositol\_4-pho  
 Hsapiens.NP\_002636.2\_phosphatidylinositol\_4-phosph  
 Myoensis.XP\_021340378.1\_phosphatidylinositol\_4p  
 Cintestinalis.LOC100175620\_phosphatidylinositol\_4p  
 Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos  
 Avaga.UJR15173.1\_hypothetical\_protein\_14U23\_002134  
 Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase  
 Egranulosus.XP\_024352417.1\_Phsphatidylinositol\_45b  
 Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho  
 Myoensis.XP\_021367892.1\_phosphatidylinositol\_45  
 Aplanci.LOC110976503\_phosphatidylinositol\_45bispho  
 Hsapiens.NP\_006209.2\_phosphatidylinositol\_4,5-bisph  
 Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha  
 Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis  
 Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis  
 Hsapiens.NP\_001269355.1\_phosphatidylinositol\_4,5-b  
 Cintestinalis.LOC100180112\_phosphatidylinositol\_45  
 Cintestinalis.LOC100183611\_phosphatidylinositol\_45  
 Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase  
 Aplanci.LOC110979051\_phosphatidylinositol\_45bispho  
 Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph  
 Hsapiens.NP\_006210.1\_phosphatidylinositol\_4,5-bisph  
 Hsapiens.NP\_005017.3\_phosphatidylinositol\_4,5-bisph  
 Myoensis.XP\_021346814.1\_phosphatidylinositol\_45  
 Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis  
 Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis  
 Egranulosus.XP\_024352493.1\_Phsphatidylinositol\_3k  
 Avaga.UJR09391.1\_hypothetical\_protein\_14U23\_013634  
 Avaga.UJR36681.1\_hypothetical\_protein\_14U23\_029398  
 Aplanci.LOC110987621\_phosphatidylinositol\_3kinase\_3  
 Hsapiens.NP\_002638.2\_phosphatidylinositol\_3-kinase  
 Myoensis.XP\_021360544.1\_phosphatidylinositol\_3k  
 Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina  
 600Å 620Å 640Å 660Å 680Å  
 Avaga.UJR33052.1\_hypothetical\_protein\_14U23\_020511  
 Egranulosus.XP\_024350401.1\_Phsphatidylinositol\_4ph  
 Avaga.UJR21159.1\_hypothetical\_protein\_14U23\_024258  
 Avaga.UJR28330.1\_hypothetical\_protein\_14U23\_009572  
 Hsapiens.NP\_001275701.1\_phosphatidylinositol\_4-pho  
 Myoensis.XP\_021346813.1\_phosphatidylinositol\_45  
 Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp  
 Aplanci.LOC110975484\_phosphatidylinositol\_4phospha  
 Hsapiens.NP\_001346263.1\_phosphatidylinositol\_4-pho  
 Hsapiens.NP\_002636.2\_phosphatidylinositol\_4-phosph  
 Myoensis.XP\_021340378.1\_phosphatidylinositol\_4p  
 Cintestinalis.LOC100175620\_phosphatidylinositol\_4p  
 Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos  
 Avaga.UJR15173.1\_hypothetical\_protein\_14U23\_002134  
 Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase  
 Egranulosus.XP\_024352417.1\_Phsphatidylinositol\_45b  
 Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho  
 Myoensis.XP\_021367892.1\_phosphatidylinositol\_45  
 Aplanci.LOC110976503\_phosphatidylinositol\_45bispho  
 Hsapiens.NP\_006209.2\_phosphatidylinositol\_4,5-bisph  
 Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha  
 Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis  
 Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis  
 Hsapiens.NP\_001269355.1\_phosphatidylinositol\_4,5-b  
 Cintestinalis.LOC100180112\_phosphatidylinositol\_45  
 Cintestinalis.LOC100183611\_phosphatidylinositol\_45  
 Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase  
 Aplanci.LOC110979051\_phosphatidylinositol\_45bispho  
 Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph  
 Hsapiens.NP\_006210.1\_phosphatidylinositol\_4,5-bisph  
 Hsapiens.NP\_005017.3\_phosphatidylinositol\_4,5-bisph  
 Myoensis.XP\_021346814.1\_phosphatidylinositol\_45  
 Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis  
 Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis  
 Egranulosus.XP\_024352493.1\_Phsphatidylinositol\_3k  
 Avaga.UJR09391.1\_hypothetical\_protein\_14U2

Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572-----ESMAILRNNYHSDTV---SI  
Hsapie...MP...AN...V...K...D...L...A...E...I...L...H...F...C...T...N...D...Q...L...L...P...--KD...H...I...L...S...V...C...G...S...E...E...F...L...Q...--ND...H...C...L...G...S...H...K...M...F...--KD  
Myse...IA...Q...A...L...S...K...W...A...N...K...T...R...N...Q...A...H...M...P...D...K...--Y...L...L...K...T...V...G...L...S...D...Y...V...Y...--G...E...N...P...L...K...E...Y...K...Y...V...N...D...C...I...--MK  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phos...TLKVVIHTLQKNSEPVTFTC...D...V...E...T...S...V...H...S...V...L...S...Q...V...A...V...S...L...L...D...D...D...T...D...V...S...--D...D...F...A...L...K...V...C...G...R...E...E...F...L...A...--N...D...T...L...G...D...Y...E...Y...V...Q...D...C...E...--KF  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha...CDVNIYVQHVISQALCHEEVS...I...S...S...--E...A...F...V...L...K...V...P...G...L...A...E...Y...L...H...--N...D...V...K...L...S...S...E...Y...V...Q...E...C...L...--KL  
Hsapie...LQ...E...A...L...T...F...T...C...N...C...S...S...T...V...D...L...L...I...Y...Q...T...L...C...Y...T...H...D...L...R...N...V...D...V...--G...D...F...V...L...K...P...C...G...L...E...E...F...L...Q...--N...K...H...A...L...G...S...H...E...Y...Q...I...Y...C...R...--KF  
Hsapie...QLPVTFTCDVSVSTVEIIIMQALCWVHDDLQNDV...V...--G...S...Y...V...L...K...V...C...G...R...E...E...V...L...Q...--N...N...H...C...L...G...S...H...E...H...I...Q...N...C...R...--KW  
Myse...SDPVLFTCDVHTLVEHIVCNALYNNHLDVSN...S...F...C...S...--K...D...F...I...K...V...S...D...R...S...E...Y...L...L...--N...D...Q...E...L...S...K...E...Y...V...H...E...C...L...--KL  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p...STVRVVISADGITQPVTFEC...D...I...N...S...S...V...E...H...I...V...S...Q...A...L...C...I...A...Y...E...D...I...S...--L...V...--S...T...D...D...Y...A...F...K...I...G...R...Q...E...Y...L...L...--S...K...T...H...L...M...G...H...Y...V...R...E...C...I...--KF  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134...MSVKVVVETKLSKEPVVFTCNVKTSEVHIVGHVLCVCEEGRGYSV...--S...A...E...D...Y...L...V...K...H...D...L...S...E...Y...F...V...--N...D...S...F...V...D...G...Y...E...Y...V...Q...R...C...I...--RL  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase...K...S...I...T...V...A...A...A...K...E...I...I...D...E...Q...R...R...L...V...Q...D...V...Q...M...K...H...D...V...D...P...A...--S...R...Y...W...L...Q...A...F...G...C...E...E...R...F...L...--G...S...K...S...I...Q...S...K...Y...V...Q...T...C...L...--KL  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho...AM...I...S...E...V...V...K...K...V...L...T...F...N...N...S...Q...N...S...T...K...S...I...N...--E...H...Y...V...L...K...V...C...G...L...N...E...Y...L...E...--G...N...F...I...C...Q...Y...K...Y...I...R...Q...C...V...--NR  
Myse...ITVIAETIRRRSRMMGITKEHAERCIDVYS...--T...A...Y...A...L...K...V...C...G...S...Q...D...F...L...L...--Q...E...F...F...I...Q...Y...K...Y...V...R...E...C...V...--AI  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho...IA...--E...T...I...R...K...--R...T...E...S...M...D...L...T...P...A...Q...Q...R...C...V...--E...E...--Y...K...G...T...V...Y...L...K...V...C...G...S...Q...D...E...Y...I...M...--D...N...P...I...S...Q...F...K...Y...I...R...Q...C...I...--LR  
Hsapie...EQVIAEAI...R...K...K...T...R...M...L...S...S...S...Q...L...K...C...L...V...L...E...Y...Q...--G...K...Y...I...L...K...V...C...G...S...Q...D...E...Y...L...L...--E...K...Y...P...I...S...Q...Y...K...Y...I...R...S...C...I...--AR  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha...EDV...I...A...G...A...I...K...K...K...T...R...M...L...T...P...E...Q...Q...C...L...E...E...Y...Q...--N...S...V...L...K...V...C...G...A...E...E...Y...M...L...--G...R...V...P...I...Q...Y...K...Y...I...R...M...C...L...--SR  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis...EMV...I...A...E...A...I...R...K...K...T...R...M...H...M...S...P...E...E...Q...K...C...V...E...E...Y...Q...--G...H...Y...L...K...V...C...G...S...Q...D...F...L...L...--E...Q...F...P...I...Q...Y...K...H...I...R...K...C...I...--AR  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis...G...A...I...L...Q...S...F...F...T...K...M...A...K...S...L...M...D...I...P...E...S...Q...E...--Q...D...F...V...L...R...V...C...G...R...D...E...Y...L...L...--G...E...T...P...I...K...M...F...Q...W...R...H...C...L...--KN  
Hsapie...MED...F...F...E...S...I...T...P...A...R...K...I...A...F...G...I...P...E...E...A...K...A...--P...D...Y...V...L...K...V...C...G...M...D...F...Y...I...R...V...C...V...--AR  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45...SWSTEHLTEVALQTWVSKTRKARLPS...T...N...K...--D...D...Y...V...L...K...G...N...G...K...--E...F...I...V...--G...N...H...P...I...Y...M...F...K...I...R...A...L...V...C...K...R...E...--SK  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase...F...S...L...T...E...S...T...L...Q...K...M...N...R...S...Q...M...K...M...N...D...R...I...T...--S...D...Y...I...L...K...V...C...G...R...D...E...Y...L...L...--G...D...Y...P...I...Q...F...L...Y...I...Q...E...M...I...--SD  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho...IKRA...N...K...M...R...Q...P...S...Q...E...--D...S...Y...V...L...K...V...R...G...K...D...E...Y...L...M...--G...N...Y...S...L...S...Q...F...T...Y...I...R...N...C...I...--SK  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bis...H...Q...L...A...L...K...K...A...F...L...R...Q...E...D...P...--A...E...F...A...L...K...V...C...G...S...Q...D...F...L...L...--G...E...F...P...I...S...R...F...Y...V...R...C...L...--SK  
Hsapie...IKVNE...L...A...I...Q...K...R...L...I...H...G...K...E...D...V...S...P...--Y...D...V...L...Q...V...N...G...R...D...E...Y...V...F...--G...D...P...I...Q...F...O...Y...I...R...N...C...V...--MN  
Hsapie...LALMA...C...A...L...R...K...--K...A...T...V...P...R...O...L...V...E...Q...P...--E...D...Y...T...L...Q...V...N...G...R...E...Y...L...L...--G...S...P...I...Q...F...O...Y...I...C...S...C...L...--HS  
Myse...K...E...L...I...M...L...V...L...Q...K...L...S...S...T...L...G...Q...A...L...G...D...P...--T...K...F...I...L...K...A...R...G...R...E...Y...L...L...D...T...G...C...N...T...I...T...Q...Y...K...Y...I...R...E...M...I...--SQ  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis...I...M...L...V...L...Q...K...L...S...S...T...L...G...Q...A...L...G...D...P...--T...K...F...I...L...K...A...R...G...R...E...Y...L...L...D...T...G...C...N...T...I...T...Q...Y...K...Y...I...R...E...M...I...--SQ  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k...Q...Y...L...G...G...C...Y...L...R...L...Y...N...S...K...K...V...F...R...S...--G...V...Y...E...L...E...L...--H...L...L...--K...N...Y...K...L...S...D...D...V...V...E...C...I...V...D...H...E...M...--TP  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634...G...S...S...T...L...S...Y...A...S...D...G...T...F...R...Q...--G...I...Y...D...L...K...L...--W...P...N...V...S...P...O...V...F...Q...S...S...--TP  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398...G...S...T...I...S...L...F...D...S...E...G...A...F...R...Q...--G...I...Y...D...L...K...L...--W...P...N...V...S...P...O...V...F...Q...S...S...--TP  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase...G...G...T...V...S...L...F...G...K...H...G...T...F...R...Q...--G...M...H...D...L...K...V...--W...P...G...V...K...G...D...S...V...H...T...A...--TP  
Hsapie...G...G...T...V...S...L...F...G...K...H...G...T...F...R...Q...--G...M...H...D...L...K...V...--W...P...N...V...E...A...D...G...S...E...P...T...K...--TP  
Myse...G...G...T...L...P...L...F...G...K...H...G...T...F...R...Q...--G...M...H...D...L...K...V...--W...P...K...I...E...A...D...P...O...H...N...S...S...--T...L  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina...G...G...T...M...P...L...F...G...K...H...G...T...F...R...Q...--G...M...H...D...L...K...V...--W...P...D...L...E...A...D...H...G...V...S...T...--TP  
700Å 720Å 740Å 760Å 780Å  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511...NIQINVELIYIQLPKSKSK---HGQINQLHEPTIFRSPILQQSMINSNKENT---HHEQFLLPN-----  
Egranulosus.XP\_024350401.1\_Posphatidylinositol4ph...GSTARLVLEAFS---AQEYFLPSVEDTKRKLNLHTAYASDTRIPDKAMIENSVMKISGHIEINLRQVSNLSFSTINATGHTCMEIRKAVVDHISGICGHTA  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258...LKP IQFVLV---QKPVSITQQNQNIQSFEQCLNQNEQYFQTMKQTKPLKSL---NCKTKSISSYPTRSDFSQWLEEFPRKINRNTLEQIEQ  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572...KPQVR-----KSVIQLHLQ---KSREAPGKLSRKHHEEDHSQF---YLAQLLFMHIMKVS---CCLLTILIRKYDFHLKYLKLTQE-----NVYN  
Hsapie...NEAPAFLLQ---SKDDI---LERSDIASRPSPSILSR---PSTGMIS---  
Myse...DLDAVALVLY---PRDVIPTHMLRTAEADDAKTSTNLNHLIDNPFVRTAVSK---RGLGVLVDAFYNEADKLRSHAS---LDWDSCKSNG  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha...DQDVKLVLV---HRAEMKMLSRTAEDDEGDSKINFLTLFERPVTAVSKWNYDTVELCEQKGLDVLSSAFLEGGDKLMAAVK---SGAQPKVKP  
Hsapie...DIDIRLQLM---EQKVVRSDLIARTVNDQSPSTLNYLVHLQERPVKQITSR---QALSLLFTDYHNEVDFAFLDADG---DFPLKADR  
Hsapie...DIDIRLQLL---TFSAMCQMLARTAEEDDETPTVDLNKHLVQIEKPCKEAMTR---HPVEEELDSYHNOVELALQIEN---QHRADVQ  
Myse...DQDIRFTLM---RQQDVFPLFRITVDDDAQNIVFPFKDYIKTDEAVVTNRGQLEILINIFTYQVEKLDRHVLKNEITNIFRFSLQO  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p...EQDVTLELV---HKTNIDHSLRRTDDBDNTQVTKMKEFLSELGKPSVTLSR---DDIQIILLDAFYKEAEKLLDLVKTPTEGEAVLVTQOQDR  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos...DEDIRLIMV---KLEDLTQLARVPLDDBRKLVLVHRPETHTRNAVSQ---DHLKILLETDPDEVEKIRAIAT---EKTLSKLQPKN  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134...DKPFLYFKLI---NIESTVGNKGKRCRLAMIQEAIQEEERKKPKQFGGRS---DNMMILITLEMEIDKLESAAD---GVPGRSVSVSCSG  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase...EKDVHLGLCLSTAA...QAI---ARTERDDEHADLLEPHLLPNEVVPITVY---SIVDLYGKVEDEDEGEAM  
Egranulosus.XP\_024352417.1\_Posphatidylinositol45b...DDIPRLTPV---LLKDVLECLGLPVEPVVNCEDCTPAYSPFAVVSNAAPLP---  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho...DELDPVMLE---SVKQVLAKIPPHLPYMQPNINKHNKNSERPIMS---  
Myse...DKIPQFLLI---TREGI---YAALPENNFAMPYSAQOGLQ---ALLDINN  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho...KKTPOQLMM---SRESV---LNSLPDVTFFLP SYMRAPP---TLPDRN  
Hsapie...GRMNPMLM---AKESL---YSQPLMDCFTMPSYSRIST---ATPMYNGE  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha...TRFPNLMML---SKEVV---YASLPSTFHLPSYARRGSS---AVLNPNGT  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis...NQIPQLMLM---SKDGV---YASLPKNVYTVPSYVRKGIS---ALQDINN  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis...GEEIHVVLD---TPDPALDEVKREWPLVDDCTGVIGYH---EQLTIGHKDH  
Hsapie...RREPQLALCVPPNDAADEV---LSVHDWFVDDSTGVTEHH---QQLTLVGCKNNH  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45...GIVSSIKAP---PVVSLVHVASVRKLLPQQYQLLKVQTNFAPVPVEKH---  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase...SAPVNVVLQ---SVYRLSEYINHHNEQAMVT---KRPLPKKRTVLHL---  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho...DIRPEL...L...L...---KVDENFVNMLTALLQK---EESPSIPP  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bis...ATTPOQLMV---KLDNI---DLESVTSPTTDP---EGPPPLPCKQ  
Hsapie...RALPHFTLV---ECKKI---KKMYEQEMIAIEA...INRNS...NLPLRLPKKT  
Hsapie...GLTPHLMV---HSSSI---LAMRDEQSNAPQVQKPR---AKPPPIPA  
Myse...GKIPHLML---TLKSRVPGLEDVAVSENGISNSCSPFVPFPPRPKPKRGNT---PSSHPPKPLKVNVPSPRLTDRR  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis...GKIPHLML---TLKSRVPGLEDVAVSENGISNSCSPFVPFPPRPKPKRGNT---PSSHPPKPLKVNVPSPRLTDRR  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis...DGKPRGL  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k...GKVEPISNQ  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634...GKIEQISNN  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398...GRTDDSR  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase...GRTSSTLSE  
Hsapie...GRTSSTLSE  
Myse...GRTSSTLSE  
Lanatina.XP\_021360544.1\_phosphatidylinositol\_3k...GRTDKN  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina...GRTDKN  
800Å 820Å 840Å 860Å 880Å  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511...INTLPEAMAAYQNSLYNMLSRKPRKQIILHQQLSPRHSTGDN---WEEVMEKLTILEMQVIRQTIAFLKWKQAWYPELRLATVL---PAPPVLGNE  
Egranulosus.XP\_024350401.1\_Posphatidylinositol4ph...CINRLIDPNMSIVTSE---EQIKSIQELINYMKGILQITCSDIQSSKILEKHKLRLNRYNIELMKHSSSGGKEHLSRLFPDLSLTKEYIQTQYCAFLFP  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258...IIEEVKKICSVLGCVEKTQITDAVNLSLILQKRGENFYQSSETSAGK---LIEK---VTTELSTSIYQ  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572...VQQA...K...A...L...C...A...T...L...A...S...L...E...T...E...V...S...Q...V...A...G...R...L...K...R...A...V...P...A...P...R...Q...P...S...V...A...G...E...P...G...L...S...E...--M...N...R...A...S...V...V...N...N...I...A...S...L...S...K...E...Q...K...Q...E...V...N...L...A...E...E...V...T...A...I...L...--  
Hsapie...LIQT...V...K...A...I...C...F...L...A...T...V...E...P...E...I...S...T...A...I...H...E...L...--Q...K...S...D...P...E...A...Y...E...K...--L...T...A...V...L...H...L...V...M...--  
Hsapie...VQ...S...V...K...A...I...C...N...A...A...V...E...T...P...E...I...S...T...A...I...H...E...L...--Q...K...S...D...P...E...A...Y...E...K...--L...T...A...V...L...H...L...V...M...--  
Hsapie...VIK...A...V...R...K...I...C...S...A...L...D...G...V...E...T...L...A...I...T...E...S...T...A...I...H...E...L...--Q...K...S...D...P...E...A...Y...E...K...--L...T...A...V...L...H...L...V...M...--  
Myse...L...I...Q...V...H...A...V...A...C...I...L...F...L...E...T...N...S...I...T...A...K...T...A...R...M...--T...A...V...A...S...H...E...A...L...S...P...E...K...V...Q...M...D...E...L...A...S...A...I...D...E...--L...T...V...A...V...H...Q...L...T...S...V...--LL  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p...L...M...Q...T...V...K...A...T...C...C...S...F...Y...G...L...E...T...I...G...T...D...A...K...L...M...G...V...Q...L...R...K...P...T...S...S...Q...D...G...L...V...H...D...L...V...K...L...D...Q...P...K...E...N...K...D...S...P...H...V...H...C...--  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos...L...I...Q...V...H...A...V...A...C...I...L...F...L...E...T...N...S...I...T...A...K...T...A...R...M...--T...A...V...A...S...H...E...A...L...S...P...E...K...V...Q...M...D...E...L...A...S...A...I...D...E...--L...T...V...A...V...H...Q...L...T...S...V...--LL  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134...V...V...Q...A...V...K...A...I...C...A...L...L...G...S...I...D...T...M...A...R...C...A...V...D...L...K...I...C...E...V...Q...K...K...Y...S...T...G...A...S...N...P...E...I...V...S...D...Y...G...D...Y...A...Q...V...V...L...R...P...S...R...M...L...E...Q...I...K...V...K...C...N...E...L...D...R...A...Q...V...E...L...V...E...L...--  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase...E...A...S...V...D...L...--L...R...D...Y...--F...S...L...T...V...R...A...Q...K...I...--T...T...V...K...N...P...S...T...E...K...L...D...T...--  
Egranulosus.XP\_024352417.1\_Posphatidylinositol45b...H...M...L...T...Q...N...--F...K...F...L...V...N...I...G...I...Y...--  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho...K...T...I...S...L...--W...E...--I...Q...A...N...--L...R...I...R...I...L...C...A...T...Y...V...--

Aplanci.LOC110976503\_phosphatidylinositol\_45bispho-----LQAKCL-----WD----VKDL-----FRVKINCAMVY-----  
Hsapies.NP\_006209.2\_phosphatidylinositol\_4,5-bisp-----TSKSL-----WV----INSA-----LRIKILCATVY-----  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha-----AQIRCI-----YD----IQSP-----LRIKILCATVY-----  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis-----QQTMSL-----WQ----VEAM-----LRIKINCATNV-----  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis-----  
Hsapies.NP\_001269355.1\_phosphatidylinositol\_4,5-b-----ESVFTV-----SLWD----CDRK-----FRVKIRGI-----  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45-----TEIVAF-----SLWD----MTRK-----FRIKVLGVDYL-----  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45-----RAVWSL-----WQ----LDVM-----FKLRIIRAGNV-----  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase-----KSISSL-----WD----MGNY-----FQLTLHSISNV-----  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho-----KKGKTL-----SWD----ILDK-----VIVSFHGATNV-----  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bis-----EKMVSL-----WN----IEAR-----VKITIVNASSL-----  
Hsapies.NP\_006210.1\_phosphatidylinositol\_4,5-bisp-----RIISHV-----WE----NNNP-----FQIVLVKGNKL-----  
Hsapies.NP\_005017.3\_phosphatidylinositol\_4,5-bisp-----KPPSSV-----SLWS----LEQP-----FRIELIQGSKV-----  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45-----  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis-----KTLGGV-----TSIWT----INET-----FSITVNAIRNV-----  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis-----KTLGGV-----TSIWT----INET-----FSITVNAIRNV-----  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k-----KELNHL-----  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634-----EQIS-----  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398-----EQILSNH-----  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase-----EQMSSL-----  
Hsapies.NP\_002638.2\_phosphatidylinositol\_3-kinase-----DQMSRL-----AKLTKA-----  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k-----DQMSRL-----AKLSKK-----  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina-----DEMSRL-----AKLSIK-----  
900a 920a 940a 960a 980a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511-----KQITIFQFHSGIYYGRRCL-----FSF  
Egranulosus.XP\_024350401.1\_Posphatidylinositol4ph-----MECERLLGQCMSQRECHMSKCDMPFVMRIGSVIDPADHSDFPWNLSERLGAG-----SCVRHVILTYAGRPSTIYTSPLNPAYPRGSKGCVYACTT  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258-----YEVEIYNNGNQTDIEQYTSPLITSIPSTCSTISLSDVFTVHVIDSLFSLPSN-----VKTVRVIRLRCYGNITTR-----VKQMTRLMSFVRNT-----SQENF  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572-----  
Hsapies.NP\_001275701.1\_phosphatidylinositol\_4-pho-----LINVYCNSFYADFQ-----PVNVPRCTSYLNPLGPSHLSTFYAAHNP1ETVWHSYKAFSFTCWLTYAGKKL-----CQVR-----NYRNPDKKFLF-----  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45-----EIPNG-----SKVKFYAGLFYGMEST-----ETISTEDIVISD-----  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp-----ALVDMYSSAFDITDFITNPQGTPTAGIVDVTGVSSNNVRVRLVSAHRLPINSNQLFEKFRVSSGFPHGHHKM-----CDTK-----QTN1HP1KNSFF-----  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha-----YCTAFDITDFRTGDTNDDEAVQDITVKGHNLRVCIASAHRLQSNVNAHEFYTVSAQLYGGNAL-----HFPI-----DTWPARINSSFF-----  
Hsapies.NP\_001364263.1\_phosphatidylinositol\_4-pho-----YCNFTNADFQTAVFGSRKHDLVQEAECFARSLAFTVYATHRIP1IWAITSYEDFYLLSCSLSHGKDEL-----CSPL-----QTRRAHFSKYLF-----  
Hsapies.NP\_002636.2\_phosphatidylinositol\_4-phosph-----IYDLLRLHANSGRSPDTCQSSKSVKEAWTTTLEQLQFTIFAAHGISSNNWSNYEKKYLICSLSHGKDL-----FKPI-----QSKKVGYTKNFF-----  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p-----VTVKQLIKMYCHTFTHTDYLGTAVQVRETNPVVALEDNF1LHIATVHRIPVTVSQKYDEYKI1C1SLHYGKDKI-----DLDVDITSCKT1ITTTQLCGL-----  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p-----DISQLYCKAFEDVDAYSLSNLSNATPPPKDKIKSTQVKDLYSVHIMSLHRFPKPWETQFEDFHI1CHLYHGEKKI-----SSNA-----STKPTSINKSFY-----  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos-----YCKMYYLELPPGVEKRQCTDSVMTDMVTGILENM1VH1ASVHR1PEQWKNSYDHSV1AS1LYAGKKI-----CQDVM-----PTARSCSTDKFH-----  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134-----PAGEFDEVK1I1GLVYHGTQPL-----YSGS1LESRSVDIT-----  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase-----YANVFRVAFSVKTPDYSTTIP1P1SCVSKPIVVC1ISCLHRLPNW-----KFDDYSLCVQIYVYGRLL-----SKPNV-----LTCSDNTSGGFL-----  
Egranulosus.XP\_024352417.1\_Posphatidylinositol45b-----GLFTFGSSSFSDLTDTDVASLGGSSSGSGRGGVSASTPLTSSASSSLDASSGVSVMN1Y1VRVGLAHGQLL-----AKYQVVFYSMTRGAL1VMGNG-----  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho-----NVGEN-----LVVYANL1YHGTKPL-----CEKKTKV1ELGGT-----  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45-----NVKES-----CK1FVRAGV1HGTGEL-----CEPQ-----DTKL1V-----ES-----  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho-----NVKEL-----DK1YVRSG1YHGSESL-----CPQV-----MTEH1V-----PC-----  
Hsapies.NP\_006209.2\_phosphatidylinositol\_4,5-bisp-----NVNIR-----D1DK1YVTRG1YHGGEPL-----CDNV-----NTQR1V-----PC-----  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha-----NVKEH-----DK1YVRSGV1YHGGEPL-----CTPV-----NTNR1V-----PC-----  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis-----SVKEL-----GR1FVK1GYHGTGEL-----CPFK-----DTHV1V-----TS-----  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis-----  
Hsapies.NP\_001269355.1\_phosphatidylinositol\_4,5-b-----D1PVLPRNTDLTVFEANI1QHQQVLI-----CQRR1T-----SPKPF1T-----  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45-----TPENETVGTDPDEL1YVEFSL1YSGRQRI-----AEPV-----RTKP1V-----ASN-----  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase-----NAGQERDKK1LVHV1GLYHGTETL-----CPTT-----YTKPEVKEMAAG-----  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho-----NFDKT-----RALKVGVH1VCLYHGDKKI-----C-----AQRSDTSPNGNF-----  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bis-----NI1DR-----AWLQVRAGV1YHGGEKI-----CPNF-----LSREA1V-----EG-----  
Hsapies.NP\_006210.1\_phosphatidylinositol\_4,5-bisp-----NAGDN-----NKVFVKAG1YHGGEETL-----CSIS-----TTKEA1V-----SCVG-----  
Hsapies.NP\_005017.3\_phosphatidylinositol\_4,5-bisp-----NTEET-----VKVHVRAGL1PHGTLEL-----CKTI-----SVSEV1SGK-----  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45-----NADER-----MKLVVQAG1LPHGNEML-----CKTV-----SSSEV1V-----SVC-----  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis-----  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis-----NCNDD-----SKI1HVRAG1LPHGHD1IM-----GDIK1D1TDFARLE-----  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k-----NCNDD-----SKI1HVRAG1LPHGHD1IM-----GDIK1D1TDFARLE-----  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634-----GELV-----ATP-----  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398-----SILQNNNSQI-----TAKPP-----  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase-----SVITTANLQHNKRQT-----TSKPL-----  
Hsapies.NP\_002638.2\_phosphatidylinositol\_3-kinase-----HKGHML-----  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k-----HRQGHMV-----  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina-----HRDGHML-----HKDGHML-----  
1000a 1020a 1040a 1060a 1080a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511-----DPIN-----WNN1TYTEE1TQNT1PL1AN1LPGTILC-----MALTSKQSETYFLN1SLFRSNGF1ILNGSHEF-----  
Egranulosus.XP\_024350401.1\_Posphatidylinositol4ph-----PVLRFDFHSYKADFNSGGKIDLE-WIRFLDFFPRFLRP1RETL1NVLSLIA-----LKQ1TED-----PS1LSNGTL1LGW1NVP1PDANGRL1RQEVVLA-----  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258-----SQVR-----FDQ1LRFSDNAD1LCELR1P1RETL1LFEI1YA-----SF1DENDDSS1LVE-----FVDG1SMRL1LGCW1SFLD1SEHRL1GTERYL-----  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572-----FNQ-----W1SFDDARHCALQ1REALL1FEI1YAS1F1DEMDD1SSSP1YEV-----FDG1PMRM1GWC1SQAL1FDDK1QHL1GTERYL-----  
Hsapies.NP\_001275701.1\_phosphatidylinositol\_4-pho-----FLVN-----WNE1TIN1FLE1IKSLPRESML1TVK1LG-----ICAT1NNAN1LAWT1CL1P1FKPS1IL1GSMFL-----  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45-----SQCT-----WNQ-----EMV1FKE1VSE1PHMC1RLCMAL1HG-----RTK1GKENT1LAW1NVN1FLFN1YK1SRML1RNGEYKF-----  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp-----FRLV-----WDE-----WVEF1SLP1LCL1LPEAR1LCVAL1YG-----VNSGAD-----SNRP1YGV1TVL1GWA1P1LNFN1RGHML1HGP1HLL-----  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha-----DKLA-----WNQ-----ELEF1LP1YV1SQLPREAR1LITLSG-----QDN-----SSAD1SDKT1VLGWA1SMFN1RGE1LTVSGSHLL-----  
Hsapies.NP\_001364263.1\_phosphatidylinositol\_4-pho-----HLIV-----WDQ-----Q1CFPVQ1VNRLPRETL1LCAT1LYA-----LP1PPP1GSS1SEA-----NKQR1RVPEAL1GW1T1PLFN1RQV1LTCGRKLL-----  
Hsapies.NP\_002636.2\_phosphatidylinositol\_4-phosph-----YL1K-----WDE-----LI1TFP1IQ1ISQLPLES1VLH1LT1FG-----ILNQ1SSG1SPDS-----NKQR1KGPEAL1GKVS1LP1DF1KRF1LT1CGTKLL-----  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p-----ECIL-----WDE-----WVS1FDE1P1VQV1LPRETR1VCM1TLC-----VKV1VPS1NQNN-----TQG1TKV1SPL1GGV1TVQ1L1NQ1SGN1L1SGN1LV-----  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p-----PRVV-----WDT-----WVEF1DIR1VCD1LPLETT1LRV1YLHG-----TVS-----SDDK1VTSR1PLC1W1N1PL1FD1HRRV1RYES1CVF-----  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos-----TKVV-----WDD-----WLQ1FSMPV1MCT1LPRETR1L1LH1LCA-----CKNV1SN-----DS1STQV1T1SLGW1VAQ1L1FDF1KRN1LVQ1GSQ1LL-----  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134-----LNPD-----WQD-----DK1FDD1IT1LVN1LP1ASK1LCC1S1HF-----HRR1RTS-----LL1SD1EW1ICI1GWA1NL1VN1HNS1LC1IGR1QK1V-----  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase-----FSA-----W1LTF1DQ1H1CTL1PREAR1L1FTV1LGK1QAASE1GEP1NDQ1NGE-----RRQV1TTEL1GWC1IQ1L1FDF1KRV1M1CGP1YLL-----  
Egranulosus.XP\_024352417.1\_Posphatidylinositol45b-----SVLQ-----WNN-----SLN1FRL1Y1SN1PLAT1RV1CVV1LQ-----VKR-----RPG1RME1FV1GWAN1MML1DERG1Y1LTVGR1SL-----  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho-----EAPK-----WNQ-----W1LTF1DIK1VAD1IPR1CAK1LCVAV1CG-----VRR1KDE1HWP1LAWAN1P1LYN1YTGK1F1IQGQ1TV-----  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45-----NNPR-----WNE-----W1N1DYI1Y1IPD1PSR1AR1LCS1IC-----VSKR-----KNR1KV1SY1PLAW1N1LQMF1D1FN1K1SRML1RNGEYKF-----  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho-----SNPR-----WNE-----W1TYE1LR1VHD1IPSR1AR1LCS1ICS-----TSK-----RKG1KKE1SVC1IAGN1VNL1FDY1TNR1LQAG1SLR1-----  
Hsapies.NP\_006209.2\_phosphatidylinositol\_4,5-bisp-----SNPR-----WNE-----W1N1DYI1Y1IPD1PSR1AR1LCS1ICS-----VKG1R-----KGAK1EEHC1PLAGN1IN1LFDY1T1LV1SGK1MAL-----  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha-----SNPL-----WNE-----W1LEYE1IA1IPD1PSR1AR1LCS1ICS-----VNRK-----KGK1KED1HCC1LAWN1IN1LFDY1QGN1LQNGY1QL-----  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis-----SNPR-----WSE-----W1LDY1LY1IPD1PSR1AR1LCS1ICF-----EAKK-----HKK1KEV1HY1PLAGN1IN1LFD1FN1RL1QSD1RLS1-----  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis-----WIN-----W1N1LNP1DSI-----HARG1STA-----  
Hsapies.NP\_001269355.1\_phosphatidylinositol\_4,5-b-----EEVL-----WNN-----W1LEF1SIK1IKD1LPK1GALL1N1Q1YCGK1APAL1SSK1AS1E1SPS-----SES1KGK1VQ1LY1V1NLL1LD1HRR1L1RRG1EYVL-----  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45-----ADLR-----WYT-----S1LEF1DIL1LRNV1PKEAR1NAN1IG1FRTK1SVVK1TGT1K1SV-----SSNG1QDV1H1LAW1MMQ1LLN1H1SVLCT1GR1H1AF-----  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45-----NEYQ-----WDE-----W1LEF1DIL1LRNV1PKEAR1NAN1IG1FRTK1SVVK1TGT1K1SV-----SSNG1QDV1H1LAW1MMQ1LLN1H1SVLCT1GR1H1AF-----  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase-----DTFL-----FND1VMD1DY1Q1MRLN1PM1R1TLC1V1IFE-----VTK1MSR1SKK1SSN1KDK1ALK1DVP1Y1KN1PLAW1NTT1F1D1HDK1L1R1TGR1HTL-----  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho-----PDV-----WDD-----W1YMD1IE1VCN1LPRMAR1CIL1C1NSK1KGK1Y1SEK1GK1SSK-----NVK1KEL1PLAW1NTT1F1D1HDK1L1R1TGR1H1AF-----  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bis-----GDAT-----WSE-----T1LEF1DD1VND1LPRMAR1CIA1Y1EAG1KGR1K1SGK1RES1-----SYP1KDS1PLG1W1N1T1M1F1D1YR1H1L1R1AGT1F1L-----  
Hsapies.NP\_006210.1\_phosphatidylinositol\_4,5-bisp-----NDHI-----WNE-----P1LEF1DIL1LRNV1PKEAR1NAN1IG1FRTK1SVVK1TGT1K1SV-----SSNG1QDV1H1LAW1MMQ1LLN1H1SVLCT1GR1H1AF-----  
Hsapies.NP\_005017.3\_phosphatidylinositol\_4,5-bisp-----SEPV-----WQK-----R1LEF1DIL1LRNV1PKEAR1NAN1IG1FRTK1SVVK1TGT1K1SV-----SSNG1QDV1H1LAW1MMQ1LLN1H1SVLCT1GR1H1AF-----  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45-----KKAT-----WNN-----T1LDF1GIS1ARD1VPR1MSR1LCF1SL1V-----I1HGK1KGK1GKE-----KRLAP1NAV1PLAW1N1M1F1D1YK1DML1QQG1K1QL-----  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis-----

Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis KKAT-----WNQ-TLDFGIS-ARDVPRMSRLCFSLLV-----IHGKKGKGKE-----KRLAPNAVPLAWNMIMVFDYKMDLQGGQPKQL  
Egranulosus.XP\_024352493.1\_Phospatidylinositol\_3k -----LDQKTLSSVVEPRIEELKRGSGKMFRLVK----- -----FEFSRS  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 -MIT-----WND-ESEYPM-LDELSRIAKLIKTCQDGHAIQDQWLEKLTIAK-----ARSLDKERSNSKSMLLIEFARTMIEDNECV  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 -NIT-----WSD-DSAYPM-LDELSRIAKLIKTCQDGHAIQDQWLEKLTIAK-----ARTSLDKERSTKSMMLIEFARTIVDNDCI  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase\_-KVD-----WLD-RLTFREI-EMINEKEKRDNSFMYL----- -----MIEFPKVHYNGTHDF  
Hsapies.NP\_002638.2\_phosphatidylinositol\_3-kinase -KVD-----WLD-RLTFREI-EMINESEKRSNFMYL----- -----MVFEFRCVKCDKEYG  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k -KVD-----WLD-RLTFREI-EMVNEKQKRDNSFMYL----- -----MIEFPF INYEEMEYT  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina -KVD-----WLD-RLTFREI-EMINEKQKRDNSFMYL----- -----MVFEPLIHYEGTEFA  
1100a 1120a 1140a 1160a 1180a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 TFNIKSQQHIANSKHVYDPDGMSSNHSTNTTYEIKLFQDSYRFYSNEEITEKLLTINIPTPTVV-----TTAKQNHQ--  
Egranulosus.XP\_024350401.1\_Phospatidylinositol4ph GLWP-----PVAEGLSPEFRSTFAEPNRS-RTAVVIELEFPIYAS-----DFFFPKPP IADDLDTGQ-AGI-----FDVEKRHYIELASQILYT  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 GVID-----STIANRTGYSLRNVSDR-DCSILTVSFQDNQ-----LVFWPDVQARKDMKVKN-----ITEISQEKQ--  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 GIFD-----ATTITRTGYSLRNVFER-NCPLVSVSFLDQ-----AFILPEIQARNDMHAVN-----FTEISRDKQ--  
Hsapies.NP\_001275701.1\_phosphatidylinositol\_4-pho SMTL-----QSEPPVEMITPGV-WDVSQSPSV-----TLQIDFPATGW- EYMKPDSEEMRSNLEEP-----LKECI-  
SMWG-RSDHQQDSESYPIG-TVGNPDDE-ATVLAITVPNFRNAV-PIVFPSPDKEVLQCSAN-MED-----PDSLGSQTHWPSNSHL-  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp GLWP-----ESKVNPIGTCSNLLQPD-----SILQVEFP SHGG-DVIFPPPEPHYEGHYS-----FSILDOTT-  
Aplanci.LOC110975484\_phosphatidylinositol4phospha GLWA-----DSSVNPITGTCSSNLLTKT-----SILQINFEPMQV-LCMFPEIRALEDKVYDF-----DMLEPHNQ--  
Hsapies.NP\_001364263.1\_phosphatidylinositol\_4-pho GLWP-----ATQENPSARWAPNFHQ-DSVILQIDFPTSAF-DIKFTSPPGDKFSPRYE-----FGSLREEDQ--  
Hsapies.NP\_002636.2\_phosphatidylinositol\_4-phosph YLWT-----SSHTNSVFGTVTKGGMVERIVLQVDFPSPAF-DIYITTPQVDRSIIQHQ-----NLETLENDIK--  
Myessoensis.XP\_0021340378.1\_phosphatidylinositol\_4p FLKM-----YSVADPFI-PFCSISQSD-AALHINLNPFGK-QIVFPDVITQKSCCKQ-----FSSLLPEIQ--  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p GMHSMKLRPKTRGAFHGPLI-CSSDITNID-NPILLLQFAEEKNPPTCVHVSQVEEHQLEPVKMQ-----NLESLLQFQ--  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos PLWP-----GDPKPLGTNLQNTIQMD-SLLQLVTLPLDGV-EVEFPNVIHKDLSERD-----FDSLHPDTP--  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 RFWP-----TETNIGKITSASHYGNERTLAGINPDRSYPTIELGFPFSYKY-QIATLSPRNGLAMQAQT-----RHEQLSLRSCAQF--  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase SLWP-----PMDKMLGAP-ARGCHPD-PCPLVLSIEVPPYGG-RIEFFPEHQVEVPKAPHY-----DFASIDANIQ--  
Egranulosus.XP\_024352417.1\_Phospatidylinositol45b PLWRSSFTSPETETHTQLNLAGTVANPDPE-FTLVNLFCHPSNQKA-RIRFPISRFITVIRGAS-----PNPTTATITVSLHSSSDSI-  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho RLWH-----PPCHMDMLNPFPG-QTGSNPDK-APCLELEFCERNKY-SLVFPQFQEISDHANVVOYGEE-----CSPVEFVQPTLEEA-  
Myessoensis.XP\_0021367892.1\_phosphatidylinositol\_45 Hsapiens.NP\_006209.2\_phosphatidylinositol\_4,5-bisb NLWP-----VPHGLEDLLNPFG-VTGSNPKNK-TPCLELEFDWFS- VVKFPDMSVIEEHANVSREAGFSYSHAGLSNRLARDNEIRENDK-  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha NMWS-----VPHGMDLLNPFIG-STGQIPARD-TPCLDLEFDRFAH-VVKYPNDQIQIEYAKWIANVNSEGNLRTGTTSSASNLHGASNSYAENG  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis QLWP-----VPHGLEDEMLNPFIG-TFGPNPRD-SACLEIEFDRFAM-PVSFPKEQIQIEYARWINNLPDSIHARGSTTAPLIPQNTWPMDDKNL  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis PLIP-----LPGQHEIDLNPFPG-QTGSNPDK-APCLELEFCERNKY-SLVFPQFQEISDHANVVOYGEE-----CSPVEFVQPTLEEA-  
Hsapiens.NP\_001269355.1\_phosphatidylinositol\_4,5-b HMWQ-----ISGKGEDQGSFNADKLTSTNPDK-NSMSISILLNLYCH-PIALPKHQITVDPDEGR-----VRAEMPQNLR-  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 KTWP-----MSYSEDSVETHGT-TFATPDGVESTSTAEIHFELOSYMH-PVVFNGPWKTSNPEEQ-----APDEIHGSSDW--  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45 NCWQ-----VNHNDNLDSNNLSPRG-GTMEPNPDE-QAAFIEMMPEYQA-TIMYPSLPEVLEEAARQ-----AVVRESNMLTRGASKSHM-  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase YLWT-----YADDIQSVEVTFHPG-TIENPRKE-ECALVDITFLSSGTG-TVRYPSEEVVLQYAADR-----EQVNRLOQRLAGPEKPI-  
Aplanci.LOC10979051\_phosphatidylinositol\_45bispho YMW- -----ASEDFDLNPFIG-CVGSNPNHD-DATVIELSFHSYKAAHKGTVSPYPPFTVLERAAIT-AA-----NEDTYLTHESINQKIL-  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bis HTWP-----WPDSGAEVLNPFIG-TVSNPNFG-ATALQVHLHSYHTC-PIIYPPFDHKLCECAANVAETQ-----RASDDADQASASSHGA1  
Hsapiens.NP\_006210.1\_phosphatidylinositol\_4,5-bisb HSW- -----SPPDELEEMNPMFG-TVQTNPYTE-NATALHVKFPENKQ-PIYYPYPMFKDIEIKAAEI-----ASSDSANVSRRGGKFL-  
Hsapiens.NP\_005017.3\_phosphatidylinositol\_4,5-bisb YMW- -----SFVDEKGLLNPTG-TVSNPNDE-SAAALLICLPEVAPH-----PVYPALEKILDELGRHS-----ECVHYTEEQ--  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 Hsapiens.NP\_0013393940.1\_phosphatidylinositol\_45bis HLWP-----LKDDITTEHSLHHIG-TVSNPNDE-SAPELLVTFHNFGCSD-PVVFPPIATVLEFAHREERE-----DGQFIYSMPDASNSTL-  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis HLWP-----LKDDITTEHSLHHIG-TVSNPNDE-SAPELLVTFHNFGCSD-PVVFPPIATVLEFAHREERE-----DGQFIYSMPDASNSTL-  
Egranulosus.XP\_024352493.1\_Phospatidylinositol\_3k -YP-----FLKYVPVMPGLDEDARPE-SLVKYPVMPGLDEDARPE-----KWNPHDEMY--  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 VLXF-----EPNCEDITNYPIGHTDLGVDFPE-----MDLENIVE-SKHLKLARSGRKAMDK-----LKPTREQR--  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 VLXF-----EPKCCDVLNYP1GTYDLAVDFPE-IDLENIVE-SKHLKLARSARKALDK-----LKPITLELR-  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase\_SIVH-----YKDAEEKVIKKNYADITVPDFPE-MLMENLVE-AKHHTLARSERSCLTDK-DLKPNASTR-  
Hsapiens.NP\_002638.2\_phosphatidylinositol\_3-kinase IVYY-----EKGDDESSPILTSFELVKKVPDQ-MSMENLVE-SKHHKLARSLSRSGPDR-DLKPNASTR-  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k VIYF-----EPKGDEFFPNYRTHADITVPDFPE-ILAENLVE-SKHHKLARSLSRSGPDR-DMKPDAKTR-  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina VVYF-----EKGDDEILFVRTNADIVSVPDAE-ISLENLVE-SKHHKLARSLSRTRDRLK-PNAGNR-  
1200a 1220a 1240a 1260a 1280a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 -----ESSSDVANG-EALNY-----LLGLVNE-ETQYVMVREPSWLSDCSLAPI-DALPCVLHSILG-EIHR5  
Egranulosus.XP\_024350401.1\_Phospatidylinositol4ph PASL1PPAGRRLDAIGEPKFTITLA-----DLSQHLFIDQLWQHRY-RL-VASS-ELLTTLTIVAAPVQWPEAC  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 -----EELYQLLDRSVLLTNESFVENRKQFQLSANVFEAAYIRNLAREYSDDER-YELWSHRH-YL-IHRP-YALPKLLKSRNV-WDYS  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 -----ETLSRLLRK-PSLLLVDSHSMITSDEREF5MDEC-HFLWSHRH-IV-LRKS-YALPKLLKSRNV-WDYS  
Hsapiens.NP\_001275701.1\_phosphatidylinositol\_4-pho -----KHIAIRLSQK-QTFL-----LLSEKK-RYLWYRF-YC-NNEN-CSLPLVLGAGAP-WERT  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45 -----IQQLQILENDS-TNMY-----QLVEQEK-ELVWLLRY-ECRDNP-HALPHLLSSVKW-YNKD  
Aplanci.LOC110975484\_phosphatidylinositol4phospha -----EQIQEIVAK-ASIS-----KLSEEEE-EMLWEKRR-YC-HTVP-AALPVLVKHAPS-WDAS  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp -----HRIREILDK-DALS-----LNSDEET-MFLWSKRY-YL-HGNA-SALPRILEVAPT-WDAC  
Hsapiens.NP\_001364263.1\_phosphatidylinositol\_4-pho -----RKIKDIMQK-ESLY-----WLTDADK-KRLWEKRY-YC-HSEV-SSLPVLVLASAPS-WEWAK  
Hsapiens.NP\_002636.2\_phosphatidylinositol\_4-phosph -----KRLDILHK-DSSL-----GLSKEDK-AFLWEKRY-YC-FKHP-NCLPKLILASAPN-WKWN  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p -----KIARDTMEK-DCVS-----SCQADEL-EILWRYRN-YL-HDFF-DALPWLIGQVVR-WDAS  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p -----DALQCVLGH-AKLTVPGLC-----NLSPTKE-AVLWNHRRHIIGAPDCATAG-VGLPILLRCVPT-WSPSS  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos -----EELMDIVEK-DSSL-----RLTDDEK-EVWEKRR-YL-YQLP-NALPKVLMAAHS-WDAC  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 -----DLEDNVQSD5FVWLKRAIDF-----ELTEQSR-VELWDORRY-EC-HMVP-NCLPKLILKCVK-SNRD  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase -----EELDLTAEI-----GYTGATERREVVWEKRL-YL-QSYP-NALPKVLMAAHS-WDYN  
Egranulosus.XP\_024352417.1\_Phospatidylinositol45b -----RVIRDLIHR-DFPY-----ELSEQDK-ALLWIRB-SCCRLRYPAESIPWLVQAVW-ERREL  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis -----KRLMNVSR-DPLS-----PLTQDER-MLLWCRG-LO-KEIP-QSLPKLLSVKW-EDREL  
Cintestinalis.XP\_0021367892.1\_phosphatidylinositol\_45 Hsapiens.NP\_006209.2\_phosphatidylinositol\_4,5-bisb -----ELVIDIIRK-DPLS-----EYDQEK-EILWKRRE-YL-QQHP-HALPKVLVSAKW-NDRQ  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha -----KQLDEIIGR-DTLH-----EMSEQDK-ELVWKYRS-YC-KVRP-NSLPLKLNVAKW-NSRDD  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho -----EQLKAISTR-DPLS-----EITEQEK-DFLWSHRH-YC-VTIP-EILPKLLSVKW-NSRDE  
Hsapiens.NP\_002638.2\_phosphatidylinositol\_4,5-bisb DSEL-----EQLHEILRK-DPLS-----DFSEQEK-DLVWKMRR-KC-QEIQ-DSLPRLLLQSKR-SRDE  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45bis Q-----EDLIEVLKR-DPLA-----EISEQEK-ELLWKMRN-FCKKNHP-DSLPKLLAAVW-DSRKD  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis -----EDLIEVLKR-DPLA-----EISEQEK-ELLWKMRN-FCKKNHP-DSLPKLLAAVW-DSRKD  
Hsapiens.NP\_001269355.1\_phosphatidylinositol\_4,5-b -----KQLEAIAT-DPLN-----PLTAEDK-ELLWHFRY-ES-LKHP-KATPKLFSVKW-GQEI  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 -----KKLEEIIQS-DTLT-----ELTLEDK-ALLKYRS-YC-RGRA-NSLPKVLQAVDA-ASLDS  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45 -----TQLEDEVVRK-DRFD-----DLFDDDK-SLLWRLRI-DCREKYP-EALSKVILASAKW-NSYKS  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase -----KELKELMANYITGLDKRY-EMVDQDR-NAIWERNR-DILREL-EELSILHGVVY-KERDD  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho -----EELRMVVEK-EPLE-----PLSEQEI-TDLWNARQ-DCRDHIP-HSLPRLITCVWR-SDCK  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisb -----DQLQCILDR-ELMA-----PMFDQDM-EMIWLQRD-KIHLEFP-HALAKLLSSVKW-NNHRD  
Hsapiens.NP\_006210.1\_phosphatidylinositol\_4,5-bisb -----PVLKEILDR-DPLS-----QLCENEM-DLITWLQK-DCREIFF-QSLPKLLLSIKW-NKLED  
Myessoensis.XP\_005017.3\_phosphatidylinositol\_4,5-bisb -----LQLEILR-REGS-----ELYHEK-DLVWKLRR-EVQEHF-EALARLLLVTKW-NKHD  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis -----QDLENMILY-DFPO-----QLHEQEK-ETVWNLRE-ECKKHFF-ECLPKLLSCVTV-DSHEK  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis -----QDLENMILY-DFPO-----QLHEQEK-ETVWNLRE-ECKKHFF-ECLPKLLSCVTV-DSHEK  
Egranulosus.XP\_024352493.1\_Phospatidylinositol\_3k -----FKMRNIRY-VAVD-----RERIPNK-EMERLRT-----ALATFLLSVRW-QYPEQ  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 -----DKIMQILAY-PPGQ-----FLTIEEQ-DLVWKYRF-FL-SQHK-KALAFKLCQVHW-DKEEE  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 -----DKIMQILAY-PPGH-----YLSIEEQ-DLVWKYRF-FL-SQHK-KALAFKLCQVHW-DKEEE  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase\_ -----DQLMSIVAY-NPTK-----VLSSEEA-DLVWKYRF-FL-TNQK-PALTFKLKVNV-DVPEH  
Hsapiens.NP\_002638.2\_phosphatidylinositol\_3-kinase -----DQLNIVSY-PTK-----QLTYEEQ-DLVWKYRF-FL-TNQK-KALTFKLKVNV-DLQK  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k -----DLLNAIATY-PPFK-----PLTSEEQ-DLWKFRR-FL-CSQK-KALTFKLKVNV-KLHE  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina -----DQNTILIGY-PTK-----TLTSEEQ-DLWKFRR-FL-SEKK-KALTFKLKVNV-DIPQE  
1300a 1320a 1340a 1360a 1380a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 ILANGNNILKIYEK-----LFSYIKLIDS--W-P-PM5F-EMCFFLLDGT-----LPDAHIRSVYAVSQLER-L  
Egranulosus.XP\_024350401.1\_Phospatidylinositol4ph RRASQPTKSAHDKILWMLLSQLYSLLQ--S-T-PLSP-AAALRLLLP-----VADQFFRHMAVWSCISQ-F  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 -----LDIMGYGVNE-IHQHIDE-IESFELLPS-----FPDMYIRSCAYRSLISQ-F  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 -----LIDIYALNE-VIQNRTIDE-IEALELLPA-----FPDMYIRYAVKSLISCL  
Hsapiens.NP\_001275701.1\_phosphatidylinositol\_4-pho -----VSEMHITLRR--W-T-FSQP-LEALGLTSS-----FPDQEKIRKVAQQLDN-L  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45 -----VAKMQALLQT--W-R-QQFV-DCALSLLDFN-----FPDRMVRKRAIDWLDNL

Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp -----LADIYSLVHN---W--S-PLTP-VSALELLHPH-----FADKEVRATAISWMQH-I  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha -----LADIYSLLRN---W--K-PVKP-IQTQLLHPR-----FADREVRRTAVKMMQS-I  
Hsapie ns.NP\_001364263.1\_phosphatidylinositol\_4-pho -----LPDIYVLLKQ---W--T-HMNH-QDALGLLHAT-----FPDQEVRRMAVQWIGS-L  
Hsapie ns.NP\_002636.2\_phosphatidylinositol\_4-phosph -----LAKTYSLLHQ---W--P-ALYP-LIALELLDSK-----FADQEVRS LAVTWIEA-I  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p -----LSDVYSLLQS---W--G-GIDP-MQAELELLPQ-----YPDNKVRFAVDCLCK-M  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p PH-----PKAAYQLSS---W--PQRQP-EESLALLSGO-----FPDTRVRTAARWLEA-A  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos -----LADTYSMIYQ---W--A-PLGS-VEAMQLLPQ-----FVDEKVRDFAVKMMRE-I  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 -----VLEAYKIVEN---WPTK-NIDPLMTALELLDAD-----YPDPFVRFSAVRLLDTRI  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase -----LIDLHALLHS---W--A-PLSP-LQSLELLLP-----YPDAKVRKAEVWISK-M  
Egranulosus.XP\_024352417.1\_Posphatidylinositol45b -----VEEFYRLlav---W--PRPLV-ETSLQLLGVAGLAGTAAAGTFGEGGGGSYVMAGGRITGVADPLVRDIAVQGLQARL  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho -----VKEFYSLLAS---W--P-RLFP-EYAIELLDCK-----YPDPKVRRFATECLDVGL  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 -----VAQLYMMLKK---W--P-QLKP-EVALELLDCS-----FPDIQLRFAVTCFEMGL  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho -----VSLIYLILKO---W--D-LVDN-ETSLGLLDCS-----YADLGVRTFAVESLEQNL  
Hsapie ns.NP\_006209.2\_phosphatidylinositol\_4,5-bisp -----VAQMYCLVKD---W--P-PIKP-EQAMELLDCN-----YDPMVRGFAVRCLEXYL  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha -----VSQMYMLLEN---W--P-QVSP-ETALELLDCT-----YADLKVRFADVCLRKT  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis -----VAQLYMLLRE---W--S-VVSP-ETALELLDFT-----YNDLYVRRFAVKCLDQGL  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis -----VAQLYMLLRE---W--S-VVSP-ETALELLDFT-----YNDLYVRRFAVKCLDQGL  
Hsapie ns.NP\_001269355.1\_phosphatidylinositol\_4,5-b -----VAKTYQLLARREVWDQS-ALDV-GLTMQLLDCN-----FSDENVRAIQVKLES-L  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 -----VUDMHALLNK---W--P-ALSV-EVALELLDSQ-----YEDEKVRSLAVKTLKC-L  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45 -----VAMVQAMLSN---W--T-PLSP-ERAMELLDCQ-----YADEHVRDFAVKCLN-L  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase -----VADMWVLLQK---W--P-LISI-ERSLELLDYA-----YDPAPVRRFAIRCLHF-L  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho -----VAQMQUALQT---W--P-ELKP-EAAMELLDYR-----YDPLSVRRFAVECLSN-L  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bis -----VAQMQUALNA---W--S-PLLP-HAAMELLDYN-----YADQAVRAFVAVKCLNQ-L  
Hsapie ns.NP\_006210.1\_phosphatidylinositol\_4,5-bisp -----VQQLALLQT---W--P-KLPP-REALELLDFN-----YPDQVVRFAVAGCLRQ-M  
Hsapie ns.NP\_005017.3\_phosphatidylinositol\_4,5-bisp -----VAQMYLLCS---W--P-ELPV-LSALELLDFS-----FPDCHVGSFAIKSLRK-L  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 -----M-----  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis -----VAVMQALLSN---W--P-KILQ-EHALELLDCS-----YASKAVRKFAVECLKD-M  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis -----VAVMQALLSN---W--P-KILQ-EHALELLDCS-----YASKAVRKFAVECLKD-M  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k -----VSQAVELLSS---WSPS-CVSP-EAVLELLTLT-----YTHPVCRRFAISRLQE-A  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 -----VQKALDLLQK---W--V-TMDT-EDALELLGPS-----YHHPKVRSYAVSRLRQ-A  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 -----VKQALDLLQK---W--V-TMDT-EDALELLGPT-----YHHPKVRSYAVSRLRQ-T  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase -----ARQALELLRK---W--N-PIDV-ADALELLSPQ-----FKNPTVRKRYAVSRLKE-A  
Hsapie ns.NP\_002638.2\_phosphatidylinositol\_3-kinase -----ARQALELLGK---W--K-FMDV-EDSLELLSSH-----YTNPTRRYAVARLRQ-A  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k -----VRQALELLSR---W--S-PIDA-EDALELLSPV-----YQHPTVRKRYAVSRLRQ-A  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina -----VKQALDLMOK---W--S-PIDP-EDALELLCPA-----FTYPAVRKYAVSRLQK-A  
1400Å 1420Å 1440Å 1460Å 1480Å  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 PNHFLFYIPQILQAAQLQFHEYID-----  
Egranulosus.XP\_024350401.1\_Posphatidylinositol4ph PPDGLICYLPCLE-AYNDYLDLW-----  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 SSYDLFIYLPQLLQ-IKFDYDYS-----  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 KSSDLLIYLPQLLQ-IKFDYDHS-----  
Hsapie ns.NP\_001275701.1\_phosphatidylinositol\_4-pho LNDELLEYLPQLQV-AVKFEWNLE-----  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45 NDNELSQYMLQVQ-SLKFEAYFL-----  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp PDDELYDFLPQLQV-ALRYECYHD-----  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha SDEELCDYLPQLQV-ALKYESYHD-----  
Hsapie ns.NP\_001364263.1\_phosphatidylinositol\_4-pho SDAELLDYLPQLQV-ALKYECYLD-----  
Hsapie ns.NP\_002636.2\_phosphatidylinositol\_4-phosph SDDLTDLPLQFQV-ALKYEIYLN-----  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p ATDDLIEFPQLQI-ALKYESYHA-----  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p EDMDIVSWLSQVQ-ALRQEQRHD-----  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos SDELCNFPQLQVQ-ALKFENYSN-----  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 DDDRLLPVILQIVQ-AVKNPEYHD-----  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase PNDQLVDFLPQLQV-SLKHDTYEG-----  
Egranulosus.XP\_024352417.1\_Posphatidylinositol45b SNADLADYLLQLQV-VVTEAFVL-----  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho TDDGVLYKYLQVLT-AIKFEFYLD-----  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 TDDKLQQLLQLQV-ALKFEPHLD-----  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho TDEELLQYILQLQV-VLKYESYLD-----  
Hsapie ns.NP\_006209.2\_phosphatidylinositol\_4,5-bisp TDDKLSQYILQLQV-VLKYESQYLD-----  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha TDDKLSQYLLQLQV-VLKYEYPLD-----  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis DDDCLSRYLQLQV-VLKYEYPLD-----  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis DDDCLSRYLQLQV-VLKYEYPLD-----  
Hsapie ns.NP\_001269355.1\_phosphatidylinositol\_4,5-b EDDDLVHYLLQLQV-AVKFEPYHD-----  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 SNTKLHAYLLQLTQ-VLKFEPYHD-----  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45 RDDELQQYMLQVQ-VVKFDSYLN-----  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase KDEDLLLYLLQLQV-AIKHESYLE-----  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho VDSQLSQYLLQLQV-ALKYETHLD-----  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph TDELSQYLLQLQV-VLKYEAYLD-----  
Hsapie ns.NP\_006210.1\_phosphatidylinositol\_4,5-bisp SDELSQYLLQLQV-VLKYEYPLD-----  
Hsapie ns.NP\_005017.3\_phosphatidylinositol\_4,5-bisp TDELFQYLLQLQV-VLKYESYLD-----  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 -----  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis SDTDLQYLLQLQV-VLKYEAYLE-----  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis SDTDLQYLLQLQV-VLKYEAYLE-----  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k SDDDIELYLYQLQV-ALRYENHEILRRSKIPTLGVDSEDQKEKEGVALKKTEG-----KADEFPSSVRSRPSKRPALGPD  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 SDEDLLEYLLQLQV-ALRYERYDLINAFVVDITGEEQYSLNGSGENYANVVPVSDSISDDPTKFSPIE-----VMSLRASSHDSILDALGGISPKSEESPEKLEK  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 SDEDLLEYLLQLQV-ALRYERYDLNPPFVDSVVEEQTNNSNGVYENFASAIQSDSTSSDLIKSSLSSE-----HVLPHPLAESPDVPTSIAVQPAILSQDHAKRKD  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase DDEELLEYLLQLQV-ALKYENFDDIKASQAPSTGTQVLSGYAESSVQKSSKGI-----HVLPHPLAESPDVPTSIAVQPAILSQDHAKRKD  
Hsapie ns.NP\_002638.2\_phosphatidylinositol\_3-kinase DDEDLLEYLLQLQV-ALKYENFDDIKNGLEPTKQSDSSSVSNVSNNGSINSAEIDSSQITISPLPSVSSPPSPASKTKVEPDGNLE-----  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k DDEDLLEYLYQLQV-ALKYENFEEIKNGVDNLSTRDISAADDGTGLYPEKDRS-----VMSLRASSHDSILDALGGISPKSEESPEKLEK  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina DDEDLLEYLYQLQV-ALKYENFEEIRAGQETSPSNRQVSGSVLGESAMSTKTSHIQGDHGTGRTSRASSTSNAPIMSPGESGSPDIMEAIRAASVDEN-----  
1500Å 1520Å 1540Å 1560Å 1580Å  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 -----TSLRILILKRALCHRS-IGQRLFWTL-----KDISTRNGR-----VMFEIYKTYC-----GLTIANDLQTVTLTLK  
Egranulosus.XP\_024350401.1\_Posphatidylinositol4ph -----SGLVSLLLHRSTVSLR-FCNALYWSIESMLM-----SPKWYSQRLL-----LLRTAIVWLH-----GSRLEATWSLQADVLAR  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 -----SPIIEYLLKQCQNYR-LAHKFSWYLRQLVL-----TENIHCI-RYY-----YIFLALLYVM-----NDFRFIELQNEYDLCVN  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 -----SILIEYLLKQSLDHR-LAHKLYWHLRQLLI-----TEHLHYI-RYY-----YFFLSLLYV-----DENFRNELQHEYNLCIN  
Hsapie ns.NP\_001275701.1\_phosphatidylinositol\_4-pho -----SPLVQLLLHRSLSQSIQ-VAHRLYWLKNAE-----NEAYFKS-WYQ-----KLALALQFCA-----GKALNDEFKQEKLIKI  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45 -----SDLATFLLERCLCNQH-LGHQLFWLLKSEL-----HDSKVTV-QFG-----LILEVYLRFS-----RDHI-PNICKQOESLSK  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp -----SALARFLIERSLASVR-IAQQLYWLKDNV-----GDQFGQ-RFQ-----MVLGALLSTC-----GRALRTEFEKQVQLIR  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha -----SALARFLIERSIQSIR-VSHFLWCCKDSL-----REHQYKQ-RIE-----MILGALLSIC-----SKGRLOQFRLEQALIN  
Hsapie ns.NP\_001364263.1\_phosphatidylinositol\_4-pho -----SPLVRFLLKRAVSDLR-VTHYFWLLKDKGL-----KDSQFSI-RYQ-----YLLAALLCCC-----GKGLREEFNRCQWLIVN  
Hsapie ns.NP\_002636.2\_phosphatidylinositol\_4-phosph -----SSLVQFLLSRALGNIQ-IAHNLVWLKDAL-----HDVQFST-RYE-----HVLGALLSVG-----GKRLREELLKQTKVLVQ  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p -----SLSRLLLEQSCSKSIR-FAHKFWLLKGAA-----QDSTYKH-RYE-----LMFVALSVSA-----GDALYQEFKQOEELVIK  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p -----SPLARLLIERSLGNQH-IAHNLVWLKRENN-----TDLEFGP-RYK-----IINAALLTTC-----GSAKKKEFDKVEYFLKK  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos -----TSLVHFLDRAVTSIR-VAHNLVWLKKEAA-----SDFLYRS-RYQ-----LVFGALLSVA-----GALCATFEKQOEELAR  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 -----SALARFLIERSLGNQ-VGHFWLWLSRAEL-----KNPQYKV-RFG-----LLEIYAVRYC-----GEYA-EDLGRQVETDK  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase -----SAMARFLIERSCLPSR-FAHHMYLWVHSLDPPHNSIGAAVMVDQYEDSOTQVRYRRNMMLRALMAIC-----GKMKLMQYQYHRMCKR  
Egranulosus.XP\_024352417.1\_Posphatidylinositol45b -----NPLTCPLIQRALDCPTLIGVLCRWLHRSQ-----DNPDLRL-RFG-----LILDALCRGF-----GRLLIFVHEQYVNLAR  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho -----NSLVRFLLKRALIKNIR-IGHVFLFWHLKSE-----YDVQVSL-QFG-----LLEAYCRSC-----GPYIL-AQLVROTEILT  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 -----SPLARFLIERSIQSIR-IOQNFWLLKSE-----HHTNIRV-RFG-----LILEVYLRFS-----GMYL-SLRQVEALDK  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho -----NPLARFLMKRSLYNHR-IGHFVFWHLKSE-----HKPKVSQ-RFG-----LMLEYCRAL-----GPYIL-KLVVQKVEATDK  
Hsapie ns.NP\_006209.2\_phosphatidylinositol\_4,5-bisp -----NLLVRFLLKALTNQR-IGHFVFWHLKSE-----HNKTVSQ-RFG-----LLESYCRAC-----GMYL-KHLNRQVEAMEK  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha -----NPLARVFLERSLLNQ-IGHFVFWHLKAE-----SNKNVRI-RFG-----LLEIYCRAC-----GAYL-LNLRQVEAQEK

Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis ----NDLARFLKRALLNQN-IGHFLFWHLKSEL-----YQVATRQ-RFG----LMLEAFRCGC-----GAYL-KSLVRQVEALDK  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis ----NDLARFLKRALLNQN-IGHFLFWHLKSEL-----YQVATRQ-RFG----LMLEAFRCGC-----GAYL-KSLVRQVEALDK  
Hsapies.NP\_001269355.1\_phosphatidylinositol\_4\_5-b ----SALARFLLKRGRLNRK-IGHFLFWFLRSEI-----AQSRRHYQORFA-VILEAYLRGC-----GTAMLHDFTOQVQVIEM  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 ----SALARFLLTRALQSKR-IGHYFFWFRLRSEI-----ENPHVSQ-RYS----LILEAYLRGC-----GSNMKLEFSKQCAVNT  
Hsapies.NP\_001269355.1\_phosphatidylinositol\_4\_5-b ----SSLVRFILRRAWSNRK-IGHFLFWHLKASEI-----SNTLLNL-RFA----LIMEAYLYGN-----LPHV-KTLYKQOEALNK  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase ----SDLVVFLERLRNRQ-IGHYFFFWHLRSEM-----QTPSMQT-RFG----LLEVYLKGC-----KHHV-APLRKQLHVLEK  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho ----CELGQFLLRRLANQR-IGHFLFWHLRSEM-----HQPAVST-RFG----LMLEAYCRGS-----IAHM-ASLIRQVESLNK  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph ----CELARFLLSRGLNNQR-IGHFLFWHLRSEM-----HNPASVS-RFG----LLEAYCRGC-----VTHM-KALSQMEALS  
Hsapies.NP\_006210.1\_phosphatidylinositol\_4\_5-bis ----CALSRFLLERLRNRK-IGHFLFWHLRSEV-----HIPASVS-QFG----VILEAYCRGS-----VGHM-KVLSKQVEALNK  
Hsapies.NP\_005017.3\_phosphatidylinositol\_4\_5-bis ----CELTKFLDLRALANRK-IGHFLFWHLRSEM-----HVPSVAL-RFG----LILEAYCRGS-----THHM-KVLMKQGEALS  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 ----NDLSEFLMQRALANQ-IGHYFFFWLLRSEM-----HVPSVSV-KFG----LILEAYCRGA-----VLHM-KTLQRQVEALEK  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis ----NDLSEFLMQRALANQ-IGHYFFFWLLRSEM-----HVPSVSV-KFG----LILEAYCRGA-----VLHM-KTLQRQVEALEK  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k ----DIPWKDTLATFLQGRGKFR-LANYLYWFLHLEAHEDTP-----STSEVKA-MFS-----HVLKRFMAALECGSEHRSWHSDDLNQTKFVNG  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 ----VDLSTFLQRAACEKPV-VANYLFWYAYVECCNSSA-----KDKAIFD-MYQ-AFVERLSITLTKNQEQTQVRLATEAKKFFVDK  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 ----IDLSTFFQRAACEKPI-VAYYLFWYAYVECCNSSS-----KDKTTS-D-MYQ-AFVNRLLSTLTKNQEQTQVRLSIEAKKFFVDK  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase ----E-----MDLATFLIDRACHNVS-LANYLYWVLLVESDDQDT-----VDTRVTO-MYQ-MVLKRFNVALIREGNEGLKVRTLTLRQGLTNQ  
Hsapies.NP\_002638.2\_phosphatidylinositol\_3-kinase ----QDLCTFLISRACKNST-LANYLYWVLLVECEDQDTQ-----RDPKTHE-MYL-NVMRFRSQALLKGDKSVRWRSLAAQQTFFVDR  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k ----E-----MDLATFLISRACNNSN-LANFYFWLVSVESIDSDTSA-----KNQKYTE-MYI-VMMKFRSQALFKGGDPDSRLRRATISRQMQMIFK  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina 1600a 1620a 1640a 1660a 1680a  
RLEDQMQLATFLISRASKNF-IGHFLFWLVVCEDDQNSAS-----KDEKIS-MYI-TVLKRFSQLMRLGLPEYKRLMSIASQKTFQDK  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 LNTINQIRIRSNKIKDASG---MRQALIERL-----KESDK-----NSWRCVSLDDTGCFLGTLTILIEECQVYDS  
Egranulosus.XP\_024350401.1\_Posphatidylinositol\_4ph IRQTAEAVKVAQDKT---KYRTLQEBL---ESI-QNFLDSRFKPKLEEAGASSPVSVLRSPNPVPLP TPDARFLPYDFGAFACNSFRTGACSYITS  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 LNRIGSEIKTKNFN---RGYLSSEQL---KELNKDDFFQS-----GQSRCLRPCQFSFKTNINSDVSCSYITS  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 LKSGIKLKSYYKANN---KGNFLFQEL---KEINSGFFQS-----NKLTCRLPCQFNMTNSLOVNSCSYFNS  
Hsapies.NP\_001275701.1\_phosphatidylinositol\_4-ph LGDIGERVKSASDHQ---RQEVLLKKEI---GRL-EEFFQ-----DVNTHCLPLNPKATKIGDHLNDCSYFNS  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45 LVLCLNTIAQRKSSKNVVK---AADRTRPLA---QRM-ITYTEP-----LT-LNLYTPLTFLPVKGVLRHKECNVMS  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp LHDVAVKVSASAKSA---RQAMLQAM---EKINNK-----MUVFFRLPNTPLFVKSGINCFQSCSYFNS  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha LNTIAEQVKGAKDAS---RMSLLHGGLESVAE-----LDSNVHLP-TNF-SLEVRGINVQNCAYYS  
Hsapies.NP\_001364263.1\_phosphatidylinositol\_4-pho LAKLAQOVREAAPSA---RQSGILRTGL---EEV-KQFFA-----LNGSCLRLPSFLSLVKGIVPRDCSYFNS  
Hsapies.NP\_002636.2\_phosphatidylinositol\_4-phosph LGGVAEKVQASGSA---RQVVLQRSM---ERVQSFFQKN---KCRPLPKSLVAKELNKSCSYFSS  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p LTNAAEKVQVSKKEGDT---LKREMQAVF---ELFED-----RGSILLYPNFGLAVSGVDLKSCSYFNS  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p VHRVAESVKEAKDSI---KQSTLDEL---SKISSRIGGH-----KFRVPTNPALIANGINVNSCSYFNS  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos LGEIADKVIAKQKDATGLH-ELEPLYQIL---HDT-----TTMLPNFMEVGLDIRTCSYFNS  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 LTFIAETIQNSTHDELHN---QKGYLAHLH---TRE-GYTQN---LQ-YFRSPVDYNIELGQDLLEHCRIMSS  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase LTTIAESVKEAKESM---RQKSLAAGM---DEVHQDLLEQ-----PTCLPLGELVEITGVSVRNCSYFNS  
Egranulosus.XP\_024352417.1\_Posphatidylinositol\_45b LDTLAI5VKKRIAEDEEQRAFELHRSEV---RRP-----LE-GILSLPRFSIKLGPVVEQCTVKRS  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho LKNVNTILQKDDNI---SQRKLKEYL---CRD-DYQEI---LQ-NNLSPLNPAFYKRLGNLRNCSYKVS  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 LTKLTDMLKSVDREDD---HLRVLQELH---RQP-DYQEA---LT-NFMSPLNNSHRLGDLINLDCRVKMS  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho LTNLITSLSVRKDDTNKD---RLKYLSDQM---QQA-DFIDA---LQ-HFPLPLDHPHTLGLRLKVEECRLSS  
Hsapies.NP\_006209.2\_phosphatidylinositol\_4\_5-bis LNLNLDLQKQEKDDTKQV---QMKFVLQVM---RRP-DFMDA---LQ-GELSPINPAHQGLNLRLEECRIMSS  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha LTMLETTLQEREKEKKDDT---RQKSLGKQINQ---DYLEA---LQ-NFPCPLNPHSHLGLTLIKECKVMS  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis LTMLTNKLKNEREDQ---QKAVLLDHI---RQM-DYLEA---LQ-SFQSPNNSHILGDLIEHECVKTS  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis LTMLTNKLKNEREDQ---QKAVLLDHI---RQM-DYLEA---LQ-SFQSPNNSHILGDLIEHECVKTS  
Hsapies.NP\_001269355.1\_phosphatidylinositol\_4\_5-b LQKVTLTDIKLSAEKYDVSSQVSIQKQKL---ENLQNSQLPE-----SFRVPYDPLGLKAGALATECKVMAS  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 LKMFSSSILSMKLSKNSNGL-ETILRLRQL---ARIS-----LPETFKAPDFPRTLGLRLMAEKSKIMDS  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45 MRTLNERVKGSEFSQDKIKVRAQALQKTA---QND-SFKEA---LT-SVECPLENDLLEKLVCKVMS  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase LKQGSLLAKKSKSEK---VTKMLQDFIL---RDQRNSAVFQ---NIQNP-LNPSFRCSGVTPDRCKVMS  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho MRSVNELIKSRQAQQTNSL-LQTMMDRII---NQE-SYNEA---LS-FNVSPLSKYKLGRLKECKT ISS  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph LKTVNELVKKQAIKNEKHQSLSEAMKACL---KQT-SYHDA---LS-RHNHVEPQFKQLGDSNDHCKFRDS  
Hsapies.NP\_006210.1\_phosphatidylinositol\_4\_5-bis LKTNLNLIKLNKAVKLNRAK---GKEAMHTCL---RQS-AYREA---LS-DLQSPNLNPKVILSELVECKVMS  
Hsapies.NP\_005017.3\_phosphatidylinositol\_4\_5-bis LKALNDFVLKSSQTKPKPQ---TKELMHLCM---RQE-AYLEA---LS-HLQSPLDSTLLAEVCEVQCTFMS  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 LRSINILVKGQYVS-----KRVGLKHCT-----  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis LRSINILVKGQYSGKKQK---ALQDMHVDL---RQK-AYMEA---LS-DLRAPLDPAWGCHKLIEKCKVMS  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis LYELVKKRVHEDASKRIR---KMEILKNLL---RTEGASLTQ---FERPLFPFVDFNFIATVDAOSDALTFSK  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k LVELTNIVKRQSGSAKV---KEDKIRSLLAGDSSPVKFNFL---NDFPILPLDPDVKIRIGIPEKTRIFKS  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 LVELTNIVKRQSGTAKV---KEEKIRSLLAGDSSPVKFNFL---NDFPILPLDPEIQCCGINPKDKITFKS  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 LKLKMLKQVARESSNRKK---KIERILQLLSDEST---SFSFV---AFDPLPLDHPHEIKVGLVAKKASIFKS  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase LVHLMKAVQRESGNRRK---KNERJLQGLDNKNNMLSDVEL---IPLPLEPQVKIRIGIPEKATLFSK  
Hsapies.NP\_002638.2\_phosphatidylinositol\_3-kinase LVDLVKVMVSRESGNRRK---KSERIQALL---QDQVECNINF---DFEPLPLDPLDPVYKGIIPETALFKS  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k LVQLVKMVTRESGSRTK---KIEKIQALLTDHETF---KFNFA---GDFPILPLDPEVVKIKALLPKDATLFSK  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina 1700a 1720a 1740a 1760a 1780a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 FMRPFKLWVENALNP---KHERFELIYKIGDGLRQDVLTLQVFRFLDSIWKKNSIDQANDDLVQLQNLHMTFYDMVCTSETTGF IRIVPNAYITILNIY  
Egranulosus.XP\_024350401.1\_Posphatidylinositol\_4ph FTRCIRLTLSGID---GEMKRCIFYKGGDGLRQDMLLQCLIHVADRIWMQGMMD---LCIPHETVMPTEKRGILIEPVMSSETLRLNQ  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 LTLPMRIVNSSLSP---LHKLQYALYKIGDGLRQDQVILQLLTKMDRIWQANNFD---FHLSLENVVQTEQCQCG IEMIITDSETLLDICE  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 LTVPIKLVNPLDSS---CEKYYSIVKIGDGLRQDQVILQVLFCSMDRIWANDFD---FRLSLENVVQTEQCQCG IEMIITDSETLREIES  
Hsapies.NP\_001275701.1\_phosphatidylinositol\_4-ph NALPLKTIITINANPM---GKNISITIFKAGDGLRQDMLVLQILQVMDNIWLQEGLD---MQMIITYRCLSTGDKQGLVQMPDVAITLAKIHR  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 KKKPLKLVHWTNADER---QDGLIYKNGDGLRQDMLTLQMTIMDNINWREBGLD---LR-----  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp NATPLRLVFCNADSL---GEEIQAMVYCGDGLRQDMLTLQMIIRIMNKLWLRGLD---LRMITFACVATGCKEAGMVEIIPKSETLKRKIQT  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha FTVPLKLVLFNADP---AEDVTIMYKAGEDMRQDMLTMQMIRIMDKLWLRSEGLD---LRMITFRCMATGLNRLGVELVGESETMRKIQV  
Hsapies.NP\_001364263.1\_phosphatidylinositol\_4-pho NAVPLKLSFQNVPLD---GENIRVIFKGGDGLRQDMLTLQMIIRIMSKIVWQEGLD---MRMVFRCFSTGRRGMVEMIPNAETLRKIQV  
Hsapies.NP\_002636.2\_phosphatidylinositol\_4-phosph NAVPLKLVFMNADPM---GEEINVMYKGGDGLRQDMLALQMIKIMDKIWLKEGLD---LRMVFICLSTGDRGMVLPASDITLRKIQV  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p NALPLKLVFKSTNIK---AEP IYVMYKGGDGLRQDMLTMQVIMDKLWLRAGLD---LRMITFACLATGPKRGVIELVMESDITLRKIQV  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p NAIP IKISPMNSCKN---GGEINIMYKGGDGLRQDALTQMLIRVMENMWLAEGLD---LRIVTDCPLTGLNQLGVELIGESKTRLEIQS  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos NAFPLKLVFKNVEPT---AASDIMPFGSGDGLRQDMLTLQVLRIMDKLWMREGLD---LKIITFMCVPTASKKGMVELIETECILRKIQV  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 ARRP LWRVWNTGSEY-AEHYPTFDLIFPKYGGDGLRQDMLTQFIQMTD I IWKADGLD---LSLPLYGCLATGYCSGLIEVVNKAKTITMNIQV  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase NTLPLKINFPVGPD---AESLPAIFKGGDGLQDQDLTQILIRIMNKMWLAERLD---LRMTFNCVPTGYKSGMIELVSEATILRKIQV  
Egranulosus.XP\_024352417.1\_Posphatidylinositol\_45b KKRPLWLVWNPDLN-GFHHHKIHLQLFKHGGDGLRQDMLTLQILKLVMDHIWKDEGLN---LDLTYYDCLATGDMGMLIEV-----RVRS  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho AKRP IILQWHSADPL-AQYQFQVHGLFKNGDGLRQDMLTLQVLRVMDIWOSSDDL---LCISPYICISGMHNVNIEIQAETVNMVQK  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho KKHPLWLVWNPDSL-ADVWFPNYKIFPKHGGDGLRQDMLTLQLLGVMVDLWKDAGLD---LRLPIYGCVCSTGKDVGVQIVQVROAETLMEIQS  
Hsapies.NP\_006209.2\_phosphatidylinositol\_4\_5-bis AKRPLWLVWNPNDIM-SELLFQNNIEIFPKNGDGLRQDMLTLQIIRIMENIWNQNGLD---LRLPIYGCLSIGDVCGLIEVVNRNSHTMQIQS  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha AKRPLWLVWNPDDPM-ADLLFKDWKIIFPKNGDGLRQDMLTLQVIGIMDNIWQTEGLD---LRLPIYGCLSAGNCGMIEVVNRNKTVMQIQV  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis KKRPLWLVWKNPDDM-ADLLFKDWKIIFPKNGDGLRQDMLTLQVIGIMDNIWQEEGLD---LRMSPYGCLSTGSNNVGMIEAVNRNSKTVLGIQK  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis KKRPLWLVWKNPDDM-ADLLFKDWKIIFPKNGDGLRQDMLTLQVIGIMDNIWQEEGLD---LRMSPYGCLSTGSNNVGMIEAVNRNSKTVLGIQK  
Hsapies.NP\_001269355.1\_phosphatidylinositol\_4\_5-b KKKPLWLEFEKADPT---ALSNETIGIFPKHGGDGLRQDMLTLQILRLIMESIWETESLD---LCLPLYGCLSTGDKIGMIEIVPKDATTIAKIQQ  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 KKKPLWLEFENADENVINESTSVIRIIFPKGGDGLRQDMLTLQMLSLMGQLWNEEGLD---LHLLPYGCLSTGLQVGIQIIVPNATTIARIQK  
Aplanci.LOC109480004\_phosphatidylinositol\_45bispho KMRPLWLVFKNNQVQ---DGSMSYIFKNGDGLRQDMLTLQITISIMDLWKAEGLD---LRMTIYGCCLATGDRSGLIEVVNTHSNTIANIQK  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase KMRPLWLVFENADVN---ASDVHIFYKNGDGLRQDMLTLQMLRVMDQLWKRDGMD---FRMINIYNCISKSGSLMIEVVNTHSNTIANIQK  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho KMRPLWLVFENEDPA---GDNVFLMFKNGDGLRQDMLTLQVQIMDNIWQEEGLD---LRLPIYRTLATGNKMGKIQVVTETATIAKIQK  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph KMRPLWLVFENEDRF---GEQVTLMFKNGDGLRQDMLTLQIIVQMEMLWQAEGLD---LRMSPYGCLSTGNKMGVIEVVNTHSNTIANIQK  
Hsapies.NP\_006210.1\_phosphatidylinositol\_4\_5-bis KMRPLWLVVNNKVFVG---EDSVGVIFKNGDGLRQDMLTLQMLRMDLWKAEGLD---LRLPIYGCCLATGDRSGLIEVVNTHSNTIANIQK  
Hsapies.NP\_005017.3\_phosphatidylinositol\_4\_5-bis KMRPLWLVVNNKVFVG---EDSVGVIFKNGDGLRQDMLTLQMLRMDLWKAEGLD---LRLPIYGCCLATGDRSGLIEVVNTHSNTIANIQK  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis KMRPLWLVWENQD---SGADSSDIYIMFKNGDGLRQDMLTLQILHLMDSIWQAEGLD---LRLPIYGCCLATGDRSGLIEVVNTHSNTIANIQK  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k TQTPASLSLVNPSDE---GQLYRIFKIGDGLRQDQVVLQMIRLMDVVLKEMFDD---LHLTPYVILAACTCRHGFQFV-KGVRSLSDVNR  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 AKLPLFLFVCEITE---GEEYPLVIFKIGDGLRQDQLTLQITLMDRI LRKENID---LHLTPYVILAACTCRHGFQFVQFV-I-DSPQLQRVIE



Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 AKLPFLFVCKTVN-----DEEYSIFKNGDDLRQDQLILQIIMLMDRILRKENID-----LKLTPYKVLSTSKYGFVQFI-DSQSLRHVRE  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase\_ ALMPSKLTFKTVD-----GAEYTMICKSGDDLRQDQLILQIMTMDKLLRQENLD-----LKLTPYRVLATSSKSGLLQFI-ESIPVADVLS  
Hsapens.NP\_002638.2\_phosphatidylinositol\_3-kinase ALMPAQLFKFTED-----GGKYVPFIFKHGDDLRQDQLILQIISLMDKLLRKENLD-----LKLTPYKVLATSTKHGFMQFI-QSVPVAEVLD  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k ALMPCKLTFKSID-----GPDYVAIFKHGDDLRQDQLVLMQISLMDKLLRRENLD-----LKLTPYKVLATSSKHGLVQYI-DSINVADVLD  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina QLMPCKLAFKTVF-----ETEYIAMFGLGDDLRQDQLVLMQISLMDKLLRQENLD-----LKLTPYKVLATSCKNGFVQIV-ESTNVAVVLS  
1800a 1820a 1840a 1860a 1880a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 RF-NTTT---TIKRNVDWDLAQ---NNTSQKTIVGKTPRRATTGGSNDSTESTVPNNVLGFKRKSAACTAGFI-ILGLDRHRPSNIMLTPDGRLFHV  
Egranulosus.XP\_024350401.1\_Phosphatidylinositol4ph SS-ASNPR---CKRDQGLLMWLKH---NSN-----DKDR---QKAVHNFCSTVAGSVLTFVLGDRHRNDNIMMRENGQSFIH  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 PL-GTLKG---SFGESALYDWLRRH---NAT-----ERDL---QIAIDNLITYSCAGCVATYVLIGIDRHRNDNIMVKSGHLFIH  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 RS-GTIKG---SFGESALYDWLRRH---NTT-----EREF---RTALENLITYSCAAYCVATYVLIGIDRHRNDNIMVKSGHLFIH  
Hsapens.NP\_001275701.1\_phosphatidylinositol\_4-pho HS-GLIG---PLKENTIKWFSQH---NHL-----KADY---EKALRNFFYSCAGWCVVTFILGVCDRHRNDNIMLTKSGHMFHI  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45 EQ-GVTG---SFKDKPLADWLQKH---NAT-----EAEY---EKAVENFMFSCAGCVATYVLIGIDRHRNDNIMIKTTGHMFHI  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp EY-GLTG---SFKDKPLAVWLQKH---NPT-----ELDY---QKAVENFTYSCAGCVATYVLIGIDRHRNDNIMVTRTGHMFHI  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha EH-GVTG---SFKDRPLADWLQKH---NPG-----EDEY---EKAVENFTYSCAGCCVATYVLIGIDRHRNDNIMLKTTHGHMFHI  
Hsapens.NP\_002636.2\_phosphatidylinositol\_4-phosph EY-GVTG---SFKDKPLAEWLKRY---NPS-----EEEY---EKASENFTYSCAGCCVATYVLIGIDRHRNDNIMLRSTGHMFHI  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p SY-GVTG---SFKDRPLKEWLQKH---NPT-----ELEY---QKALENFTSSCAGCVATYVLIGIDRHRNDNIMLKQSGHMFHI  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p SY-GLTG---AFKDRPLAEWLKRY---NPT-----GISY---EKAVENFTLSCAGCVATYVLIGIDRHRNDNIMLRSSGHLFIH  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos SA-GVTG---SFKDRPIADWLKHH---NPT-----ELF---KRAVSNFTLSCAGCVATYVLIGIDRHRNDNIMLKQSGHMFHI  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 LG-GFRGQF---QIDPAALYRWIEKN---NPG-----AEKL---KSAVDLFTSCAGCVATYVLIGIDRHRNDNIMVTEGQVFIH  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase EC-GLTG---SFKDRPLAEWLKGQ---NPS-----PLEY---QSAVRNFTLSCAGSVATYVLIGIDRHRNDNIMLTKSGHLFIH  
Egranulosus.XP\_021346811.1\_Phosphatidylinositol45b AM-----QIDSSQLHKWFLQKKAPPLGS-----EEAY---EKALRKFNTSCAGCVATYVLIGIDRHRNDNIMVDDSGHLFIH  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho KG-GVGSGL---QLRNGTLHWQLKND---NPG-----EKQY---NKDY-NFTRSCAGCVATLLGGLADHRNDNIMKKNQGMFIH  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 Ap K-GMKGAL---QIDSSALHKWISKM---N-----KQY---QDAIDFTTSCAGCVATYVLIGIDRHRNDNIMVTEGQVFIH  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho KA-GIMGTI---QLKSSVTLHWQIKR---NK-----GDQY---DAADIMFTKSCAGCVATYVLIGIDRHRNDNIMVNGNQIFFIH  
Hsapens.NP\_006209.2\_phosphatidylinositol\_4, 5-bispho KG-GLKGAL---QIDSSVTLHWQLKDR---NK-----GEIY---DDAIDFTTSCAGCVATYVLIGIDRHRNDNIMVTEGQVFIH  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha MS-GITGTI---QLRSSSLHIEWIKR---NK-----GDRY---DRAIEAFTLSCAGCVATYVLIGIDRHRNDNIMVNEEQIFFIH  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis KR-GKKSAM---QLDSSQLHKWIKR---NK-----GDKY---QLAIEFTTSCAGCVATYVLIGIDRHRNDNIMVNEEQVFIH  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis KR-GKKSAM---QLDSSQLHKWIKR---NK-----GDKY---QLAIEFTTSCAGCVATYVLIGIDRHRNDNIMVNEEQVFIH  
Hsapens.NP\_001269355.1\_phosphatidylinositol\_4, 5-b STVGNTG---AFKDEVLNHLWKER---SPT-----EEKF---QAAVERFVYSCAGCVATYVLIGIDRHRNDNIMITETGNLFIH  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 ES-GGLIRG---TFKDEVLLKWLKER---NPT-----TDRM---NSAVETFMSCAGCVATYVLIGIDRHRNDNIMVTEGNLFIH  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45 TRGGKMS---AFRHQTLLEWLQN---NST-----PSEF---EQAIENFTYSCAGCVATYVLIGIDRHRNDNIMVTEGQVFIH  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase EK-GMFSATSPFFKKSLLSLWKHE---NKP-----ADKL---NKAIENFTLSCAGCVATYVLIGVADHRNDNIMVKRNLQFIH  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho SD-GSNKFNATFRKRVALLFNWLKHH---NPT-----EAQF---TRAIEDFTLSCAGCVATYVLIGIDRHRNDNIMVKKTKQLFIH  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph DK-GSTATA---GFKKSLFLMWLKEK---NPE-----KESL---NKAVQFTLSCAGCVATYVLIGVGDHRSDNIMVTEGQVFIH  
Hsapens.NP\_006210.1\_phosphatidylinositol\_4, 5-bisph NS-SNVAAAAAFAFNKDALNLWKEY---NS-----GDDL---DRAIEEFTLSCAGCVATYVLIGVGDHRSDNIMVKKTKQLFIH  
Hsapens.NP\_005017.3\_phosphatidylinositol\_4, 5-bisph NK-SNMAATAAFANKDALNLWKEY---NP-----GEAL---DRAIEEFTLSCAGCVATYVLIGIDRHRNDNIMVRESQVFIH  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 K-GGKS---AFNKTAFLNWLKQR---NPL-----EENL---KRAVEFTMSACGCVATYVLIGIDRHRNDNIMLTKSGHMFHI  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis  
Egranulosus.XP\_024352493.1\_Phosphatidylinositol\_45bis Egranulosus.XP\_024352493.1\_Phosphatidylinositol\_45bis  
Avaga.UJR9391.1\_hypothetical\_protein\_I4U23\_013634 HS-----RTIRQYVLQKAIITTE-----DAPLSEVGIPEHVSADYVYKSCAGCVIMYLLGVGDHRNDNILLRSGQLFIH  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 NE-G-----NIQNFPRKY---SPA-----DNNA-VYGISQDVMYVYKSCAGCVITYLLGVGDHRNDNILLRSGQLFIH  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase TE-G-----SIQNFPRKY---SPA-----DNNA-VYGISQDVMYVYKSCAGCVITYLLGVGDHRNDNILLRSGQLFIH  
Hsapens.NP\_002638.2\_phosphatidylinositol\_3-kinase TE-G-----SIQNFPRKY---SPA-----DNNA-VYGISQDVMYVYKSCAGCVITYLLGVGDHRNDNILLRSGQLFIH  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k AD-G-----SIQNFPRKY---SPA-----EGAPY---GISPEVMDMYVYKSCAGSVITYLLGVGDHRNDNILLRSGQLFIH  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina SE-G-----SIQNFPRKY---SPF-----ETGPY---GIRNEVMDMYVYKSCAGSVITYLLGVGDHRNDNILLRSGQLFIH  
1900a 1920a 1940a 1960a 1980a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 DFGHILGDYVKNFIPRETTSIVLVEPFYLVINNRST---NDTV-----EYRDFIQLCQTLFRLREHATSLFGLLILYIAR  
Egranulosus.XP\_024350401.1\_Phosphatidylinositol4ph DFAKVFNGQKILSF-NRDRSPFVLTPDMVEVVKSAEPPSSSSREKEDLPKELDIPDSFVRHVCQAYNLRYTFISIMGIMEMPCAAEHNTSDAASVSLTM  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 DFGKYLGDQTKFQGW-NRDRAPFVFTKQMLYAMSYGG---TSND-----AMHQFIDLCCDAFTIRHQSTLLRLLSHLSCSN  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 DFGKYLGDQTKFQGW-NRDRAPFVFTKQMLYAMSDGG---TSND-----ALHRFVLDCCNAFTIRQNSLLRLLSHLSCSN  
Hsapens.NP\_001275701.1\_phosphatidylinositol\_4-pho DFGKFLGHAQTFGGI-KRDRAPFVITSEMEYITTEG---KNPQ-----HFQDFVLCRCNAYNIRKHSLLNLEMLLYAG  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45 DFGKFLGHAQTFGGI-KRDRAPFVLTSDMAYVINDG---RPST-----RFQDFVLDLCEAFNIRKNNANFLNLFGLMLSSG  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp DFGKFLGHAQTFGGI-KRDRAPFVLTSDMAYVINGE---KQSS-----NFQNFVLDLCEAFNIRKNNANFLNLFGLMLSSG  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha DFGKFLGHAQTFGGI-KRDRAPFVLTSDMAYVINGE---KQSS-----RFHDFVLDLCCAFNIRKNNANFLNLFGLMLSSG  
Hsapens.NP\_002636.2\_phosphatidylinositol\_4-phosph DFGKFLGHAQTFGGI-KRDRAPFVLTSDMAYVINGE---KFTI-----RFQFVLDLCCAFNIRKNNANFLNLFGLMLSSG  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p DFNKFLGDSQMFNTI-RDRAPFVLTSDMAYVINGE---KRSD-----RFQNFIDQCCAFNIRKNNANFLNLFGLMLSSG  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p DFGKFLGHAQTFGGI-KRDRAPFVLTSDMAYVINGE---RPSS-----RFQFVLDLCCAFNIRKNNANFLNLFGLMLSSG  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4pho DFGKFLGHAQTFGGI-KRDRAPFVLTSDMAYVINGE---KPSQ-----RFQFVLDLCCAFNIRKNNANFLNLFGLMLSSG  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 DFGHILGNFKMKYGI-RRERTQVLIEDFVRYVYNVKNQETETR---EFQNFQRLCVKGYRIIRKQYRQVCLFLKMNCDG  
Dmelanogaster.P13K68D\_phosphatidylinositol\_3kinase DFGKFLGHAQTFGGI-KRDRAPFVLTSDMAYVINGE---KPST-----DFHYFVLDLCCAFNIRKNNANFLNLFGLMLSSG  
Egranulosus.XP\_024352417.1\_Phosphatidylinositol45b DFGHILNNKKKKFGI-TRERVPFVLTDFACVIAAGEEKPYSK---GFMDFTRLCEDAFYRIIRKNNANFLNLFGLMLSSG  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho DFGHFLNNKKKKFGI-TRERVPFVLTDFACVIAAGEEKPYSK---GFMDFTRLCEDAFYRIIRKNNANFLNLFGLMLSSG  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 DFGHFLNNKKKKFGI-TRERVPFVLTDFACVIAAGEEKPYSK---GFMDFTRLCEDAFYRIIRKNNANFLNLFGLMLSSG  
Aplanci.LOC110976503\_phosphatidylinositol\_45bispho DFGHFLNNKKKKFGI-TRERVPFVLTDFACVIAAGEEKPYSK---GFMDFTRLCEDAFYRIIRKNNANFLNLFGLMLSSG  
Hsapens.NP\_006209.2\_phosphatidylinositol\_4, 5-bisph DFGHFLNNKKKKFGI-TRERVPFVLTDFACVIAAGEEKPYSK---GFMDFTRLCEDAFYRIIRKNNANFLNLFGLMLSSG  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha DFGHFLNNKKKKFGI-TRERVPFVLTDFACVIAAGEEKPYSK---GFMDFTRLCEDAFYRIIRKNNANFLNLFGLMLSSG  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis Hsapens.NP\_001269355.1\_phosphatidylinositol\_4, 5-b  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45 DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Dmelanogaster.P13K92E\_phosphatidylinositol\_3kinase DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Aplanci.LOC110979051\_phosphatidylinositol\_45bispho DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Hsapens.NP\_006210.1\_phosphatidylinositol\_4, 5-bisph DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Hsapens.NP\_005017.3\_phosphatidylinositol\_4, 5-bisph DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis  
Egranulosus.XP\_024352493.1\_Phosphatidylinositol\_45bis Egranulosus.XP\_024352493.1\_Phosphatidylinositol\_45bis  
Avaga.UJR9391.1\_hypothetical\_protein\_I4U23\_013634 DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Aplanci.LOC110987621\_phosphatidylinositol\_3kinase DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Hsapens.NP\_002638.2\_phosphatidylinositol\_3-kinase DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina DFGHILGNFKTKFGI-KRERVPFVLTDFVHYVINKGKT---RESK---DFQFRLKCLDNACFIRKNNANFLNLFGLMLSSG  
2000a 2020a 2040a 2060a 2080a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 -----LPL---LNNVTNHLNRQSLFTLGEKYESKNAIQAQYKRKIESAQNDT-RFRLDWAIAHAFVHKPQR-----  
Egranulosus.XP\_024350401.1\_Phosphatidylinositol4ph HPQAWQMQLPG---LER---GQGHVYGNLNR---S-ISDAEAEATFFKELIQRSI-QSYTAQLNNMHDVQRKSGSTPEPSSESRYVGYVAGVYHLQSN  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 -----VPN---LN-YDAVRFVYERLVRP---S-KNYADSTIYFTDLVNVSLNSTW-TRINGFTHMKAQLPS---TNSIPNGNITSFVPS  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 -----VSN---LN-YDAVRFVYERLVRP---S-KNYADSTIYFTDLVNVSLNSTW-TRINGFTHMKAQLPS---TNSIPNGNITSFVPS  
Hsapens.NP\_001275701.1\_phosphatidylinositol\_4-pho -----LPE---LSGIQDLKYVNNLNRP---Q-DTDLATSHFTKKIKESL-ECFVVKLNNLHTLQAQMSA-ISPAKSTQS---TFPQE  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45 -----IPA---LSRTEDIQVHNAALPK---S-ASDAEATAHFTRLIEVSL-GSRATQINFFMHNAALQMR---SGNAGDESIFTFSPK  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phosp -----ISQ---LSKPEDLNLYVNAALPK---K-ASDTEATTMITRLIEASL-GSKATQINFFHNAALQMR---SFSANSLSIFSPK  
Aplanci.LOC110975484\_phosphatidylinositol\_4phospha -----TPE---LSDLEDLNTVQVNAALPK---Q-DTEANATYFTRLIESSL-GSVATKLNNLHTLQAQMSA-ISPAKSTQS---TFPQE  
Hsapens.NP\_001364263.1\_phosphatidylinositol\_4-pho -----TPE---LSDLEDLNTVQVNAALPK---Q-DTEANATYFTRLIESSL-GSVATKLNNLHTLQAQMSA-ISPAKSTQS---TFPQE

Hsapiens.NP\_002636.2\_phosphatidylinositol\_4-phosph -----LPE--LTSIQDLKYVRDALQP--Q-TTDAEATIFFTRLIESSL-GSIATKFNNFIHNLQAQLRFSGLPSNDEP-----ILSFSPK-----  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p -----IPG---VSENAALYIQKALLP--K-LTDAQASAIIFTRMIEDSLKSVF-TPINFFIHNLAQLK-----FSSHQEGALLSFVPK-----  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p -----IPE---LSSKSDLKVVYDALKP--N-AAETEATMTRLIESSLSSSF-TRNFNFIHNLAQLRFL--SNDEDDKNTLSFAPO-----  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos -----IPG---VTVSAAKYVQKALLP--E-CSDAEATAMTRMIEESLSRVF-TQINFFVHNLAQLK-----FRGHTEGELLSFSFK-----  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 -----LTE---LNSENDMAYLRQTDFDL--G-SNEQEACKRFELVLLDSYRSSSLKTRLDWFFHNAVHIKS-----  
Dmelanogaster.Pi3K68D\_phosphatidylinositol\_3kinase -----MPG---VNSNAVQYVRRALLP--S-QSNPEAAATFAKMIQSSL-KSWFTQFNFFLHNLAQMRF-----TPDEGGSELLSFVPR-----  
Egranulosus.XP\_024352417.1\_Posphatidylinositol45b -----LPE---LTCASDLEYVRKTLAV--ELRDEEALNRYNAKFNEAYNGAWTTKIDWFAHWVR--  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho -----LPE---LSSFDDIDIEYIRASLAV--E-KDETQAVQYFRCDLAAQDKQWTTKVDWVCHAVRNSVRK-----  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 -----IPE---LQSLDDISYLKRTLAV--E-KSERDAVEYFSKQFINAVGEQWKQKVDWFFHNVKNM-----  
Aplanci.LOC1010976503\_phosphatidylinositol\_45bispho -----LPE---LQSIDDISYLKRTMAV--E-KEEAEALYFQMQLNEAHGGGWTTKMDWLCAL-----KHGI-----  
Hsapiens.NP\_006209.2\_phosphatidylinositol\_4,5-bisph -----MPE---LQSFDDIAYIRKTLAL--D-KTEQEALEYFMKQMNDAHHGGWTTKMDWIFHTIKQHALN-----  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha -----IPE---LQSFDDIDIEYLRKTLAV--E-MTDTEALQYFSSCFNEAYSRSYSTKVDWFMFHGIKQSR-----  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis -----IPE---LQSPDDIGYLKRTLAV--E-KSEEAIEYFQOQNLNEAHGGAWTTKMDWFFHYLKHRRNS-----  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis -----IPE---LQSPDDIGYLKRTLAV--E-KSEEAIEYFQOQNLNEAHGGAWTTKMDWFFHYL-----KHRRNS-----  
Hsapiens.NP\_001269355.1\_phosphatidylinositol\_4,5-b -----MPQ---LTSKEDIEYIRDALTIV--G-KNEEDAKKYFLDQIEVCRDKGWTQVQFNWFLHLVLGKQGEKHS-----  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 -----IPE---LNSVRDIRYLQNVLVL--D-KTEHEASQHFLEIAGVLRKNNVTQVQNWLMHRL-----VHSGSS-----  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45 -----LPE---MTSLDLHLEYLRTELAL--H-LTEQKALQQFRSKFNKALTDAAWTSVNNVFNHVARONT-----  
Dmelanogaster.Pi3K92E\_phosphatidylinositol\_3kinase -----LPE---LSSEKOLDLYRETLVL--D-YTEEKARHEHFRAKFSEALANSWKTSLNWSHNFKNKKQ-----  
Aplanci.LOC1010979051\_phosphatidylinositol\_45bispho -----IPE---LS-DETIKYLRDTLVL--D-RSDEEALKHFKGKFTALKNSWKTSLDMAHIIAHAR-----  
Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph -----LPE---LTSFSDINLYKDKLAL--E-MTQEALRHFRFEDNALQSKWTSVNNWLNHI-----AKDNK-----  
Hsapiens.NP\_006210.1\_phosphatidylinositol\_4,5-bisph -----LPE---LTSVKDIQYLKDSLAL--G-KSEEAALKQFKQKFDALRESWTTKVNWMAHTVRKDYRS-----  
Hsapiens.NP\_005017.3\_phosphatidylinositol\_4,5-bisph -----LPE---LSCSKDIQYLKDSLAL--G-KTEEAALKHFRVKFNEALRESWTKVNWLAHV--SKDNKQ-----  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 -----IPQ---LTSVNDVEYLRKDTLVL--H-LSDEAEARHEHHTFKQEALNNSWKTSLNWNHLKHA-----  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis -----LPE---LTCMKDISYLNMTLVL--N-YSEDEALKHFRSKFDEALKNSWKTSLNWAHNM-----AKDNT-----  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis -----IPQ---LKDIAERPMPKARDVVKERFCL--D-ETEEAARHFASRIFDSIKAIPEVPMERI-HTVMQRLPETLTLPSPT-----  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k -----IPDIALERDKTVKKLLDKFRL--D-LDDEKATRYLKDLIDSSIGALVQVQYDIIHNSLAFR-----  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 -----IPDIALERDKTVKKLLDKFRL--D-LDDEKAI SYLKDLIDSSIGALVQLYDYFHNLIHNIR-----  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 -----VPDIALEPDKTVKKLQDKFRL--D-LDDEAVQYMQNLIDVSGAVFAAVVEQF-HKFAQYWRK-----  
Aplanci.LOC1010987621\_phosphatidylinositol\_3kinase -----IPDIALEPDKTVKKVQDKFRL--D-LSDEEAVHYMQSLIDESVHALFAAVVEQI-HKFAQYWRK-----  
Hsapiens.NP\_002638.2\_phosphatidylinositol\_3-kinase -----IPDIALEPDKTVKKVQDKFVL--H-LDDEAVHYMQTVIDVSVSAMMAIVEQL-HKMAQYWRK-----  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k -----VPDIALEPDKTVKKVQDKFKL--E-LSDEEAVRHLQNEIDVSVSFAFMAGIEVQF-HKMAQYWRK-----  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina -----  
2100a 2120a 2140a 2160a 2180a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 -----KFSPTSNTQPEMLAKISVTDLTALTRNGWYSRPAKFKEIQPENKNPTGAGGDDSLRNGFCIVRDAQELKRLAWRLDSNHKSQPALNLLNRLSELDDQMVN-----  
Egranulosus.XP\_024350401.1\_Posphatidylinositol4ph -----TYTITIHGDKIRSAQIIDEFKRTEPSKHYLYKFKVERSIR-----TYHYRTYNEFYEFYECVLV-----KQYPSISFDLKSSQ-----QTE  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 -----TYTITATGDKIRSAQVYSEKRSHPTEKHVYVYKVERENINDSTMHYQNSKSLYSTHYRTYNECYEFFERLNR-----KQFPLVNLDLKFSTR-----QTE  
Avaga.UJR28330.1\_hypothetical\_protein\_I4U23\_009572 -----SCLLSTTRISIERATILGFSKSNLY-----LIQVTSNNET-----SLTEKSEFQFSKLHSLOQ-----KQFASLITPEFFHWWHLPTFN-----  
Hsapiens.NP\_001275701.1\_phosphatidylinositol\_4-ph -----  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45 -----  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phos -----VYSMEKDGKITSLSVFGQKRYSGEKYVYVYIKVYRQDREP-----TFVFRTYDELFELHQRLT-----LAFPHNRLPSFPTRTVIGRSN-----  
Aplanci.LOC1010975484\_phosphatidylinositol\_4phospha -----RYTMAMDGKIASASMEGQIKRRYEDAKRYVYVSVLREGSSVP-----SFIFRRYSEFSEFAQKLA-----VLHFAQRVFNLRSGPLVGRTH-----  
Hsapiens.NP\_001364263.1\_phosphatidylinositol\_4-ph -----THTLKSSGRISDVFLCRHEIFPHNKGYVYVVKVMRENTHEA-----TYIQRTFEFQELHNKLR-----LFFPSHGLPSFSPSRFVIGRSR-----  
Hsapiens.NP\_002636.2\_phosphatidylinositol\_4-phosph -----TYSFRQDGRKIEKVSFTYHKKYNDPKHYVYVVRLLREGQIEP-----SFVFRTEFDEFQELHNKLS-----IIFPLMKLPGFPNRMVLGRTH-----  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p -----TYSANTDGLKHVLSHYKRVPEPKDHVIEFKVERESQKLP-----TYVFRHYSSELVEFRTRIV-----ELFPLVSWPPLPSRLVIGRSR-----  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p -----LQSHRDEGTIAMATVVGYQKRYSPGKYMFCKVKVTRKNTTTKD-----SYVFRTEFEFEELHRKLS-----FVYPSKLPFSFSDSVVVGSRQ-----  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos -----TYSVATDGGIKGSVEIFGQKRYSPKFIYIYIKVGRQNKVP-----NFVFRKYTEFQEPHNKLV-----TMFPLAKLPSLQGRVLMGRTH-----  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 -----RYTMQDQGRGLIKVVKVCFQKHYSMEKFIYMILEVTRHGQDPD-----THLFRSYRETFEPHQKLC-----MHFPLVKLHSLPAGVHVGRSN-----  
Dmelanogaster.Pi3K68D\_phosphatidylinositol\_3kinase -----  
Egranulosus.XP\_024352417.1\_Posphatidylinositol45b -----  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho -----  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 -----  
Aplanci.LOC1010976503\_phosphatidylinositol\_45bispho -----  
Hsapiens.NP\_006209.2\_phosphatidylinositol\_4,5-bisph -----  
Bbelcheri.LOC109479966\_LOW\_QUALITY\_PROTEIN\_phospha -----  
Lanatina.XP\_013391449.1\_phosphatidylinositol\_45bis -----  
Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis -----  
Hsapiens.NP\_001269355.1\_phosphatidylinositol\_4,5-b -----  
Cintestinalis.LOC100180112\_phosphatidylinositol\_45 -----  
Cintestinalis.LOC100183611\_phosphatidylinositol\_45 -----  
Dmelanogaster.Pi3K92E\_phosphatidylinositol\_3kinase -----  
Aplanci.LOC1010979051\_phosphatidylinositol\_45bispho -----  
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Hsapiens.NP\_006210.1\_phosphatidylinositol\_4,5-bisph -----  
Hsapiens.NP\_005017.3\_phosphatidylinositol\_4,5-bisph -----  
Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 -----  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis -----  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis -----  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k -----  
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Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 -----  
Aplanci.LOC1010987621\_phosphatidylinositol\_3kinase -----  
Hsapiens.NP\_002638.2\_phosphatidylinositol\_3-kinase -----  
Myessoensis.XP\_021360544.1\_phosphatidylinositol\_3k -----  
Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina -----  
2200a 2220a 2240a 2260a 2280a  
Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 -----CAQPSPPSAVLNLSLTALVELIQFHALDPMMNFWKPTTEADLRPDLQKSSSVTSNPSFSSRSSPPQPSQNRNSTEDTKTPPPDYAVQLTLELSTSCD-----  
Egranulosus.XP\_024350401.1\_Posphatidylinositol4ph -----TRMIAQKRLNIDIEFLKHLGFITNEIIESDVSFTFQTIQRDQQLNDPKDDRTSND-----PLGNQPKIRLRLKYDNR-----  
Avaga.UJR21159.1\_hypothetical\_protein\_I4U23\_024258 -----DKIVAQRVSDINDIEFLKRLQLTIEVIESDLVITFFHKIQDQDQINDTEKSHDDFSSRSYSNNS-----NNQAKIRQLKYDNG-----  
Hsapiens.NP\_001275701.1\_phosphatidylinositol\_4-ph -----SDH-----RRFRLNHNMEQILNVSHEVTSNDCVLSFFLS-----EAVQQTVEESSPVYLGEKFPDKKP-----KVQLVLSYEDV-----  
Myessoensis.XP\_021346813.1\_phosphatidylinositol\_45 -----  
Bbelcheri.LOC109481794\_phosphatidylinositol\_4phos -----IKQVAERRQVDLNIYLKEVMSAPPQVSQDLVYTFPHMLRDEKDAAGANMLKIGDSSQRP-----TIGQVGGSVKLSIHYKKN-----  
Aplanci.LOC1010975484\_phosphatidylinositol\_4phospha -----VNQVAEKRRNELDLFLRHLFALPPEVQSQDLVYTFPHSLRDEKDAHLAYKSVKLKNGPLFTDSDDPITITDVEPTV-----APQFSGRVQVAIYRQKD-----  
Hsapiens.NP\_001364263.1\_phosphatidylinositol\_4-ph -----GEAVERERRRELNGYIWHLIAPEVACEDLVYTFPHFLPRDEKAMGTSPAPKSSDGTWAR-----PVGVGGVEVKLSISYKNN-----  
Hsapiens.NP\_002636.2\_phosphatidylinositol\_4-phosph -----IKDVAKKRIELNSYQLSMNASTVVAECDLVCTFFHPLLRDEKAEGAIARSADAGFSF-----TPGQIGAVKLSISYRNG-----  
Myessoensis.XP\_021340378.1\_phosphatidylinositol\_4p -----VKSVAESRKPIEKFLAELWQKTAETKESDLVYTFPHFLLRDEKESQIEKLDQKRRVNFQLI-----QHPNQFGQLKLSLLYSKE-----  
Cintestinalis.LOC100175620\_phosphatidylinositol\_4p -----VKQVAERRKIKLNSYLSFLSKQRTIAMHDLVYTFPHFLRDEEKVTKTVPKSPDL-----TVGGEIKVSLHYKNN-----  
Lanatina.XP\_013408190.1\_phosphatidylinositol\_4phos -----VKSVAKKRIELEHFLRELQMAETISECDLVYTFPHMLRDEQIDSTNLQKLEAKPTVA-----FVRLIHQIKMSLQYKNG-----  
Avaga.UJR15173.1\_hypothetical\_protein\_I4U23\_002134 -----  
Dmelanogaster.Pi3K68D\_phosphatidylinositol\_3kinase -----  
Egranulosus.XP\_024352417.1\_Posphatidylinositol45b -----  
Cintestinalis.LOC100180252\_LOW\_QUALITY\_PROTEIN\_pho -----  
Myessoensis.XP\_021367892.1\_phosphatidylinositol\_45 -----  
Aplanci.LOC1010976503\_phosphatidylinositol\_45bispho -----  
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Lanatina.XP\_013391443.1\_phosphatidylinositol\_45bis -----  
Hsapiens.NP\_001269355.1\_phosphatidylinositol\_4,5-b -----

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Aplanci.LOC110979051\_phosphatidylinositol\_45bispho -----  
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Hsapient.NP\_005017.3\_phosphatidylinositol\_4,5-bisph -----  
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Avaga.UJR33052.1\_hypothetical\_protein\_I4U23\_020511 -----  
Egranulosus.XP\_024350401.1\_Posphatidylinositol4ph -----  
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Hsapient.NP\_002636.2\_phosphatidylinositol\_4-phosph -----  
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Dmelanogaster.Pi3K68D\_phosphatidylinositol\_3kinase -----  
Egranulosus.XP\_024352417.1\_Posphatidylinositol45b -----  
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Lanatina.XP\_013404834.1\_phosphatidylinositol\_3kina -----  
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Bbelcheri.LOC109480004\_phosphatidylinositol\_45bisph -----  
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Myessoensis.XP\_021346814.1\_phosphatidylinositol\_45 -----  
Lanatina.XP\_013393940.1\_phosphatidylinositol\_45bis -----  
Lanatina.XP\_013393974.2\_phosphatidylinositol\_45bis -----  
Egranulosus.XP\_024352493.1\_Posphatidylinositol\_3k -----  
Avaga.UJR09391.1\_hypothetical\_protein\_I4U23\_013634 -----  
Avaga.UJR36681.1\_hypothetical\_protein\_I4U23\_029398 -----  
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Hsapient.NP\_002638.2\_phosphatidylinositol\_3-kinase -----

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