

Os06g11380 -----  
 AtKCA1 -----  
 AtKCA2 -----  
 AtKinesin-12A -----  
 At3g10310 -----  
 Os01g14090 -----  
 At1g63640 -----  
 At5g41310 -----  
 Os02g13580 -----  
 Os06g36080 -----  
 Os01g54080 -----  
 Os05g44560 -----  
 At1g18410 -----  
 At1g73860 -----  
 Os11g44880 -----  
 OsKCH1 -----  
 Os03g18980 -----  
 At2g47500 -----  
 At1g09170 -----  
 ATK4 -----  
 AtKP1 -----  
 OsKCH2 -----  
 AtKCBP MEGQ<sup>R</sup>GSNS<sup>S</sup>LSSGNGTEVAT<sup>D</sup>VSSCFY<sup>V</sup>VFNPSGTDFDAESS<sup>S</sup>LP<sup>L</sup>LLSLCHSS<sup>S</sup>FAP-QV  
 Os04g57140 -----MNGGGA-----SGGDGYDS<sup>D</sup>GYSFAP-----PTPTTL  
 At1g55550 -----  
 Os01g15540 -----  
 At5g27950 -----  
 Os11g42800 -----  
 ATK2 -----  
 ATK3 -----  
 ATK5 -----  
 ATK1 -----  
 Os03g64415 -----  
 Os04g53760 -----  
 Os07g01490 -----  
 At2g22610 -----  
 Os03g02290 -----  
 At1g72250 -----  
 Os12g42160 -----  
 At5g27550 -----  
 Os05g33030 -----

Os06g11380 -----  
 AtKCA1 -----  
 AtKCA2 -----  
 AtKinesin-12A -----  
 At3g10310 -----  
 Os01g14090 -----  
 At1g63640 -----  
 At5g41310 -----  
 Os02g13580 -----MGVAK<sup>F</sup>SAS<sup>D</sup>LERGQMTAV  
 Os06g36080 -----  
 Os01g54080 -----  
 Os05g44560 -----  
 At1g18410 -----  
 At1g73860 -----  
 Os11g44880 -----  
 OsKCH1 -----  
 Os03g18980 -----  
 At2g47500 -----  
 At1g09170 -----  
 ATK4 -----  
 AtKP1 -----  
 OsKCH2 -----  
 AtKCBP ALSIPAE<sup>L</sup>AAAIPLIDRFQ<sup>V</sup>EAF<sup>L</sup>RLMQ<sup>K</sup>QIQSAG<sup>K</sup>RGFF<sup>F</sup>YSK<sup>K</sup>SSGSN<sup>V</sup>RER<sup>F</sup>TFEDML  
 Os04g57140 -----SMSIPPELAGAIPLIDRFQ<sup>V</sup>E<sup>G</sup>FLKAMQ<sup>K</sup>QIHSAG<sup>K</sup>RGFF-SK<sup>K</sup>SVGPH<sup>V</sup>REK<sup>F</sup>TLEDML  
 At1g55550 -----  
 Os01g15540 -----  
 At5g27950 -----  
 Os11g42800 -----

ATK2  
ATK3  
ATK5  
ATK1  
Os03g64415  
Os04g53760  
Os07g01490  
At2g22610  
Os03g02290  
At1g72250  
Os12g42160  
At5g27550  
Os05g33030

Os06g11380  
AtKCA1  
AtKCA2  
AtKinesin-12A  
At3g10310  
Os01g14090  
At1g63640  
At5g41310  
Os02g13580  
Os06g36080  
Os01g54080  
Os05g44560  
At1g18410  
At1g73860  
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Os03g18980  
At2g47500  
At1g09170  
ATK4  
AtKP1  
OsKCH2  
AtKCBP  
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At5g27950  
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ATK2  
ATK3  
ATK5  
ATK1  
Os03g64415  
Os04g53760  
Os07g01490  
At2g22610  
Os03g02290  
At1g72250  
Os12g42160  
At5g27550  
Os05g33030

Os06g11380  
AtKCA1  
AtKCA2  
AtKinesin-12A  
At3g10310  
Os01g14090  
At1g63640  
At5g41310  
Os02g13580  
Os06g36080  
Os01g54080  
Os05g44560  
At1g18410

At1g73860 TPRSFFSPFSPLSVDDRRHFNHADTK-----  
 Os11g44880 GEEAVVATAAVVEDGLRNGDGGGGGVGEVVGVRSIDMEWRK---AEEAAIRRYE---  
 OsKCH1 AAVEEEEMVERMHGWARDMDVASRR-----AEEEMRRYD---  
 Os03g18980 AALFSLSAAAVVEDVLRQHGCRLSD-----RDLASRRAEAAAARRNE---  
 At2g47500 DGGLSFTVASVMEDVLRQHGNGLRD-----HDLVSRRAEEAASRRYE---  
 At1g09170 QQDSQLCLATILEDFLKQRIQVSV--GVDSSSLKKADETFGGRDLPVDPDLRRYE---  
 ATK4 NNDLSFVSIVEDVLRQHSSRSSD-----VGLVSRKVEESSLRRYE---  
 AtKP1 -----  
 OsKCH2 -----MAAAEGRHDQGMALRK-----AEEAARRCE---  
 AtKCBP LKRVELRDELFAQISKQTRHNPDFRQYLIKAWELMYLCASSMPPSKDIGGYLSEYIHNVAH  
 Os04g57140 LKRSELRDELFAQISKQTRNPDFRAWLIRAWELMYLCASSMPPSKDIGAYLSEYVHYIAH  
 At1g55550 -----  
 Os01g15540 -----  
 At5g27950 -----  
 Os11g42800 -----  
 ATK2 TNNGRIRPSFPVKDLTSNEGSEYGG-----  
 ATK3 ANNGRIRSAFPVTNGSKDLTPNSAP-----  
 ATK5 QNRAPLPSPNVKEALSSIPFDKRR-----KE---  
 ATK1 NQNRPPRSPNAKKEGLGGISFDKRR-----KVET---  
 Os03g64415 KPGSWLPEWKRIVVLLGSWTLGVRE-----  
 Os04g53760 TPRSFPYKKNLGNARRGMGVKPGP-----  
 Os07g01490 STRATRPGMLHQKENAADAQAGKRQ-----  
 At2g22610 IDDTFPVDLNGVTSLCSPEIPSFDF-----  
 Os03g02290 CPGEPTPMDFSWTTGWKKAADDE-----  
 At1g72250 ATDASPRPESFSRSAEKDIASRSRTVAMADLDSNCELSNDVDMEQSSPDLMKLEQSSDPV  
 Os12g42160 -----MEMEEEGSGRGG-----  
 At5g27550 -----  
 Os05g33030 FESFFFLLYFLKSKANPHDLSLAR-----

Os06g11380 -----  
 AtKCA1 -----  
 AtKCA2 -----  
 AtKinesin-12A -----MKKHFTLPRN-----  
 At3g10310 -----AVQWL-----KSVVGGQIGIPNPSEKEFISCLRNGMIL---CNAINKI  
 Os01g14090 -----AATWL-----ESVIGPFGLSRCPSEQEFVAAVRNGIVL---CKAINKI  
 At1g63640 -----LVEWL-----NETLPYLKLPWEASEDELRACLRDTGTVL---CSLLNQL  
 At5g41310 -----LVEWL-----NETLPYLNLPWEASEEELRACLVDGTVL---CNLLNQL  
 Os02g13580 PYRIACLLRKVILEIERRISTQAGHIRNQNNLIKAREEKYQSRIRVLEVL---AGGMEKD  
 Os06g36080 DRRRAEAVAWLRALLRGCG---GGGGGQLPPPHASEDDLRAALADGALL---CAALRRL  
 Os01g54080 -----VIDWL-----GGLLPEFDLPLDSSDEELRDYLINGEAL---CYVADKL  
 Os05g44560 -----AEVIEWL-----NALLPEYCLPLDSSDDELRELLSDGTVL---CHIVNAL  
 At1g18410 -----MLDNLTLNTPAESCESEEIQTALPSSSSSQDLVASDEDS---EDVELGD  
 At1g73860 -----TPRSFFSPFSPLSGDERHKSLAESKFQQALASSGQLDPLSPGSMH  
 Os11g44880 -----AANWLRV-----VGVVCGKDLAEEPSEEEFRLGLRNGIVL---CNALNKV  
 OsKCH1 -----AASWLRST-----VGVVCARDLPDEPSEEEFRLGLRNGIVL---CNALNKI  
 Os03g18980 -----AAGWLRRT-----VGAVAARDLPEEPSEEEFRLGLRNGQIL---CGALNRV  
 At2g47500 -----AANWLRM-----VGVVAKDLPAEPTTEGLRLGLRSGIIL---CKVLNKV  
 At1g09170 -----AARWVRNT-----LGVVGGRDLPADPSEEDFRIALRSGIIL---CNVLRV  
 ATK4 -----AAGWLRDM-----IGVSNKDFPGEPEEEFRLGLRSGIVL---CNVLRV  
 AtKP1 -----MDQGAMETLPEKPSDEFFSLALRNLIL---CNVLRV  
 OsKCH2 -----AARWLRQ-----MEAAAESLPERPSEEEFCVALRNLVL---CNVLRV  
 AtKCBP DATIEPDAQVLAVNTLKALKRSIKAGPRHTTPGREIEALLTGRKLTIVFFLDETFEEI  
 Os04g57140 GATTDSVRLALNTLNALKRSVKAGPRVTIPAREIEALLSSRKLTTIVFFLDETFEEI  
 At1g55550 -----MERTRSKPVRLPETIHSLL-----  
 Os01g15540 -----MDVQPARTM-----  
 At5g27950 -----MLISAKEGEILI-----  
 Os11g42800 -----  
 ATK2 -----PVEFTREDVETLLHERIKYK-----  
 ATK3 -----ASTTGSSEYGPVEFTREDVETLLNERIKYK-----  
 ATK5 -----TQGTGRQVLSVNRQDANSVGVSTEE---CGKVEFT  
 ATK1 -----QGGTGRQAFSAVNKQDVTMNSDVGSIEE---CGKVDFT  
 Os03g64415 -----NEKGSGRLIKWNGSGSREQKICKTTLPFQACIKHLNS  
 Os04g53760 -----RRNVLSAINNGGNTSDTASVDGGEGGAGPAPVIEFT  
 Os07g01490 -----RTAAGSAAARPLSANAAPPPDPAIEFA  
 At2g22610 -----VSDTEKLEIGDTSIDDCDALGDSMV---CDPNSRL  
 Os03g02290 -----AESAPAPAPPAPSPQEAESMI-----L  
 At1g72250 ALDGVVVLGFSLASFDL---VNCGASPDLPGRSYEDSFEFSKRRR---FSTELSL  
 Os12g42160 -----DGPAAHGRIGGDSVPMVSSASVRKTKMSETCDFIPYV  
 At5g27550 -----MERDQHQEICNDGGLL---CES---  
 Os05g33030 -----QIHAVDLISRLVSMTRQPSGRPFNPETGKSEMS---CTGA---

Os06g11380 -----  
AtKCA1 -----  
AtKCA2 -----  
AtKinesin-12A -----  
At3g10310 HPGAVSKVVENY---SYL-----  
Os01g14090 QPGAVPKVV---ANA-----  
At1g63640 SPGSM-----  
At5g41310 SPGSM-----  
Os02g13580 KFGDKGQLAVEDME--RLM-----  
Os06g36080 GCDPAA-----ASD-----  
Os01g54080 MPGV-----LEG-----  
Os05g44560 IPG-----VLE-----  
At1g18410 TFYSCSELLQRNCCVLPYK-----  
At1g73860 GGHKFHEVFQMKQGRYDLQ-----  
Os11g44880 QPGSVPKVVEA---PSD-----  
OsKCH1 QPGAIPKVVQAQSDAAG-----  
Os03g18980 HPGAVPKVVVNTAAD-SVL-----  
At2g47500 QPGAVSKVVEAPND--AIL-----  
At1g09170 KPGAVPKVVEAPND--PLV-----  
ATK4 NPGSVSKVVEAPDD-----  
AtKFP1 NPGSVLKVVENPITP-AIQ-----  
OsKCH2 NPGAVPKVVENPIV--AVQ-----  
AtKCBP SYDMATTVSDAVEELAGTIKLSAFSSFSLFECRKKVSSSSKSSDPGNEEYIGLDDNKYIGD  
Os04g57140 TYDMATTVADAVEELAGIIKLSVYSSFSLFECRKKVNGSKSSDVGNEEYIGLDDNKYIGD  
At1g55550 -----GLK-----  
Os01g15540 -----  
At5g27950 -----PQS-----  
Os11g42800 -----  
ATK2 -----SKY-----  
ATK3 -----SKF-----  
ATK5 KDEVLALLNERAKA--GKF-----  
ATK1 KDEILALLSERAKA--GKF-----  
Os03g64415 R-----DLL-----  
Os04g53760 GREDVERLLAEKMKGKSKT-----  
Os07g01490 GRDDVDALLNEKMKGKNKM-----  
At2g22610 VP-----TGL-----  
Os03g02290 VPGPRVVLS-----GLM-----  
At1g72250 ENGI DGSTTTTRLGRKSQV-----  
Os12g42160 DDDDDGNSSEENSASSGIL-----  
At5g27550 -----KEV-----  
Os05g33030 -----

Os06g11380 -----MAD-----  
AtKCA1 MADQRS-----  
AtKCA2 MAEQK-----  
AtKinesin-12A RDGGEPHSPNPSISK-----  
At3g10310 NGEYQLPPAYQYFEN--VRNFLVALETLRLPGEASDLEKDNLESGSVTK  
Os01g14090 SCDGQPSTAFQYFEN--IRNFLVAVQELKLPCEASDLEKDNIDAGSVGK  
At1g63640 RMGGSFEPASVKIER---FLTAMDEMALPRFEVSDIEQ----GDMVP  
At5g41310 RMGGSFEPGCVNIER---FLAAMDENTLPRFESLKALKASFDDGYDK  
Os02g13580 KYQDDVVRMLKENED--LVRLLEKEDMVRLLEKEDMVRLLEKEGMIN  
Os06g36080 EGTGSAAAAAAAAAAGEGDVGRFLAAERMGLPGFSPSDDLT----GPVSS  
Os01g54080 TWGGYASDQRSNVKK---FLSVVAEMGLPGFVGDLEE----GSMSS  
Os05g44560 ESWGAYASSDQHAGH--VKKFLAVVADMGLPGFVGDLEE----GSMSS  
At1g18410 AQKKTKENPFDFDVR-----TWSSPCDFPRFGEMILLSPVLNMPFFS  
At1g73860 ASKISEMMKSSSLDNAPTQSLLSVLNGILDESIERKNGEIPQRVACLRLK  
Os11g44880 SADGAALCAYQYFEN--VRNFLMGLQDLGLPTFEASDLEK---GGKVR  
OsKCH1 PTDGSALCAYQYFEN--LRNFLVVVEDLRLPTFEVSDLEK---GGKVR  
Os03g18980 QPDGAALSFAFYFEN--VRNFLVAAQIQLPCFEASDLEQ---GGKSAR  
At2g47500 VADGAPLSAFQYFEN--VRNFLVAIQEMGPTFEASDLEQ---GGNSAR  
At1g09170 NQDGAALSFAFYFEN--LRNFLVFVEEMGIPTFEVSDFEK---GGKSAR  
ATK4 VADGAALSFAFYFEN--IRNFLVAIEEMGLPSFEASDMEK---GGKSIR  
AtKFP1 YADGAAQSAIQYFEN--MRNFLKAVEDMQLLTFGASDLEK---GGSSNK  
OsKCH2 SSDVAAQSAIQYFEN--MRNFLVAVSEMNLTFEASDIEK---GGSSMK  
AtKCBP LLAEFKAIKDRNKGEILHCKLVFKKKLFRSEDAVTDLMFVQLSYVQLQHDYLLGNYPVG  
Os04g57140 LLSEFKAARDNKGEILHCKLVFKKRLFRSEDAITDPMFVQLSYVQLQHDYLLGNYPVG  
At1g55550 -----  
Os01g15540 RNLPDTLSSLMGFNK-----

At5g27950 ----- PLSSESVVPLVYTDV -----  
Os11g42800 ----- MEGHVIVP -----  
ATK2 ----- NYKERCENTMDYVKR --LRLCIRWFQELELDYAFEQEKLKNAM-EMNEKH  
ATK3 ----- NYKERCENTMDYIKR --LRLCIRWFQELELDYAFEQEKLKNAL-ELNEKH  
ATK5 ----- DTGKIEQMTDIKK --LKVCVRWYQQVDETHVQDKENLSSSL-QSAEKR  
ATK1 ----- DTKAKIEQMTDIKR --LKVCVKWFQQADETHVQEKENLKVSL-ESSEQK  
Os03g64415 ----- STKVLTLALYKYILR ----- APQTAPHPPAAPPRTEVASSTAGRASR  
Os04g53760 ----- DYKGRTEQMSEYIKK --LRACIRWYIELEDGYLVEQEKLKLRSTMDAENAQH  
Os07g01490 ----- DYKKGSEQMMYIKK --LRACIKWLLEREDTNLAEIGKLNGLL-EAAEKH  
At2g22610 ----- TRTNRTDETIMFINA ----- GGDDSK  
Os03g02290 ----- RGDCRADDVLFINA ----- GGSATE  
At1g72250 ----- VKFSAICQTFGYELS ----- PESSFELPSPPGDFRESMPVISINSGSI  
Os12g42160 ----- PCDGMQHDTPDYIRR ----- GAAAAA  
At5g27550 ----- SVNHNHSDA -----  
Os05g33030 ----- PSNGRLVSASSKIKS ----- APPISF

Os06g11380 ----- TRGRWADVPGFEPF -----  
AtKCA1 ----- KTNRWNEVSGFEPF -----  
AtKCA2 ----- STNMWNWEVTGFESK -----  
AtKinesin-12A -----  
At3g10310 VVDCILG ----- LKAYHECKLPSNGNG -----  
Os01g14090 IVDCVIS ----- LKSYHEWRQRGGSYG -----  
At1g63640 VLQSLKA ----- LKASFSDGSYDKNSL -----  
At5g41310 NT ----- LSARRRWSLPADHSK -----  
Os02g13580 LKT VKAEETQRIEDEDKYRII KEKDDALDRLVKEKEEMIRLLKEKDDVVRLMKEKEDLLN  
Os06g36080 VVTCLLA ----- LRDQFVSHDVGLSC ----- SLPEKV  
Os01g54080 IVECLLA ----- LKDNVATQLGGHISN -----  
Os05g44560 VVDCLLV ----- LRESVSSGLRDGTSK -----  
At1g18410 CCTKRAI ----- FCSSPGSSSHGGSTPR -----  
At1g73860 VVQEIERR ----- ISTQAEHLRTQNNIF -----  
Os11g44880 VVDCVLS ----- LRSFSESKQVGRSAP -----  
OsKCH1 VVDCVLA ----- LKSFSESNKTGRQAS -----  
Os03g18980 VVNCVLA ----- LKSYGDWKQCGGTGP -----  
At2g47500 VVNCVLA ----- IKSDEWKQSGGIGV -----  
At1g09170 IVECVLA ----- LKSYREWQKQSGSGT -----  
ATK4 IVNCILA ----- LKSYSEWKLKGENGP -----  
AtKP1 VVDCILC ----- LKGFYEWKQAGGVGV -----  
OsKCH2 VVDCILC ----- LKAYHEWKLSSGGIGI -----  
AtKCBP RDDAAQLCALQILVIGIFVNSPESCIDWTSLLERFLPRQIAI  
Os04g57140 RDDAAQLSALQILVEIGFVDNPESCVEWISLLERFLPRQVAI  
At1g55550 ----- SHMTSDWVKVSCNIA -----  
Os01g15540 ----- HLTSPWIESVSHII -----  
At5g27950 -----  
Os11g42800 ----- LEKLSLELNNGGIML -----  
ATK2 CADLEVN ----- LKVKEEELNMVIDEL -----  
ATK3 CVDMEVS ----- LKNKEEELNMIIEEL -----  
ATK5 YSKELD ----- AKTKEEELRATITEM -----  
ATK1 YNHKELE ----- ARTKEEELQATISKL -----  
Os03g64415 ----- TKSASSTGRVSRANP -----  
Os04g53760 AKLEAQ ----- LSSDLEELKAAHLNL -----  
Os07g01490 HSEIVAQ ----- LKSAIEESKAINNEEL -----  
At2g22610 VLDSE ----- LNISRDDYFEGGDVL -----  
Os03g02290 GCEPS ----- SKLSEDSFFEGGDAI -----  
At1g72250 STDVTVED ----- VTFLKDEFFSGGESI -----  
Os12g42160 ----- HRIAPLELFSGPSP -----  
At5g27550 ----- VEESEDITSGNQEV -----  
Os05g33030 LPQTPPR ----- LLLRSPNQIPNSAPP -----

Os06g11380 ----- QPVVGAAGMPLAPPTA -----  
AtKCA1 ----- KSSSNASFAES -----  
AtKCA2 -----  
AtKinesin-12A -----  
At3g10310 LYKHVKTPTFQLSATKIHPILSA -----  
Os01g14090 HLLKHLKSPLATRSASHV -----  
At1g63640 ----- AARRRWSLPEDHSDSRGDDRNFTDGFQSK -----  
At5g41310 -----  
Os02g13580 LEKGEVEGTTKMTDDNKDRLIKEKNDVVLRLTEEKEEMVRLLEKEDIIRLMKEKEDMVY  
Os06g36080 MMQSMFPRKENDPGTQNSGRRKIPKNPAMSEPSPL -----  
Os01g54080 ----- STAKTPIRRKLELRETDPVLSVATPGKR -----

Os05g44560 -----APLRKKWRVPEETGEP LVPGV AQGKTSF GED-----  
 At1g18410 -----SPFS PSSPREH NKGLADSR FQRPLFNSSALDPS-----  
 At1g73860 -----KTREEKYQSRIN VLEALASGTGVEHEIATQQL-----  
 Os11g44880 -----LKYGGILKPSMSGKHFIRKNSE P-----  
 OsKCH1 -----CKYGGLSKPLTARKYFILKNTDAF-----  
 Os03g18980 -----WKYGGNLKPSASGKSFVRKNSEPF-----  
 At2g47500 -----WKFGGNIKPPALGKSSFVRKNSE P-----  
 At1g09170 -----WRYILNSKPTTFGI AKQYKRKDSE-----  
 ATK4 -----WRYGSNMKHNFGSRKFLLRKSSEP-----  
 AtKP1 -----WRYGGTVRIVSFNRKGSS-----  
 OsKCH2 -----WRYGGIVKIASSSKRLPSYSSRGG-----  
 AtKCBP -----TRAKREWELDILARYRSMENVTKDDARQQF-----  
 Os04g57140 -----TRAKRDWELDIVSRYQLMEHLSKDDARQQF-----  
 At1g55550 -----  
 Os01g15540 -----  
 At5g27950 -----  
 Os11g42800 -----  
 ATK2 -----RKNFASVQVQLAKEQTEKLAANESLGKEREAR-----  
 ATK3 -----RKNFESVQVQLAREQTEKLAANDSLGKEREAR-----  
 ATK5 -----KENIESLQEKLSKEKLSKLDAIENHRRKDCR-----  
 ATK1 -----EENVVSLHEKLAKESSSTQDAIECHRREKEAR-----  
 Os03g64415 -----ASFHRPRLRLRQAGLHLRRPRL-----  
 Os04g53760 -----TRQCDLSLEESFNKEKADRMLAVESEYKERQQR-----  
 Os07g01490 -----QRQYASLEENLKRVEAEKLDALRSYGDEKEAR-----  
 At2g22610 -----RTEESIVEAGDFFFIYQSARVGNFCYQLNNL-----  
 Os03g02290 -----ETSEDIVEGGDYPSLYHSARYGNFSYKIDGL-----  
 At1g72250 -----TTDAVVGNEDILLYQTARLGNFAYKFQSL-----  
 Os12g42160 -----QGPPSPSPAIGGALEATSNDGV-----  
 At5g27550 -----  
 Os05g33030 -----RARRRKQIAAMEADPAPSSTPPSSPAPA-----

Os06g11380 -----  
 AtKCA1 -----  
 AtKCA2 -----KSPSSEEGVH-----  
 AtKinesin-12A -----  
 At3g10310 -----SKTSRHLDMSSVRE RNDCTD GESDKLKGIAK-----  
 Os01g14090 -----QSEYVCSGSSSTPKRLDLVETDTERQPQNQVGPNCQEAME-----  
 At1g63640 -----EGSEIDMSDAKISDLLKSNLSRNAPTRSLFDMLDKLLD-----  
 At5g41310 -----GVDSNFNDGGSQFIEASEINTSHHSLQNTSTRSLFD-----  
 Os02g13580 -----LEKGEVEDRKQMTDDIKDKLIKEKDDIVFRLTKEKEEIKLLEEKEDI IILMKEKEDMVN-----  
 Os06g36080 -----SQTTLSSISRHAGHSFHDVFLRQGRYS DLPSSKISEMMK-----  
 Os01g54080 -----YPKSQQRSPLLSGQKINEVVQFKHGTYTDLPAAKISEMLH-----  
 Os05g44560 -----KRNGLPDPKSQKTPIFNGRKLREIFQLKRGSYADLPAAKISEMMH-----  
 At1g18410 -----SPGSMHLHGKHSHEAFQMQG-----RFDLQAAKISELMK-----  
 At1g73860 -----RQIETEKSMWEEKKKHEEEDMVKLMKQNDQHNLEISALKQELE-----  
 Os11g44880 -----FVKTMVRSYSAEALLRDGVSLEQSLGLDFSLHEVERTTPDS-----  
 OsKCH1 -----MNKIMKGHSAEAIQSEFSEGGQSVTDFSIENEMTTSDS-----  
 Os03g18980 -----RRCQSMNEGEVPEEAGFSGDYHLDSGDMSTSRP-----  
 At2g47500 -----FMNSLRSRTSSINNEKAPSENDSNKLSPPSSLSTLVR-----  
 At1g09170 -----VPVDAVTNSPSSTPSSEQPLLDQSDNTKNDGTASSID-----  
 ATK4 -----FVSSISRTQSTDMLSTDQPLSSDGDSRSIN-----  
 AtKP1 -----PPQYIGSESTTDESVSLEDESSQYDQLLDFLHLSNEIS-----  
 OsKCH2 -----GSADLNQQMLEFVHLLSEVSLSESRVGESQH-----  
 AtKCBP -----LRILKALPYGNSVFFSVRKIDDP IGLLPGR IILGINKRGVHFFRPVPKEYLHSAEL-----  
 Os04g57140 -----LRILRTL PYGNSVFFSVRKIDDP IGLLPGR IILGINKRGVHFFRPVPKEYLHSAEL-----  
 At1g55550 -----  
 Os01g15540 -----  
 At5g27950 -----  
 Os11g42800 -----  
 ATK2 -----IAVESLQAAIT EELAKTQGE LQTANQRIQAVNDMYK-----  
 ATK3 -----LSVEKAQAGL TEELGKAQGD LQTANQRIQSVNDMYK-----  
 ATK5 -----VVAEKLQVSLREELDKVKEEKMAAKQKVTSL EDMYK-----  
 ATK1 -----VAAEKVQASLGEELDKVKEEKMAAKQKVTSL EDMYK-----  
 Os03g64415 -----SRQAGLRCHRHLHLSAPSRSP TPPPNAVAPSSCSRLP-----  
 Os04g53760 -----ESAEASLDLLSVDLERVSHAEAKRFSEQLKMQDTNK-----  
 Os07g01490 -----IAVEASRNEHLEDLRRIKLEEKRLNDQIKMLQDTNK-----  
 At2g22610 -----LPGEYLIDFHFAE IINTNGPKGIRVFNVYVQDEKATE-FD-----  
 Os03g02290 -----APGDYFLDLHFAEIVNTYGPKGIRAFDVLVQEEKILSELD-----  
 At1g72250 -----DPGDYFIDLHFAEIEFTKGPFG-----VISGLD-----  
 Os12g42160 -----AEPQVHPPEGISSIISTGGGEQETATMGSQSVHETLH-----

At5g27550 -----  
 Os05g33030 -----ASPSRHPPGEEGGGAERVEVEEYVDPSPDCCGGA-----

Os06g11380 -----  
 AtKCA1 -----  
 AtKCA2 -----R-----  
 AtKinesin-12A -----  
 At3g10310 -----LFADHIFSSKEN-----  
 Os01g14090 -----R-----LQKVILDCMISC  
 At1g63640 -----ESMTKMNGHVSH-----AMASLLSALVQVIEQRI  
 At5g41310 -----MLDRLLDESSQK-----MNVSHVYVSLRGIVQVVEQRI  
 Os02g13580 -----LGKGEDEDRKQADNDKDRLIKEKDDIVVRLTKEKEEIIKEKDDIVVRLTKEKEEIIKLL  
 Os06g36080 -----S-TSLDNAPTQS-----LLSVNVILDELVETKIGETIPY---HLACLLRKKVLEIERRI  
 Os01g54080 -----S-NSLDNAPTQS-----LLRVVNGILDESIERRKGEIPH---RVVHLLRNVIQIEHRI  
 Os05g44560 -----S-NSLDNAPTQS-----LLSVVNGILDESIERRKGEIPH---RVVYLLRKKVQIEERRL  
 At1g18410 -----S-NNLDNAPTQS-----LLSIVNGILDETIERRKNGELPQ---RVACLLRKKVQIEERRI  
 At1g73860 -----TTKRKYEQQYSQIESQTKTEKSKWEEQKNEEEDMDKLLKENDQFNLQISALRQLELTR  
 Os11g44880 -----I-RMLVQTM LSD-----KPEEIPV---LVESLLSRVIEHFERRT  
 OsKCH1 -----LSILLRKKVLLDK-----KPEEVPL---IVESILSKVIEYEHRI  
 Os03g18980 -----L-KMLVSAVLS-----KRPDEVPQ---LLESMLSKLVEEFENRL  
 At2g47500 -----AVLSDKKPEDVP-----KLIESLLSKVVEEFENRV  
 At1g09170 -----AIVRAVFSDMKQ-----EDIPV---IVEDMLKSMVEYERRL  
 ATK4 -----GLVRSFIADRKH-----EDIPN---VVESVLNKVMEEVQQR  
 AtKP1 -----A-EESETAISLAFLFDFHAFALQLLHGYLEKES--DGINDMPLNEMVIDTLLNRVVKDFSAIL  
 OsKCH2 -----SLFQQFVLRVVR-----AFLQEWGEAEGPLDDMVLETILEQACKFTILL  
 AtKCBP -----RDIMQFGSSNTAVFFKMRVAGVLHIFQFETKQGEIICVALQTHINDVMLRRYSKARSAAN  
 Os04g57140 -----RDIMQFGSSNTAVFFKMRVAGVLHIFQFETKQGEIICVALQTHINDVMLRRYSKARSATS  
 At1g55550 -----  
 Os01g15540 -----  
 At5g27950 -----  
 Os11g42800 -----  
 ATK2 -----L-LQEYNSSLQL-----YNSKLQGDLEAHENIKRGEKERTGIV  
 ATK3 -----L-LQEYNSSLQL-----YNSKLQGDLEAHETIKRGEKERTAI  
 ATK5 -----R-LQEYNTSLQQ-----YNTKLQTDLEVAREAHTRAEEKSSIL  
 ATK1 -----R-LQEYNTSLQQ-----YNSKLQTDLETVRAALTRAEEKSSIL  
 Os03g64415 -----RARLAIRRRAS-----SHSATVDTACSRRH  
 Os04g53760 -----R-LQEYNTSLQQ-----YNSNLQADASKSGDIIISKLQKEKSAMM  
 Os07g01490 -----R-LQEYNTSLQQ-----YNSNLQADATKNGETIAKLQKEKNTMV  
 At2g22610 -----I-FSVVGANRPLLLVDLVRVMDDGLIRVRFEGINGSPVVCGI---C  
 Os03g02290 -----V-YAVVGGNRPLQVRDIRVTVESDSAIVINFKGVGSPMVCGICIRKRVAMAVTDMVTEG  
 At1g72250 -----L-FSQVGANTPLVIEDLRLMVGREGELSLRLEGVTGAAILCGISIRKETATATVVEETGML  
 Os12g42160 -----I-----EENEGKC  
 At5g27550 -----  
 Os05g33030 -----

Os06g11380 -----MPRAPPTAMVARAAGADGAV--VPVADRLDQ-----  
 AtKCA1 -----TGHRTTGPLLRNRSISTPSL--PPKQAIASK-----  
 AtKCA2 -----TPSSMLRRYSIPKNSLP----PHSSELASK-----  
 AtKinesin-12A -----  
 At3g10310 -----IDENLV--SLENGSENSRANFEKILSRF--PELQSVFKN-----  
 Os01g14090 -----KENLDND--SLKKDPYKLVGTILSRQLEK--EQFPELLQL-----  
 At1g63640 -----SNQAD---NLKNQNILFRVREEKYRSRI--KVLES LAAG-----TTKENEIV  
 At5g41310 -----SNQAE---NLKNQNILFRVREEKYRSRI--NVLET LAG-----  
 Os02g13580 -----EEKEDII--SLMKQKEDMFMSIKEKENKA--ELKKIADED-----  
 Os06g36080 -----STQAE---HIRNQNNLMKAREEKYKRSI--RVLEALASGTSQTHVNSNATNGKAHVSP  
 Os01g54080 -----GIQAD---HIRNQNSIIKTREDKYRSKI--KALET LVNGTNEENEMAIN-----  
 Os05g44560 -----CIQAE---HIRSNVVIKTREDKYRSKI--KALEILVNG-----TNEENQMA  
 At1g18410 -----STQSE---HLRTQNSVFKAREEKYQSRI--KVLET LAG-----  
 At1g73860 -----KAYEQQCSQMESQTMVATTGLESRLKELEQEGKVNTAKN-----  
 Os11g44880 -----ANQNE---SVKHALDPNDKLLSRADTP--PEMESTCTC-----  
 OsKCH1 -----AIQNK-----  
 Os03g18980 -----TSQHE---LVKAALKNGTDGTSKFSKSK--VLVEATPNS-----  
 At2g47500 -----TNQYE---LVRAAPRESTSSQNRSFL--KPLGERERE-----  
 At1g09170 -----ATQNELLMSAGNRDKLGSGLGRITISGNEETLSDASYGE-----  
 ATK4 -----SIHNE---MMKSSSKPIPEDDSSCETVVRSQLCDARQHE-----  
 AtKP1 -----VSQGA---QLGSFLRKILKCDNGDLRS--EFLAAVFRY-----  
 OsKCH2 -----ASHRN---QVRSLLRKMMDENGAHSKQ--ELIEVISKS-----  
 AtKCBP -----SLVNGDI--SCSSKPNFVYKRLQDLS--KAYEESQKK-----  
 Os04g57140 -----AVSQNDV--SQTYKPPNIEIYEKRVQELS--KAVEESERK-----



Os06g36080 KEKEE---MVWMMREKENMVSLNNGRVEDKHQLTDKDVANSARYNEIIKLMKEKEDSN  
 Os01g54080 ETKAR-----  
 Os05g44560 ELTAK-----  
 At1g18410 ESKTKGATAGIEDRVKELEQMRKSDASVARKALEERVRELEKMGKEADAVKMNLEEKVKEL  
 At1g73860 QQMEK-----  
 Os11g44880 IQAKQ-----  
 OsKCH1 QLEAQ-----  
 Os03g18980 EAYGE-----  
 At2g47500 EKMKT-----  
 At1g09170 YAI SK-----  
 ATK4 -----  
 AtKP1 GKLEF-----  
 OsKCH2 KQLDD-----  
 AtKCBP QSLMS-----ELRGMEARLAK  
 Os04g57140 QASLM-----EKTRLETRLKS  
 At1g55550 -----  
 Os01g15540 DDNTE-----  
 At5g27950 -----  
 Os11g42800 -----  
 ATK2 ETLQA-----  
 ATK3 KTLQT-----  
 ATK5 QKLAG-----  
 ATK1 QKLSE-----  
 Os03g64415 VLLAE-----  
 Os04g53760 NTL SA-----  
 Os07g01490 HSL LA-----  
 At2g22610 TSANE-----  
 Os03g02290 DNIEQ-----  
 At1g72250 SEIQN-----  
 Os12g42160 GSLAF-----  
 At5g27550 -----  
 Os05g33030 PKLKQ-----

Os06g11380 -----  
 AtKCA1 -----  
 AtKCA2 -----  
 AtKinesin-12A -----  
 At3g10310 -----  
 Os01g14090 -----  
 At1g63640 -----  
 At5g41310 -----  
 Os02g13580 -----DVARLLTDKENNDSIISELKKELEETKRLHE  
 Os06g36080 DTIMKLNIELEAMKSSYEGTRILLDSKKKEVLQLLMDKESIEYIVSQLKQELAIERSHQ  
 Os01g54080 -----  
 Os05g44560 -----  
 At1g18410 QKYKDEITITVTTTSIEGKNRELEQFKQETMTVTTTSLEAQNRELEQAIKETMTVNTSLEAKN  
 At1g73860 -----  
 Os11g44880 -----  
 OsKCH1 -----  
 Os03g18980 -----  
 At2g47500 -----  
 At1g09170 -----  
 ATK4 -----  
 AtKP1 -----  
 OsKCH2 -----  
 AtKCBP SGNTKSS-----KETKSELAEMNQI--LYKIQKELEVRNKELVAVDNSKRL  
 Os04g57140 GQQQESSNRITGVSGNHFERDTPVTVNNSIEMLAKLEELKSCCKELDASKELSKKLT  
 At1g55550 -----  
 Os01g15540 -----  
 At5g27950 -----  
 Os11g42800 -----  
 ATK2 -----  
 ATK3 -----  
 ATK5 -----  
 ATK1 -----  
 Os03g64415 -----  
 Os04g53760 -----EL  
 Os07g01490 -----  
 At2g22610 -----  
 Os03g02290 -----

At1g72250 -----  
 Os12g42160 -----  
 At5g27550 -----  
 Os05g33030 -----  
  
 Os06g11380 -----YSNAKL  
 AtKCA1 -----YSNAKL  
 AtKCA2 -----YSNAKL  
 AtKinesin-12A -----SKPPRKL  
 At3g10310 -----KTKCNHKRLL  
 Os01g14090 -----NRRRL  
 At1g63640 -----KTRDELEKLLKDAELHVVDSRKRKVELEKLCQSKSQRWKKECIYQNF  
 At5g41310 -----KAKVELERQVKNSLRVVEAKELEKLCETKTKRWKKEQTYKRF  
 Os02g13580 AHSQQLKAAQVSKLEQRIEEVKMLDDSTKRRIELEELSETRIQWKKKEVVIDQFV  
 Os06g36080 THIQELETRAFQANNKLEQRIRKEMELMLEDSTKTRVRDLEELLESRSQIWEQKEIRLNQFI  
 Os01g54080 -----QMEEHLTLRAKEAEFCLMQSKKKVEEVEATSQLKSQVWKKANIFQSF  
 Os05g44560 -----QMEEHLTKIKEVESLLVQSNKKEEVEAASLLKSQVWKKKEGIFQKYM  
 At1g18410 RELEQSKKETMTVNTSLKAKNRELEQNLVHWKSKAKEMEKSELNRSWSQKELSYRSFI  
 At1g73860 -----ETKTANTSLEGKIQELEQNLVMWKTKVREMEKSESNHQRSQKELSYKRFI  
 Os11g44880 -----TDKYF  
 OsKCH1 -----TNF  
 Os03g18980 -----VTLKQYSML  
 At2g47500 -----RQFKQLTIF  
 At1g09170 -----EKTEKQQLII  
 ATK4 -----QKIL  
 AtKP1 -----SRLNAREFSPGHVEAI  
 OsKCH2 -----GGGL  
 AtKCBP SENKILEQNLN-IEKKKKEEVEIHQKRYEQEKVKLKRVSLENKLEVLAQDLDSESTI  
 Os04g57140 MENNLLDQKVQRLERAKSEKSNMERVYEDECCKLKSRIAELEQKLESRTSLNVTSTL  
 At1g55550 -----KNTSS  
 Os01g15540 -----SEAKV  
 At5g27950 -----ESNQLEKSI  
 Os11g42800 -----NHDKDI  
 ATK2 -----EATKQNDFKDTINELESKCSVQNKFI  
 ATK3 -----EATKYNDFKDAITELETTCSSTQGI  
 ATK5 -----EILMYKESVKGSSHELDILIAKSGSLEETCSLQKERI  
 ATK1 -----EIRKYQENVGKSSQELDILTAKSGSLEETCSLQKERL  
 Os03g64415 -----VARETTGYSNGAPDPAAVVAISCCRPFSI  
 Os04g53760 ANYKELAGKSTKDCESLSVKVSAFEVSGFRLTKSILSVRNLAHHYASAQETCSMQEQI  
 Os07g01490 -----DVSTYKEMTGKVAELDNAMTRSTALEETCSQAERI  
 At2g22610 -----QLEKVMMELENNKIYQARSLDQTVITQADCLKSIIRKYENDKRHWATAIDSLQEKI  
 Os03g02290 -----VVDRAQDLRSVSQKYENAKKLWAAAIISNLENKI  
 At1g72250 -----ELMRKSMHVGSLAFAVEGQVKEKSRWFSSLRDLTRKL  
 Os12g42160 -----AVEGQVKEKSRWCQLLNDLSEKF  
 At5g27550 -----SDKI  
 Os05g33030 -----

Os06g11380 GRVTRYLGLFLADRTRKLDQ-----AALETEARITPLIHEK  
 AtKCA1 DRVTRYLGLVLAEKSRKLDQ-----FVLETEARISPLINEK  
 AtKCA2 ERVTRYLGLVLADKSRKLDQ-----YALETEARISPLINEK  
 AtKinesin-12A RSAKENAPPLDRNTSTPDHRSMRMKNPLPPPPSNPLKRKLS-AETATESGFS-----  
 At3g10310 KTQEKELAVLKNLFIKTKQ--DFKFEQVYLRQDLMELGNQMQ-EMSSAAQGYKVVVEEN  
 Os01g14090 QAQSELELELKSMSFQEVKI--DFRTLKTQFQDDIIKLGDNVQ-GLSKAALGYNQAVKEN  
 At1g63640 DNHSGALQELSATSLSIKH--EVRTQRKYFEDLNYYGLKLLK-GVADAAKNYHVVLEEN  
 At5g41310 NHQTEALQELKATSMKSLK--DVLKIGENYFLDLTYYGIKLR-GVAHAAKNYQIIIEEN  
 Os02g13580 SLQVQNVQDLKLSVSVRH--EILNCQNKWSEELAGLGKSLK-VVTNTAEKYHGALAEN  
 Os06g36080 GLQIQNIQDLRLSSVSIH--EILHCQKRWSEECDLGQSLK-VLTNAAENYHATLEEN  
 Os01g54080 NNQKLSIKDIKISSQSIKQ--EMYALQMTWRDEISNIGHDLK-GLVDAENYHKVLAEN  
 Os05g44560 NQQQLYVKGLRISWSIKN--EMHALEMELRDEMSNFGSLK-CLVDAENYHKVLAEN  
 At1g18410 SFQCQALQELRFYSKSIKQ--EILKVQDKYTVFESQLGKLL-ELGDAANYHEVLTEN  
 At1g73860 DNQSQALLELRSYSRSIKQ--EILKVQENYTDQFSQLGKLLI-ELSNAAENYHATLEEN  
 Os11g44880 DQQQKHIDKLSNLTAMKS--GMEHIKLYSEDLKLGKHHVH-TLSHAASGYHKVLEEN  
 OsKCH1 DVQKQIQELKALSFKS--GMEQLRLQYSEEFKALGHFY-TLSNAASSYHKVLEEN  
 Os03g18980 QLQSKHVEELKADIRATKA--GMEFMQMKYSEDINILGRHLF-SLAHAASGYHIVLEEN  
 At2g47500 NQQQEDIEGLRQTLTYTTRA--GMQFMQKQFQEEFSSLMGHVH-GLAHAASGYHRVLEEN  
 At1g09170 ERQQTHTEELKHDLKAVKA--GLSLLQMKYQEFSTSLGKHLH-GLTYAATGYQRVLEEN  
 ATK4 LNQQKHIQELKQTLTYTTKA--GMKLLQMKYQEDFFHLGKHLN-GLAYAATGYKRVLEEN  
 AtKP1 GLQQKELEEVKSNFVETRS--QVKMQSEWQKELQRIVHHVK-AMEVTSSSYHKVLEEN  
 OsKCH2 EHQQEELKLVSNEMKLL--QVESTSQWEEDLRRLLESYFE--AHNHNAYHKVLEEN

AtKCBP ESKNSDMLLQNNLKELEE-LREMKEIDRKNEQTAAILKMQGAQLAELEIILYKEEQVLR  
Os04g57140 ALRNAEVDLTLQNSLKELEDE-LREFKADVDRKNQQTAEILKRQGAQLIELENLYKQEQVLR  
At1g55550 TSKKEEDDFVSVDLQSIIRD-----QLSALTVQVNDQNKLR  
Os01g15540 QKIQDELVSLNAQLKQITL-----QR  
At5g27950 SNLEEEVFLKLLKLSLDE-----KR  
Os11g42800 SALQEEISALRSRQRHLHD-----RR  
ATK2 EELQDQLVASERKLVQVADL---STFEKMFEEQKESIMELKG-RLEEAELKLIERGEKLR  
ATK3 RQLQDRLVNSERRLQVSDL---STFEKMFEEQKQSIIDLKS-RVEEAELKLVGEKLR  
ATK5 KMLEQELAFAKEKLMVDL---SMSHTMTEFEEQKQCMHELQD-RLADTERQLFEGELLR  
ATK1 NMLEQQLAIANERQKMADA---SVSLTRTEFEEQKHLLCELQD-RLADMEHQLCBEGELLR  
Os03g64415 PPSTAAAGSCRHPAAVTRWRPLAGGARSGRRDNRPRQGTGAT-RTGISKTYVSSVVAKT  
Os04g53760 QTLTKQLAVATNKLKLDV---TAIEAMTGYEEQKVIKDLLE-RLASAEFQIVADKLR  
Os07g01490 KTLLEQLASANEKLRSDL---TMMETMTEYEQKRMLEDLQL-RLEEAQQIILDGENLR  
At2g22610 EIMKREQSLSQEAHECEVGEPIPELYKMVGQVQALVS-----QCEDLKQKYSEEQAKR  
Os03g02290 KAMKQEQTLLEAHDCANAVPDLKMIQAVQTLVA-----QCEDLKLKYYEEMAKR  
At1g72250 KIMKVEQIKLLEAATYKHLVQDINEFSSHIQSRVKQDAELHE----NLKVKFVAGEKER  
Os12g42160 KALKAHQILLQESLECKKQVADATQMTTIIQQHVNYASLEC-EFKDLKEKFTETKER  
At5g27550 KILKDEHALVSNQVQEIKN---CSLVEPEISRALQLLTT---KLGALEKQYLEESSER  
Os05g33030 -----INTPDRLAALRFLGGKYNLSLEERYKQVAKCAEBCAPRYDGLKKKYADECAER

Os06g11380 KRLFNDDLTLKGNVVFCSRPLFEDE----GSSVVE-FPDDFTIRVNTGDESITN-PK  
AtKCA1 KRLFNDDLTAKNIKVFCRARPLFEDE----GPSVIE-FPGDCTICVNTSDDTLNS-PK  
AtKCA2 KRLFNDDLTKGNVVFCSRPLFEDE----GPSVIE-FPDNCTIRVNTSDDTLNS-PK  
AtKinesin-12A -----SGVKVIVRMKPLNKG-----EGDMIVEKMSKDSLTVSG  
At3g10310 RKLNYMVDLQGNIRVYCRVRFINSEM---DGVVDY-IGKDGSLFVLDPSPKPKD-AR  
Os01g14090 KSLYNLLQELRGNIRVFCRIRPLINSE---ISSIEH-IGNDGSIMVCDPLKPKT--TR  
At1g63640 RRLYNEVQELKGNIRVYCRVRFPLPGQNS-R-QTTIEY-IGETGELVVANPFKQKGD-TH  
At5g41310 RRLYNEVQELKGNIRVYCRVRFPLPGQNK-K-QTSIEY-TGENGELVVANPLKQKGD-TY  
Os02g13580 RKLFEIQELKGNIRVYCRVRFPLPGEDD-K-SSSVEY-IGDNGELVLSNPTKQKKE-GG  
Os06g36080 RKLFEVQELKGNIRVHCRVRFPLPGEDQ-T-STTIEY-VGDNGELILANPAKRKKE-GH  
Os01g54080 RKLNYNEVQELKGNIRVYCRVRFPLPGQDG-K-LTAIDY-IGENGEILIANPSKQKKE-GY  
Os05g44560 QKLFNEVQELKGNIRVYCRVRFPLPGQDK-K-STVDY-IGENGELLSNPFKQKGD-GH  
At1g18410 QKLFNEVQELKGNIRVYCRVRFPLPGQGA-S-KTVVEH-IGDHGELVVLNPTKPGKD-AH  
At1g73860 RKLFEVQELKGNIRVFCRVRPFLPAQGA-A-NTVVEY-VGEDGELVVNPTKPGKD-GL  
Os11g44880 RKLNYNEVQELKGNIRVYCRVRFPLPGQV---SSSSVA-GLEDRITITVMTSPKHKGD-AR  
OsKCH1 RKLNYNEVQELKGNIRVYCRVRFPLPGHRS---LSSSVA-DTEERTITITPTKYGKD-GC  
Os03g18980 RKLNYNEVQELKGNIRVYCRVRFPLPGQV---SSCAVG-SIDENITITITPSKSGKE-GR  
At2g47500 RKLNYNEVQELKGNIRVYCRVRFPLPGQSS---FSSTIG-NMEDDTIGINTASRHGK--SL  
At1g09170 RKLNYNEVQELKGNIRVYCRVRFPLPGQKS-V-LTTVDH-L-EDSTLSIATPSKYGKE-GQ  
ATK4 RKLNYNEVQELKGNIRVYCRVRFPLPGQESGG-LSAVED-I-DEGTITIRVPSKYGKA-GQ  
AtKP1 RLLYNEVQDLKGTIRVYCRVRFPLQEQD-M-QSTVDY-IGENGEIINNPFKQEKD-AR  
OsKCH2 RKLNYNEVQDLKGSIRVYCRVRFPLKMQTD-Q-RSTVDH-IGENGEIMIVNPQKQKKE-GR  
AtKCBP KRYLNTIEDMKGKIRVFCRIRPLNEKES---EREKQM-LTTVDFETVHPWKDD---KR  
Os04g57140 KRYLNTIEDMKGKIRVFCRIRPLNDKELI---EKDKNI-VCSPEFETVAHPWKDDKS---  
At1g55550 RQILNEFLDLKGNIRVFCRVPKPLGATEKL---RPPVAS---DTRNVIKLSSET-----KR  
Os01g15540 REALNLYDLKGNIRVFCRIRPFHHEESY---SSRNLF-TLDESNVFLKVAET-----KR  
At5g27950 KQVNLKIIDTKGSIRVFCRVRPFLTEREPI-REPVSF-GPDNVVIRSAG-----SS  
Os11g42800 QEALDKLIDLKGSIRVFCRVRPSISANNF---MTKSPV-TVENEKIVVRAVG-----IK  
ATK2 KKLHNTIQELKGNIRVFCRVRPLPSGENSSE-EAKTIS-YPTSLEALGRGIDLLQNG-QS  
ATK3 KKLHNTIILELKGNIRVFCRVRPLPSGENNGD-EGKTIS-YPTSLEALGRGIDLMQNA-QK  
ATK5 KKLHNTIILELKGNIRVFCRVRPLPDDGGRQ-EASVIA-YPTSTESLGRGIDVVQSG-NK  
ATK1 KKLHNTIILELKGNIRVFCRVRPLPDDGGRH-EATVIA-YPTSTEAQGRGVDLVQSG-NK  
Os03g64415 LAL---QELKGNIRVFCRVRPLPNE-----SGAVAY--PKSGENLGRGIELTHNG-QM  
Os04g53760 KKLHNTIILELKGNIRVFCRVRPLPQDNDSSGAEEALIS-YPTSVEASGRGIDLMNQG-QR  
Os07g01490 KRLHNTIILELKGNIRVFCRVRPLPNE-----SGAVAY--PKSGENLGRGIELTHNA-QM  
At2g22610 KELYNHIQETKGNIRVFCRPLNTEETS---TKSATI-VDFDGAQDGLGVIITGNN-SK  
Os03g02290 KKLHNIVEETKGNIRVFCRPLSKDETS---SGYKCA-VDFDGAQDGLGIAIVNGGA-AK  
At1g72250 KELYNKILELKGNIRVFCRPLNFEETE---AGVSMG-IDVESTKNGEVIVMSNGF-PK  
Os12g42160 KDLYNKILIEVKNIRVFCRPLNQEIEGASMAVDPESAKDGLIVRGHVS-----SK  
At5g27550 KRLYNEVIELKGNIRVFCRPLNQAIEIANG-CASVAE-FDITQE--NELQILSSDS-SK  
Os05g33030 RRLYNEVIELRGNIRVFCRPLSTAIEISNG-CSSIVQ-IDPSHE--TELQFVPSDK-DR

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Os06g11380 KDYEFDRVYGPPIGQELFHDV-QPLVQSALDGYNVAIFAYGQSRSGKTHTEGSSH---  
AtKCA1 KDFEFDRVYGPVHQAALFSDV-QPFVQSALDGSNVSILSYGQTNAGKTYTMEGSNH---  
AtKCA2 KEFEFDRVYGPVQQAALFSDV-QPFVQSALDGSNVSIFAYGQTHAGKTYTMEGSNQ---  
AtKinesin-12A QTFTFDSIANPESTQEQMQLVGAFLVENCLSGFNSSVFAYGQTGSGKTYTMTWGPANGLL  
At3g10310 KTFQFNQVFGPTATQDDVFRET-QPLIRSVMDGYNVCIFAYGQTGSGKTYTMTSGPPGR-S  
Os01g14090 KIFQFNKIFGPTTTQDEVYKET-QYLIRSVMDGYNVCIFAYGQTGSGKTHTMCGPSSGLS  
At1g63640 RLFKFNKVFDAQAATQEEVFLDT-RPLIRSVMDGYNVCIFAYGQTGSGKTYTMTSGPSIT-S

At5g41310 RLFKFNKVFPESTQEEVFLDT-RPMIRSVLDGYNVCFAYGQTGSGKTYTMSGP SIT-S  
Os02g13580 KNFTFNKVFPIITQDAVFKDI-QPLIRSVLDGYNVCFAYGQTGSGKTYTMMGPEKA-T  
Os06g36080 KLFKFNKVLGPSASQDEVFKEI-QPLIRSVLDGYNVCFAYGQTGSGKTYTMTGPENA-T  
Os01g54080 RMFKFNKVFTHSSQAEVFSDI-QPLIRSVLDGFNVCFAYGQTGSGKTYTMSGPGTS--  
Os05g44560 RMFKFNKVFSPFSSQAEVFSDI-QPLIRSVLDGFNVCFAYGQTGSGKTYTMSGPSTS--  
At1g18410 RKFRFNKVYSPASTQAEVFSDI-KPLIRSVLDGYNVCFAYGQTGSGKTYTMTGPDGA-S  
At1g73860 RQFKFNKVYSPASTQAEVFSDI-RPLVRSVLDGYNVCFAYGQTGSGKTYTMTGPDGS-S  
Os11g44880 KSFTFNRVFGPLATQEQVFADM-QPLIRSVLDGYNVCFAYGQTGSGKTYTMSGPKVL-T  
OsKCH1 KSFSFNRVFGPASTQEEVFSDM-QPLIRSVLDGFNVCFAYGQTGSGKTYTMSGPKVL-T  
Os03g18980 KTFNFKVFGPSATQEEVFLDT-QPLIRSVLDGYNVCFAYGQTGSGKTYTMSGPKNM-T  
At2g47500 KSFTFNKVFGPSASQEAVFADM-QPLIRSVLDGYNVCFAYGQTGSGKTYTMSGPRDL-T  
At1g09170 KTFNFKVFGPSASQEAVFADT-QPLIRSVLDGYNVCFAYGQTGSGKTYTMMGNEL-T  
ATK4 KPFMFKVFGPSATQEEVFSDM-QPLVRSVLDGYNVCFAYGQTGSGKTYTMTGPKEL-T  
AtKP1 KIFSNKVFQGTVSQEQIYIDT-QPVIRSVLDGFNVCFAYGQTGSGKTYTMSGPDLM-T  
OsKCH2 KMFSFNKIFGNASQSEVFADT-QPLIRSVMDGYNVCFAYGQTGSGKTYTMSGPDIT-T  
AtKCBP KQHIYDRVFDMRASQDDIFEDT-KYLVQS AVDGYNVCFAYGQTGSGKTYTIIYGHE----  
Os04g57140 KQHIYDRVFDANTQEEVFEEDT-KYLVQS AVDGYNVCFAYGQTGSGKTYTIIYGSE----  
At1g55550 KTYNFDKVFQPDSSQDDVFELEI-EPVIKSVLDGYNVCFAYGQTGSGKTYTMEGLP----  
Os01g15540 KQYKFDKVFQDFSTQGVFSEV-EPVIKSVLDGYNVCFAYGQTGSGKTYTMEGKP----  
At5g27950 KEFFFDKVFHQSATQEEVFEV-EPVIRSVLDGYNVCFAYGQTGSGKTYTMDGTS----  
Os11g42800 KEFSDRVFDQESTQEDVFEV-EPVIRSVLDGYNVCFAYGQTGSGKTYTMEGNN----  
ATK2 HCFTFDKVFPASQEDVFEI-SQLVQSALDGYKVCIFAYGQTGSGKTYTMMGRPGN--  
ATK3 HAFTFDKVFAPTASQEDVFEI-SQLVQSALDGYKVCIFAYGQTGSGKTYTMMGRPGN--  
ATK5 HPFTFDKVFHDGASQEEVFEI-SQLVQSALDGYKVCIFAYGQTGSGKTYTMMGRPET--  
ATK1 HPFTFDKVFNHEASQEEVFEI-SQLVQSALDGYKVCIFAYGQTGSGKTYTMMGRPEA--  
Os03g64415 YFFTFDKVFEQSTQEDVFEI-SHLVQSALDGYKVCIFAYGQTGSGKTYTMMGNPEL--  
Os04g53760 YFSYDKVFDHGASQEDVFEV-EPVIRSVLDGYNVCFAYGQTGSGKTYTMMGPPG--  
Os07g01490 YSFTFDKVFHQSATQEDVFEI-SQLVQSALDGYKVCIFAYGQTGSGKTYTMMGNPEL--  
At2g22610 KSFKFDRVYTPKDGQDVDFADA-SPMVSVLDGYNVCFAYGQTGSGKTYTMEGTP----  
Os03g02290 KTFKFDKVFQPDSSQDDVFELEI-EPVIKSVLDGYNVCFAYGQTGSGKTYTMEGTE----  
At1g72250 KSFKFDSVFGPNSQADVFEDT-APFATSVLDGYNVCFAYGQTGSGKTYTMEGTQ----  
Os12g42160 KVFKFDSVFPEDQEKVFEKT-VPFATSVLDGYNVCFAYGQTGSGKTYTMEGIE----  
At5g27550 KHFKFDHVFQPDGQETVFAQT-KPIVTSVLDGYNVCFAYGQTGSGKTYTMEGTP----  
Os05g33030 KAFKFDHVFQPDGQETVFAES-LPVVRSVMDGFNVCFAYGQTGSGKTYTMEGIP----  
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Os06g11380 -----DRGLYLRSFEELFDLNSDST---TSTSHFNFYITACELYNDQVRDLLSDSI-  
AtKCA1 -----DRGLYARCFEELFDLANSDS---TSTSRFSFSLSVFEIYNEQIRDLLSETQ-  
AtKCA2 -----DRGLYARCFEELMDLANSDS---TSASQFSFVSVFELYNEQVRDLLSGCQ-  
AtKinesin-12A EEHLGCDQRGLTPRVFERFLRKEEQVKAERQLNYQCRCSLEIYNEQITDLDLPSQ-  
At3g10310 AT----EMGINYLALSDLFLICDR-R----KMMTYEIVVQMVVEIYNEQVRDLLAENS-  
Os01g14090 SQ----DLGISYMALNDLFKTTST---REDVKYDIHVQMVVEIYNEQVRDLLNEDT-  
At1g63640 KE----DWGVNRYALNDLFLLTQS-R---QNTVMYEVGVQMVVEIYNEQVRDILSDGG-  
At5g41310 EE----DRGVNRYALNDLFLLTQS-R---QNSVMYEVGVQMVVEIYNEQVRDILSDG--  
Os02g13580 EK----EWGVNRYALNDLFNISHD-R---RDTITYELGVQMIYNEQIRDLLGSGG-  
Os06g36080 EK----DWGVNRYALNDLFLHISRS-R---RDTVMYKVSQMIYNEQIHDLLGNSG-  
Os01g54080 RE----DWGVNRYALNDLFLDISLS-R---KNAFSYEVGVQMVVEIYNEQVRDILSNDI-  
Os05g44560 KE----DWGVNRYALNDLFLDISLS-R---RNAFSYEVGVQMVVEIYNEQVRDILSNDI-  
At1g18410 EE----EWGVNRYALNDLFRISQS-R---KSNIAEYEVGVQMVVEIYNEQVRDILS--  
At1g73860 EE----DWGVNRYALNDLFLKISQS-R---KGNISYEVGVQMVVEIYNEQVLDLSDDN-  
Os11g44880 EE----GLGVNRYALNDLFLNIQAQ-R---KDTFCYEISVQMIYNEQVRDILQNGG-  
OsKCH1 EE----SLGVNRYALNDLFLNIKAQ-R---KGTIDYEISVQMIYNEQVRDILQDGG-  
Os03g18980 EQ----TQGVNRYALSDLFLKLAEQ-R---KGAFIYDIYAVQMIYNEQVRDILVNDG-  
At2g47500 EK----SQGVNRYALGDLFLFLAEQ-R---KDTFRYDIYAVQMIYNEQVRDILVTDG-  
At1g09170 DE----TLGVNRYALSDLFLHLSK-----  
ATK4 EE----SLGVNRYALADLFLFLSNQ-R---KDTTSYEISVQMIYNEQVRDILLAQDG-  
AtKP1 ET----TWGVNRYALRDLFLQLSNA-R---THVVTYEIGVQMIYNEQVRDILVSDG-  
OsKCH2 EE----TWGVNRYRSLNDLFAISQN-R---ADTTYDVKVQMIYNEQVRDILMVDG-  
AtKCBP -S-----NPGLTPRATKELFNILKR-D---SKRFSSFLKAYMVELYQDTLVDLLPKS-  
Os04g57140 -N-----NPGLTPRATKELFRVIKR-D---GHKYSFSLKAYMVELYQDNLDLAKN-  
At1g55550 -N-----SPGIVPRAIKGLFQVVEE-----SNHMFTIHFMSLEIYMGNLKDLLSEA-  
Os01g15540 -T-----NLGVIIPRGIQTLFNQASE-----CNNRFLTFMSLEIYMGNIIRDLLAPRS-  
At5g27950 -E-----QPLAPRAIKELFNEASM-----DQTHSVTFRMSLEIYMGNLKDLLSARQ-  
Os11g42800 -G-----KLGIVPRAIQELFSSHASQ-----DSSSTYSFISMSLEVYMGTVRDLTPRQ-  
ATK2 PD----EKGLIPRCLEQIFQTRQSLR----SQGWKYELQVSMLEIYNETIRDLLSTNK-  
ATK3 VE----EKGLIPRCLEQIFETRQSLR----SQGWKYELQVSMLEIYNETIRDLLSTNK-  
ATK5 PE----QKGLIPRSLEQIFKTSQSLR----TQGWKYKMQVSMLEIYNETIRDLLSTNK-  
ATK1 PD----QKGLIPRSLEQIFQASQSLG----AQGWKYKMQVSMLEIYNETIRDLLSTNR-  
Os03g64415 HD----QKGLIPRSLEQIFQTSQALI----SQGWKYKMQASMLEIYNETIRDLLATNH-  
Os04g53760 RD----QKGIIPRSLEQIFKTSQSLR----SQGWKYSMQASMLEIYNETIRDLLAPGR-  
Os07g01490 HD----QKGLIPRSLEQIFQTSQALI----SQGWKYKMQASMLEIYNETIRDLLATNR-

At2g22610 -Q----NRGVNYRTVEQLFEVARE-R----RETISYNISSVSVLEVYNEQIRDLLLATSP-  
Os03g02290 -R----NRGVNYRTLEELFKIAEE-R----KETVTYSISVSVLEVYNEQIRDLLASSP-  
At1g72250 -H----DRGVNYRTLENLFRIKA-R----EHRYNYEISVSVLEVYNEQIRDLLVPAS-  
Os12g42160 -D----ARGVNYRTLEELFRITKE-R----QGLFQYEITVSVLEVYNEQIHDLTGT-  
At5g27550 -E----NRGVNYRTLEELFRCSSE-K----SHLMKFELSVSMLEVYNEKIRDLLVDNS-  
Os05g33030 -E----DRGVNYRALEELFRLEE-R----SSSVAYTFAVSILEVYNEKIRDLLDESS-

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Os06g11380 -----SPVPKVRMGVQE-----SFVELVQEKVENPLEFSNSLKAALENRSANS  
AtKCA1 -----SNLPNINMDLHE-----SVIELGQEKVDNPLEFLGLVKSFAFLNRGNKY  
AtKCA2 -----SNLPKINMGLRE-----SVIELSQEKVDNPEFMRVLSNFAQNRNDK  
AtKinesin-12A -----KNLMIRE-DV-KSGVYVENLTEEYVKNLTDVSQLLIKGLGNRRRTGA  
At3g10310 -----SCTRLDIRTCSSDDGLSLPDATMHSVNSTKDVQLMEAGEVNRVAVSS  
Os01g14090 -----SSTKLDIRT-SS-NGLNLNLPDAKKCPVQSPSDVINLMLLGEKHRASSP  
At1g63640 -----SSRRLGIWN-TALPNGLAVPDASMHCVRSTEDVLELMNIGLMNRTVGA  
At5g41310 -----VPDASMHSVRSTEDVLELMNIGLMNRTVGA  
Os02g13580 -----VQKGLGIQN-TIQPNGLAVPDATMCPVTSTSHVIELMQTGHDRAMSA  
Os06g36080 -----SEKKGILN-ASQPNGLAVPDATMHPVNSSSDVIELMRTGLENRSVGA  
Os01g54080 -----AQKRLGIWS-TSQPNGLVVPDASLHPVKSTSDVLDLMEIGQSNRAVGS  
Os05g44560 -----AQKRLGIWS-TSQPNGLVVPDASLHPVKSTSDVLDLMEIGQSNRAVGS  
At1g18410 -----GILS-TTQQNGLAVPDASMPVPTSTSDVLELMSIGLQNRVVS  
At1g73860 -----SQKTLGLILS-TTQQNGLAVPDASMPVPTSTSDVITLMDIGLQNRVVS  
Os11g44880 -----NKKVDIKN-SS-QKGIAPDANIVPVTSTSDVIDLMLNGQKNRAVCS  
OsKCH1 -----NRRLEIRN-TP-QKGLAVPDASIVPVTSTADVVELMNGQKNRAVGS  
Os03g18980 -----LNKRLEIRN-NS-QNGLNVPDASLVCVASTMDVMELMNVGQKNRAVGA  
At2g47500 -----SNKRLEIRN-SS-QKGLSVPDASLVPVSSTFDVIDLMDTGHKNRAVGS  
At1g09170 -----IRN-ST-QDGINVPEATLVPVSTSDVIHLMNIGQKNRAVSA  
ATK4 -----QTKRLEIRN-NS-HNGINVPEASLVPVSSDDVVIQLMDLGHMNRVSS  
AtKFP1 -----SSRRLDIRN-NSQLNGLNVPDANLIPVSNTRDVLDLMRIGQKNRAVGA  
OsKCH2 -----ANKRLEIRN-SSHVNGLNIPDANLVPVKAQDVLDLMRVGHNRRAVGS  
AtKCBP -----ARRLKEIKK-DS-KGMVFNVTIPISTLEELRMILERSGERRHVS  
Os04g57140 -----ATHQKLEIKK-DS-KGVVTVENVTVVNISSFEELRAIILRGSERRHTAG  
At1g55550 -----TKPISPIPPSLSIHT-DP-NGEIDIENLVKLVDDFNEILRLYKVGCRSRATAS  
Os01g15540 -----KTNGIKNVPSLSIKS-DP-DGGIEIEDLVAVTVNSFQEVKRLYEMGTRLRSTAS  
At5g27950 -----SLKSYEASAKCNLNIQV-DS-KGSVEIEGLTEVEVMDFTKARWVYKGRVRSTSW  
Os11g42800 -----PLFRSTECNTSSIIISILA-TK-SGAVEVEGLTDVAIQDLKKANQVYCRGRARRSTSW  
ATK2 -----EAVRADNGVSPQKYAIKH-DA-SGNTHVVELTVVDVRSKQVFFLDHAARNRSVKG  
ATK3 -----EAVRTDSGVSPQKHAIKH-DA-SGNTHVAELTILDVKSREVSFLDHAARNRSVKG  
ATK5 IAIESVRADSSSTSGRYTITH-DV-NGNTHVSDLTIVDVCSIGQISSLLQQAQSRVSGK  
ATK1 TSMDLVRADSGTSGQYTIH-DV-NGNTHVSDLTIFDVCSVGISSLLQQAQSRVSGK  
Os03g64415 -----TTIQDGGASKYSIKH-DA-NGNTHVSDLIIVDVLSINEVSSLLKRAAQSRVGR  
Os04g53760 -----SNNFDLSTSKQYTIKH-DP-QGNTTVDLTVADVFSADVTSLLAKASQSRVGR  
Os07g01490 -----TTVQDGGASKYSIKH-DA-NGNTHVSDLTIVDVSSINEVSSLLKRAAQSRVGR  
At2g22610 -----GSKKLEIKQ-SS-DGSHHVPLVEANVENINEVWVNLQAGSNARAVGS  
Os03g02290 -----SSKKLEIKQ-AS-EGSHHVPGIVEAKVENIKEVVDVLQAGSNARAVGS  
At1g72250 -----QSASAPKRFEIRQ-LS-EGNHVPLVEAPVKSIEEVVDVLKTGSNARAVGK  
Os12g42160 -----QPGATAKRLEVRQ-VA-EGVHHVPLVEARVTNMNEAWEVLQTGSKARVVS  
At5g27550 -----NQPPKKLEVKQ-SA-EGTQEVPLVEAQVYNTDGVWDLKKGAVRSVGS  
Os05g33030 -----EQTGRKLDIKQ-TA-DGTQEVAGLIEAPIYITIDGVWEKLVGAKNRVGA

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Os06g11380 LKVMVS----HLIVTIHI--HYRNYVTG-EHLY-SKLSLVLDLPASECLLEEDANRDNVTD  
AtKCA1 SKFNVT---HLIVSIHI--YYSNTITG-ENIY-SKLSLVDLAGSEGLIMENDSGDHVTD  
AtKCA2 S----KSTVTHLIVSIHI--CYSNTITR-ENVI-SKLSLVDLAGSEGLTVEDDNGDHVTD  
AtKinesin-12A TSVNTESSRSHCVFTCVVESRCKNVADGLSSFKTSRINLVDLAGSERQKSTGAAGERLKE  
At3g10310 TSMNRRSSRSHSIFMVHV--RGKDT-SG-GTLR-SCLHLVDLAGSERVDKSEVTGDRLKE  
Os01g14090 TAMNHRSSRSHSILTVHV--NGKDM-SG-NVTR-SSLHLVDLAGSERVDRSEATGDRLKE  
At1g63640 TALNERSSRSHCVLSVHV--RGVDVETD-SILR-GSLHLVDLAGSERVDRSEATGERLKE  
At5g41310 TTLNEKSSRSHSVLSVHV--RGVDVETE-SVLR-GSLHLVDLAGSERVGRSEVTGERLKE  
Os02g13580 TALNERSSRSHSVVTIHV--RGQDLKTG-NTLR-GALHLVDLAGSERVDRSAVTGDRLKE  
Os06g36080 TALNERSSRSHSVVTMHI--QGVDLKTG-VTLR-GALHLVDLAGSERVDRSAATGDRLKE  
Os01g54080 TALNERSSRSHSILTVHV--RGLDVKNG-STSR-GCLHLIDLAGSERVERSEATGDRLKE  
Os05g44560 TALNERSSRSHSILTVHV--RGLDVKNG-STSR-GCLHLIDLAGSERVERSEATGDRLKE  
At1g18410 TALNERSSRSHSIVTVHV--RGKDLKTG-SALY-GNLHLVDLAGSERVDRSEVTGDRLKE  
At1g73860 TALNERSSRSHSIVTVHV--RGKDLKTG-SVLY-GNLHLVDLAGSERVDRSEVTGDRLRE  
Os11g44880 TAMNDRSSRSHSCLTVHV--QGRDLTSR-TVLR-GCMHLVDLAGSERVDKSEVVGDRLKE  
OsKCH1 TAINDRSSRSHSCLSVHV--QGKYLTSG-AMLR-GCMHLVDLAGSERVDKSEVVGDRLKE  
Os03g18980 TALNDRSSRSHSCLTVHV--QGRDLTSG-TILR-GCMHLVDLAGSERVDKSEVTGERLKE  
At2g47500 TALNDRSSRSHSCLTVHV--QGRDLTSG-AVLR-GCMHLVDLAGSERVDKSEVTGDRLKE  
At1g09170 TAMNDRSSRSHSCLTVHV--QKDLTSG-VTLR-GSMHLVDLAGSERIDKSEVTGDRLKE  
ATK4 TAMNDRSSRSHSCLTVHV--QGRDLTSG-SILH-GSMHLVDLAGSERVDKSEVTGDRLKE

AtKP1 TALNERSSRSHSVLTVHV--QGKELASG-SILR-GCLHLVLDLAGSERVEKSEAVGERLKE  
OsKCH2 TALNERSSRSHSVLTVHV--QGKEIASG-STLR-GCLHLVLDLAGSERVDKSEAGERLNE  
AtKCBP TNMNESSRSHLILSVVI--ESIDLQTO-SAAR-GKLSFVDLAGSERVKKSGSAGCQLKE  
Os04g57140 TNMNVESSRSHLILSIII--ESTNLQTO-SYAR-GKLSFVDLAGSERVKKSGSAGKQLKE  
At1g55550 TNSNSVSSRSHCMIRVSV--TSLGAPER-RRET-NKIWLVDLGGSERVLKTRATGRRFDE  
Os01g15540 TMANSTSSRSHCLIRISL--TSLNATER-RKAT-SKLWMLDLAGSERLVKTKATGKRLKE  
At5g27950 TNVNETSSRSHCLTRITI--FRRGDAVG-SKTEVSKLWMLDLAGSERLLKTGATGQTMDE  
Os11g42800 TNVNDVSSRSHCLTRITI---KRSSGG-TTEEC SKLWLVLDLAGSERLLKTGASGLTMDE  
ATK2 TAMNEQSSRSHFVFTLKI--SGFNESTE-QQVQ-GVLNLDLAGSERLSKSGSTGDRLKE  
ATK3 TQMNEQSSRSHFVFTLRI--SGVNESTE-QQVQ-GVLNLDLAGSERLSKSGSTGDRLKE  
ATK5 THMNEQSSRSHFVFTLRI--SGVNESTE-QQVQ-GVLNLDLAGSERLSRSGATGDRLKE  
ATK1 TQMNEQSSRSHFVFTMRI--SGVNESTE-QQVQ-GVLNLDLAGSERLSKSGATGDRLKE  
Os03g64415 TQMNESSRSHCVFTLRF--FGVNEGTD-QQVQ-GVLNLDLAGSERLNKSGATGDRLKE  
Os04g53760 TQMNEQSSRSHFVFTLKI--SGSNENTG-QQVQ-GVLNLDLAGSERLAKSGSTGDRLKE  
Os07g01490 TQMNESSRSHCVFTLRI--FGVNEGTD-QQVQ-GVLNLDLAGSERLNKSGATGDRLKE  
At2g22610 NNVNEHSSRSHCMLSIMV--KAKNLMNG-DCTK-SKLWLVLDLAGSERLAKTDVQGERLKE  
Os03g02290 NNVNEHSSRSHCMLCIMV--RAENLMNG-ECTR-SKLWLVLDLAGSERLAKTDVQGERLKE  
At1g72250 TTANEHSSRSHCHICVMV--KGENLLNG-ECTR-SKLWLVLDLAGSERVAKTEVQGERLKE  
Os12g42160 TTANEHSSRSHCMHCVMV--KGENLMNG-EQTK-SKLWLVLDLAGSERVAKTEVQGERLKE  
At5g27550 TAANEQSSRSHCLLRVTV--KGENLING-QRTR-SHLWLVLDLAGSERVQKVEVEGERLKE  
Os05g33030 TSANELSSRSHSLVKVTV--RSEHLVTG-QKWR-SHIWLVDLAGSERVNTVEVEGDRLKE

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Os06g11380 FLHVSKLSALGDALASLSA----KKEPVLSGNSRITQILADSLGSSSKTLLIVHVS  
AtKCA1 LLHVMNSISALGDVLSLTS----GKDSIPYDNSILTRVLADSLGGSSKTLMIVNICPS  
AtKCA2 LLHVTNSISALGDVLSLTS----KRDTIPYENSFLTRILADSLGSSSKTLMIVNICPS  
AtKinesin-12A AGNINRSLSQLGNLILAIETISQTKPRHIPYRDSRLTFLQESLGGNAKLAMVCAVSPS  
At3g10310 AQYINKSLSCLDVIFSLAQ----KNSHIPYRNSKLTLLQDLSLGGQAKTLMFVHISPE  
Os01g14090 AQHINKSLSCLDVITALAQ----KNSHIPYRNSKLTQLLQSSLGGNAKTLMFVHISPE  
At1g63640 AQHINKSLSCLDVIFALAH----KNPVPYRNSKLTQVLQSSLGGQAKTLMFVQVNP  
At5g41310 AQHINKSLSCLDVIFALAH----KNPVPYRNSKLTQVLQSSLGGQAKTLMFVQINP  
Os02g13580 AQHINKSLSCLDVIFSLSQ----KNAHVPYRNSKLTQVLQSSLGGHAKTLMFVQVNP  
Os06g36080 AQHINKSLSCLDVIFSLSQ----KNAHVPYRNSKLTQVLQSSLGGNAKTLMFVQVNP  
Os01g54080 AQHINKSLSCLDVIFSLAQ----KNAHVPYRNSKLTQVLQSSLGGQAKTLMVQINP  
Os05g44560 AQHINKSLSCLDVIFALAQ----KNAHVPYRNSKLTQVLQSSLGGQAKTLMFVQINP  
At1g18410 AQHINKSLSCLDVIFSLAS----KSSHVPYRNSKLTQLLQSSLGGRAKTLMFVQVNP  
At1g73860 AQHINKSLSSLDVIFSLAS----KSSHVPYRNSKLTQLLQSSLGGRAKTLMFVQVNP  
Os11g44880 AQHINKSLAALGDVIFSLAQ----KNAHVPYRNSKLTQLLQSSLGGQAKTLMFVHIAPE  
OsKCH1 AQYINKSLSCLDVIFSLAQ----KNSHVPYRNSKLTQLLQSSLGGQAKTLMFVHISPE  
Os03g18980 AQHINKSLSCLDVIFSLAQ----KSAHVPYRNSKLTQLLQSSLGGQAKTLMFVHISPE  
At2g47500 AQHINRSLSCLDVIFSLAH----KNPVPYRNSKLTQLLQSSLGGQAKTLMFVHISPE  
At1g09170 AQHINKSLSCLDVIFSLSQ----KNNHIPYRNSKLTQLLQDALGGQAKTLMFVHISPE  
ATK4 AQHINKSLSCLDVIFSLSQ----KTSHVPYRNSKLTQLLQSSLGGSAKTLMFVHISPE  
AtKP1 AQHINKSLSCLDVIFSLAQ----KSSHVPYRNSKLTQVLQSSLGGQAKTLMFVHISPE  
OsKCH2 AKHINKSLSCLDVIFSLAQ----KSSHVPYRNSKLTQVLQDALGGQAKTLMFVHMNPE  
AtKCBP AQSINKSLSCLDVIFALSS----GNQHIPYRNHKLTMMSDSLGGNAKTLMFVNVSPA  
Os04g57140 AQSINKSLSCLDVIFALSS----DGQHIPYRNHKLTMMSDSLGGNAKTLMFVNVSPA  
At1g55550 GKAINLSLSCLDVIFSLQR----KNSHIPYRNSKLTQVLKDSLGGQAKTLMVHISPK  
Os01g15540 GKAINLSLSCLDVIDALQT----KKPHVPYRNSKLTQVLRDSLGCESKTLMLVHISPD  
At5g27950 GRAINLSLSCLDVIFALRR----KKGHVPYRNSKLTQILKDSLGRSKVLMVHISPR  
Os11g42800 GKAINLSLSCLDVIFALRR----KRSHVPYRNSKLTQILSDSLGGSKVLMVHISPS  
ATK2 TQAINKSLSSLDVIFALAK----KEDHVPFRNSKLTLLQPCPLGGDSKTLMFVNIPE  
ATK3 TQAINKSLSSLDVIFALAK----KEDHVPFRNSKLTLLQPCPLGGDAKTLMFVNIPE  
ATK5 TQAINKSLSALSDVIFALAK----KEDHVPFRNSKLTLLQPCPLGGDSKTLMFVNISP  
ATK1 TQAINKSLSALSDVIFALAK----KEDHVPFRNSKLTLLQPCPLGGDSKTLMFVNISP  
Os03g64415 TQAINKSLSCLSDVIFSLIAK----KEEHVPFRNSKLTLLQPCPLGGDSKTLMFVNISP  
Os04g53760 TQAINKSLSALSDVIFALIAK----GDDHVPFRNSKLTLLQPCPLGGDSKTLMFVNISP  
Os07g01490 TQAINKSLSCLSDVIFSLIAK----KEEHVPFRNSKLTLLQPCPLGGDSKTLMFVNISP  
At2g22610 AQNINRSLSCLDVIFALAT----KSSHIPYRNSKLTLLQDLSLGGDSKTLMFVQISPS  
Os03g02290 AQNINRSLSCLDVIFALAT----KNSHIPYRNSKLTLLQDLSLGGDSKALMFVQISPS  
At1g72250 TQAINKSLSCLSDVIFALAN----KSSHIPFRNSKLTLLQDLSLGGDSKTLMFVQISPN  
Os12g42160 AQNINKSLSALSDVIFALAT----KSQHIPFRNSKLTLLQDLSLGGDSKTLMFVQISPN  
At5g27550 SQFINKSLSALSDVIFALAS----KTSHIPYRNSKLTLLQDLSLGGDSKTLMFVQISPS  
Os05g33030 SQFINKSLSALSDVIFALAS----KNAHIPYRNSKLTLLQDLSLGGDSKTLMFVQISPS

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Os06g11380 ASNLSRTLSTLSFSARAKNAE-----  
AtKCA1 VQTLSETISCLNYAARANTV-----  
AtKCA2 ARNLSEIMSCLNIAARANTV-----  
AtKinesin-12A QSCRSEFSTLRFARAKAIQNKAVVNEVMQDDVNFLRGVHQLRDELQRMKNDGNNPTN  
At3g10310 EDSFGETISTLKFAQRVSTVE-----

Os01g14090 ADSYVETLSTLKFAQRASCVE-----  
 At1g63640 GDSYAETVSTLKFAERVSGVE-----  
 At5g41310 EDSYAETVSTLKFAERVSGVE-----  
 Os02g13580 VSSYTETLSTLKFAERVSGVE-----  
 Os06g36080 VSSYAETLSTLKFADRVSGVE-----  
 Os01g54080 IESYSETISTLKLAERVSGVE-----  
 Os05g44560 VESYSETISTLKFAERVSGVE-----  
 At1g18410 ITSYSMSSTLKFAERVSGVE-----  
 At1g73860 ATSYSMSSTLKFAERVSGVE-----  
 Os11g44880 PDAIGESISTLKFAERVATVE-----  
 OsKCH1 LDAVGETISTLKFAERVASVE-----  
 Os03g18980 SDALGESISTLKFAERVSTVE-----  
 At2g47500 ADAVGETISTLKFAERVATVE-----  
 At1g09170 LEDLGETLSTLKFAERVATVD-----  
 ATK4 PDTLGETISTLKFAERVGSVE-----  
 AtKP1 VNAVGETISTLKFAQRVASIE-----  
 OsKCH2 ADAFGETMSTLKFAERVATVE-----  
 AtKCBP ESNLDETYNSLLYASRVRTIV-----  
 Os04g57140 ESNLEETYNSLMYASRVRCIV-----  
 At1g55550 EDDLCEITICSLNFATRAKNIH-----  
 Os01g15540 EGDLCETICTLGFATRVR SIR-----  
 At5g27950 DEDVGETICSLSFTRARAVE-----  
 Os11g42800 DDDIGETVCSLSFAKRARSIE-----  
 ATK2 PSSTGESLCSLRFAARVNACE-----  
 ATK3 SSSTGESLCSLRFAARVNACE-----  
 ATK5 PSSTGESLCSLRFAARVNACE-----  
 ATK1 PTSAGESLCSLRFAARVNACE-----  
 Os03g64415 VSSSTGESICSLRFAARVNACE-----  
 Os04g53760 ASSVGETICSLRFAARVNACE-----  
 Os07g01490 VSSSTGESICSLRFAARVNACE-----  
 At2g22610 EHDVSETLSSLNFATRVRGVE-----  
 Os03g02290 NNDVSETLSSLNFASRVRRIE-----  
 At1g72250 ENDQSETLCSLNFA SRV R G I E-----  
 Os12g42160 ENDVGETLCSLNFA SRV R G I E-----  
 At5g27550 SADLGETLCSLNFA SRV R G I E-----  
 Os05g33030 SADSGETLCSLNFA SRV R A I D-----

\* : \*

Os06g11380 -----LS---LGNRDTIKKWKDVANDSRKELHDKEKEVLDLR  
 AtKCA1 -----PS---LGNRDTIKKWRDVASDARKELEKEKEREQNQNK  
 AtKCA2 -----PS---LGNRDTIKKWRDVANDARKEVLEKEKEREQNQLK  
 AtKinesin-12A PNVAYSTAWNARRSLNLLRSFGLGHPRLSPHED--N-----DGDIEMELID  
 At3g10310 -----LG---AARAH--K-----ETREVMHLK  
 Os01g14090 -----LG---TAHAN--K-----ESNEIRELK  
 At1g63640 -----LG---AAKSS--K-----EGRDVRQLM  
 At5g41310 -----LG---AARSY--K-----EGRDVRQLM  
 Os02g13580 -----LG---VARSNKEGK-----EGKDVKELM  
 Os06g36080 -----LG---AAKAN--K-----EGKDIKEFK  
 Os01g54080 -----LG---AARSN--R-----EGKDIKELL  
 Os05g44560 -----LG---AARSN--K-----EGKDIKELL  
 At1g18410 -----LG---AAKSS--K-----DGRDVRQLM  
 At1g73860 -----LG---AAKTS--K-----EGKDVRDLK  
 Os11g44880 -----LG---AAKSN--K-----EGGEVKELK  
 OsKCH1 -----LG---AAKAN--K-----EGSEVRELK  
 Os03g18980 -----LG---AARLN--K-----ESGEVKELK  
 At2g47500 -----LG---AARVN--N-----DTSDEVKELK  
 At1g09170 -----LG---AARVN--K-----DTSEVKELK  
 ATK4 -----LG---AARVN--K-----DNSEVKELK  
 AtKP1 -----LG---AARSN--K-----ETGEIRD LK  
 OsKCH2 -----LG---AAHAN--K-----EVGQVKDLK  
 AtKCBP -----ND---PSKHI-----SSKEMVRLK  
 Os04g57140 -----ND---TSKHV-----APKEIMRLK  
 At1g55550 -----LG---QDEST-----EEQAKKEAV  
 Os01g15540 -----LESEEPPEMKA--RKETLLIDLQKVN DLEHECEDIR  
 At5g27950 -----SNRGL-----TAE L Q K L R  
 Os11g42800 -----SSKEL-----SEDIKKLK  
 ATK2 -----IG---TAHRH-----VNARPLD  
 ATK3 -----IG---TPRRQ-----TNIKPLE  
 ATK5 -----IG---IPRRQ-----TSAKLLD  
 ATK1 -----IG---IPRRQ-----TSTKLLD  
 Os03g64415 -----IG---IPRRQ-----TQVRS LA

Os04g53760 -----IG----IPRRH-----TQARSF  
Os07g01490 -----IG----IPRRQ-----TQVRS  
At2g22610 -----LG----PARKQ--V-----DTGEIQK  
Os03g02290 -----LG----PAKKQ--V-----DTAELQK  
At1g72250 -----LG----PARKQ--L-----DNTPELLK  
Os12g42160 -----LG----QARKQ--V-----DVGELSR  
At5g27550 -----SG----PARKQ-----ADVSELL  
Os05g33030 -----HG----PARKQ--A-----DPAETF

Os06g11380 QE-VLGLKLSLKEANDQCITLLFNEVQKAWRVSSLTQADLKSENMLLAEKHRIEKEQNNQL  
AtKCA1 QE-VVGLKKALKDANDQCIVLLYSEVQRWVVSFTLQSDLKSENIMLVDKHRLEKEQNSQL  
AtKCA2 QE-VTGLKQALKEANDQCIVLLYNEVQRWVVSFTLQSDLKSENAMVVDKHKIEKEQNFQL  
AtKinesin-12A EAAVERLCVQVGLQSSLASEGINHDMNRVKS IHSSDGQS IEKRLEPESDVAMEDACCHTE  
At3g10310 EQ-IENLKRALGTE-----  
Os01g14090 EQ-VENLKRALAAKEL-----  
At1g63640 EQ-VSNLKDVIKDE-----  
At5g41310 EQ-VSNLKDVIKDE-----  
Os02g13580 DQ-LSLLKDTISKDE-----  
Os06g36080 EQ-LSLLKDKIAKDE-----  
Os01g54080 EQ-VASLKDVIKDM-----  
Os05g44560 EQ-VASLKDVIKDM-----  
At1g18410 EQ-LGSLKDTIARKDD-----  
At1g73860 EQ-LASLKDVIKDE-----  
Os11g44880 EQ-IACLKAALAKKDG-----  
OsKCH1 EQ-IATLKAALAKKEG-----  
Os03g18980 EQ-IARLKSSLAMKDS-----  
At2g47500 EQ-IATLKAALARKEA-----  
At1g09170 EQ-IASLKLALARKES-----  
ATK4 EQ-IANLKMALVRKGN-----  
AtKFP1 DE-ISSLKSAMEKKEA-----  
OsKCH2 EE-ISKLLALDDKER-----  
AtKCBP KL-VAYWKEQAGKGE-----  
Os04g57140 KL-IAYWKEQAGKRSE-----  
At1g55550 MMNLQKMMKIEQERE-----  
Os01g15540 RK-IKNLEESMEHLTG-----PQPTIYSNFDMSH  
At5g27950 EKKISELEEMEEETQE-----  
Os11g42800 QKRIAELDKIICDAEQ-----  
ATK2 YR-LSLG-----  
ATK3 NR-LSLG-----  
ATK5 SR-LSYG-----  
ATK1 SR-LSYG-----  
Os03g64415 QG-----  
Os04g53760 SR-LSYG-----  
Os07g01490 QG-----  
At2g22610 AM-VEKARQESRSKDE-----  
Os03g02290 QM-LERAKQDIRLKDD-----  
At1g72250 QM-VEKWKQDMKGD-----  
Os12g42160 LM-AGRAKQDSKNKDA-----  
At5g27550 KS--KQMAEKLKHEEK-----  
Os05g33030 QM-TEKIRHEEKENAK-----LLESQ

Os06g11380 RDQISRLLVEQEQQIKMHERDLTIQSLQAKLKSIESQLNEALNSSDARSTIGSESASVI  
AtKCA1 RNQIAQFLQLDQEQLQMQQQDSAIQNLQAKITDLESQVSEAVRSDTTRTGDALQSQDIF  
AtKCA2 RNQIAQLLQLEQEQLQAQQDSTIQNLQSKVKDLESQLSKALKSDMTRSRDPLE-----  
AtKinesin-12A NHEPETVDNMRTEETETGIRENQIKTHSQTLDHESSEFQPLSVKD-----  
At3g10310 --EWNVSNNGSKEIKSPFRPIATERTPPRLRRLSIENCSST-----  
Os01g14090 --EKSSFLLKENTVVRERAKQVPERTPPRPRRLSLENTGIGK-----  
At1g63640 --ELQNFQKVKGNATSLKRGSLNLRLLVGFPSPRRHISGASPN-----  
At5g41310 --ELQKFQNINGIQKRGSLKLRIVSPRRHSLGGALTNSPRR-----  
Os02g13580 --EIDRLQLNLSSTRLKPTRQADSVLKHSSSSPGITSLGKGT-----  
Os06g36080 --EISRLQLQSHNTPRATAKRADSLKHSSSSPGISSLGSKIQ-----  
Os01g54080 --EIEQLQLLKSFPNSMTRNGSNLLRQSTSSSTGLSSLPVAS-----  
Os05g44560 --EIEQLQLMCKVKSPSFAVDINGASMPKNSNSDLRSVLSIT-----  
At1g18410 --EIERLHLLKDIINYPQRLQKKS LGQSDDFNSEAGDSQLSIED-----  
At1g73860 --EIERLQHQPRLQKSMRRKSIHTDDINSDTGEY-----  
Os11g44880 --ETESIRSTQSSPDIYRMRMSAPPFRNPMEEVGNLETRSN-----  
OsKCH1 --EPENIQSTQSSPDMYRIKRGNAIPAFPNRQPMEEVGNLEV-----  
Os03g18980 --GSEQNINRDPEAFNMKMPSPGFSNRRQGSCELVSSQTNF-----  
At2g47500 -----ESQNNILKTPGGSEKHAKTGEVEIHNNNIM-----

At1g09170 --GADQTQLQRPLTPDKLLRKKSLGVSSSFKSNSTRQVQTK-----  
 ATK4 -GNDVQPTAIPINRERISRRRSLPTTIRPKLPTMGNTSNNRS-----  
 AtKP1 -ELEQLRSGSIRNTECQRARAVSPFHLPRGTGNGAGTKAEAS-----  
 OsKCH2 -EASKLRDIANRVASEKRNARTRSPLTTTLSSKPEAGQDSSV-----  
 AtKCBP -----EEDLVDI EEDRTRKDEADS-----  
 Os04g57140 -----DDLEEIQEERTPKKADNRLTS-----  
 At1g55550 -MSLRKMRNLNETLEKLTGKPHVIEEEEKDVVREVIHVTPKKP-----  
 Os01g15540 LSSEELKTDVSSNVNSKNRREASSRLPRFMKPTASSQHRIGL-----  
 At5g27950 --GCKKIKARLQEV ECLVNEHKKLFWITNDKYLEDIEKKAISP-----  
 Os11g42800 --ELKDLNEQIKRAETSLEERKKLSSSACQALSDEKGSPRSTL-----  
 ATK2 -----  
 ATK3 -----  
 ATK5 -----  
 ATK1 -----  
 Os03g64415 -----  
 Os04g53760 -----  
 Os07g01490 -----  
 At2g22610 --SIKKMEENIQNLEGKNGRDNYSRSLQEKNDLQNLDSVH-----  
 Os03g02290 --SLRKLLEDNCQNLNENKAKGKEQFYKNLQEKVKELESQLDKSM-----  
 At1g72250 --QIRKMEETMYGLEAKIKERDTKNTLQDKVKELESQLLVER-----  
 Os12g42160 --QIKSMEETIQSLEAKNAKDLLTMNLQEKIKELEAQLLVER-----  
 At5g27550 --ETKKLQDNVQSLQLRLTAREHICRGLQDKVRDLEFQLAEER-----  
 Os05g33030 QLKYSARENVIKTLQEKIREAEQTSKTYQQRVRELENELANEK-----

Os06g11380 -STPKMESTADSSSVTKRLEEEELAKRDALIEKLHEENEKLFDRLTEKSGLGSSFPQAPSP  
 AtKCA1 SPIPKAVEGTTDSSSVTKLEEEELKRRDALIERLHEENEKLFDRLTERS-MAVSTQVLSP  
 AtKCA2 -PQPRAENTLDSSAVTKKLEEEELKRRDALIERLHEENEKLFDRLTEKS-VASSTQVSSP  
 AtKinesin-12A -ALCSSLNKSEDVSSCPDLPVQDVTSANVLIADGVDDPEHLVNSASPSLCID-----  
 At3g10310 -KANLEDRRGIKS-----  
 Os01g14090 -SIPDRKGPKSPL-----  
 At1g63640 -ARRGKASGLF-----  
 At5g41310 -QGPGLLGRITSD-----  
 Os02g13580 -----  
 Os06g36080 -HRRTASGGRIKI-----  
 Os01g54080 -QQNQQLSGSVEA-----  
 Os05g44560 -TNQQSQLSDPQS-----  
 At1g18410 -DSRFQHDYTRQS-----  
 At1g73860 -----  
 Os11g44880 -GTPRQKKRFELPDVEN-----  
 OsKCH1 -RNNATPMQKASFQFSGVLSN-----  
 Os03g18980 -RQPMEDVGNIEVRANPTLRQ-----  
 At2g47500 -TKKSESCEVEEI-----  
 At1g09170 -HKPSQIDVNSIEG-----  
 ATK4 -PQIMDLSGPEAFNDST-----  
 AtKP1 -PQPNDGTRSYETRSCSTGKQRKSGFPSALRNRE-----  
 OsKCH2 -DTCTSEIRSSS-----  
 AtKCBP -----  
 Os04g57140 -----  
 At1g55550 -RNKSRRASDVFPFMRPTASSNRRLSGADFVTPN-----  
 Os01g15540 -NNRTPIIINRLKPPVPPRRRPPSSVYAESVMVPVNAAP-----  
 At5g27950 -LDHLKDDATPI-----  
 Os11g42800 -VVVGHIDSAESP-----  
 ATK2 -----  
 ATK3 -----  
 ATK5 -----  
 ATK1 -----  
 Os03g64415 -----  
 Os04g53760 -----  
 Os07g01490 -----  
 At2g22610 -NQSEKQYAQLQE-----RLKSRDEICSNLQQKVKELECKLREHQSDSAA-----  
 Os03g02290 -HSQITSEKQONELFGKLEKEEMCTTLQKQIAE-----  
 At1g72250 -KLARQHVDTKIAEQQTQQTEDENNTSKRPPLTNILLGSASK-----  
 Os12g42160 -KIARQHVNDNKIAQ-----  
 At5g27550 -KTRIKQESRALATASSTTTTTSRHLRETLPTIIEK-----  
 Os05g33030 -KAARDTARST-----

Os06g11380 SNKQTAQGRDIGRSDSTKQSSDVFPPLVPSQDKAGNSGAIVKSSNELKTTTPAGEYLTS  
 AtKCA1 SLRASPNI-QPANVNSRGEYSAAVALPSTPNKNGAITLVKSGTDLVKTTTPAGEYLTA  
 AtKCA2 SSKASPTV-QPADVDSAG-----TLPSSVDKNEGITLVKSSSELVKTTPAGEYLTA

AtKinesin-12A -----PVGATPVLKSP T LSVSP TIRNSRKSLKTSELSTASQK DSEGENLVT  
At3g10310 -----PLASRR A Q I L S L E G P M S C K N E E N G K G D P T  
Os01g14090 -----SVTKLNRDHATI HDSIDGFNHHIMHQGSVMQ  
At1g63640 -----G R G T S D V D N C S E Y S S K H S D S G S Q Q S  
At5g41310 -----I H R H Q N E S R S S S K F S G G A K D N N I F E D T E L L G  
Os02g13580 -----V G S G A A S D L D N F S D T S D R Q S E A G S M L S  
Os06g36080 -----V G S R A G S D V D N F S D I S D R H S E A G S M Q S  
Os01g54080 -----E A E D N A S D  
Os05g44560 -----Y A E V N R D G G P T S Y  
At1g18410 -----R H S V T D G E A L A S  
At1g73860 -----S S Q S R Y S V T D G E S L A S  
Os11g44880 -----D T S S W L D T S S K E A A L G E W V N N S Q F G S S N S L  
OsKCH1 -----N S S D L A E N C N G I Q K T D R M A V G N N Q F E N G N S I  
Os03g18980 -----K K P S F D L Q D L L A S N D S P S W P D S I S R A N F Q M G  
At2g47500 -----T V N S P P W P P V A S P G Q A Y R E  
At1g09170 -----Q S D S A S S L D L Q G L V G S P S W K T P P R D G K E E D M  
ATK4 -----A S S R R H S L D I H E L M K S S S P A W P R Q P L N G K D E  
AtKP1 -----A S P R M P N L A E E R L N P S P S R R S L S T D R A S T I K  
OsKCH2 -----S G K Q R R F R S P L S V R E L D E K S F V I N R E L Y L S A  
AtKCBP -----  
Os04g57140 -----  
At1g55550 -----S S S F K S R R N S M I S V R A E S A C L P V K K K K N R F D  
Os01g15540 -----W Q E C S S E C S M S L T S D M N W T P S I R D G T E C S Q  
At5g27950 -----S S D K L V K I R K S S G F V P R F M T S T V A S R  
Os11g42800 -----Q A T E K T K S R A S H G S V P H F M S P T V C S P Q R H S S  
ATK2 -----  
ATK3 -----  
ATK5 -----  
ATK1 -----  
Os03g64415 -----  
Os04g53760 -----  
Os07g01490 -----  
At2g22610 -----N N Q -----K V K D L E N N L K E S E G S S L V W Q Q K V K D Y E N K L K  
Os03g02290 -----E S E K L R L Q Q Q S E S E I K E L E L K L K E Q E H H R S  
At1g72250 -----E M V N L T R P S L L E S T S Y D L A P L P S G V P K Y N D  
Os12g42160 -----D H L H Q Q Q S K K P E N S F C P T R S P M A E R N L N S T  
At5g27550 -----K P P L A P T R M R M P L R R I T N F M P Q Q Q P S Q G H S K  
Os05g33030 -----K P P L A P M R Q R P P L G R I G N H I P P K A P L R L R L S

Os06g11380 ALMDFDPNQFEGVA AIADGANKLLMLPYFHCHRDYNETPPISDWCMVLA AVIKAGAAREH  
AtKCA1 ALNDFDPEEYEG LAAIADGANKLLML-----VLA AVIKAGASREH  
AtKCA2 ALNDFDPEQEYEG LAAIADGANKLLML-----VLA AVIKAGASREH  
AtKinesin-12A EAADPSPATSKKMNCSSALSTQKSKVFPV RTERLASSLHKGIKLLLESY CQSTAQR RSTY  
At3g10310 MEVHQLKNPRSPLSSYQNR A-----  
Os01g14090 MSATSS EDPVRETEKIIITVDTVPF CGLHP-----  
At1g63640 SDERKHQDYHQPSKFAGAAKGIDFDD-----  
At5g41310 FEESNNEERLSDISDSCLSMG-----  
Os02g13580 VDPEISGLADVDS DGRLS-----  
Os06g36080 VDDIQQ SREIMGLSKLSMSEM-----  
Os01g54080 DGCSVGETEYSPAGASE T-----  
Os05g44560 TDI TPTCLDEADFE DNASEDGFSG-----  
At1g18410 STDAEYDDETEGSTDAPCAA-----  
At1g73860 SAEAEYDERLSEIT-----  
Os11g44880 LELGPDATQDVVFYQRNSPEPQW-----  
OsKCH1 LELEPGATQLPTFFYQRYDPDKQR-----  
Os03g18980 EERV TIGGEWIDKVVVNNNSVG-----  
At2g47500 DDRSFGSSEWVDKVMVNNRQDEMR-----  
At1g09170 EFIIIPGSEWVDKHEDEITR SSKPENR-----  
ATK4 DRESKSGEWIDKHEELIQNQPN S-----  
AtKP1 SRNKPDVTQNLVPSRT PFPARVPVV-----  
OsKCH2 KFKTPSPPPVRSLSAERVGIKSV-----  
AtKCBP -----  
Os04g57140 -----  
At1g55550 SACDSSDRSVSKSTS IMRQNTADDAT-----  
Os01g15540 DASEYEIKQVIFSEHEKSSHDQVTCYTDY-----  
At5g27950 QRQTMSEKEINAKAQ SIRS-----  
Os11g42800 ASHSATKTR LTKSV-----  
ATK2 -----  
ATK3 -----  
ATK5 -----

ATK1  
Os03g64415  
Os04g53760  
Os07g01490  
At2g22610 ESEGN<sup>S</sup>LVW<sup>Q</sup>Q<sup>K</sup>I<sup>K</sup>E<sup>L</sup>E<sup>I</sup>K<sup>H</sup>K<sup>D</sup>E  
Os03g02290 VAES<sup>K</sup>I<sup>K</sup>E<sup>L</sup>E<sup>L</sup>K<sup>L</sup>K<sup>E</sup>Q<sup>E</sup>H<sup>H</sup>R<sup>S</sup>V<sup>A</sup>ES<sup>K</sup>AME  
At1g72250 LSE<sup>K</sup>EN<sup>N</sup>PE<sup>M</sup>AD<sup>Q</sup>V<sup>H</sup>L<sup>P</sup>N<sup>K</sup>T<sup>G</sup>R<sup>F</sup>S  
Os12g42160 AE<sup>K</sup>P<sup>V</sup>T<sup>L</sup>L<sup>K</sup>D<sup>L</sup>G<sup>I</sup>A<sup>R</sup>Q<sup>M</sup>F<sup>S</sup>D<sup>S</sup>N<sup>T</sup>D<sup>T</sup>Y  
At5g27550 RF<sup>S</sup>D<sup>T</sup>T<sup>F</sup>K<sup>E</sup>N<sup>N</sup>S<sup>N</sup>R<sup>R</sup>S<sup>S</sup>S<sup>M</sup>D<sup>V</sup>N<sup>T</sup>L<sup>M</sup>K  
Os05g33030 KA<sup>P</sup>T<sup>I</sup>Q<sup>N</sup>K<sup>E</sup>N<sup>I</sup>P<sup>V</sup>M<sup>L</sup>N<sup>K</sup>G<sup>S</sup>S<sup>G</sup>A<sup>D</sup>T<sup>S</sup>K<sup>A</sup>V<sup>A</sup>

Os06g11380 E<sup>I</sup>L<sup>A</sup>E<sup>I</sup>R<sup>D</sup>A<sup>V</sup>F<sup>S</sup>F<sup>I</sup>R<sup>K</sup>M<sup>E</sup>P<sup>R</sup>K<sup>V</sup>M<sup>D</sup>T<sup>M</sup>L<sup>V</sup>S<sup>R</sup>V<sup>K</sup>I<sup>L</sup>Y<sup>I</sup>R<sup>S</sup>L<sup>L</sup>A<sup>R</sup>S---PE<sup>L</sup>Q<sup>S</sup>I<sup>K</sup>V<sup>S</sup>P<sup>V</sup>E<sup>R</sup>  
AtKCA1 E<sup>I</sup>L<sup>A</sup>E<sup>I</sup>R<sup>D</sup>S<sup>V</sup>F<sup>S</sup>F<sup>I</sup>R<sup>K</sup>M<sup>E</sup>P<sup>R</sup>R<sup>V</sup>M<sup>D</sup>T<sup>M</sup>L<sup>V</sup>S<sup>R</sup>V<sup>R</sup>I<sup>L</sup>Y<sup>I</sup>R<sup>S</sup>L<sup>L</sup>A<sup>R</sup>S---PE<sup>L</sup>Q<sup>T</sup>I<sup>R</sup>V<sup>S</sup>P<sup>V</sup>E<sup>C</sup>  
AtKCA2 E<sup>I</sup>L<sup>A</sup>E<sup>I</sup>R<sup>D</sup>S<sup>V</sup>F<sup>S</sup>F<sup>I</sup>R<sup>K</sup>M<sup>E</sup>P<sup>R</sup>R<sup>V</sup>M<sup>D</sup>T<sup>M</sup>L<sup>V</sup>S<sup>R</sup>V<sup>R</sup>I<sup>L</sup>Y<sup>I</sup>R<sup>S</sup>L<sup>L</sup>A<sup>R</sup>S---PE<sup>L</sup>Q<sup>S</sup>I<sup>K</sup>V<sup>S</sup>P<sup>V</sup>E<sup>R</sup>  
AtKinesin-12A RF<sup>S</sup>FK<sup>A</sup>PD<sup>S</sup>E<sup>P</sup>ST<sup>S</sup>I<sup>S</sup>K<sup>A</sup>D<sup>A</sup>G<sup>V</sup>Q<sup>T</sup>I<sup>P</sup>G<sup>A</sup>D<sup>A</sup>I<sup>S</sup>E<sup>N</sup>T<sup>K</sup>E<sup>F</sup>L<sup>C</sup>C<sup>K</sup>C<sup>K</sup>CR<sup>E</sup>Q<sup>F</sup>DA<sup>Q</sup>Q<sup>M</sup>G<sup>D</sup>M<sup>P</sup>N  
At3g10310 ---VK<sup>V</sup>D<sup>G</sup>R<sup>T</sup>S<sup>I</sup>P<sup>Q</sup>L<sup>Q</sup>  
Os01g14090 ---DA<sup>Y</sup>I<sup>S</sup>S<sup>K</sup>Q<sup>S</sup>G<sup>L</sup>D<sup>T</sup>  
At1g63640 ---ED<sup>V</sup>EL<sup>V</sup>G<sup>L</sup>AD<sup>A</sup>D<sup>S</sup>  
At5g41310 ---TE<sup>T</sup>D<sup>G</sup>S<sup>I</sup>S<sup>S</sup>GA<sup>M</sup>E  
Os02g13580 ---DA<sup>S</sup>D<sup>G</sup>I<sup>S</sup>M<sup>G</sup>EA<sup>D</sup>  
Os06g36080 ---GH<sup>N</sup>S<sup>V</sup>D<sup>P</sup>EL<sup>P</sup>CF<sup>G</sup>  
Os01g54080 ---  
Os05g44560 ---GT<sup>D</sup>Y<sup>S</sup>V<sup>G</sup>CA<sup>A</sup>GA<sup>S</sup>  
At1g18410 ---EG<sup>R</sup>K<sup>P</sup>L<sup>K</sup>I<sup>S</sup>D<sup>K</sup>P<sup>K</sup>  
At1g73860 ---SD<sup>A</sup>AS<sup>M</sup>GT<sup>Q</sup>GS<sup>I</sup>D  
Os11g44880 ---SW<sup>A</sup>GS<sup>V</sup>AT<sup>E</sup>DS<sup>D</sup>D  
OsKCH1 ---RR<sup>A</sup>EP<sup>V</sup>ET<sup>D</sup>DS<sup>D</sup>S  
Os03g18980 ---DW<sup>E</sup>GS<sup>A</sup>AL<sup>P</sup>DF<sup>F</sup>  
At2g47500 ---RV<sup>E</sup>SL<sup>W</sup>GG<sup>A</sup>T<sup>E</sup>N  
At1g09170 ---A<sup>H</sup>T<sup>Q</sup>L<sup>E</sup>K<sup>R</sup>T<sup>S</sup>SL<sup>K</sup>  
ATK4 ---PE<sup>Q</sup>F<sup>Y</sup>Q<sup>S</sup>M<sup>V</sup>P<sup>Q</sup>Q<sup>Q</sup>  
AtKPF1 ---KS<sup>F</sup>ST<sup>V</sup>PL<sup>N</sup>PS<sup>A</sup>E  
OsKCH2 ---ER<sup>S</sup>EN<sup>I</sup>D<sup>C</sup>T<sup>P</sup>V<sup>S</sup>R  
AtKCBP  
Os04g57140 ---  
At1g55550 ---V<sup>Y</sup>S<sup>Q</sup>D<sup>I</sup>SE<sup>C</sup>D---IK<sup>L</sup>V<sup>V</sup>SE<sup>H</sup>K<sup>P</sup>K<sup>P</sup>L  
Os01g15540 ---PL<sup>A</sup>ES<sup>R</sup>D<sup>I</sup>Q<sup>I</sup>K<sup>I</sup>E  
At5g27950 ---VA<sup>K</sup>N<sup>L</sup>T<sup>Q</sup>F<sup>S</sup>T<sup>S</sup>Q<sup>S</sup>  
Os11g42800 ---NR<sup>Y</sup>PA<sup>E</sup>L<sup>S</sup>GS<sup>H</sup>S  
ATK2  
ATK3  
ATK5  
ATK1  
Os03g64415  
Os04g53760  
Os07g01490  
At2g22610 ---QS<sup>Q</sup>E<sup>A</sup>V<sup>L</sup>L<sup>R</sup>Q<sup>K</sup>I<sup>K</sup>  
Os03g02290 ---IG<sup>Q</sup>EL<sup>L</sup>ET<sup>Q</sup>R<sup>T</sup>E<sup>A</sup>  
At1g72250 ---IC<sup>A</sup>K<sup>R</sup>I<sup>P</sup>S<sup>A</sup>P<sup>A</sup>P<sup>R</sup>  
Os12g42160 ---S<sup>I</sup>N<sup>H</sup>L<sup>M</sup>S<sup>M</sup>S<sup>S</sup>E<sup>K</sup>E  
At5g27550 ---PR<sup>R</sup>SS<sup>I</sup>A<sup>F</sup>R<sup>P</sup>A<sup>P</sup>A  
Os05g33030 ---G<sup>K</sup>ARR<sup>V</sup>SL<sup>T</sup>P<sup>V</sup>IR

Os06g11380 F<sup>L</sup>E<sup>K</sup>S<sup>H</sup>T<sup>S</sup>R<sup>S</sup>R<sup>S</sup>S<sup>S</sup>R<sup>G</sup>S<sup>S</sup>P<sup>G</sup>R<sup>S</sup>P<sup>V</sup>H<sup>H</sup>H<sup>D</sup>H<sup>G</sup>S<sup>R</sup>T<sup>S</sup>L<sup>I</sup>D<sup>E</sup>H<sup>V</sup>H<sup>G</sup>F<sup>K</sup>V<sup>N</sup>I<sup>K</sup>P<sup>E</sup>R<sup>K</sup>S<sup>K</sup>F<sup>S</sup>S<sup>I</sup>V  
AtKCA1 F<sup>L</sup>E<sup>K</sup>P<sup>N</sup>T<sup>G</sup>R<sup>S</sup>K<sup>S</sup>T<sup>S</sup>R<sup>G</sup>S<sup>S</sup>P<sup>G</sup>R<sup>S</sup>P<sup>V</sup>R<sup>Y</sup>---L<sup>D</sup>T<sup>Q</sup>I<sup>H</sup>G<sup>F</sup>K<sup>V</sup>N<sup>I</sup>K<sup>A</sup>E<sup>R</sup>R<sup>N</sup>K<sup>L</sup>A<sup>S</sup>V<sup>V</sup>  
AtKCA2 F<sup>L</sup>E<sup>K</sup>P<sup>Y</sup>T<sup>G</sup>R<sup>T</sup>R<sup>S</sup>S<sup>S</sup>G<sup>S</sup>S<sup>S</sup>P<sup>G</sup>R<sup>S</sup>P<sup>V</sup>R<sup>Y</sup>---Y<sup>D</sup>E<sup>Q</sup>I<sup>Y</sup>G<sup>F</sup>K<sup>V</sup>N<sup>L</sup>K<sup>P</sup>E<sup>K</sup>K<sup>S</sup>K<sup>L</sup>V<sup>S</sup>V<sup>V</sup>  
AtKinesin-12A L<sup>Q</sup>L<sup>V</sup>P<sup>V</sup>D<sup>N</sup>SE<sup>V</sup>A<sup>E</sup>K<sup>S</sup>K<sup>N</sup>Q<sup>V</sup>P<sup>K</sup>A<sup>V</sup>E<sup>K</sup>V<sup>L</sup>AG<sup>S</sup>I<sup>R</sup>RE<sup>M</sup>A<sup>L</sup>E<sup>E</sup>F<sup>C</sup>T<sup>K</sup>Q<sup>A</sup>SE<sup>I</sup>T<sup>Q</sup>L<sup>N</sup>R<sup>L</sup>V<sup>Q</sup>Q<sup>Y</sup>K<sup>H</sup>  
At3g10310 LL<sup>Q</sup>T<sup>F</sup>V<sup>K</sup>G<sup>A</sup>S<sup>R</sup>N<sup>D</sup>I<sup>Q</sup>M<sup>I</sup>S<sup>V</sup>D<sup>S</sup>---  
Os01g14090 LL<sup>R</sup>T<sup>P</sup>C<sup>R</sup>S<sup>R</sup>N<sup>L</sup>N<sup>L</sup>E<sup>V</sup>G<sup>Q</sup>T<sup>D</sup>E<sup>P</sup>SS<sup>S</sup>A<sup>K</sup>---LE<sup>K</sup>M<sup>T</sup>S<sup>S</sup>  
At1g63640 ED<sup>R</sup>L<sup>S</sup>D<sup>I</sup>S<sup>D</sup>S<sup>C</sup>L<sup>S</sup>M<sup>G</sup>T<sup>E</sup>T<sup>D</sup>G<sup>S</sup>I<sup>S</sup>SA<sup>V</sup>---EL  
At5g41310 LT<sup>L</sup>F<sup>P</sup>ET<sup>S</sup>N<sup>P</sup>PE<sup>M</sup>F<sup>E</sup>Q<sup>S</sup>E<sup>Q</sup>N---  
Os02g13580 S<sup>S</sup>V<sup>S</sup>N<sup>V</sup>AD<sup>Q</sup>E<sup>Q</sup>E<sup>K</sup>T<sup>S</sup>N<sup>T</sup>A---  
Os06g36080 Y<sup>D</sup>D<sup>S</sup>E<sup>G</sup>R<sup>L</sup>S<sup>D</sup>I<sup>S</sup>D<sup>S</sup>G<sup>L</sup>S<sup>M</sup>GA<sup>E</sup>T<sup>D</sup>C<sup>S</sup>M---SS<sup>V</sup>V  
Os01g54080 ---  
Os05g44560 V<sup>F</sup>P<sup>N</sup>SC<sup>S</sup>D<sup>R</sup>T---  
At1g18410 P<sup>V</sup>T<sup>P</sup>R---  
At1g73860 V<sup>T</sup>K<sup>R</sup>P<sup>P</sup>R<sup>I</sup>S<sup>D</sup>R<sup>A</sup>K<sup>S</sup>V<sup>T</sup>A<sup>K</sup>---  
Os11g44880 F<sup>E</sup>V<sup>T</sup>T<sup>S</sup>C<sup>S</sup>SE<sup>Q</sup>D<sup>M</sup>V<sup>R</sup>P<sup>T</sup>S<sup>A</sup>P<sup>K</sup>A<sup>P</sup>GS<sup>A</sup>N---  
OsKCH1 F<sup>D</sup>A<sup>A</sup>T<sup>S</sup>SP<sup>S</sup>D<sup>Q</sup>E<sup>M</sup>L<sup>L</sup>ST<sup>S</sup>G<sup>L</sup>K<sup>A</sup>D<sup>G</sup>I<sup>A</sup>---

Os03g18980 YQRYHSGTRDKQYLRNNSRKKDGNF-----EQQRPRF  
 At2g47500 GIGILPEDFYRRDLASDTSRIFSEHS-----YNI  
 At1g09170 REATRQVDKNCNSVVDKGLVVRKIP-----  
 ATK4 SLYGGKQDFEVQSI TDNESDE-----  
 AtKP1 NNHRLHTDNSSEAFQNHQKLSARKLF-----PEIEEEHIRHALHIRQGGVKKTRAES  
 OsKCH2 IEVPPKVQHSSSRKTPSSVLTAAQSLR-----KFRDSEENRSAPKPSVRE  
 AtKCBP -----  
 Os04g57140 -----  
 At1g55550 QMGPGSATKRSNINSNFEKDVMOKIGGTEFSRINSWLRSSQENRSYVLDKTLQPATHFLE  
 Os01g15540 EKGIVDIDNWLHQQIVEKTSTFRSKM-----VLDIPGVTEAEI  
 At5g27950 LSLSDSRKALLRRSYTKPLQAA-----  
 Os11g42800 FSYSSCKNAAKA-----  
 ATK2 -----  
 ATK3 -----  
 ATK5 -----  
 ATK1 -----  
 Os03g64415 -----  
 Os04g53760 -----  
 Os07g01490 -----  
 At2g22610 ELEMRLKEQEKHIQEMATREFPEVA-----NATPNEVKTCFKED  
 Os03g02290 MLQIKPRDLENNIQERTTLQDTNMILDSTNCMRVASTPGEAKAHLTREAMSEKEQHIL  
 At1g72250 RSSLAPTTSTSRMVMYLT RPPLSEST-----TSYDLPLPLNGGLKYSD  
 Os12g42160 NNPAGGAQPTKARRVSLCGGAHQQPA-----APPRRGS LIPLP  
 At5g27550 PSATASSNKTIMPRRRVSIATLRPEP-----SSLSS  
 Os05g33030 HIPLQPKRRSSLAVLPTQREQLSIFP-----DKRSV  
  
 Os06g11380 LKLRGIEEETWRQHVTGGKLEITTEEAKAFAIGNKALAALFVHTPAGELQRQIRAWLAEN  
 AtKCA1 SRMRGLEQDAGRQQVTGKVLREMQDEAKSFAIGNKALAALFVHTPAGELQRQIRLWLAEN  
 AtKCA2 SRIRGHQDQDTRQQVTGKVLREIQDEAKSFAIGNKPLAALFVHTPAGELQRQIRSWLAES  
 AtKinesin-12A ERECNAIIGQTRREDKIIIRLES LMDGVLSKEDFLDEEFASLLHEHKLLKDMYQNHPEVLKT  
 At3g10310 -----KTINGKGSHIRKSLRTIGKLINGSEK-----  
 Os01g14090 NATKKGSHLRKSIQSSIGKLIHGSERRNVQHLGQATPAKIANSTN-----  
 At1g63640 TLFPE TAKPLELIERPEARMTSEKLEKSVKMGKTEPK-----  
 At5g41310 -----  
 Os02g13580 -----  
 Os06g36080 ELTSLPDQDRVSGTQKEQHMAPSTPKDRLHKVATRA-----  
 Os01g54080 -----  
 Os05g44560 -----  
 At1g18410 -----  
 At1g73860 -----  
 Os11g44880 -----  
 OsKCH1 -----  
 Os03g18980 YSTNTDDSDDI DIATS DSSSESDALWQFNVSINSSIS-----  
 At2g47500 FMGNNNSTDDLDAATS DSSSEPDLLWQFNQSTKIPTRSN-----  
 At1g09170 --YEEEANESDETATSDCSETNLMWQLNVQVNMPPASNG-----  
 ATK4 -----AATSDCSDS DLLWRLSVQVNVPK-----  
 AtKP1 SKAKAKQPSPARFQKLDVGLSLRSDADSEAKVGNVYQTKGNHNVHISRFQNFVGVISL  
 OsKCH2 SMTKTRLD SATKPPQKEEQ TANKNTGTRV RSEAKIPRNISDIENEFANSEPTFH-----  
 AtKCBP -----  
 Os04g57140 -----  
 At1g55550 NLNRSLEKSPTQSFTTEKITGNELEGI EETKTNETVVNPTLMLKKLFELQCLCSAE----  
 Os01g15540 HVSSIPSPTTMACTKEDSQVKDEVMGLTQSSTDYVEDI-----  
 At5g27950 -----  
 Os11g42800 -----  
 ATK2 -----  
 ATK3 -----  
 ATK5 -----  
 ATK1 -----  
 Os03g64415 -----  
 Os04g53760 -----  
 Os07g01490 -----  
 At2g22610 NFGNENMESNTNILRTSNRLKTKRHDSLNLNEMTRKKRASRSGETE-----  
 Os03g02290 RSSDSMNKVTNNSIVGAPEVNVNEKKRRGDARNSSIGGELENQFV-----  
 At1g72250 LIEKVNQEMAEQVQIPKRIGAGRSSICAKRIPPAPRRKSFAPMPFIPITSTLTPDEKKS  
 Os12g42160 RRNSLMLPLPLPKPATPAAAA SPLDMITEQCSSPLVIAPNDIRGGG-----  
 At5g27550 METPSRPPPSFRGDP RKARYSKLFSPDRNLVTPNAMKSSRFMKSP-----  
 Os05g33030 SRLSHIQMPRRSIATFNSIPATPLAAAAHKQVDGTPPEARQLRRIE-----  
  
 Os06g11380 FEFLSVTGGDVAG-ASQLELLSTA IMDGWMAGLGTARPPSTDALGQLLSEYTKRVYTSQ

AtKCA1 FEFLSVTSDDVSGNGGQLELLSTAIMDGWMAGLGAAVPPHTDALGQLLSEYAKRVYTSQ  
 AtKCA2 FEFLSVTADDVSGVTGQLELLSTAIMDGWMAGVGAAVPPHTDALGQLLSEYAKRVYTSQ  
 AtKinesin-12A KIELERTQEEVENFKNFYGDGMGEREVLLLEIQDLKLQLQCYIDPSLKSALKTCTLLKLSY  
 At3g10310 -----  
 Os01g14090 -----  
 At1g63640 -----  
 At5g41310 -----  
 Os02g13580 -----  
 Os06g36080 -----  
 Os01g54080 -----  
 Os05g44560 -----  
 At1g18410 -----  
 At1g73860 -----  
 Os11g44880 -----  
 OsKCH1 -----  
 Os03g18980 -----  
 At2g47500 -----  
 At1g09170 -----  
 ATK4 -----  
 AtKP1 FSDLCAGDKSDSTLKS-----  
 OsKCH2 -----  
 AtKCBP -----  
 Os04g57140 -----  
 At1g55550 -----  
 Os01g15540 -----  
 At5g27950 -----  
 Os11g42800 -----  
 ATK2 -----  
 ATK3 -----  
 ATK5 -----  
 ATK1 -----  
 Os03g64415 -----  
 Os04g53760 -----  
 Os07g01490 -----  
 At2g22610 -----  
 Os03g02290 -----  
 At1g72250 -----  
 Os12g42160 -----  
 At5g27550 -----  
 Os05g33030 -----

Os06g11380 LHHLKDIAGTLATEVADDPAHVSKLRSALLESVDHKRRKIMQQMRDITVLLTKEEGGSPIR  
 AtKCA1 MQHMKDIAGTLAAEEAEDAGQVSKLRSALLESVDHKRRKILQQMRSDAALLNLEGGSSPIP  
 AtKCA2 MQHLKDIAGTLASEEAEDAGQVAKLRSALLESVDHKRRKILQQMRSDAALFTLEEGSSPVQ  
 AtKinesin-12A QAPPVNAIPESQDESLEKTLEQERLCWTEAETKWISLSSEELRTELEASKALINKQKHELE  
 At3g10310 -----RKENIPAD  
 Os01g14090 -----NDVPSSIT  
 At1g63640 -----DRTNIPSK  
 At5g41310 -----DKAHVGVG  
 Os02g13580 -----AKERLTRA  
 Os06g36080 -----SRTPPKT  
 Os01g54080 -----SAERAHKA  
 Os05g44560 -----ADTSIRRI  
 At1g18410 -----SNTTTSRP  
 At1g73860 -----SSTSSTRP  
 Os11g44880 -----GSASIAIK  
 OsKCH1 -----SRGAFIIK  
 Os03g18980 -----ENGSKIKK  
 At2g47500 -----IESKLLKP  
 At1g09170 -----SSTKLKKN  
 ATK4 -----VSNIQNSA  
 AtKP1 -----DSSETDNE  
 OsKCH2 -----SNRKAWKL  
 AtKCBP -----  
 Os04g57140 -----  
 At1g55550 -----EEDQILSR  
 Os01g15540 -----KQSKTDNQ  
 At5g27950 -----ANSPTPE  
 Os11g42800 -----RSVAFSSS  
 ATK2 -----

ATK3 -----  
 ATK5 -----  
 ATK1 -----  
 Os03g64415 -----  
 Os04g53760 -----  
 Os07g01490 -----  
 At2g22610 -----NNGDDPQM  
 Os03g02290 -----GSQNASRK  
 At1g72250 -----GANQVLCF  
 Os12g42160 -----GGGRNKKRI  
 At5g27550 -----GGGSSWK  
 Os05g33030 -----FSSSKFRS

Os06g11380 NPPTAAEDARLASLISLDNIIKQVKEVMRQSSARPLRKS KKKALLES LDDLLA QMPSLLD  
 AtKCA1 NPSTAAEDSRLASLISLDGILKQVKEITRQASVHVLSKSKKKALLES LDELTERMP SLLD  
 AtKCA2 NPSTAAEDSRLASLISLDAILKQVKEITRQASVHVLSKSKKKALLES LDELNERMP SLLD  
 AtKinesin-12A IEKRCGEELKEAMQMAMEGHARMLEQYADLEEKHMQLLARHRRIQDGI DDVKKAAARAGV  
 At3g10310 PRSPGLGVANNFSHIKSPDTSN-----  
 Os01g14090 PDLRLRRRQSLTGLPPPSTMS-----  
 At1g63640 IPKQTLKPPGQTRP-----  
 At5g41310 PSKPLKHTPKPDISK-----  
 Os02g13580 VNRVQKLTLPKAGQSSSL-----  
 Os06g36080 PQSPTLWPK-----  
 Os01g54080 PSRITRFFLTKNQPFSTS-----  
 Os05g44560 SSRIRFSLTKNGQPA-----  
 At1g18410 LDKLKQVTMRTT-----  
 At1g73860 LDKLRKVATRITS-----  
 Os11g44880 AQPKGAKSTDIRSTNPAKRAAP-----  
 OsKCH1 KPQTKNTKITATKIPNLA-----  
 Os03g18980 PQTKLRESSDTRTPLH-----  
 At2g47500 VSKPIRSPQSRNNSNNT-----  
 At1g09170 QSKISRVAAE TRSMIPSL-----  
 ATK4 NPKPKKIQR TAKL-----  
 AtKP1 PPSKSKNAQRNSSKNSLNHKLRTI-----  
 OsKCH2 PPQSTRQSQSIDLRASVREM-----  
 AtKCBP -----  
 Os04g57140 -----  
 At1g55550 FPIPGYEDDDESRYPPILENDGFSQHIDNEWFGVNNYSADWERD SPATIP LLECEPDLKQ  
 Os01g15540 FTKELCTPPFKEFSSNNEVKGHKNEHPVY-----  
 At5g27950 TPKRHIKD-----  
 Os11g42800 MPKMKCLPLKSDQIN-----

ATK2 -----  
 ATK3 -----  
 ATK5 -----  
 ATK1 -----  
 Os03g64415 -----  
 Os04g53760 -----  
 Os07g01490 -----  
 At2g22610 -----  
 Os03g02290 -----  
 At1g72250 -----  
 Os12g42160 -----  
 At5g27550 -----  
 Os05g33030 -----

Os06g11380 VDHPCAQKQIMEARKVVE SLQEDPDE-----PATDLNSNTLG ESEVSQWNVLQFNT  
 AtKCA1 IDHPCAQREIATAHQLVETIPEQEDTNILEQSHDRRPSLES ISSGETDVSQWNVLQFNT-  
 AtKCA2 VDHPCAQREIDTAHQLVETIPEQED---NLQDEKRPSIDSISSTETDVSQWNVLQFNTG  
 AtKinesin-12A RGAESRFINALAAEISALKVEKERQYLRDENKSLQTQLRDTAEAIQAAGELLVRLKEA  
 At3g10310 -----AKTMRRQSLTGVMPPGQERSRRSSI  
 Os01g14090 -----RRSSLGGKSDIGAKNSPISACAASE  
 At1g63640 -----SRLSIATSSSSKALTGAKRPTISTS  
 At5g41310 -----PSRLSISTSSKALTSSKRPVGTGS  
 Os02g13580 -----RPKPRDPAPARSSAATGVRKSSTSQ  
 Os06g36080 -----LRDPPPPSPISTSTGKVRVTQATS  
 Os01g54080 -----RPKPREVVPKTQGSMPGTAQATGG  
 Os05g44560 -----TSRPPKPDAPKTPNQTRVQSSQLI  
 At1g18410 -----NIAKATSALLSPSSQGMKKTGSASN  
 At1g73860 -----TVAKVTGLTSSSKGLASSSIKKTGS

Os11g44880	-----LQK KINGPPSASTKNGKQLSLAAD
OsKCH1	-----MKS PMSEKRLQTPIRNSKQLPFSTT
Os03g18980	-----SQIP SASRKT SNGNRSGRQPLSGSD
At2g47500	-----VSRPLASQKVGNGPRGMKQFGPADM
At1g09170	-----IPTPTRTSLGAAISSPGQTSSRHN
ATK4	-----SETRSLIPSLIPAPSKRPNTVNSQ
AtKP1	-----YAHEDTSLVDDKPSNGTAHIKEGNN
OsKCH2	-----EPLTEGKPRRSKAPHGDRTNVPLPE
AtKCBP	-----
Os04g57140	-----
At1g55550	LLPELGLDRSL-----KPRGLAVAEGAAPLLRAQETLGER
Os01g15540	-----HGRPRRSLQEELENCTLEKPNMDSK
At5g27950	-----NSLQRKNMNDTSSPRSKMVTSSDPN
Os11g42800	-----MSNNSIDSTAASAPRRRESFISRPA
ATK2	-----
ATK3	-----
ATK5	-----
ATK1	-----
Os03g64415	-----
Os04g53760	-----
Os07g01490	-----
At2g22610	-----RPTRTASGSSSQVPVAQKRVIKREQ
Os03g02290	-----PGRVTATSKTAAATHKTGPVTRATR
At1g72250	-----SPRQQPMRRGGGINVGMERVRLSIG
Os12g42160	-----AGTTHGGGGGVMRARRVPVSGGR
At5g27550	-----VWSPLKFKNRRPSLVAIRSSASSSS
Os05g33030	-----FSVQKRVILGSPAPVKSSLLSGTGI
Os06g11380	GTSAPFIIKCGANSSCELVIKADQKIQEPKGDEIIRVVPKPSVLAEMSFEIIGVFEEELP
AtKCA1	GSSAPFIIKCGGNNSSELVIKADARVQEPKGGEIVRVVPRPSVLVNMSLEEMKQMFVQLP
AtKCA2	GSSAPFIIKCGANSSELVIKADARIQEPKGGEIVRVVPRPSVLENMSLEEMKQVFGQLP
AtKinesin-12A	EEGLTVAQKRAMDAEYEAAYRQIDKLLKKHENEINTLNQLVLPQSHIHNECSTKCDQAV
At3g10310	GGKPIENGGKDHVFTPFRLNKFNN-----
Os01g14090	YKPLPFSWVRWPEQYQCSDKRGAKTPPPNSAAKAKRWL-----
At1g63640	SSAKPLNRRR-----
At5g41310	SSVKPLNRKR-----
Os02g13580	ATPLARNNSTLKRGP-----
Os06g36080	SSRNSSTQKRWL-----
Os01g54080	SLAKPSKRR-----
Os05g44560	GGSSLRASKRWQK-----
At1g18410	FLKSPKDSKRWS-----
At1g73860	TSSLAKSSKRWA-----
Os11g44880	GKRAPNGKVSARK-----
OsKCH1	GGRRTRNGKINTPK-----
Os03g18980	SRRLSSNGRHAGTK-----
At2g47500	KRKATNARH-----
At1g09170	NSTVVVKKRQNPK-----
ATK4	PQRPTRDGRRLSLGT-----
AtKP1	NISMPEFRRSRSTHHARFMVP-----
OsKCH2	TRRSVSLPRGKMALV-----
AtKCBP	-----
Os04g57140	-----
At1g55550	GKGPFTFMQKLQALCFRILLGLGFMDVFGNDFNGLTK-----
Os01g15540	SHRSHDDKHKTGKFTKFFQALQTAWIGALLALGTVSIQLEHGFFQSLTL-----
At5g27950	VRAKLCHHKRRMSSLT-----
Os11g42800	QRAPLHQHRRRMSSLT-----
ATK2	-----
ATK3	-----
ATK5	-----
ATK1	-----
Os03g64415	-----
Os04g53760	-----
Os07g01490	-----
At2g22610	QEVVVKERDSKKKIWSR-----
Os03g02290	QQPAVNKTRGWVR-----
At1g72250	NRGRLAHRVLLTNARKAGLKETPQKQERWI-----
Os12g42160	GGGGVQHNRKERGWNNGTSLRQLN-----
At5g27550	ASDLLRREQ-----
Os05g33030	FNPALREKMMAAKIGNAQRFVNTNRRKSVL-----

Os06g11380	EAISSLALARTADGTRARYSRLYRTLANKVPALKDIVAEMEKGGVFKDVRS-
AtKCA1	EALSSLALARTADGTRARYSRLYKTLAMKVPSLKDLVSELE-----
AtKCA2	EALSSLALARTADGTRARYSRLYRTLAMKVPSLRDLVGELEKGGVLKDTKST
AtKinesin-12A	EPSVNASSEQQWRDEFEPYKKEFEFSNLAEPWFSGYDRCNI-----
At3g10310	-----
Os01g14090	-----
At1g63640	-----
At5g41310	-----
Os02g13580	-----
Os06g36080	-----
Os01g54080	-----
Os05g44560	-----
At1g18410	-----
At1g73860	-----
Os11g44880	-----
OsKCH1	-----
Os03g18980	-----
At2g47500	-----
At1g09170	-----
ATK4	-----
AtKP1	-----
OsKCH2	-----
AtKCBP	-----
Os04g57140	-----
At1g55550	-----
Os01g15540	-----
At5g27950	-----
Os11g42800	-----
ATK2	-----
ATK3	-----
ATK5	-----
ATK1	-----
Os03g64415	-----
Os04g53760	-----
Os07g01490	-----
At2g22610	-----
Os03g02290	-----
At1g72250	-----
Os12g42160	-----
At5g27550	-----
Os05g33030	-----