

OsPT13 ----MAGNQQLRVLHALDIARTQLYHFIAIIVIAGMGFFTDAYDLFSISLVADLLGHVYYY
OsPT11 ----MADADGGSNLAVLDALDSARTQMYHMKAIIVIAGMGFFTDAYDLFCISTVSKLLGRLYYQ
AT5g43340 ----MANEEQGSILKALDVAKTQWYHVTAVVSGMGFFTDSDYDLFVISLITKLLGRYYQ
At2g32830 ----MAKKGKEVLNALDAKTQMYHFTAIVIAGMGFFTDAYDLFSISLVTKLLGRYYH
OsPT1 ----MAGGQLNVLSTLDQAKTQWYHFMAIVIAGMGFFTDAYDLFCISLVTKLLGRYYH
OsPT3 ----MADGQLKVLTTLDHARTQWYHFMAIVIAGMGFFTDAYDLFCISLVSKLLGRYYT
OsPT2 ----MAGSQLNVLKLDQAKTQWYHFMAIVIAGMGFFTDAYDLFCIALVTKLLGRLYYT
OsPT6 MGGGGGEQQLEVLHALDVAKTQWYHFTAIVVAGMGFFTDAYDLFCISLVTKLLGRYYR
OsPT7 ----MAGDQMHVLSALDSAKTQWYHFTAIVIAGMGFFTDAYDLFCISLVTKLLGRYYT
OsPT12 ---MGRQDQQLQVLNALDAKTQWYHFTAIVIAGMGFFTDAYDLFCISLVTKLLGRYYT
OsPT4 ----MAGELKVLNALSADAKTQWYHFTAIVIAGMGFFTDAYDLFSISLVTKLLGRYYF
OsPT5 ----MVQDRKVLDAALDTAKTQWYHFTAIVIAGMGFFTDAYDLFCISLVTKLLGRYYF
OsPT8 ---MARQEQQLHLQVLSALDAKTQWYHFTAIVVAGMGFFTDAYDLFCISLVTKLLGRYYT
LePT2 MAVGNDNNNLQVLNALDLAKTQLYHFTAIVIAGMGFFTDAYDLFSISLVTKLLGRLYYT
StPT2 ---MAVEDNNLQVLNALDLAKTQLYHFTAIIAGMGFFTDAYDLFCISLVTKLLGRYYT
MtPT1 ----MSGELGVLNALDVAKTQLYHFTTIVIAGMGFFTDAYDLFCISLVTKLLGRYYT
MtPT2 ----MSGELGVLNALDVAKTQLYHFTTIVIAGMGFFTDAYDLFCISLVTKLLGRYYT
AT5g43350 ----MAEQQLGVLKALDVAKTQLYHFTAIVIAGMGFFTDAYDLFCVSLTKLLGRYYF
AT5g43370 ----MAEQQLGVLKALDVAKTQLYHFTAIVIAGMGFFTDAYDLFCVSLTKLLGRYYF
AT5g43360 ----MADQQLGVLKALDVAKTQLYHFTAIVIAGMGFFTDAYDLFCVSLTKLLGRLYYF
At2g38940 ----MAREQLQVLNALDVAKTQWYHFTAIIAGMGFFTDAYDLFCISLVTKLLGRYYH
AT3g54700 ----MAGDQLNVLNALDVAKTQWYHFTAIIAGMGFFTDAYDLFCISLVTKLLGRYYH
LePT1 ----MANDLQVLNALDVAKTQLYHFTAIVIAGMGFFTDAYDLFCISMTVTKLLGRLYYH
NtPT1 ----MAKDLQVLNALDVAKTQLYHFTAIVIAGMGFFTDAYDLFCISLVTKLLGRYYH
StPT1 ----MANDLQVLNALDVAKTQLYHFTAIVIAGMGFFTDAYDLFCISMTVTKLLGRYYH
StPT3 ----MAKNCLQVLNALDVAKTQLYHFTAIVIAGMGFFTDAYDLFCISLVTKLLGRYYH
At1g20860 ----MP1KVLSSLDVARTQWYHFKAIIIVAGMGLFTDAYDLFCIAPVMKMSIQYYH
At1g76430 ----MPELSLLSALDAARIQWYHFKAIIIVAGMGLFTDAYDLFCIAPVMKMSIQYYH
OsPT9 ----MAPRIRVLAALDQARTQYHFKAIIIVAGMGLFTDSYDLFCISPMKIFGRVYYA
OsPT10 ----MAP1GVLTAALDQARTQYHFKAIIIVAGMGLFTDSYDLFCIAPVMKIFGRVYYA

OsPT13 -----GELPRNIHAAVTGIALCGTVPQQLVFGWL GATKWAGSVSMESPSSMV
OsPT11 PDGSTD---SKPGALSKTANMVI GVALVGTLMGQLVFGYFG-DKLGKRKYVGVTLILMA
AT5g43340 VPGS-----SSPGSLPDGISA AVS V G V A F A G T F I G Q I F F G C L G -D K L G R K R Y V G T L L I M T
At2g32830 VDSS-----KKPGTLPNVA AVN G V A F C G T L A G Q L F F G W L G -D K L G R K K V Y G I T L M L M V
OsPT1 DDSK-----DTPGALPPNVSA AVT G V A L C G T L A G Q L F F G W L G -D K L G R K S V Y G T L I L M V
OsPT3 DLAG-----DNP G S L P P N V S A A V N G V A L C G T L A G Q L F F G W L G -D K L G R K S V Y G F T L V L M V
OsPT2 DITK-----PNPGTLPNVS SAVT G V A L C G T L A G Q L F F G W L G -D K L G R K S V Y G F T L I L M V
OsPT6 VDGS-----PSPGTLPPHVSASVNGVAFVGTLSGQLFFGWLG-DKLGKRKYVGVTLILMV
OsPT7 ADGA-----SKPGSLPPNVSA AVN G V A F V G T L T G Q L F F G W L G -D R V G R K S V Y G M T L L L M I
OsPT12 DPAS-----PXP G S L P P N I A A A V N G V A L C G T L S G Q L F F G W L G -D K L G R K S V Y G M T L L L M V
OsPT4 NPAS-----KSPGSLPPNVSA AVN G V A F C G T L A G Q L F F G W L G -D K M G R K K V Y G T L M L M V
OsPT5 NPAS-----KSPGSLPPNVSA AVN G V A F C G T L A G Q L F F G W L G -D K M G R K K V Y G M T L M L M V
OsPT8 DLAK-----ENPGSLPPNVA AVN G V A F C G T L A G Q L F F G W L G -D K L G R K S V Y G M T L L M M V
LePT2 KPDL-----LKP G T L P P A V S A S V T G V A L V G T L A G Q L F F G W L G -D K M G R K K V Y G M T L V L M V
StPT2 KPDL-----LKP G T L P P A R V G L R H G C A L V G T L A G Q L F F G C A R L A K M G R K K V Y G M T L V L M V
MtPT1 EPNP-----TRPGTLPSSAQSAVTGVALVGTLAGQLFFGWLG-DKLGKRKYVGLTILMV
MtPT2 EPNP-----TRPGTLPSSAQSAVTGVALVGTLAGQLFFGWLG-DKLGKRKYVGLTILMV
AT5g43350 NPES-----AKPGSLPPHVA AVN G V A L C G T L S G Q L F F G W L G -D K L G R K K V Y G T L V M M I
AT5g43370 NPES-----AKPGSLPPHVA AVN G V A L C G T L S G Q L F F G W L G -D K L G R K K V Y G T L I M M I
AT5g43360 NPTS-----AKPGSLPPHVA AVN G V A L C G T L A G Q L F F G W L G -D K L G R K K V Y G I T L I M M I
At2g38940 VEGA-----QKPGTLPNVA AVN G V A F C G T L A G Q L F F G W L G -D K L G R K K V Y G M T L M V M V
At3g54700 VDGS-----EKPGTLPNVS AVN G V A F C G T L A G Q L F F G W L G -D K L G R K K V Y G M T L M V M V
LePT1 HDGA-----LKP G S L P P N V S A A V N G V A F C G T L A G Q L F F G W L G -D K M G R K K V Y G M T L M I M V
NtPT1 RDGA-----LKP G S L P P N V S A A V N G V A F C G T L A G Q L F F G W L G -D K M G R K K V Y G M T L M M M V
StPT1 HDNA-----LKP G S L P P N V S A A V N G V A F C G T L A G Q L F F G W L G -D K M G R K K V Y G M T L M I M V
StPT3 HEGA-----PKPGILPPGIS AVN G V A F V G T L S G Q L F F G W L G -D K M G R K R Y V G M T L M I M V
At1g20860 GD-----SINTAVLSTSYAIAL LGTATGQLVFGYLG-DRVGRRRVYGLCLIIIMI
At1g76430 KD-----SIGTALLSTSYAIAL LGTALGQLIFGYLG-DRVGRRRVYGLSLLIMV
OsPT9 P S G S V D G S G S P G V T P P A V V S A T V G V A L L G A V A G N V V F G A L G -D R V G R R R V Y G A C L L L M V
OsPT10 -----D-GGARPGVTPPAVVSATVGVALLGAVIGNVVFALG-DRVGRRRVYGACLLMLL

OsPT13 VSSLASGLSF-----IGGDYPLSATIMSEYANKRTRGAFIAAV
OsPT11 ACAIGSGLSFGSSRKA-VIGTLCFFRFWLGFGIGGDYPLSATIMSEYSNKKTRGAFIAAV
AT5g43340 IC S I C S G L S L G R D P K T - V M V T L C F F R F W L G F G I G G D Y P L S A T I M S E Y S N K K T R G A F I A A V
At2g32830 LC SL G S G L S F G H S A N G - V M A T L C F F R F W L G F G I G G D Y P L S A T I M S E Y A N K K T R G A F I A A V
OsPT1 VCSVASGLSFGSSAKG-VVSTLCFFRFWLGFGIGGDYPLSATIMSEYANKRTRGAFIAAV
OsPT3 VCSVASGLSFGRTAKG-VVXLCFFRFWLGFGIGGDYPLSATIMSEYANKRTRGAFIAAV
OsPT2 VCSIASGLSFGHTPKS-VIATLCFFRFWLGFGIGGDYPLSATIMSEYANKRTRGAFIAAV
OsPT6 LC SL A S A L S F G H T P T S - V M A T L C F F R F W L G F G I G G D Y P L S A T I M S E Y A N K K T R G A F I A A V
OsPT7 IC SV A S G L S F G D T P T S - V M A T L C F F R F W L G F G I G G D Y P L S A T I M S E Y A N K R T R G A F I A A V
OsPT12 IC S I A S G L S F S H T P T S - V M A T L C F F R F W L G F G I G G D Y P L S A T I M S E Y A N K K T R G A F I A A V
OsPT4 IC CL A S G L S F G S S A K G - V M A T L C F F R F W L G F G I G G D Y P L S A T I M S E Y A N K R T R G A F I A A V
OsPT5 IC CL A S G L S F G S S A K G - V M A T L C F F R F W L G F G I G G D Y P L S A T I M S E Y A N K R T R G A F I A A V
OsPT8 IC S I A S G L S F S H T P T S - V M A T L C F F R F W L G F G I G G D Y P L S A T I M S E Y A N K K T R G A F I A A V
LePT2 VCSVASGLSFGSTPKG-VMTTLCFFRFWLGFGIGGDYPLSATIMSEYANKRTRGAFIAAV
StPT2 VCSVASGLSLGNTPKV-VMTTLCFFRFWLGFGIGGDYPLSATIMSEYANKRTRGAFIAAV
MtPT1 VCSVSGLSFGSSPKS-VMATL CFFRFWLGFGIGGDYPLSATIMSEYANKRTRGAFIAAV
MtPT2 VCSVASGLSFGSSPKS-VMATL CFFRFWLGFGIGGDYPLSATIMSEYANKRTRGAFIAAV
AT5g43350 LC SV A S G L S F G H E A K G - V M T T L C F F R F W L G F G I G G D Y P L S A T I M S E Y A N K K T R G A F I A A V
AT5g43370 LC SV A S G L S F G N E A K G - V M T T L C F F R F W L G F G I G G D Y P L S A T I M S E Y A N K K T R G A F I A A V

AT5g43360 LCSVASGLSLGNSAKG-VMTTLCFFRFWLFGFVGIGDYPLSATIMSEYANKKTRGAFIAAV
At2g38940 LCSIASGLSFGHEPKA-VMATLCFFRFWLFGFVGIGDYPLSATIMSEYANKKTRGAFVSAV
AT3g54700 LCSIASGLSFGSNPKT-VMTTLCFFRFWLFGFVGIGDYPLSATIMSEYANKKTRGAFIAAV
LePT1 ICASIAGLSFGHTPKG-VMTTLCFFRFWLFGFVGIGDYPLSATIMSEYANKKTRGAFIAAV
NtPT1 ICASIAGLSFGHTPKG-VMTTLCFFRFWLFGFVGIGDYPLSATIMSEYANKKTRGAFIAAV
StPT1 ICASIAGLSFGHTPKS-VMTTLCFFRFWLFGFVGIGDYPLSATIMSEYANKKTRGAFIAAV
StPT3 ICASIAGLSFGKTPSG-VIATLCFFRFWLFGFVGIGDYPLSATIMSEYANKKTRGAFIAAV
At1g20860 LSSFSGCGFSVCTTRRSCVMVSLGFFRFVLLGLGIGDYPLSATIMSEFANKRTRGAFIAAV
At1g76430 FSSFSGCGFSVCTTRRSCVMVSLGFFRFVLLGLGIGDYPLSATIMSEFANKRTRGAFIAAV
OsPT9 CSSVSGLSVCRXRR-ALASLCFFRFVLLGVGVGGDYPLSATIMSEFANRTRGAFIAAV
OsPT10 R--RERLLRVPDAPVR-ARQPL-LLPFLLVGVGVGGDYPLSATIMSEFANRTRGAFIAAV

OsPT13 FAMQGFGLAAGIIGMIVSAAFH-----SS---ASKIDYAWRIILMFGAIP
OsPT11 FAMQGVGIIIFAGLVSMIVSIFLTYNKAPSYPKGNHDLR---QMPAADYVWRIVLMIGAFP
AT5g43340 FGMQGITILAAAGAVSLVSAVFSKFPSPRAYILDGAASST---VPQADYVWRILMFGALP
At2g32830 FAMQGFGLAGGIVLSLVSTFDHAFKAPTYEVDVPGST---VPQADYVWRIVLMFGAIP
OsPT1 FAMQGFGLFAGIIVALVSAAGRFRHAYPAPSYSDNHAASL---VPQADYVWRILMFGTVP
OsPT3 FAMQGFGLFAGIIVALVSAAGRFRHAYPAPSYADGRAASL---VPEADYVWRILMFGTVP
OsPT2 FAMQGFGLFAGIIVALVSAAGRFRHAYPAPSYAQNPAASL---APQADYVWRILMFGTIP
OsPT6 FAMQGFGLIITGGLVAILVSAFRAAFPAPPYGEDPVAASL---PPQADYVWRILMFGALP
OsPT7 FAMQGFGLAGGAVAIGITAIIFRSRFPAPPFAADPAASL---PPQADYVWRILMFGALP
OsPT12 FAMQGFGLAGGVVTLAMSAGFQAAPAPAYEVNAAASL---VPQADYVWRILMFGALP
OsPT4 FAMQGFGLTGGIVAVIISAAFKSRFDAPAYRDDRTGST---VPQADYVWRIVLMFGAIP
OsPT5 FAMQGFGLTGGIVAVIISAAFKSLRFDAPAYRDDRAXX-----ADYAWRIVLMFGAIP
OsPT8 FAMQGFGLAGGIVTLIISAFRAGFPAPAYQDDRAGST---VRQADYVWRILMFGAMP
LePT2 FAMQGFGLFSGIVALITAAGFDHAYRSPTFEENAALST---VPQSDYIWRILMFGSLP
StPT2 FAMQGFGLFSGIVALITAAGFDHAYKAPTFAENAAVST---VPQADYIWRILMFGSLP
MtPT1 FAMQGFGLGGGIVALIVASIFDHKYKVPTEENPATSL---LVQFDYVWRILMFGALP
MtPT2 FAMQGFGLGGGIVALTVASIFDHKYKVPTEENPAASL---LVQFDYVWRILMFGALP
AT5g43350 FAMQGVGILAGGFVALAVSSIFDKKFPAPTYAVNRALST---PPQVDYIWRILMFGALP
AT5g43370 FAMQGVGILAGGFVALAVSSIFDKKFPAPTYAVNRALST---PPQVDYIWRILMFGALP
AT5g43360 FAMQGVGILAGGFVALAVSSIFDKKFPAPTYEQDRFLST---PPQADYIWRILMFGALP
At2g38940 FAMQGFGLMAGGIFAIISAFKFPAPYADDALGST---IPQADLVWRILMFGAIP
AT3g54700 FAMQGFGLTGGIFAIISAFKFPAPTYQIDALAST---VPQADYVWRILMFGALP
LePT1 FAMQGFGLAGGMVAIIVSAAFKGAFPAPAYEVDAIGST---VPQADYVWRILMFGAIP
NtPT1 FAMQGFGLAGGMVAIIVSAAFKGAFPAPTYHADALAST---VSQADYVWRILMFGAIP
StPT1 FAMQGFGLAGGMVAIIVSAAFKGAFPAPAYEVDALAST---VSQADYVWRILMFGAIP
StPT3 FAMQGFGLAGGIVALVSGAFKNAYPAPIYSVNEGST---PQEADYVWRILMFGAIP
At1g20860 FSMQGLGILVSSAVTMVAVCFKRSGGG---LEVDAAS-----PTEADLAWRILMFGALP
At1g76430 FSMQGLGILMSSAVTMVAVCLAFKNAGEGSSSEKTNVAGLETAPPESDIAWRILMFGALP
OsPT9 FSMQGFGLVSSAVTMVAVAAFDHYTYGAPPLD-----TPECADLAWRILMAGAVP
OsPT10 FSMQGFGLASSAVTMVAVAAFDHYTYGAPPLD-----TPECADLAWRILMAGAVP

OsPT13 AALTYWRMKMPETARYTALISKNAKKAADMSAVLNVNI---TPDDEVINE-LA-----
OsPT11 ALATFYWRMKMPETARYTALIDGNAKQAANDMQKLSIEI---EAEQEKLAK-F-----
AT5g43340 ALLTYWRMKMPETARYTALVSKNAEQALDMTKVLNVDI---EASAANKDQ-----
At2g32830 ALLTYWRMKMPETARYTALVARNTKQAASDMSKVLQVDL---IAEEEAQNSN-----
OsPT1 AALTYWRMKMPETARYTALARNAKQAAADMSKVLHTQI---EESADRAET-VA-----
OsPT3 AALTYWRMKMPETARYTALARNAKQAAADMSKVLXTEI---QEDXERAE-AVA-----
OsPT2 AGLTYWRMKMPETARYTALVARNAKQAAADMSKVLHAEI---EERPEVVS-----
OsPT6 AALTYWRMKMPETARYTALVANNAKQAAADMSKVLQV---VEMRNIGN-----
OsPT7 AALTYWRMKMPETARYTALVAKNAERAAADMSKVLQVKI---TAEQAEMASVDP-----
OsPT12 AILTYWRMKMPETARYTALVAKDAKQASSDMAKVLQVEI---EVEEEKLQD-IT-----
OsPT4 ALLTYWRMKMPETARYTALVAKNAKQAAADMTQVLNVEI---VEEQEKADE-VA-----
OsPT5 ALLTYWRMKMPETARYTALVAKNDKQAAADMARVNLVEL---VDEQEKAATAAA-AE-----
OsPT8 ALLTYWRMKMPETARYTALVAKNAKQAAADMSKVLQVEI---QEEQDKLEQ-MVTR---
LePT2 AALTYWRMKMPETARYTALVAKDAKRAAQ-MGKVLQVEI---ESEEAKIEQ-ISRN---
StPT2 AALTYWRMKMPETARYTALVAKDAKRAAQDMGRVLQVEI---ESEEAKIEQ-ISRN---
MtPT1 AALTYWRMKMPETARYTALVAKNAKQAAADMSKVLQVEL---EVEEEKVQK-MT-----
MtPT2 AALTYWRMKMPETARYTALVAKNAKQAAADMSKVLQVEL---EVEEEKVEK-MT-----
AT5g43350 AALTYWRMKMPETARYTALVAKNIKQATADMSKVLQTDI---ELEER-VED-DV-----
AT5g43370 AALTYWRMKMPETARYTALVAKNIKQATADMSKVLQTDI---ELEER-VED-DV-----
AT5g43360 AALTYWRMKMPETARYTALVAKNIKQATADMSKVLQTDL---ELEER-VED-DV-----
At2g38940 AAMTYYSRSKMPETARYTALVAKDAKQAAADMSKVLQVEI---EPEQKLEE-IS-----
At3g54700 AAMTYYSRSKMPETARYTALVAKDAKLAASNSKVLQVEI---EAEQQGTE-----
LePT1 AGLTYWRMKMPETARYTALVAKNLKQAANDMSKVLQVEI---EAEPEKVTA-IS-----
NtPT1 AAMTYWRMKMPETARYTALVAKNLKQAANDMSKVLQVEI---EAEPEKVTA-IS-----
StPT1 AGLTYWRMKMPETARYTALVAKNLKQAANDMSKVLQVEI---EAEPEKVA-IS-----
StPT3 ALLTYWRMKMPETARYTALVAKNAKQAASDMSKVLNVEI---EAEDDKIEK-IV-----
At1g20860 AALTYWRMLMPETARYTALVENNVQAQKDMQVRMSRSH---ISDEATTD-PP-----
At1g76430 AALTYWRMLMPETARYTALVENNVQAQKDMQVRMSVSMISQITEDSSSEL-----
OsPT9 AALTYWRMSMPETARYTALVERDVVKATNDIGRVLADLDAVAEEVEVAALSPPPVT
OsPT10 AALTYWRMSMPETARYTALVERDVVKATNDIGRVLADLDAVAEEVEVAALSRP----

OsPT13 ----RQDEYGLFSFEFLHRHGLHLLGTTVCWFLVDVTFYSLNIFMKNIIFTEVGLLPRLDS
OsPT11 ---NAANNYPLL SMEFARRHGLHLLGTTTTWFLLDIAFYSQLTKQDIFPAMGLISG--A
AT5g43340 -ARVSSDEFGLFSMKFLRRHGLHLLGTASTWFLLDIAFYSQLFQKDIFTTIGWPS--A
At2g32830 -SSNPNFTFGLFTREFARRHGLHLLGTTTTWFLLDIAFYSQLFQKDIYTAIGWIPA--A
OsPT1 ---VGGESWGLFSRQFLRRHGLHLLATTSTWFLLDIAFYSQLFQKDIFSKVGWIPP--A
OsPT3 --GGAG GLFSRQFVRRHGVLHLLVATTSTWFLLDIAFYSQLFQKDIFSKVGWIPP--A
OsPT2 -QVVAGETWGLFSRQFMRRHGHLHLLATTSTWFLLDIAFYSQLFQKDIFSKVGWIPP--A

OsPT6 -NGGSRPFGLFSGEFVRRHGLHLVGTSAWLLLDIAFYSQLFQKDI FSAVGVIPK--A
OsPT7 -KPFTSKPFGLFSGEFARRHGFLHLLGTTSTWLLLDIAFYSQLFQKDI FSAIGWIPE--A
OsPT12 ----RGRDYGLFSARFAKRHGAHLLGTAATWFLVDVAYSQLFQKDI FTSIHWIPK--A
OsPT4 ----RREQFGLFSRQFLRRHGRHLLGTTVCWFVLDIAFYSSNL FQKDIYTAVQWL PK--A
OsPT5 EEAARREQYGLFSREFARRHGHLHLLGTTVCWFVLDIAFYSQLFQKDIYTAVQWL PK--A
OsPT8 ----NSSSFGLFSRQFARRHGLHLLVGTATTWFLLDIAFYSQLFQKDI FTSINWIPE--A
LePT2 ----ETNQFGLFSWEFVRRHGLHLFGTCSTWFLLDIAFYSQLFQKDVFSAVGVIPK--A
StPT2 ----ETNQFGLFSWEFVRRHGLHLFGTCSTWFLLDIAFYSQLFQKDVFS--VGVIPK--A
MtPT1 --SDKRNSYGLFSKQFAARHGLALFGTCSTWFLLDIAFYSQLFQKDI FSAIGWIPE--A
MtPT2 --SDKRNSYGLFSKQFAARHGLALFGTCSTWFLLDIAFYSQLFQKDI FSAIGWIPE--A
AT5g43350 --KDPKQNYGLFSKEFLRRHGLHLLGTTSTWFLLDIAFYSQLFQKDI FSAIGWIPE--A
AT5g43370 --KDPKQNYGLFSKEFLRRHGLHLLGTTSTWFLLDIAFYSQLFQKDI FSAIGWIPE--A
AT5g43360 --KDPKQNYGLFSKEFLRRHGLHLLGTTSTWFLLDIAFYSQLFQKDI FSAIGWIPE--A
At2g38940 --KEKSKAFGLFSKEFMSRHLHLLGTTSTWFLLDIAFYSQLFQKDI FSAIGWIPE--A
AT3g54700 --DKSNSFGLFSKEFMRHGLHLLGTTSTWFLLDIAFYSQLFQKDI FSAIGWIPE--A
LePT1 -EAKGANDFGLFTKEFLRRHGLHLLGTASTWFLLDIAFYSQLFQKDI FSAIG--IPE--A
NtPT1 --QNTGNEFGLFSKEFLRRHGLHLLGTASTWFLLDIAFYSQLFQKDI FSAIGWIPE--A
StPT1 -VANGANFGLFSKEFLRRHGLHLLGTASTWFLLDIAFYSQLFQKDI FSAIGWIPE--A
StPT3 --AIQGNFGLFSKEFLRRHGLHLLGTTSTWFLLDIAFYSQLFQKDI FSKIGWIPE--P
At1g20860 -PPPPPSYKLFSRFFRLHGRDLFAASFNWFLVDIVFYTNLLLSHIFSHYSKPK--S
At1g76430 EQPPSSSYKLFSRFFRLHGRDLFAASFNWFLVDIVFYTNLLLSHIFSN--KP--L
OsPT9 TPPPPrPSYGLFSRRFVRQHGRDLFACAAWFLLDIPYSSSTLFQSQIYRP--WFP--A
OsPT10 -PPPPPrSYGLLSRRFVRQHGRDLFACAAWFLLDIPYSSSTLFQSQIYRPL--FPA--P

OsPT13 EYHHTLQRMITMTAVHTFISLGCALPGYFFTVAFVDRIGRVKIQLIGFTMMTVFMLCLAI
OsPT11 AEVNLTMEFQISKASFLVALLGTFPGYWTVVALIDKMGRYMIQLIGFTMMSMFMLAMGI
AT5g43340 KTMNAIQELYMIKAQTIACSTVPYGFYFTVGFIDYMGKRIQIMGFAMMTIFMLSLAI
At2g32830 ETMNAIHEVFTVSKAQTIALCGTVPGYWTFVAFIDILGRFFIQLMGFFMTIFMFLAI
OsPT1 KTMNALEELYRIARAQALIALCGTIPGYWTFVAFIEIMGRFVIQIMGFAMMTAFMLGLAI
OsPT3 RTMNAVEEVFRIARAQALIALCGTIPGYWTFVAFIDVAGRFAIQIMGFAMMTAFMLGLAA
OsPT2 KTMNALEELYRISRAQALIALCGTIPGYWTFVAFIDVGRFVIQIMGFMMTVFMLALGV
OsPT6 ATMSALEELFRIARAQALIALCGTIPGYWTFVALIDVGRFKIQAVGFFMMTLMFLTLAL
OsPT7 KTMNALEELYRIARAQALIALCGTIPGYWTFVALIDVGRFKIQAAAGFVMTAFMLALAV
OsPT12 RTMSELEEVFRIARAQALIALCGTIPGYWTFVFLIDVGRFKIQLLGFAGMTAFMLGLAI
OsPT4 DTMSALEEMFKISRAQTLVALCGTIPGYWTFVFFIDIIGRFVIQLLGGFFMTAFMLGLAV
OsPT5 DTMSALEEMFKISRAQTLVALCGTIPGYWTFVFLIDVGRFAIQLLGGFFMTAFMLGLAV
OsPT8 KTMNALEEVFRIARAQALIALCGTIPGYWTFVFLIDVGRFAIQLLGGFFMTAFMLGLAV
LePT2 PTMNAVQELYKIAQAQALIALCSTVPYGFYFTVAFIDVGRFAIQIMGFMMTVFMFAIAI
StPT2 PTMNAVQELYKIAQAQALIALCSTVPYGFYFTVAFIDVGRFAIQIMGFMMTVFMFAIAI
MtPT1 KEMNAIHEVYKIAQAQALIALCSTVPYGFYFTVAFIDHMGFRFAIQMMGFMMTVFMFLAI
MtPT2 KEMNAIHEVYKIAQAQALIALCSTVPYGFYFTVAFIDHMGFRFAIQMMGFMMTVFMFLAI
AT5g43350 ATMNAIHEVRIARAQALIALCSTVPYGFYFTVAFIDVGRFKIQLLNGFFMMTVFMFAIAF
AT5g43370 ATMNAIHEVRIARAQALIALCSTVPYGFYFTVAFIDVGRFKIQLLNGFFMMTVFMFAIAF
AT5g43360 ATMNAIHEVFKIAQAQALIALCSTVPYGFYFTVAFIDVGRFAIQIMGFMMTVFMFAIAF
At2g38940 QSMNAIQEVFKIAQAQALIALCSTVPYGFYFTVAFIDVGRFAIQIMGFMMTVFMFLAI
AT3g54700 QTMNAIQEVFKIAQAQALIALCSTVPYGFYFTVAFIDVGRFAIQIMGFMMTVFMFLAI
LePT1 QTMNALEEVYKIAQAQALIALCSTVPYGFYFTVAFIDKIGRFVIQIMGFMMTVFMFLAI
NtPT1 ETMNALEEVYKIAQAQALIALCSTVPYGFYFTVAFIDRIGRFVIQIMGFMMTVFMFLAI
StPT1 QTMNALEEVYKIAQAQALIALCSTVPYGFYFTVAFIDRIGRFVIQIMGFMMTVFMFLAI
StPT3 ETMNALEEVFKIAQAQALIALCSTVPYGFYFTVAFIDRWGRFAIQIMGFMMTVFMFLAI
At1g20860 TAENVYDAAEVFAELGAIIAACSTIPGYWTFVYFIDKIGRVKIQIMGFMMTVYLVAGI
At1g76430 NSTNVYDSAFEVAKLAAIVAACSTIPGYWTFVYFIDKIGRVKIQIMGFMMTVYLVAGI
OsPT9 AKVNAFQEAQFVAKFQAVIAVASTIPGYFAAMLLIERAGRRRLQMGFLLMAVFLFALAG
OsPT10 GLINAFQEAQFVAKFQAVIAVASTIPGYFAAMLLIDRVGRRLQMGFLLMAVFLFALAG

OsPT13 PYD-QWLRHK-NKYGFVVMYGLTFFFANFGPNSTTFFIIPAEIFPARLRSTCHGISAVGK
OsPT11 LYD-YL--KT-HHFLFGLLYALTFFFANFGPNSTTFFVLPALFPTRVRSSTCHISAAGK
AT5g43340 PYH-HWTLPA-NRIGFVVLYSFTFFFANFGPNATTFIVPAEIFFPARLRSTCHGISAASGK
At2g32830 PYD-HWRHRE-NRIGFVIMYSLTFFFANFGPNATTFVVPAEIFFPARLRSTCHGISAASGK
OsPT1 PYH-HWTTPG-HHTGFVVMYGLTFFFANFGPNSTTFFIIPAEIFFPARLRSTCHGISAAGK
OsPT3 PYH-HWTTPG-NHTGFVVMYGLTFFFANFGPNATTFIVPAEIFFPARLRSTCHGISAAGK
OsPT2 PYD-HWTHPA-HHTGFVVLALYALTFFFANFGPNSTTFFIIPAEIFFPARLRSTCHGISAASGK
OsPT6 PYH-HWTAPGKNHVGLLLYGLTFFFANFGPNSTTFFIIPAEIFFPARLRSTCHGISAASGK
OsPT7 PYD-HWTAAG-NQIGFVVLALYALTFFFANFGPNATTFIVPAEIFFPARLRSTCHGISAASGK
OsPT12 PYH-HWTMPG-NQVIFVFLYGLTFFFANFGPNATTFIVPAEIFFPARLRSTCHGISAASGK
OsPT4 PYH-HWTTPG-NHIGFVVMYGLTFFFANFGPNSTTFFIIPAEIFFPARLRSTCHGISAAGK
OsPT5 PYH-HWTTPG-NHVGFMVYAFVFFFANFGPNSTTFFIIPAEIFFPARLRSTCHGISAAGK
OsPT8 PYH-HWTTKG-NHIGFVVMYAFVFFFANFGPNSTTFFIIPAEIFFPARLRSTCHGISAAGK
LePT2 PYH-HWTLA-NRIGFVIMYSLTFFFANFGPNATTFVVPAEIFFPARLRSTCHGISAAGK
StPT2 PYH-HWTLA-NRIGFVIMYSLTFFFANFGPNATTFVVPAEIFFPARLRSTCHGISAAGK
MtPT1 PYD-HWSKEE-NRIGFVVMYSLTFFFANFGPNATTFVVPAEIFFPARLRSTCHGISAAGK
MtPT2 PYD-HWSKEE-NRIGFVVIYSLTFFFANFGPNATTFVVPAEIFFPARLRSTCHGISAAGK
AT5g43350 PYN-HWIKPE-NRIGFVVMYSLTFFFANFGPNATTFIVPAEIFFPARLRSTCHGISAAGK
AT5g43370 PYN-HWIKPE-NRIGFVVMYSLTFFFANFGPNATTFIVPAEIFFPARLRSTCHGISAAGK
AT5g43360 PYN-HWILPD-NRIGFVVMYSLTFFFANFGPNATTFIVPAEIFFPARLRSTCHGISAAGK
At2g38940 PYN-HWTHKE-NRIGFVIMYSLTFFFANFGPNATTFVVPAEIFFPARLRSTCHGISAASGK
AT3g54700 PYD-HWTHKE-NRIGFVAMYSLTFFFANFGPNATTFVVPAEIFFPARLRSTCHGISAASGK
LePT1 PYH-HWTLKD-HRIGFVVMYSLTFFFANFGPNATTFVVPAEIFFPARLRSTCHGISAAGK
NtPT1 PYH-HWTLKD-NRIGFVIMYSLTFFFANFGPNATTFVVPAEIFFPARLRSTCHGISAAGK
StPT1 PYH-HWTLKD-NRIGFVVMYSLTFFFANFGPNATTFVVPAEIFFPARLRSTCHGISAAGK
StPT3 PYN-HWTKKE-NRIGFVVMYSLTFFFANFGPNATTFVVPAEIFFPARLRSTCHGISAAGK

At1g20860	PYSWYWSKHEHNKGMVLYGLVFFFCNFGPNTTTFIIPAELFPARFRSTCHGISGAAGK
At1g76430	PYSWYWSKHEKTKNGFMVLYGLIFFFSNFGPNTTTFIIPAELFPARFRSTCHGISGAAGK
OsPT9	PYDGYWRDH-AKTAGYIVLYSLTFFSANLGPNTTTFILPAELFPARFRSTCHGLSGAAGK
OsPT10	PYDGYWRDH-GAHAGYIVLYSLTFFSANLGPNTTTFILPAELFPARFRSTCHGLSGAAGK
OsPT13	IGAIIVGVFGFLYTEYH-----IRIFLVLIGCNLVGFIITL-LLPESKG
OsPT11	AGAIVAAFGIQKLTYNQVVK-----SIKKALIIISITNMLGFFFTF-LVPETMG
AT5g43340	AGAMVGSFSGFSALVK-----ALGMSNTLYIMAGINLLGLLTF-TIPETNG
At2g32830	AGAIIVGAFGLYAAQSSDSEKTDA-GYPPGIGVRNSLLMLACVNLGIVFTL-LVPESKG
OsPT1	AGAIIGAFGLYAAQ--DQHKPEP-GYPRGIGIKNALFVLAGTNFLGIMTL-LVPESKG
OsPT3	AGAIIVGAFGLYAAQ--DPHKPEA-GYKPGIGIRNALFVLAGTXFLGMLMTL-LVPESKG
OsPT2	AGAIIGAFGLYAAQ--DQHNPDA-GYSRGIGIRNALFVLAGTNFLGMLMTL-LVPESKG
OsPT6	LGAIIVGSFGLYLAQSPDRSKTEH-GYPPGIGVRNSLFLAACNLLGLLTF-LVPESKG
OsPT7	VGAIIVGSFGLYLAQSPVPAKAAAHGYPPGIGVRNSL FALAGCSLLGLLTF-LVPEPKG
OsPT12	AGAIIGAFGLYAAQPDKAHVDA-GYKPGIGVRNALFVLAGCNLVGFLMTWMLVPEPKG
OsPT4	AGAIIVGSFGLYAAQSTDASKTDA-GYPPGIGVRNSL FFLAGCNVIGFFFTF-LVPESKG
OsPT5	MGAIIVGSFGLYAAQSTDPSKTDA-GYPRGIGVRNSL FFLAGCNVVGFLFTF-LVPESKG
OsPT8	AGAIIGSFGLYAAQ--DPHKPDA-GYKPGIGVRNSL FVLAGCNLLGFICTF-LVPESKG
LePT2	AGAIIVGAYGFLYAAQSKDPNKTDA-GYPAGIGIKNSLIVLGCINLALGMLCTF-CVPEPKG
StPT2	AGAIIVGAYGFLYAAQSKDPMKTDA-GYPAGIGIKNSLIVLGFINALGMVCTF-CVPEPKG
MtPT1	AGAIIVGAFGLYAAQSKDPTKTDK-GYPTGIGIKNSLIMLVGINFVGMMLCTL-LVPESKG
MtPT2	AGAIIVGAFGLYAAQSKDPTKTDK-GYPTGIGIKNSLIMLVGINFVGMMLCTL-LVPESKG
AT5g43350	AGAIIVGAFGLYAAQSQDKAKVDA-GYPPGIGVKNLSIMLVGNFVGMMLFTF-LVPEPKG
AT5g43370	AGAIIGAFGLYAAQNDKAKVDA-GYPPGIGVKNLSIMLVGNFVGMMLFTF-LVPEPKG
AT5g43360	AGAIIVGAFGLYAAQPDKTKTDA-GYPPGIGVKNLSIMLVGINFVGMMLFTF-LVPEPKG
At2g38940	LGAMVGAFFGLYLAQNPDKDKTDA-GYPPGIGVRNSLIVLGVNVLGMLFTF-LVPESKG
AT3g54700	LGAMVGAFFGLYLAQSPDKTKTEH-GYPPGIGVKNLSIMLVGVNLLGMVFTL-LVPESKG
LePT1	AGAMVGAFFGLYAAQPTDPTKTDK-GYPPGHWCCELVDPRWLCNFGMLFTF-LVPEPNSG
NtPT1	AGAMVGAFFGLYAAQPTDPKKVDK-GYPAGIGVRNSLIVLGCNVLGMLVFTF-LVPESKG
StPT1	AGAMVGAFFGLYAAQPTDPKKTDK-GYPAGIGVRNSLIVLGCNVLGMLFTF-LVPESKG
StPT3	AGAIIVGAFGLYAAQSTDPSKVDA-GYPTGIGVKNLIVLGCNVLGMLFTL-LVPESKG
At1g20860	LGAIIVGTVGFVLWATKKMESDDKNQ-IYPEVNRMRIAFILILGGVCIAGILVTVYFFTKETMG
At1g76430	FGAIIVGTVGFVLWATRHE----ED-GFPDVKRVRIAFLILGGVCIAGIMIVTYLFTRETMTG
OsPT9	LGALVGSIGFLWASQKQDGA--A-GHLPGIGMMYALFVLGGICLLGLALTYAFTPETMT
OsPT10	LGALVGSIGFLWASQKQDGA--A-GHLPGIGMMYALFVLGGICLLGLALTYVFTPETMM
OsPT13	KSLEDLTGEIEEFQE-EDEGESEVALSRPIHTVPL-----
OsPT11	RSLEEISGEDGNTGAGGGGAPAAANAGVGVASDVS RDEKFPASSTEWQTSMHA-----
AT5g43340	KSLEELSGETEPEKIKEKIVV-----
At2g32830	KSLEEISREDEEQSG-GDTVVEMTVANSGRKVPV-----
OsPT1	MSLEVISQEVADGDDEEAAPK-----
OsPT3	MSLEEVSKENVADDE-EATA-----
OsPT2	LSLEEMSKDNVDETAQEAIAQA-----
OsPT6	KSLEEMSGDAEAQEE-APPPLQTVL-----
OsPT7	KSLEEMSRENEVGQP-----
OsPT12	KSLEEMSGEADDEEA-SANGGATAVNNSGVEMV-----
OsPT4	KSLEELSGENEDDDD-VPEAPATADHRTAPAPPA-----
OsPT5	KSLEELSGENEMEAE-PAAATNSYRQTVPD SGQSE-----
OsPT8	KSLEEMSGEAEDDDD-EVAAAGGGAAVRPQTA-----
LePT2	KSLEEASQETITGEA-----
StPT2	KSLEEASQETITGE-A-----
MtPT1	KSLEELSGENEGEGA-EATEQEGPRFENVA-----
MtPT2	KSLEELSGENEGEGA-EATEQEGSRV-----
AT5g43350	KSLEELSGEAEVSHD-EK-----
AT5g43370	KSLEELSGEAEVSHD-EK-----
AT5g43360	KSLEELSGEAEVDK-----
At2g38940	KSLEEMSGENEDNEN-SNNSDRTVPIV-----
AT3g54700	KSLEEMSGENEQNDE-SSSSNNNSNNAVSTA-----
LePT1	KSLEDLSRENEGEEE-TVAEIRATSGRTVPV-----
NtPT1	KSLEEMSRENEGEEE-SGTEMKNSGRTVPV-----
StPT1	KSLEEMSRENEGEEE-TVAEMRATSGRTVLFK-----
StPT3	KSLEEMSKENEGEEE-MTKVENATIPV-----
At1g20860	RSLEENEHDQDNNAESEDEPQIVDQSSVSTLLQTR-----
At1g76430	RSLEENEDEIVSTSAGSSPANELLRRQY-----
OsPT9	RSLEENESSVQAQSVGDGSDAGNGSDGLRFHELNLMEAAATKSPVSMASSHLSMSPIL
OsPT10	RSLEENESDRAQTQVGDGSDTEAAKSPASMASSHLSMSPILPARVSV-----
OsPT13	-----
OsPT11	-----
AT5g43340	-----
At2g32830	-----
OsPT1	-----
OsPT3	-----
OsPT2	-----
OsPT6	-----
OsPT7	-----
OsPT12	-----
OsPT4	-----
OsPT5	-----
OsPT8	-----
LePT2	-----

```
StPT2      -----  
MtPT1      -----  
MtPT2      -----  
AT5g43350  -----  
AT5g43370  -----  
AT5g43360  -----  
At2g38940  -----  
AT3g54700  -----  
LePT1      -----  
NtPT1      -----  
StPT1      -----  
StPT3      -----  
At1g20860  -----  
At1g76430  -----  
OsPT9      PHRMSL  
OsPT10     -----  
  
;  
end;
```