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Hsap_NBP 1 -----MEEVPHDCPGADSAQAGRGASCQGGCPNQRLLCASGAGATPDT
Mus_NBP 1 -----MEEAPHGCPGADSAQAGRGASCQGGCPNQRLLCASGAGAAPDP
At_NBP 1 -----MENG--DIPEDANEHCPGPQSESAKSDSCAGCPNQEACAT-APKGPDP
CyPPNUBP 1 -----MENGNEHEIPEDAHEHCPGPQSESAKSDSCAGCPNQQICAT-APKGPDP
Sac_NBP 1 MTEILPHVNDVLP AEYELNQPEPEHCPGPESDMAGKSDACGGCANKEICES-LPKGDDP

Hsap_NBP 42 AIEEIK EKMKTVKHKILVLSGKGGVGKSTFSAHLAHLAEDENTQIALLDIDICGPSIPK
Mus_NBP 42 AVEEIREKMKTVRHKLLVLSGKGGVGKSTFSAHLAHLAEDGDTQVALLDIDICGPSIPK
At_NBP 47 DLVAIAERMSTVKHKILVLSGKGGVGKSTFSAQLSFALAG-MDHQVGLMDIDICGPSIPK
CyPPNUBP 49 DLIGIAERMATIKHKILVLSGKGGVGKSTFSAQLSFALAS-KDYQVGLLDIDICGPSIPK
Sac_NBP 60 DIPLITDNLSGIEHKILVLSGKGGVGKSTFAAML SWALSADEDLQVGAMDLDICGPSLPH

Hsap_NBP 102 IMGLEGEQVHQSGSGWSPVYVEDNLGVMSVGFLLSSPDDAVIWRGPKKNGMIKQFLRDVD
Mus_NBP 102 IMGLEGEQVHQSGSGWSPVYVDDNLGVMSVGFLLSSPDDAVIWRGPKKNGMIKQFLRDVD
At_NBP 106 MLGLEGEQVHQSNLGSWSPVYVEDNLGVMSIGFMLPNSDEAVIWRGPRKNGLIKQFLKDVY
CyPPNUBP 108 MLGLEREDIHQSNLGSWSPVYVDSNLGVMSISFMLPNPDEAVIWRGPRKNGLIKQFLKNVN
Sac_NBP 120 MLGCIKETVHESNSGWT P VYVTDNLATMSIQYMLPEDDSAI IWRGSKNLLIKKFLKNDV

Hsap_NBP 162 WGEVDYLIVDTPPGTSDEHLSVVRYLATAHIDGAVIITTPQELSLQDVRKEINFCKKVKL
Mus_NBP 162 WGDVDYLIVDTPPGTSDEHLSVVQYLA AAHIDGAVIL TTPQEVALQDVRKEISFCHKVKL
At_NBP 166 WGEIDYLIVDAPPGTSDEHISIVQYLLPTGIDGAIIVTTPQEVSLIDVRKEVDFCKKVG
CyPPNUBP 168 WGEIGYLVVDAPPGTSDEHISIVQFLQASGIDGAVIVTTPQQVSLIDVRKEISFCKKVG
Sac_NBP 180 WDKLDYLIVDTPPGTSDEHISINKYMRESGIDGALVVITTPQEVALLDVRKEIDFCKKAGI

Hsap_NBP 222 PIIGVVENMSPFICP-----KCKKE-----SQI
Mus_NBP 222 PIIGVVENMSGFICP-----KCKKE-----SQI
At_NBP 226 PVLGVVENMSGLSQPLKDVKFMKLAT--ETGSSINVTEDVIACLRKNAPELLDIVACSEV
CyPPNUBP 228 QVLGVVENMSGLKQPVLDLKFERLVAGDKVGAVEDVTEWAQRYIRQNAPELLSLFACSEV
Sac_NBP 240 NILGLVENMSGFVCP-----NCKGE-----SQI

Hsap_NBP 245 FPPTTGGAEALMCQDLEVP LLGRVPLDPLIGKNC DKQSFFIDAPD SPATLAYRSIIQRIQ
Mus_NBP 245 FPPTTGGAEAMCQDLRIP LLGKVP LDPHIGKSCDKQSFFVEAPD SPATAAYRSIIQRIR
At_NBP 284 FDSSGGGAERMCREMGV PFLGKVPMDPQLCKAAEQGKSCFE--DNKCLISAPALKSIIQ
CyPPNUBP 288 FDISGGGA AKMCTEMGV PFLGKVP LDPQLCKAAEDGRSCFEE--DQKRLSAPSLLGIVE
Sac_NBP 263 FKATTGGGEALCKELGIKFLGVSPLDPRIGKSCDMGESFLDNYPD SPASSAVLNVEALR

Hsap_NBP 305 EFCNLHQSK EENLISS
Mus_NBP 305 DFCNSHQSHAETLISP
At_NBP 341 KVFPSTVMTE-----
CyPPNUBP 346 QLIASHE-----
Sac_NBP 323 DAVGDV-----

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Figure 3-4.

CTCTCTTTTCTACTATATGCTTCCCTTATCTGTTCCCCCATGGAGGCACGAATTAACACGCTCCCTGTGGG 70  
 L S F H Y M L P L S V P P W R H E L K R S L W  
 AATCCTATGCTCCTCGCAACAAGATCTTCTCCAGAAGGTCATTGAGGTAATCAACCTGAGGAAGATTA 140  
 E S Y V L A N K I F S Q K V I E V I N P E E D Y  
 CGTCTGGATTATGATTACCATCTCATGGCTCTCCACCTTCTCCGCCGCCGCTTCAATCGCCTTCGG 210  
 V W I H D Y H L M A L P T F L R R R F N R L R  
 ATGGGATTTCTTCCACAGCCCTTCCATCGCTGAGATCTACCGCACTCTCCCTGTGCGGAGGAGA 280  
 M G F F L H S P F P S S E I Y R T L P V R E E  
 TCCTGAAAGCTTCTCAACTGCGACCTCATTGGCTTCCATACCTTCGACTATGCCCGCCACTTCCCTCTC 350  
 I L K A L L N C D L I G F H T F D Y A R H F L S  
 CTGCTGCAGTCGGATGCTTGGAAATGGAGTATCAGTCCAAGCGTGGCTATATTGGCTCGACTACTTTGGC 420  
 C C S R M L G M E Y Q S K R G Y I G L D Y F G  
 CGCACCGTCGGCATCAAGATCATGCCGTTGGGCAATCAATGGCGCAGCTTCAATTGACACTTTCCCTCC 490  
 R T V G I K I M P V G I Q M A Q L Q L T L S L  
 CGGACAAGGCTGGCGTGTCTGAGCTCCAGCAGCAGTTTTTTGGTAAACTGTTTTGCTTGGTGTGA 560  
 P D K A W R V S E L Q Q Q F F G K T V L L G V D  
 TGACATGGACATTTTCAAGGCATCAATCTCAAGCTCCTTGCAATTTGAGCAGATGCTCAAGATACATTC 630  
 D M D I F K G I N L K L L A F E Q M L K I H S  
 AAGTGCAGGGGAATGCGGTTCTTGTGCAAGTGTCTAATCCTGCTCGGGCAAGGGAAGGGACCTTGAGG 700  
 K W Q G N A V L V Q I A N P A R G K G R D L E  
 AGATTCAGCAGAGATTCGCAAAAGCTGCAAAAGGATTAATGAGCAGTTTGGTAAATGCTAATTACAACC 770  
 E I Q A E I R Q S C K R I N E Q F G N A N Y N P  
 TGTTGCTTTCATTGATCTCCCAATCTCCCTAGAAGAGAGGGTTGCGTTCTACACCATTGCGGAATGTGTG 840  
 V V F I D L P I S L E E R V A F Y T I A E C V  
 GTTGTACAGCAGTCAGAGATGGGATGAACCTTGACACCATATGAGTACATTGTATGTAGACAGGGGATTA 910  
 V V T A V R D G M N L T P Y E Y I V C R O G I  
 TTTCTGGGCTGATTCCAGTTTGGAGGCTGATGGTCTTAAAGAAGCATGCTTGTGGTCTCCGAATTTCT 980  
 I S G S D S S L E A D G P K K S M L V V S E F L  
 TGGATGCTCGCTTCTGAGTGGAGCAATTCGGATCAATCCATGGAACACTGAATCAACTGCAGAGGCC 1050  
 G C S P S L S G A I R I N P W N T E S T A E A  
 ATGAACGAGGCAATCTATGAGTGTGCGGAGAAGCAGCTGCGGCATGAAAAGCATTATAGATATGTA 1120  
 M N E A I S M S D A E K Q L R H E K H Y R Y V  
 GTACTCATGATGTTGGCTTATTGGTCCAAGTCTTTCATGATGACTTGGAGAGGACATGCAAGGACACTT 1190  
 S T H D V A Y W S K S F M H D L E R T C K D H F  
 TAAGAGGAGGTGCTGGGGATTTGGGTTTGGGATTTGGGTTTGGGTTTGGGTTGATGATCCCAATTTTAGG 1260  
 K R R C W G I G L G F G F R V V A L D P N F R  
 AAGCTTAACATGATGCAATTTTTCAGCACATGAGAGGGCTAAAAGCAGGGCTATTTTGTGGATTATG 1330  
 K L N I D A I V S A H E R A K S R A I L L D Y  
 ATGGCAGCATGATGCCCAAAATGCCTATTAACAAGACTCCAAGTGCAGAAATATCTCTATTATCAATAC 1400  
D G T M M P O M P I N K T P S A E I I S I I N T  
 ACTTTGTGGTGAATAAAGAATGTGGTCTTATTGTAGTGGTAGAGGAATGGTGAACCTGGAGAAGTGG 1470  
 L C G D K K N V V F I V V V E E W C N L E K W  
 TTCTCCCTTGCAGGAAACTGGGCTTGCAGCAGAGCATGGATACTTACAGAGTGGAGTCCGATGAAA 1540  
 F S P C R K L G L A A E H G Y F T R W S R D E  
 GTTGGGAAATATGCAGTCAAAGCTCTGATTTGAATGGATGCAGATAGCTGAGCCTGTGATGAAATGTA 1610  
 S W E I C S Q S S D F E W M Q I A E P V M K L Y  
 TACAGAATCGACTGATGGATCTATATTGATAAGAAAGAGAGTGCATTGGTGTGCCACCATCATGATGCT 1680  
 T E S T D G S Y I D K K E S A L V W H H H D A  
 GATCCTGATTTGGATCAGCTCAGGCCAAGGAGATGCTGGACCCTTGAGAGTGTACTTGCAAATGAGC 1750  
 D P D F G S A Q A K E M L D H L E S V L A N E  
 CTGTTTCAGTGAAGAGCGGCCAGTTTCATCGTTGAAGTCAAGCCTCAGGAGTGACCAAGGTATTGTCTG 1820  
 P V S V K S G Q F I V E V K P Q G V T K G I V V  
 GGAGAAGATCTTATCCTCTATGGTCAACTACAATAAACAAGCAGACTTCTTGGCTTTGATTTGGTATGAT 1890  
 E K I L S S M V N Y N K Q A D F L L C I G D D  
 AGATCACATGAAGACATGTTTGAATGCATCAGTGTATCCTCTCCAAGGATCTTGTGCGCCAACACAA 1960  
R S H E D M F E C I S A I L S K D L V A P N T  
 CAAGTGTGCTTCCACAAGTGGGACAGAAACCAGCAAAAGCAAGATACTCTTACGACACCGGTGCA 2030  
 T S V C F H K W D R N R A K A R Y Y L D D T V E  
 GGTGACTAACATGCTTGGAGCACTTGCAGATAGCTCCAGCCATCTTACCTATTTCTGATGTTAAACTG 2100  
 V T N M L G A L A D S S Q P S S P I S D V K L  
 GAATCTTTATCTTCTGAGATGGCTGCCAAGCCTAACATGTCCACCTAA~~AAA~~AACTGATGGTATTGTTA 2170  
 E S L S F S E M A A K P N M S T .  
 TTATTGATGATCAAGAAAACCTCAAAATGCTGATGAAAAAATAAAAAA 2219

Figure 3-5.

At\_TPSP 1 MISRSYTNLLDLASGNFPVMG-----RER--RRLPRVMTVPGNVSEFDE  
 Stub\_TPSP 1 MMSRSYTNLLDLASGNFPVMG-----RERDRRRMSRVMTVPGSICELDD  
 Osat\_TPSP 1 MFSRSYTNLVDLANGNLSALDYGGGGGGGGGGNGAGGRPPRRARMQRTMTTPGTLAEELDE  
 CyPP\_TPSP 1 -----  
  
 At\_TPSP 43 DQAVSVSSDNPFSSVSSDRMIIVANRLPLKAEKR--NGSWSFSWDQDSLYLQLKDGLPEDM  
 Stub\_TPSP 45 DQAVSVSSDNQSSLAGDRMIVVANQLPLKAKRRPDNKGWSFSWNEDSLLLRLKDGLPEDM  
 Osat\_TPSP 61 ERAGSVTSDVPSSLASDR LIVVANTLPVRCERRPDGRGWSFCWDEDSLLLHLRDGLPDDM  
 CyPP\_TPSP 1 -----  
  
 At\_TPSP 101 EILYVGSLSDVDVSNEQDDVAQILLDKFKCVPTFFPPDLQSKFYDGFCKRQIWPLFHYML  
 Stub\_TPSP 105 EVLFGVSLSDVDVPIEQDDVSSYLLDKFRCVPTFLPPNIVEKYYEGFCKRHLWPLFHYML  
 Osat\_TPSP 121 EVLYVGSLRADVPSAEQDDVAQALLDRFRCVPAFLPKDVLDRFYHGFCQTLWPLFHYML  
 CyPP\_TPSP 1 -----LSFHYML  
  
 At\_TPSP 161 PFSA-DHGGRFDRSLWEAYVATNKLFFQKVIIEVINPDDDFVWIHDYHLMVLPFLRRRFN  
 Stub\_TPSP 165 PFSP-DHGGRFDRSMWEAYVSANKMFSQKVEVLNPEDDFVWIHDYHLMVLPFLRRRFN  
 Osat\_TPSP 181 PFTS-DHGGRFDRSQWEAYVLANKLFSQRVIEVLNPEDDYIWIHDYHLLALPSFLRRRFN  
 CyPP\_TPSP 8 PLSVPPWRHELKRSLSWESYVLANKIFSQKVIIEVINPEEDYVWIHDYHLMALPFLRRRFN  
  
 At\_TPSP 220 RIRMGFFLHSPFPSSSEIYRSLPVRREEILKALLNSDLIGFHTFDYARHFLTCCSRMLGLE  
 Stub\_TPSP 224 RLRI GFFLHSPFPSSSEIYRSLPVRREEILKALLCSDLVGFHTFDYARHFLS CCSRMLGLE  
 Osat\_TPSP 240 RLRI GFFLHSPFPSSSELYRSLPVRDEILKSLNCDLIGFHTFDYARHFLS CCSRMLGIE  
 CyPP\_TPSP 68 RLRI GFFLHSPFPSSSEIYRSLPVRREEILKALLNCDLIGFHTFDYARHFLS CCSRMLGMEY  
  
 At\_TPSP 280 QSKRGIYIGLEYGRTVGIKIMPVGINMGRIQSVMYRSEEEGKVMELRNRFEKTVLLGID  
 Stub\_TPSP 284 QSKRGIYIGLEYGRTVGIKIMPVGIHMGHIESMKKIADKELKFKELKQQFEGKTVLLGVD  
 Osat\_TPSP 300 QSKRGIYIGLDYFGRTVGIKIMPVGINMTQLQTQIRLPDLEWRVAELRKQFDGKTVMLGVD  
 CyPP\_TPSP 128 QSKRGIYIGLDYFGRTVGIKIMPVGIQMAQLQLTSLPDKAWRVSELQQQFFGKTVLLGVD  
  
 At\_TPSP 340 DMDIFKGINLKLAMEQMLRQHPNWRGRAVLVQIVNPARGKIDVVEIRGEIEESCRIN  
 Stub\_TPSP 344 DL DIFKGINLKLAMEHMLKQHPWSQQA VLVQIANPMRGKIDLEEIQA EIQESCRIN  
 Osat\_TPSP 360 DMDIFKGINLKVLA FEQMLRTHPKWQRKAVLVQIANPRGGGKDL EEIQA EIDESCRIN  
 CyPP\_TPSP 188 DMDIFKGINLKLAFEQMLKIHSKWQGNAVLVQIANPARGKGRDLEEIQA EIRQSCRIN  
  
 At\_TPSP 400 GEF GKPGYQPIIYIDTPV SINEINAYYHIAECVVVTAVRDGMNLTPEYIIVCRQGLLG-S  
 Stub\_TPSP 404 KQFGKPGYEP IYVIDRSVSSSERMAYYSVAECVVVTAVRDGMNLTPEYIIVCRQGVSG-A  
 Osat\_TPSP 420 AQFSRPGYV PVV IINRALSSVERMAYYTVAECVVVTAVRDGMNLTPEYIIVCRQGFDDL  
 CyPP\_TPSP 248 EQFGNANYNPVVFI DLPI SLEERVAFYTIAECVVVTAVRDGMNLTPEYIIVCRQGIISGS  
  
 At\_TPSP 459 ESD--FSGPK-KSMLVASEFIGCSPSLSGAIRVNPWNVEATGEALNEALSMSDAEKQLRH  
 Stub\_TPSP 463 ETDSGVGEPD-KSMLVVSEFIGCSPSLSGAIRINPNWVEATAEAMNEAVSMAEQEKQLRH  
 Osat\_TPSP 480 GS--GDDGPRRKSMLVVSEFIGCSPSLSGAIRVNPWNIDTTAEAMNESIALSENEKQLRH  
 CyPP\_TPSP 308 DSSLEADGPK-KSMLVVSEFLGCSPSLSGAIRINPWNTES TAEAMNEAISMSDAEKQLRH  
  
 At\_TPSP 516 EKHFYVSTHDVAYWSRSFLQDLERICVDHFKKRCWGMGISFGFRVVALDPNFRKLSIPC  
 Stub\_TPSP 522 EKHYRYVSTHDVAYWSRSFLQDMERTCADHFRKRCYIGIGLGFGRVVALDPNFRKLSIDD  
 Osat\_TPSP 538 EKHYRYVSSHVDVAYWSKSYIHDLERSCRDHFRRCWIGIGLGFGRVVALDRNFKKLTVDS  
 CyPP\_TPSP 367 EKHYRYVSTHDVAYWSKSFMDLERTCDHFKRCWIGIGLGFGRVVALDPNFRKLTNIDA  
  
 At\_TPSP 576 IVSDYKRAKSRAILLDYDGTLM PQNSINKAPSQEVLNFLDALCEDKKN SIFIVSGRGRES  
 Stub\_TPSP 582 IVNAYIKSKSRAIFLDYDGTVM PQNSIIKSPSANVISILNKLSGDPNNTV FIVSGRGRES  
 Osat\_TPSP 598 IVTDYKNSKSRVILLDYDGTLPQT TINRTPNESVVKIMNALCDDKKNV FIVSGRGRDS  
 CyPP\_TPSP 427 IVSAHERAKSRAILLDYDGTMPQMPINKTPSAEIIISIINTLCGDKKNV FIVVVEWCN  
  
 At\_TPSP 636 LSKWFTPCKKIGIAAEHGYFLKWSGSEEWETCGQSSDFGWMQIVEPVMKQYTES TDGSSI  
 Stub\_TPSP 642 LTKWFSPCRKLG LAAEHGYFLRWEREQKWEVCSQTSDFGWMQLAEPVMQSYT DATDGS CI  
 Osat\_TPSP 658 LEKWFSPCQDLGIAAEHGYFMRWTRDEQWQLNNQCSEFGWMQMAK PVMNLYTEATDGSYI  
 CyPP\_TPSP 487 LEKWFSPCRKLG LAAEHGYFTRWSRDESWEIC SQSSDFEWMQIAEPVMKLYTES TDGSYI  
  
 At\_TPSP 696 EIKESALVWQYRDADPGFGSLQAKEMLEHLESVLANEPVAVKSGHYIVEVKPQGVS KGSV  
 Stub\_TPSP 702 ERKESAI VWQYRDADSGFGFSQAKEMLDHLESVLANEPVAVKSGQHIVEVKPQGVTKGLV  
 Osat\_TPSP 718 ETKESALVWHHQDADPGFGSSQAKEMLDHLESVLANEPVCVKSGQQIVEVKPQGVSKGFV  
 CyPP\_TPSP 547 DKKESALVWHHHADADPDFGSAQAKEMLDHLESVLANEPVS VKSGQFIVEVKPQGVTKGIV  
  
 At\_TPSP 756 SEKIFSSMAGKGPVDFVLCIGDDRSDEDMFEAIGNAMSKRLLCD-NALVFACTV GQKPS  
 Stub\_TPSP 762 AEKVFTSLAVKGLAD FVLCIGDDRSDEDMFEIIGDALSRNIISY-DAKVFACTV GQKPS  
 Osat\_TPSP 778 AEKILSTLTENKRQAD FVLCIGDDRSDEDMFEIADIMRRSIVDP-QTSLYACTV GQKPS  
 CyPP\_TPSP 607 VEKILSSMVNYNKQAD FLLCIGDDRSHEDMFECISAILS KDLVAPNTTSVCFHKWDRNRA

Figure 3-6.