

	E1											TM			
	1	11	21	31	41	51	61	71	81	91	101	111	121	131	
Rabbit AAA31391	MAEEGSKRDS	IKMNMKGCQT	NNGFVQNEDI	PELDDLPSSS	*****KH	ILG*PEEPN*	*****	***AKNIQPY	AQMPKEVLFQ	FAGQARYRVP	REILFVLLVVV	SVLVILGATI	AIIAISPCK*	****LDWVQA	
Human NP_000332	MAEDSKRDS	IEMSMKGCQT	NNGFVHNEDI	LEQTPDPGSS	TDNLKHSTRG	ILG*SQEPD*	*****	***FKGVQPY	AGMPKEVLFQ	FAGQARYRIP	REILFVLLTVA	SVLVILGATI	AIIAISPCK*	****LDWVQE	
Dog AF187966_1	MAKGTDRRGS	GALRMQACRT	NNGFVQNGLI	PASEPEPEPE	PEPEPERARG	PASPPCPGG	AAGLGLGLG	GLGLGAAQPY	AGMPKEVLFQ	FERRARYRAP	REALFVLLTVA	SVLLLTGATI	AIIAISPCK*	****LDWVQA	
Mouse NP_032321	MDEDKGRKRS	IQMSMKGCRT	NNGFVQNDLI	PEQDPDPGSR	DTP*OPNAVS	IPA*PEEPH*	*****	***LKAVRPY	AGMPKEVLFQ	FAGQARYRVP	REILFVLLTVV	SVLLLIGATI	AIIAISPCK*	****LDWVQA	
Rat NP_058912	MNEDKDKRDS	IQMSMKGCRT	NNGFVQNDLI	QEQDPD**SR	DTP*QSNVS	IPA*PEEPQ*	*****	***LKVVRPY	AGMPKEVLFQ	FAGQARYRVP	REILFVLLTVV	SVLLLIGATI	AIIAISPCK*	****LDWVQA	
Human AAA51540	*****	****MSQDT	EVDMDKVELN	ELEPEKQPMN	****AASGA	AMSLAGAEKN	GLVKIKVAED	EAEAAPAKT	TGLSKEELLK	VAGSGWVRT	RWALLLLFWL	GWLGMLAGAV	VIIVRAPCR	ELPAQKWHT	
Mouse NP_032603	*****	****MSQDT	EVDMDKVELN	ELEPEKQPMN	****AADGA	AA***GEKN	GLVKIKVAED	**ETEAGVKF	TGLSKEELLK	VAGSGWVRT	RWALLLLFWL	GWLGMLAGAV	VIIVRAPCR	ELFVQRWWHK	
Rat NP_062156	*****	****MSQDT	EVDMDKVELN	ELEPEKQPMN	****AADGA	AA***GEKN	GLVKIKVAED	**EAEAGVKF	TGLSKEELLK	VAGSGWVRT	RWALLLLFWL	GWLGMLAGAV	VIIVRAPCR	ELFVQRWWHK	
Hamster AAB97631	*****	****MSQDT	EVDMDKVELN	ELEPEKQPMN	****AAAGA	AA***GEKN	GLVKIKVAED	EAEAAGAKT	TGLSKEELLK	VAGSGWVRT	RWALLLLFWL	GWLGMLAGAV	VIIVRAPCR	ELFVQRWWHE	
Zebrafish NP_571676	*****	****MANK	EDEMKEVELN	EMDQKQPMT	****GTFPT	GT***EKN	GSVKV*LAGD	****AEVKF	TGLSKEELMK	VAGTAGWVRT	RWALLVFWL	GWVGLAGAI	VIIVQAPRCK	FIFEMHWNE	
Lamprey	*****	***MADRDTV	SIDLKDELNR	DGSPPEQEQ	QHRQEEEG	DAEKLVMNTP	GDANGAAAKI	DDGASPAARF	TGLTKEELLK	ISTOPFWIRT	RLALLVFWL	GWLAMLGAV	VIIVQAPRCK	PEPRDWWQL	
Drosophila AAF59085	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****MI	KYRLIAFLAV	IQYPNYHADP	VGICDHGAD*	****LKWWQT	
Anopheles EAA00179	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	**MALYYLAL	LI*****	LGWSTVTAQ*	****KDWNES	
Anopheles EAA00998	*****	*****	*****	*****	*****	*****	*****	*****	*****	***HFLFFPP	KMPPLGVLLL	LVALGHSTQG	*****HR	PLPIKKAHK*	****FDWBER
E.coli NP_290870	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****M	TNLS*	*****HWQON	****KDWNES
S.pompe NP_595063	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****M	KVPSSEKIK*	*****PNIWRE	****KDWNES
D. thermophilum P14899	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****M	KIKFFIKRTL	IFIFILVTFP	TYHGYNEP*	****KYKN	****KDWNES
C.elegans NP_4970	****MDATDR	LMPGPEGKTP	RFYEVDRGNK	TESYISAVSG	NPVPEHIMR	KEKRQEQEEA	PPQKSWERP	APTNPKNTDQ	IGLSEQEEQ	FRNDECKWFI	ETVLFVLEWL	INLALFAVAI	LLVCSPTCV	LRAKPNWQT	****KDWNES

	E2					E3								
	141	151	161	171	181	191	201	211	221	231	241	251	261	271
Rabbit AAA31391	GPMYQIYPRS	FKDSKDQNG	DLKIQDKLD	YITLNIKTI	WITSFYKSSL	RDFRYGVDF	REIDPIFGTM	EDFENLAAI	HDKGLKLID	FIPNHTSDKH	AWFQLSRT*R	TGKYTDYYIW	HDCAHENG*I	TTPNPNWLSV
Human NP_000332	GPMYQIYPRS	FKDSKDQNG	DLKIQDKLD	YITLNIKTV	WITSFYKSSL	KDFRYGVDF	REVDPIFGTM	EDFENLVAAI	HDKGLKLID	FIPNHTSDKH	INFQLSRT*R	TGKYTDYYIW	HDCTHENG*K	TIPPNNWLSV
Dog AF187966_1	GPVIYIYPRS	FRSDADQNG	DLKIQEKL	YITLNIKTI	WITSFYKSSL	KDFRYGIED	RDIDPIFGTM	KDFENLAAI	HDKGLKLID	FIPNHTSDKH	AWFQLSRN*R	TGKYTDYYIW	HDCTHENG*T	TIPPNNWLSV
Mouse NP_032321	GPIYIYPRS	FKDSKDQNG	DLKIQEKL	YITLNIKTL	WITSFYKSI	EDFRYAVEDI	KEIDPIFGTM	KDFENLVAAI	HDKGLKLID	FIPNHTSDKH	PWFQSSRT*R	SGKYTDYYIW	HNCTHANG*V	TTPNPNWLSV
Rat NP_058912	GPMYQIYPRS	FKDSKDQNG	DLKIQEKL	YITLNIKTI	WITSFYKSP	KDFRYAVDF	KEIDPIFGTM	KDFENLVAAV	HDKGLKLID	FIPNHTSDKH	PWFQSSRT*R	SGKYTDYYIW	HNCTHANG*V	TTPNPNWLSV
Human AAA51540	GALYRIGD**	LQAFVGRDAG	GIAGLKSHLE	YLSTLKVKGL	VLGPIHKNQK	DEV**NTDL	KQIDPDLGSQ	EDFKDLLQSA	KKKSIEHILD	LTPNYK*GQN	AWF*****	*****	*****	*****
Mouse NP_032603	GALYRIGD**	LQAFVGRDAG	GIAGLKSHLE	YLSTLKVKGL	VLGPIHKNQK	DEV**NTDL	KQIDPDLGSQ	EDFKDLLQSA	KKKSIEHILD	LTPNYK*GQN	AWF*****	*****	*****	*****
Rat NP_062156	GALYRIGD**	LQAFVGRDAG	GIAGLKSHLE	YLSTLKVKGL	VLGPIHKNQK	DEV**NTDL	KQIDPDLGSQ	EDFKDLLQSA	KKKSIEHILD	LTPNYK*GQN	AWF*****	*****	*****	*****
Hamster AAB97631	GALYRIGD**	LQAFVGRDAG	GIAGLKSHLE	YLSTLKVKGL	VLGPIHKNQK	DEV**NTDL	KQIDPDLGSQ	EDFKDLLQSA	KKKSIEHILD	LTPNYK*GQN	AWF*****	*****	*****	*****
Zebrafish NP_571676	GPLYQISNH*	LDAFVGRDAG	GLKSVVEEKL	YLSMLKLVKGL	VLGPIHKNQK	DEV**NTDL	KQIDPDLGSQ	EDFKDLLQSA	KKKSIEHILD	LTPNYK*GQN	AWF*****	*****	*****	*****
Lamprey	TAVYDVSTEA	FADNNGAGKG	DVRGVQRSLD	YLKQLNVRAM	VMQLLPEDA	TTR**QVNF	INVDVRYGR	DELQKLMTEA	RRKDIKILD	MFAK****	WF*****	*****	*****	*****
Drosophila AAF59085	AIFYQIYPRS	FKDSNGDQVG	DLNGLAEQIP	YLKELGITAT	WLSPIFTSPM	ADFGYDIANF	TEIAPIFGTM	ADFEELMVA	KKLDIKILD	FVFNHSSDEH	EWFRRSAA*R	DPEFKDFYVW	HPGRMENG*N	RHPPSNWISV
Anopheles EAA00179	ASFYQIYPRS	FKDSNGDQVG	DLNGLAEQIP	YLKELGITAT	WLSPIFTSPM	ADFGYDIANF	TEIAPIFGTM	ADFEELMVA	KKLDIKILD	FVFNHSSDEH	EWFRRSAA*R	DPEFKDFYVW	HPGRMENG*N	RHPPSNWISV
Anopheles EAA00998	GNFYQIYPRS	FKDSNGDQVG	DLNGLAEQIP	YLKELGITAT	WLSPIFTSPM	ADFGYDIANF	TEIAPIFGTM	ADFEELMVA	KKLDIKILD	FVFNHSSDEH	EWFRRSAA*R	DPEFKDFYVW	HPGRMENG*N	RHPPSNWISV
E.coli NP_290870	GVYQIYPRS	FKDSNGDQVG	DLNGLAEQIP	YLKELGITAT	WLSPIFTSPM	ADFGYDIANF	TEIAPIFGTM	ADFEELMVA	KKLDIKILD	FVFNHSSDEH	EWFRRSAA*R	DPEFKDFYVW	HPGRMENG*N	RHPPSNWISV
S.pompe NP_595063	GVYQIYPRS	FKDSNGDQVG	DLNGLAEQIP	YLKELGITAT	WLSPIFTSPM	ADFGYDIANF	TEIAPIFGTM	ADFEELMVA	KKLDIKILD	FVFNHSSDEH	EWFRRSAA*R	DPEFKDFYVW	HPGRMENG*N	RHPPSNWISV
D. thermophilum P14899	AIFYEVFVRS	FADSDGDQVG	DLNGLAEQIP	YLKELGITAT	WLSPIFTSPM	ADFGYDIANF	TEIAPIFGTM	ADFEELMVA	KKLDIKILD	FVFNHSSDEH	EWFRRSAA*R	DPEFKDFYVW	HPGRMENG*N	RHPPSNWISV
C.elegans NP_4970	AVAYHWVPS	FKDSNGDQVG	DVDGLNRLD	QLRKSQVQT	WSPFLIS*D	DEKT*AVRS	SQMDPKIGVN	QKADLNLKI	HEKGNPKSAV	*****	*****	*****	*****	*****

	E4					E5					E6					
	281	291	301	311	321	331	341	351	361	371	381	391	401	411		
Rabbit AAA31391	YGNSSWHFDE	VRNQCYPHQF	LKEQPDNLNR	NPVQEEIKE	IMQFWLTKGV	DGFSFNAVKF	LLEAMHLRNE	IQVNAS***Q	IPDVTTRYSE	LYHDFTTQV	GMHDLVRSFR	QTMQYRSFEP	GRYRFMGTEA	YAESIDRTMR		
Human NP_000332	YGNSSWHFDE	VRNQCYPHQF	MKEQPDNLNR	NPVQEEIKE	IIRFWLTKGV	DGFSFDAVKF	LLEAKHLRDE	IQVNT***Q	IPDVTQYSE	LYHDFTTQV	GMHDVRSFR	QTMQYRSFEP	GRYRFMGTEA	YAESIDRTVM		
Dog AF187966_1	YGNSSWHFDE	VRNQCYPHQF	LREQPDNLFR	NLDVQEEIKE	IITFWLTKGV	DGFSFDAVKF	LLEAEHLRDE	AQVNA***Q	IPDVTTHYSE	LYHDFTTQV	GMHDVRSFR	QTMQYRSFEP	GRYRFMGTEA	YAESIDRTMM		
Mouse NP_032321	YGNSSWHFDE	VRNQCYPHQF	LREQPDNLFR	NPVQEEIKE	IITFWLTKGV	DGFSFDAVKF	LLEAKDLRNE	IQVNT***Q	IPDVTTRYSE	LYHDFTTQV	GMHDLVRSFR	QTMQYRSFEP	GRYRFMGTEA	YAESIDRTMM		
Rat NP_058912	YGNSSWHFDE	VRNQCYPHQF	LREQPDNLFR	NPVQEEIKE	IITFWLTKGV	DGFSFDAVKF	LLEAKDLRNE	IQVNT***Q	IPDVTTRYSE	LYHDFTTQV	GMHDLVRSFR	QTMQYRSFEP	GRYRFMGTEA	YAESIDRTMM		
Human AAA51540	*****	*****	*****	****S*Q	VDIVATKVKD	ALFPWLQAGV	DGQV****	*****	*****	*****	***RDIENLK	DASSFLAEWQ	NITKGFSEDT	***RLIAGT	NSSDLQQLS	
Mouse NP_032603	*****	*****	*****	****LPAQ	ADIVATKIKE	ALSSWLQDGV	DGQV****	*****	*****	*****	***RDVGEKLM	NAPLYLAEWQ	NITKNFSEDT	***RLIAGT	ESSDLQQLVN	
Rat NP_062156	*****	*****	*****	****LPPQ	ADIVATKIKE	ALSSWLQDGV	DGQV****	*****	*****	*****	***RDVGEKLM	NAPLYLAEWQ	NITKNFSEDT	***RLIAGT	ASSDLQQLVN	
Hamster AAB97631	*****	*****	*****	****LPAQ	ADIVATKIKE	ALSSWLQDGV	DGQV****	*****	*****	*****	***RDVGEKLM	NAPLYLAEWQ	NITKNFSEDT	***RLIAGT	DSSDLQQLVT	
Zebrafish NP_571676	*****	*****	*****	****NNA	AS*VAEKLIK	ACVFWLKNQV	DGIFL****	*****	*****	*****	***SDINDIM	NLYAWSIQQA	IFNKIDGFP*	***KCALMGT	ASSLSVDTIS	
Lamprey	*****	*****	***SNGTSG	TKMREBMKK	ALKFWMQGI	AGFRIG***	*****	*****	*****	*****	***VGLGEKE	EVNDLFEWHR	NVTSTYSTED	KERRVLIADA	RQSDLAEYL	
Drosophila AAF59085	FRGSAWQWHD	GRQEFYHQF	VKKQPDNLNR	NPKVRETNEN	VLRFWLTKGV	AGFRIDAVPH	VFEIAPDNQV	QYRDEPRND	DND*PEDYGV	LQHIYTKDQF	ETIDLVYENR	AVLDAHQRH	GGEDRILMAE	TYSPIDIVMQ		
Anopheles EAA00179	FRGSAWQWHD	GRQEFYHQF	VKKQPDNLNR	NPKVRETNEN	VLRFWLTKGV	AGFRIDAVPH	VFEIAPDNQV	QYRDEPRND	DND*PEDYGV	LQHIYTKDQF	ETIDLVYENR	AVLDAHQRH	GGEDRILMAE	TYSPIDIVMQ		
Anopheles EAA00998	FRGSAWQWHD	GRQEFYHQF	VKKQPDNLNR	NPKVRETNEN	VLRFWLTKGV	AGFRIDAVPH	VFEIAPDNQV	QYRDEPRND	DND*PEDYGV	LQHIYTKDQF	ETIDLVYENR	AVLDAHQRH	GGEDRILMAE	TYSPIDIVMQ		
E.coli NP_290870	FRGSAWQWHD	GRQEFYHQF	VKKQPDNLNR	NPKVRETNEN	VLRFWLTKGV	AGFRIDAVPH	VFEIAPDNQV	QYRDEPRND	DND*PEDYGV	LQHIYTKDQF	ETIDLVYENR	AVLDAHQRH	GGEDRILMAE	TYSPIDIVMQ		
S.pompe NP_595063	FDTSAWRWA	ESEQYLLHLF	AVEQADLNWE	NPVRAEKLK	VCFPWARDRG	DGLRLDVVNL	ISKDPFPDD	LGDGGR***	***RFYTDGP	RAHEFHEMN	RDVTFPRGLM	TVGEMG*STS	LHQRQYAL	TGSELSMTFN		
D. thermophilum P14899	****SNLWYK	KPTQYYYALF	WSEMPDLNFD	NPKVRETNEN	VLRFWLTKGV	AGFRIDAVPH	VFEIAPDNQV	QYRDEPRND	DND*PEDYGV	LQHIYTKDQF	ETIDLVYENR	AVLDAHQRH	GGEDRILMAE	TYSPIDIVMQ		
C.elegans NP_4970	*****	*****	*****	****LNWQ	NSNLREHMFN	ALSNWIDRGV	DGFEHQIEY	LARTPN***	*****	*****	*****GTE	PWNSIYDVI	RDIRFHVDSY	SNESITADGK	KIALPSTREE	AKKPKKMA

Rabbit AAA31391 421 431 441 451 461 471 481 491 501 511 521 531 541 551  
Human NP\_000332 YYGLSFIQEQ ADFPFNN\*\* YFTTLDLTSG NTVYE\*VITA WMENMP\*\*E GKWPNNMTGG PDITRLTSLR GNQ\*YVNMIM \*MLLFTLPGT PITIYGEIIG MGN\*\*\*\*\*  
Dog AF187966\_1 YYGLPFQIQE ADFPFNN\*\* YLSMLDTVSG NSVYE\*VITS WMENMP\*\*E GKWPNNMTGG PDSSRLTSLR GNQ\*YVNMIM \*MLLFTLPGT PITIYGEIIG MGN\*\*\*\*\*  
Mouse NP\_033231 YYGLPFQIQE ADFPFNN\*\* YLTKLNTPSG NSVFE\*VITS WMENMP\*\*E GKWPNNMTGG PDNARLTSRF GEE\*YVNMIM \*MLVFTLPGT PITIYGEIIG MGN\*\*\*\*\*  
Rat NP\_058912 YYGLSFIQEQ ADFPFNN\*\* YFTTIGLTSG HTVYE\*VITS WMENMP\*\*E GKWPNNMTGG PETPRLTSLR GSE\*YVNMIM \*MLLFTLPGT PITIYGEIIG MGN\*\*\*\*\*  
Human AAA51540 LLESNKDLLL TSS\*\*\*\*\* YLSDG\*STG E\*\*HTKSLVT QYLNAT\*\*G NRWCWSLSQ \*\*\*ARLTSF LPAQLLRLYQ \*LMFTLPGT PVFVSGDEIG LDAA\*\*\*\*\*  
Mouse NP\_032603 ILESTSDLLL TSS\*\*\*\*\* YLSNST\*FTG E\*\*RTESLVT RFLNAT\*\*G SQWCSWSVSQ \*\*\*AGLLADF IPDHLRLYQ \*LLFTLPGT PVFVSGDEIG LQG\*\*\*\*\*  
Rat NP\_062156 ILESTSDLLL TSS\*\*\*\*\* YLSQPV\*FTG E\*\*HALLVI KFLNAT\*\*G SRWCWSVSQ \*\*\*AGLLTSF IPAQFLRLYQ \*LLFTLPGT PVFVSGDEIG LQAV\*\*\*\*\*  
Hamster AAB97631 ILESTSDLLL TSS\*\*\*\*\* YLSNST\*FTG E\*\*HTKSLVT RFLNAT\*\*G SHWCWSVSQ \*\*\*AGLLTAS VPAQLLRLYQ \*LMFTLPGT PVFVSGDEIG LQEA\*\*\*\*\*  
Zebrafish NP\_571676 LLLNQSGVDL LLT\*\*\*\*\* KLPYP\*GLS G\*\*RQATLMQ RLCGSH\*\*G EASLAWLGG T\*\*AGSOAR TPALPVKLYQ \*TLLFALPGT PVFVSGDEIG LKA\*\*\*\*\*  
Lamprey VEGNADLTV VYD\*\*\*\*\* LRKLSANSTE T\*\*DVHNLVK SILMK\*\*A NKSIGLAIGG R\*\*NGYLATK NPG\*LNRLALG \*VLLLTLPGT PFIYGEIIG LRF\*\*\*\*\*  
Drosophila AAF59085 YYGN\*ATAEG AQLPFNFLLI SELSNSNAH A\*\*YEGTVLK WQHMP\*\*K GRTANWVLGN HDQPRVGRSL GRD\*RVDMLN \*MLTATLPGA SVTVOGEIIG MTN\*\*\*\*\*  
Anopheles EAA00179 YFNDNNRQG SQMPFNFQLI MELDNNSKAS D\*\*FQTVINS WDIIP\*\*P GHTPNWVLGN HDKRRVSSRM GGDHMDVIMA \*MIELTLPGI TVTVOGEIIG MHD\*\*\*\*\*  
Anopheles EAA00998 FYGT\*PAARQ AQIPFNFQLI TLLTVNSTGR D\*\*FNAVQS WTRAMP\*\*S GAICANWVLGN HDNSRIASRL GVA\*RADLYN \*IALQTLPGI AVTVOGEIIG MVD\*\*\*\*\*  
E.coli NP\_290870 FHLKLV\*YYP FGEKWDLAKP DFVALTKLFR H\*\*WQOQGMH \*\*VALNA\*\*L FCWNHDQPRV VSRF\*DEGE YRVPAAKMLA \*MVLHGMQGT PFIYGEIIG MTN\*PHFTRI TDYRDVESLN MFALRNDG\* \*\*RDADELLA  
S.pompe NP\_595063 FDFVDLDDP NQHKYIRGSW ELSDLKSLK K\*\*WQSALLS GGGWNA\*\*S FIENHDQTRT VSRYLSDSFK YRAYSSKMLA \*LFIIFQSGT PFIYGEIIG LANIPRDWPI DEYLDVETQN FWKLFMSGNP SQEIEKTM  
D. thermophilum P14899 YKGLPSNPNF PLS\*\*DKIMN SSSKSKRLRN Y\*\*RISRLKR LFGENN\*\*T DFADAIFLRN HDQVRVTRTF GGSIDKSLA GSIYVTLACN TFIYGEIIG MEG\*\*\*\*\*  
C.elegans NP\_4970 KSGMDTVINY ELGEVEKDTK ICHKNEGSVA T\*\*CVHEILS DVLLFHSLNE QVWPHWRVFS PDLARIASRV GSRPHAQLLM \*VLQMLPGT NNIIYGEIIG MRN\*\*\*\*\*

Rabbit AAA31391 561 571 581 591 601 611 621 631 641 651 661 671 681 691  
Human NP\_000332 ESYDVNTLLS KSPMNDNS NAGFSEGN\*H TWLPTSSDYH TYNVDVOKIQ \*PTSALKLYQ ALSLHANEL FCLLRNDSRV LVYTRELDGI DR\*\*\*\*\*  
Dog AF187966\_1 ESYDVNTLLS KSPMNDNS NAGFSEAN\*H TWLPTSSDYH TYNVDVOKIQ \*PRAALKLYQ DLSLHANEL FCHLRNDSHY VVYTRELDGI DR\*\*\*\*\*  
Mouse NP\_033231 ESYDSTLLVS KSPMNDNS NAGFTEAN\*H TWLPPNSDYH TYNVDVOKIQ \*SRSAKLYQ ELSLHANEL \*\*\*LLSRGW FCYLRNDSHS VVYARELDGI DR\*\*\*\*\*  
Rat NP\_058912 ERYDTNALLS KSPMNDNS NAGFTEAN\*H TWLPTNSDYH TYNVDVOKIQ \*PSSAALRYQ DLSLHANEL \*\*\*VLSRGW FCLLRDSDHS VVYTRELDGI DN\*\*\*\*\*  
Human AAA51540 \*\*ALPGQPM E APVMLDESS FPDIPGAV\*\* \*\*\*\*\*S AMTVKGQSE DPGSLSTQFR RLSDRGKER \*\*\*SLLHGD FHAFSAGPGL FSYIRHWON ER\*\*\*\*\*  
Mouse NP\_032603 \*\*ALPGQPAK APMLPWNES IPHIPPV\*\* \*\*\*\*\*S LNMTVKQNE DPGSLTQFR RLSDRGKER \*\*\*SLLHGD FHALLSSPDL FSYIRHWON ER\*\*\*\*\*  
Rat NP\_062156 \*\*ALPGQPM E APFMLWNES NSQTSSPV\*\* \*\*\*\*\*S LNMTVKQNE DPGSLTQFR RLSDRGKER \*\*\*SLLHGD FHALSSSEL FSYIRHWON ER\*\*\*\*\*  
Hamster AAB97631 \*\*VVPQVE APFMPDESS LPQTPGHI\*\* \*\*\*\*\*S TNMTVKQNE DPGSLTQFR WLSDRGKER GKERSLHGD FRALTSSPEI FSYVRYWON ER\*\*\*\*\*  
Zebrafish NP\_571676 \*\*\*\*\*S \*GAMNED\*\* \*\*\*\*\*S VNSTAE\*\*E ENTAVRNFKL TSLDLKGER \*\*\*SLLHGE YVNLHNSPTS LAFRLNDQS ER\*\*\*\*\*  
Lamprey \*\*GAET\*\* \*\*MPVNDSS \*\*\*\*\*S IVNVKSOETH KHSNLLYR NLAKLKWS S \*\*\*AKFGD FNFTLIGGV FAFQLVQDS PR\*\*\*\*\*  
Drosophila AAF59085 IYEQYSDPE RTPFQWDAQ DAGFSNAS\*K TWLPIAVDYK EYNVE\*QERQ KPLSHNLVYR QIWOIRKQSQ \*\*\*TLKRGE TEVKALSDAV LAVKRWLQVA QFYQIYPRSY KSDSDGIGD LQGIISKLDY LKEIGVATW  
Anopheles EAA00179 TYQEGTRDPA RTPFQWDSTA NAGFTNASVK PWLPLATDYP LVNVITQES AQNSHIKVFK ELMNLRG\*TN \*\*\*TLIWS EKSLVGRD YAILRSFND K\*\*\*\*\*  
Anopheles EAA00998 TYELYSRDPV RTPFQWNGT NAGFSNAS\*V TWLPVADGYR ELNVA\*AQLA APRSHKTFM QLTAYRKR\*Q \*\*\*LLAEGN FDLRTVGRDL VMYKRSVPV GY\*\*\*\*\*  
E.coli NP\_290870 ILASKSRDNS RTPMOWNSGD NAGFTAG\*\*E PWIGLGDNYR QINVEAALAD ESSEVFTYQK LIALRKR\*BA \*\*\*LLTWN YQDLTPNSPV LWCYRREWK QT\*\*\*\*\*  
S.pompe NP\_595063 IVNKRARDNG RTPMHWDS P NGGFTKAGVK PWRMVNDYK EWNANQVND PESPYTFWSK ALELRKELKD \*\*\*AVVYGS BELISEDPS IVAFVRESST YK\*\*\*\*\*  
D. thermophilum P14899 \*\*\*SKPDEYI REPFKWTDDM KSKYQTYWII P\*\*RY\*NLP NGIALDTBEK DPNSIYNHK KLEIRVKCR \*\*\*ALNGK IERIKTQDRS ILAYKLEED EK\*\*\*\*\*  
C.elegans NP\_4970 LANDSRVFPQ KGAMQWDSL NGGFTSAISP P\*\*VPSNIDV ANINWKRQYA EPQSTLKIFA KLAKLRQED \*\*\*ALMTGT TLIGRLVDA FTRTRFNNEF NRTTG\*\*\*\*

Rabbit AAA31391 701 711 721 731 741 751 761 771 781 791 801 811 821 831  
Human NP\_000332 VLNFGES\*\* \*\*\*\*\*S \*TLLNLQEMI SGLPVRLSIK LSTNSASTGS QVDTRGIFLE RGEGLVLEHK MKNLLHRQTA FRDRCFISSR \*\*\*\*\*  
Dog AF187966\_1 VLNFGES\*\* \*\*\*\*\*S \*TLLNLHMI SGLPAKIRIR LSTNSAD\*GS JVDTSIGIFLD KGEGLIFEHN TKNLLHRQTA FRDRCFVSNR \*\*\*\*\*  
Mouse NP\_033231 VLNFGES\*\* \*\*\*\*\*S \*SLVNLQEMI SNIPARMRIR LSTNSADDRN TVDTNAILLD KGEGLI EYN TNDLLHQTA FKDRCFVSNR \*\*\*\*\*  
Rat NP\_058912 VLNFGES\*\* \*\*\*\*\*S \*TVLNLQEI SDLPPELRIR LSTNSAS\*GS AVDTRAISLE KGEGLVLEHS TKAPLHQQA FRDRCFVSSR \*\*\*\*\*  
Human AAA51540 VLNFGES\*\* \*\*\*\*\*S \*TVLNLQETI SDVPTKLRIR LSTNPAS\*GS DVDTHAVSLE KGEGLI EHS MKTLLHQKA FRDKCFISNR \*\*\*\*\*  
Mouse NP\_032603 VLNFRD\*\* \*\*\*\*\*S \*\*\*\*\*S GLSAGLQASD \*LPASASLPA KADLLSTQP GR\*\*EEGSP LEERLKELE \*\*\*\*\*  
Rat NP\_062156 VLNFDV\*\* \*\*\*\*\*S \*\*\*\*\*S GRSARLGASN \*LPAGISLPA SAKLLS TDS ARQREEDTS LKLENLSNP \*\*\*\*\*  
Hamster AAB97631 VLNFDV\*\* \*\*\*\*\*S \*\*\*\*\*S GLSARV GASN \*LPAGISLPA SANLLS TDS TRLSREEDTS LSENLSNP \*\*\*\*\*  
Zebrafish NP\_571676 AVNWCD\*\* \*\*\*\*\*S \*\*\*\*\*S VLSARLEAAN \*LPAGISLPA SANLLFSTNS TRLQGEQGS LSENLYNP \*\*\*\*\*  
Lamprey LFNLGS\*\* \*\*\*\*\*S \*\*\*\*\*S SISMTLND \*LPPEAR\*RA TTDIEKLA\*\* \*\*\*\*\*VDSK VKLEKLEGS \*\*\*\*\*  
Drosophila AAF59085 LSPYSSPMA DFGYDISDF DIQPEYGTLA DFDELIAEAK KRNIKIILDF VPHNSDENV WFQSKVREK GYEDYYMWD GYVNTATGKR EPPSNWLQAF RGSAWEWNDE RQYYLHQFA VKQPDNLNRYN PAVVAQMKRV  
Anopheles EAA00179 LANICSK\*\* \*\*\*\*\*S \*\*SEIIDATK \*\*\*\*\*S LDNSLPNELV FRVSVS\*\* \*\*\*\*\*S \*\*NHITGS VATNNILNP \*\*\*\*\*  
Anopheles EAA00998 ALNFGPE\*\* \*\*\*\*\*S \*\*\*\*\*S VASQFPGTGE HWLKVIAS\*\* \*\*\*\*\*S \*\*SLQAO PQAGTWLNR \*\*\*\*\*  
E.coli NP\_290870 IANLSRE\*\* \*\*\*\*\*S \*\*\*\*\*S I\*\*PWQPGQMRG NWQLVMHN\*\* \*\*\*\*\*S \*\*\*\*\*S YEAS PQPCAMTRP \*\*\*\*\*  
S.pompe NP\_595063 LLNFTGM\*\* \*\*\*\*\*S \*\*\*\*\*S VSYDCPLNLT SYEILLDN\*\* \*\*\*\*\*S \*\*\*\*\*S YKDFI CMT\*PVTLP \*\*\*\*\*  
D. thermophilum P14899 VHNLNRIEN \*\*\*\*\*S \*\*\*\*\*S \*\*TFNFNNEIK EKDILYIR\*\* \*\*\*\*\*S \*\*\*\*\*S \*\*NAK TEKN\*IIIGP \*\*\*\*\*  
C.elegans NP\_4970 ALNFAEHP\*\* \*\*\*\*\*S \*\*\*\*\*S LPLTDLPSNS KLHKSTIITA TSNCAVYAR \*\*\*\*\*S \*\*\*\*\*S QTVD FGLKEIELEP \*\*\*\*\*

	841	851	861	871
Rabbit AAA31391	*****	*****	YSSALDILYS	SC
Human NP_000332	*****	*****	AC YSSVLNILYT	SC
Dog AF187966_1	*****	*****	AC YSSVLNILHS	LC
Mouse NP_033231	*****	*****	AC YSSALDILYS	SC
Rat NP_058912	*****	*****	AC YSSVLDLLYS	SC
Human AAA51540	*****	*****	HEGILLRFPY	AA
Mouse NP_032603	*****	*****	YEGLLQFFP	VA
Rat NP_062156	*****	*****	YEGLLQFFP	VA
Hamster AAB97631	*****	*****	HEGILLHFPY	VA
Zebrafish NP_571676	*****	*****	KQAVLSVFP	PG
Lamprey	*****	*****	MEALVLKIN	VA
<i>Drosophila</i> AAF59085	LTYWLDRGVA	GFRMDAVPWC	FEVLPDADGR	YP
<i>Anopheles</i> EAA00179	*****	*****	YKAVLAN**	**
<i>Anopheles</i> EAA00998	*****	*****	L YKLAPDSG**	**
<i>E. coli</i> NP_290870	*****	*****	FEAVWVLQK*	**
<i>S. pompe</i> NP_595063	*****	*****	YQAVLKL*	**
<i>D. thermophilum</i> P14899	*****	*****	YSTVIVKIP*	**
<i>C. elegans</i> NP_4970	*****	*****	NEGVFRTSA	**