

Supplementary Table 1: Sequence Source and Key. Sequences are provided into the order shown on the radial tree Starting with the Nematoda sequences and work clockwise to the Echinodermata sequences.

Kingdom/Phylum	Genus	Species	Database	Accession ID	Key	Alignment name
Animalia, Nematoda	<i>Caenorhabditis</i>	<i>elegans</i>	Uniprot	A5JYS1		Caenorhabditis elegans A5JYS1
Animalia, Nematoda	<i>Caenorhabditis</i>	<i>elegans</i>	Uniprot	G5ECE4		Caenorhabditis elegans G5ECE4
Animalia, Nematoda	<i>Caenorhabditis</i>	<i>elegans</i>	Uniprot	A5JYS0		Caenorhabditis elegans A5JYS0
Animalia, Nematoda	<i>Caenorhabditis</i>	<i>brenneri</i>	Uniprot	G0PIX8		Caenorhabditis brenneri G0PIX8
Animalia, Nematoda	<i>Caenorhabditis</i>	<i>remanei</i>	Uniprot	E3LF57		Caenorhabditis remanei E3LF57
Animalia, Nematoda	<i>Caenorhabditis</i>	<i>briggsae</i>	Uniprot	A8WTD3		Caenorhabditis briggsae A8WTD3
Animalia, Nematoda	<i>Caenorhabditis</i>	<i>japonica</i>	Uniprot	H2VM81		Caenorhabditis japonica H2VM81
Animalia, Nematoda	<i>Ancylostoma</i>	<i>ceylanicum</i>	Uniprot	AGT57959		Ancylostoma ceylanicum AGT57959
Animalia, Nematoda	<i>Pristionchus</i>	<i>pacificus</i>	Uniprot	H3FNH8		Pristionchus pacificus H3FNH8
Animalia, Nematoda	<i>Ascaris</i>	<i>suum</i>	GenPept	ERG86016		Ascaris suum ERG86016
Animalia, Nematoda	<i>Brugia</i>	<i>malayi</i>	Uniprot	A8QFB3		Brugia malayi A8QFB3
Animalia, Nematoda	<i>Loa</i>	<i>loa</i>	Uniprot	E1FRC7		Loa loa E1FRC7
Animalia, Annelida	<i>Eisenia</i>	<i>foetida</i>	Uniprot	B3F0K8		Eisenia foetida B3F0K8
Animalia, Annelida	<i>Lumbricus</i>	<i>rubellus</i>	GenPept	AHC94360		Lumbricus rubellus AHC94360
Animalia, Annelida	<i>Helobdella</i>	<i>robusta</i>	GenPept	ESO10002		Helobdella robusta ESO10002
Animalia, Annelida	<i>Helobdella</i>	<i>robusta</i>	GenPept	ESO10000		Helobdella robusta ESO10000
Animalia, Annelida	<i>Lumbricus</i>	<i>rubellus</i>	GenPept	AHC94359		Lumbricus rubellus AHC94359
Animalia, Annelida	<i>Capitella</i>	<i>teleta</i>	Uniprot	ELT92982		Capitella teleta ELT92982
Animalia, Mollusca	<i>Lottia</i>	<i>gigantea</i>	GenPept	ESO83119		Lottia gigantea ESO83119
Animalia, Mollusca	<i>Lottia</i>	<i>gigantea</i>	GenPept	ESO88410		Lottia gigantea ESO88410
Animalia, Mollusca	<i>Lottia</i>	<i>gigantea</i>	GenPept	ESP03342		Lottia gigantea ESP03342
Animalia, Mollusca	<i>Crassostrea</i>	<i>gigas</i>	Uniprot	EKC27807		Crassostrea gigas EKC27807
Animalia, Mollusca	<i>Aplysia</i>	<i>californica</i>	GenPept	XP_005110845		Aplysia californica XP_005110845
Animalia, Platyhelminthes	<i>Clonorchis</i>	<i>sinensis</i>	Uniprot	G7YC46		Clonorchis sinensis G7YC46
Animalia, Platyhelminthes	<i>Schistosoma</i>	<i>mansoni</i>	Uniprot	G4LXY7		Schistosoma mansoni G4LXY7
Animalia, Platyhelminthes	<i>Hymenolepis</i>	<i>microstoma</i>	GenPept	CDJ12891		Hymenolepis microstoma CDJ12891
Animalia, Platyhelminthes	<i>Echinococcus</i>	<i>granulosus</i>	GenPept	CDJ21038		Echinococcus granulosus CDJ21038
Animalia, Platyhelminthes	<i>Echinococcus</i>	<i>granulosus</i>	GenPept	EUB59843		Echinococcus granulosus EUB59843
Animalia, Chordata	<i>Ciona</i>	<i>savignyi</i>	Uniprot	H2ZEH9		Ciona savignyi H2ZEH9
Animalia, Chordata	<i>Ciona</i>	<i>intestinalis</i>	Ensembl	ENSCING00000011973		Ciona intestinalis ENSCING00000011973
Animalia, Chordata	<i>Ciona</i>	<i>intestinalis</i>	Uniprot	F6RYD4		Ciona intestinalis F6RYD4
Amaeozoa, Conosa, Mycetozoa	<i>Dictyostelium</i>	<i>fasciculatum</i>	Uniprot	F4Q988		Dictyostelium fasciculatum F4Q988
Amaeozoa, Conosa, Mycetozoa	<i>Polysphondylium</i>	<i>pallidum</i>	Uniprot	D3BP48		Polysphondylium pallidum D3BP48
Amaeozoa, Conosa, Mycetozoa	<i>Dictyostelium</i>	<i>fasciculatum</i>	Uniprot	F4QB85		Dictyostelium fasciculatum F4QB85
Amaeozoa, Conosa, Mycetozoa	<i>Dictyostelium</i>	<i>discoideum</i>	Uniprot	Q54F37		Dictyostelium discoideum Q54F37
Amaeozoa, Conosa, Mycetozoa	<i>Dictyostelium</i>	<i>purpureum</i>	Uniprot	F0ZCA6		Dictyostelium purpureum F0ZCA6
Excavata, Percolozoa	<i>Naegleria</i>	<i>gruberi</i>	Uniprot	D2V937		Naegleria gruberi D2V937
Fungi, Ascomycota	<i>Tuber</i>	<i>melanosporum</i>	Uniprot	D5GDG6		Tuber melanosporum D5GDG6
Fungi, Ascomycota	<i>Schizosaccharomyces</i>	<i>japonicus</i>	Uniprot	B6K713		Schizosaccharomyces japonicus B6K713
Fungi, Ascomycota	<i>Schizosaccharomyces</i>	<i>pombe</i>	Uniprot	Q10075		Schizosaccharomyces pombe Q10075
Excavata, Percolozoa	<i>Naegleria</i>	<i>gruberi</i>	Uniprot	D2V5X8		Naegleria gruberi D2V5X8
Fungi, Basidiomycota	<i>Melampsora</i>	<i>larici-populina</i>	Uniprot	F4R8K9		Melampsora larici-populina F4R8K9
Fungi, Basidiomycota	<i>Puccinia</i>	<i>graminis</i>	Uniprot	E3JZ89		Puccinia graminis E3JZ89
Fungi, Basidiomycota	<i>Puccinia</i>	<i>graminis</i>	Uniprot	E3JZ90		Puccinia graminis E3JZ90
Fungi, Mucorales	<i>Rhizopus</i>	<i>delemar</i>	Uniprot	I1C2R1		Rhizopus delemar I1C2R1
Animalia, Cnidaria	<i>Nematostella</i>	<i>vectensis</i>	Uniprot	A7RXK3		Nematostella vectensis A7RXK3
Animalia, Cnidaria	<i>Nematostella</i>	<i>vectensis</i>	Uniprot	A7SA56		Nematostella vectensis A7SA56
Animalia, Cnidaria	<i>Nematostella</i>	<i>vectensis</i>	Uniprot	A7SXH2		Nematostella vectensis A7SXH2
Animalia, Cnidaria	<i>Nematostella</i>	<i>vectensis</i>	Uniprot	A7RVC5		Nematostella vectensis A7RVC5
Choanoflagellate	<i>Monosiga</i>	<i>brevicollis</i>	Uniprot	A9VCF7		Monosiga brevicollis A9VCF7
Animalia, Hemichordata	<i>Saccoglossus</i>	<i>kowalevskii</i>	GenPept	XP_002730372		Saccoglossus kowalevskii XP_002730372
Animalia, Hemichordata	<i>Saccoglossus</i>	<i>kowalevskii</i>	GenPept	XP_002730374		Saccoglossus kowalevskii XP_002730374
Animalia, Echinodermata	<i>Strongylocentrotus</i>	<i>purpuratus</i>	GenPept	XP_003730583		Strongylocentrotus purpuratus XP_003730583
Animalia, Echinodermata	<i>Strongylocentrotus</i>	<i>purpuratus</i>	GenPept	XP_790643		Strongylocentrotus purpuratus XP_790643
Animalia, Echinodermata	<i>Strongylocentrotus</i>	<i>purpuratus</i>	GenPept	XP_780594		Strongylocentrotus purpuratus XP_780594

Supplementary Table 2: Alignment of Active site region, organisms given in order of appearance in phylogenetic tree. Active site residues are highlighted in green. Additional proposed conserved cysteine residues are shown by yellow shading.

Caenorhabditis elegans A5JY51	GSANIYFKLASQFRTQDEPAFVGLST	LMVNLNALEV-DPEKVMKAPWRF	YHE-SML-D	CYPLEN	IRKS-GINLQQFSCLAKN	RLKSTVSYGDNSPD	FLKFKRTSLVNSVR-SDD	QVLVASYDRSVLGGTGS	GFSPFLAAYHEDS	DQVLIM	VARFYPHPHWKLETLQKALCSVDVTTKL
Caenorhabditis elegans G5CE4	GSANIYFKLASQFRTQDEPAFVGLST	LMVNLNALEV-DPEKVMKAPWRF	YHE-SML-D	CYPLEN	IRKS-GINLQQFSCLAKN	RLKSTVSYGDNSPD	FLKFKRTSLVNSVR-SDD	QVLVASYDRSVLGGTGS	GFSPFLAAYHEDS	DQVLIM	VARFYPHPHWKLETLQKALCSVDVTTKL
Caenorhabditis elegans A5JY50	GSANIYFKLASQFRTQDEPAFVGLST	LMVNLNALEV-DPEKVMKAPWRF	YHE-SML-D	CYPLEN	IRKS-GINLQQFSCLAKN	RLKSTVSYGDNSPD	FLKFKRTSLVNSVR-SDD	QVLVASYDRSVLGGTGS	GFSPFLAAYHEDS	DQVLIM	VARFYPHPHWKLETLQKALCSVDVTTKL
Caenorhabditis brenneri G0PIX8	GSANIYFKLASQFRTQDEPAFVGLST	LMVNLNALEV-DPEKVMKAPWRF	YHE-SML-D	CYPLEN	IRKS-GINLQQFSCLAKN	RLKSTVSYGDNSPD	FLKFKRTSLVNSVR-SDD	QVLVASYDRSVLGGTGS	GFSPFLAAYHEDS	DQVLIM	VARFYPHPHWKLETLQKALCSVDVTTKL
Caenorhabditis remanei E3LF57	GSANIYFKLASQFRTQDEPAFVGLST	LMVNLNALEV-DPEKVMKAPWRF	YHE-SML-D	CYPLEN	IRKS-GITLQQFSCLAKN	RLKSVAVSYGENTFD	FLQFKFKSLVNSVR-SDD	QVLVASYDRSVLGGTGS	GFSPFLAAYHADS	DQVLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Caenorhabditis briggsae A8WD03	GSANIYFKLASQFRTQDEPAFVGLST	LMVNLNALEV-DPEKVMKAPWRF	YHE-SML-D	CYPLEN	IRKS-GINLQQFSCLAKN	RLKSVSYSGETTFE	FLKFKFASLVNSVR-SDD	QVLVASYDRSVLGGTGT	GFSPFLAAYHADS	DQVLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Caenorhabditis japonica H2VM81	GCANIYFKLASQFRTQDEPAFVGLST	LMVNLNALEV-DPEKVMKAPWRF	YHE-SML-D	CYPLEN	IRKT-GINLQQFSCLAKN	RLNASVSYGDSGDG	FLKFKFRTSLVNSVQ-SMD	QVLVASYDRSVLGGTGS	GFSPFLAAYHEKS	DQVLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Ancylostoma ceylanicum AGT57959	GNANIYFRLLAAQFRTQDEPAFVGLST	LMVNLNALEV-DPGRVMKAPWRF	YHE-TML-D	CYPLES	VKKT-GINLQAQFCLAVN	RLSHVLVKYQGBGD	FLSMRLKRDVAVSVR-SDT	INVVASYDRSLQQTGT	GFSPFLAAYHTAS	DRVLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Pristionchus pacificus H3FHN8	GNASIFPKLSSQFRTQDDPAFVGLSS	LMVNLNALEV-DPGRV			GLTIAQVFSCLASN	RLSSEMHAAETED	SITSFRRDVLVSR-GDD	VVLASTYNRVAVLSQGT	GFSPFAAYHAAS	DRVLIM	VARFYPHPHWDLRLFRAMQVDDPTSD
Ancaria euum ERG6016	GSANIYFKLASQFRTQDEPAFVGLST	LMVNLNALEV-DPEKVMKAPWRF	YHE-SML-D	CYPLEN	VKKK-GITLQQFSCLAKN	RLSVVLYKASGSE	AAFRFVRLVNSVR-SDD	QVLVASYDRSVLGGTGT	GFSPFLAAYHAKUT	DRVLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Brugia malayi A8QPB3	GHANIYFRLLASHFTLQGEPSYVGLST	LMVNLNALEV-DPGRVKSAPWRF	YHE-SML-D	CYPLED	IKKT-GITLSQFACLASN	RLSTVEVYKANSKSE	FLNLKRENVKQMA-VDD	TLIVASYNRVQLGGTGA	GFSPFLGAYHES	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Loa loa E1FRF7	GHANIYFRLLASHFTLQGEPSYVGLST	LMVNLNALEV-DPGRVKSAPWRF	YHE-SML-D	CYPLED	IKKT-GITLSQFACLASN	KLSTLEKVAESKSE	FLSLIFRENIRKSM-VDD	TLIVVNNRQVLGGTGT	GFSPFLGAYHES	DQVLIM	VARFYPHPHWISLITLQKALCSVDVTTTK
Eisenia foetida B3FOK8	GYMENFFPLASQFRTQDEPAFVGLST	LMVNLNTLEV-DPGKVMKGPWRN	YHE-NML-D	CYPINV	IEKS-GITFDQFSCLAVN	RLNRSVSRGPDAS	EDFKFRASLVKRSK-GSE	EVIVASYSRKGLDQTGD	GFSPFIAGYHPGR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Lumbricus rubellus AHC94360	GYMEIFPLASQFRTQDEPAFVGLST	LMVNLNTLEV-DPGKVMKGPWRN	YHE-NML-D	CYPINV	IAKS-GITFDQFSCLAVN	TLNVKAIKRADETS	EEDEFRLKRVSK-GSD	EVIVASYSRKALDQTGG	GFSPFIAGYHPKE	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Helobdella robusta ES010002	PFMNCYFSLASQFRTQDEPAFVGLST	LMVNLNALEV-DPGRVMKGPWRN	YHE-NML-D	CYPILA	IEKK-GITMDQFCLAAEN	MLKTKVTRGDSN	EEFTRKLKRVSK-KTN	CLIVTSYSRVTLQQTGD	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Helobdella robusta ES010000	GHMDCYFPLAAQFRTQDEPAFVGLST	LMVNLNTLEV-DPGRVMKGPWRN	YHE-NML-D	CYPILK	IEKN-GITMDQFCLAAEN	MLQVEMVRNMTPS	EEFNRLQKLKLT-RMD	KIMVYSYSRLELTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Lumbricus rubellus AHC94359	GDMNYCYFPLAAQFRTQDEPAFVGLST	LMVNLNALEV-DPGRVMKGPWRN	YHE-NML-D	CYPILV	IEET-GITMDQFCLAAEN	TLNTRVSRGPDAS	EDDFRLKRVSK-KTN	CLIVVTSYSRVTLQQTGD	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Capitella teleta ELT92982	GHMDCYFPLAAQFRTQDEPAFVGLST	LMVNLNALEV-DPGRVMKGPWRN	YHE-NML-D	CYPILD	IEEQ-GITMEQFCLALN	KLSTTVTVVDQNTN	VETFRFVMKRCM-SED	EFIVASYSRKILQGTGA	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Lottia gigantea ES083119	GHSACFFPLVSQFRTQDEPAFVGLST	MMVNLNALEI-DPGKVMKGPWRN	YDE-RML-LG	CYPILK	VIRI-GMNYDEFSLATVN	KLVSNNVRVDDNSD	IRKFRFCVMQCTK-SDK	CFIVATYSRCAINQNGG	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Lottia gigantea ES088410	GHSACFFPLVSQFRTQDEPAFVGLST	MMVNLNALEI-DPGKVMKGPWRN	YDE-RML-LG	CYPILK	VIRI-GMNYDEFSLATVN	KLVSNNVRVDDNSD	IRKFRFCVMQCTK-SDK	CFIVATYSRCAINQNGG	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Lottia gigantea ESP03342	GNLVCYFKLASQFRTQDEPAFVGLST	MMVNLNALEI-DPGLIKWGPWRN	YHE-NML-D	CYPILQ	VEQN-GINLHQFCLIASN	NLNVSTPVDSDV	ITQFRTVRHYQT-QDE	SFLVASYSRVAVLQGTGD	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Crassostrea gigas EKC27807	GHEMCYFKLAAQFRTQDEPAFVGLST	LVIALNALEV-DPAVMKGPWRN	YHE-RML-D	CYPISL	VEHE-GITFNQFCLAEEN	SLETQATKSGTGT	DEQFREKRVVEYSK-RDD	AFILISYSRKTVMQGTGD	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Aplysia californica XF_005110845	GFNMSYFPLCAQFRTQDEPAFVGLST	LMVNLNALEI-DPGRVMKGPWRN	YHE-NML-D	CYPILD	ARVK-GITMEQFCLALN	GLNARARISAILS	LDGLRLVGLQSCS-QDD	LVFTISYSRKLLEGTGD	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Echinococcus granulosus CDJ21038	GHEMAEYFPLAQFRTQDEPAFVGLST	LMVNLNALEV-DPGRVMKGPWRN	YHE-NML-D	CYPILV	LSQ-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Schistosoma mansoni G4LXV7	GHEMSYFPLASQFCTQDEPAFVGLAS	LMVNLNALGV-DPGRVMKGPWRN	YHE-NML-T	CYPILD	LTGK-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Hymenolepis microstoma CDJ12891	GFLSFYFDLVFQFRTQAGPSYVGLS	MMVNLNSFEL-DPGRVMKAPWRF	YHE-DML-T	CYPLED	SITN-GITTDQFQSIKAKN	GLNVLDHQNPCTE	TDVFRSRLSLSCQSLS	TSGTILVVAYDRKAVNQGTGS	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Echinococcus granulosus CDJ21038	GFLSFYFDLVFQFRTQAGPSYVGLS	MMVNLNSFEL-DPGRVMKAPWRF	YHE-DML-T	CYPLED	SITN-GITTDQFQSIKAKN	GLNVLDHQNPCTE	TDVFRSRLSLSCQSLS	TSGTILVVAYDRKAVNQGTGS	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Echinococcus granulosus EUB59843	GFLSFYFDLVFQFRTQAGPSYVGLS	MMVNLNSFEM-DPGRVMKAPWRF	YHE-DML-T	CYPLED	SITN-GITTDQFQSIKAKN	GLNVLDHQNPCTE	TDVFRSRLSLSCQSLS	TSGTILVVAYDRKAVNQGTGS	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Ciona savignyi H2ZEH9	GHMDSFFHFGAQLRTQDEPAFVGLS	LVIVLNLGLSV-DPGRVMKGPWRN	YHE-SML-E	CYPLEE	VKSK-GVSLDELTCIARV	QLIADQVYVDDHAS	DDFRLKRVVEYSK-RDD	AFILISYSRKTVMQGTGD	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Ciona intestinalis ENSCINC00000011973	GMEIFPHLFGQFRTQDEPAFVGLS	LVIVLNLGLSV-DPGRVMKGPWRN	YHE-SML-E	CYPLEE	VKSK-GVSLDELTCIARV	QLIADQVYVDDHAS	DDFRLKRVVEYSK-RDD	AFILISYSRKTVMQGTGD	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Ciona intestinalis P68YD4	GMEIFPHLFGQFRTQDEPAFVGLS	LVIVLNLGLSV-DPGRVMKGPWRN	YHE-SML-E	CYPLEE	VKSK-GVSLDELTCIARV	QLIADQVYVDDHAS	DDFRLKRVVEYSK-RDD	AFILISYSRKTVMQGTGD	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Dictyostelium fasciculatum F4Q988	GMYKTYFPLASQFCTQDEPAFVGLS	LMVNLNALGV-DPGRVMKGPWRN	YHE-NML-T	CYPILD	LTGK-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Polycephalum pallidum D3BP48	KYMGFFPLAEHSTPQSDNLNLSLAT	LAMVNLNSLV-DPGRVMKGPWRN	FVE-DML-P	CYPTRE	ITRR-GMTFKFACLSRN	GASVGEFFGDHID	LDLFRFRLDACS-TDK	KHLVLVCYDRKSLGGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Dictyostelium fasciculatum F4QB85	GHEMGYFSLAQFVSQSDPAFVGLAT	LAMVNLNALEI-DPGRVMKGPWRN	FVE-DML-P	CYPTRE	ITRR-GMTFKFACLSRN	GASVGEFFGDHID	LDLFRFRLDACS-TDK	KHLVLVCYDRKSLGGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Dictyostelium discoideum Q54F37	GHEMGYFSLAQFVSQSDPAFVGLAT	LAMVNLNALEI-DPGRVMKGPWRN	FVE-DML-P	CYPTRE	ITRR-GMTFKFACLSRN	GASVGEFFGDHID	LDLFRFRLDACS-TDK	KHLVLVCYDRKSLGGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Dictyostelium purpureum F0ZCA6	GHEMGYFSLAQFVSQSDPAFVGLAT	LAMVNLNALEI-DPGRVMKGPWRN	FVE-DML-P	CYPTRE	ITRR-GMTFKFACLSRN	GASVGEFFGDHID	LDLFRFRLDACS-TDK	KHLVLVCYDRKSLGGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Naegleria gruberi D2VSX8	GNTHSFFPLIEQFHTQAGPSYVGLGT	LVNMNNALEI-DPGRVMKGPWRN	FTE-EFF-D	CYPLEV	VKKE-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Melampsora larici-populina F4R8K9	GHLEAFPLSLSQLVTQHEPSYVGLAS	LCTVNLNALGV-DPGRVMKGPWRN	YEQ-DML-D	CYPLED	VKKE-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Schizosaccharomyces japonicus B6K713	GHEMGYFSLAQFVSQSDPAFVGLAT	LAMVNLNALEI-DPGRVMKGPWRN	FVE-DML-P	CYPTRE	ITRR-GMTFKFACLSRN	GASVGEFFGDHID	LDLFRFRLDACS-TDK	KHLVLVCYDRKSLGGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Schizosaccharomyces pombe Q10075	GHEMGYFSLAQFVSQSDPAFVGLAT	LAMVNLNALEI-DPGRVMKGPWRN	FVE-DML-P	CYPTRE	ITRR-GMTFKFACLSRN	GASVGEFFGDHID	LDLFRFRLDACS-TDK	KHLVLVCYDRKSLGGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Naegleria gruberi D2VSX8	GNTHSFFPLIEQFHTQAGPSYVGLGT	LVNMNNALEI-DPGRVMKGPWRN	FTE-EFF-D	CYPLEV	VKKE-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Melampsora larici-populina F4R8K9	GHLEAFPLSLSQLVTQHEPSYVGLAS	LCTVNLNALGV-DPGRVMKGPWRN	YEQ-DML-D	CYPLED	VKKE-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Puccinia graminis E3JZ89	GHEMGYFSLAQFVSQSDPAFVGLAT	LAMVNLNALEI-DPGRVMKGPWRN	FVE-DML-P	CYPTRE	ITRR-GMTFKFACLSRN	GASVGEFFGDHID	LDLFRFRLDACS-TDK	KHLVLVCYDRKSLGGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Rhizopus delemar H1CZ81	GHEMGYFSLAQFVSQSDPAFVGLAT	LAMVNLNALEI-DPGRVMKGPWRN	FVE-DML-P	CYPTRE	ITRR-GMTFKFACLSRN	GASVGEFFGDHID	LDLFRFRLDACS-TDK	KHLVLVCYDRKSLGGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Nematostella vectensis A7RXK3	GAIVFPLSLSCYNTQDEPAFVGLAT	LAVNLNAMOI-DPGRVMKGPWRN	YTE-DTL-G	CYPLED	VKKE-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Nematostella vectensis A7SA56	GAIVFPLSLSCYNTQDEPAFVGLAT	LAVNLNAMOI-DPGRVMKGPWRN	YTE-DTL-G	CYPLED	VKKE-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Nematostella vectensis A7SXH2	ENAAFPPLSLSCYNTQDEPAFVGLAT	LAVNLNAMOI-DPGRVMKGPWRN	YTE-DTL-G	CYPLED	VKKE-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Nematostella vectensis A7RVCS	GAIVFPLSLSCYNTQDEPAFVGLAT	LAVNLNAMOI-DPGRVMKGPWRN	YTE-DTL-G	CYPLED	VKKE-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Monosiga brevicollis A9VCF7	GYAEPFPLSLSCYNTQDEPAFVGLAT	LAVNLNAMOI-DPGRVMKGPWRN	YTE-DTL-G	CYPLED	VKKE-GITLDFVFIARV	GLEVLHVRPDSQ	LGAFREYVTSMTS-SEH	KGLVTFPCARSQGTGT	GFSPFIAGYHPR	DQLIM	VARFYPHPHWKLETLQKALCSVDVTTTK
Saccoglossus kowalevskii XP_002730372	DLIIKYFG	AAIVNNAKQ	NDSD	YHE-TM	DL	QPTLSV	LDKSVKTEK	CTCIGKSDLVAF	NLDVETVHSDSS		
Saccoglossus kowalevskii XP_002730374	DLIIKYFG	AAIVNNAKQ	NDSD	YHE-TM	DL	QPTLSV	LDKSVKTEK	CTCIGKSDLVAF	NLDVETVHSDSS		
Strongylocentrotus purpuratus XP_003730583	QTV	LIKLINNKQKQKQKGLAS	AHVMSQVL	AHKYVDPDSIHDQCDITDVRVTEENIF	EH	ESTRSVIGSAGYVQCKNEGTS	KEIGDILKMH	GFVVVMKSGDSD			
Strongylocentrotus purpuratus XP_790643	QTL	LIKLINNKQKQKQKGLAS	AHVMSQVL	AHKYVDPDSIHDQCDITDVRVTEENIF	EH	ESTRSVIGSAGYVQCKNEGTS	KEIGDILKMH	GFVVVMKSGDSD			
Strongylocentrotus purpuratus XP_780594	QTL	LIKLINNKQKQKQKGLAS	AHVMSQVL	AHKYVDPDSIHDQCDITDVRVTEENIF	EH	ESTRSVIGSAGYVQCKNEGTS	KEIGDILKMH	GFVVVMKSGDSD			