

# Supplementary Information

CLUSTAL 2.1 multiple sequence alignment

```
gi|Aspergillus_niger_N/A -----
gi|Aspergillus_nidulans_parA -----
gi|Mus_musculus_alpha -----
gi|Rattus_norvegicus_alpha -----
gi|Macaca_mulatta_alpha -----
gi|Homo_sapiens_alpha -----
gi|Ovis_aries_alpha -----
gi|Bos_taurus_alpha -----
gi|Felis_catus_alpha -----
gi|Canis_lupus_familiaris_alph -----
gi|Falco_peregrinus_alpha -----
gi|Gallus_gallus_alpha -----
gi|Alligator_mississippiensis_ -----
gi|Chrysemys_picta_bellii_alph -----
gi|Xenopus_laevis_alpha -----
gi|Xenopus_tropicalis_alpha -----
gi|Ambystoma_mexicanum_alpha -----
gi|Danio_rerio_alpha -----
gi|Petromyzon_marinus_S4RHV1 -----
gi|Mus_musculus_epsilon -----
gi|Rattus_norvegicus_epsilon -----
gi|Macaca_mulatta_epsilon -----
gi|Homo_sapiens_epsilon -----
gi|Ovis_arie_epsilon -----
gi|Bos_taurus_epsilon -----
gi|Canis_lupus_familiaris_epsi -----
gi|Falco_peregrinus_epsilon -----
gi|Gallus_gallus_epsilon -----
gi|Felis_catus_epsilon -----
gi|Chrysemys_picta_bellii_epsi -----
gi|Xenopus_laevis_epsilon -----
gi|Xenopus_tropicalis_epsilon -----
gi|Alligator_mississippiensis_ -----
gi|Ambystoma_mexicanum_epsilon -----
gi|Danio_rerio_epsilon -----
gi|Mus_musculus_beta -----
gi|Rattus_norvegicus_beta -----
gi|Felis_catus_beta -----
gi|Canis_lupus_familiaris_beta -----
gi|Homo_sapiens_beta -----
gi|Bos_taurus_beta -----
gi|Ovis_aries_beta -----
gi|Macaca_mulatta_beta -----
gi|Xenopus_laevis_beta -----
gi|Alligator_mississippiensis_ -----
gi|Chrysemys_picta_bellii_beta -----
gi|Xenopus_tropicalis_beta -----
gi|Danio_rerio_beta -----
gi|Ambystoma_mexicanum_beta -----
gi|Petromyzon_marinus_S4RGA7 -----
gi|Strongylocentrotus_purpurat -----
gi|Drosophila_melanogaster_wdb -----
jgi|Branchiostoma_floridae_237 -----
gi|Hydra_vulgaris_alpha -----
jgi|Branchiostoma_floridae_112 -----
jgi|Branchiostoma_floridae_284 -----
gi|Caenorhabditis_elegans_PPTR -----
```

Figure S1. *Cont.*

gi Amphimedon_queenslandica_be	-----
gi Chrysemys_picta_bellii_gamm	-----
gi Chrysemys_picta_bellii_delt	-----
gi Falco_peregrinus_gamma	-----
gi Falco_peregrinus_delta/gamm	-----
gi Gallus_gallus_gamma	-----
gi Alligator_mississippiensis_	-----
gi Alligator_mississippiensis_	-----
gi Ambystoma_mexicanum_gamma	-----
gi Mus_musculus_gamma	-----
gi Rattus_norvegicus_gamma	-----
gi Ovis_aries_gamma	-----
gi Bos_taurus_gamma	-----
gi Canis_lupus_familiaris_gamm	-----
gi Macaca_mulatta_gamma	-----
gi Homo_sapiens_gamma	-----
gi Felis_catus_gamma	-----
gi Canis_lupus_familiaris_delt	-----
gi Macaca_mulatta_delta/gamma	MAQGAATGRGIPLQATVAEAGPVDVFPDTSQNSVSPTEGRGKGQAVHAERQ 50
gi Bos_taurus_delta/gamma	-----
gi Mus_musculus_delta/gamma	-----
gi Rattus_norvegicus_delta/gam	-----
gi Danio_rerio_gamma	-----
gi Danio_rerio_delta/gamma	-----
gi Xenopus_laevis_delta/gamma	-----
gi Xenopus_laevis_gamma	-----
gi Xenopus_tropicalis_delta/ga	-----
gi Mus_musculus_delta	-----
gi Rattus_norvegicus_delta	-----
gi Felis_catus_delta	-----
gi Bos_taurus_delta	-----
gi Canis_lupus_familiaris_delt	-----
gi Macaca_mulatta_delta	-----
gi Homo_sapiens_delta	-----
gi Ovis_aries_delta	-----
gi Falco_peregrinus_delta	-----
gi Gallus_gallus_delta	-----
gi Alligator_mississippiensis_	-----
gi Chrysemys_picta_bellii_delt	-----
gi Danio_rerio_delta	-----
gi Ambystoma_mexicanum_delta	-----
gi Petromyzon_marinus_S4RN43	-----
jgi Branchiostoma_floridae_237	-----
jgi Branchiostoma_floridae_252	-----
gi Strongylocentrotus_purpurat	-----
gi Caenorhabditis_elegans_PPTR	-----
gi Hydra_vulgaris_delta	-----
gi Amphimedon_queenslandica_de	-----
gi Drosophila_melanogaster_B56	-----
gi Dictyostelium_discoideum_ps	-----
gi Dictyostelium_purpureum_N/A	-----
gi Dictyostelium_fasciculatum_	-----
gi Polysphondylium_pallidum_N/	-----
gi Arabidopsis_thaliana_theta	-----
gi Arabidopsis_thaliana_eta	-----
gi Arabidopsis_thaliana_zeta	-----
gi Arabidopsis_thaliana_gamma	-----
gi Oryza	-----
gi Oryza_sativa_zeta	-----
gi Oryza_sativa_theta	-----
gi Oryza_sativa_eta	-----

Figure S1. Cont.

gi Arabidopsis_thaliana_delta	-----
gi Arabidopsis_thaliana_N/A	-----
gi Oryza_sativa_kappa	-----
gi Oryza_sativa_N/A	-----
gi Arabidopsis_thaliana_alpha	-----
gi Arabidopsis_thaliana_beta	-----
gi Oryza_sativa_N/A_2	-----
gi Arabidopsis_thaliana_epsilon	-----
gi Chlamydomonas_reinhardtii_w	-----
gi Schizosaccharomyces_pombe_P	-----
gi Schizosaccharomyces_pombe_P	-----
gi Ashbya_gossypii_RTS1	-----
gi Saccharomyces_cerevisiae_RT	-----
gi Aspergillus_niger_N/A	-----
gi Aspergillus_nidulans_para	-----
gi Mus_musculus_alpha	-----
gi Rattus_norvegicus_alpha	-----
gi Macaca_mulatta_alpha	-----
gi Homo_sapiens_alpha	-----
gi Ovis_aries_alpha	-----
gi Bos_taurus_alpha	-----
gi Felis_catus_alpha	-----
gi Canis_lupus_familiaris_alph	-----
gi Falco_peregrinus_alpha	-----
gi Gallus_gallus_alpha	-----
gi Alligator_mississippiensis_	-----
gi Chrysemys_picta_bellii_alph	-----
gi Xenopus_laevis_alpha	-----
gi Xenopus_tropicalis_alpha	-----
gi Ambystoma_mexicanum_alpha	-----
gi Danio_rerio_alpha	-----
gi Petromyzon_marinus_S4RHV1	-----
gi Mus_musculus_epsilon	-----
gi Rattus_norvegicus_epsilon	-----
gi Macaca_mulatta_epsilon	-----
gi Homo_sapiens_epsilon	-----
gi Ovis_aries_epsilon	-----
gi Bos_taurus_epsilon	-----
gi Canis_lupus_familiaris_epsi	-----
gi Falco_peregrinus_epsilon	-----
gi Gallus_gallus_epsilon	-----
gi Felis_catus_epsilon	-----
gi Chrysemys_picta_bellii_epsi	-----
gi Xenopus_laevis_epsilon	-----
gi Xenopus_tropicalis_epsilon	-----
gi Alligator_mississippiensis_	-----
gi Ambystoma_mexicanum_epsilon	-----
gi Danio_rerio_epsilon	-----
gi Mus_musculus_beta	-----
gi Rattus_norvegicus_beta	-----
gi Felis_catus_beta	-----
gi Canis_lupus_familiaris_beta	-----
gi Homo_sapiens_beta	-----
gi Bos_taurus_beta	-----
gi Ovis_aries_beta	-----
gi Macaca_mulatta_beta	-----
gi Xenopus_laevis_beta	-----
gi Alligator_mississippiensis_	-----
gi Chrysemys_picta_bellii_beta	-----

Figure S1. Cont.

gi Xenopus_tropicalis_beta	-----
gi Danio_rerio_beta	-----
gi Ambystoma_mexicanum_beta	-----
gi Petromyzon_marinus_S4RGA7	-----
gi Strongylocentrotus_purpurat	-----
gi Drosophila_melanogaster_wdb	-----
jgi Branchiostoma_floridae_237	-----
gi Hydra_vulgaris_alpha	-----
jgi Branchiostoma_floridae_112	-----
jgi Branchiostoma_floridae_284	-----
gi Caenorhabditis_elegans_PPTR	-----
gi Amphimedon_queenslandica_be	-----
gi Chrysemys_picta_bellii_gamm	-----
gi Chrysemys_picta_bellii_delt	-----
gi Falco_peregrinus_gamma	-----
gi Falco_peregrinus_delta/gamm	-----
gi Gallus_gallus_gamma	-----
gi Alligator_mississippiensis_	-----
gi Alligator_mississippiensis_	-----
gi Ambystoma_mexicanum_gamma	-----
gi Mus_musculus_gamma	-----
gi Rattus_norvegicus_gamma	-----
gi Ovis_aries_gamma	-----
gi Bos_taurus_gamma	-----
gi Canis_lupus_familiaris_gamm	-----
gi Macaca_mulatta_gamma	-----
gi Homo_sapiens_gamma	-----
gi Felis_catus_gamma	-----
gi Canis_lupus_familiaris_delt	-----
gi Macaca_mulatta_delta/gamma	SLQVCQDGVVTTWKRIILFTGAGGC SL SKMQWRFSLSPHEGEAPMPLAREIR 100
gi Bos_taurus_delta/gamma	-----
gi Mus_musculus_delta/gamma	-----
gi Rattus_norvegicus_delta/gam	-----
gi Danio_rerio_gamma	-----
gi Danio_rerio_delta/gamma	-----
gi Xenopus_laevis_delta/gamma	-----
gi Xenopus_laevis_gamma	-----
gi Xenopus_tropicalis_delta/ga	-----
gi Mus_musculus_delta	-----
gi Rattus_norvegicus_delta	-----
gi Felis_catus_delta	-----
gi Bos_taurus_delta	-----
gi Canis_lupus_familiaris_delt	-----
gi Macaca_mulatta_delta	-----
gi Homo_sapiens_delta	-----
gi Ovis_aries_delta	-----
gi Falco_peregrinus_delta	-----
gi Gallus_gallus_delta	-----
gi Alligator_mississippiensis_	-----
gi Chrysemys_picta_bellii_delt	-----
gi Danio_rerio_delta	-----
gi Ambystoma_mexicanum_delta	-----
gi Petromyzon_marinus_S4RN43	-----
jgi Branchiostoma_floridae_237	-----
jgi Branchiostoma_floridae_252	-----
gi Strongylocentrotus_purpurat	-----
gi Caenorhabditis_elegans_PPTR	-----
gi Hydra_vulgaris_delta	-----
gi Amphimedon_queenslandica_de	-----
gi Drosophila_melanogaster_B56	-----
gi Dictyostelium_discoideum_ps	-----

Figure S1. Cont.

gi Dictyostelium_purpureum_N/A	-----
gi Dictyostelium_fasciculatum	-----
gi Polysphondylium_pallidum_N/	-----
gi Arabidopsis_thaliana_theta	-----
gi Arabidopsis_thaliana_eta	-----
gi Arabidopsis_thaliana_zeta	-----
gi Arabidopsis_thaliana_gamma	-----
gi Oryza	-----
gi Oryza_sativa_zeta	-----
gi Oryza_sativa_theta	-----
gi Oryza_sativa_eta	-----
gi Arabidopsis_thaliana_delta	-----
gi Arabidopsis_thaliana_N/A	-----
gi Oryza_sativa_kappa	-----
gi Oryza_sativa_N/A	-----
gi Arabidopsis_thaliana_alpha	-----
gi Arabidopsis_thaliana_beta	-----
gi Oryza_sativa_N/A_2	-----
gi Arabidopsis_thaliana_epsilon	-----
gi Chlamydomonas_reinhardtii_w	-----
gi Schizosaccharomyces_pombe_P	-----
gi Schizosaccharomyces_pombe_P	-----
gi Ashbya_gossypii_RTS1	-----
gi Saccharomyces_cerevisiae_RT	-----
gi Aspergillus_niger_N/A	-----
gi Aspergillus_nidulans_parA	-----
gi Mus_musculus_alpha	-----
gi Rattus_norvegicus_alpha	-----
gi Macaca_mulatta_alpha	-----
gi Homo_sapiens_alpha	-----
gi Ovis_aries_alpha	-----
gi Bos_taurus_alpha	-----
gi Felis_catus_alpha	-----
gi Canis_lupus_familiaris_alph	-----
gi Falco_peregrinus_alpha	-----
gi Gallus_gallus_alpha	-----
gi Alligator_mississippiensis_	-----
gi Chrysemys_picta_bellii_alph	-----
gi Xenopus_laevis_alpha	-----
gi Xenopus_tropicalis_alpha	-----
gi Ambystoma_mexicanum_alpha	-----
gi Danio_rerio_alpha	-----
gi Petromyzon_marinus_S4RHV1	-----
gi Mus_musculus_epsilon	-----
gi Rattus_norvegicus_epsilon	-----
gi Macaca_mulatta_epsilon	-----
gi Homo_sapiens_epsilon	-----
gi Ovis_arie_epsilon	-----
gi Bos_taurus_epsilon	-----
gi Canis_lupus_familiaris_epsi	-----
gi Falco_peregrinus_epsilon	-----
gi Gallus_gallus_epsilon	-----
gi Felis_catus_epsilon	-----
gi Chrysemys_picta_bellii_epsi	-----
gi Xenopus_laevis_epsilon	-----
gi Xenopus_tropicalis_epsilon	-----
gi Alligator_mississippiensis_	-----
gi Ambystoma_mexicanum_epsilon	-----
gi Danio_rerio_epsilon	-----

Figure S1. *Cont.*



gi	Danio rerio_delta	-----	
gi	Ambystoma_mexicanum_delta	-----	
gi	Petromyzon_marinus_S4RN43	-----	
jgi	Branchiostoma_floridae_237	-----	
jgi	Branchiostoma_floridae_252	-----	
gi	Strongylocentrotus_purpurat	-----	
gi	Caenorhabditis_elegans_PPTR	-----	
gi	Hydra_vulgaris_delta	-----	
gi	Amphimedon_queenslandica_de	-----	
gi	Drosophila_melanogaster_B56	-----	
gi	Dictyostelium_discoideum_ps	-----	
gi	Dictyostelium_purpureum_N/A	-----	
gi	Dictyostelium_fasciculatum_	-----	
gi	Polysphondylium_pallidum_N/	-----	
gi	Arabidopsis_thaliana_theta	-----	
gi	Arabidopsis_thaliana_eta	-----	
gi	Arabidopsis_thaliana_zeta	-----	
gi	Arabidopsis_thaliana_gamma	-----	
gi	Oryza	-----	
gi	Oryza_sativa_zeta	-----	
gi	Oryza_sativa_theta	-----	
gi	Oryza_sativa_eta	-----	
gi	Arabidopsis_thaliana_delta	-----	
gi	Arabidopsis_thaliana_N/A	-----	
gi	Oryza_sativa_kappa	-----	
gi	Oryza_sativa_N/A	-----	
gi	Arabidopsis_thaliana_alpha	-----	
gi	Arabidopsis_thaliana_beta	-----	
gi	Oryza_sativa_N/A_2	-----	
gi	Arabidopsis_thaliana_epsilon	-----	
gi	Chlamydomonas_reinhardtii_w	-----	
gi	Schizosaccharomyces_pombe_P	-----	
gi	Schizosaccharomyces_pombe_P	-----	
gi	Ashbya_gossypii_RT51	-----MMRGFKQKLIKKTTGSSSSSTQ-KKKDKE-	27
gi	Saccharomyces_cerevisiae_RT	-----MMRGFKQRLIKKTTGSSSSSSSKKKDKEK	29
gi	Aspergillus_niger_N/A	-----MKGFRQRVHEQLSRAKDANK	20
gi	Aspergillus_nidulans_parA	-----MKGFRQRVHEQLSRAKDNKS	20
gi	Mus_musculus_alpha	-----	
gi	Rattus_norvegicus_alpha	-----	
gi	Macaca_mulatta_alpha	-----	
gi	Homo_sapiens_alpha	-----	
gi	Ovis_aries_alpha	-----	
gi	Bos_taurus_alpha	-----	
gi	Felis_catus_alpha	-----	
gi	Canis_lupus_familiaris_alph	-----	
gi	Falco_peregrinus_alpha	-----	
gi	Gallus_gallus_alpha	-----	
gi	Alligator_mississippiensis_	-----	
gi	Chrysemys_picta_bellii_alph	-----	
gi	Xenopus_laevis_alpha	-----	
gi	Xenopus_tropicalis_alpha	-----	
gi	Ambystoma_mexicanum_alpha	-----	
gi	Danio_rerio_alpha	-----	
gi	Petromyzon_marinus_S4RHV1	-----	
gi	Mus_musculus_epsilon	-----	
gi	Rattus_norvegicus_epsilon	-----	
gi	Macaca_mulatta_epsilon	-----	
gi	Homo_sapiens_epsilon	-----	
gi	Ovis_aries_epsilon	-----	

Figure S1. Cont.

gi	Bos_taurus_epsilon	-----	
gi	Canis_lupus_familiaris_epsilon	-----	
gi	Falco_peregrinus_epsilon	-----	
gi	Gallus_gallus_epsilon	-----	
gi	Felis_catus_epsilon	-----	
gi	Chrysemys_picta_bellii_epsilon	-----	
gi	Xenopus_laevis_epsilon	-----	
gi	Xenopus_tropicalis_epsilon	-----	
gi	Alligator_mississippiensis_epsilon	-----	
gi	Ambystoma_mexicanum_epsilon	-----	
gi	Danio_rerio_epsilon	-----	
gi	Mus_musculus_beta	-----	
gi	Rattus_norvegicus_beta	-----	
gi	Felis_catus_beta	-----	
gi	Canis_lupus_familiaris_beta	-----	
gi	Homo_sapiens_beta	-----	
gi	Bos_taurus_beta	-----	
gi	Ovis_aries_beta	-----	
gi	Macaca_mulatta_beta	-----	
gi	Xenopus_laevis_beta	-----	
gi	Alligator_mississippiensis_beta	-----	
gi	Chrysemys_picta_bellii_beta	-----	
gi	Xenopus_tropicalis_beta	-----	
gi	Danio_rerio_beta	-----	
gi	Ambystoma_mexicanum_beta	-----	
gi	Petromyzon_marinus_S4RGA7	-----	
gi	Strongylocentrotus_purpurat	-----	
gi	Drosophila_melanogaster_wdb	-----	
jgi	Branchiostoma_floridae_237	-----	
gi	Hydra_vulgaris_alpha	-----	
jgi	Branchiostoma_floridae_112	-----	
jgi	Branchiostoma_floridae_284	-----	
gi	Caenorhabditis_elegans_PPTR	-----	
gi	Amphimedon_queenslandica_be	-----	
gi	Chrysemys_picta_bellii_gamm	-----	
gi	Chrysemys_picta_bellii_delt	-----	
gi	Falco_peregrinus_gamma	-----	
gi	Falco_peregrinus_delta/gamm	-----	
gi	Gallus_gallus_gamma	-----	
gi	Alligator_mississippiensis_gamma	-----	
gi	Alligator_mississippiensis_delta/gamma	-----	
gi	Ambystoma_mexicanum_gamma	-----	
gi	Mus_musculus_gamma	-----	
gi	Rattus_norvegicus_gamma	-----	
gi	Ovis_aries_gamma	-----	
gi	Bos_taurus_gamma	-----	
gi	Canis_lupus_familiaris_gamm	-----	
gi	Macaca_mulatta_gamma	-----	
gi	Homo_sapiens_gamma	-----	
gi	Felis_catus_gamma	-----	
gi	Canis_lupus_familiaris_delt	-----	
gi	Macaca_mulatta_delta/gamma	EERGCTSGRDLAEGAAEGGANGERRGCRVCGTSPPELRRAGPTRKGRGCR	200
gi	Bos_taurus_delta/gamma	-----	
gi	Mus_musculus_delta/gamma	-----	
gi	Rattus_norvegicus_delta/gam	-----MPASSGRRRQVVQARGRAQGAGRIAWSWGGRPGEVALRCR	42
gi	Danio_rerio_gamma	-----	
gi	Danio_rerio_delta/gamma	-----	
gi	Xenopus_laevis_delta/gamma	-----	
gi	Xenopus_laevis_gamma	-----	
gi	Xenopus_tropicalis_delta/ga	-----	
gi	Mus_musculus_delta	-----	

Figure S1. Cont.

gi Rattus_norvegicus_delta	-----	
gi Felis_catus_delta	-----	
gi Bos_taurus_delta	-----	
gi Canis_lupus_familiaris_delt	-----	
gi Macaca_mulatta_delta	-----	
gi Homo_sapiens_delta	-----	
gi Ovis_aries_delta	-----	
gi Falco_peregrinus_delta	-----	
gi Gallus_gallus_delta	-----	
gi Alligator_mississippiensis_	-----	
gi Chrysemys_picta_bellii_delt	-----	
gi Danio_rerio_delta	-----	
gi Ambystoma_mexicanum_delta	-----	
gi Petromyzon_marinus_S4RN43	-----	
jgi Branchiostoma_floridae_237	-----	
jgi Branchiostoma_floridae_252	-----	
gi Strongylocentrotus_purpurat	-----	
gi Caenorhabditis_elegans_PPTR	-----	
gi Hydra_vulgaris_delta	-----	MPV- 3
gi Amphimedon_queenslandica_de	-----	MMPIG 5
gi Drosophila_melanogaster_B56	---MDNEALDPTIKSSTSAATPTAAASETTTTAASSVVETTTTIAAATASA	48
gi Dictyostelium_discoideum_ps	-----	
gi Dictyostelium_purpureum_N/A	-----	
gi Dictyostelium_fasciculatum_	-----	
gi Polysphondylium_pallidum_N/	-----	
gi Arabidopsis_thaliana_theta	-----	
gi Arabidopsis_thaliana_eta	-----	
gi Arabidopsis_thaliana_zeta	-----	
gi Arabidopsis_thaliana_gamma	-----	
gi Oryza	-----	
gi Oryza_sativa_zeta	-----	
gi Oryza_sativa_theta	-----	
gi Oryza_sativa_eta	-----	
gi Arabidopsis_thaliana_delta	-----	
gi Arabidopsis_thaliana_N/A	-----	
gi Oryza_sativa_kappa	-----	
gi Oryza_sativa_N/A	-----	
gi Arabidopsis_thaliana_alpha	-----	
gi Arabidopsis_thaliana_beta	-----	
gi Oryza_sativa_N/A_2	-----	
gi Arabidopsis_thaliana_epsilon	-----	
gi Chlamydomonas_reinhardtii_w	-----	
gi Schizosaccharomyces_pombe_P	-----MKGIKSKMLSRGKSQDTQKSSKKKESK-----	27
gi Schizosaccharomyces_pombe_P	-----MKGLRSKFVKALSLKDEQGSBKNGHSKSHYISKNGSYVETD	41
gi Ashbya_gossypii_RT1	-----TGKKPGSANGAAG-----AVGSGGRATVDKKEQKGSQAK	62
gi Saccharomyces_cerevisiae_RT	EKEKSSTTSSTSKKPASASSSHGTTSSASSTGSKSTTEKQKQSGSVPS	79
gi Aspergillus_niger_N/A	SSKKKDSSHSSQ-NNAALGVHHGQQSSSPNQGTPTSSTTSVNDTRGKSPD	69
gi Aspergillus_nidulans_parA	SKKKESASQASQQNSANLGIHHGQQSASPNQVTPPTSSTTSVNDIRKKAPE	70
gi Mus_musculus_alpha	-----	
gi Rattus_norvegicus_alpha	-----	
gi Macaca_mulatta_alpha	-----	
gi Homo_sapiens_alpha	-----	
gi Ovis_aries_alpha	-----	
gi Bos_taurus_alpha	-----	
gi Felis_catus_alpha	-----	
gi Canis_lupus_familiaris_alph	-----	
gi Falco_peregrinus_alpha	-----	
gi Gallus_gallus_alpha	-----	
gi Alligator_mississippiensis_	-----	

Figure S1. Cont.

gi Chrysemys_picta_bellii_alpha	-----	
gi Xenopus_laevis_alpha	-----	
gi Xenopus_tropicalis_alpha	-----	
gi Ambystoma_mexicanum_alpha	-----	
gi Danio_rerio_alpha	-----	
gi Petromyzon_marinus_S4RHV1	-----	
gi Mus_musculus_epsilon	-----	
gi Rattus_norvegicus_epsilon	-----	
gi Macaca_mulatta_epsilon	-----	
gi Homo_sapiens_epsilon	-----	
gi Ovis_aries_epsilon	-----	
gi Bos_taurus_epsilon	-----	
gi Canis_lupus_familiaris_epsilon	-----	
gi Falco_peregrinus_epsilon	-----	
gi Gallus_gallus_epsilon	-----	
gi Felis_catus_epsilon	-----	
gi Chrysemys_picta_bellii_epsilon	-----	
gi Xenopus_laevis_epsilon	-----	
gi Xenopus_tropicalis_epsilon	-----	
gi Alligator_mississippiensis_epsilon	-----	
gi Ambystoma_mexicanum_epsilon	-----	
gi Danio_rerio_epsilon	-----	
gi Mus_musculus_beta	-----	
gi Rattus_norvegicus_beta	-----	
gi Felis_catus_beta	-----	
gi Canis_lupus_familiaris_beta	-----	
gi Homo_sapiens_beta	-----	
gi Bos_taurus_beta	-----	
gi Ovis_aries_beta	-----	
gi Macaca_mulatta_beta	-----	
gi Xenopus_laevis_beta	-----	
gi Alligator_mississippiensis_beta	-----	
gi Chrysemys_picta_bellii_beta	-----	
gi Xenopus_tropicalis_beta	-----	
gi Danio_rerio_beta	-----	
gi Ambystoma_mexicanum_beta	-----	
gi Petromyzon_marinus_S4RGA7	-----	
gi Strongylocentrotus_purpurat	-----	
gi Drosophila_melanogaster_wdb	-----	
jgi Branchiostoma_floridae_237	-----	
gi Hydra_vulgaris_alpha	-----	
jgi Branchiostoma_floridae_112	-----	
jgi Branchiostoma_floridae_284	-----	
gi Caenorhabditis_elegans_FPTR	-----	
gi Amphimedon_queenslandica_beta	-----	
gi Chrysemys_picta_bellii_gamma	-----MLTCNKA	7
gi Chrysemys_picta_bellii_delta	-----	
gi Falco_peregrinus_gamma	-----MLTCNRA	7
gi Falco_peregrinus_delta/gamma	-----	
gi Gallus_gallus_gamma	-----MLTCNRA	7
gi Alligator_mississippiensis_gamma	-----MLTCNKA	7
gi Alligator_mississippiensis_delta	-----	
gi Ambystoma_mexicanum_gamma	-----MLTCNQV	7
gi Mus_musculus_gamma	-----MLTCNKA	7
gi Rattus_norvegicus_gamma	-----MLTCNKA	7
gi Ovis_aries_gamma	-----MLTCNKA	7
gi Bos_taurus_gamma	-----MLTCNKA	7
gi Canis_lupus_familiaris_gamma	-----MWTCNKA	7
gi Macaca_mulatta_gamma	-----MLTCNKA	7
gi Homo_sapiens_gamma	-----	
gi Felis_catus_gamma	-----MAESPKAGKSGKSSKE	16

Figure S1. Cont.

gi	Canis_lupus_familiaris_delt	-----MAESPKAGKSGKSSKE	16
gi	Macaca_mulatta_delta/gamma	VGGTLREKLRRAGPTREGRACRMGGTSREDLRTVELESPKAGKSGKSSKE	250
gi	Bos_taurus_delta/gamma	-----MPNKNKKEKESPKAGKSGKSSKE	23
gi	Mus_musculus_delta/gamma	-----MPNKNKKEKEPKPKVKSJKGPKPE	23
gi	Rattus_norvegicus_delta/gam	GRSGRRRMLRQCSAWRGLGCWSVQDSPQKPSLGGGLREPPKPKVKSJKGPKPE	92
gi	Danio_rerio_gamma	-----MLTCSKDE-----ARMVLDAPS	17
gi	Danio_rerio_delta/gamma	-----MPNKTKKDKDSPKSAKVGKTAGQ	23
gi	Xenopus_laevis_delta/gamma	-----MPNKNKKDKKEPPKAGKSGKSGKE	23
gi	Xenopus_laevis_gamma	-----MPNKNKKDKKEPPKAGKSGKSGKE	23
gi	Xenopus_tropicalis_delta/ga	-----MPNKNKKDKKEPPKAGKSGKTGKE	23
gi	Mus_musculus_delta	-----MSYKLLKKDKE-PSKLAGGTAKPS	22
gi	Rattus_norvegicus_delta	AERAECGRAEPEPEPERRSRAGCGPAEMPYKLLKKDKE-PPKLAGGTAKPS	49
gi	Felis_catus_delta	-----GSGRAEMPYKLLKKEKE-TPKLAGGTAKPS	28
gi	Bos_taurus_delta	-----MPYKLLKKEKE-PPKLAGGTAKPS	22
gi	Canis_lupus_familiaris_delt	-----MPYKLLKKEKVSPPKLAGGTAKPS	23
gi	Macaca_mulatta_delta	-----MPYKLLKKEKE-PPKLAGGTAKPT	22
gi	Homo_sapiens_delta	-----MPYKLLKKEKE-PPKLAGGTAKPS	22
gi	Ovis_aries_delta	-----MAEDNAHQTPKPFKE-PPKLAGGTAKPS	26
gi	Falco_peregrinus_delta	-----	
gi	Gallus_gallus_delta	-----MP---SVGEE-SPKSAKSTTKPG	19
gi	Alligator_mississippiensis_	-----MPYKLLKKEKE-PPKSAKSTTKSS	22
gi	Chrysemys_picta_bellii_delt	-----MPYKLLKKEKE-PPKSAKSTTKPS	22
gi	Danio_rerio_delta	-----MPNKTKKKEKE-PTKSAKSTTKNS	22
gi	Ambystoma_mexicanum_delta	-----	
gi	Petromyzon_marinus_S4RN43	-----MPNKNKKDKKEPAKAASAKNSPK	23
jgi	Branchiostoma_floridae_237	-----	
jgi	Branchiostoma_floridae_252	-----QANRNRAATNN--	11
gi	Strongylocentrotus_purpurat	-----MSRKKPGEWISALIVSKHRPQNVPPPQLTR	31
gi	Caenorhabditis_elegans_PPTR	-----MIPADAPPPPTNIGR	14
gi	Hydra_vulgaris_delta	---KLKKDKEKNSEKDKGKEE-----ENKGANLPPQVPVVKKAGP	42
gi	Amphimedon_queenslandica_de	KGKKAEEKEKEKAQNKNTSAKPSSESPQNVPATGDNVPAFPVPTTGVGV	55
gi	Drosophila_melanogaster_B56	AESKNETTATNNSNTSGSISSSSSNNIVIPASATNGIKESNSNLSTTTT	98
gi	Dictyostelium_discoideum_ps	-----MKNDHINYQQLNSQSPILNS	20
gi	Dictyostelium_purpureum_N/A	-----MKNDHIN-----	7
gi	Dictyostelium_fasciculatum_	-----MTSPHIK-----	7
gi	Polysphondylium_pallidum_N/	-----MKSPKES-----	7
gi	Arabidopsis_thaliana_theta	-----MWKQILSKLPPK-----	12
gi	Arabidopsis_thaliana_eta	-----MWKQILSKLPPK-----	12
gi	Arabidopsis_thaliana_zeta	-----MIKQIFGKLP-----	11
gi	Arabidopsis_thaliana_gamma	-----MIKQIFGKLP-----	11
gi	Oryza	-----MMKQIFGR--R-----	9
gi	Oryza_sativa_zeta	-----MIKQILGRFPK-----	11
gi	Oryza_sativa_theta	-----MIKQILGRFPK-----	12
gi	Oryza_sativa_eta	-----MIKQILGRFPK-----	11
gi	Arabidopsis_thaliana_delta	-----MFKQILGKLP-----	11
gi	Arabidopsis_thaliana_N/A	-----MFKQFLSKLP-----	11
gi	Oryza_sativa_kappa	-----MWKGFLSKLP-----	11
gi	Oryza_sativa_N/A	-----MWKQFLGKISW-----	11
gi	Arabidopsis_thaliana_alpha	-----MFKKIMKGANR-----	11
gi	Arabidopsis_thaliana_beta	-----MFKKIMKGGHR-----	11
gi	Oryza_sativa_N/A_2	-----MFNKIKRGGGR-----	11
gi	Arabidopsis_thaliana_epsilon	-----MFNKIKLGGK-----	11
gi	Chlamydomonas_reinhardtii_w	-----MLKSMKQKFSG-----	11
gi	Schizosaccharomyces_pombe_P	-----KSNSHDSSKAPKESPS-----	43
gi	Schizosaccharomyces_pombe_P	DVKHTDTHHSSKHELKLLKSHFLKDTLKHKRHHANSNNEKHENSDDKIH	91
gi	Ashbya_gossypii_RTSl	Q-----PKAKDAGK-----SGAGAAPKVKVAACK-----	86
gi	Saccharomyces_cerevisiae_RT	QGKHHSSSTSKTKTATTPSSSSSSSSSVSRSGSSSTKKTSSRKGQEQS	129
gi	Aspergillus_niger_N/A	NGSQAG-----MYPGTPTKQGQQMAPSV	92
gi	Aspergillus_nidulans_parA	DASQAGG-----FPPATPTKQGQPMAPSV	94

Figure S1. Cont.

gi Mus_musculus_alpha	-----	
gi Rattus_norvegicus_alpha	-----	
gi Macaca_mulatta_alpha	-----	
gi Homo_sapiens_alpha	-----	
gi Ovis_aries_alpha	-----	
gi Bos_taurus_alpha	-----	
gi Felis_catus_alpha	-----	
gi Canis_lupus_familiaris_alph	-----	
gi Falco_peregrinus_alpha	-----	
gi Gallus_gallus_alpha	-----	
gi Alligator_mississippiensis_	-----	
gi Chrysemys_picta_bellii_alph	-----	
gi Xenopus_laevis_alpha	-----	
gi Xenopus_tropicalis_alpha	-----	
gi Ambystoma_mexicanum_alpha	-----	
gi Danio_rerio_alpha	-----	
gi Petromyzon_marinus_S4RHV1	-----	
gi Mus_musculus_epsilon	-----	
gi Rattus_norvegicus_epsilon	-----	
gi Macaca_mulatta_epsilon	-----	
gi Homo_sapiens_epsilon	-----	
gi Ovis_arie_epsilon	-----	
gi Bos_taurus_epsilon	-----	
gi Canis_lupus_familiaris_epsi	-----	
gi Falco_peregrinus_epsilon	-----	
gi Gallus_gallus_epsilon	-----	
gi Felis_catus_epsilon	-----	
gi Chrysemys_picta_bellii_epsi	-----	
gi Xenopus_laevis_epsilon	-----	
gi Xenopus_tropicalis_epsilon	-----	
gi Alligator_mississippiensis_	-----	MESAGE 6
gi Ambystoma_mexicanum_epsilon	-----	
gi Danio_rerio_epsilon	-----	
gi Mus_musculus_beta	-----	
gi Rattus_norvegicus_beta	-----	
gi Felis_catus_beta	-----	
gi Canis_lupus_familiaris_beta	-----	
gi Homo_sapiens_beta	-----	
gi Bos_taurus_beta	-----	
gi Ovis_aries_beta	-----	
gi Macaca_mulatta_beta	-----	
gi Xenopus_laevis_beta	-----	
gi Alligator_mississippiensis_	-----	
gi Chrysemys_picta_bellii_beta	-----	
gi Xenopus_tropicalis_beta	-----	
gi Danio_rerio_beta	-----	
gi Ambystoma_mexicanum_beta	-----	
gi Petromyzon_marinus_S4RGA7	-----	
gi Strongylocentrotus_purpurat	-----	
gi Drosophila_melanogaster_wdb	-----	
jgi Branchiostoma_floridae_237	-----	
gi Hydra_vulgaris_alpha	-----	
jgi Branchiostoma_floridae_112	-----	
jgi Branchiostoma_floridae_284	-----	
gi Caenorhabditis_elegans_PPTR	-----	MHGSGHSL 8
gi Amphimedon_queenslandica_be	-----	
gi Chrysemys_picta_bellii_gamm	G-----	8
gi Chrysemys_picta_bellii_delt	-----	
gi Falco_peregrinus_gamma	G-----	8
gi Falco_peregrinus_delta/gamm	-----	
gi Gallus_gallus_gamma	G-----	8

Figure S1. Cont.

gi	Alligator_mississippiensis	G-----	8
gi	Alligator_mississippiensis	-----	
gi	Ambystoma_mexicanum_gamma	G-----	8
gi	Mus_musculus_gamma	G-----	8
gi	Rattus_norvegicus_gamma	G-----	8
gi	Ovis_aries_gamma	G-----	8
gi	Bos_taurus_gamma	G-----	8
gi	Canis_lupus_familiaris_gamma	G-----	8
gi	Macaca_mulatta_gamma	G-----	8
gi	Homo_sapiens_gamma	-----	
gi	Felis_catus_gamma	GQDII-----	21
gi	Canis_lupus_familiaris_delt	GQDII-----	21
gi	Macaca_mulatta_delta/gamma	GQDTV-----	255
gi	Bos_taurus_delta/gamma	GQDII-----	28
gi	Mus_musculus_delta/gamma	GQDTA-----	28
gi	Rattus_norvegicus_delta/gam	GQDTA-----	97
gi	Danio_rerio_gamma	AN-----	19
gi	Danio_rerio_delta/gamma	ENSEH-----	28
gi	Xenopus_laevis_delta/gamma	GQDNP-----	28
gi	Xenopus_laevis_gamma	GQDNP-----	28
gi	Xenopus_tropicalis_delta/ga	GQDNP-----	28
gi	Mus_musculus_delta	SSSK-----DGGGENTD-EAQPPQ	41
gi	Rattus_norvegicus_delta	SSSK-----DGGGENTDTEAQPPQ	69
gi	Felis_catus_delta	SSGK-----DGGGESAE-EAQPPQ	47
gi	Bos_taurus_delta	SSSK-----DGGGESTE-EAQPPQ	41
gi	Canis_lupus_familiaris_delt	SSGK-----DGGGESTD-EPQPQP	42
gi	Macaca_mulatta_delta	SSGK-----DGGGENTE-EAQPPQ	41
gi	Homo_sapiens_delta	SSGK-----DGGGENTE-EAQPPQ	41
gi	Ovis_aries_delta	SSSK-----DGGGESTE-EPQPPP	45
gi	Falco_peregrinus_delta	-----	
gi	Gallus_gallus_delta	GGSG-----KDGAENSEEAQQPQQ	40
gi	Alligator_mississippiensis	GGSX--G-----KDGAENSEEVQQ----	40
gi	Chrysemys_picta_bellii_delt	SGSSGGG-----KDGAENSEEVQQ----	42
gi	Danio_rerio_delta	NASAG-----KDVGTENSEEAQQ----	40
gi	Ambystoma_mexicanum_delta	-----	
gi	Petromyzon_marinus_S4RN43	DAADT-----	28
jgi	Branchiostoma_floridae_237	-----	
jgi	Branchiostoma_floridae_252	-----	
gi	Strongylocentrotus_purpurat	T-----	32
gi	Caenorhabditis_elegans_PPTR	TNT-----	17
gi	Hydra_vulgaris_delta	-----	
gi	Amphimedon_queenslandica_de	GLPAK-----	60
gi	Drosophila_melanogaster_B56	AAAVAAA-----TVEGVAPAITSTIVVT	122
gi	Dictyostelium_discoideum_ps	NKNQTQQ-----NQOQQOQQOQNPQQO	44
gi	Dictyostelium_purpureum_N/A	-----AQQVSPNLKHQQ	19
gi	Dictyostelium_fasciculatum	-----PKQGSDDPISPS	19
gi	Polysphondylium_pallidum_N/	-----ASGVAGSPTSPS	19
gi	Arabidopsis_thaliana_theta	-----SSSK-----	16
gi	Arabidopsis_thaliana_eta	-----KSSKHEHRGR	22
gi	Arabidopsis_thaliana_zeta	-----KPSKSLQND	20
gi	Arabidopsis_thaliana_gamma	-----KPSKSSHND	20
gi	Oryza	-----KNAKSADKD	18
gi	Oryza_sativa_zeta	-----KPSKSGDKD	20
gi	Oryza_sativa_theta	-----EKPGKSGE-K	21
gi	Oryza_sativa_eta	-----KPGKAGDSR	20
gi	Arabidopsis_thaliana_delta	-----	
gi	Arabidopsis_thaliana_N/A	-----KSSKSDSG-	19
gi	Oryza_sativa_kappa	-----KTSASGRGA	20
gi	Oryza_sativa_N/A	-----KAPKSGGG-	19
gi	Arabidopsis_thaliana_alpha	-----KASKAEAND	20
gi	Arabidopsis_thaliana_beta	-----KPSKSEANE	20

Figure S1. Cont.

gi	Oryza_sativa_N/A_2	-----KGQRAADGG	20
gi	Arabidopsis_thaliana_epsilon	-----KFNKSDQHH	20
gi	Chlamydomonas_reinhardtii_w	-----KKDASKNKD	20
gi	Schizosaccharomyces_pombe_P	-----TDP-NGSVIG-----	52
gi	Schizosaccharomyces_pombe_P	TTVLASGHEDSDYSTFLPVIETSKVKDANHFPPNYPEPKNDSVSSNIDEF	141
gi	Ashbya_gossypii_RTS1	-----EERSYPTMIAA	97
gi	Saccharomyces_cerevisiae_RT	KQSQQPSQSQKQSSSSSAAIMNPTPVLTVTKDDKSTSGEDHAHPTLLGA	179
gi	Aspergillus_niger_N/A	VISPSA-----PHVPPFGAAETMPGD	113
gi	Aspergillus_nidulans_parA	VISPSG-----PHAPPPGAAETMPGD	115
gi	Mus_musculus_alpha	-----MSSPSPP---AP	9
gi	Rattus_norvegicus_alpha	-----MSSPSPP---AP	9
gi	Macaca_mulatta_alpha	-----MSSSSPP---AG	9
gi	Homo_sapiens_alpha	-----MSSSSPP---AG	9
gi	Ovis_aries_alpha	-----MSSSSPPPPAG	12
gi	Bos_taurus_alpha	-----MSSSSPPPPAG	12
gi	Felis_catus_alpha	-----	
gi	Canis_lupus_familiaris_alph	-----	
gi	Falco_peregrinus_alpha	-----	
gi	Gallus_gallus_alpha	-----	
gi	Alligator_mississippiensis_	-----AAAAPLAAM	9
gi	Chrysemys_picta_bellii_alph	-----	
gi	Xenopus_laevis_alpha	-----	
gi	Xenopus_tropicalis_alpha	-----	
gi	Ambystoma_mexicanum_alpha	-----	
gi	Danio_rerio_alpha	-----	
gi	Petromyzon_marinus_S4RHV1	-----	
gi	Mus_musculus_epsilon	-----MS	2
gi	Rattus_norvegicus_epsilon	-----MS	2
gi	Macaca_mulatta_epsilon	-----MS	2
gi	Homo_sapiens_epsilon	-----MS	2
gi	Ovis_arie_epsilon	-----MS	2
gi	Bos_taurus_epsilon	-----MS	2
gi	Canis_lupus_familiaris_epsi	-----MS	2
gi	Falco_peregrinus_epsilon	-----MS	2
gi	Gallus_gallus_epsilon	-----MS	2
gi	Felis_catus_epsilon	-----MS	2
gi	Chrysemys_picta_bellii_epsi	-----MS	2
gi	Xenopus_laevis_epsilon	-----MS	2
gi	Xenopus_tropicalis_epsilon	-----MS	2
gi	Alligator_mississippiensis_	YWNVKL-----EIRKEIHSVKGADMS	27
gi	Ambystoma_mexicanum_epsilon	-----	
gi	Danio_rerio_epsilon	-----MS	2
gi	Mus_musculus_beta	----M-----ETKLPPASTPTSPSS	16
gi	Rattus_norvegicus_beta	----M-----ETKLPPASTPTSPSS	16
gi	Felis_catus_beta	----M-----ETKLPPASTPTSPSS	16
gi	Canis_lupus_familiaris_beta	----M-----ETKLPPASTPTSPSS	16
gi	Homo_sapiens_beta	----M-----ETKLPPASTPTSPSS	16
gi	Bos_taurus_beta	----M-----ETKLPPASTPTSPSS	16
gi	Ovis_aries_beta	----M-----ETKLPPASTPTSPSS	16
gi	Macaca_mulatta_beta	----M-----AQEHGGWGQQLPWR	16
gi	Xenopus_laevis_beta	-----	
gi	Alligator_mississippiensis_	----M-----EMKLTAGTPPSPPS	16
gi	Chrysemys_picta_bellii_beta	----M-----ETKLPPAGTPTSPSS	16
gi	Xenopus_tropicalis_beta	----M-----ETKLP--VTPTSPSS	14
gi	Danio_rerio_beta	----M-----ETPTKLPPSSPSPT	16
gi	Ambystoma_mexicanum_beta	-----	
gi	Petromyzon_marinus_S4RGA7	-----	
gi	Strongylocentrotus_purpurat	-----	
gi	Drosophila_melanogaster_wdb	-----	

Figure S1. Cont.

jgi Branchiostoma_floridae_237	-----	
gi Hydra_vulgaris_alpha	-----MPHG	4
jgi Branchiostoma_floridae_112	-----	
jgi Branchiostoma_floridae_284	-----	
gi Caenorhabditis_elegans_PPTR	TGAPHQ-----IPPPRTQGAATGGQQ	29
gi Amphimedon_queenslandica_be	--MTSK-----ASKGLGKTPPKAGTP	19
gi Chrysemys_picta_bellii_gamm	-----	
gi Chrysemys_picta_bellii_delt	-----	
gi Falco_peregrinus_gamma	-----	
gi Falco_peregrinus_delta/gamm	-----	
gi Gallus_gallus_gamma	-----	
gi Alligator_mississippiensis_	-----	
gi Alligator_mississippiensis_	-----	
gi Ambystoma_mexicanum_gamma	-----	
gi Mus_musculus_gamma	-----	
gi Rattus_norvegicus_gamma	-----	
gi Ovis_aries_gamma	-----	
gi Bos_taurus_gamma	-----	
gi Canis_lupus_familiaris_gamm	-----	
gi Macaca_mulatta_gamma	-----	
gi Homo_sapiens_gamma	-----	
gi Felis_catus_gamma	-----ES-EIPGRKNN	31
gi Canis_lupus_familiaris_delt	-----ES-ETSSRKNN	31
gi Macaca_mulatta_delta/gamma	-----ESEQISVRKNS	266
gi Bos_taurus_delta/gamma	-----DS-EIPSRKNS	38
gi Mus_musculus_delta/gamma	-----ET-EIASRKNS	38
gi Rattus_norvegicus_delta/gam	-----EA-EIASRKNS	107
gi Danio_rerio_gamma	-----	
gi Danio_rerio_delta/gamma	-----EQASNKKGNS	39
gi Xenopus_laevis_delta/gamma	-----EHEVSNKKSNS	39
gi Xenopus_laevis_gamma	-----EHEVSNKKSNS	39
gi Xenopus_tropicalis_delta/ga	-----EHEVSNKKSNN	39
gi Mus_musculus_delta	SQ-----SPSSNKRPSNS	54
gi Rattus_norvegicus_delta	PQ-----PPSSNKRPSNS	82
gi Felis_catus_delta	PQPQPQ-----PQPQPSSNKRPSNS	68
gi Bos_taurus_delta	PQPQPQ-----PQ--PPSSNKRPSNS	60
gi Canis_lupus_familiaris_delt	PQ-----PPSSNKRPSNS	55
gi Macaca_mulatta_delta	PQPQPQ-----AQSQPPSSNKRPSNS	62
gi Homo_sapiens_delta	PQPQPQ-----AQSQPPSSNKRPSNS	62
gi Ovis_aries_delta	PQ-----PPSSNKRPSNS	58
gi Falco_peregrinus_delta	-----	
gi Gallus_gallus_delta	PQQQQQ-----QTPSNKRPSNS	57
gi Alligator_mississippiensis_	-QQQQQ-----QTSNKRPSNS	56
gi Chrysemys_picta_bellii_delt	-QQQPP-----PPTSNKRPSNS	58
gi Danio_rerio_delta	-----TASKRPSNS	49
gi Ambystoma_mexicanum_delta	-----	
gi Petromyzon_marinus_S4RN43	-----DESVSERGGNK	39
jgi Branchiostoma_floridae_237	-----	
jgi Branchiostoma_floridae_252	-----	
gi Strongylocentrotus_purpurat	-----	
gi Caenorhabditis_elegans_PPTR	-----	
gi Hydra_vulgaris_delta	-----	
gi Amphimedon_queenslandica_de	-----DIDGINSDT	69
gi Drosophila_melanogaster_B56	GGTPPL-----SSLANKLKDNTPPYD	143
gi Dictyostelium_discoideum_ps	QFQHQQ-----VPQLSPQQIPFSEPL	65
gi Dictyostelium_purpureum_N/A	TNTNQT-----VP-LSPQQIPFSEPL	39
gi Dictyostelium_fasciculatum_	SPNMYL-----GNGVQQQQQAP TSP	40
gi Polysphondylium_pallidum_N/	-----GKGIS	24
gi Arabidopsis_thaliana_theta	---NHS-----SSSS-----STSKSS	29
gi Arabidopsis_thaliana_eta	EHHGHS-----SSSHTSGASTSKST	43
gi Arabidopsis_thaliana_zeta	SN--GE-----GGVNN--SYASNSST	38

Figure S1. Cont.

gi	Arabidopsis_thaliana_gamma	SNPNGE-----GGVN--SYYPNSGI	39
gi	Oryza	FFSGTS-----PSVLD-QVSGLVAD	38
gi	Oryza_sativa_zeta	PIGRSS-----PSVNP-PPLGPRGAE	40
gi	Oryza_sativa_theta	DLAGVG-----SSLPDARTTTDLTMS	42
gi	Oryza_sativa_eta	DAAGPN-----GNEP----SNSYSVA	37
gi	Arabidopsis_thaliana_delta	-----KTSAKFW	18
gi	Arabidopsis_thaliana_N/A	ELN--R-----SSSGP-VSSPVQRSG	37
gi	Oryza_sativa_kappa	DLDSGQ-----CSNGAGNGNPIQRTS	41
gi	Oryza_sativa_N/A	-----GGGSPTAKSPLSKGA	34
gi	Arabidopsis_thaliana_alpha	SSMYG-----FDPP-GRSGPGS	36
gi	Arabidopsis_thaliana_beta	PSSYG-----IGLPDNRSGPGS	37
gi	Oryza_sativa_N/A_2	DAAHGR-----PAAAAPSSSSGGAQP	41
gi	Arabidopsis_thaliana_epsilon	QDNNNN-----NNNTSTNTVVRGS	39
gi	Chlamydomonas_reinhardtii_w	D-----SQPSTSA	28
gi	Schizosaccharomyces_pombe_P	-----A-----QNDFLTVPKHSQKQV	68
gi	Schizosaccharomyces_pombe_P	PNDSIS-----SASFSLVFPQSTPPYL	162
gi	Ashbya_gossypii_RTS1	AVSPGS-----TSG-----PPSPKEAEASPNGID	122
gi	Saccharomyces_cerevisiae_RT	VSAVPSSPISNASGTAVSSDVENGNNSNNNMNINTSNTQDANHASSQSID	229
gi	Aspergillus_niger_N/A	LAPPRKSHVFDRLQTPPKDMSEGIRTPKRQHSSRFDISDQRQ-----	155
gi	Aspergillus_nidulans_para	LAPPRKSHVFDRLQTPPKDMSEGIRTPKRQHSSRFDISDQRQ-----	157
gi	Mus_musculus_alpha	VACAAISASEKVDGFTRKSVRKAQRQKRSQGSSQFRSQGSQ-----	50
gi	Rattus_norvegicus_alpha	VACAAISASEKVDGFTRKSVRKAQRQKRSQGSSQFRSQGSQ-----	50
gi	Macaca_mulatta_alpha	AASAAISASEKVDGFTRKSVRKAQRQKRSQGSSQFRSQGSQ-----	50
gi	Homo_sapiens_alpha	AASAAISASEKVDGFTRKSVRKAQRQKRSQGSSQFRSQGSQ-----	50
gi	Ovis_aries_alpha	AASAAISAAEKVDGFTRKSVRKAQRQKRSQGSSQFRSQCSQ-----	53
gi	Bos_taurus_alpha	AASAAISAAEKVDGFTRKSVRKAQRQKRSQGSSQFRSQCSQ-----	53
gi	Felis_catus_alpha	-----	
gi	Canis_lupus_familiaris_alph	-----	
gi	Falco_peregrinus_alpha	--MSAAISAAEKVDGFTRKSVRKAQRQKRSQGSSQFRSQSSQ-----	40
gi	Gallus_gallus_alpha	--MSAAISAAEKVDGFTRKSVRKAQRQKRSQGSSQFRSQSSQ-----	40
gi	Alligator_mississippiensis	SAAAAISAAEKVDGFTRKSVRKAQRQKRSQGSSQFRSQSSQ-----	50
gi	Chrysemys_picta_bellii_alph	--MSAAISASEKVDGFTRKSVRKAQRQKRSQGSSQFRSQSSQ-----	40
gi	Xenopus_laevis_alpha	--MSAISAAEKVDGFTRKSVRKAQRQRRSQGSSQFLGQGPP-----	39
gi	Xenopus_tropicalis_alpha	--MSAISAAEKVDGFTRKSVRKAQRRRSQGSSQFRGQGPP-----	39
gi	Ambystoma_mexicanum_alpha	-----	
gi	Danio_rerio_alpha	---MSAISASEKVDGFTRKSVRKAQRQVVCQGSSQFAVNSSRP-----	40
gi	Petromyzon_marinus_S4RHV1	MMSATAAAEKVDGFSRRSLRRAGRARRSQGSSQFRTRAHL-----	41
gi	Mus_musculus_epsilon	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Rattus_norvegicus_epsilon	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Macaca_mulatta_epsilon	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Homo_sapiens_epsilon	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Ovis_arie_epsilon	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Bos_taurus_epsilon	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Canis_lupus_familiaris_epsi	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Falco_peregrinus_epsilon	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Gallus_gallus_epsilon	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Felis_catus_epsilon	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Chrysemys_picta_bellii_epsi	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Xenopus_laevis_epsilon	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Xenopus_tropicalis_epsilon	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	42
gi	Alligator_mississippiensis_	SAPTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	67
gi	Ambystoma_mexicanum_epsilon	--QTTTPSVDKVDGFSRKSVRKA-RQKRSQSSSQFRSQGKP-----	38
gi	Danio_rerio_epsilon	SAATTAPSVDKVDGFSRKSVRKA-RQKRAQSSSQFRSQDKP-----	42
gi	Mus_musculus_beta	PGLSPVPPPDKVDGFSRRSLRRA-RPRRSHSSSQFRYQSNQ-----	56
gi	Rattus_norvegicus_beta	PGLSPVPPPDKVDGFSRRSLRRA-RPRRSHSSSQFRYQSNQ-----	56
gi	Felis_catus_beta	PGLSPVPPPDKVDGFSRRSLRRA-RPRRSHSSSQFRYQSNQ-----	56
gi	Canis_lupus_familiaris_beta	PGLSPVPPPDKVDGFSRRSLRRA-RPRRSHSSSQFRYQSNQ-----	56
gi	Homo_sapiens_beta	PGLSPVPPPDKVDGFSRRSLRRA-RPRRSHSSSQFRYQSNQ-----	56
gi	Bos_taurus_beta	PGLSPVPPPDKVDGFSRRSLRRA-RPRRSHSSSQFRYQSNQ-----	56

Figure S1. Cont.

gi Ovis_aries_beta	PGLSPVPPDKVDGFSRRSLRRA-RPRDXEGSFLPRAAAAAG-----	56
gi Macaca_mulatta_beta	LGGS-VPPRAGAAG-----GAG-----	32
gi Xenopus_laevis_beta	-----	
gi Alligator_mississippiensis	PGLSPVPPPEKVDGFSRRSLRRT-RPRRSHSSSQFRYQSSQ-----	56
gi Chrysemys_picta_bellii_beta	PGMSPVPPDKVDGFSRRSLRRS-RQRRSHSSSQFRYQSNQ-----	56
gi Xenopus_tropicalis_beta	PGLSPVLAADKVDGFSRRSLRRS-RQRRSHSSSQFRYQSKQ-----	54
gi Danio_rerio_beta	TGFS-VPSAEKVDGFPRRSMRRA-RQRRSHSSSQFRYQSSQ-----	55
gi Ambystoma_mexicanum_beta	-----	
gi Petromyzon_marinus_S4RGA7	-----	
gi Strongylocentrotus_purpurat	-MSSGSTAVDKIDPFAKK-SLRKG--KQKKSQSSQYRLS-----	36
gi Drosophila_melanogaster_wdb	-MSSG-TFVDRIDPFAKR-SLKK---KGKKSQSSRYRNS-----	34
jgi Branchiostoma_floridae_237	-----	
gi Hydra_vulgaris_alpha	ASAAQPSTKENVDFPTRKSSVKKIVKSQKKQGGSSRFKTT-----	44
jgi Branchiostoma_floridae_112	MSAATGFPVTDKIDPFSKKQSVKPP--KQKRSQASSRYKAK-----	38
jgi Branchiostoma_floridae_284	-----MITP--KP-----	6
gi Caenorhabditis_elegans_PPTR	LSATANQFVDKIDPFHNKRGTSSRR--LRINN--SSRYNVD-----	65
gi Amphimedon_queenslandica_be	PLGVQSSSLPVPDPFRKMSHINRK---NQQTQSSSRYNLKK-----	57
gi Chrysemys_picta_bellii_gamm	-----SRMVVDAAN-SNGP-----	21
gi Chrysemys_picta_bellii_delt	-----	
gi Falco_peregrinus_gamma	-----SRMVVDAAN-SNGP-----	21
gi Falco_peregrinus_delta/gamm	-----	
gi Gallus_gallus_gamma	-----SRMVVDAAN-SNGP-----	21
gi Alligator_mississippiensis	-----SRMVVDAAN-SNGP-----	21
gi Alligator_mississippiensis	-----	
gi Ambystoma_mexicanum_gamma	-----SRMVVDAAGGSNGP-----	22
gi Mus_musculus_gamma	-----SGMVVDAAS-SNGP-----	21
gi Rattus_norvegicus_gamma	-----SGMVVDAAS-SNGP-----	21
gi Ovis_aries_gamma	-----SRMVVDAAN-SNGP-----	21
gi Bos_taurus_gamma	-----SRMVVDAAS-SNGP-----	21
gi Canis_lupus_familiaris_gamm	-----SRMVVDAAN-SNGP-----	21
gi Macaca_mulatta_gamma	-----SRMVVDAAN-SNGP-----	21
gi Homo_sapiens_gamma	-----MVVDAAN-SNGP-----	11
gi Felis_catus_gamma	LPATPSTVSSKIKVPAAPQIVR---RDKRQNSSRFS-ASNN-----	68
gi Canis_lupus_familiaris_delt	LAAPPSTVSSKIKVPVPQPIVK---KEKRQNSSRFN-ASNN-----	68
gi Macaca_mulatta_delta/gamma	LVAVPSTVSAKIKVPVSQPIVK---KDKRQNSSRFS-ASNN-----	303
gi Bos_taurus_delta/gamma	LIAAPSAASSKIKVPAPQPIVK---RDRRQNSSRFS-ASNN-----	75
gi Mus_musculus_delta/gamma	LTVVQSSSTSTKIKVPIQPVVVPVKDKRQNSSRFN-ASNN-----	78
gi Rattus_norvegicus_delta/gam	LASVQSSSTS-KIKVPVPQVPVK---KDKRQNSSRFN-ASNN-----	144
gi Danio_rerio_gamma	-----GFPQVA-----	26
gi Danio_rerio_delta/gamma	VPPATQLLKKGQSGSQTPVKKE----KRPNSRFS-LSNN-----	74
gi Xenopus_laevis_delta/gamma	TPPPAQVSKIKVPTPQAVVKKE----KRQSSRYN-VSNN-----	74
gi Xenopus_laevis_gamma	TPPPAQVSKIKVPTPQAVVKKE----KRQSSRYN-VSNN-----	74
gi Xenopus_tropicalis_delta/ga	TPPPAQVSKIKVPTPQAVVKKE----KRQSSRFN-VSNN-----	74
gi Mus_musculus_delta	TPPPTQLSKIKYSGGPQIVKKE----RRQSSFNFN-LSKN-----	89
gi Rattus_norvegicus_delta	TPPPTQLSKIKYSGGPQIVKKE----RRQSSRFN-LSKN-----	117
gi Felis_catus_delta	TPPPTQLSKIKYSGGPQIVKKE----RRQSSRFN-LSKN-----	103
gi Bos_taurus_delta	TPPPTQLSKIKYSGGPQIVKKE----RRQSSRFN-LSKN-----	95
gi Canis_lupus_familiaris_delt	TPPPTQLSKIKYSGGPQIVKKE----RRQSSRFN-LSKN-----	90
gi Macaca_mulatta_delta	TPPPTQLSKIKYSGGPQIVKKE----RRQSSRFN-LSKN-----	97
gi Homo_sapiens_delta	TPPPTQLSKIKYSGGPQIVKKE----RRQSSRFN-LSKN-----	97
gi Ovis_aries_delta	TPPPTQLSKIKYSGGPQIVKKE----RRQSSRFN-LSKN-----	93
gi Falco_peregrinus_delta	-----	
gi Gallus_gallus_delta	APPPTQLNKIKYSGGPQIVKKE----RRHSSRFN-LSKN-----	92
gi Alligator_mississippiensis	APPPTQLNKIKYSGGPQIVKKE----RRHSSRFN-LSKN-----	91
gi Chrysemys_picta_bellii_delt	TPPPTQLNKIKYSGGPQIVKKE----RRHSSRFN-LTKN-----	93
gi Danio_rerio_delta	TPPPTQLNKIKYSGGPQIVKKE----RRQSSRFN-LSKN-----	84
gi Ambystoma_mexicanum_delta	-----	
gi Petromyzon_marinus_S4RN43	PPPQTQLNKVKYGSPIVVKKE----KRQSSRFN-VTKN-----	74
jgi Branchiostoma_floridae_237	-----	
jgi Branchiostoma_floridae_252	VPPPTQLTKIKLTGGQGHVVKK---DKRQSSRFN-ISKN-----	47
gi Strongylocentrotus_purpurat	-----KGTGPLVKK---DKRQSSRFN-ISKN-----	55

Figure S1. Cont.

gi Caenorhabditis_elegans_PPTR	-----YGGGPVIPRR----ERRQSSSMFN-ISQN-----	41
gi Hydra_vulgaris_delta	-----ASVQVLKR----DNRQSSSSFN-ISKN-----	64
gi Amphimedon_queenslandica_de	VPIAYNSIVSRLQGSYSYTHRT----NSRQGSRRFN-ISKN-----	105
gi Drosophila_melanogaster_B56	APPPTPIISKVLNITGTPIVRKE----KRQTSARYN-ASKN-----	178
gi Dictyostelium_discoideum_ps	KNNLTLQHQQQQQQHQQLAGGQHGSLLRKSYSSRFHEKPOGE-----	107
gi Dictyostelium_purpureum_N/A	K-----AGQQHGSLLRKSYSSRFHEKPOGE-----	64
gi Dictyostelium_fasciculatum	SKLLGQTPKSEA-----IPLTKNTSLRRSASSRFHEKSKVE-----	76
gi Polysphondylium_pallidum_N/	-----LTPKSE-----IPKNTINLRRSASSRFHEKSSSE-----	54
gi Arabidopsis_thaliana_theta	DNGASKSGNSQTQNAAPPVKPSADSGFKEGNLKGNGNG-----	66
gi Arabidopsis_thaliana_eta	DNGAASK-HAKNASPAGKSAASDSGFKDGNLKSSGNNNNNNNGV-----	87
gi Arabidopsis_thaliana_zeta	TSISKPSSTSSKSSASGSRVANG-TLAPNSMSSNRNTNQGKKPLGGDAV	87
gi Arabidopsis_thaliana_gamma	SSISKPSSK----SSASNSGANGTVIAPSTSSNR-TNQVN-----	76
gi Oryza	RATSNLGSQPPILSSTGLSYGSGNRVENPNTRTNGNLYSSSF-----	80
gi Oryza_sativa_zeta	RS-SNLSSQTPVIVSSSGLSYGSGMHVGNANSRVNGNSVQPTV-----	81
gi Oryza_sativa_theta	SRIANPNNYTAAVTNPGQNYTVKNAHGGAGVSNGLAPPVF-----	84
gi Oryza_sativa_eta	RSVEQGN-----KRSGNGDYVVPAGLTPNPMNGTVVYHSN-----	73
gi Arabidopsis_thaliana_delta	DNGESQT-----LDNNSNQGGGDEVLSQRTSSNGDTSLDCVS-----	55
gi Arabidopsis_thaliana_N/A	TSGGSGPV-----RSNSGKRMSSAVFPASVVAGIEP-----	69
gi Oryza_sativa_kappa	SCGSIPSGR-----STSTIKRMSSAIFPSSVVAGIEP-----	73
gi Oryza_sativa_N/A	GNGEPPAP-----PAAAAGGGG-----	51
gi Arabidopsis_thaliana_alpha	NMIVNHASRGSIVPSSPNSMAAATTPPPMYS-----	68
gi Arabidopsis_thaliana_beta	NVVVNHASRGALVNSSP-SPVTATPPPPPLGS-----	68
gi Oryza_sativa_N/A_2	PVTVNHASRAAAPSPPSPHAAAAASAPSAGAAASNQASSHHHQ-----	86
gi Arabidopsis_thaliana_epsilon	RTTTTAPSSVSNGESQPTTAQSPSQTPNHPMFTTTP-----	74
gi Chlamydomonas_reinhardtii_w	KAGAPAASS----KAPAPRPISAIREKPLPAINEQTLQOYY-----	66
gi Schizosaccharomyces_pombe_P	PIDTTPTPRDEILLENVRT-----VRKQRSSELYHISENR-----	102
gi Schizosaccharomyces_pombe_P	VSQPTPLNKFLAGAENVDPHSLRPVPRREHSSQFQVSEKR-----	203
gi Ashbya_gossypii_RTS1	IPRSSHSFERLPTPTKLNPDTDLELIKTPQRHSSSRFEPSPR-----	163
gi Saccharomyces_cerevisiae_RT	IPRSSHSFERLPTPTKLNPDTDLELIKTPQRHSSSRFEPSPR-----	270
gi Aspergillus_niger_N/A	-----RELEKLGQGFHEVPPN-RRQELFMQKIDQCNIIFDFNDP--	192
gi Aspergillus_nidulans_parA	-----RELEKLGQGFHEVPPN-RRQELFMQKIDQCNIIFDFNDP--	194
gi Mus_musculus_alpha	-----AELHPLPQLKDATSNEQQELFCQKLQCCVLFDFMDS--	87
gi Rattus_norvegicus_alpha	-----AELHPLPQLKDATSNEQQELFCQKLQCCVLFDFMDS--	87
gi Macaca_mulatta_alpha	-----AELHPLPQLKDATSNEQQDLFCQKLQCCILDFMDS--	87
gi Homo_sapiens_alpha	-----AELHPLPQLKDATSNEQQELFCQKLQCCILDFMDS--	87
gi Ovis_aries_alpha	-----PELHPLPQLKDATSNEQQELFCQKLQCCILDFMDS--	90
gi Bos_taurus_alpha	-----PELHPLPQLKDATSNEQQELFCQKLQCCILDFMDS--	90
gi Felis_catus_alpha	-----MDS--	3
gi Canis_lupus_familiaris_alph	-----MDS--	3
gi Falco_peregrinus_alpha	-----VELSPLPQLKDATFN-EQQDLFCQKLQCCVLFDFMDS--	77
gi Gallus_gallus_alpha	-----VELSPLPQLKDATSN-EQQDLFCQKLQCCVLFDFMDS--	77
gi Alligator_mississippiensis_	-----VELSPLPQLKDATSN-EQQELFCQKLQCCILFDFIDS--	87
gi Chrysemys_picta_bellii_alph	-----VELSPLPQLKDATSN-EQQDLFCQKLQCCILDFMDS--	77
gi Xenopus_laevis_alpha	-----VELSPLPALKDATSN-EQQDLFCQKLEQCCVLFDFMDS--	76
gi Xenopus_tropicalis_alpha	-----VELSPLPPLKDATSN-DQQDLFCQKLQCCVLFDFMDS--	76
gi Ambystoma_mexicanum_alpha	-----MDS--	3
gi Danio_rerio_alpha	-----AAPEISALPQLKASST-EQHELFMQLQCCVLFDFYDT--	79
gi Petromyzon_marinus_S4RHV1	-----ELAPLALADTPAS-EQEELFCCKLQCCVIFDFLDS--	77
gi Mus_musculus_epsilon	-----IELTPLPLKDVPTS-EQPELFLKKLQCCVIFDFMDT--	79
gi Rattus_norvegicus_epsilon	-----IELTPLPLKDVPTS-EQPELFLKKLQCCVIFDFMDT--	79
gi Macaca_mulatta_epsilon	-----IELTPLPLKDVPTS-EQPELFLKKLQCCVIFDFMDT--	79
gi Homo_sapiens_epsilon	-----IELTPLPLKDVPTS-EQPELFLKKLQCCVIFDFMDT--	79
gi Ovis_aries_epsilon	-----IELTPLPLKDVPTS-EQPELFLKKLQCCVIFDFMDT--	79
gi Bos_taurus_epsilon	-----IELTPLPLKDVPTS-EQPELFLKKLQCCVIFDFMDT--	79
gi Canis_lupus_familiaris_epsi	-----IELTPLPLKDVPTS-EQPELFLKKLQCCVIFDFMDT--	79
gi Falco_peregrinus_epsilon	-----IELTPLPLKDVPTS-EQPELFLKKLQCCVIFDFMDT--	79
gi Gallus_gallus_epsilon	-----IELTPLPLKDVPTS-EQPELFLKKLQCCVIFDFMDT--	79
gi Felis_catus_epsilon	-----IELTPLPLKDVPTS-EQPELFLKKLQCCVIFDFMDT--	79
gi Chrysemys_picta_bellii_epsi	-----IELTPLPLKDVPTS-EQPELFLKKLQCCVIFDFMDT--	79

Figure S1. Cont.

gi	Xenopus_laevis_epsilon	-----IETPLPLLLKDVPTL-EQPFLFLKLLKQQCGVIFDFMDT--	79
gi	Xenopus_tropicalis_epsilon	-----IETPLPLLLKDVPTS-EQPFLFLKLLKQQCGVIFDFMDT--	79
gi	Alligator_mississippiensis_	-----IETPLPLLLK-----ACKALTFTES--	87
gi	Ambystoma_mexicanum_epsilon	-----IETPLPLLLKDVQNS-EQSEFLKLLKQQCCVLFDFMET--	75
gi	Danio_rerio_epsilon	-----IELVALPLLLKDVSAQ-EQPFLFLKLLKQQCCTLFDFMDT--	79
gi	Mus_musculus_beta	-----QELTPLPLLLKDV PAS-ELHELLSRKLAQCGVMFDFLDC--	93
gi	Rattus_norvegicus_beta	-----QELTPLPLLLKDV PAS-ELHELLSRKLAQCGVMFDFLDC--	93
gi	Felis_catus_beta	-----QELTPLPLLLKDV PAS-ELHELLSRKLAQCGVMFDFLDC--	93
gi	Canis_lupus_familiaris_beta	-----QELTPLPLLLKDV PAS-ELHELLSRKLAQCGVMFDFLDC--	93
gi	Homo_sapiens_beta	-----QELTPLPLLLKDV PAS-ELHELLSRKLAQCGVMFDFLDC--	93
gi	Bos_taurus_beta	-----QELTPLPLLLKDV PAS-ELHELLSRKLAQCGVMFDFLDC--	93
gi	Ovis_aries_beta	-----AQAQTPPPSPDV PAS-ELHELLSRKLAQCGVMFDFLDC--	93
gi	Macaca_mulatta_beta	-----VQAQDALPSPDV PAS-ELHELLSRKLAQCGVMFDFLDC--	69
gi	Xenopus_laevis_beta	-----	
gi	Alligator_mississippiensis_	-----QELTPLPLLLKDV AVS-ELHELLGRKLQCCVLFDFLDP--	93
gi	Chrysemys_picta_bellii_beta	-----QELTPLPLLLKDV AVA-ELHELLCKKLQCCVLFDFLDC--	93
gi	Xenopus_tropicalis_beta	-----QELTPLPLLLKDV AVS-ELHDLFCKKLQCCSVIFQFMDC--	91
gi	Danio_rerio_beta	-----VELTPLPLLLKDV AVA-ELHDLFCKKLQCCVLFDFLDC--	92
gi	Ambystoma_mexicanum_beta	-----	
gi	Petromyzon_marinus_S4RGA7	-----	
gi	Strongylocentrotus_purpurat	-----NNTEIQQLN-LLKDTPPPEQQELVVKLEQCCMVDFMDA--	75
gi	Drosophila_melanogaster_wdb	-----QDVELQQLPPLKADCSSLEQEEFLIRKLRCCVSVDFMDP--	74
jgi	Branchiostoma_floridae_237	-----LPVDAPPAEQHELFIKKLQCCSVVDFMDS--	30
gi	Hydra_vulgaris_alpha	-----PVAELQPLT-LLKDAPAQERQELFIKKLQCCVTFDFMDP--	83
jgi	Branchiostoma_floridae_112	-----GGTELVPPLQKDATPA-EQQELFLKLLKQQCSVLFDFADDC--	78
jgi	Branchiostoma_floridae_284	-----GSLLRFFPS-ADATPA-EQQELFLKLLKQQCSVLFDFADDC--	44
gi	Caenorhabditis_elegans_PPTR	-----SAQELVQLALIKDTAAN-EQPALVIEKLVQCHVDFDFYDP--	104
gi	Amphimedon_queenslandica_be	-----PPPDYKPLPLLLKDSIQG-DRESLMLQKIAQCCVDFVSDP--	96
gi	Chrysemys_picta_bellii_gamm	-----FQPVALHIRDVPPA-EQEKLFIQKLRQCCVLFDFVSDP--	59
gi	Chrysemys_picta_bellii_delt	-----	
gi	Falco_peregrinus_gamma	-----FQPVALHIRDVPPA-DQEKLFIQKLRQCCVLFDFVSDP--	59
gi	Falco_peregrinus_delta/gamm	-----	
gi	Gallus_gallus_gamma	-----FQPVALHIRDVPPA-DQEKLFIQKLRQCCVLFDFVSDP--	59
gi	Alligator_mississippiensis_	-----FQPVALHIRDVPPA-DQEKLFIQKLRQCCVLFDFVSDP--	59
gi	Alligator_mississippiensis_	-----	
gi	Ambystoma_mexicanum_gamma	-----FQPVALSHIRDVPAA-EQEKLFIQKLRQCCVLFDFVSDP--	60
gi	Mus_musculus_gamma	-----FQPVALHIRDVPPA-DQEKLFIQKLRQCCVLFDFVSDP--	59
gi	Rattus_norvegicus_gamma	-----FQPVALHIRDVPPA-DQEKLFIQKLRQCCVLFDFVSDP--	59
gi	Ovis_aries_gamma	-----FQPVALHIRDVPPA-DQEKLFIQKLRQCCVLFDFVSDP--	59
gi	Bos_taurus_gamma	-----FQPVALHIRDVPPA-DQEKLFIQKLRQCCVLFDFVSDP--	59
gi	Canis_lupus_familiaris_gamm	-----FQPVALHIRDVPPA-DQEKLFIQKLRQCCVLFDFVSDP--	59
gi	Macaca_mulatta_gamma	-----FQPVALHIRDVPPA-DQEKLFIQKLRQCCVLFDFVSDP--	59
gi	Homo_sapiens_gamma	-----FQPVLLHIRDVPPA-DQEKLFIQKLRQCCVLFDFVSDP--	49
gi	Felis_catus_gamma	-----RELQKLPSLKDVPAA-DQEKLFIQKLRQCCVLFDFVSDP--	106
gi	Canis_lupus_familiaris_delt	-----RELQKLPSLKDVPAA-DQEKLFIQKLRQCCVLFDFVSDP--	106
gi	Macaca_mulatta_delta/gamma	-----RELQKLPSLKDVPAA-DQEKLFIQKLRQCCVLFDFVSDP--	341
gi	Bos_taurus_delta/gamma	-----RELQKLPSLKDVPAA-DQEKLFIQKLRQCCVLFDFVSDP--	113
gi	Mus_musculus_delta/gamma	-----RELQKLPSLKDVPAA-DQEKLFIQKLRQCCVLFDFVSDP--	116
gi	Rattus_norvegicus_delta/gam	-----RELQKLPSLKDVPAA-DQEKLFIQKLRQCCVLFDFVSDP--	182
gi	Danio_rerio_gamma	-----LMHFRDVPPA-EQEKLFIQKLRQCCVLFDFVSDP--	59
gi	Danio_rerio_delta/gamma	-----RELQKLVPVFTDVPPA-EQEKLFIQKLRQCCVLFDFVSDP--	112
gi	Xenopus_laevis_delta/gamma	-----RELQKLPAKDVPPA-EQEKLFIQKLRQCCVLFDFVSDP--	112
gi	Xenopus_laevis_gamma	-----RELQKLPAKDVPPA-EQEKLFIQKLRQCCVLFDFVSDP--	112
gi	Xenopus_tropicalis_delta/ga	-----RELQKLPAKDVPPA-EQEKLFIQKLRQCCVLFDFVSDP--	112
gi	Mus_musculus_delta	-----RELQKLPAKDSPTQ-EREELFIQKLRQCCVLFDFVSDP--	127
gi	Rattus_norvegicus_delta	-----RELQKLPAKDSPTQ-EREELFIQKLRQCCVLFDFVSDP--	155
gi	Felis_catus_delta	-----RELQKLPAKDSPTQ-EREELFIQKLRQCCVLFDFVSDP--	141
gi	Bos_taurus_delta	-----RELQKLPAKDSPTQ-EREELFIQKLRQCCVLFDFVSDP--	133
gi	Canis_lupus_familiaris_delt	-----RELQKLPAKDSPTQ-EREELFIQKLRQCCVLFDFVSDP--	128
gi	Macaca_mulatta_delta	-----RELQKLPAKDSPTQ-EREELFIQKLRQCCVLFDFVSDP--	135
gi	Homo_sapiens_delta	-----RELQKLPAKDSPTQ-EREELFIQKLRQCCVLFDFVSDP--	135

Figure S1. Cont.

gi	Ovis_aries_delta	-----RELQKLPALKDSPTQ-EREELFIQKLRQCCVLFDFVSDP-	131
gi	Falco_peregrinus_delta	-----MSLLSLTDAPPH-EREELFIQKLRQCCVLFDFISDP-	35
gi	Gallus_gallus_delta	-----RELQKLPALKDAPPH-EREELFIQKLRQCCVLFDFISDP-	130
gi	Alligator_mississippiensis_	-----RELQKLPALKDAPPH-EREELFIQKLRQCCVLFDFISDP-	129
gi	Chrysemys_picta_bellii_delt	-----RELQKLPALKDAPAH-EREELFIQKLRQCCVLFDFISDP-	131
gi	Danio_rerio_delta	-----RELQKLPALKDAPPI-DREELFVQKLRQCCVLFDFVTD-	122
gi	Ambystoma_mexicanum_delta	-----	
gi	Petromyzon_marinus_S4RN43	-----RELQKLPALKDAPPG-EREELFVQKLRQCCVLFDFVSDP-	112
jgi	Branchiostoma_floridae_237	-----PAHVDPARPE-EREDLFVQKLRQCCVVFDFVNDP-	32
jgi	Branchiostoma_floridae_252	-----RELQKLAALKDARPE-EREDLFVQKLRQCCVVFDFVNDP-	85
gi	Strongylocentrotus_purpurat	-----RELQKLPPLKDATPG-EREDLFSKLLQCCVVFDFISDP-	93
gi	Caenorhabditis_elegans_PPTR	-----RELQRLPAIKDADPS-ERETLFIQKLRQCCVVFDFANDA-	79
gi	Hydra_vulgaris_delta	-----RELQKLPPLIKDTNNS-EKESLFIQKLRQCCVLFDFVVD-	102
gi	Amphimedon_queenslandica_de	-----REISKLPPLKDATPN-AREDLFLQKLHQCSIIFDFNRDP-	143
gi	Drosophila_melanogaster_B56	-----CELTALIPLNKTAASEREELFIQKIQCCVTFDFDS-EP-	216
gi	Dictyostelium_discoideum_ps	-----LTKIANFQDVSPE-ERPISLFLKLLKQCCVYDFSDN--	142
gi	Dictyostelium_purpureum_N/A	-----LTKIPGFQEVVPE-ERPISLFLKLLKQCCVYDFSEN--	99
gi	Dictyostelium_fasciculatum_	-----LQQIPGFHDVPPPE-ERQSLLIKKLLKQCCVVFDFSDTE-	112
gi	Polysphondylium_pallidum_N/	-----LQQIPAFNVVPPPE-ERPNNLLKLLKQCCALFDFSDSE-	90
gi	Arabidopsis_thaliana_theta	-----FTPYEALPGFKDVPNA-EKQNLFVKKLSLCCVVFDFSD---	103
gi	Arabidopsis_thaliana_eta	-----FTPYEALPSFKDVPNT-EKQNLFIKLLNLCRVVDFDFTD---	124
gi	Arabidopsis_thaliana_zeta	VQAGPFPSSGGVYEALPSFRDVPIS-EKPNLFIGKLSMCCVVFDFSD---	133
gi	Arabidopsis_thaliana_gamma	-----GVYEALPSFRDVPNTS-EKPNLFIKLLSMCCVVFDFND---	112
gi	Oryza	-----QPLPSFKDVPNS-EKQNLIRKLLKCCIVDFDFTD---	113
gi	Oryza_sativa_zeta	-----ELLPSFKDVPNT-EKNNLKVKKLNLCCATFDFDFTD---	114
gi	Oryza_sativa_theta	-----EALPSLRDAPAP-EKPSLFLRKKVVMCVVDFDFTD---	117
gi	Oryza_sativa_eta	-----EPLPAFKDVPAS-EKQNLFVKKVNLCCAVYDFDAD---	106
gi	Arabidopsis_thaliana_delta	-----SFDVLPRLRDVSVS-EKQELFLKLLRLLCCVDFDFVAE--	91
gi	Arabidopsis_thaliana_N/A	-----LVPFKDVPSSE-EKLNLFVSKVSLCCVTFDFDS----	99
gi	Oryza_sativa_kappa	-----LVSFKDVPSSE-EKQNLFVSKLNLCCAVDFDS----	103
gi	Oryza_sativa_N/A	-----GAEGE-TREDVFLRKLNVCCVVFDFSSAAA	80
gi	Arabidopsis_thaliana_alpha	-----VEPLPLFRDVSVS-ERQSLFLRKLQICCFQDFDFTD---	102
gi	Arabidopsis_thaliana_beta	-----VEPLPLFRDVPVS-ERQTLFLRKLQCCVLFDFDFTD---	102
gi	Oryza_sativa_N/A_2	-QQPAAAPQPPLEPLPLLRDVAAA-DRPGLLVRKLRLLVAALFDFDFTD---	131
gi	Arabidopsis_thaliana_epsilon	-----ILEVLPPLKDVSSS-DRPLLFMKKAHMCSCCHDFSD---	109
gi	Chlamydomonas_reinhardtii_w	-----AEPLPSFRDVSVA-EKQYLFVQKLHLCSFGDFDAD---	100
gi	Schizosaccharomyces_pombe_P	-----NLVRLPSFTDVPVN-KWHSLEALEKLEQCCVVFDFNDPS-	139
gi	Schizosaccharomyces_pombe_P	-----TLVRLPSFDDVHTS-EREELFIKLEQCNIIFFDFNDPS-	240
gi	Ashbya_gossypii_RTS1	-----YTQISKLPGFDDVPPPE-EQISLFIKVDQCNIMFDFSDPS-	202
gi	Saccharomyces_cerevisiae_RT	-----YTPLTKLPNFNEVSPE-ERIPLFIAKVDQCNIMFDFNDPS-	309
gi	Aspergillus_niger_N/A	-----TADMKSKEIKRLALHELLDYIANNRS-----VITEPMY-PR	227
gi	Aspergillus_nidulans_parA	-----TADMKSKEIKRLALHELLDYIANNRS-----VITEPMY-PR	229
gi	Mus_musculus_alpha	-----VSDLKSKEIKRATLNELVEYVS-TNR-----GVIVESAY-SD	122
gi	Rattus_norvegicus_alpha	-----VSDLKSKEIKRATLNELVEYVS-TNR-----GVIVESAY-SD	122
gi	Macaca_mulatta_alpha	-----VSDLKSKEIKRATLNELVEYVS-TNR-----GVIVESAY-SD	122
gi	Homo_sapiens_alpha	-----VSDLKSKEIKRATLNELVEYVS-TNR-----GVIVESAY-SD	122
gi	Ovis_aries_alpha	-----VSDLKSKEIKRATLNELVEYVS-TNR-----GVIVESAY-SD	125
gi	Bos_taurus_alpha	-----VSDLKSKEIKRATLNELVEYVS-TNR-----GVIVESAY-SD	125
gi	Felis_catus_alpha	-----VSDLKSKEIKRATLNELVEYVS-TNR-----GVIVESAY-SD	38
gi	Canis_lupus_familiaris_alph	-----VSDLKSKEIKRATLNELVEYVS-TNR-----GVIVESAY-SD	38
gi	Falco_peregrinus_alpha	-----VSDLKSKEIKRATLNELVEYVS-TNR-----GVIVESAY-AD	112
gi	Gallus_gallus_alpha	-----VSDLKGKEIKRATLNELVEYVS-TNR-----GVIVESAY-AD	112
gi	Alligator_mississippiensis_	-----VSDLKSKEIKRATLNELVEYVS-TNR-----GVIVESAY-AD	122
gi	Chrysemys_picta_bellii_alph	-----VSDLKSKEIKRATLNELVEYVS-TTR-----GVIVESAY-AD	112
gi	Xenopus_laevis_alpha	-----ISDLKSKEIKRATLNELVEYVA-TNR-----GVLVETAY-PE	111
gi	Xenopus_tropicalis_alpha	-----ISDLKSKEIKRATLNELVEYVS-INR-----GVLVESAY-PD	111
gi	Ambystoma_mexicanum_alpha	-----VSDLKSKEIKRATLNELVEYVS-TNR-----GVIVETAY-PD	38
gi	Danio_rerio_alpha	-----VTDLKSKEIKRATLNELVDYVS-TNR-----GVLVEPVY-PE	114
gi	Petromyzon_marinus_S4RHV1	-----VSDLKGKEIKRAALNELVDYIT-AGR-----GVLTESVY-PD	112

Figure S1. Cont.

gi Mus_musculus_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Rattus_norvegicus_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Macaca_mulatta_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Homo_sapiens_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Ovis_arie_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Bos_taurus_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Canis_lupus_familiaris_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Falco_peregrinus_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Gallus_gallus_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Felis_catus_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Chrysemys_picta_bellii_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Xenopus_laevis_epsilon	-----LSDLKMKEYKRSTLNELVDY VA-ISR-----GCLTEQTY-PE	114
gi Xenopus_tropicalis_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	114
gi Alligator_mississippiensis_epsilon	-----LFS-----KNTLLISLKTFLN-YKN-----G-----	107
gi Ambystoma_mexicanum_epsilon	-----LSDLKMKEYKRSTLNELVDY IT-ISR-----GCLTEQTY-PE	110
gi Danio_rerio_epsilon	-----LSDLKMKEYKRSTLNELVDY VT-LSR-----GYLTEQTY-PE	114
gi Mus_musculus_beta	-----VADLKGKEVKRAALNELVECVG-CTR-----GVLIEPVY-PD	128
gi Rattus_norvegicus_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	128
gi Felis_catus_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	128
gi Canis_lupus_familiaris_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	128
gi Homo_sapiens_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	128
gi Bos_taurus_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	128
gi Ovis_aries_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	128
gi Macaca_mulatta_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	104
gi Xenopus_laevis_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	104
gi Alligator_mississippiensis_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	104
gi Chrysemys_picta_bellii_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	104
gi Xenopus_tropicalis_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	104
gi Danio_rerio_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	104
gi Ambystoma_mexicanum_beta	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	104
gi Petromyzon_marinus_S4RGA7	-----VADLKGKEVKRAALNELVECVG-STR-----GVLIEPVY-PD	104
gi Strongylocentrotus_purpurat	-----VSELGKE IKRASLNELVDY IT-TGR-----GVLTEPLY-PE	110
gi Drosophila_melanogaster_wdb	-----VTDLKGKE IKRAALNDLSTY IT-HGR-----GVLTEPVY-PE	109
jgi Branchiostoma_floridae_237	-----VSDLKGKE IKRASLNELVDY IT-AGR-----GVLTEQVY-PE	65
gi Hydra_vulgaris_alpha	-----VGDLRGKEVKRGTNLNELVDY IT-SER-----GVLTEPVY-PE	118
jgi Branchiostoma_floridae_112	-----VSELRSMEVKRFSLEIVLDHIG-KT-----GVLLEQTY-PE	112
jgi Branchiostoma_floridae_284	-----VSELRSMEVKRFSLEIVLDHIG-KT-----GVLLEQTY-PE	78
gi Caenorhabditis_elegans_PPTR	-----VAQLCKE IKRAALNELIDHIT-STK-----GAIVETIY-PA	139
gi Amphimedon_queenslandica_beta	-----MADLRAKE IKRAALNEILDY IT-NYK-----EVLSEPLY-PE	131
gi Chrysemys_picta_bellii_gamm	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	94
gi Chrysemys_picta_bellii_delt	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	19
gi Falco_peregrinus_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	94
gi Falco_peregrinus_delta/gamm	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	19
gi Gallus_gallus_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	94
gi Alligator_mississippiensis_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	94
gi Alligator_mississippiensis_delta/gamm	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	19
gi Ambystoma_mexicanum_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	95
gi Mus_musculus_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	94
gi Rattus_norvegicus_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	94
gi Ovis_aries_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	94
gi Bos_taurus_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	94
gi Canis_lupus_familiaris_gamm	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	94
gi Macaca_mulatta_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	94
gi Homo_sapiens_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	84
gi Felis_catus_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	141
gi Canis_lupus_familiaris_delt	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	141
gi Macaca_mulatta_delta/gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	376
gi Bos_taurus_delta/gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	148
gi Mus_musculus_delta/gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	151
gi Rattus_norvegicus_delta/gam	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	217
gi Danio_rerio_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	94

Figure S1. Cont.

gi Danio_rerio_delta/gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	147
gi Xenopus_laevis_delta/gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	147
gi Xenopus_laevis_gamma	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	147
gi Xenopus_tropicalis_delta/ga	-----LSDLKWKEVKRAALSEMVEY IT-HNR-----NVITEPIY-PE	147
gi Mus_musculus_delta	-----LSDLKCKEVKRAALSEMVEY IT-HSR-----DVVTEAIY-PE	162
gi Rattus_norvegicus_delta	-----LSDLKFKEVKRAALSEMVEY IT-HSR-----DVVTEAIY-PE	190
gi Felis_catus_delta	-----LSDLKFKEVKRAALSEMVEY IT-HSR-----DVVTEAIY-PE	176
gi Bos_taurus_delta	-----LSDLKFKEVKRAALSEMVEY IT-HSR-----DVVTEAIY-PE	168
gi Canis_lupus_familiaris_delt	-----LSDLKFKEVKRAALSEMVEY IT-HSR-----DVVTEAIY-PE	163
gi Macaca_mulatta_delta	-----LSDLKFKEVKRAALSEMVEY IT-HSR-----DVVTEAIY-PE	170
gi Homo_sapiens_delta	-----LSDLKFKEVKRAALSEMVEY IT-HSR-----DVVTEAIY-PE	170
gi Ovis_aries_delta	-----LSDLKFKEVKRAALSEMVEY IT-HSR-----DVVTEAIY-PE	167
gi Falco_peregrinus_delta	-----LSDLKFKEVKRAALSEMVEY IT-HNR-----DVVTEAIY-PE	70
gi Gallus_gallus_delta	-----LSDLKFKEVKRAALSEMVEY IT-HNR-----DVVTEAIY-PE	165
gi Alligator_mississippiensis_	-----LSDLKFKEVKRAALSEMVEY IT-HNR-----DVITEAIY-PE	164
gi Chrysemys_picta_bellii_delt	-----LSDLKFKEVKRAALSEMVEY IT-HNR-----DVVTEAIY-PE	166
gi Danio_rerio_delta	-----LSDLKYKEVKRAALSEMVEY IT-HNR-----DVVTEAIY-PE	157
gi Ambystoma_mexicanum_delta	-----LSDLKYKEVKRAALSEMVEY IT-HNR-----DVVTEAIY-PE	19
gi Petromyzon_marinus_S4RN43	-----LSDLKWKEVKRAALSEMVEY IT-HSR-----GVITEPIY-PE	147
jgi Branchiostoma_floridae_237	-----LSDLKWKEVKRAALSEMVEY VT-HNR-----GVITEAVY-PE	67
jgi Branchiostoma_floridae_252	-----LSDLKWKEVKRAALSEMVEY VT-HNR-----GVITEAVY-PE	120
gi Strongylocentrotus_purpurat	-----LSDLKWKEVKRAALNELVEYVT-HQR-----GIITEAIY-PE	128
gi Caenorhabditis_elegans_PPTR	-----LSDLKFKEVKRAALNELVDHVS GAPK-----GSLSDAVY-PE	115
gi Hydra_vulgaris_delta	-----LSDLKWKEVKRAALNEIVDYLT-HNK-----NVITEPVY-PE	137
gi Amphimedon_queenslandica_de	-----LSDLKFKEVKRAALNELVEFIT-HNR-----GVITESIY-PE	178
gi Drosophila_melanogaster_B56	-----LSDLKFKEVKRAALHEMVDFLT-NQN-----GVITEVIY-PE	251
gi Dictyostelium_discoideum_ps	-----TYMVS KGVKQ EALLQCVNFLTSTN-----DQPLHESIY-KM	176
gi Dictyostelium_purpureum_N/A	-----NYMVS KSIKQ EALLQCVQFLTSTN-----DQPLHESVIY-KM	133
gi Dictyostelium_fasciculatum	-----SDKSSKAIKLEALLQCVVFLTSTN-----KEVISEPIY-EA	146
gi Polysphondylium_pallidum_N/	-----ADSKS KSIKREALLQCVDY LSSS-----KDAYTEAVY-EA	124
gi Arabidopsis_thaliana_theta	-----PTKNVKEKD IKRQT LLELVDY VASP-----NGKFSEVI-QE	139
gi Arabidopsis_thaliana_eta	-----PTKNIKEKD IKRQT LLELVDY VNSP-----NGKFSEVGI-QE	160
gi Arabidopsis_thaliana_zeta	-----PSKNLKEKE IKRQT LLELVDY VASV-----GKFNVDVSM-QE	169
gi Arabidopsis_thaliana_gamma	-----PSKNLREKE IKRQT LLELVDY IATV-----STKLSDAAM-QE	148
gi Oryza	-----PTKNIQEKEMKSQT LLEIVDY VVSA-----TVKFPEIVM-LE	149
gi Oryza_sativa_zeta	-----PTKSVKEKEVKRQT LLELVDY IASA-----NGKFPEIIM-QE	150
gi Oryza_sativa_theta	-----PTKDVKEKE IKRQT LLELVDY VVSA-----TGKFPEPAV-QE	153
gi Oryza_sativa_eta	-----PTKNLKEKE TKRQT LLELVDY VVSA-----NGKFSEVVM-SE	142
gi Arabidopsis_thaliana_delta	-----PQQNFKEKE IKRQT LLELVVDY VISSG-----NGKFPESVI-QE	128
gi Arabidopsis_thaliana_N/A	-----DPGKNS IEKDVKRQT LLELDFV ASG-----SVKFTPEAI-LA	136
gi Oryza_sativa_kappa	-----DPNKSSAEKD IKRQT LLDL IDY VDSS-----SSRFSEAVI-AA	140
gi Oryza_sativa_N/A	AAAAERGRDSPERERKRQVLVSLVDCV GAA-----EEPLTEAMI-SG	121
gi Arabidopsis_thaliana_alpha	-----TLKNAREKE IKRQT LLELVDY IQSGA-----GKLTEVCQ-EE	138
gi Arabidopsis_thaliana_beta	-----TIKNARDEKE IKRQT LLELVDY IQSGS-----SKISESCQ-EE	138
gi Oryza_sativa_N/A_2	-----SLKHPREKEAKRQAL LLELVDY VQAPSPAANANAPARLPENVQ-EA	175
gi Arabidopsis_thaliana_epsilon	-----TLIMPREKE IKRQT LLELVDY FLHSSS-----GKVNETMQ-SE	145
gi Chlamydomonas_reinhardtii_w	-----PTKHVREKE IKRQT LLELVDY ANSG-----AGKFTEGVS-ED	136
gi Schizosaccharomyces_pombe_P	-----TDLYGKEVKREALQDLIDLIS-VRK-----EAIDESLY-PS	173
gi Schizosaccharomyces_pombe_P	-----SDLASKE IKREALQMIDYVS-ENR-----GISSASLF-PY	274
gi Ashbya_gossypii_RTS1	-----FDIHGKE IKRITLQELIEFIVTNRF-----TYTEEMY-GH	236
gi Saccharomyces_cerevisiae_RT	-----FDIQGKE IKRSTLDELIEFLVTNRF-----TYTNEMY-AH	343
gi Aspergillus_niger_N/A	VVEMFAKNLFRP IPPPVT PQ-----GEAFDPEEDEPVLEVAWPHIQV---	269
gi Aspergillus_nidulans_parA	VVEMFAKNLFRP IPPPI TPQ-----GEAFDPEEDEPVLEVAWPHIQV---	271
gi Mus_musculus_alpha	IVKMISANIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL---	161
gi Rattus_norvegicus_alpha	IVKMISANIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL---	161
gi Macaca_mulatta_alpha	IVKMISANIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL---	161
gi Homo_sapiens_alpha	IVKMISANIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL---	161
gi Ovis_aries_alpha	IVKMISANIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL---	164
gi Bos_taurus_alpha	IVKMISANIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL---	164

Figure S1. Cont.

gi Felis_catus_alpha	IVKMISANIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL--- 77
gi Canis_lupus_familiaris_alph	IVKMISANIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL--- 77
gi Falco_peregrinus_alpha	IVKMISNIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL--- 151
gi Gallus_gallus_alpha	IVKMISNIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL--- 151
gi Alligator_mississippiensis_	IVKMISNIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL--- 161
gi Chrysemys_picta_bellii_alph	IVKMISNIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL--- 151
gi Xenopus_laevis_alpha	IIKMICSNIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL--- 150
gi Xenopus_tropicalis_alpha	IIKMICSNIFRTLPPSDN-----PDFDPEEDEPTLEASWPHIQL--- 150
gi Ambystoma_mexicanum_alpha	IVRMISNIFRTLPPSDN-----PEFDPEEDEPTLEASWPHIQL--- 77
gi Danio_rerio_alpha	ITTMVSTNIFRTLPPSEN-----PDFDPEEDEPTLEASWPHMQL--- 153
gi Petromyzon_marinus_S4RHV1	IIRMVAYNIFRTLPPSEN-----PEFDPEEDEPTLEASWPHLQI--- 151
gi Mus_musculus_epsilon	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Rattus_norvegicus_epsilon	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Macaca_mulatta_epsilon	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Homo_sapiens_epsilon	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Ovis_aries_epsilon	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Bos_taurus_epsilon	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Canis_lupus_familiaris_epsi	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Falco_peregrinus_epsilon	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Gallus_gallus_epsilon	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Felis_catus_epsilon	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Chrysemys_picta_bellii_epsi	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Xenopus_laevis_epsilon	AVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Xenopus_tropicalis_epsilon	VVRMVSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Alligator_mississippiensis_	----VSCNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 142
gi Ambystoma_mexicanum_epsilon	VVRMVSYNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 149
gi Danio_rerio_epsilon	VVKMVSYNIFRTLPPSDS-----NEFDPEEDEPTLEASWPHLQL--- 153
gi Mus_musculus_beta	IIRMISVNIFRTLPPSEN-----PEFDPEEDEPNLEPSWPHLQL--- 167
gi Rattus_norvegicus_beta	IIRMISVNIFRTLPPSEN-----PEFDPEEDEPNLEPSWPHLQL--- 167
gi Felis_catus_beta	IIRMISVNIFRTLPPSEN-----PEFDPEEDEPNLEPSWPHLQL--- 167
gi Canis_lupus_familiaris_beta	IIRMISVNIFRTLPPSEN-----PEFDPEEDEPNLEPSWPHLQL--- 167
gi Homo_sapiens_beta	IIRMISVNIFRTLPPSEN-----PEFDPEEDEPNLEPSWPHLQL--- 167
gi Bos_taurus_beta	IIRMISVNIFRTLPPSEN-----PEFDPEEDEPNLEPSWPHLQL--- 167
gi Ovis_aries_beta	IIRMISVNIFRTLPPSEN-----PEFDPEEDEPNLEPSWPHLQL--- 167
gi Macaca_mulatta_beta	IIRMISVNIFRTLPPSEN-----PEFDPEEDEPNLEPSWPHCSL--- 143
gi Xenopus_laevis_beta	-----
gi Alligator_mississippiensis_	AVRMISVNIFRTLPPSEN-----PEFDPEEDEPNLEPSWPHLQL--- 167
gi Chrysemys_picta_bellii_beta	IIKMISVNIFRTLPPTEN-----PEFDPEEDEPNLEPSWPHLQL--- 167
gi Xenopus_tropicalis_beta	VIKMISVNIFRTLPPTDN-----PEFDPEEDEPNLEPSWPHLQL--- 165
gi Danio_rerio_beta	AIKMISVNIFRTLPPSEN-----PEFDPEEDEPALEASWPHLQL--- 166
gi Ambystoma_mexicanum_beta	---MISGNIFRTLPPSEN-----PEFDPEEDEPNLEPSWPHLQL--- 36
gi Petromyzon_marinus_S4RGA7	-----
gi Strongylocentrotus_purpurat	CIQMISCNIFRTLPPSEN-----SDFDPEEDDPTLEASWPHLQL--- 149
gi Drosophila_melanogaster_wdb	IIRMISCNLFRRTLPPSEN-----PDFDPEEDDPTLEASWPHLQL--- 148
jgi Branchiostoma_floridae_237	VVKMIASNIFRTLPPSEN-----TEFDPEEDDPTLEASWPHLQI--- 104
gi Hydra_vulgaris_alpha	IVRMVANNCFKTLPPSNN-----PDFDPEKNEPTLEASWPHLQV--- 157
jgi Branchiostoma_floridae_112	VVKMIAANIFRPLPPAEN-----AEFDPEEDEPTFEASWPHLQ--- 150
jgi Branchiostoma_floridae_284	VVKMVSTNIFRPLPPAEN-----AEFDPEEDEPTFEASWPHLQI--- 117
gi Caenorhabditis_elegans_PPTR	VIKMVAKNIFRVLPPSEN-----CEFDPEEDEPTLEASWPHLQL--- 178
gi Amphimedon_queenslandica_be	IVRMMTNAFRTLPPLEQG-----TEYDPDEDEPPTLELTPHLEL--- 171
gi Chrysemys_picta_bellii_gamm	VVHMFVAVNMFRTLPPSSNPT----GAEFDPEEDEPTLEAAWPHLQL--- 136
gi Chrysemys_picta_bellii_delt	VVHMFVAVNMFRTLPPSSNPT----GAEFDPEEDEPTLEAAWPHLQL--- 61
gi Falco_peregrinus_gamma	VVHMFVAVNMFRTLPPSSNPT----GAEFDPEEDEPTLEAAWPHLQL--- 136
gi Falco_peregrinus_delta/gamm	VVHMFVAVNMFRTLPPSSNPT----GAEFDPEEDEPTLEAAWPHLQL--- 61
gi Gallus_gallus_gamma	VVHMFVAVNMFRTLPPSSNPT----GAEFDPEEDEPTLEAAWPHLQL--- 136
gi Alligator_mississippiensis_	VVHMFVAVNMFRTLPPSSNPT----GAEFDPEEDEPTLEAAWPHLQL--- 136
gi Alligator_mississippiensis_	VVHMFVAVNMFRTLPPSSNPT----GAEFDPEEDEPTLEAAWPHLQL--- 61
gi Ambystoma_mexicanum_gamma	VVHMFVAVNMFRTLPPSSNPT----GAEFDPEEDEPTLEAAWPHLQL--- 137
gi Mus_musculus_gamma	AVHMFVAVNMFRTLPPSSNPT----GAEFDPEEDEPTLEAAWPHLQL--- 136
gi Rattus_norvegicus_gamma	AVHMFVAVNMFRTLPPSSNPT----GAEFDPEEDEPTLEAAWPHLQL--- 136
gi Ovis_aries_gamma	VVHMFVAVNMFRTLPPSSNPT----GAEFDPEEDEPTLEAAWPHLQL--- 136

Figure S1. Cont.

gi Bos_taurus_gamma	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	136
gi Canis_lupus_familiaris_gamm	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	136
gi Macaca_mulatta_gamma	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	136
gi Homo_sapiens_gamma	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	126
gi Felis_catus_gamma	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	183
gi Canis_lupus_familiaris_delt	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	183
gi Macaca_mulatta_delta/gamma	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	418
gi Bos_taurus_delta/gamma	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	190
gi Mus_musculus_delta/gamma	AVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	193
gi Rattus_norvegicus_delta/gam	AVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	259
gi Danio_rerio_gamma	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	136
gi Danio_rerio_delta/gamma	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	189
gi Xenopus_laevis_delta/gamma	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	189
gi Xenopus_laevis_gamma	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	189
gi Xenopus_tropicalis_delta/ga	VVHMFVAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	189
gi Mus_musculus_delta	AVTMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	204
gi Rattus_norvegicus_delta	AVTMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	232
gi Felis_catus_delta	AVTMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	218
gi Bos_taurus_delta	AVTMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	210
gi Canis_lupus_familiaris_delt	AVTMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	205
gi Macaca_mulatta_delta	AVTMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQVPGQ	215
gi Homo_sapiens_delta	AVTMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	212
gi Ovis_aries_delta	CTPQFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	209
gi Falco_peregrinus_delta	AVIMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	112
gi Gallus_gallus_delta	AVIMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	207
gi Alligator_mississippiensis_	AVIMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	206
gi Chrysemys_picta_bellii_delt	AVIMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	208
gi Danio_rerio_delta	AVIMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	199
gi Ambystoma_mexicanum_delta	AVLMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	61
gi Petromyzon_marinus_S4RN43	VVHVFAVNMFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	189
jgi Branchiostoma_floridae_237	AVNMF SINVFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	109
jgi Branchiostoma_floridae_252	AVNMF SINVFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	162
gi Strongylocentrotus_purpurat	AVQMF AINMFRITLPPSSNPH-----GAEFDPEEDEPTLEAAWPHLQI---	170
gi Caenorhabditis_elegans_PPTR	AIGMFSVNLFRITLPPSSNPT-----GAEFDPEEDEPTLEAAWPHLQL---	157
gi Hydra_vulgaris_delta	ACNMF SVNVFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	179
gi Amphimedon_queenslandica_de	AVRMFGINAFRALPPSANPS-----GAEFDPEEDEPTLEAAWPHLQI---	220
gi Drosophila_melanogaster_B56	AINMF AVNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	293
gi Dictyostelium_discoideum_ps	VFEMVAVNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	218
gi Dictyostelium_purpureum_N/A	LFEMVAVNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	175
gi Dictyostelium_fasciculatum_	VFEMVASNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	188
gi Polysphondylium_pallidum_N/	LFEMISINLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	166
gi Arabidopsis_thaliana_theta	VVRMVSVINLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	183
gi Arabidopsis_thaliana_eta	VVRMVSANIFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	204
gi Arabidopsis_thaliana_zeta	LTKMVAVNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	213
gi Arabidopsis_thaliana_gamma	IAKVAVVNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	192
gi Oryza	ITRMISANLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	193
gi Oryza_sativa_zeta	ITRMVSVNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	193
gi Oryza_sativa_theta	VIKMVSTNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	197
gi Oryza_sativa_eta	ITKMSVINLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	186
gi Arabidopsis_thaliana_delta	ATKMISANLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	171
gi Arabidopsis_thaliana_N/A	MCRMCAVNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	177
gi Oryza_sativa_kappa	SSRMFAVNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	183
gi Oryza_sativa_N/A	CVRMFAINLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	164
gi Arabidopsis_thaliana_alpha	MVKMISVINLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	182
gi Arabidopsis_thaliana_beta	MIKMSVINLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	182
gi Oryza_sativa_N/A_2	LVAASVNVFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	222
gi Arabidopsis_thaliana_epsilon	LIRMVSVNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	191
gi Chlamydomonas_reinhardtii_w	IIYMLSNNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	180
gi Schizosaccharomyces_pombe_P	IVHMFVAVNVFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	215
gi Schizosaccharomyces_pombe_P	VVNTFSLNVFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	316
gi Ashbya_gossypii_RTS1	VVNMFVAVNLFRITLPPSSNPN-----GAEFDPEEDEPTLEAAWPHLQI---	278

Figure S1. Cont.

```

gi|Saccharomyces_cerevisiae_RT      VVNMFKINLFRPIPPPVPVVG-----DIYDPDEDEPVELAWPHMQA--- 385

gi|Aspergillus_niger_N/A            -----VYEFFLRFIESQDFNTNIAKQY IDHHFVLQLELFDSEDPRE 312
gi|Aspergillus_nidulans_parA       -----VYEFFLRFIESQDFNTNIAKAY IDHHFVLQLELFDSEDPRE 314
gi|Mus_musculus_alpha              -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 204
gi|Rattus_norvegicus_alpha         -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 204
gi|Macaca_mulatta_alpha            -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 204
gi|Homo_sapiens_alpha              -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 204
gi|Ovis_aries_alpha                 -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 207
gi|Bos_taurus_alpha                -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 207
gi|Felis_catus_alpha               -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 120
gi|Canis_lupus_familiaris_alph     -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 120
gi|Falco_peregrinus_alpha          -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 194
gi|Gallus_gallus_alpha             -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 194
gi|Alligator_mississippiensis     -----VYEFFLRFLFESLDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 204
gi|Chrysemys_picta_bellii_alph     -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVQQLLELFDSEDPRE 194
gi|Xenopus_laevis_alpha            -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVQQLLELFDSEDPRE 193
gi|Xenopus_tropicalis_alpha        -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVQQLLELFDSEDPRE 193
gi|Ambystoma_mexicanum_alpha       -----VYEFFLRFLFESQDFQPSIAKRYVDQKFVQQLLELFDSEDPRE 120
gi|Danio_rerio_alpha               -----VYEFFLRFLFENPDFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Petromyzon_marinus_S4RHV1      -----VYEFFLRFLFLEQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 194
gi|Mus_musculus_epsilon            -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Rattus_norvegicus_epsilon       -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Macaca_mulatta_epsilon          -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Homo_sapiens_epsilon            -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Ovis_aries_epsilon              -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Bos_taurus_epsilon              -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Canis_lupus_familiaris_epsi     -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Falco_peregrinus_epsilon        -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Gallus_gallus_epsilon           -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Felis_catus_epsilon             -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Chrysemys_picta_bellii_epsi     -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Xenopus_laevis_epsilon          -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Xenopus_tropicalis_epsilon      -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Alligator_mississippiensis     -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 185
gi|Ambystoma_mexicanum_epsilon     -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 192
gi|Danio_rerio_epsilon             -----VYEFFLRFLFESQEFQPSIAKRY IDQKFVLQLELFDSEDPRE 196
gi|Mus_musculus_beta               -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVLMLELFDSEDPRE 210
gi|Rattus_norvegicus_beta          -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVLMLELFDSEDPRE 210
gi|Felis_catus_beta                -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVLMLELFDSEDPRE 210
gi|Canis_lupus_familiaris_beta     -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVLMLELFDSEDPRE 210
gi|Homo_sapiens_beta               -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVLMLELFDSEDPRE 210
gi|Bos_taurus_beta                 -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVLMLELFDSEDPRE 210
gi|Ovis_aries_beta                  -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVLMLELFDSEDPRE 210
gi|Macaca_mulatta_beta             -----GFFIRVMDFISP-----ISLDFETYVAQSR 169
gi|Xenopus_laevis_beta             -----
gi|Alligator_mississippiensis     -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVLMLELFDSEDPRE 210
gi|Chrysemys_picta_bellii_beta     -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVLMLELFDSEDPRE 210
gi|Xenopus_tropicalis_beta         -----VYEFFLRFLFESQDFQPSIAKRYVDQKFVLMLELFDSEDPRE 208
gi|Danio_rerio_beta                -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVLMLELFDSEDPRE 209
gi|Ambystoma_mexicanum_beta        -----VYEFFLRFLFESPDFQPSIAKRYVDQKFVMTLLDLFDSEDPRE 79
gi|Petromyzon_marinus_S4RGA7      -----
gi|Strongylocentrotus_purpurat     -----VYEFFLRFLFESPEFQPSIAKRY IDQKFVLMLELFDSEDPRE 192
gi|Drosophila_melanogaster_wdb     -----VYEVFLRFLESQDFQATIGKRYVDQKFVLQLELFDSEDPRE 191
jgi|Branchiostoma_floridae_237     -----VYEFFLRFLFESPDFQPSIAKRY IDQKFVLQLELFDSEDPRE 147
gi|Hydra_vulgaris_alpha            -----VYEFFLRVLESPEFQPTIAKRY IDQKFVLQLELFDSEDPRE 200
jgi|Branchiostoma_floridae_112     -----
jgi|Branchiostoma_floridae_284     -----VYEVFLRFLESPEFQPTIAKRYVDQKFVLMLELFDSEDPRE 160
gi|Caenorhabditis_elegans_PPTR    -----VYELFLRFLESPDFQASIGKRY IDQKFVLMLELFDSEDPRE 221
gi|Amphimedon_queenslandica_be     -----VYAFFLRFLFESPEMQASIAKRY IDQKFVLMLELFDSEDPRE 214

```

Figure S1. Cont.

gi Chrysemys_picta_bellii_gamm	-----VYEFFLRFLFLESPDFQPNAVAKKY IDQKFVLQLELFDSEDPRE	179
gi Chrysemys_picta_bellii_delt	-----VYEFFLRFLFLESPDFQPNAVAKKY IDQKFVLQLELFDSEDPRE	104
gi Falco_peregrinus_gamma	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	179
gi Falco_peregrinus_delta/gamm	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	104
gi Gallus_gallus_gamma	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	179
gi Alligator_mississippiensis_	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	179
gi Alligator_mississippiensis_	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	104
gi Ambystoma_mexicanum_gamma	-----VYEFFLRFLFLESPDFQPNAVAKKY IDQKFVLQLELFDSEDPRE	180
gi Mus_musculus_gamma	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	179
gi Rattus_norvegicus_gamma	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	179
gi Ovis_aries_gamma	-----VYEFFLRLLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	179
gi Bos_taurus_gamma	-----VYEFFLRLLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	179
gi Canis_lupus_familiaris_gamm	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	179
gi Macaca_mulatta_gamma	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	179
gi Homo_sapiens_gamma	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	169
gi Felis_catus_gamma	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	226
gi Felis_lupus_familiaris_delt	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	226
gi Macaca_mulatta_delta/gamma	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	461
gi Bos_taurus_delta/gamma	-----VYEFFLRLLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	233
gi Mus_musculus_delta/gamma	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	236
gi Rattus_norvegicus_delta/gam	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	302
gi Danio_rerio_gamma	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	179
gi Danio_rerio_delta/gamma	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLQLELFDSEDPRE	232
gi Xenopus_laevis_delta/gamma	-----VYEFFLRFLFLESPDFQPNAVAKKY IDQKFVLQLELFDSEDPRE	232
gi Xenopus_laevis_gamma	-----VYEFFLRFLFLESPDFQPNAVAKKY IDQKFVLQLELFDSEDPRE	232
gi Xenopus_tropicalis_delta/ga	-----VYEFFLRFLFLESPDFQPNAVAKKY IDQKFVLQLELFDSEDPRE	232
gi Mus_musculus_delta	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLALLDLFDSEDPRE	247
gi Rattus_norvegicus_delta	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLALLDLFDSEDPRE	275
gi Felis_catus_delta	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLALLDLFDSEDPRE	261
gi Bos_taurus_delta	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLALLDLFDSEDPRE	253
gi Canis_lupus_familiaris_delt	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLALLDLFDSEDPRE	248
gi Macaca_mulatta_delta	GGQVGPCCREWGSRGXXXXXXXX-XXKKY IDQKFVLALLDLFDSEDPRE	264
gi Homo_sapiens_delta	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLALLDLFDSEDPRE	255
gi Ovis_aries_delta	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLALLDLFDSEDPRE	252
gi Falco_peregrinus_delta	-----VYEFFLRFLFLESPDFQPNAVAKKY IDQKFVLSLLDLFDSEDPRE	155
gi Gallus_gallus_delta	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLSLLDLFDSEDPRE	250
gi Alligator_mississippiensis_	-----VYEFFLRFLFLESPDFQPNAVAKKY IDQKFVLSLLDLFDSEDPRE	249
gi Chrysemys_picta_bellii_delt	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLSLLDLFDSEDPRE	251
gi Danio_rerio_delta	-----VYEFFLRFLFLESPDFQPNIAKKY IDQKFVLSLLELFDSEDPRE	242
gi Ambystoma_mexicanum_delta	-----VYEFFLRFLFLESPDFQPNAVAKKY IDQKFVMSLLDLFDSEDPRE	104
gi Petromyzon_marinus_S4RN43	-----VYEFFLRFLFLESPDFQPNAVAKKY IDQKFVLQLELFDSEDPRE	232
jgi Branchiostoma_floridae_237	-----VYEFFLRFLFLESPDFQPNTAKKY IDQKFVLQLLDLFDSEDPRE	152
jgi Branchiostoma_floridae_252	-----VYEFFLRFLFLESPDFQPNTAKKY IDQKFVLQLLDLFDSEDPRE	205
gi Strongylocentrotus_purpurat	-----VYEFLLRFLESPDFQPNAVAKKY IDQKFVLALLELFDSEDPRE	213
gi Caenorhabditis_elegans_PPTR	-----VYEFFLRFLFLECPDFQSQVAKKY IDQNFILRLMIMDSEDPRE	200
gi Hydra_vulgaris_delta	-----VYEFFLRFLFLESTDFQPNIAKKY IDQRFLINILNLDSEDPRE	222
gi Amphimedon_queenslandica_de	-----VYEFFLRFLFLESQDFQPGIAKKF IDQKFVQGQLELFDSEDPRE	263
gi Drosophila_melanogaster_B56	-----VYELFLRFLESPDFQPSMAKRF IDHQFVLQLELFDSEDPRE	336
gi Dictyostelium_discoideum_ps	-----VYEVLLRFIDSPTFNTHIAKNYVDDRFLVQMLDLFDSEDPRE	261
gi Dictyostelium_purpureum_N/A	-----VYEVLLRFIDSPTFNTHIAKNYVDDKFLVQMLELFDSEDPRE	218
gi Dictyostelium_fasciculatum_	-----VYELLRFVDS'TNFNTHIAKNYVDQKFVLQLLDLFDSEDPRE	231
gi Polysphondylium_pallidum_N/	-----VYELLRFIDSP'IFNTHIAKAFVDQKFVLQLLDLFDSEDPRE	209
gi Arabidopsis_thaliana_theta	-----VYELLRLIASPETDTKLAKKY IDQSFVSRLLDLFDSEDPRE	226
gi Arabidopsis_thaliana_eta	-----VYELFLRFVASPE'IDTKLAKRY IDQSFVLRLLDLFDSEDPRE	247
gi Arabidopsis_thaliana_zeta	-----VYELLRFVASPM'TDAKLAKRY IDHSFVLKLLDLFDSEDPRE	256
gi Arabidopsis_thaliana_gamma	-----VYELLRFVASPM'TDAKLAKRY IDHSFVLKLLDLFDSEDPRE	235
gi Oryza	-----VYELLKFIQSPETDAKLAKRY IDHSFILRLLDIFDSEDPRE	236
gi Oryza_sativa_zeta	-----VYELFLRFIQSPETDAKLAKRY IDHSFVLRLLDLFDSEDPRE	236
gi Oryza_sativa_theta	-----VYELFLRFVQSPETDAKLAKRYVDHGF'IKLLDLFDSEDPRE	240
gi Oryza_sativa_eta	-----VYEVFLRFVASQETDAKLAKRY IDHSFILRLLDIFDSEDPRE	229
gi Arabidopsis_thaliana_delta	-----VYEFFLRIVASPN'TDPKISKKY IDHTFVLKLLDLFDSEDPRE	214

Figure S1. Cont.

gi	Arabidopsis_thaliana_N/A	-----VYDLLKFITSPLDAKVAKKYLDHAFIVRLLDLFDSEDPRE	220
gi	Oryza_sativa_kappa	-----VYELLLKFIGSSSLDAKVGKKYFDHSFIVKLLNLLDSEDPRE	226
gi	Oryza_sativa_N/A	-----VYELLLRFVMSPVVDVKIARKYMDNSFVSRLLDLFDSDPRE	207
gi	Arabidopsis_thaliana_alpha	-----IYELLRLRYIVPSD TDTKVAKRY IDHSFVLRLLLELFETEDPRE	225
gi	Arabidopsis_thaliana_beta	-----VYELLLRYVVS TD TDTKVAKRY IDHSFVLRLLDLFDSEDPRE	225
gi	Oryza_sativa_N/A_2	-----VYELLLRYVVS PD TD TKVAKRYVDHAFVLRLLDLFDSEDPRE	265
gi	Arabidopsis_thaliana_epsilon	-----VYELLLRYVVSSE IEPKTAKKF INHTFVSRLLDLFDSEDPRE	234
gi	Chlamydomonas_reinhardtii_w	-----VYEFLLRYVVSND TDAKI AKKY IDQQFVLRLLLELFDSEDPRE	223
gi	Schizosaccharomyces_pombe_P	-----VYDFLRFVFFESPLNTSVAKVY INQKFIRKLLVLFDSSEDPRE	258
gi	Schizosaccharomyces_pombe_P	-----VYLLF IKFLES PD FRASKAKSLVDRRFFNRLALFDTEDPRE	359
gi	Ashbya_gossypii_RTS1	-----VYEFFLRFVESP DFNHQIAKQF IDQEFILKLELFDSEDIRER	321
gi	Saccharomyces_cerevisiae_RT	-----VYEFFLRFVESP DFNHQIAKQY IDQDFILKLELFDSEDIRER	428
gi	Aspergillus_niger_N/A	DFLKTTLHRIYKGFNLNR-----SYIRRS INNVFFQFTYETERFNGIAEL	357
gi	Aspergillus_nidulans_para	DFLKTTLHRIYKGFNLNR-----SYIRRS INNVFFQFSYETERFNGIAEL	359
gi	Mus_musculus_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	249
gi	Rattus_norvegicus_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ TNNIFLRFIYETEHNFGVAEL	249
gi	Macaca_mulatta_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	249
gi	Homo_sapiens_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	249
gi	Ovis_aries_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	252
gi	Bos_taurus_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	252
gi	Felis_catus_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	165
gi	Canis_lupus_familiaris_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	165
gi	Falco_peregrinus_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	239
gi	Gallus_gallus_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	239
gi	Alligator_mississippiensis	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	249
gi	Chrysemys_picta_bellii_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	239
gi	Xenopus_laevis_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	238
gi	Xenopus_tropicalis_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	238
gi	Ambystoma_mexicanum_alpha	DFLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETDHNFGVAEL	165
gi	Danio_rerio_alpha	EFLKTLHRIYKGFGLR-----AFIRKQ INNIFLRFIYETEHNFGVAEL	241
gi	Petromyzon_marinus_S4RHV1	DFLRTVLHRIYKGLLGLR-----AFIRTQ INNILLRYIYETERFNGVEM	239
gi	Mus_musculus_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Rattus_norvegicus_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Macaca_mulatta_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Homo_sapiens_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Ovis_aries_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Bos_taurus_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Canis_lupus_familiaris_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Falco_peregrinus_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Gallus_gallus_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Felis_catus_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Chrysemys_picta_bellii_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Xenopus_laevis_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Xenopus_tropicalis_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	241
gi	Alligator_mississippiensis	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	230
gi	Ambystoma_mexicanum_epsilon	DYLKTVLHRIYKGFGLR-----AFIRKQ INNIFLRFVYETEHNFGVAEL	237
gi	Danio_rerio_epsilon	DCLKTVLHRIYKGFGLR-----AFIRKQ INNIFLCFVYETERFNGVAEL	241
gi	Mus_musculus_beta	EYLKTLHRIYKGFGLR-----AYIRKQCNHIFLRFIYELEHNFGVAEL	255
gi	Rattus_norvegicus_beta	EYLKTLHRIYKGFGLR-----AYIRKQCNHIFLRFIYELEHNFGVAEL	255
gi	Felis_catus_beta	EYLKTLHRIYKGFGLR-----AYIRKQCSHIFLRFIYELEHNFGVAEL	255
gi	Canis_lupus_familiaris_beta	EYLKTLHRIYKGFGLR-----AYIRKQCSHIFLRFIYEFHNFGVAEL	255
gi	Homo_sapiens_beta	EYLKTLHRIYKGFGLR-----AYIRKQCNHIFLRFIYEFHNFGVAEL	255
gi	Bos_taurus_beta	EYLKTLHRIYKGFGLR-----AYIRKQCSHIFLRFIYEFHNFGVAEL	255
gi	Ovis_aries_beta	EYLKTLHRIYKGFGLR-----AYIRKQCSHIFLRFIYEFHNFGIAEL	255
gi	Macaca_mulatta_beta	CAKCLSF SWLTGKSLGLRGTGPTLLALSPPAF LFCRFIYEFHNFGVAEL	219
gi	Xenopus_laevis_beta	-----	
gi	Alligator_mississippiensis	EYLKTLHRIYKGFGLR-----AYIRKQCNHIFLRFIYETEHNFGVAEL	255
gi	Chrysemys_picta_bellii_beta	EYLKTLHRIYKGFGLR-----AYIRKQCNHIFLRFIYETEHNFGVAEL	255
gi	Xenopus_tropicalis_beta	EYLKTLHRIYKGFGLR-----AYIRKQCNHIFLRFIYETERFNGVAEL	253

Figure S1. Cont.

gi	Danio_rerio_beta	EYLKTLHRVYGKLLGLR-----AYIRKQINNIFLRFIYETERFNGVAEL	254
gi	Ambystoma_mexicanum_beta	EYLKTLHRVYGKFLGLR-----AYIRKQCNNIFLRFVYETEHEFNGVAEL	124
gi	Petromyzon_marinus_S4RGA7	-----VCCRFIYETEHEFNGVAEL	18
gi	Strongylocentrotus_purpurat	DFLKTVLHRIYGKFLGLR-----AFIRKQINHIFLRFIYETEHEFNGVDEL	237
gi	Drosophila_melanogaster_wdb	DFLKTVLHRIYGKFLGLR-----AFIRKQINNIFLRFIYETEHEFNGVDEL	236
jgi	Branchiostoma_floridae_237	DFLKTVLHRIYGKFLGLR-----AFIRKQINHIFLRFIYETEHEFNGVDEL	192
gi	Hydra_vulgaris_alpha	EFLKTVLHRIYGKFLGLR-----AYIRKQINHMFLKFIYETEHEFSGVDEL	245
jgi	Branchiostoma_floridae_112	-----	
jgi	Branchiostoma_floridae_284	DLKTMHLHRIYGKFLGLR-----AFIRKQINHIFLRFIYETEHEFNGIGEL	205
gi	Caenorhabditis_elegans_PPTR	DFLKTVLHRIYGKFLGLR-----AFIRKHINMFLRFVYETDSFNGVDEL	266
gi	Amphimedon_queenslandica_be	DYKTVLHRIYGKFLGLR-----AFIRKHINYIFLRFVYETERFAGIAEL	259
gi	Chrysemys_picta_bellii_gamm	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	224
gi	Chrysemys_picta_bellii_delt	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	149
gi	Falco_peregrinus_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	224
gi	Falco_peregrinus_delta/gamm	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	149
gi	Gallus_gallus_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	224
gi	Alligator_mississippiensis_	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	224
gi	Alligator_mississippiensis_	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	149
gi	Ambystoma_mexicanum_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	225
gi	Mus_musculus_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	224
gi	Rattus_norvegicus_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	224
gi	Ovis_aries_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	224
gi	Bos_taurus_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	224
gi	Canis_lupus_familiaris_gamm	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	224
gi	Macaca_mulatta_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	224
gi	Homo_sapiens_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	214
gi	Felis_catus_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	271
gi	Canis_lupus_familiaris_delt	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	271
gi	Macaca_mulatta_delta/gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	506
gi	Bos_taurus_delta/gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	278
gi	Mus_musculus_delta/gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	281
gi	Rattus_norvegicus_delta/gam	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	347
gi	Danio_rerio_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	224
gi	Danio_rerio_delta/gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	277
gi	Xenopus_laevis_delta/gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	277
gi	Xenopus_laevis_gamma	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	277
gi	Xenopus_tropicalis_delta/ga	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	277
gi	Mus_musculus_delta	DFLKTILHRIYGKFLGLR-----AYIRRQINHIFYRFIYETEHHNGIAEL	292
gi	Rattus_norvegicus_delta	DFLKTILHRIYGKFLGLR-----AYIRRQINHIFYRFIYETEHHNGIAEL	320
gi	Felis_catus_delta	DFLKTILHRIYGKFLGLR-----AYIRRQINHIFYRFIYETEHHNGIAEL	306
gi	Bos_taurus_delta	DFLKTILHRIYGKFLGLR-----AYIRRQINHIFYRFIYETEHHNGIAEL	298
gi	Canis_lupus_familiaris_delt	DFLKTILHRIYGKFLGLR-----AYIRRQINHIFYRFIYETEHHNGIAEL	293
gi	Macaca_mulatta_delta	DFLKTILHRIYGKFLGLR-----AYIRRQINHIFYRFIYETEHHNGIAEL	309
gi	Homo_sapiens_delta	DFLKTILHRIYGKFLGLR-----AYIRRQINHIFYRFIYETEHHNGIAEL	300
gi	Ovis_aries_delta	DFLKTILHRIYGKFLGLR-----AYIRRQINHIFYRFIYETEHHNGIAEL	297
gi	Falco_peregrinus_delta	DFLKTILHRIYGKFLGLR-----AYVRRQINNIFYRFIYETEHHNGIAEL	200
gi	Gallus_gallus_delta	DFLKTILHRIYGKFLGLR-----AYVRRQINNIFYRFIYETEHHNGIAEL	295
gi	Alligator_mississippiensis_	DFLKTILHRIYGKFLGLR-----AYVRRQINNIFYRFIYETEHHNGIAEL	294
gi	Chrysemys_picta_bellii_delt	DFLKTILHRIYGKFLGLR-----AYVRRQINNIFYRFIYETEHHNGIAEL	296
gi	Danio_rerio_delta	DFLKTILHRIYGKFLGLR-----AYIRRQINNIFYRFIYETEHHNGIAEL	287
gi	Ambystoma_mexicanum_delta	DFLKTILHRIYGKFLGLR-----AYIRRQINNIFYRFIYETEHHNGIAEL	149
gi	Petromyzon_marinus_S4RN43	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	277
jgi	Branchiostoma_floridae_237	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	197
jgi	Branchiostoma_floridae_252	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFIYETEHHNGIAEL	250
gi	Strongylocentrotus_purpurat	DFLKTTLHRIYGKFLGLR-----AYIRKQINNIFYRFVYETEHHNGIAEL	258
gi	Caenorhabditis_elegans_PPTR	DFLKTTLHRIYGKFLGHR-----AYIRKQINNIFYSFYIYETERHNGIAEL	245
gi	Hydra_vulgaris_delta	DFLKTILHRIYGKFLNLR-----AYIRKQINNLFYRFIYETEHHNGIAEL	267
gi	Amphimedon_queenslandica_de	DFLKTTLHRIYGKFLGLR-----AHIRKQISNIFYRFIYETEKHNGVAEL	308
gi	Drosophila_melanogaster_B56	DFLKTVLHRIYGKFLGLR-----AFIRKQINNIFYRFIYETEHHNGIAEL	381
gi	Dictyostelium_discoideum_ps	DYLKTTLHRIYGKFLGLR-----GFIRTAIRNLFCFVYESHQHGISEI	306
gi	Dictyostelium_purpureum_N/A	DYLKTTLHRIYGKFLGLR-----SFIRTAIRNLFCFVYESHQHGISEI	263

Figure S1. Cont.

gi Dictyostelium_fasciculatum_	DYLKTTLHRIYKGFIALR-----GYIRTAIRDLFCTFVYESSQHNGVSEI	276
gi Polysphondylium_pallidum_N/	DYLKTTLHRIYKGFIALR-----GFIRTAIKDLFCFVYESYQHNGVSEI	254
gi Arabidopsis_thaliana_theta	DCLKTVLHRIYKGFMVHR-----PFIRKSNINIFYRFVFETEKGHNGIAEF	271
gi Arabidopsis_thaliana_eta	DCLKTVLHRIYKGFMVHR-----PFIRKSNINIFYRFVFETEKGHNGIAEF	292
gi Arabidopsis_thaliana_zeta	EYLKTVLHRIYKGFMVHR-----PYIRKAINNIFYRFIFETEKGHNGIAEL	301
gi Arabidopsis_thaliana_gamma	EYLKTVLHRIYKGFMVHR-----PFIRKAINNIFYRFIFETEKGHNGIAEL	280
gi Oryza	EYLKMTLHRIYKGFMVYR-----PFIRKAINNIFYQFIYETEKGHNGIAEL	281
gi Oryza_sativa_zeta	EYLKTVLHRIYKGFMVHR-----PFIRKAINNIFYQFIYETEKGHNGIAEL	281
gi Oryza_sativa_theta	EYLKTVLHRIYKGFMVHR-----PFIRKAINNIFYRFIFETEKGHNGIAEL	285
gi Oryza_sativa_eta	DYLKTVLHRIYKGFMVHR-----PFIRKAINNIFYRFIFETEKGHNGVAEL	274
gi Arabidopsis_thaliana_delta	EYLKTVLHRIYGRFMVHR-----PFIRKTMNINILYDFIFETGKHSNGIAEF	259
gi Arabidopsis_thaliana_N/A	ECLKTVLHRIYKGFMVHR-----PFVRSMSNIFYRFVFETEKGHNGIAEL	265
gi Oryza_sativa_kappa	DCLKTVLHRIYKGFIFHR-----PFIRKAVSNIFYHFVFETDRHNGIAEL	271
gi Oryza_sativa_N/A	ECLKTVLHRIYKGFMGNR-----PFIRKAVSNIFYRFVFETDRHNGIAEL	252
gi Arabidopsis_thaliana_alpha	EYLKTVLHRIYKGFMVHR-----PFIRKAMNHIFYRFIFETERHSGIGEL	270
gi Arabidopsis_thaliana_beta	EYLKTVLHRIYKGFMVHR-----PFIRKAINNIFYRFIFETERHSGIGEL	270
gi Oryza_sativa_N/A_2	EYLKTVLHRIYKGFMVHR-----PFIRKAINNVFYRFIFETERHNGIGEL	310
gi Arabidopsis_thaliana_epsilon	EYLKTVLHRIYKGFIFHR-----PFIRCSIYINIFYKFLYETERCIGIGEL	279
gi Chlamydomonas_reinhardtii_w	DYLKTVLHRIYKGFMVHR-----PFIRKAINNVFYRFIFETERHNGVAEL	268
gi Schizosaccharomyces_pombe_P	DFLKTTLHRIYKGFSLR-----AFIRRSINNLFLQFVYENEQFNGIAEL	303
gi Schizosaccharomyces_pombe_P	ELLKTTLHRIYKGFNLNR-----SYIRKSMNIVFLQFIYEREKFGHNGIAEL	404
gi Ashbya_gossypii_RTS1	DCLKTTLHRIYKGFSLR-----SFIRRSINNLFLQFVYETERFNGIAEL	366
gi Saccharomyces_cerevisiae_RT	DCLKTTLHRIYKGFSLR-----SFIRRSMNINIFLQFIYETEKGHNGVAEL	473
gi Aspergillus_niger_N/A	LEILGSIINGFALPLKKEHKLFTRVLLPLHKVKSLSMYHPQLAYCIVQF	407
gi Aspergillus_nidulans_para	LEILGSIINGFALPLKKEHKLFTRVLLPLHKVKSLSMYHPQLAYCIVQF	409
gi Mus_musculus_alpha	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	299
gi Rattus_norvegicus_alpha	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	299
gi Macaca_mulatta_alpha	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	299
gi Homo_sapiens_alpha	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	299
gi Ovis_aries_alpha	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	302
gi Bos_taurus_alpha	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	302
gi Felis_catus_alpha	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	215
gi Canis_lupus_familiaris_alph	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	215
gi Falco_peregrinus_alpha	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	289
gi Gallus_gallus_alpha	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	289
gi Alligator_mississippiensis_	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	299
gi Chrysemys_picta_bellii_alph	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	289
gi Xenopus_laevis_alpha	LEILGSIINGFALPLKSEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	288
gi Xenopus_tropicalis_alpha	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	288
gi Ambystoma_mexicanum_alpha	LEILGSIINGFALPLKAEHKQFLMKVLIIPMHTAKGLALFHAQLAYCVVQF	215
gi Danio_rerio_alpha	LEILGSIINGFALPLKAEHKQFLMKIILPLHTAKPLALFHAQLAYCVVQF	291
gi Petromyzon_marinus_S4RHV1	LEILGSIIDGFALPLKTEHKQFLVVRVLLPLHTARGLSIFHAQLAYCVMLF	289
gi Mus_musculus_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Rattus_norvegicus_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Macaca_mulatta_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Homo_sapiens_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Ovis_aries_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Bos_taurus_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Canis_lupus_familiaris_epsi	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Falco_peregrinus_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Gallus_gallus_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Felis_catus_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Chrysemys_picta_bellii_epsi	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Xenopus_laevis_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Xenopus_tropicalis_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Alligator_mississippiensis_	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	280
gi Ambystoma_mexicanum_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	287
gi Danio_rerio_epsilon	LEILGSIINGFALPLKAEHKQFLVKVLIPLHTVRSLSLFAQLAYCIVQF	291
gi Mus_musculus_beta	LEILGSIINGFALPLKTEHKQFLVVRVLIPLHSVKSLSVFAQLAYCVVQF	305

Figure S1. Cont.

gi Rattus_norvegicus_beta	LEILGSIINGFALPLKTEHKQFLVRVLIPLHSVKSLSVFHAQLAYCVVQF	305
gi Felis_catus_beta	LEILGSIINGFALPLKTEHKQFLVRVLIPLHSVKSLSVFHAQLAYCVVQF	305
gi Canis_lupus_familiaris_beta	LEILGSIINGFALPLKTEHKQFLVRVLIPLHSVKSLSVFHAQLAYCVVQF	305
gi Homo_sapiens_beta	LEILGSIINGFALPLKTEHKQFLVRVLIPLHSVKSLSVFHAQLAYCVVQF	305
gi Bos_taurus_beta	LEILGSIINGFALPLKTEHKQFLVRVLIPLHSVKSLSVFHAQLAYCVVQF	305
gi Ovis_aries_beta	LEILGSIINGFALPLKTEHKQFLVRVLIPLHSVKSLSVFHAQLAYCVVQF	305
gi Macaca_mulatta_beta	LEILGSIINGFALPLKTEHKQFLVRVLIPLHSVKSLSVFHAQLAYCVVQF	269
gi Xenopus_laevis_beta	-----	
gi Alligator_mississippiensis_beta	LEILGSIINGFALPLXAEHKQFLVRVLIPLHSVKALS VFHAQLAYCVVQF	305
gi Chrysemys_picta_bellii_beta	LEILGSIINGFALPLKTEHKHFLVRVLIPLHSVKSLSIFHAQLAYCVVQF	305
gi Xenopus_tropicalis_beta	LEILGSIINGFALPLKSEHKQFLVRVLIPLHSVKSLSIFHAQLAYCAVQF	303
gi Danio_rerio_beta	LEILGSIINGFALPLKSEHKQFLVRVLIPLHTAKSLSIFHAQLAYCVVQF	304
gi Ambystoma_mexicanum_beta	LEILGSIINGFALPLKAEHKQFLVRVLLPLHSVKSLSIFHAQLAYCVVQF	174
gi Petromyzon_marinus_S4RGA7	LEILGSIINGFAMPLKSEHKQFLVKVLLPLHTVKVLSLPHQAQLAYCVVQF	68
gi Strongylocentrotus_purpurat	LEILGSIINGFALPLKTEHKQFLIKVLIPLHKVKCLGLYHAQLAYCVVQF	287
gi Drosophila_melanogaster_wdb	LEILGSIINGFALPLKAEHKQFLVKVLLPLHKVKCLSLYHAQLAYCIVQF	286
jgi Branchiostoma_floridae_237	LEILGSIINGFALPLKAEHKQFLIKVLIPLHKAKSLSLYHAQLAYCVVQF	242
gi Hydra_vulgaris_alpha	LEILGSIINGFALPLKAEHKQFLKVLVLIPLHKARCLSLYHAQLAYCVVQF	295
jgi Branchiostoma_floridae_112	-----	
jgi Branchiostoma_floridae_284	LEILGSIINGFALPLKAEHKQFLKVLVLIPLHKAKSLAQYHAQLAYCVVQF	255
gi Caenorhabditis_elegans_PPTR	LEILGSIINGFALPLKQEHKQFLVKVLLPLHKPKCLSLYHAQLAYCVVQF	316
gi Amphimedon_queenslandica_be	LEILGSIINGFALPLKVEHKQFLIRVLLPLHKAKSLAQYQAQLAYCVVQF	309
gi Chrysemys_picta_bellii_gamm	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	274
gi Chrysemys_picta_bellii_delt	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	199
gi Falco_peregrinus_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	274
gi Falco_peregrinus_delta/gamm	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	199
gi Gallus_gallus_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	274
gi Alligator_mississippiensis_beta	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	274
gi Alligator_mississippiensis_beta	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	199
gi Ambystoma_mexicanum_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	275
gi Mus_musculus_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	274
gi Rattus_norvegicus_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	274
gi Ovis_aries_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	274
gi Bos_taurus_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	274
gi Canis_lupus_familiaris_gamm	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	274
gi Macaca_mulatta_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	274
gi Homo_sapiens_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	264
gi Felis_catus_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	321
gi Canis_lupus_familiaris_delt	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	321
gi Macaca_mulatta_delta/gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	556
gi Bos_taurus_delta/gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	328
gi Mus_musculus_delta/gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	331
gi Rattus_norvegicus_delta/gam	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	397
gi Danio_rerio_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	274
gi Danio_rerio_delta/gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	327
gi Xenopus_laevis_delta/gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	327
gi Xenopus_laevis_gamma	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	327
gi Xenopus_tropicalis_delta/ga	LEILGSIINGFALPLKKEHKIFLLKVLVLIPLHKVKSLSVYHPQLAYCVVQF	327
gi Mus_musculus_delta	LEILGSIINGFALPLKKEHKVFLVRVLLPLHKVKSLSVYHPQLAYCVVQF	342
gi Rattus_norvegicus_delta	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	370
gi Felis_catus_delta	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	356
gi Bos_taurus_delta	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	348
gi Canis_lupus_familiaris_delt	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	343
gi Macaca_mulatta_delta	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	359
gi Homo_sapiens_delta	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	350
gi Ovis_aries_delta	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	347
gi Falco_peregrinus_delta	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	250
gi Gallus_gallus_delta	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	345
gi Alligator_mississippiensis_beta	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	344
gi Chrysemys_picta_bellii_delt	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	346
gi Danio_rerio_delta	LEILGSIINGFALPLKKEHKMFLIRVLLPLHKVKSLSVYHPQLAYCVVQF	337

Figure S1. Cont.

gi Ambystoma_mexicanum_delta	LEILGSIINGFALPLKEEHKMFLIRVLLPLLHKVKSLSVYHPQLAYCVVQF	199
gi Petromyzon_marinus_S4RN43	LEILGSIINGFALPLKEEHKVFLLLKVLPLLHKVKSLSVYHPQLAYCVVQF	327
jgi Branchiostoma_floridae_237	LEVLGSIINGFALPLKEEHKVFLLLKVLPLLHKVKSLSVYHPQLAYCVVQF	247
jgi Branchiostoma_floridae_252	LEVLGSIINGFALPLKEEHKVFLLLKVLPLLHKVKSLSVYHPQLAYCVVQF	300
gi Strongylocentrotus_purpurat	LEILGSIINGFALPLKEEHTFLLKVLMLPLHKAKSLSVYHPQLAYCVVQF	308
gi Caenorhabditis_elegans_PPTR	LEILGSIINGFALPLKEEHTFLLRVLPLLHKVKSLSVYHPQLAYCVVQF	295
gi Hydra_vulgaris_delta	LEVLGSIINGFALPLKEEHKMFLLLKVLPLLHKVKSLSVYHPQLAYCVVQF	317
gi Amphimedon_queenslandica_de	LEILGSIINGFALPLKEEHKMFLLRVLIPLLHKVKSLSVYHPQLAYCVVQF	358
gi Drosophila_melanogaster_B56	LEILGSIINGFALPLKEEHKQFLLKVLPLLHKAKSLSVYHPQLTYCVVQF	431
gi Dictyostelium_discoideum_ps	LEVLGSIINGFALPLKDEHKQFLIKVLIPLLHKPKSLSVYCSHLGYCMSQF	356
gi Dictyostelium_purpureum_N/A	LEVLGSIINGFVPLKDEHKQFLIKVLIPLLHKPKSLSVYCSHLGYCMTQF	313
gi Dictyostelium_fasciculatum	LEVLGSIINGFALPLKDEHKQFLTKVLLPLLHKPKSLSVYCSHLGYCISQF	326
gi Polysphondylium_pallidum_N/	LEVLGSIINGFVPLKDEHKQFLVKVLLPLLHKPKSLSVYCSHLGYCITQF	304
gi Arabidopsis_thaliana_theta	LEILGSIINGFALPLKDEHKVFLVRLVPLLHKPKSLQMYHQQLSYCITQF	321
gi Arabidopsis_thaliana_eta	LEILGSIINGFALPLKDEHK-----F	313
gi Arabidopsis_thaliana_zeta	LEILGSIINGFALPLKEEHLFLLRALIPLLHKPKCSSVYHQQLSYCIVQF	351
gi Arabidopsis_thaliana_gamma	LEILGSIINGFALPLKEEHLFIRALIRALIPLHRPKCASAYHQQLSYCIVQF	330
gi Oryza	LEILGSIINGFALPLKEEHLFVLRVLIPLLHKPKCIALYHQQLSYCITQF	331
gi Oryza_sativa_zeta	LEILGSIINGFALPLKEEHLFVLRALIPLHKPKCIGMYHQQLSYCITQF	331
gi Oryza_sativa_theta	LEILGSIINGFALPLKEEHLFVLRALIPLHKPKCVSMYHQQLSYCVTQF	335
gi Oryza_sativa_eta	LEILGSIINGFALPLKEEHLFVLRALIPLHKPKCVSMYHQQLSYCITQF	324
gi Arabidopsis_thaliana_delta	LEVLGSIINGFALPLKEEHLFTRVLIPLLHKLCLPNYHQQLSYCVIQF	309
gi Arabidopsis_thaliana_N/A	LEIFGSIIVSGFALPLKEEHLFVLRVLIPLLHKPKSVGNYFQQLSYCITQF	315
gi Oryza_sativa_kappa	LEVFGSVISGFALPLKEEHLFVLRVLIPLLHKPKSVGVYLLQQLTYCVTQF	321
gi Oryza_sativa_N/A	LEVFGSVISGFALPLKEEHLFVLRVLIPLLHKPKTVGVYLPQLTYCIIQF	302
gi Arabidopsis_thaliana_alpha	LEILGSIINGFALPMKEEHLFIRALIPLHKPKPIAMYHQQLSYCIVQF	320
gi Arabidopsis_thaliana_beta	LEILGSIINGFALPMKEEHLFIRVLIPLLHKPKPIVYHQQLSYCIVQF	320
gi Oryza_sativa_N/A_2	LEILGSIINGFALPMKEEHLFVLRVLIPLLHKPKSVAIYHQQLSYCIVQF	360
gi Arabidopsis_thaliana_epsilon	LEILGSIINGFALPMKEEHLFVLRVLIPLLHKPKSVAIYHQQLSYCIVQF	329
gi Chlamydomonas_reinhardtii_w	LEILGSIINGFALPLKEEHLFVLRVLIPLLHKPKSVAMYHQQLAYCVTQF	318
gi Schizosaccharomyces_pombe_P	LEILGSIINGFALPLKEEHLFVLRVLIPLLHKAKSLPLYPQIAYGIVQF	353
gi Schizosaccharomyces_pombe_P	LEILGSIINGFALPLKEEHLFVLRVLIPLLHKPKSVFVLYHPQLTYCIVQF	454
gi Ashbya_gossypii_RTS1	LEILGSIINGFALPLKEEHLFVLRVLIPLLHKVRCLSLYHPQLAYCIVQF	416
gi Saccharomyces_cerevisiae_RT	LEILGSIINGFALPLKEEHLFVLRVLIPLLHKVRCLSLYHPQLAYCIVQF	523
gi Aspergillus_niger_N/A	LEKDSSTLTDVVLGLLRYWPKTNSTKEVMYLNVEDIFEVMDPAE-FAKV	456
gi Aspergillus_nidulans_parA	LEKDSLTLDVVLGLLRYWPKTNSTKEVMFLNEVEDIFEVMDPAE-FAKV	458
gi Mus_musculus_alpha	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	348
gi Rattus_norvegicus_alpha	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	348
gi Macaca_mulatta_alpha	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	348
gi Homo_sapiens_alpha	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	348
gi Ovis_aries_alpha	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	351
gi Bos_taurus_alpha	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	351
gi Felis_catus_alpha	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	264
gi Canis_lupus_familiaris_alph	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	264
gi Falco_peregrinus_alpha	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	338
gi Gallus_gallus_alpha	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	338
gi Alligator_mississippiensis	LEKETTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	348
gi Chrysemys_picta_bellii_alph	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	338
gi Xenopus_laevis_alpha	MEKDTTLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	337
gi Xenopus_tropicalis_alpha	LEKDTTLTDPVIRGLLKFWPKTCSQKEVMYLGIEIEEILDVIEPTQ-FKKI	337
gi Ambystoma_mexicanum_alpha	LEKDTTLTEPVIRGLLKFWPKTCSQKEVMYLGIEIEEILDVIEPTQ-FKKI	264
gi Danio_rerio_alpha	LEKDP TLTEPVIRGLLKFWPKTCSQKEVMFLGEIEEILDVIEPTQ-FKKI	340
gi Petromyzon_marinus_S4RHV1	LEKDATLAEIVVRGLLKFWPKTCSQKEVMFLGEVEEVLVIEPTQ-FVKI	338
gi Mus_musculus_epsilon	LEKDP SLTEPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Rattus_norvegicus_epsilon	LEKDP SLTEPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Macaca_mulatta_epsilon	LEKDP SLTEPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Homo_sapiens_epsilon	LEKDP SLTEPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Ovis_aries_epsilon	LEKDP SLTEPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Bos_taurus_epsilon	LEKDP SLTEPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340

Figure S1. Cont.

gi Canis_lupus_familiaris_epsilon	LEKDPSTLTPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Falco_peregrinus_epsilon	LEKDPSTLTPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Gallus_gallus_epsilon	LEKDPSTLTPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Felis_catus_epsilon	LEKDPSTLTPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Chrysemys_picta_bellii_epsilon	LEKDPSTLTPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Xenopus_laevis_epsilon	LEKDPSTLTPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Xenopus_tropicalis_epsilon	LEKDPSTLTPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	340
gi Alligator_mississippiensis_epsilon	LEKDPSTLTPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPSQ-FVKI	329
gi Ambystoma_mexicanum_epsilon	LEKDPSTLTPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPTQ-FVKI	336
gi Danio_rerio_epsilon	LEKDPSTLTPVIRGLMKFWPKTCSQKEVMFLGELEEILDVIEPTQ-FVKI	340
gi Mus_musculus_beta	LEKDATLTHEVIRGLLKYWPKTCTQKEVMFLGEMEEILDVIEPSQ-FVKI	354
gi Rattus_norvegicus_beta	LEKDATLTHEVIRGLLKYWPKTCTQKEVMFLGEMEEILDVIEPSQ-FVKI	354
gi Felis_catus_beta	LEKDATLTHEVIRGLLKYWPKTCTQKEVMFLGEMEEILDVIEPSQ-FVKI	354
gi Canis_lupus_familiaris_beta	LEKDATLTHEVIRGLLKYWPKTCTQKEVMFLGEMEEILDVIEPSQ-FVKI	354
gi Homo_sapiens_beta	LEKDATLTHEVIRGLLKYWPKTCTQKEVMFLGEMEEILDVIEPSQ-FVKI	354
gi Bos_taurus_beta	LEKDATLTHEVIRGLLKYWPKTCTQKEVMFLGEMEEILDVIEPSQ-FVKI	354
gi Ovis_aries_beta	LEKDATLTHEVIRGLLKYWPKTCTQKEVMFLGEMEEILDVIEPSQ-FVKI	354
gi Macaca_mulatta_beta	LEKDATLTHEVIRGLLKYWPKTCTQKEVMFLGEMEEILDVIEPSQ-FVKI	318
gi Xenopus_laevis_beta	-----	
gi Alligator_mississippiensis_beta	LEKDATLTHEVIRGLLKYWPKTCTQKEVMFLGEEIEILDVIEPSQ-FVKV	354
gi Chrysemys_picta_bellii_beta	LEKDATLTHEVIRGLLKYWPKTCTQKEVMFLGEEIEILDVIEPSQ-FVKV	354
gi Xenopus_tropicalis_beta	LEKDSSTLTHEVIRGLLKYWPKTCTQKEVMFLGEEIEILDVIEPSQ-FVKI	352
gi Danio_rerio_beta	MEKDATVTEHIIRGLLRYWPKTCTQKEVMFLGEEIEILDVIEPSQ-FIRV	353
gi Ambystoma_mexicanum_beta	LEKDATLTHEVIRGLLKYWPKTCTQKEVMFLGEEIEILDVIEPSQ-FIKI	223
gi Petromyzon_marinus_S4RGA7	LEKDPQLTEPVIRALLKFWPKTCSQKEVMFLGEEIEILDVIESNQ-FVKI	117
gi Strongylocentrotus_purpurat	LEKDAALTEQVVGGLLKFWPKTCSAKEVMFLGEEIEILDVIEPSQ-FVKI	336
gi Drosophila_melanogaster_wdb	LEKDPFLTEPVVIRGLLKYWPKTCSQKEVMFLGEEIEILDVIDPPQ-FVKI	335
jgi Branchiostoma_floridae_237	LEKDATLTEPVVIRGLLKYWPKTCSQKEVMFLGEEIEILDVIEPSQ-FVRI	291
gi Hydra_vulgaris_alpha	LEKDSLTTEPVIMGLLKYWPKTCSQKEVMFLGEEIEILDVIEASQ-FQKV	344
jgi Branchiostoma_floridae_112	-----	
jgi Branchiostoma_floridae_284	LEKDATLTEPVVIRGLLKYWPKTCSQKEVMFLGEEIEILDVIEPSQ-FVRI	304
gi Caenorhabditis_elegans_PPTR	IEKDSSTLTPQVFEALLKFWPKTCSSEKVMFLGEEIEILDVIEPEQ-FVKI	365
gi Amphimedon_queenslandica_beta	LEKDAALTEQVHLGLFKFWPKTNSKKEVMYLGEEIEILDVIEPEQ-FVTI	358
gi Chrysemys_picta_bellii_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	323
gi Chrysemys_picta_bellii_delta	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	248
gi Falco_peregrinus_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	323
gi Falco_peregrinus_delta/gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	248
gi Gallus_gallus_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	323
gi Alligator_mississippiensis_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	323
gi Alligator_mississippiensis_delta	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	248
gi Ambystoma_mexicanum_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	324
gi Mus_musculus_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	323
gi Rattus_norvegicus_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	323
gi Ovis_aries_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	323
gi Bos_taurus_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	323
gi Canis_lupus_familiaris_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	323
gi Macaca_mulatta_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	323
gi Homo_sapiens_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	313
gi Felis_catus_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	370
gi Canis_lupus_familiaris_delta	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	370
gi Macaca_mulatta_delta/gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	605
gi Bos_taurus_delta/gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	377
gi Mus_musculus_delta/gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	380
gi Rattus_norvegicus_delta/gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKI	446
gi Danio_rerio_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	323
gi Danio_rerio_delta/gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	376
gi Xenopus_laevis_delta/gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	376
gi Xenopus_laevis_gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	376
gi Xenopus_tropicalis_delta/gamma	LEKDSLTTEPVVMALLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	376
gi Mus_musculus_delta	LEKESSTLTPVIVGLLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FSKV	391
gi Rattus_norvegicus_delta	LEKESSTLTPVIVGLLKYWPKTHSPKEVMFLNELEEILDVIEPSE-FSKV	419

Figure S1. Cont.

gi Felis_catus_delta	LEKESLSTTEPVIVGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FSKV	405
gi Bos_taurus_delta	LEKESLSTTEPVIVGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FSKV	397
gi Canis_lupus_familiaris_delt	LEKESLSTTEPVIVGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FSKV	392
gi Macaca_mulatta_delta	LEKESLSTTEPVIVGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FSKV	408
gi Homo_sapiens_delta	LEKESLSTTEPVIVGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FSKV	399
gi Ovis_aries_delta	LEKESLSTTEPVIVGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FSKV	396
gi Falco_peregrinus_delta	LEKDSLSTTEPVIVGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	299
gi Gallus_gallus_delta	LEKDSLSTTEPVIVGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	394
gi Alligator_mississippiensis_	LEKDSLSTTEPVIMGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	393
gi Chrysemys_picta_bellii_delt	LEKESLSTTEPVIVGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	395
gi Danio_rerio_delta	LEKDSLSTTEPVIMGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	386
gi Ambystoma_mexicanum_delta	LEKDSLSTTEPVIVGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	248
gi Petromyzon_marinus_S4RN43	LEKDSLSTTEPVIMGLLKFWPKTHSPKEVMFLNELEEILDVIEPSE-FVKV	376
jgi Branchiostoma_floridae_237	LEKASLSTTEPVIMGLLKFWPKVHSPKEVMFLNELEEILDVIEPSE-FQKV	296
jgi Branchiostoma_floridae_252	LEKASLSTTEPVIMGLLKFWPKVHSPKEVSV--NKLGNLIVHRRS-----	342
gi Strongylocentrotus_purpurat	LEKDPSTLSTTEPVIRLRLKFWPKVHSPKEVMFLNELEEILDVIEPLE-FQKV	357
gi Caenorhabditis_elegans_PPTR	IEKDSLSTTEPVISGMLRFWPKQHSPEVMFLNELEEVLVIEPNE-FQKI	344
gi Hydra_vulgaris_delta	LEKDPSTLSTTEPVIMGLLKFWPKVHSPKEVMFLNELEEILDVIEPNE-FVKI	366
gi Amphimedon_queenslandica_de	LEKDPSTLSTTEPVITGLLKFWPKVHSPKEVMFLNELEEILDVMEPVE-FVKV	407
gi Drosophila_melanogaster_B56	LEKDPSTLSEAVIKSLLKFWPKTHSPKEVMFLNELEEILDVIEPAE-FQKV	480
gi Dictyostelium_discoideum_ps	IEKEPSLAEPFVFKSILRLWPCGNSQKEVFLSEMEDLLGLVSDQ--FAKF	405
gi Dictyostelium_purpureum_N/A	IEKDPSTLSTTEPVIRLRLWPCGNSQKEVFLSEMEDLLSSVSDQ--FLKF	362
gi Dictyostelium_fasciculatum	LEKDPMLALTIKFSILRQWPIGNSQKEVFLFLYBIEIDLGLSIRDEQQFTEI	376
gi Polysphondylium_pallidum_N/	IEKDPSTLSDVVFVTKVLRMWPVGNQKEVFLFLYBIEIDLGLSIRDEQQFTEI	353
gi Arabidopsis_thaliana_theta	VEKDCKLADTVIRGLLKSWPVTNNSKEVMFLNELEEVLVLEATQPPPE-FQRC	370
gi Arabidopsis_thaliana_eta	VEKDCKLADTVIRGLLKSWPVTNNSKEVMFLNELEEVLVLEATQPPPE-FQRC	362
gi Arabidopsis_thaliana_zeta	VEKDFKLADTVIRGLLKSWPVTNNSKEVMFLNELEEVLVLEATQAAE-FQRC	400
gi Arabidopsis_thaliana_gamma	VEKDFKLADTVIRGLLKSWPVTNNSKEVMFLNELEEVLVLEATQAAE-FQRC	379
gi Oryza	VEKDCKLADTVIRGLIKYWPITNNSKEVMFLNELEEVLVLEATQPAE-FQKC	380
gi Oryza_sativa_zeta	VEKDCKLADTVIRGLLKSWPVTNNSKEVFLFLGELEEILEATQPAE-FQKC	380
gi Oryza_sativa_theta	VEKDCKLADTVIRGLLKSWPVTNNSKEVMFLNELEEVLVLEATQPAE-FQRC	384
gi Oryza_sativa_eta	VEKDCKLADTVIRGLLKSWPVTNNSKEVMFLNELEEVLVLEATQPAE-FQRC	373
gi Arabidopsis_thaliana_delta	VEKDCKLADTVIRGMLKYWPVTNSAKEIMFLNELEEILEATQLTE-FERC	358
gi Arabidopsis_thaliana_N/A	IDKEPKLGSVVIKGLLKFWPKTHSPKEVMFLNELEEIVLEAMSVME-FQKI	364
gi Oryza_sativa_kappa	IEKDPKCLASSVIGLLRYWPITNNSKEVMFLSEIEEILETISTAE-FQKC	370
gi Oryza_sativa_N/A	IEKEPKLAGTVIRGLLKSWPVTNNSKEVMFLNELEEVLVLEATEMAE-FQKC	351
gi Arabidopsis_thaliana_alpha	VEKDYKLADTVIRGLLKSWPVTNNSKEVFLFLGELEEVLVLEATQVTE-FQRC	369
gi Arabidopsis_thaliana_beta	VEKDYKLADTVIRGLLKSWPVTNNSKENLFLGELEEVLVLEATQVTE-FQRC	369
gi Oryza_sativa_N/A_2	VEKDYKLADTVIRGLLKSWPVTNNSKEVFLFLGELEEVLVLEATQVTE-FQRC	409
gi Arabidopsis_thaliana_epsilon	VEKDYKLADTVIRGLLKFWPLTNCQKEVFLFLGELEEVLVLEATEPSE-FQQC	378
gi Chlamydomonas_reinhardtii_w	VEKDSKLAEPVLTALLKYWPVTNNSKEVFLFLGELEEILELTAPE-FQKV	367
gi Schizosaccharomyces_pombe_P	VEKDSVTEEVVGLLRWPKVNSKEVFLFLNEIEDIEVMEPSE-FLKI	402
gi Schizosaccharomyces_pombe_P	IDKDPSTLTKAVLTGILKYWPVINSFKELLFLNEIEDIEFVLEPSE-FVNI	503
gi Ashbya_gossypii_RT51	LEKEPMLTEEVIMGLLRWPKVNSKEIMFLNEIEDIEFVIEPLE-FIKV	465
gi Saccharomyces_cerevisiae_RT	LEKDPFLTEEVVIMGLLRWPKVNSKEIMFLNEIEDIEFVIEPLE-FIKV	572
gi Aspergillus_niger_N/A	QVPLFQQQAKSVASPHFQ-----	474
gi Aspergillus_nidulans_parA	QEPLFQQQAKSVASPHFQ-----	476
gi Mus_musculus_alpha	EEPLFKQISKCVSSSHFQ-----	366
gi Rattus_norvegicus_alpha	EEPLFKQISKCVSSSHFQ-----	366
gi Macaca_mulatta_alpha	EEPLFKQISKCVSSSHFQ-----	366
gi Homo_sapiens_alpha	EEPLFKQISKCVSSSHFQ-----	366
gi Ovis_aries_alpha	EEPLFKQISKCVSSSHFQ-----	369
gi Bos_taurus_alpha	EEPLFKQISKCVSSSHFQ-----	369
gi Felis_catus_alpha	EEPLFKQISKCVSSSHFQ-----	282
gi Canis_lupus_familiaris_alph	EEPLFKQISKCVSSSHFQ-----	282
gi Falco_peregrinus_alpha	EEPLFKQISKCVSSSHFQ-----	356
gi Gallus_gallus_alpha	EEPLFKQISKCVSSSHFQ-----	356
gi Alligator_mississippiensis_	EEPLFKQISKCVSSSHFQ-----	366
gi Chrysemys_picta_bellii_alph	EEPLFKQISKCVSSSHFQ-----	356

Figure S1. Cont.

gi Xenopus_laevis_alpha	QEPLFKQISKCVSSSHFQ-----	355
gi Xenopus_tropicalis_alpha	QEPLFKQISKCVSSSHFQ-----	355
gi Ambystoma_mexicanum_alpha	QEPLFKQISKCVSSSHFQ-----	282
gi Danio_rerio_alpha	QEPLFKQIAKCVASPHFQ-----	358
gi Petromyzon_marinus_S4RHV1	QEPLFKQISRCVASPHLH-----	356
gi Mus_musculus_epsilon	QEPLFKQIAKCVSSPHFQ-----	358
gi Rattus_norvegicus_epsilon	QEPLFKQIAKCVSSPHFQ-----	358
gi Macaca_mulatta_epsilon	QEPLFKQIAKCVSSPHFQ-----	358
gi Homo_sapiens_epsilon	QEPLFKQIAKCVSSPHFQ-----	358
gi Ovis_aries_epsilon	QEPLFKQIAKCVSSPHFQ-----	358
gi Bos_taurus_epsilon	QEPLFKQIAKCVSSPHFQ-----	358
gi Canis_lupus_familiaris_epsilon	QEPLFKQIAKCVSSPHFQ-----	358
gi Falco_peregrinus_epsilon	QEPLFKQIAKCVSSPHFQ-----	358
gi Gallus_gallus_epsilon	QEPLFKQIAKCVSSPHFQ-----	358
gi Felis_catus_epsilon	QEPLFKQIAKCVSSPHFQ-----	358
gi Chrysemys_picta_bellii_epsilon	QEPLFKQIAKCVSSPHFQ-----	358
gi Xenopus_laevis_epsilon	QEPLFKQISKCVSSPHFQ-----	358
gi Xenopus_tropicalis_epsilon	QEPLFKQISKCVSSPHFQ-----	358
gi Alligator_mississippiensis	QEPLFKQIAKCVSSPHFQ-----	347
gi Ambystoma_mexicanum_epsilon	QEPLFKQISKCVSSPHFQ-----	354
gi Danio_rerio_epsilon	QELLFKQIARCVSSPHFQ-----	358
gi Mus_musculus_beta	QEPLFKQVARCVSSPHFQ-----	372
gi Rattus_norvegicus_beta	QEPLFKQVARCVSSPHFQ-----	372
gi Felis_catus_beta	QEPLFKQVARCVSSPHFQ-----	372
gi Canis_lupus_familiaris_beta	QEPLFKQVARCVSSPHFQ-----	372
gi Homo_sapiens_beta	QEPLFKQVARCVSSPHFQ-----	372
gi Bos_taurus_beta	QEPLFKQVARCVSSPHFQ-----	372
gi Ovis_aries_beta	QEPLFKQVARCVSSPHFQ-----	372
gi Macaca_mulatta_beta	QEPLFKQVARCVSSPHFQ-----	336
gi Xenopus_laevis_beta	-----SVFTCC-----	6
gi Alligator_mississippiensis	QQPLFKQVAQC IASPHFQ-----	372
gi Chrysemys_picta_bellii_beta	QEPLFKQIARCISSPHFQ-----	372
gi Xenopus_tropicalis_beta	QEPLFKQIARCVSSPHFQ-----	370
gi Danio_rerio_beta	QEPLFKQIAAC ISSPHFQ-----	371
gi Ambystoma_mexicanum_beta	QEPLFKQIARCIASPHFQ-----	241
gi Petromyzon_marinus_S4RGA7	QEPLFRQIAKCVSSPHFQ-----	135
gi Strongylocentrotus_purpurat	QEMLFRQLAKCVASPHFQ-----	354
gi Drosophila_melanogaster_wdb	QEPLFRQIAKCVSSPHFQ-----	353
jgi Branchiostoma_floridae_237	QEPLFKQISKCVSSPHFQ-----	309
gi Hydra_vulgaris_alpha	MEPLFKKISKCVSSPHFQ-----	362
jgi Branchiostoma_floridae_112	-----	
jgi Branchiostoma_floridae_284	QEQLFKQMSKCVSSPHFQ-----	322
gi Caenorhabditis_elegans_PPTR	IDPLFRQLAKCVSSPHFQ-----	383
gi Amphimedon_queenslandica_be	QEPLFRQLAKCVSSPHFQ-----	376
gi Chrysemys_picta_bellii_gamm	MEPLFRQLAKCVSSPHFQ-----	341
gi Chrysemys_picta_bellii_delt	MEPLFRQLAKCVSSPHFQ-----	266
gi Falco_peregrinus_gamma	MEPLFRQLAKCVSSPHFQ-----	341
gi Falco_peregrinus_delta/gamm	MEPLFRQLAKCVSSPHFQ-----	266
gi Gallus_gallus_gamma	MEPLFRQLAKCVSSPHFQ-----	341
gi Alligator_mississippiensis	MEPLFRQLAKCVSSPHFQ-----	341
gi Alligator_mississippiensis	MEPLFRQLAKCVSSPHFQ-----	266
gi Ambystoma_mexicanum_gamma	MEPLFRQLAKCVSSPHFQ-----	342
gi Mus_musculus_gamma	MEPLFRQLAKCVSSPHFQ-----	341
gi Rattus_norvegicus_gamma	MEPLFRQLAKCVSSPHFQ-----	341
gi Ovis_aries_gamma	MEPLFRQLAKCVSSPHFQ-----	341
gi Bos_taurus_gamma	MEPLFRQLAKCVSSPHFQ-----	341
gi Canis_lupus_familiaris_gamm	MEPLFRQLAKCVSSPHFQ-----	341
gi Macaca_mulatta_gamma	MEPLFRQLAKCVSSPHFQ-----	341
gi Homo_sapiens_gamma	MEPLFRQLAKCVSSPHFQ-----	331
gi Felis_catus_gamma	MEPLFRQLAKCVSSPHFQ-----	388
gi Canis_lupus_familiaris_delt	MEPLFRQLAKCVSSPHFQ-----	388

Figure S1. Cont.

gi Macaca_mulatta_delta/gamma	MEPLFRQLAKCVSSPHFQ-----	623
gi Bos_taurus_delta/gamma	MEPLFRQLAKCVSSPHFQ-----	395
gi Mus_musculus_delta/gamma	MEPLFRQLAKCVSSPHFQ-----	398
gi Rattus_norvegicus_delta/gam	MEPLFRQLAKCVSSPHFQ-----	464
gi Danio_rerio_gamma	MEPLFRQLAKCVSSPHFQ-----	341
gi Danio_rerio_delta/gamma	MEPLFRQLAKCVSSPHFQ-----	394
gi Xenopus_laevis_delta/gamma	MEPLFRQLAKCVSSPHFQ-----	394
gi Xenopus_laevis_gamma	MEPLFRQLAKCVSSPHFQ-----	394
gi Xenopus_tropicalis_delta/ga	MEPLFRQLAKCVSSPHFQ-----	394
gi Mus_musculus_delta	MEPLFRQLAKCVSSPHFQ-----	409
gi Rattus_norvegicus_delta	MEPLFRQLAKCVSSPHFQ-----	437
gi Felis_catus_delta	MEPLFRQLAKCVSSPHFQ-----	423
gi Bos_taurus_delta	MEPLFRQLAKCVSSPHFQ-----	415
gi Canis_lupus_familiaris_delt	MEPLFRQLAKCVSSPHFQ-----	410
gi Macaca_mulatta_delta	MEPLFRQLAKCVSSPHFQ-----	426
gi Homo_sapiens_delta	MEPLFRQLAKCVSSPHFQ-----	417
gi Ovis_aries_delta	MEPLFRQLAKCVSSPHFQ-----	414
gi Falco_peregrinus_delta	MEPLFRQLAKCVSSPHFQ-----	317
gi Gallus_gallus_delta	MEPLFRQLAKCVSSPHFQ-----	412
gi Alligator_mississippiensis_	MEPLFRQLAKCVSSPHFQ-----	411
gi Chrysemys_picta_bellii_delt	MEPLFRQLAKCVSSPHFQ-----	413
gi Danio_rerio_delta	MEPLFRQLAKCVSSPHFQ-----	404
gi Ambystoma_mexicanum_delta	MEPLFRQLAKCVSSPHFQ-----	266
gi Petromyzon_marinus_S4RN43	MEPLFRQLAKCVSSPHFQ-----	394
jgi Branchiostoma_floridae_237	MVPLFRQLAQCVSSPHFQ-----	314
jgi Branchiostoma_floridae_252	-IVLNEDFFFGYSN-ISQ-----	358
gi Strongylocentrotus_purpurat	MTPLFRQQLANCVSSPHFQ-----	375
gi Caenorhabditis_elegans_PPTR	MTPLFRQIARCVSSPHFQ-----	362
gi Hydra_vulgaris_delta	VEPLFKKLGQCVSSQHFQ-----	384
gi Amphimedon_queenslandica_de	MQPLFKQISKCISSQHFQ-----	425
gi Drosophila_melanogaster_B56	MVPLFRQIACVSSPHFQ-----	498
gi Dictyostelium_discoideum_ps	RNQQFFRQMTKCFQSEHFQ-----	423
gi Dictyostelium_purpureum_N/A	RTQFFRQMTKCFQSEHFQ-----	380
gi Dictyostelium_fasciculatum_	QQILFKQLARCFQSEHFQ-----	394
gi Polysphondylium_pallidum_N/	YIPLFKQITKCFNSEHFQ-----	371
gi Arabidopsis_thaliana_theta	MVPLFRQVARCLNSLHFQ-----	388
gi Arabidopsis_thaliana_eta	MVPLFRQIARCLNSLHFQAI SFRHTL TALLMRSRYSLPVISNEQMEELIL	412
gi Arabidopsis_thaliana_zeta	MVPLSRQIARCLNSSHFQ-----	418
gi Arabidopsis_thaliana_gamma	MVPLFRQIARCLNSSHFQ-----	397
gi Oryza	MVPLFRQIACCLNSSHFQ-----	398
gi Oryza_sativa_zeta	MVPLFRQIAHCLNSSHFQ-----	398
gi Oryza_sativa_theta	MVSLFCQIARCLNSSHFQ-----	402
gi Oryza_sativa_eta	MVPLFRQIACSMNSSHFQ-----	391
gi Arabidopsis_thaliana_delta	MVPLSRQIAQCLSSSHFQ-----	376
gi Arabidopsis_thaliana_N/A	MVPLFLRIACCVTSSSHFQ-----	382
gi Oryza_sativa_kappa	MVPLFRRIAQC IKSSHFQ-----	388
gi Oryza_sativa_N/A	MVPLFRRIAHLNSSHFQ-----	369
gi Arabidopsis_thaliana_alpha	MVPLFQQIARCLSSSNFQ-----	387
gi Arabidopsis_thaliana_beta	MVPLFQQIGRCLTSSHFQ-----	387
gi Oryza_sativa_N/A_2	MVPLFKQIGRCLNSSHFQ-----	427
gi Arabidopsis_thaliana_epsilon	VVPLFTQIGKCLNSAHFQ-----	396
gi Chlamydomonas_reinhardtii_w	MIPLFRQLAKCLNSQHFQ-----	385
gi Schizosaccharomyces_pombe_P	QVPLFHKLATS ISSQNFQ-----	420
gi Schizosaccharomyces_pombe_P	MSPLFQQLARS ISSMHFQ-----	521
gi Ashbya_gossypii_RTS1	EVPLFVQLAKCISSPHFQ-----	483
gi Saccharomyces_cerevisiae_RT	EVPLFVQLRKC ISSPHFQ-----	590
gi Aspergillus_niger_N/A	-----VAERALYFWNNEYFCNLVSDNVEIILP--IMFPP	506
gi Aspergillus_nidulans_parA	-----VAERALYFWNNEYFCNLVSDNVEIILP--IMFPP	508
gi Mus_musculus_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFAS	398

Figure S1. Cont.

gi Rattus_norvegicus_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFAS	398
gi Macaca_mulatta_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFAS	398
gi Homo_sapiens_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFAS	398
gi Ovis_aries_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFGS	401
gi Bos_taurus_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFGS	401
gi Felis_catus_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFGS	314
gi Canis_lupus_familiaris_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFGS	314
gi Falco_peregrinus_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFAS	388
gi Gallus_gallus_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFGS	388
gi Alligator_mississippiensis	-----VAERALYFWNNEYILSLIEENIDKILP--IMFGS	398
gi Chrysemys_picta_bellii_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFGS	388
gi Xenopus_laevis_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFGS	387
gi Xenopus_tropicalis_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFGS	387
gi Ambystoma_mexicanum_alpha	-----VAERALYFWNNEYILSLIEENIDKILP--IMFGS	314
gi Danio_rerio_alpha	-----VAERALYFWNNEYILSLIEENNAKIFP--IMFGN	390
gi Petromyzon_marinus_S4RHV1	-----VAERALYFWNNEYILSLIEENNVILP--IMFGN	388
gi Mus_musculus_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	390
gi Rattus_norvegicus_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	390
gi Macaca_mulatta_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	390
gi Homo_sapiens_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	390
gi Ovis_aries_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	390
gi Bos_taurus_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	390
gi Canis_lupus_familiaris_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	390
gi Falco_peregrinus_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	390
gi Gallus_gallus_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	390
gi Felis_catus_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	390
gi Chrysemys_picta_bellii_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	390
gi Xenopus_laevis_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFAS	390
gi Xenopus_tropicalis_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFAS	390
gi Alligator_mississippiensis	-----VAERALYFWNNEYIMSLIEENNVILP--IMFSS	379
gi Ambystoma_mexicanum_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFAS	386
gi Danio_rerio_epsilon	-----VAERALYFWNNEYIMSLIEENNVILP--IMFAS	390
gi Mus_musculus_beta	-----VAERALYFWNNEYILSLIEDNCHTVLP--AVFGT	404
gi Rattus_norvegicus_beta	-----VAERALYFWNNEYILSLIEDNCHTVLP--AVFGT	404
gi Felis_catus_beta	-----VAERALYFWNNEYILSLIEDNCHTVLP--AVFGT	404
gi Canis_lupus_familiaris_beta	-----VAERALYFWNNEYILSLIEDNCHTVLP--AVFGT	404
gi Homo_sapiens_beta	-----VAERALYFWNNEYILSLIEDNCHTVLP--AVFGT	404
gi Bos_taurus_beta	-----VAERALYFWNNEYILSLIEDNCHTVLP--AVFGT	404
gi Ovis_aries_beta	-----VAERALYFWNNEYILSLIEDNCHTVLP--AVFGT	404
gi Macaca_mulatta_beta	-----VAERALYFWNNEYILSLIEDNCHTVLP--AVFGT	368
gi Xenopus_laevis_beta	-----YYWD-----GFLP--TSFS-	18
gi Alligator_mississippiensis	-----VAERALYFWNNEYILSLIEDNCQAVLP--AIFGT	404
gi Chrysemys_picta_bellii_beta	-----VAERALYFWNNEYILSLIEDNCHTVLP--AIFGT	404
gi Xenopus_tropicalis_beta	-----VAERALYFWNNEYILSLIEENCHTILP--LIFGT	402
gi Danio_rerio_beta	-----VAERALYFWNNEYILSLIEENCQVILP--LVFGT	403
gi Ambystoma_mexicanum_beta	-----VAERALYFWNNEYILSLIEDNCHSILP--IIFST	273
gi Petromyzon_marinus_S4RGA7	-----VAERAMYFWNNEYILGLMEENISTILP--IVFGS	167
gi Strongylocentrotus_purpurat	-----VAERALYFWNNEYVVSLEENIQAIMP--IMFTN	386
gi Drosophila_melanogaster_wdb	-----VAERALYLWNNEYAMSLIEENNAVIMP--IMFPA	385
jgi Branchiostoma_floridae_237	-----VAERALYFWNNEYVMSLEENSNVIMP--IMFPN	341
gi Hydra_vulgaris_alpha	-----VAERALYFWNNEYIMSLIDENSAVILP--IMFSC	394
jgi Branchiostoma_floridae_112	-----VAERALYFWNNEYVMSLEENSNVILP--IMFSC	354
jgi Branchiostoma_floridae_284	-----VAERALYFWNNEYILSLIEDTSSLVMP--IMFPA	415
gi Caenorhabditis_elegans_PPTR	-----VAERALYFWNNEYIVGLIQENSEVIMP--IMFDA	408
gi Amphimedon_queenslandica_beta	-----VAERALYFWNNEYIMSLISDNAKILP--IMFPP	373
gi Chrysemys_picta_bellii_gamma	-----VAERALYFWNNEYIMSLISDNAKILP--IMFPP	298
gi Chrysemys_picta_bellii_delta	-----VAERALYFWNNEYIMSLISDNAKILP--IMFPP	373
gi Falco_peregrinus_gamma	-----VAERALYFWNNEYIMSLISDNAKILP--IMFPP	298
gi Falco_peregrinus_delta/gamma	-----VAERALYFWNNEYIMSLISDNAKILP--IMFPP	298
gi Gallus_gallus_gamma	-----VAERALYFWNNEYIMSLISDNAKILP--IMFPP	373
gi Alligator_mississippiensis	-----VAERALYFWNNEYIMSLISDNAKILP--IMFPP	373

Figure S1. Cont.

gi	Alligator_mississippiensis_	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	298
gi	Ambystoma_mexicanum_gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	374
gi	Mus_musculus_gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	373
gi	Rattus_norvegicus_gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	373
gi	Ovis_aries_gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	373
gi	Bos_taurus_gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	373
gi	Canis_lupus_familiaris_gamm	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	373
gi	Macaca_mulatta_gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	373
gi	Homo_sapiens_gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	363
gi	Felis_catus_gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	420
gi	Canis_lupus_familiaris_delt	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	420
gi	Macaca_mulatta_delta/gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	655
gi	Bos_taurus_delta/gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	427
gi	Mus_musculus_delta/gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	430
gi	Rattus_norvegicus_delta/gam	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	496
gi	Danio_rerio_gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	373
gi	Danio_rerio_delta/gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	426
gi	Xenopus_laevis_delta/gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	426
gi	Xenopus_laevis_gamma	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	426
gi	Xenopus_tropicalis_delta/ga	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPS	426
gi	Mus_musculus_delta	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPA	441
gi	Rattus_norvegicus_delta	-----VAERALYWNNEY IMSLISDNAARVLP--IMFPA	469
gi	Felis_catus_delta	-----VAERALYWNNEY IMSLISDNAARVLP--IMFPA	455
gi	Bos_taurus_delta	-----VAERALYWNNEY IMSLISDNAARVLP--IMFPA	447
gi	Canis_lupus_familiaris_delt	-----VAERALYWNNEY IMSLISDNAARVLP--IMFPA	442
gi	Macaca_mulatta_delta	-----VAERALYWNNEY IMSLISDNAARVLP--IMFPA	458
gi	Homo_sapiens_delta	-----VAERALYWNNEY IMSLISDNAARVLP--IMFPA	449
gi	Ovis_aries_delta	-----VAERALYWNNEY IMSLISDNAARVLP--IMFPA	446
gi	Falco_peregrinus_delta	-----VAERALYWNNEY IMSLISDNAARVLP--IMFPA	349
gi	Gallus_gallus_delta	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPA	444
gi	Alligator_mississippiensis_	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPA	443
gi	Chrysemys_picta_bellii_delt	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPA	445
gi	Danio_rerio_delta	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPA	436
gi	Ambystoma_mexicanum_delta	-----VAERALYWNNEY IMSLISDNAAKILP--IMFPA	298
gi	Petromyzon_marinus_S4RN43	-----VAERALYWNNEY IMSLVSDNAAKILP--IMFPA	426
jgi	Branchiostoma_floridae_237	-----VAERALYWNNEY IMSLISDNAQVILP--IMFPA	346
jgi	Branchiostoma_floridae_252	-----VAERALYWNNEY IMSLISDNAQVILP--IMFPA	390
gi	Strongylocentrotus_purpurat	-----VAERALYWNNEY IMSLISDNDETILP--IMFPA	407
gi	Caenorhabditis_elegans_PPTR	-----VAERALYWNNEY VMSLVADNARVILP--IMFPV	394
gi	Hydra_vulgaris_delta	-----VAERALYWNNEY IMSLVSDNAITKALP--IIFPY	416
gi	Amphimedon_queenslandica_de	-----VAERALYWWSNDY IMSLVGENPQALFP--IILPA	457
gi	Drosophila_melanogaster_B56	-----VAERALYWNNEY IMSLITDNSAVILP--IMFPA	530
gi	Dictyostelium_discoideum_ps	-----VAERALYLFSENENIVLLIASKNNFTLALETIFYKP	457
gi	Dictyostelium_purpureum_N/A	-----VAERALYLFSENENIVLLIASKNNFTLALETIFYKP	414
gi	Dictyostelium_fasciculatum_	-----VAERSLLLLSNEHIVGLLSKRSVPLALNYFYKI	428
gi	Polysphondylium_pallidum_N/	-----VAERALLWSNDHVSVLVSKTCLP-----NV	398
gi	Arabidopsis_thaliana_theta	-----VAERALFLWNNNDH IENLIMQNRKVILP--IIFPA	420
gi	Arabidopsis_thaliana_eta	RYGKYQCLGLLYSALGVAERALFLWNNNH IENLIMQNRKVILP--IIFPA	460
gi	Arabidopsis_thaliana_zeta	-----VAERALFLWNNNDH IRNLITQNHKVIMP--IVFPA	450
gi	Arabidopsis_thaliana_gamma	-----VAERALFLWNNNDH IRNLITQNHKVIMP--IVFPA	429
gi	Oryza	-----VAERALFLWNNNDH IENLIRQNSKVILP--IIFSA	430
gi	Oryza_sativa_zeta	-----VAERALFLWNNNDH IENLIKQNSRVILP--IIFPA	430
gi	Oryza_sativa_theta	-----VAERALFLWNNNDH IEVLIKQNSKVILP--IILPA	434
gi	Oryza_sativa_eta	-----VAERALFLWNNNDH IENLIKQNYKVILP--IIFPA	423
gi	Arabidopsis_thaliana_delta	-----VAERALYLWNNNDHVTLNLRQNSRIILP--IVFPA	408
gi	Arabidopsis_thaliana_N/A	-----VSERALFLWNNNDQ IVNLIGHNRQAILP--IMFTA	414
gi	Oryza_sativa_kappa	-----VAERALFIWNNNDNVISLIAQNRQMIMP--IIVPA	420
gi	Oryza_sativa_N/A	-----VAERALFLWNNNEHLFDLISQNRQTIMP--IIPYA	401
gi	Arabidopsis_thaliana_alpha	-----VAERALFLWNNNEHVGLIAQNRGVILP--IIFAS	419
gi	Arabidopsis_thaliana_beta	-----VAERALFLWNNNEHIVGLIAQNRSVILP--IITYPT	419
gi	Oryza_sativa_N/A_2	-----VAERALFLWNNNDH IVSLIAQNRSVIFP--IIFEA	459

Figure S1. Cont.

gi Arabidopsis_thaliana_epsilon	-----VAERALFLWNNEHIVGLIAQNKDVIFFP--IIFEA	428
gi Chlamydomonas_reinhardtii_w	-----VAERSLFLWNNEYIVNLVAQHRHQLLP--ILFPA	417
gi Schizosaccharomyces_pombe_P	-----VAERALYFFNNDYFVHLVEENVDIILP--IIYPA	452
gi Schizosaccharomyces_pombe_P	-----VAERALCLWSNEYFTSLVSNQNVVTLPL--IIYPS	553
gi Ashbya_gossypii_RTsl	-----VAEKVLSYWNNEYFLNLCIENAEVILP--IIFPA	515
gi Saccharomyces_cerevisiae_RT	-----VAEKVLSYWNNEYFLNLCIENAEVILP--IIFPA	622
gi Aspergillus_niger_N/A	LYENS-----KGHWNRTHSMVYNAMK	528
gi Aspergillus_nidulans_parA	LFENS-----KGHWNRTHSMVYNAMK	530
gi Mus_musculus_alpha	LYKIS-----KEHWNQTIVALVYNVLK	420
gi Rattus_norvegicus_alpha	LYKIS-----KEHWNQTIVALVYNVLK	420
gi Macaca_mulatta_alpha	LYKIS-----KEHWNQTIVALVYNVLK	420
gi Homo_sapiens_alpha	LYKIS-----KEHWNPTIVALVYNVLK	420
gi Ovis_aries_alpha	LYKIS-----KEHWNPTIVALVYNVLK	423
gi Bos_taurus_alpha	LYKIS-----KEHWNPTIVALVYNVLK	423
gi Felis_catus_alpha	LYKIS-----KEHWNPTIVALVYNVLK	336
gi Canis_lupus_familiaris_alph	LYKIS-----KEHWNPTIVALVYNVLK	336
gi Falco_peregrinus_alpha	LYKIS-----KEHWNPTIVALVYNVLK	410
gi Gallus_gallus_alpha	LYKIS-----KEHWNPTIVALVYNVLK	410
gi Alligator_mississippiensis_	LYKIS-----KEHWNPTIVALVYNVLK	420
gi Chrysemys_picta_bellii_alph	LYKIS-----KEHWNPTIVALVYNVLK	410
gi Xenopus_laevis_alpha	LYKIS-----KEHWNPTIVALVYNVLK	409
gi Xenopus_tropicalis_alpha	LYKIS-----KEHWNPTIVALVYNVLK	409
gi Ambystoma_mexicanum_alpha	LYKIS-----KEHWNPTIVALVYNVLK	336
gi Danio_rerio_alpha	LYRIS-----KEHWNPTIVALVYNVLK	412
gi Petromyzon_marinus_S4RHV1	LYKMS-----EEHWNQTIILGLNFNVMK	410
gi Mus_musculus_epsilon	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Rattus_norvegicus_epsilon	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Macaca_mulatta_epsilon	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Homo_sapiens_epsilon	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Ovis_aries_epsilon	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Bos_taurus_epsilon	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Canis_lupus_familiaris_epsi	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Falco_peregrinus_epsilon	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Gallus_gallus_epsilon	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Felis_catus_epsilon	LYRIX-----KEHWNPAIVALVYNVLK	412
gi Chrysemys_picta_bellii_epsi	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Xenopus_laevis_epsilon	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Xenopus_tropicalis_epsilon	LYRIS-----KEHWNPAIVALVYNVLK	412
gi Alligator_mississippiensis_	LYRIS-----KEHWNPAIVALVYNVLK	401
gi Ambystoma_mexicanum_epsilon	LYRIS-----KEHWNPAIVALVYNVLK	408
gi Danio_rerio_epsilon	LYRIS-----KEHWNPAISALIYNVLK	412
gi Mus_musculus_beta	LYQVS-----KEHWNQTIVSLIYNVLK	426
gi Rattus_norvegicus_beta	LYQVS-----KEHWNQTIVSLIYNVLK	426
gi Felis_catus_beta	LYQVS-----KEHWNQTIVSLIYNVLK	426
gi Canis_lupus_familiaris_beta	LYQVS-----KEHWNQTIVSLIYNVLK	426
gi Homo_sapiens_beta	LYQVS-----KEHWNQTIVSLIYNVLK	426
gi Bos_taurus_beta	LYQVS-----KEHWNQTIVSLIYNVLK	426
gi Ovis_aries_beta	LYQVS-----KEHWNQTIVSLIYNVLK	426
gi Macaca_mulatta_beta	LYQVS-----KEHWNQTIVSLIYNVLK	390
gi Xenopus_laevis_beta	-----AHR--TIVSLIYNVLK	32
gi Alligator_mississippiensis_	LYRVS-----KEHWNQTIVSLVYNVLK	426
gi Chrysemys_picta_bellii_beta	LYRVS-----KEHWNQTIVSLVYNVLK	426
gi Xenopus_tropicalis_beta	LYQVS-----KEHWNQTIVSLIYNVLK	424
gi Danio_rerio_beta	LYRVS-----KEHWNQTIISLIYNVLK	425
gi Ambystoma_mexicanum_beta	LYRVS-----KEHWNQTIVSLIYNVLK	295
gi Petromyzon_marinus_S4RGA7	LYRVS-----KEHWNQTIVALVYNILK	189
gi Strongylocentrotus_purpurat	LYRIS-----KDHWNQTIVALVYNVLR	408
gi Drosophila_melanogaster_wdb	LYRIS-----KEHWNQTIVALVYNVLK	407
jgi Branchiostoma_floridae_237	LYRIS-----KEHWNQTIVALVYNVLK	363

Figure S1. Cont.

gi Hydra_vulgaris_alpha	LYRIS-----	KDHWNQTI VALVYNVLK	416
jgi Branchiostoma_floridae_112	-----	-----	-----
jgi Branchiostoma_floridae_284	LYRIS-----	KDHWNQTI VALVYNVLK	376
gi Caenorhabditis_elegans_PPTR	LYRIS-----	KEHWNQTI VALVYNVLK	437
gi Amphimedon_queenslandica_be	LYRIS-----	KEHWNKAI VSLVYNVLK	430
gi Chrysemys_picta_bellii_gamm	LYRNS-----	KTHWNKTI HGLIYNALK	395
gi Chrysemys_picta_bellii_delt	LYRNS-----	KTHWNKTI HGLIYNALK	320
gi Falco_peregrinus_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	395
gi Falco_peregrinus_delta/gamm	LYRNS-----	KTHWNKTI HGLIYNALK	320
gi Gallus_gallus_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	395
gi Alligator_mississippiensis_	LYRNS-----	KTHWNKTI HGLIYNALK	395
gi Alligator_mississippiensis_	LYRNS-----	KTHWNKTI HGLIYNALK	320
gi Ambystoma_mexicanum_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	396
gi Mus_musculus_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	395
gi Rattus_norvegicus_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	395
gi Ovis_aries_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	395
gi Bos_taurus_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	395
gi Canis_lupus_familiaris_gamm	LYRNS-----	KTHWNKTI HGLIYNALK	395
gi Macaca_mulatta_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	395
gi Homo_sapiens_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	385
gi Felis_catus_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	442
gi Canis_lupus_familiaris_delt	LYRNS-----	KTHWNKTI HGLIYNALK	442
gi Macaca_mulatta_delta/gamma	LYRNS-----	KTHWNKTI HGLIYNALK	677
gi Bos_taurus_delta/gamma	LYRNS-----	KTHWNKTI HGLIYNALK	449
gi Mus_musculus_delta/gamma	LYRNS-----	KTHWNKTI HGLIYNALK	452
gi Rattus_norvegicus_delta/gam	LYRNS-----	KTHWNKTI HGLIYNALK	518
gi Danio_rerio_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	395
gi Danio_rerio_delta/gamma	LYRNS-----	KTHWNKTI HGLIYNALK	448
gi Xenopus_laevis_delta/gamma	LYRNS-----	KTHWNKTI HGLIYNALK	448
gi Xenopus_laevis_gamma	LYRNS-----	KTHWNKTI HGLIYNALK	448
gi Xenopus_tropicalis_delta/ga	LYRNS-----	KTHWNKTI HGLIYNALK	448
gi Mus_musculus_delta	LYRNS-----	KSHWNKTI HGLIYNALK	463
gi Rattus_norvegicus_delta	LYRNS-----	KSHWNKTI HGLIYNALK	491
gi Felis_catus_delta	LYRNS-----	KSHWNKTI HGLIYNALK	477
gi Bos_taurus_delta	LYRNS-----	KSHWNKTI HGLIYNALK	469
gi Canis_lupus_familiaris_delt	LYRNS-----	KSHWNKTI HGLIYNALK	464
gi Macaca_mulatta_delta	LYRNS-----	KSHWNKTI HGLIYNALK	480
gi Homo_sapiens_delta	LYRNS-----	KSHWNKTI HGLIYNALK	471
gi Ovis_aries_delta	LYRNS-----	KSHWNKTI HGLIYNALK	468
gi Falco_peregrinus_delta	LYKNS-----	KSHWNKTI HGLIYNALK	371
gi Gallus_gallus_delta	LYKNS-----	KSHWNKTI HGLIYNALK	466
gi Alligator_mississippiensis_	LYKNS-----	KSHWNKTI HGLIYNALK	465
gi Chrysemys_picta_bellii_delt	LYKNS-----	KSHWNKTI HGLIYNALK	467
gi Danio_rerio_delta	LYKNS-----	KSHWNKTI HGLIYNALK	458
gi Ambystoma_mexicanum_delta	LYKNS-----	KSHWNKTI HGLIYNALK	320
gi Petromyzon_marinus_S4RN43	LYRNS-----	KSHWNKTI HGLIYNALK	448
jgi Branchiostoma_floridae_237	LYKNS-----	KTHWNKTI HGLIYNALK	368
jgi Branchiostoma_floridae_252	LYKNS-----	KTHWNKTI HGLIYNALK	412
gi Strongylocentrotus_purpurat	LYKNS-----	KAHWNKTI NGLIYNALK	429
gi Caenorhabditis_elegans_PPTR	LFKNS-----	KSHWNKTI HGLIYNALK	416
gi Hydra_vulgaris_delta	LYRNS-----	KTHWNKTI HGLIYNALK	438
gi Amphimedon_queenslandica_de	LLRHS-----	KQHWNKTI LGLIYNALK	479
gi Drosophila_melanogaster_B56	LNRNS-----	KTHWNKNI HGLIYNALK	552
gi Dictyostelium_discoideum_ps	LHENS-----	ISHWNRS IRNLSISSLK	479
gi Dictyostelium_purpureum_N/A	LYENS-----	IGHWNKS IRNLSISSLK	436
gi Dictyostelium_fasciculatum_	LHDNA-----	NNHWNKTI RSLSFNSLK	450
gi Polysphondylium_pallidum_N/	LYENS-----	NNHWNKS IRSLSFSSLK	420
gi Arabidopsis_thaliana_theta	LERNT-----	QKHWNQAVHSL TTNVQK	442
gi Arabidopsis_thaliana_eta	LERNA-----	QKHWNQAVHSL TTNVRK	482
gi Arabidopsis_thaliana_zeta	LERNT-----	RGHWNQAVQSL TINVRK	472
gi Arabidopsis_thaliana_gamma	MERNT-----	RGHWNQAVQSL TTNVRK	451

Figure S1. Cont.

gi	Oryza	LEKNV-----IEHWNQAVKSLSLNVQK	452
gi	Oryza_sativa_zeta	LERNA-----NGHWNQAVQSLTLNVRK	452
gi	Oryza_sativa_theta	IERNT-----KEHWNQAVQSLSLNVRK	456
gi	Oryza_sativa_eta	LERNA-----RGHWNQAVRSLTLNVRK	445
gi	Arabidopsis_thaliana_delta	LEKNG-----SSHWNQAVKNLTEENVLK	430
gi	Arabidopsis_thaliana_N/A	LEKNA-----QNHWNQSVLNLTLNVRK	436
gi	Oryza_sativa_kappa	LEHNS-----QNHWNQAVLNLTDNVVK	442
gi	Oryza_sativa_N/A	LERNT-----RWHWNQSVLNVTMNVRK	423
gi	Arabidopsis_thaliana_alpha	LEKNI-----ESHWNQAVHGLSANIKR	441
gi	Arabidopsis_thaliana_beta	LEKNI-----QSHWNQAVHGLTTNIKK	441
gi	Oryza_sativa_N/A_2	LERNI-----TSHWNQAVHGLTANVRK	481
gi	Arabidopsis_thaliana_epsilon	LERNM-----KGHWNQAVHGLSENVRR	450
gi	Chlamydomonas_reinhardtii_w	LEENT-----NSHWNPAVHGLTCNVRK	439
gi	Schizosaccharomyces_pombe_P	LFEIS-----KSHWNRVIHSMVCNVLK	474
gi	Schizosaccharomyces_pombe_P	LYKTA-----NEHWNSTIQAIACNVLQ	575
gi	Ashbya_gossypii_RTS1	LYELTSQQLDLSQTDEEGNPNQDPYMLVEQAINSGSWNRRAIHAMAFKALK	565
gi	Saccharomyces_cerevisiae_RT	LYELTSQLELDTANGED--SISDPYMLVEQAINSGSWNRRAIHAMAFKALK	670
gi	Aspergillus_niger_N/A	MFMEINPQLFDECSHEYNERQNS-----	551
gi	Aspergillus_nidulans_parA	MFMEINPQLFDECSHEYNERQNS-----	553
gi	Mus_musculus_alpha	TLMEMNGKLFDDLTSSYKAERQR-----	443
gi	Rattus_norvegicus_alpha	TLMEMNGKLFDDLTSSYKAERQR-----	443
gi	Macaca_mulatta_alpha	TLMEMNGKLFDDLTSSYKAERQR-----	443
gi	Homo_sapiens_alpha	TLMEMNGKLFDDLTSSYKAERQR-----	443
gi	Ovis_aries_alpha	TLMEMNGKLFDDLTSSYKAERQR-----	446
gi	Bos_taurus_alpha	TLMEMNGKLFDDLTSSYKAERQR-----	446
gi	Felis_catus_alpha	TLMEMNGKLFDDLTSSYKAERQR-----	359
gi	Canis_lupus_familiaris_alph	TLMEMNGKLFDDLTSSYKAERQR-----	359
gi	Falco_peregrinus_alpha	TLMEMNGKLFDELTSSYKAERQR-----	433
gi	Gallus_gallus_alpha	TLMEMNGKLFDELTSSYKAERQR-----	433
gi	Alligator_mississippiensis_	TLMEMNGKLFDELTSTYKAERQR-----	443
gi	Chrysemys_picta_bellii_alph	TLMEMNGKLFDELTSSYKAERQR-----	433
gi	Xenopus_laevis_alpha	TLMEMNGKLFDELTGSYKAERQR-----	432
gi	Xenopus_tropicalis_alpha	TLMEMNGKLFDELTGSYKAERQR-----	432
gi	Ambystoma_mexicanum_alpha	TLMEMNGKLFDELTGSYKAERQR-----	359
gi	Danio_rerio_alpha	TMMEMNSKLFDELTTSYKSDRQR-----	435
gi	Petromyzon_marinus_S4RHV1	TMMDMNCELFGELTTSYNNERQR-----	433
gi	Mus_musculus_epsilon	AFMEMNSTMFDELTATYKSDRQR-----	435
gi	Rattus_norvegicus_epsilon	AFMEMNSTMFDELTATYKSDRQR-----	435
gi	Macaca_mulatta_epsilon	AFMEMNSTMFDELTATYKSDRQR-----	435
gi	Homo_sapiens_epsilon	AFMEMNSTMFDELTATYKSDRQR-----	435
gi	Ovis_arie_epsilon	AFMEMNSTMFDELTATYKSDRQR-----	435
gi	Bos_taurus_epsilon	AFMEMNSTMFDELTATYKSDRQR-----	435
gi	Canis_lupus_familiaris_epsi	AFMEMNSTMFDELTATYKSDRQR-----	435
gi	Falco_peregrinus_epsilon	AFMEMNSTMFDELTATYKSDRQR-----	435
gi	Gallus_gallus_epsilon	AFMEMNSTMFDELTATYKSDRQR-----	435
gi	Felis_catus_epsilon	AFMEMNSTMFDELTATYKSDRQR-----	435
gi	Chrysemys_picta_bellii_epsi	AFMEMNSTMFDELTATYN-----	430
gi	Xenopus_laevis_epsilon	AFMEMNSTLFDELTATYKSDRQR-----	435
gi	Xenopus_tropicalis_epsilon	AFMEMNSTLFDELTATYN-----	430
gi	Alligator_mississippiensis_	AFMEMNSTMFDELTATYKSDRQRRLSKAAGEKNEETSGTPTRLSRFCVQTQ	451
gi	Ambystoma_mexicanum_epsilon	AFMEMNSTLFDELTATYKSDRQR-----	431
gi	Danio_rerio_epsilon	AFMEMNSALFDELAASYKSDRQR-----	435
gi	Mus_musculus_beta	TFMEMNGKLFDELTASYKLEKQQ-----	449
gi	Rattus_norvegicus_beta	TFMEMNGKLFDELTASYKLEKQQ-----	449
gi	Felis_catus_beta	TFMEMNGKLFDELTASYKLEKQQ-----	449
gi	Canis_lupus_familiaris_beta	TFMEMNGKLFDELTASYKLEKQQ-----	449
gi	Homo_sapiens_beta	TFMEMNGKLFDELTASYKLEKQQ-----	449
gi	Bos_taurus_beta	TFMEMNGKLFDELTASYKLEKQQ-----	449
gi	Ovis_aries_beta	TFMEMNGKLFDELTASYKLEKQQ-----	449

Figure S1. Cont.

gi Macaca_mulatta_beta	TFMEMNGKLFDELTAASYKLEKQQ-----	413
gi Xenopus_laevis_beta	TFMEMNGKLFDELTAASYKLDROQ-----	55
gi Alligator_mississippiensis_	TFMEMNGKLFDELTAASYKLEKQQ-----	449
gi Chrysemys_picta_bellii_beta	TFMEMNGKLFDELTAASYKVEKQQ-----	449
gi Xenopus_tropicalis_beta	TFMEMNGKLFDELTAASYKLDROQ-----	447
gi Danio_rerio_beta	TFMEMNSKLFDDLTASYKVEKQK-----	448
gi Ambystoma_mexicanum_beta	TFMEMNSTLFDELTAASYKVEKQQ-----	318
gi Petromyzon_marinus_S4RGA7	TFMEMNSKLFDELTAASYKAERQR-----	212
gi Strongylocentrotus_purpurat	TFMEMNSKLFDELTAASYKADRQK-----	431
gi Drosophila_melanogaster_wdb	TFMEMNSKLFDELTAASYKAERQK-----	430
jgi Branchiostoma_floridae_237	TFMEMNSKLFDELTAANYKAERQK-----	386
gi Hydra_vulgaris_alpha	SFMEMNSKLFDDLTASYKADRQK-----	439
jgi Branchiostoma_floridae_112	-----	
jgi Branchiostoma_floridae_284	TFMEMNSKLFDELTAASYKADRQK-----	399
gi Caenorhabditis_elegans_PPTR	TFMEMNGKLFDELTAASYKGERLR-----	460
gi Amphimedon_queenslandica_be	AMTAMNPKLFDQLLDSYKAEKQK-----	453
gi Chrysemys_picta_bellii_gamm	LFMEMNQKLFDDCTQQFKAEKLK-----	418
gi Chrysemys_picta_bellii_delt	LFMEMNQKLFDDCTQQFKAEKLK-----	343
gi Falco_peregrinus_gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	418
gi Falco_peregrinus_delta/gamm	LFMEMNQKLFDDCTQQFKAEKLK-----	343
gi Gallus_gallus_gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	418
gi Alligator_mississippiensis_	LFMEMNQKLFDDCTQQFKAEKLK-----	418
gi Alligator_mississippiensis_	LFMEMNQKLFDDCTQQFKAEKLK-----	343
gi Ambystoma_mexicanum_gamma	LFMEMNQKLFDDCTQQFKAEKQK-----	419
gi Mus_musculus_gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	418
gi Rattus_norvegicus_gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	418
gi Ovis_aries_gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	418
gi Bos_taurus_gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	418
gi Canis_lupus_familiaris_gamm	LFMEMNQKLFDDCTQQFKAEKLK-----	418
gi Macaca_mulatta_gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	418
gi Homo_sapiens_gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	408
gi Felis_catus_gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	465
gi Canis_lupus_familiaris_delt	LFMEMNQKLFDDCTQQFKAEKLK-----	465
gi Macaca_mulatta_delta/gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	700
gi Bos_taurus_delta/gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	472
gi Mus_musculus_delta/gamma	LFMEMNQKLFDDCTQQFKAEKLK-----	475
gi Rattus_norvegicus_delta/gam	LFMEMNQKLFDDCTQQFKAEKLK-----	541
gi Danio_rerio_gamma	LFMEMNQKLFDDCTQQFRAEKNK-----	418
gi Danio_rerio_delta/gamma	LFMEMNQKLFDDCTQQFRAEKNK-----	471
gi Xenopus_laevis_delta/gamma	LFMEMNQKLFDDCTQQFKAEKQK-----	471
gi Xenopus_laevis_gamma	LFMEMNQKLFDDCTQQFKAEKQK-----	471
gi Xenopus_tropicalis_delta/ga	LFMEMNQKLFDDCTQQFKAEKQK-----	471
gi Mus_musculus_delta	LFMEMNQKLFDDCTQQYKAEKQK-----	486
gi Rattus_norvegicus_delta	LFMEMNQKLFDDCTQQYKAEKQK-----	514
gi Felis_catus_delta	LFMEMNQKLFDDCTQQYKAEKQK-----	500
gi Bos_taurus_delta	LFMEMNQKLFDDCTQQYKAEKQK-----	492
gi Canis_lupus_familiaris_delt	LFMEMNQKLFDDCTQQYKAEKQK-----	487
gi Macaca_mulatta_delta	LFMEMNQKLFDDCTQQYKAEKQK-----	503
gi Homo_sapiens_delta	LFMEMNQKLFDDCTQQYKAEKQK-----	494
gi Ovis_aries_delta	LFMEMNQKLFDDCTQQYKAEKQK-----	491
gi Falco_peregrinus_delta	LFMEMNQKLFDDCTQQYKAEKQK-----	394
gi Gallus_gallus_delta	LFMEMNQKLFDDCTQQYKAEKQK-----	489
gi Alligator_mississippiensis_	LFMEMNQKLFDDCTQQYKAEKQK-----	488
gi Chrysemys_picta_bellii_delt	LFMEMNQKLFDDCTQQYKAEKQK-----	490
gi Danio_rerio_delta	LFMEMNQKLFDDCTQQYKAEKQK-----	481
gi Ambystoma_mexicanum_delta	LFMEMNQKLFDDCTQQYKAEKQK-----	343
gi Petromyzon_marinus_S4RN43	LFMEMNQKLFDDCTQQYKAERQK-----	471
jgi Branchiostoma_floridae_237	LFMEMNQKLFDDCTQRYKAERQK-----	391
jgi Branchiostoma_floridae_252	LFMEMNQKLFDDCTQRYKAERQK-----	435
gi Strongylocentrotus_purpurat	LFMEINQKRFDDCMQYKDERQQ-----	452
gi Caenorhabditis_elegans_PPTR	MFMEMNQKLFDECSQAYQKDRVQ-----	439

Figure S1. Cont.

gi Hydra_vulgaris_delta	LLMEMNQKLFQCAQQYNFQIE-----	460
gi Amphimedon_queenslandica_de	IFAEMNQKLFDECSDFKKEELEQ-----	502
gi Drosophila_melanogaster_B56	LFMEIDQRLFDECSKNYQEKQM-----	575
gi Dictyostelium_discoideum_ps	LFMEIDMDLFNKISEKYKESKKK-----	502
gi Dictyostelium_purpureum_N/A	LFMEIDIDLFNKVSEKYKETKKK-----	459
gi Dictyostelium_fasciculatum	LFMEIDLETFNNSISCKVMEERA-----	473
gi Polysphondylium_pallidum_N/	LFMDIDVETFNRIISDQYKE-----	439
gi Arabidopsis_thaliana_theta	IFNDIDAELFKDCLAKFREDESK-----	465
gi Arabidopsis_thaliana_eta	IFHDLDPFLFKECLAKFKEDESK-----	505
gi Arabidopsis_thaliana_zeta	VLCEIDQVLFDECLAKFQVEEVN-----	495
gi Arabidopsis_thaliana_gamma	VMAETDQILFDECLAKFQDEAN-----	474
gi Oryza	LFSDRDPELYKECLRKYEENKAK-----	475
gi Oryza_sativa_zeta	LFSDHDVGVYDECQRKYEDEKAK-----	475
gi Oryza_sativa_theta	IFMDHDPVLFEECLKKFEDEAK-----	479
gi Oryza_sativa_eta	IFSDHDSAFFGECTQKFNDELK-----	468
gi Arabidopsis_thaliana_delta	VLSDTNPDLFEECLKHFKQEDQQK-----	453
gi Arabidopsis_thaliana_N/A	MFCEMDEALFMSCHARFKEDEAK-----	459
gi Oryza_sativa_kappa	MFSEMDDVLFSAVLVKYKEDEER-----	465
gi Oryza_sativa_N/A	MFLEMDEGLLLTCQRNFQEEEEK-----	446
gi Arabidopsis_thaliana_alpha	MFMEMDPELFEECQQQYEEKQAK-----	464
gi Arabidopsis_thaliana_beta	MFMEMDPELFEECQRQYEEKQAK-----	464
gi Oryza_sativa_N/A_2	MFLDMSELFEECQQQYIEKQAR-----	504
gi Arabidopsis_thaliana_epsilon	MFLMDTEALFEECEKQYLENEAK-----	473
gi Chlamydomonas_reinhardtii_w	MFQELDEALYEECKRKYEEEQTS-----	462
gi Schizosaccharomyces_pombe_P	LFMDINPSLFDEVDAAEYSESRRK-----	497
gi Schizosaccharomyces_pombe_P	IFVMDADFFNGLVEDYKQAI IK-----	598
gi Ashbya_gossypii_RTS1	IFLETNPVLYENCNSLYLSSLKE-----	588
gi Saccharomyces_cerevisiae_RT	IFLETNPVLYENCNALYLSSVKE-----	693
gi Aspergillus_niger_N/A	-----AEERELGRQQRWEKVLERAKDRKNGVTVPP---	581
gi Aspergillus_nidulans_parA	-----AEMREKARQNRWEKVAERAMQRQNGVNLPR---	583
gi Mus_musculus_alpha	-----EKKKELEEREELWKKLEELQLK-----	464
gi Rattus_norvegicus_alpha	-----EKKKELEEREELWKKLEELKLK-----	464
gi Macaca_mulatta_alpha	-----EKKKELEEREELWKKLEELKLK-----	464
gi Homo_sapiens_alpha	-----EKKKELEEREELWKKLEELKLK-----	464
gi Ovis_aries_alpha	-----EKKKELEEREELWKKLEELKLK-----	467
gi Bos_taurus_alpha	-----EKKKELEEREELWKKLEELKLK-----	467
gi Felis_catus_alpha	-----EKKKELEEREELWKKLEELKLK-----	380
gi Canis_lupus_familiaris_alph	-----EKKKELEEREELWKKLEELKLK-----	380
gi Falco_peregrinus_alpha	-----EKKKELEEREELWRKLEELKLK-----	454
gi Gallus_gallus_alpha	-----EKKKELEEREELWRKLEELKLK-----	454
gi Alligator_mississippiensis	-----EKKKELEEREELWRKLEELKLK-----	464
gi Chrysemys_picta_bellii_alph	-----EKKKELEEREELWRKLEELKLK-----	454
gi Xenopus_laevis_alpha	-----EKKKELEEREELWRRLLDLLLLK-----	453
gi Xenopus_tropicalis_alpha	-----EKKKELEEREELWRRLLDLLLLK-----	453
gi Ambystoma_mexicanum_alpha	-----ERKKELEEREELWRKLLDLDLKLK-----	380
gi Danio_rerio_alpha	-----EKKKEQEREELWRRLLDELRLMK-----	456
gi Petromyzon_marinus_S4RHV1	-----EKKKEEREELWKKLEDLELK-----	454
gi Mus_musculus_epsilon	-----EKKKEKEREELWKKLEDLELK-----	456
gi Rattus_norvegicus_epsilon	-----EKKKEKEREELWKKLEDLELK-----	456
gi Macaca_mulatta_epsilon	-----EKKKEKEREELWKKLEDLELK-----	456
gi Homo_sapiens_epsilon	-----EKKKEKEREELWKKLEDLELK-----	456
gi Ovis_arie_epsilon	-----EKKKEKEREELWKKLEDLELK-----	456
gi Bos_taurus_epsilon	-----EKKKEKEREELWKKLEDLELK-----	456
gi Canis_lupus_familiaris_epsi	-----EKKKEKEREELWKKLEDLELK-----	456
gi Falco_peregrinus_epsilon	-----EKKKEKEREELWKKLEDLELK-----	456
gi Gallus_gallus_epsilon	-----EKKKEKEREELWKKLEDLELK-----	456
gi Felis_catus_epsilon	-----EKKKEKEREELWKKLEDLELK-----	456
gi Chrysemys_picta_bellii_epsi	-----EKKKEKEREELWKKLEDLELK-----	451
gi Xenopus_laevis_epsilon	-----EKKKEKEREELWKKLEDLELK-----	456

Figure S1. Cont.

gi	Xenopus tropicalis_epsilon	-----EKKKEKEREELWKKLEDELELK-----	451
gi	Alligator_mississippiensis_	GSHKQSEGYCMSSNLVSEKKKEKEREELWKKLEDELELK-----	489
gi	Ambystoma_mexicanum_epsilon	-----	
gi	Danio_rerio_epsilon	-----ERKKDKEREDLWRKLEDELELR-----	456
gi	Mus_musculus_beta	-----EQQKAQERQELWRGLEELRLR-----	470
gi	Rattus_norvegicus_beta	-----EQQKAQERQELWRGLEELRLR-----	470
gi	Felis_catus_beta	-----EQQKARERQELWQGLEELRLR-----	470
gi	Canis_lupus_familiaris_beta	-----EQQKARERQELWQGLEELRLR-----	470
gi	Homo_sapiens_beta	-----EQQKAQERQELWQGLEELRLR-----	470
gi	Bos_taurus_beta	-----EQQKARERQELWQGLEELRLR-----	470
gi	Ovis_aries_beta	-----EQQKARERQELWQGLEELRLR-----	470
gi	Macaca_mulatta_beta	-----EQQKAQERQELWQGLEELRLR-----	434
gi	Xenopus_laevis_beta	-----	
gi	Alligator_mississippiensis_	-----ELKKEKERQELWRQLEDELRLR-----	470
gi	Chrysemys_picta_bellii_beta	-----ELKKEKERQELWKQLEDELQLK-----	470
gi	Xenopus_tropicalis_beta	-----EMKREKERQELWRKLDLRLK-----	468
gi	Danio_rerio_beta	-----ELKKERVELWRNLEDLRER-----	469
gi	Ambystoma_mexicanum_beta	-----ELKKEKERQELWKKLDDLQLR-----	339
gi	Petromyzon_marinus_S4RGA7	-----ERKREKEREDLWQRLLEELQLQ-----	233
gi	Strongylocentrotus_purpurat	-----EKKKEKERDELWKRLSKLEMN-----	452
gi	Drosophila_melanogaster_wdb	-----EKKRERDREELWKKLHELESNRSSGRTAGGSAT	463
jgi	Branchiostoma_floridae_237	-----ERKKEKEREELWKKLDGLEIN-----	407
gi	Hydra_vulgaris_alpha	-----EKKKERDRDDLWKRDLKLE-----	460
jgi	Branchiostoma_floridae_112	-----	
jgi	Branchiostoma_floridae_284	-----EKKKEKEREELWKQDKLEIS-----	420
gi	Caenorhabditis_elegans_PPTR	-----EKQREKDRDAFWKKMEALELN-----	481
gi	Amphimedon_queenslandica_be	-----ELKKGKDRNELWKQLDRLKLE-----	474
gi	Chrysemys_picta_bellii_gamm	-----EKLKSKEREAEAWVKIENLAKSNPQYPTYSDTSV	451
gi	Chrysemys_picta_bellii_delt	-----EKLKSKEREAEAWVKIENLAKSNPQYPTYSDTSV	376
gi	Falco_peregrinus_gamma	-----EKLKSKEREAEAWVKIENLAKSNPQYPTYSDTSL	451
gi	Falco_peregrinus_delta/gamm	-----EKLKSKEREAEAWVKIENLAKSNPQYPTYSDTSL	376
gi	Gallus_gallus_gamma	-----EKLKSKEREAEAWVKIENLAKSNPQYPTYSDTSL	451
gi	Alligator_mississippiensis_	-----EKLKSKEREAEAWVKIENLAKSNPQYPTYSDTSV	451
gi	Alligator_mississippiensis_	-----EKLKSKEREAEAWVKIENLAKSNPQYPTYSDTSV	376
gi	Ambystoma_mexicanum_gamma	-----EKLKSKEREAEAWVKIENLAKSNPKYSMRPDNST	452
gi	Mus_musculus_gamma	-----EKLKMKEREAEAWVKIENLAKANPQYAVYSQASA	451
gi	Rattus_norvegicus_gamma	-----EKLKMKEREAEAWVKIENLAKANPQYAVYSQASA	451
gi	Ovis_aries_gamma	-----EKLKMKEREAEAWVKIENLAKANP-----	441
gi	Bos_taurus_gamma	-----EKLKMKEREAEAWVKIENLAKANPQYAVYSQAST	451
gi	Canis_lupus_familiaris_gamm	-----EKLKMKEREAEAWVKIENLAKANPQYAVYSQAST	451
gi	Macaca_mulatta_gamma	-----EKLKMKEREAEAWVKIENLAKANPQYTVYSQAST	451
gi	Homo_sapiens_gamma	-----EKLKMKEREAEAWVKIENLAKANPQYTVYSQAST	441
gi	Felis_catus_gamma	-----EKLKMKEREAEAWVKIENLAKANP-----	488
gi	Canis_lupus_familiaris_delt	-----EKLKMKEREAEAWVKIENLAKANPQYAVYSQAST	498
gi	Macaca_mulatta_delta/gamma	-----EKLKMKEREAEAWVKIENLAKANPQYTVYSQAST	733
gi	Bos_taurus_delta/gamma	-----EKLKMKEREAEAWVKIENLAKANPQYAVYSQAST	505
gi	Mus_musculus_delta/gamma	-----EKLKMKEREAEAWVKIENLAKANPQYAVYSQASA	508
gi	Rattus_norvegicus_delta/gam	-----EKLKMKEREAEAWVKIENLAKANPQYAVYSQASA	574
gi	Danio_rerio_gamma	-----EKAKWKEREAEAWIKIENLAKSNPQFLMYIDANS	451
gi	Danio_rerio_delta/gamma	-----EKAKWKEREAEAWIKIENLAKSNPQFLMYIDANS	504
gi	Xenopus_laevis_delta/gamma	-----EKLKSKEREAEAWVKIENLAKSNQSCCNRWA	504
gi	Xenopus_laevis_gamma	-----EKLKSKEREAEAWVKIENLAKSNQSCCNRWA	504
gi	Xenopus_tropicalis_delta/ga	-----EKLKSKEREAEAWIKIENLAKSNPQYPMYTD TSA	504
gi	Mus_musculus_delta	-----GRFRMKEREEMWQKIEELARLNPQYPMFRAPPP	519
gi	Rattus_norvegicus_delta	-----GRFRMKEREEMWQKIEELARLNPQYPMFRAPPP	547
gi	Felis_catus_delta	-----GRFRMKEREEMWQKIEELARLNPQYPMFRAPPP	533
gi	Bos_taurus_delta	-----GRFRMKEREEMWQKIEELARLNPQYPMFRAPPP	525
gi	Canis_lupus_familiaris_delt	-----GRFRMKEREEMWQKIEELARLNPQYPMFRAPPP	520
gi	Macaca_mulatta_delta	-----GRFRMKEREEMWQKIEELARLNPQYPMFRAPPP	536
gi	Homo_sapiens_delta	-----GRFRMKEREEMWQKIEELARLNPQYPMFRAPPP	527
gi	Ovis_aries_delta	-----GRFRMKEREEMWQKIEELARLNPQYPMFRAPPP	524

Figure S1. Cont.

gi Falco_peregrinus_delta	-----GRFRMKEREEMWQKIEELARLNPQYPMYYAPP	427
gi Gallus_gallus_delta	-----GRFRMKEREEMWQKIEELARLNPQYPMYYAPPS	522
gi Alligator_mississippiensis_	-----GRFRMKERVEMWQKIEELARLNPQYPMYYAPP	521
gi Chrysemys_picta_bellii_delt	-----GRFKLREEREEMWHKVEELARQNPQYPMYYAPP	523
gi Danio_rerio_delta	-----EKYKVKEREEMWHKIEALAKQNPQSTKVQLRPG	514
gi Ambystoma_mexicanum_delta	-----GKFVKEREEMWHKIEELARLNP-----	366
gi Petromyzon_marinus_S4RN43	-----QARGQVRGGSCRTQMSTLARCDPAQDLNG----	500
jgi Branchiostoma_floridae_237	-----EKEKVREREAEAWDRIEHIAQTNPMVSTANLGTC	424
jgi Branchiostoma_floridae_252	-----EKEKVREREAEAWDRIEHIAQTNPMVSTVNLGTC	468
gi Strongylocentrotus_purpurat	-----EKDKLLKMDEIWNKLEYKARSNP-----	475
gi Caenorhabditis_elegans_PPTR	-----EKTLNEEKERIWNNEIKQAMGNPQYVEVKALFA	472
gi Hydra_vulgaris_delta	-----	
gi Amphimedon_queenslandica_de	-----EPKVVKKREDTWTALEKLLALMSPHVSJKLSSPQN	535
gi Drosophila_melanogaster_B56	-----EREKLSQREELWQQVESLAKTNPEWTKARRFND	608
gi Dictyostelium_discoideum_ps	-----QQQIQQ-REKFKQN-----APETQ	520
gi Dictyostelium_purpureum_N/A	-----QQQQQQQREKTRQN-----VDVS-	477
gi Dictyostelium_fasciculatum	-----KKRQQS IMEDQRARLAHQQQQLQMQQHMQQMQ	506
gi Polysphondylium_pallidum_N/	-----RKTNKI TEEKKP-----Q	452
gi Arabidopsis_thaliana_theta	-----EAE IGAKREATWKR-----	479
gi Arabidopsis_thaliana_eta	-----AAETEAKREATWKR-----	519
gi Arabidopsis_thaliana_zeta	-----KTEVVKAKRETRWQR-----	509
gi Arabidopsis_thaliana_gamma	-----ETE VVAKREATWKL-----	488
gi>Oryza	-----EKDHKLKQESVWKR-----	489
gi Oryza_sativa_zeta	-----EKE TKLKQEVAWKR-----	489
gi Oryza_sativa_theta	-----ETALRSKREATWKR-----	493
gi Oryza_sativa_eta	-----QEESENSKREALWKR-----	482
gi Arabidopsis_thaliana_delta	-----AEDTKKKNGETWRQ-----	467
gi Arabidopsis_thaliana_N/A	-----QCSAAEKREKVVWAR-----	473
gi Oryza_sativa_kappa	-----QASLESKRRLTWEK-----	479
gi Oryza_sativa_N/A	-----RAASEERRKLIWEN-----	460
gi Arabidopsis_thaliana_alpha	-----SKQVEEQRQNRWRR-----	478
gi Arabidopsis_thaliana_beta	-----SKEVEEQRQYTWKR-----	478
gi Oryza_sativa_N/A_2	-----AKDMEEQRLSAWRQ-----	518
gi Arabidopsis_thaliana_epsilon	-----ACELLEQRELTWKR-----	487
gi Chlamydomonas_reinhardtii_w	-----ERAAMETRD RKWEY-----	476
gi Schizosaccharomyces_pombe_P	-----KEDEE I IREERWTILENIAKEN-----	519
gi Schizosaccharomyces_pombe_P	-----QEEVMI IRKQWCQIEALAAE-----	619
gi Ashbya_gossypii_RTS1	-----SQKRREKREENWNKLEQYVRN-----	609
gi Saccharomyces_cerevisiae_RT	-----TQQRKVQREENWSKLEEYVKN-----	714
gi Aspergillus_niger_N/A	-----	
gi Aspergillus_nidulans_para	-----	
gi Mus_musculus_alpha	-----	
gi Rattus_norvegicus_alpha	-----	
gi Macaca_mulatta_alpha	-----	
gi Homo_sapiens_alpha	-----	
gi Ovis_aries_alpha	-----	
gi Bos_taurus_alpha	-----	
gi Felis_catus_alpha	-----	
gi Canis_lupus_familiaris_alph	-----	
gi Falco_peregrinus_alpha	-----	
gi Gallus_gallus_alpha	-----	
gi Alligator_mississippiensis_	-----	
gi Chrysemys_picta_bellii_alph	-----	
gi Xenopus_laevis_alpha	-----	
gi Xenopus_tropicalis_alpha	-----	
gi Ambystoma_mexicanum_alpha	-----	
gi Danio_rerio_alpha	-----	
gi Petromyzon_marinus_S4RHV1	-----	
gi Mus_musculus_epsilon	-----	

Figure S1. Cont.

gi Rattus_norvegicus_epsilon	-----	
gi Macaca_mulatta_epsilon	-----	
gi Homo_sapiens_epsilon	-----	
gi Ovis_aries_epsilon	-----	
gi Bos_taurus_epsilon	-----	
gi Canis_lupus_familiaris_epsilon	-----	
gi Falco_peregrinus_epsilon	-----	
gi Gallus_gallus_epsilon	-----	
gi Felis_catus_epsilon	-----	
gi Chrysemys_picta_bellii_epsilon	-----	
gi Xenopus_laevis_epsilon	-----	
gi Xenopus_tropicalis_epsilon	-----	
gi Alligator_mississippiensis_epsilon	-----	
gi Ambystoma_mexicanum_epsilon	-----	
gi Danio_rerio_epsilon	-----	
gi Mus_musculus_beta	-----	
gi Rattus_norvegicus_beta	-----	
gi Felis_catus_beta	-----	
gi Canis_lupus_familiaris_beta	-----	
gi Homo_sapiens_beta	-----	
gi Bos_taurus_beta	-----	
gi Ovis_aries_beta	-----	
gi Macaca_mulatta_beta	-----	
gi Xenopus_laevis_beta	-----	
gi Alligator_mississippiensis_beta	-----	
gi Chrysemys_picta_bellii_beta	-----	
gi Xenopus_tropicalis_beta	-----	
gi Danio_rerio_beta	-----	
gi Ambystoma_mexicanum_beta	-----	
gi Petromyzon_marinus_S4RGA7	-----	
gi Strongylocentrotus_purpurat	-----	
gi Drosophila_melanogaster_wdb	TSNSAASAASTSLQ-----	477
jgi Branchiostoma_floridae_237	-----	
gi Hydra_vulgaris_alpha	-----	
jgi Branchiostoma_floridae_112	-----	
jgi Branchiostoma_floridae_284	---STANSKTVKAV-----	431
gi Caenorhabditis_elegans_PPTR	---PPAEGKEVTPS-----	492
gi Amphimedon_queenslandica_be	-----	
gi Chrysemys_picta_bellii_gamm	LN-----SPVAMETDGPLIEDLQMLKKTVKEEAC-----	480
gi Chrysemys_picta_bellii_delt	LN-----SPVAMETDGPLIEDLQMLKKTVKEEAC-----	405
gi Falco_peregrinus_gamma	LN-----SPVAMETDGPLIEDLQMLKKTVKEEAC-----	480
gi Falco_peregrinus_delta/gamm	LN-----SPVAMETDGPLIEDLQMLKKTVKEEAC-----	405
gi Gallus_gallus_gamma	LN-----SPVAMETDGPLIEDLQMLKKTVKEEAC-----	480
gi Alligator_mississippiensis_gamma	LN-----SPVAMETDGPLIEDLQMLKKTVKEEAC-----	480
gi Alligator_mississippiensis_gamma	LN-----SPVAMETDGPLIEDLQMLKKTVKEEAC-----	405
gi Ambystoma_mexicanum_gamma	FN-----SQIAMETDGPLIEDVQMLKKIVKEEAS-----	481
gi Mus_musculus_gamma	VS-----IPVAMETDGPQFEDVQMLKKTVSDEARQVKVGR	486
gi Rattus_norvegicus_gamma	MS-----IPVAMETDGPQFEDVQMLKKTVSDETR-----	480
gi Ovis_aries_gamma	-----QVLKKRVT-----	449
gi Bos_taurus_gamma	IS-----IPVAMETDGPLFEDVQMLRKTVNEEAR-----	480
gi Canis_lupus_familiaris_gamm	MS-----IPVAMETDGPLFEDVQMLRKAVNEEAR-----	480
gi Macaca_mulatta_gamma	VS-----IPVAMETDGPLFEDVQMLRKTVKDEAH-----	480
gi Homo_sapiens_gamma	MS-----IPVAMETDGPLFEDVQMLRKTVKDEAH-----	470
gi Felis_catus_gamma	-----	
gi Canis_lupus_familiaris_delt	MS-----IPVAMETDGPLFEDVQMLRKAVNEEA-----	526
gi Macaca_mulatta_delta/gamma	VS-----IPVAMETDGPLFEDVQMLRKTVKDEA-----	761
gi Bos_taurus_delta/gamma	IS-----IPVAMETDGPLFEDVQMLRKTVNEEA-----	533
gi Mus_musculus_delta/gamma	VS-----IPVAMETDGPQFEDVQMLKKTVSDEARQVKVGR	543
gi Rattus_norvegicus_delta/gam	MS-----IPVAMETDGPQFEDVQMLKKTVSDET-----	602
gi Danio_rerio_gamma	LC-----SPMDMETDGPMLLEDVLMMLKKTVEEEAT-----	480
gi Danio_rerio_delta/gamma	LC-----SPMDMETDGPMLLEDVLMMLKKTVEEEAT-----	533

Figure S1. Cont.

gi	Xenopus_laevis_delta/gamma	LT-----	506
gi	Xenopus_laevis_gamma	LT-----	506
gi	Xenopus_tropicalis_delta/ga	LN-----SPVAMETDGPILLEDVQMLKKTVKKEAS-----	533
gi	Mus_musculus_delta	LP-----PVYSMETETPTAEDIQLLKRTVETEAV-----	548
gi	Rattus_norvegicus_delta	LP-----PVYSMETETPTAEDIQLLKRTVETEAV-----	576
gi	Felis_catus_delta	LP-----PVYSMETETPTAEDIQLLKRTVETEAV-----	562
gi	Bos_taurus_delta	LP-----PVYSMETETPTAEDIQLLKRTVETEAV-----	554
gi	Canis_lupus_familiaris_delt	LP-----PVYSMETETPTAEDIQLLKRTVETEAV-----	549
gi	Macaca_mulatta_delta	LP-----PVYSMETETPTAEDIQLLKRTVETEAV-----	565
gi	Homo_sapiens_delta	LP-----PVYSMETETPTAEDIQLLKRTVETEAV-----	556
gi	Ovis_aries_delta	LP-----PVYSMETETPTAEDIQLLKRTVETEAV-----	553
gi	Falco_peregrinus_delta	LP-----SVCCMETETPTAEDIQLLKRTVETEAV-----	456
gi	Gallus_gallus_delta	LP-----LVCCMETETPTAEDIQLLKRTVETEAV-----	551
gi	Alligator_mississippiensis_	LP-----PVYCMETETPTAEDIQLLKRTVETEAV-----	550
gi	Chrysemys_picta_bellii_delt	LP-----PVYCMETETPTAEDIQLLKRTVETEAV-----	552
gi	Danio_rerio_delta	LAQEEYMMYNEGGM---PIYSMETETPTVEDIQLLKRTVESEAS-----	555
gi	Ambystoma_mexicanum_delta	-----	
gi	Petromyzon_marinus_S4RN43	-----AVVSMETGTPSSEDIMLLKKSME TEAV-----	527
jgi	Branchiostoma_floridae_237	SSCVGG-----SVAMETDANDDAELSLDKMNERG-----	453
jgi	Branchiostoma_floridae_252	SSCVGCEW-----LSLPSLVLASLQME LPFLRSCEVLTCCVV---	505
gi	Strongylocentrotus_purpurat	-----LAAEGVPGGRKESKPLLR-----	493
gi	Caenorhabditis_elegans_PPTR	RFNPDEII-----SSRQQNGVDENMKTSTVLSKDEILKNAV-----	508
gi	Hydra_vulgaris_delta	-----	
gi	Amphimedon_queenslandica_de	AFRKSMLSSLTSIASEEPTSPDGVP TSEELKSIPQTPPSESGAS-----	579
gi	Drosophila_melanogaster_B56	CL-----PVSDSRALCDQYSENSDS-----	628
gi	Dictyostelium_discoideum_ps	KSKQINQNNNNNNNN-----	535
gi	Dictyostelium_purpureum_N/A	-FKQINQKE-----	485
gi	Dictyostelium_fasciculatum	QQOQLQQQM-----	516
gi	Polysphondylium_pallidum_N/	QRPITSNIS-----	462
gi	Arabidopsis_thaliana_theta	-----	
gi	Arabidopsis_thaliana_eta	-----	
gi	Arabidopsis_thaliana_zeta	-----	
gi	Arabidopsis_thaliana_gamma	-----	
gi	Oryza	-----	
gi	Oryza_sativa_zeta	-----	
gi	Oryza_sativa_theta	-----	
gi	Oryza_sativa_eta	-----	
gi	Arabidopsis_thaliana_delta	-----	
gi	Arabidopsis_thaliana_N/A	-----	
gi	Oryza_sativa_kappa	-----	
gi	Oryza_sativa_N/A	-----	
gi	Arabidopsis_thaliana_alpha	-----	
gi	Arabidopsis_thaliana_beta	-----	
gi	Oryza_sativa_N/A_2	-----	
gi	Arabidopsis_thaliana_epsilo	-----	
gi	Chlamydomonas_reinhardtii_w	-----	
gi	Schizosaccharomyces_pombe_P	-----	
gi	Schizosaccharomyces_pombe_P	-----	
gi	Ashbya_gossypii_RTSl	-----	
gi	Saccharomyces_cerevisiae_RT	-----	
gi	Aspergillus_niger_N/A	-----QCQVAEIPVHLDDIDQVAHESQKRLHALK	610
gi	Aspergillus_nidulans_para	-----NSTTAEIPLQLDDVDALIQESQRRLQSLK	612
gi	Mus_musculus_alpha	-----KALE-KQNNAYNMHSIRSS TSAK----	486
gi	Rattus_norvegicus_alpha	-----KALE-KQNNAYNMHSILSNTSAQ----	486
gi	Macaca_mulatta_alpha	-----KALE-KQNSAYNMHSILSNTSAE----	486
gi	Homo_sapiens_alpha	-----KALE-KQNSAYNMHSILSNTSAE----	486
gi	Ovis_aries_alpha	-----KALE-KQNSAYNMHSILSNTNDG----	489
gi	Bos_taurus_alpha	-----KALE-KQNSAYNMHSILSNTNDG----	489
gi	Felis_catus_alpha	-----KALE-KQNSAYNMHSILSNTSDE----	402

Figure S1. Cont.

gi	Canis_lupus_familiaris_alph	-----KALE-KQNSAYNMHSILSNTSDE-----	402
gi	Falco_peregrinus_alpha	-----KAMAEKQNSTHNVLNNAHN-TSAK-----	476
gi	Gallus_gallus_alpha	-----KAMAEKQNSTHNVLNNAHN-TSAK-----	476
gi	Alligator_mississippiensis_	-----KVLAEKQNSTHNVLNNAQNNTSAK-----	487
gi	Chrysemys_picta_bellii_alph	-----KTLVEKQNSTHNVLNNAHNSTSAK-----	477
gi	Xenopus_laevis_alpha	-----KALADKQNP TLCVQNIQNNASAK-----	476
gi	Xenopus_tropicalis_alpha	-----KTLADKQNPALCVQNIQNNASAK-----	476
gi	Ambystoma_mexicanum_alpha	-----KALAEKQKFHHNVQNAQKNTIAK-----	403
gi	Danio_rerio_alpha	-----EVLMIQNNRHDHISLTTTTSIKNNEHD	483
gi	Petromyzon_marinus_S4RHV1	-----NFQN-----NILVK-----	463
gi	Mus_musculus_epsilon	-----RGLR-----RDGI IPT-----	467
gi	Rattus_norvegicus_epsilon	-----RGLR-----RDGI IPT-----	467
gi	Macaca_mulatta_epsilon	-----RGLR-----RDGI IPT-----	467
gi	Homo_sapiens_epsilon	-----RGLR-----RDGI IPT-----	467
gi	Ovis_aries_epsilon	-----RGLR-----RDGI IPT-----	467
gi	Bos_taurus_epsilon	-----RGLR-----RDGI IPT-----	467
gi	Canis_lupus_familiaris_epsi	-----RGLR-----RDGI IPT-----	467
gi	Falco_peregrinus_epsilon	-----RGLR-----RDGI IPT-----	467
gi	Gallus_gallus_epsilon	-----RGLR-----RDGI IPT-----	467
gi	Felis_catus_epsilon	-----RGLR-----RDGI IPT-----	467
gi	Chrysemys_picta_bellii_epsi	-----RGLR-----RDGI IPT-----	462
gi	Xenopus_laevis_epsilon	-----RGLR-----SDGI IPT-----	467
gi	Xenopus_tropicalis_epsilon	-----RGLR-----SDGI IPT-----	462
gi	Alligator_mississippiensis_	-----RGLR-----RDGI IPT-----	500
gi	Ambystoma_mexicanum_epsilon	-----	
gi	Danio_rerio_epsilon	-----RGIQN-----SDGVIPT-----	468
gi	Mus_musculus_beta	-----RLQGTQGAKEAPVPRPTPQVAASGGQS-	497
gi	Rattus_norvegicus_beta	-----RLQGTQGAKEAPVPRPTPQVAASGGQS-	497
gi	Felis_catus_beta	-----RLQGTQGAKEAPLQRLTPQVATSGGQS-	497
gi	Canis_lupus_familiaris_beta	-----RLQGTQGAKE TPLQRLTPQVATSGGQS-	497
gi	Homo_sapiens_beta	-----RLQGTQGAKEAPLQRLTPQVAASGGQS-	497
gi	Bos_taurus_beta	-----RLQGTQGAKEAPLQRLTPQVVTG-GGQS-	496
gi	Ovis_aries_beta	-----RLQGTQGAKEAPLQRLTPQVVTG-GGQS-	496
gi	Macaca_mulatta_beta	-----RLQGTQGAKEAPLQRLTPQVATSGGQS-	461
gi	Xenopus_laevis_beta	-----	
gi	Alligator_mississippiensis_	-----RLRGLEEAQMNRLNLQHGHSPTK-----	493
gi	Chrysemys_picta_bellii_beta	-----KLQGLEEAQMNRLNLQHSLSLQSGNKS-	497
gi	Xenopus_tropicalis_beta	-----KMNGLEEAQMNQLNLQHSRGSKS-----	491
gi	Danio_rerio_beta	-----RLQSLTEASRNQKNLQERENTAKSQSDT	497
gi	Ambystoma_mexicanum_beta	-----RLRSLEEAQMNRLNLQNSLSMQSSSKS-	366
gi	Petromyzon_marinus_S4RGA7	-----QSPNNNSARAAGTS-----	247
gi	Strongylocentrotus_purpurat	-----HLN---NQTNSS-----	461
gi	Drosophila_melanogaster_wdb	-----PPSSAGLNSHQQSSNSGSSGSLSSGGAGG	506
jgi	Branchiostoma_floridae_237	-----	
gi	Hydra_vulgaris_alpha	-----KTGNSSEPGT-----	470
jgi	Branchiostoma_floridae_112	-----	
jgi	Branchiostoma_floridae_284	-----PPMSPNSAPPGDRGANYSPYSPTAHRILMA	460
gi	Caenorhabditis_elegans_PPTR	-----LFPEKLT DY LKKDGNMTPLPVATAGGGD	521
gi	Amphimedon_queenslandica_be	-----HDMKLAKK-----	482
gi	Chrysemys_picta_bellii_gamm	-----QAQRDQKK-DRPLMRRKSEL PQDIY TMKALE	510
gi	Chrysemys_picta_bellii_delt	-----QAQRDQKK-DRPLMRRKSEL PQDIY TMKALE	435
gi	Falco_peregrinus_gamma	-----QAQKDQKK-DRPLVRRKSEL PQDIY TMKALE	510
gi	Falco_peregrinus_delta/gamm	-----QAQKDQKK-DRPLVRRKSEL PQDIY TMKALE	435
gi	Gallus_gallus_gamma	-----QAQKDQKK-DRPLVRRKSEL PQDIY TMKALE	510
gi	Alligator_mississippiensis_	-----QAQKDQKK-DRPLVRRKSEL PQDIY TMKALE	510
gi	Alligator_mississippiensis_	-----QAQKDQKK-DRPLVRRKSEL PQDIY TMKALE	435
gi	Ambystoma_mexicanum_gamma	-----LALKDIKK-ERP I VRRKSEL PQDIY TMKALE	511
gi	Mus_musculus_gamma	-----EKSHDSHASQEGVETDWAQAQKELKK-DRPLVRRKSEL PQDPHTEKALE	535
gi	Rattus_norvegicus_gamma	-----QAQKDLKK-DRPLVRRKSEL PQDPHTEKALE	510
gi	Ovis_aries_gamma	-----	
gi	Bos_taurus_gamma	-----QAQKDPKK-ERPLARRKSEL PQDLHTKSALE	510

Figure S1. Cont.

gi	Canis_lupus_familiaris_gamm	-----QAQKDLKK-DRPGVRRKPELPQDPHTKNALE	510
gi	Macaca_mulatta_gamma	-----QAQKDPKK-DRPLARRKSELQDPHTTKALE	510
gi	Homo_sapiens_gamma	-----QAQKDPKK-DRPLALRRKSELQDPHTTKALE	500
gi	Felis_catus_gamma	-----QAQKDLKK-DRPLVRRKSELQDLHTKNALE	518
gi	Canis_lupus_familiaris_delt	-----RQAQKDLKK-DRPGVRRKPELPQDPHTKNALE	557
gi	Macaca_mulatta_delta/gamma	-----HQAQKDPKK-DRPLARRKSELQDPHTTKALE	792
gi	Bos_taurus_delta/gamma	-----RQAQKDPKK-ERPLARRKSELQDLHTKSALE	564
gi	Mus_musculus_delta/gamma	EKSHDSHASQEGVETDWAQAQKELKK-DRPLVRRKSELQDPHTEKALE	592
gi	Rattus_norvegicus_delta/gam	-----RQAQKDLKK-DRPLVRRKSELQDPHTEKALE	633
gi	Danio_rerio_gamma	-----PLHREQRK-ERPLMRRKSELQDSTSTVKALE	510
gi	Danio_rerio_delta/gamma	-----PLHREQRK-ERPLMRRKSELQDSTSTVKALE	563
gi	Xenopus_laevis_delta/gamma	-----	
gi	Xenopus_laevis_gamma	-----	
gi	Xenopus_tropicalis_delta/ga	-----QAQKDLKK-ERPLVRRKSELQDIYTMKALE	563
gi	Mus_musculus_delta	-----QMLKDIKK-DKVLVRRKSELQDVYTIKALE	578
gi	Rattus_norvegicus_delta	-----QMLKDIKK-DKVLVRRKSELQDVYTIKALE	606
gi	Felis_catus_delta	-----QMLKDIKK-EKVLVRRKSELQDVYTIKALE	592
gi	Bos_taurus_delta	-----QMLKDIKK-EKVLVRRKSELQDVYTIKALE	584
gi	Canis_lupus_familiaris_delt	-----QMLKDIKK-EKVLVRRKSELQDVYTIKALE	579
gi	Macaca_mulatta_delta	-----QMLKDIKK-EKVLVRRKSELQDVYTIKALE	595
gi	Homo_sapiens_delta	-----QMLKDIKK-EKVLVRRKSELQDVYTIKALE	586
gi	Ovis_aries_delta	-----QMLKDIKK-EKVLVRRKSELQDVYTIKALE	583
gi	Falco_peregrinus_delta	-----QMLKDIKK-EKALVRRKSELQDVYTIKALE	486
gi	Gallus_gallus_delta	-----QMLKDIKK-EKVLVRRKSELQDVYTIKALE	581
gi	Alligator_mississippiensis_	-----QMLKDIKK-EKVLVRRKSELQDVYTIKALE	580
gi	Chrysemys_picta_bellii_delt	-----QMLKDIKK-EKVLVRRKSELQDVYTIKALE	582
gi	Danio_rerio_delta	-----QGMKEIKK-DKVLVRRKSELQDVYTIKALE	585
gi	Ambystoma_mexicanum_delta	-----	
gi	Petromyzon_marinus_S4RN43	-----QVQNSKGEKGVLLRSKSELQEMSTMRALE	558
jgi	Branchiostoma_floridae_237	-----QAGVSRGKDLKMLPRRKSELPHDSLTMRALE	485
jgi	Branchiostoma_floridae_252	-----FPQAGVSRGKDLKMLPRRKSELPHDSLTMRALE	539
gi	Strongylocentrotus_purpurat	-----RKSELPRDAFTIKAIG	509
gi	Caenorhabditis_elegans_PPTR	-----GVSSMK-NDMDFGNHKQSDFPDEQTTKALG	539
gi	Hydra_vulgaris_delta	-----	
gi	Amphimedon_queenslandica_de	-----NTGAVKTNKNGHMLIRRKSYLPMNDNTSQALQ	611
gi	Drosophila_melanogaster_B56	-----AYDQSEQRARQPPPLPPQKQAHQEFPR	655
gi	Dictyostelium_discoideum_ps	-INNNNNNNNNNGSTETKADKP-----SMIRRKSLLPVDPSTIAALS	577
gi	Dictyostelium_purpureum_N/A	-----IETKSDKP-----SMIRRKSLLPVDPSTIAALS	513
gi	Dictyostelium_fasciculatum_	-----QHMQQQQPQTQPSKASMIIRRKSLLPVDPSTIAALS	552
gi	Polysphondylium_pallidum_N/	-----ALPENGEKP-----ISMIRRKSLLPVDPSTIAALS	492
gi	Arabidopsis_thaliana_theta	-----LEEIGNQKQ--KSSL----	492
gi	Arabidopsis_thaliana_eta	-----LEELGVRKA--S-----	529
gi	Arabidopsis_thaliana_zeta	-----LEDLATSKTVVTNEAVLVP	528
gi	Arabidopsis_thaliana_gamma	-----LEELAASKS-VSNEAVLVP	506
gi	Oryza	-----LEEVASAKA-TSGEAVLIS	507
gi	Oryza_sativa_zeta	-----LEEMASAKA-TSGA AVLVS	507
gi	Oryza_sativa_theta	-----LEEIASSKT-ISSEPAVPP	511
gi	Oryza_sativa_eta	-----LEEA AVPRS-DNNNPVGT	500
gi	Arabidopsis_thaliana_delta	-----LEEIVASMAK-----	477
gi	Arabidopsis_thaliana_N/A	-----LENAASMKPITGKTAVLVT	492
gi	Oryza_sativa_kappa	-----LESAASFQPVGTGHTAVLVG	498
gi	Oryza_sativa_N/A	-----LERNASFRPVTGDIGFSVL	479
gi	Arabidopsis_thaliana_alpha	-----LDEAVEERE----REDPMI	493
gi	Arabidopsis_thaliana_beta	-----LAEAAAERDGGGGEEDHMI	497
gi	Oryza_sativa_N/A_2	-----LEAAAAS--GDDMVL	533
gi	Arabidopsis_thaliana_epsilon	-----LEEAASLAN-----	497
gi	Chlamydomonas_reinhardtii_w	-----LQKLAVQKSNRPLPEVKP	495
gi	Schizosaccharomyces_pombe_P	-----AMKLSQNP'TTVHSTTERL	538
gi	Schizosaccharomyces_pombe_P	-----NKPTDYL	626
gi	Ashbya_gossypii_RTSl	-----LHIS-----SVDNPVAVDRTIGTGLH	630
gi	Saccharomyces_cerevisiae_RT	-----LRINNDKDYTIKNPELRNSFNTASEN	741

Figure S1. Cont.

gi Aspergillus_niger_N/A	LDDSSSTERRPRESTASSVSTERPE-----	635
gi Aspergillus_nidulans_parA	LDEAGSKDRRPREGSITSP-----	631
gi Mus_musculus_alpha	-----	
gi Rattus_norvegicus_alpha	-----	
gi Macaca_mulatta_alpha	-----	
gi Homo_sapiens_alpha	-----	
gi Ovis_aries_alpha	-----	
gi Bos_taurus_alpha	-----	
gi Felis_catus_alpha	-----	
gi Canis_lupus_familiaris_alph	-----	
gi Falco_peregrinus_alpha	-----	
gi Gallus_gallus_alpha	-----	
gi Alligator_mississippiensis_	-----	
gi Chrysemys_picta_bellii_alph	-----	
gi Xenopus_laevis_alpha	-----	
gi Xenopus_tropicalis_alpha	-----	
gi Ambystoma_mexicanum_alpha	-----	
gi Danio_rerio_alpha	I-----	484
gi Petromyzon_marinus_S4RHV1	-----	
gi Mus_musculus_epsilon	-----	
gi Rattus_norvegicus_epsilon	-----	
gi Macaca_mulatta_epsilon	-----	
gi Homo_sapiens_epsilon	-----	
gi Ovis_arie_epsilon	-----	
gi Bos_taurus_epsilon	-----	
gi Canis_lupus_familiaris_epsi	-----	
gi Falco_peregrinus_epsilon	-----	
gi Gallus_gallus_epsilon	-----	
gi Felis_catus_epsilon	-----	
gi Chrysemys_picta_bellii_epsi	-----	
gi Xenopus_laevis_epsilon	-----	
gi Xenopus_tropicalis_epsilon	-----	
gi Alligator_mississippiensis_	-----	
gi Ambystoma_mexicanum_epsilon	-----	
gi Danio_rerio_epsilon	-----	
gi Mus_musculus_beta	-----	
gi Rattus_norvegicus_beta	-----	
gi Felis_catus_beta	-----	
gi Canis_lupus_familiaris_beta	-----	
gi Homo_sapiens_beta	-----	
gi Bos_taurus_beta	-----	
gi Ovis_aries_beta	-----	
gi Macaca_mulatta_beta	-----	
gi Xenopus_laevis_beta	-----	
gi Alligator_mississippiensis_	-----	
gi Chrysemys_picta_bellii_beta	-----	
gi Xenopus_tropicalis_beta	-----	
gi Danio_rerio_beta	SAANTT-----	503
gi Ambystoma_mexicanum_beta	-----	
gi Petromyzon_marinus_S4RGA7	-----	
gi Strongylocentrotus_purpurat	-----	
gi Drosophila_melanogaster_wdb	DNNPATTNAKIKQDKADN---	524
jgi Branchiostoma_floridae_237	-----	
gi Hydra_vulgaris_alpha	-----	
jgi Branchiostoma_floridae_112	-----	
jgi Branchiostoma_floridae_284	K-----	461
gi Caenorhabditis_elegans_PPTR	KSPSVVKKSTGSETTTPAKK-----	542
gi Amphimedon_queenslandica_be	-----	
gi Chrysemys_picta_bellii_gamm	SHCRADELI-SHDGH-----	524

Figure S1. Cont.

gi Chrysemys_picta_bellii_delt	SHCRADELI-SHDGH-----	449
gi Falco_peregrinus_gamma	SHCRADELI-SHDGQ-----	524
gi Falco_peregrinus_delta/gamm	SHCRADELI-SHDGQ-----	449
gi Gallus_gallus_gamma	SHCRADELI-SHDGH-----	524
gi Alligator_mississippiensis_	SHCRADELI-SHDGH-----	524
gi Alligator_mississippiensis_	SHCRADELI-SHDGH-----	449
gi Ambystoma_mexicanum_gamma	SHCRADELL-THDAH-----	525
gi Mus_musculus_gamma	AHCRASELL-SQDGR-----	549
gi Rattus_norvegicus_gamma	AHCRASELL-SQDGR-----	524
gi Ovis_aries_gamma	-----	
gi Bos_taurus_gamma	AHGRAEIPA-PQDGR-----	524
gi Canis_lupus_familiaris_gamm	AHCRADELV-SQDGR-----	524
gi Macaca_mulatta_gamma	AHCRADELA-SQDGR-----	524
gi Homo_sapiens_gamma	AHCRADELA-SQDGR-----	514
gi Felis_catus_gamma	AHCRADELV-SQDGR-----	532
gi Canis_lupus_familiaris_delt	AHCRADELV-SQDGR-----	571
gi Macaca_mulatta_delta/gamma	AHCRADELA-SQDGR-----	806
gi Bos_taurus_delta/gamma	AHGRAEIPA-PQDGR-----	578
gi Mus_musculus_delta/gamma	AHCRASELL-SQDGR-----	606
gi Rattus_norvegicus_delta/gam	AHCRASELL-SQDGR-----	647
gi Danio_rerio_gamma	THHRAEDMIGTQDGH-----	525
gi Danio_rerio_delta/gamma	THHRAEDMIGTQDGH-----	578
gi Xenopus_laevis_delta/gamma	-----	
gi Xenopus_laevis_gamma	-----	
gi Xenopus_tropicalis_delta/ga	SHCRADELISHDGH-----	577
gi Mus_musculus_delta	AHKRAEEFLTASQEAL-----	594
gi Rattus_norvegicus_delta	AHKRAEEFLTASQEAL-----	622
gi Felis_catus_delta	AHKRAEEFLTASQEAL-----	608
gi Bos_taurus_delta	AHKRAEEFLTASQEAL-----	600
gi Canis_lupus_familiaris_delt	AHKRAEEFLTASQEAL-----	595
gi Macaca_mulatta_delta	AHKRAEEFLTASQEAL-----	611
gi Homo_sapiens_delta	AHKRAEEFLTASQEAL-----	602
gi Ovis_aries_delta	AHKRAEEFLTASQEAL-----	599
gi Falco_peregrinus_delta	AHKRAEEFLTSSQEAL-----	502
gi Gallus_gallus_delta	AHKRAEEFLTSSQEAL-----	597
gi Alligator_mississippiensis_	AHKRAEEFLTSSQEAL-----	596
gi Chrysemys_picta_bellii_delt	AHKRAEEFLTSSQEAL-----	598
gi Danio_rerio_delta	AHKRAEEYLTANQEAL-----	601
gi Ambystoma_mexicanum_delta	-----	
gi Petromyzon_marinus_S4RN43	VHRAEEYLTSSHE-----	572
jgi Branchiostoma_floridae_237	DHKRADDYLTTSFETS-----	501
jgi Branchiostoma_floridae_252	DHKRADDYLTTSFETS-----	555
gi Strongylocentrotus_purpurat	THKRHEEFLVASPETNS-----	526
gi Caenorhabditis_elegans_PPTR	EYKRHDPFLKKVTSTDEQ-----	557
gi Hydra_vulgaris_delta	-----	
gi Amphimedon_queenslandica_de	QYKPERHLGVPNES-----	625
gi Drosophila_melanogaster_B56	EVRQALATLTLNLY-----	670
gi Dictyostelium_discoideum_ps	SHRSLEDIMSTNSNS---GNDDDENNHTNHDSIEIENEVKEDFRVPPVNN	623
gi Dictyostelium_purpureum_N/A	NHRSLEEIIISNKNEN---SNDNNDDE-----EVKEDSLHYVPY	548
gi Dictyostelium_fasciculatum_	SHRSLEDIVHSSDSEMNCITDDNNADQQPNN-----DYNGDHTSTSK	595
gi Polysphondylium_pallidum_N/	NHRSLEGLVHSGDG-----DHDAEETEML-----YDSSSEKVPVAI	528
gi Arabidopsis_thaliana_theta	-----	
gi Arabidopsis_thaliana_eta	-----	
gi Arabidopsis_thaliana_zeta	RFVSSVNLTTSSSESTGS-----	546
gi Arabidopsis_thaliana_gamma	RFSSSVTLATG--KTSGS-----	522
gi Oryza	PSLARTSSLV-----	517
gi Oryza_sativa_zeta	RTLPRQSSAV-----	517
gi Oryza_sativa_theta	EATVH-----	516
gi Oryza_sativa_eta	NGKFSQAAG-----	509
gi Arabidopsis_thaliana_delta	-----	
gi Arabidopsis_thaliana_N/A	--PRATSIAC-----	500

Figure S1. Cont.

gi Oryza_sativa_kappa	RQPSANLIATLI-----	510
gi Oryza_sativa_N/A	P-ASAPLVAPTMT-----	491
gi Arabidopsis_thaliana_alpha	TS-----	495
gi Arabidopsis_thaliana_beta	TS-----	499
gi Oryza_sativa_N/A_2	VN-----	535
gi Arabidopsis_thaliana_epsilon	-----	
gi Chlamydomonas_reinhardtii_w	LSALLRV-----	502
gi Schizosaccharomyces_pombe_P	KKLSLDYTN-----	548
gi Schizosaccharomyces_pombe_P	R-----	627
gi Ashbya_gossypii_RT51	-----	
gi Saccharomyces_cerevisiae_RT	NTLNEENENDCSEIQ-----	757
gi Aspergillus_niger_N/A	-----	
gi Aspergillus_nidulans_parA	-----	
gi Mus_musculus_alpha	-----	
gi Rattus_norvegicus_alpha	-----	
gi Macaca_mulatta_alpha	-----	
gi Homo_sapiens_alpha	-----	
gi Ovis_aries_alpha	-----	
gi Bos_taurus_alpha	-----	
gi Felis_catus_alpha	-----	
gi Canis_lupus_familiaris_alph	-----	
gi Falco_peregrinus_alpha	-----	
gi Gallus_gallus_alpha	-----	
gi Alligator_mississippiensis_	-----	
gi Chrysemys_picta_bellii_alph	-----	
gi Xenopus_laevis_alpha	-----	
gi Xenopus_tropicalis_alpha	-----	
gi Ambystoma_mexicanum_alpha	-----	
gi Danio_rerio_alpha	-----	
gi Petromyzon_marinus_S4RHV1	-----	
gi Mus_musculus_epsilon	-----	
gi Rattus_norvegicus_epsilon	-----	
gi Macaca_mulatta_epsilon	-----	
gi Homo_sapiens_epsilon	-----	
gi Ovis_aries_epsilon	-----	
gi Bos_taurus_epsilon	-----	
gi Canis_lupus_familiaris_epsilon	-----	
gi Falco_peregrinus_epsilon	-----	
gi Gallus_gallus_epsilon	-----	
gi Felis_catus_epsilon	-----	
gi Chrysemys_picta_bellii_epsilon	-----	
gi Xenopus_laevis_epsilon	-----	
gi Xenopus_tropicalis_epsilon	-----	
gi Alligator_mississippiensis_	-----	
gi Ambystoma_mexicanum_epsilon	-----	
gi Danio_rerio_epsilon	-----	
gi Mus_musculus_beta	-----	
gi Rattus_norvegicus_beta	-----	
gi Felis_catus_beta	-----	
gi Canis_lupus_familiaris_beta	-----	
gi Homo_sapiens_beta	-----	
gi Bos_taurus_beta	-----	
gi Ovis_aries_beta	-----	
gi Macaca_mulatta_beta	-----	
gi Xenopus_laevis_beta	-----	
gi Alligator_mississippiensis_	-----	
gi Chrysemys_picta_bellii_beta	-----	
gi Xenopus_tropicalis_beta	-----	
gi Danio_rerio_beta	-----	

Figure S1. Cont.

gi Ambystoma_mexicanum_beta	-----	
gi Petromyzon_marinus_S4RGA7	-----	
gi Strongylocentrotus_purpurat	-----	
gi Drosophila_melanogaster_wdb	-----	
jgi Branchiostoma_floridae_237	-----	
gi Hydra_vulgaris_alpha	-----	
jgi Branchiostoma_floridae_112	-----	
jgi Branchiostoma_floridae_284	-----	
gi Caenorhabditis_elegans_PPTR	-----	
gi Amphimedon_queenslandica_be	-----	
gi Chrysemys_picta_bellii_gamm	-----	
gi Chrysemys_picta_bellii_delt	-----	
gi Falco_peregrinus_gamma	-----	
gi Falco_peregrinus_delta/gamm	-----	
gi Gallus_gallus_gamma	-----	
gi Alligator_mississippiensis_	-----	
gi Alligator_mississippiensis_	-----	
gi Ambystoma_mexicanum_gamma	-----	
gi Mus_musculus_gamma	-----	
gi Rattus_norvegicus_gamma	-----	
gi Ovis_aries_gamma	-----	
gi Bos_taurus_gamma	-----	
gi Canis_lupus_familiaris_gamm	-----	
gi Macaca_mulatta_gamma	-----	
gi Homo_sapiens_gamma	-----	
gi Felis_catus_gamma	-----	
gi Canis_lupus_familiaris_delt	-----	
gi Macaca_mulatta_delta/gamma	-----	
gi Bos_taurus_delta/gamma	-----	
gi Mus_musculus_delta/gamma	-----	
gi Rattus_norvegicus_delta/gam	-----	
gi Danio_rerio_gamma	-----	
gi Danio_rerio_delta/gamma	-----	
gi Xenopus_laevis_delta/gamma	-----	
gi Xenopus_laevis_gamma	-----	
gi Xenopus_tropicalis_delta/ga	-----	
gi Mus_musculus_delta	-----	
gi Rattus_norvegicus_delta	-----	
gi Felis_catus_delta	-----	
gi Bos_taurus_delta	-----	
gi Canis_lupus_familiaris_delt	-----	
gi Macaca_mulatta_delta	-----	
gi Homo_sapiens_delta	-----	
gi Ovis_aries_delta	-----	
gi Falco_peregrinus_delta	-----	
gi Gallus_gallus_delta	-----	
gi Alligator_mississippiensis_	-----	
gi Chrysemys_picta_bellii_delt	-----	
gi Danio_rerio_delta	-----	
gi Ambystoma_mexicanum_delta	-----	
gi Petromyzon_marinus_S4RN43	-----	
jgi Branchiostoma_floridae_237	-----	
jgi Branchiostoma_floridae_252	-----	
gi Strongylocentrotus_purpurat	-----	
gi Caenorhabditis_elegans_PPTR	-----	
gi Hydra_vulgaris_delta	-----	
gi Amphimedon_queenslandica_de	-----	
gi Drosophila_melanogaster_B56	-----	
gi Dictyostelium_discoideum_ps	RYTFT 628	
gi Dictyostelium_purpureum_N/A	ISQ-- 551	
gi Dictyostelium_fasciculatum_	MIF-- 598	

Figure S1. Cont.

```

gi|Polysphondylium_pallidum_N/      SQ--- 530
gi|Arabidopsis_thaliana_theta      -----
gi|Arabidopsis_thaliana_eta        -----
gi|Arabidopsis_thaliana_zeta        -----
gi|Arabidopsis_thaliana_gamma       -----
gi|Oryza                             -----
gi|Oryza_sativa_zeta                 -----
gi|Oryza_sativa_theta                 -----
gi|Oryza_sativa_eta                   -----
gi|Arabidopsis_thaliana_delta        -----
gi|Arabidopsis_thaliana_N/A         -----
gi|Oryza_sativa_kappa                 -----
gi|Oryza_sativa_N/A                 -----
gi|Arabidopsis_thaliana_alpha        -----
gi|Arabidopsis_thaliana_beta        -----
gi|Oryza_sativa_N/A_2                -----
gi|Arabidopsis_thaliana_epsilon     -----
gi|Chlamydomonas_reinhardtii_w       -----
gi|Schizosaccharomyces_pombe_P       -----
gi|Schizosaccharomyces_pombe_P       -----
gi|Ashbya_gossypii_RTS1              -----
gi|Saccharomyces_cerevisiae_RT       -----

```

**Figure S1.** A CLUSTAL 2.1 multiple sequence alignment of all analyzed B56 sequences.