

Supplementary Figure S1. Amino acid sequence alignment.

Aplysia_punctata_cyplasin_L_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_cyplasin_S_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_californica_aplysianin_A_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_1_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_2_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_3_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_californica_escapin_{Mollusks}	-----	-----	-----	-----	-----	-----
Achatina_fulica_achacin_{Mollusks}	-----	-----	-----	-----	-----	-----
Hahella_chejuensis_{Proteobacteria}	-----	-----	-----	-----	-----	-----
Pseudomonas_entomophila_{Proteobacteria}	-----	-----	-----	-----	-----	-----
Burkholderia_ubonensis_{Proteobacteria}	-----	-----	-----	-----	-----	-----
Chromobacterium_violaceum_{Proteobacteria}	-----	-----	-----	-----	-----	-----
Chitinophaga_pinensis_{Bacteroidetes}	-----	-----	-----	-----	-----	-----
Flavobacterium_johnsoniae_{Bacteroidetes}	-----	-----	-----	-----	-----	-----
Dyadobacter_fermentans_{Bacteroidetes}	-----	-----	-----	-----	-----	-----
Staphylococcus_aureus_{Firmicutes}	-----	-----	-----	-----	-----	-----
Clostridium_botulinum_{Firmicutes}	-----	-----	-----	-----	-----	-----MN
Clostridium_carboxidivorans_{Firmicutes}	-----	-----	-----	-----	-----	-----ME
Turkey_LAO	-----	-----	-----	-----	-----	-----MA
Chicken_LAO	MDGLPSADTT	TITRRDISDG	FPPGDATIVT	RRDISDGFPP	GDATIMTRRD	ISHGFPPGDA
Zebrafinch_LAO	-----	-----	-----	-----	-----	-----MT
Ophiophagus_hannah_{Elapidae}	-----	-----	-----	-----	-----	-----MN
Crotalus_atrox_{Viperidae}	-----	-----	-----	-----	-----	-----MN
Sistrurus_catenatus_{Viperidae}	-----	-----	-----	-----	-----	-----MN
Gloydeus_halys_{Viperidae}	-----	-----	-----	-----	-----	-----MN
Trimesurus_stejnegeri_{Viperidae}	-----	-----	-----	-----	-----	-----MN
Bothrops_jararacussu_{Viperidae}	-----	-----	-----	-----	-----	-----MN
Echis_ocellatus_{Viperidae}	-----	-----	-----	-----	-----	-----MN
Oxyuranus_scutellatus_{Elapidae}	-----	-----	-----	-----	-----	-----MN
Pseudechis_australis_{Elapidae}	-----	-----	-----	-----	-----	-----MN
Bungarus_multicinctus_{Elapidae}	-----	-----	-----	-----	-----	-----MN
Demancia_vestigiata_{Elapidae}	-----	-----	-----	-----	-----	-----MN
Dog_LAO1	-----	-----	-----	-----	-----	-----MK
Panda_LAO1	-----	-----	-----	-----	-----	-----
Bovine_LAO1	-----	-----	-----	-----	-----	-----MVKMR
Horse_LAO1	-----	-----	-----	-----	-----	-----MK
Mouse_LAO1	-----	-----	-----	-----	-----	MSFRITMAKKS
Opossum_LAO1	-----	-----	-----	-----	-----	-----MSSLFT
Horse_LAO2	-----	-----	-----	-----	-----	-----MCPGWL
Opossum_LAO2	-----	-----	-----	-----	-----	-----METLL
Flounder_LAO3	-----	-----	-----	-----	-----	-----MDPHVS
Flounder_LAO2	-----	-----	-----	-----	-----	-----MDPHVS
Flounder_LAO1	-----	-----	-----	-----	-----	-----MGAHVM
Rockfish_LAO	-----	-----	---MNIMKEK	LAALETKLKA	QEGKDGKKTN	FQTEMNPHVV

Green_pufferfish_LAO	-----	-----	-----	-----	-----ML
Zebrafish_LAO	-----	-----	-----	-----	-----MLSAVL
Panda_IL4I1	-----	-----	-----	-----	-----P P-----ARY
Dog_IL4I1	-----	-----	-----	-----MQHHL	-----PRIMASSVRY
Human_IL4I1	-----	-----	-----	-----MA	-----P-----LALH
Mouse_IL4I1	-----	-----	-----	-----MAG	-----LAL
Streptosporangium_roseum_{Actinobacteria}	-----	-----	-----	-----	-----
Roseiflexus_castenholzii_{Chloroflexi}	-----	-----	-----	-----	-----
Bacillus_cereus_{Firmicutes}	-----	-----	-----	-----	-----
Marseillevirus	-----	-----	-----	-----	-----
Aplysia_punctata_cyplasin_L_{Mollusks}	-----	MAVRFLAPGL	LTLATLVSGR	TVCESKQECD	AAQCDK-----
Aplysia_punctata_cyplasin_S_{Mollusks}	-----	MAVRFLAPGL	LTLATLVSGR	TVCESKQECD	AAQCDK-----
Aplysia_californica_aplysianin_A_{Mollusks}	-----	MAVRFLALGL	LIFVTVCSGR	RVCDSQQSCD	AEQCDK-----
Aplysia_punctata_ink_toxin_1_{Mollusks}	-----M	SSAVLLLACA	LVISVHADG-	-ICRNRQCN	REVCGS-----
Aplysia_punctata_ink_toxin_2_{Mollusks}	-----	SSAVLLLACA	LVISVHADG-	-VCRNRQCN	REVCGS-----
Aplysia_punctata_ink_toxin_3_{Mollusks}	-----	-----	-----DG-	-ICRNRQCN	REVCGS-----
Aplysia_californica_escapin_{Mollusks}	-----M	SSAFLLLACA	LVISVHADG-	-VCRNRQCN	KEVCGS-----
Achatina_fulica_achacin_{Mollusks}	-----	MLLLNSALFI	LCLVCWLPGT	SSSRVLTRE	GPQCSR-----
Hahella_chejuensis_{Proteobacteria}	-----	-----	-----	-----	-----MDNAAL-----
Pseudomonas_entomophila_{Proteobacteria}	-----	--MANWHSKG	PRQYWLVTWI	SLPTHNKREF	AMSHNH-----
Burkholderia_ubonensis_{Proteobacteria}	-----	-----	-----	-----	-----MADE-----
Chromobacterium_violaceum_{Proteobacteria}	-----	-----	-----	-----	-----MAEE-----
Chitinophaga_pinensis_{Bacteroidetes}	-----	-----	-----	-----	-----MANE-----
Flavobacterium_johnsoniae_{Bacteroidetes}	-----	-MTMFMYCLN	VYPKTAINHK	TMNKNTPLNS	GIQPD-----
Dyadobacter_fermentans_{Bacteroidetes}	-----	-----	-----	-----	-----MKNKNTPLNN
Staphylococcus_aureus_{Firmicutes}	-----	-----	-----MTNR	ITMKDIEHID	GINKNN-----
Clostridium_botulinum_{Firmicutes}	SYNNSNSP--	-YQIDNPGEY	ERYTMLEYIL	KLQNRSDDDL	NIINLM-----
Clostridium_carboxidivorans_{Firmicutes}	VYRADIQP--	-FNPSNE---	QRYALLKNAL	RKSGRLGDFN	NI IKLL-----
Turkey_LAO	AMVL-----	-FQILLLLGL	ASAKRFPCFP	EYCLHDKDYE	ELLSIV-----
Chicken_LAO	TVVTRKDISG	GFPSLASRST	EGAKRFSCFP	EYCLHDKDYE	ELLSIV-----
Zebrafinch_LAO	GIAL-----	-LQILLLVGL	LSAKRFSSFP	DYCLHQDYE	DLLKIV-----
Ophiophagus_hannah_{Elapidae}	DFLL-----	-LLLVLFLGV	PRSENHVINL	EECFQEPEYE	NWLATA-----
Crotalus_atrox_{Viperidae}	VFFMFS----	-LLFLAALGS	CAHDR--NPL	EECFRET DYE	EFLEIA-----
Sistrurus_catenatus_{Viperidae}	VFFMFS----	-LLFLAALGS	CADDR--NPL	EECFRET DYE	EFLEIA-----
Gloydeus_halys_{Viperidae}	VFFMFS----	-LLFLAALGS	CANDR--NPL	EECFRET DYE	EFLEIA-----
Trimesurus_stejnegeri_{Viperidae}	VFFMFS----	-LLFLAALGS	CADDR--NPL	EECFRET DYE	EFLEIA-----
Bothrops_jararacussu_{Viperidae}	VFFMF-----	-----SKPGK	LADDR--NPL	EECFRET DYE	EFLEIA-----
Echis_ocellatus_{Viperidae}	IFFMFS----	-LLFLATLGS	CADDK--NPL	EECFREADYE	EFLEIA-----
Oxyuranus_scutellatus_{Elapidae}	VFFMFS----	-LLFLAALGS	CADVRR--NPL	EECFREADYE	EFLEIA-----
Pseudechis_australis_{Elapidae}	VFFMFS----	-LLFLAALGS	CADDR--RPL	EECFREADYE	EFLEIA-----
Bungarus_multicinctus_{Elapidae}	VFSIFS----	-LVFLAALGS	CADDR--SPL	EECFREADYE	EFLEIA-----
Demancia_vestigiata_{Elapidae}	VFFMFS----	-LLFLAALGS	CADDR--NPL	GECFREADYE	EFVDIA-----
Dog_LAO1	GILILG----	---LFLATPS	CLGYF--EDL	VKCFQDPEYE	SILVTA-----
Panda_LAO1	-----	-----	-----	-KCLQDPEYE	SILVTA-----
Bovine_LAO1	GILILG----	---LFLATPS	CLGYF--EDL	AKCFHDPEYE	SILVTA-----
Horse_LAO1	GILILG----	---LLLATPS	CLASY--EDL	VKCFQDPEYE	SILVTA-----

Mouse_LAO1	GILVWG----	---ILLCVSS	CLALY--ENL	VKCFQDPDYE	AFLLIA----	-----
Opossum_LAO1	GILTIA----	---FLLTITN	CHGYS--KSL	AKCFEDPEYE	AVLKIA----	-----
Horse_LAO2	ALGLLS----	---MLSLS--	TQAFN--SQL	LKCLEDPQYE	ELVRLA----	-----
Opossum_LAO2	KMLLLS----	---MVLLSPY	SHAFN--TEL	VKCFDDPQYE	ELLGLL----	-----
Flounder_LAO3	KRELYVVS-	-LLFTMYQSQ	TAALSFRANI	SSCLEDKDYE	TLETA----	-----
Flounder_LAO2	KCELGK----	-----QQQ	TAALSFRAHL	ANSLEDADYE	TLLQTA----	-----
Flounder_LAO1	KCEIYVVS-	-LLFTMSQSQ	TAALSFRAHL	SDCLEDKDYQ	TLLQTV----	-----
Rockfish_LAO	TWKLFVSV-	-LLLALYPSH	AAAIISLRDNL	ADCLEDRDYD	KLLHIA----	-----
Green_pufferfish_LAO	LWLLWLLP--	-----LLGG	ALAVGGGDRL	SDCLQDNDYD	RLLRVV----	-----
Zebrafish_LAO	ALVLVSIY--	-----HAGGTGNDLL	HAGGTGNDLL	SKCLQSDYD	YLLKIT----	-----
Panda_IL4I1	LLVLVS----	IFLSLVSALD	WKTSHSQDPF	EKCMHDPDYE	VLLKVV----	-----
Dog_IL4I1	LLVLVS----	TFLSLVGSLD	WKTSHGQDSF	EKCMHDPDYE	VLLKVV----	-----
Human_IL4I1	LLVLVP----	ILLSLVSQD	WKAERSQDPF	EKCMQDPDYE	QLLKVV----	-----
Mouse_IL4I1	RLVLAA----	TLLGLAGSLD	WKAASSLNPI	EKCMEDHDYE	QLLKVV----	-----
Streptosporangium_roseum_{Actinobacteria}	-----	-----MPAD	PRHPRFDHAS	LSPGHERVSP	RLVRTA----	-----
Roseiflexus_castenholzii_{Chloroflexi}	-----	-----MAQE	LSTSEY----	LDSIHRGIA-	-----A----	-----
Bacillus_cereus_{Firmicutes}	-----	-----MQKD	IMYNTEMDEA	LKVIDKGLK-	-----	-----
Marseillevirus	-----	-----	-----	-----	-----	-----
Aplysia_punctata_cyplasin_L_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_cyplasin_S_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_californica_aplysianin_A_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_1_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_2_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_3_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_californica_escapin_{Mollusks}	-----	-----	-----	-----	-----	-----
Achatina_fulica_achacin_{Mollusks}	-----	-----	-----	-----	-----	-----
Hahella_chejuensis_{Proteobacteria}	-----	-----	-----	-----	-----	-----
Pseudomonas_entomophila_{Proteobacteria}	-----	-----	-----	-----	-----	-----
Burkholderia_ubonensis_{Proteobacteria}	-----	-----	-----	-----	-----	-----
Chromobacterium_violaceum_{Proteobacteria}	-----	-----	-----	-----	-----	-----
Chitinophaga_pinensis_{Bacteroidetes}	-----	-----	-----	-----	-----	-----
Flavobacterium_johnsoniae_{Bacteroidetes}	-----	-----	-----	-----	-----	-----
Dyadobacter_fermentans_{Bacteroidetes}	-----	-----	-----	-----	-----	-----
Staphylococcus_aureus_{Firmicutes}	-----	-----	-----	-----	-----	-----
Clostridium_botulinum_{Firmicutes}	-----	-----	-----	-----	-----	-----
Clostridium_carboxidivorans_{Firmicutes}	-----	-----	-----	-----	-----	-----
Turkey_LAO	-----	-----	-----	-----	-----	-----
Chicken_LAO	-----	-----	-----	-----	-----	-----
Zebrafinch_LAO	-----	-----	-----	-----	-----	-----
Ophiophagus_hannah_{Elapidae}	-----	-----	-----	-----	-----	-----
Crotalus_atrox_{Viperidae}	-----	-----	-----	-----	-----	-----
Sistrurus_catenatus_{Viperidae}	-----	-----	-----	-----	-----	-----
Gloydeus_halys_{Viperidae}	-----	-----	-----	-----	-----	-----
Trimesurus_stejnegeri_{Viperidae}	-----	-----	-----	-----	-----	-----
Bothrops_jararacussu_{Viperidae}	-----	-----	-----	-----	-----	-----
Echis_ocellatus_{Viperidae}	-----	-----	-----	-----	-----	-----

Oxyuranus_scutellatus_{Elapidae}	-----	-----	-----	-----	-----	-----
Pseudechis_australis_{Elapidae}	-----	-----	-----	-----	-----	-----
Bungarus_multicinctus_{Elapidae}	-----	-----	-----	-----	-----	-----
Demancia_vestigiata_{Elapidae}	-----	-----	-----	-----	-----	-----
Dog_LAO1	-----	-----	-----	-----	-----	-----
Panda_LAO1	-----	-----	-----	-----	-----	-----
Bovine_LAO1	-----	-----	-----	-----	-----	-----
Horse_LAO1	-----	-----	-----	-----	-----	-----
Mouse_LAO1	-----	-----	-----	-----	-----	-----
Opossum_LAO1	-----	-----	-----	-----	-----	-----
Horse_LAO2	-----	-----	-----	-----	-----	-----
Opossum_LAO2	-----	-----	-----	-----	-----	-----
Flounder_LAO3	-----	-----	-----	-----	-----	-----
Flounder_LAO2	-----	-----	-----	-----	-----	-----
Flounder_LAO1	-----	-----	-----	-----	-----	-----
Rockfish_LAO	-----	-----	-----	-----	-----	-----
Green_pufferfish_LAO	-----	-----	-----	-----	-----	-----
Zebrafish_LAO	-----	-----	-----	-----	-----	-----
Panda_IL4I1	-----	-----	-----	-----	-----	-----
Dog_IL4I1	-----	-----	-----	-----	-----	-----
Human_IL4I1	-----	-----	-----	-----	-----	-----
Mouse_IL4I1	-----	-----	-----	-----	-----	-----
Streptosporangium_roseum_{Actinobacteria}	-----	-----	-----	-----	-----	-----
Roseiflexus_castenholzii_{Chloroflexi}	-----	-----	-----	-----	-----	-----
Bacillus_cereus_{Firmicutes}	-----	-----	-----	-----	-----	-----
Marseillevirus	-----	-----	-----	-----	-----	-----
Aplysia_punctata_cyplasin_L_{Mollusks}	-----	-----	-----	-TLDVAIVGA	GAAGAYSAYL	LRNKGQ----
Aplysia_punctata_cyplasin_S_{Mollusks}	-----	-----	-----	-TLDVAIVGA	GAAGAYSAYL	LRNKGQ----
Aplysia_californica_aplysianin_A_{Mollusks}	-----	-----	-----	-NLDIAIVGA	GPSGAYSAYK	MRYSGK----
Aplysia_punctata_ink_toxin_1_{Mollusks}	-----	-----	-----	-TYDVAVVGA	GPGGANSAYM	LRDSGL----
Aplysia_punctata_ink_toxin_2_{Mollusks}	-----	-----	-----	-TYDVAVVGA	GPGGANSAYM	LRDSGL----
Aplysia_punctata_ink_toxin_3_{Mollusks}	-----	-----	-----	-TYDVAVVGA	GPGGANSAYM	LRDSGL----
Aplysia_californica_escapin_{Mollusks}	-----	-----	-----	-SYDVAIVGA	GPGGANSAYM	LRESGL----
Achatina_fulica_achacin_{Mollusks}	-----	-----	-----	-SVDVAIVGA	GPSGTYSAYK	LRNKGQ----
Hahella_chejuensis_{Proteobacteria}	-----	-----	-----	-TLDVAIVGG	GVSGVYSAWR	LQTECG-AQQ
Pseudomonas_entomophila_{Proteobacteria}	-----	-----	-----	-PLDVAIIGG	GVSGTYSAWR	LQQAHG-THQ
Burkholderia_ubonensis_{Proteobacteria}	-----	-----	-----	-LIDIAIVGA	GVSGVYSAWR	LQQAD--ARR
Chromobacterium_violaceum_{Proteobacteria}	-----	-----	-----	-TFDIAIVGG	GVSGVYCAWR	LKQTY--PGK
Chitinophaga_pinensis_{Bacteroidetes}	-----	-----	-----	-QIDIAIIGG	GVSGVYSAWK	LKKQF--PDQ
Flavobacterium_johnsoniae_{Bacteroidetes}	-----	-----	-----	-KIETAIIGA	GTSGLYTAYR	LVTDKKYTAD
Dyadobacter_fermentans_{Bacteroidetes}	-----	-----	-----	-ETEVAIIGA	GTSGLYSAFR	LTEVGKYTGS
Staphylococcus_aureus_{Firmicutes}	-----	-----	-----	-EVDIAIIGA	GVSGLYSAYR	FLEDPPQYSQQ
Clostridium_botulinum_{Firmicutes}	SPPEEDIT---	-----	--NICKAGMA	KNIKVAVIGA	GEAGLASAFE	LRKIGC----
Clostridium_carboxidivorans_{Firmicutes}	GPPPDIL---	-----	--NYAYPGEF	KKIKVGIIGG	GLAGMSAAFE	LRKLGf----
Turkey_LAO	KNGLE----	-----	---PTTR---	-PSKVIVGA	GISGLTAAKL	LRDAGH----
Chicken_LAO	KYGLE----	-----	---PTTR---	-PSNVIVGA	GISGLTAAKL	LRDAGH----

Zebrafinch_LAO	QEGLE----	-----	---PAAR---	-PARVAVVGA	GVAGLTAAKL	LRDAGH----
Ophiophagus_hannah_{Elapidae}	SHGLT----	-----	---KTLN---	-PKKIVVGA	GISGLTAAKL	FREAGH----
Crotalus_atrox_{Viperidae}	KNGLT----	-----	---ATSN---	-PKRVVIVGA	GMAGLSAAYV	LAGAGH----
Sistrurus_catenatus_{Viperidae}	KNGLT----	-----	---ATSN---	-PKRVVIVGA	GMSGLSAAYV	LAGAGH----
Gloydeus_halys_{Viperidae}	RNGLK----	-----	---ATSN---	-PKHVVVVGA	GMSGLSAAYV	LSGAGH----
Trimesurus_stejnegeri_{Viperidae}	RNGLK----	-----	---ATSN---	-PKRVVIVGA	GMSGLSAAYV	LAGTGH----
Bothrops_jararacussu_{Viperidae}	KNGLS----	-----	---TTSN---	-PKRVVIVGA	GMSGLSAAYV	LANAGH----
Echis_ocellatus_{Viperidae}	KNGLK----	-----	---KTSN---	-PKDIVVVGA	GMSGLSAAYV	LAGAGH----
Oxyuranus_scutellatus_{Elapidae}	RNGLK----	-----	---KTSN---	-PKHVVVVGA	GMAGLSAAYV	LAGAGH----
Pseudechis_australis_{Elapidae}	KNGLQ----	-----	---RTSN---	-PKRVVVVGA	GMAGLSAAYV	LAGAGH----
Bungarus_multicinctus_{Elapidae}	RNGLK----	-----	---KTSN---	-PKHVVVVGA	GMAGLSAAYV	LEKAGH----
Demancia_vestigiata_{Elapidae}	TNGLK----	-----	---QTSN---	-PKRVVVVGA	GMAGLSAAYV	LAGAGH----
Dog_LAO1	QEGHL-----	-----	---TSP-----	-TKRVIVVGA	GMSGLAAAKA	LQDAGH----
Panda_LAO1	QEGHL-----	-----	---TSP-----	-PKRVVIVGA	GMSGLVAAKA	LQDAGH----
Bovine_LAO1	QEGHL-----	-----	---TSPV-----	-PKRIVVVGA	GMSGLTAAKA	LQDAGH----
Horse_LAO1	QEGHL-----	-----	---ISRL-----	-PKRVVVVGA	GMSGLAAAKA	LQDAGH----
Mouse_LAO1	QNGHL-----	-----	---TSP-----	-SKRVVVVGA	GMAGLVAAKT	LQDAGH----
Opossum_LAO1	QEGLG-----	-----	---TSAI-----	-RKHIVVVGA	GMSGLIAAKT	LQEAGH----
Horse_LAO2	QDGLR-----	-----	---QTAE-----	-RKQVVVIGA	GMAGLTAAKT	LQDAGH----
Opossum_LAO2	QGGGL-----	-----	---APIE-----	-KKSVVVIGA	GIAGLTAAKV	LQDAGH----
Flounder_LAO3	KTGLP-----	-----	---PTHT-----	-PHHVVVVGA	GMAGLTAAKL	LQDAGH----
Flounder_LAO2	KNGLPAL---	-----	--LP TAKTCL	PPRHVVIVGA	GMAGLTAASL	LEGVGF----
Flounder_LAO1	ENGLP-----	-----	---PIHT-----	PPRHVVVVGA	GMAGLTAAKL	LQDAGH----
Rockfish_LAO	EFGLP-----	-----	---NINT-----	-SHHVVIAGA	GMAGLTAAKL	LKEAGH----
Green_pufferfish_LAO	QTGLP-----	-----	---PVNR-----	-SHHVVIAGA	GLAGLTAAKL	LQDAGH----
Zebrafish_LAO	EQGLP-----	-----	---PTKT-----	-PKHVLIVGA	GAAGLTAAKF	LEDAGH----
Panda_IL4I1	TLGLN-----	-----	---RTSK-----	-PQRVIVVGA	GAAGLVAAKV	LSDAGH----
Dog_IL4I1	TLGLN-----	-----	---RTSK-----	-PQRVIVVGA	GAAGLVAAKV	LSDAGH----
Human_IL4I1	TWGLN-----	-----	---RTLK-----	-PQRVIVVGA	GVAGLVAAKV	LSDAGH----
Mouse_IL4I1	TLGLN-----	-----	---RTSK-----	-PQKVVVVGA	GVAGLVAAKM	LSDAGH----
Streptosporangium_roseum_{Actinobacteria}	QEGLP-----	-----	--ARQDT-----	-PKRVLVIGA	GMAGLVAAYE	LMRQGH----
Roseiflexus_castenholzii_{Chloroflexi}	VAGPP-----	-----	--HR-----	-PKRVVIVGA	GVAGLVAGYE	LLRAGH----
Bacillus_cereus_{Firmicutes}	-----	-----	---KTIS---	-PKQIIVVGA	GMAGLVSASL	LKAAGH----
Marseillevirus	-----	-----	---MYDFIVAGG	GISGVFFAWR	MNTFFP--	NK
Aplysia_punctata_cyplasin_L_{Mollusks}	NIGVFEFC-D	RVGGRLFITYQ	LPNTP-----	--DVQLELGG	MRYITG----	-----AHN
Aplysia_punctata_cyplasin_S_{Mollusks}	NIGVFEFC-D	RVGGRLFITYQ	LPNTP-----	--DVQLELGG	MRYITG----	-----AHN
Aplysia_californica_aplysianin_A_{Mollusks}	DVGVFEYS-D	RVGGRLYTYQ	LPNTP-----	--DVNLEIGG	MRYITG----	-----AHN
Aplysia_punctata_ink_toxin_1_{Mollusks}	DIAVFEYS-D	RVGGRLFITYQ	LPNTP-----	--DVNLEIGG	MRFIEG----	-----AMH
Aplysia_punctata_ink_toxin_2_{Mollusks}	DIAVFEYS-D	RVGGRLFITYQ	LPNTP-----	--DVNLEIGG	MRFIEG----	-----AMH
Aplysia_punctata_ink_toxin_3_{Mollusks}	DIAVFEYS-D	RVGGRLFITYQ	LPNTP-----	--DVNLEIGG	MRFIEG----	-----AMH
Aplysia_californica_escapin_{Mollusks}	DIAVFEYS-D	RVGGRLYTYQ	LPNTP-----	--DVNLEIGG	MRFIEG----	-----AMH
Achatina_fulica_achacin_{Mollusks}	TVELFEYS-N	RIGGRLFTH	LPNVP-----	--DLNLESGG	MRYFKN----	-----HHK
Hahella_chejuensis_{Proteobacteria}	DIALFEYS-D	RIGGRLYSIT	LPGLP-----	--NVVAEVEG	MRYIP-----	-----DA
Pseudomonas_entomophila_{Proteobacteria}	RIQLFEYG-D	RIGGRSFSIN	LPGLP-----	--NVVAEVEG	MRYMPG----	-----ADG
Burkholderia_ubonensis_{Proteobacteria}	KIVVFEYS-D	RIGGRLLSVR	PPGID-----	--NMVAELGG	MRILPE----	-----VQP
Chromobacterium_violaceum_{Proteobacteria}	KIAVFEAS-N	HIGGRLLSVR	PPDIF-----	--DMVAELGG	MRILPA----	-----VQP

Chitinophaga_pinensis_{Bacteroidetes}	KIVVFEGS-D	HIGGRLLSVK	PPEIP-----	--YMTAELGG	MRILEN----	-----TQK
Flavobacterium_johnsoniae_{Bacteroidetes}	QVQIFDLS-S	KLGRRLSEVI	MPGM-----	--DFWGELGG	MRYLTS----	-----QEI
Dyadobacter_fermentans_{Bacteroidetes}	QVQIFDMS-E	RLGRRLSEVV	LPGM-----	--NFWGELGG	MRYLTS----	-----QEI
Staphylococcus_aureus_{Firmicutes}	KIGIYDLS-D	KIGGRLESTL	LPES-----	--NVSGELGG	MRYLTS----	-----QKI
Clostridium_botulinum_{Firmicutes}	NVTLFEAS-H	RIGGRVYTY	FDRNR-----	--NYYGELGP	MSIP-----	-----VSHY
Clostridium_carboxidivorans_{Firmicutes}	DITVFDALKD	RVGGRVYTY	FDEDK-----	--KFYGELGP	IRIP-----	-----VAHE
Turkey_LAO	KVTILETS-N	RVGGRIRTYR	E---K-----	--DWYVELGA	MRLP-----	-----SKHR
Chicken_LAO	KVTILEIS-N	RVGGRIRTYR	E---K-----	--DWYVELGA	MRLP-----	-----SKHR
Zebrafinch_LAO	EVILERS-S	WVGGRIRTYR	P-EGQ-----	--DWYVELGP	MRLP-----	-----GKHR
Ophiophagus_hannah_{Elapidae}	EVVILEAS-D	RVGGRVTKYR	E---D-----	--GWYVDVGP	MRVP-----	-----QTHR
Crotalus_atrox_{Viperidae}	QVTVLEAS-E	RVGGRVRTYR	---KK-----	--DWYANLGP	MRLP-----	-----TKHR
Sistrurus_catenatus_{Viperidae}	QVTVLEAS-E	RVGGRVRTYR	---KE-----	--DWYANLGP	MRLP-----	-----TKHR
Gloydeus_halys_{Viperidae}	QVTVLEAS-E	RAGGRVRTYR	N-DKE-----	--DWYANLGP	MRLP-----	-----EKHR
Trimesurus_stejnegeri_{Viperidae}	EVTVLEAS-E	RAGGRVRTYR	N-DEE-----	--GWYANLGP	MRLP-----	-----EKHR
Bothrops_jararacussu_{Viperidae}	QVTVLEAS-E	RAGGQVKTYR	N-EKE-----	--GWYANLGP	MRLP-----	-----EKHR
Echis_ocellatus_{Viperidae}	KVTVLEAS-Q	LVGGRVTKYR	N-AKE-----	--GWYANLGP	MRIP-----	-----EKHR
Oxyuranus_scutellatus_{Elapidae}	KVTVLEAS-E	RVGGRVHTYR	N-EKE-----	--GWYVNLGP	MRLP-----	-----ERHR
Pseudechis_australis_{Elapidae}	KVTVLEAS-E	RVGGRVNTYR	N-EKD-----	--GWYVNLGP	MRLP-----	-----ERHR
Bungarus_multicinctus_{Elapidae}	RVTVLEAS-D	RVGGRANTYR	D-EKE-----	--GWYVNMGP	MRLP-----	-----ERHR
Demancia_vestigiata_{Elapidae}	NVMLEAS-E	RVGGRVNTYR	N-EQE-----	--GWYVNLGP	MRLP-----	-----ERHR
Dog_LAO1	QVTILEAS-N	HVGGRVVTFR	N-EKE-----	--GWYHELGP	MRIP-----	-----KSHR
Panda_LAO1	QVTILETS-Q	HIGGRVATIR	N-EEE-----	--GWYHELGP	MRIP-----	-----KSHR
Bovine_LAO1	QVTILEAS-N	HVGGRVMTFR	N-EKE-----	--GWYELGP	MRIP-----	-----KSHR
Horse_LAO1	QVTILEAS-D	HVGGRVLTFR	N-EEE-----	--GWYFELGP	MRIP-----	-----KSHR
Mouse_LAO1	EVTILEAS-N	HIGGRVVTLR	N-KEE-----	--GWYLELGP	MRIP-----	-----ESHK
Opossum_LAO1	RVTVLETR-D	KIGGRVATFR	S-PDR-----	--NWYIELGP	MRLP-----	-----ATHR
Horse_LAO2	QVTVLEAS-G	RVGGRIETHR	V-PGA-----	--QWYVELGA	MRIP-----	-----AHRH
Opossum_LAO2	QVTVLEAS-G	RVGGRIETHR	V-PGA-----	--KWYVELGA	MRIP-----	-----ANHM
Flounder_LAO3	KVTILEAS-D	RVGGRVETYR	N-END-----	--GWYIEFGA	MRIP-----	-----TTHE
Flounder_LAO2	KVTILEAS-D	RVGGRVETYR	N-END-----	--GWYIEFGA	MRIP-----	-----YTHE
Flounder_LAO1	KVTILEAS-G	RVGGRVETYR	N-EQ-----	--GWYVELGA	MRIP-----	-----STHK
Rockfish_LAO	KVTILEAS-S	RVGGRVETYR	N-EKE-----	--GWYVELGA	MRIP-----	-----SSHQ
Green_pufferfish_LAO	QVTILEAS-G	RVGGRVETYR	N-QQE-----	--GWYADLGA	MRIP-----	-----SSHQ
Zebrafish_LAO	KVTILEAS-D	RIGGRVATFR	N-GRE-----	--GWYVELGA	MRIP-----	-----SFHR
Panda_IL4I1	KVTILEAD-N	RIGGRILTFR	D-RKT-----	--GWYVELGA	MRMP-----	-----SSHR
Dog_IL4I1	KVTILEAD-N	RIGGRILTFR	D-RKT-----	--GWYVELGA	MRMP-----	-----NSHR
Human_IL4I1	KVTILEAD-N	RIGGRIFTFR	D-QNT-----	--GWYVELGA	MRMP-----	-----SSHR
Mouse_IL4I1	KVTILEAD-N	RIGGRIFTFR	D-EKT-----	--GWYVELGA	MRMP-----	-----SSHR
Streptosporangium_roseum_{Actinobacteria}	DPVVLEAQ-Q	RVGGRVHTLR	G-FAE-----	--GLYAEAGA	MRIP-----	-----RVHD
Roseiflexus_castenholzii_{Chloroflexi}	DPLILEAR-N	RVGGRICTLR	EPFTE-----	--GLYGEAGA	MRIP-----	-----RAHT
Bacillus_cereus_{Firmicutes}	DVKIFEAN-N	RVGGRIETVR	M-EDT-----	--GLYLDVGA	MRIP-----	-----YTHR
Marseillevirus	KILLIEKE-E	RLGGRLLSYD	LGN-----	--GIYAEQGG	QRTFP-----	-----DIDK
Aplysia_punctata_cyplasin_L_{Mollusks}	LLEGVVRQLG	LTPVV-----	-----FT	EGFGKLGTR	YYLRGQSLTF	QEVLTGDVP-
Aplysia_punctata_cyplasin_S_{Mollusks}	LLEGVVRQLG	LTPVV-----	-----FT	EGFGKLGTR	YYPRGQSLTF	QEALTGDVP-
Aplysia_californica_aplysianin_A_{Mollusks}	ILQALTKELG	LESVP-----	-----FT	EGFGRPGRTR	FFLRGQSLTY	DEVKFGDVP-
Aplysia_punctata_ink_toxin_1_{Mollusks}	RLWRVISELG	LTPKV-----	-----FK	EGFGKEGRQR	FYLRGQSLTK	KQVKSGDVP-

Aplysia_punctata_ink_toxin_2_{Mollusks}	RLWRVISELG	LTPKV-----	-----FK	EGFGKEGRQR	FYLRGQSLTK	KQVKSGDVP-
Aplysia_punctata_ink_toxin_3_{Mollusks}	RLWRVISELG	LTPKV-----	-----FK	EGFGKEGRQR	FYLRGQSLTK	KQVKSGDVP-
Aplysia_californica_escapin_{Mollusks}	RLWKVISELG	LTPKV-----	-----FK	EGFGKEGRQR	FYLRGQSLTK	KQVKSGDVP-
Achatina_fulica_achacin_{Mollusks}	IFGVLVKELN	LSNKE-----	-----FT	EGFGKPGRTR	FFARGKSLTL	EEMTSGDVP-
Hahella_chejuensis_{Proteobacteria}	HILVANLVKY	LQLPTK----	--DFPMG-AP	EPVGSK-DNL	FFLRGARFRY	RDFSHPDK-
Pseudomonas_entomophila_{Proteobacteria}	HVMVDTLVQH	LGLPSK----	--DFPMGNEQ	DQIGAK-DNL	FYLRGQRFRF	RDFVEAPHK-
Burkholderia_ubonensis_{Proteobacteria}	LIKKLIDTLN	PILPP-----	--SQQIDLYK	FPVDEP-VNL	AYLRGVHLRL	SDFTQEPAK-
Chromobacterium_violaceum_{Proteobacteria}	LVTQLIHELN	KELPD-----	--DEQITLYD	FPVDEP-QNI	AFLRGVYLRL	ADFTQNPDL-
Chitinophaga_pinensis_{Bacteroidetes}	LIVDLIETLN	TELPA-----	--AEKITLYD	FPVDEP-QNL	AYLRGEYLRL	VDFATRPDK-
Flavobacterium_johnsoniae_{Bacteroidetes}	VTTLIEGY-I	SPKDPKKRIP	VLKDKMTPVP	FPMGKSSKLL	MYLRKERFKQ	DAWDEAQKKG
Dyadobacter_fermentans_{Bacteroidetes}	VTTLIEGYPL	TEKDKAKRKF	VLNDRMTPIP	FPMGNAADLL	FYLRKEHFKQ	DAWNVAQQNG
Staphylococcus_aureus_{Firmicutes}	TTTLIENIFN	LNNER-----	-----	FELGNPSHHT	FYLRGQRFKE	DAWESYQKDN
Clostridium_botulinum_{Firmicutes}	TTWHYINLFG	-----	-----LH	TSPFVNNDN	NLFYIRDERA	INDAKGKSVE
Clostridium_carboxidivorans_{Firmicutes}	TTWHYINLFG	-----	-----LA	TQPFIQNNPN	NFVYVQETRA	RRDP--KSIE
Turkey_LAO	LVREFIRQFD	-----	-----LK	LNPFFHQTDN	AWYFVNGIRA	---RVAEVNR
Chicken_LAO	LVREFIRQFD	-----	-----LK	LNPFRQTDN	AWYFVNGIRA	---RVAEVNR
Zebrafinch_LAO	LVREFIRQFK	-----	-----LK	LNPFIQRDEN	SWFFLRGVRV	---RAGEVER
Ophiophagus_hannah_{Elapidae}	IVREYIKKFN	-----	-----IS	LNPFRQTDEN	AWYLKHKVRQ	---KMSAN--
Crotalus_atrox_{Viperidae}	IVREYIKKFD	-----	-----LK	LNEFSQENEN	AWYFIKNIRK	---RVREVKN
Sistrurus_catenatus_{Viperidae}	IVREYIKKFG	-----	-----LE	LNEFFQENDN	AWYFIKNIRK	---RVGEVKN
Gloydeus_halys_{Viperidae}	IVREYIRKFG	-----	-----LQ	LNEFSQENDN	AWYFIKNIRK	---RVGEVKK
Trimesurus_stejnegeri_{Viperidae}	IVREYIRKFN	-----	-----LQ	LNEFSQENDN	AWHFVKNIRK	---TVGEVKK
Bothrops_jararacussu_{Viperidae}	IVREYIRKFG	-----	-----LQ	LNEFSQENEN	AWYFIKNIRK	---RVGEVKN
Echis_ocellatus_{Viperidae}	IVREYIRKFG	-----	-----LE	LNEFVQETDN	GWYFVKNIRK	---RVGEVKK
Oxyuranus_scutellatus_{Elapidae}	IIREYIRKFG	-----	-----LK	LNEFFQENEN	AWYFIRNIRK	---RVWEVKK
Pseudechis_australis_{Elapidae}	IIREYIRKFG	-----	-----LE	LNEFIQENDN	AWYFIKNIRK	---RVSEVKK
Bungarus_multicinctus_{Elapidae}	IVRTYIAKFG	-----	-----LK	LNEFFQENEN	AWYFIRNIRK	---RVWEVKK
Demancia_vestigiata_{Elapidae}	IVREYIKKFG	-----	-----LQ	LNQFFQEDD	AWYFIKNIRK	---KVREVKE
Dog_LAO1	LVHTYVKKLG	-----	-----LK	LNKFIQYDDN	TWHLINGQRY	---RTREVKD
Panda_LAO1	LVHTYIKKLG	-----	-----LK	LNRFIQYDGN	TWYLINGKRH	---RSKEVQD
Bovine_LAO1	LVHTYVRKLG	-----	-----LK	LNKFLQYHDN	TWFLINRKRY	---RAGEVKA
Horse_LAO1	LVHTYVKKLG	-----	-----LK	LNKFIQYDDN	TWYLINGQRY	---RTREVKA
Mouse_LAO1	LIHTYVQKLG	-----	-----LK	LNKFKHQYDSN	TWYLLNGQRY	---RASEVMA
Opossum_LAO1	LVRHYVKKMG	-----	-----LK	MNTFIQASKN	TWYINGRRH	---RTSDVLA
Horse_LAO2	LSRELIRKYG	-----	-----LK	LNEFYPSNNQ	TWVLVNGVRR	---RMGEVQA
Opossum_LAO2	FSRELISQFG	-----	-----LK	LNEFSRYDDR	TWVLVNGVRR	---RTGEVQA
Flounder_LAO3	IIRWYVESLG	-----	-----LE	LNEFFMTHPK	TFYLVNGIKK	---RTFEVNA
Flounder_LAO2	IIRWYVESLG	-----	-----LK	LNEFIMTDPK	TFYLVNGIKK	---RTFEVKA
Flounder_LAO1	IVLFFVELLK	-----	-----LK	LNEFIMTDPN	TFYLVNGIKK	---RTFEVNA
Rockfish_LAO	IVRWYAKELG	-----	-----VK	LNEFIMDDPN	TFYLVNGVLE	---KTETVQK
Green_pufferfish_LAO	IVHAFVKMLG	-----	-----LK	LNRFMQVDPN	TFYLVNGVRR	---RWSAVQH
Zebrafish_LAO	ILLAVAQKLS	-----	-----LK	LGKFFVQDDPN	TYYYINGERH	---KTYTVKQ
Panda_IL4I1	ILHELCKSLG	-----	-----LN	LTKFTQYDEN	TWIEVNNLKL	---RNYVVEK
Dog_IL4I1	ILHELCKSLG	-----	-----LN	LTKFTQYDEN	TWIEVNNLKL	---RNYVVEK
Human_IL4I1	ILHKLQGLG	-----	-----LN	LTKFTQYDKN	TWTEVHEVKL	---RNYVVEK
Mouse_IL4I1	ILHKLCRTLG	-----	-----LN	LTQFTQYDEN	TWTEVHNVKL	---RNYVVEK
Streptosporangium_roseum_{Actinobacteria}	LTLAYCREFG	-----	-----LG	LRPFVMGNPR	TLAFIQGRRM	---TMEDLNA

Roseiflexus_castenholzii_{Chloroflexi}	LTMAYIERFG	-----	-----LP	TVDFIMDSMQ	TYVHIGGVKR	---RRAEAHA
Bacillus_cereus_{Firmicutes}	LTMAYIRKFG	-----	-----LQ	VSPFINRNET	DIIYVNGRKT	---TLKQYEK
Marseillevirus	ELTRVLQMIG	-----	-----KK	SFPMPYNBPQ	NVAELKGRF	TVSIGNATGA
Aplysia_punctata_cyplasin_L_{Mollusks}	-----YNL	TVAEKQNQDN	IFAFYLKELT	R-----	-----	-----F
Aplysia_punctata_cyplasin_S_{Mollusks}	-----YNL	TVAEKQNQDN	IFAFYLKELT	R-----	-----	-----F
Aplysia_californica_aplysianin_A_{Mollusks}	-----YNL	TTVEKRNQGR	IYEYLLKELT	G-----	-----	-----F
Aplysia_punctata_ink_toxin_1_{Mollusks}	-----YDL	SPEEKENQGN	LVEYYLEKLT	G-----	-----	-----L
Aplysia_punctata_ink_toxin_2_{Mollusks}	-----YDL	SPEEKENQGN	LVEYYLEKLT	G-----	-----	-----L
Aplysia_punctata_ink_toxin_3_{Mollusks}	-----YDL	SPEEKENQGN	LVEYYLEKLT	G-----	-----	-----L
Aplysia_californica_escapin_{Mollusks}	-----YDL	SPEEKANQGR	LVEYYLEKLT	G-----	-----	-----L
Achatina_fulica_achacin_{Mollusks}	-----YNL	STEEKANQAN	LAGYLLKCLT	G-----	-----	-----F
Hahella_chejuensis_{Proteobacteria}	----IPYNMV	WSERGYGPEP	LQVKIMNLYL	PG-----	-----	-----FA
Pseudomonas_entomophila_{Proteobacteria}	----IPYDLG	WTERGYNPED	LQVNVMNISY	PG-----	-----	-----FD
Burkholderia_ubonensis_{Proteobacteria}	----VPYQLS	FLDRGETAGA	IIINAIEQIV	PG-----	-----	-----IT
Chromobacterium_violaceum_{Proteobacteria}	----VPYQLN	FIDHGQSAGA	VIVNAIEQIV	PG-----	-----	-----IT
Chitinophaga_pinensis_{Bacteroidetes}	----VPYNMS	FLEEGNGPPT	IIVNAIEQIV	PG-----	-----	-----IT
Flavobacterium_johnsoniae_{Bacteroidetes}	KKLPTRYLNL	ETDLGFSSDQ	LFNKIIYDVL	MADPWVAKKY	QKKIKKGHNV	YDYTFELTSE
Dyadobacter_fermentans_{Bacteroidetes}	EKLVTTRYLN	DDDIGFSSDQ	LFNKIIYDVL	MADPWVVENF	SDRVKKGPT	YDYAFMLTSE
Staphylococcus_aureus_{Firmicutes}	SKFQTRYFMH	QSYQGYHPDQ	LFNKVIADVC	LNDRWFTDTY	GERITIKDN-	YNITFKLTKK
Clostridium_botulinum_{Firmicutes}	NNIYPKFNLS	EIERKKAWHE	LHEKIYEKYL	KS-----	-----	-----
Clostridium_carboxidivorans_{Firmicutes}	KKIYPKYNLR	QIEKNTTWPK	LYEYAVHFFM	NK-----	-----	-----
Turkey_LAO	NPDILNYTLR	ASERKGSASQ	LYREALQSAF	KE-----	-----	-----
Chicken_LAO	NPDILNYTLR	PSEKGSASQ	LYREALQSAV	KE-----	-----	-----
Zebrafinch_LAO	NPDLNLYTVK	PSEKGNVQ	LYREVLNKAL	KK-----	-----	-----
Ophiophagus_hannah_{Elapidae}	NPENFGYQLN	PNERGKSASQ	LFDETLDK--	-----	-----	-----
Crotalus_atrox_{Viperidae}	NPGLLEYPVK	PSEEGKSAQ	LYVESLRKVV	KE-----	-----	-----
Sistrurus_catenatus_{Viperidae}	NPGLLKYPVK	PSETGKSAGQ	LYEESLRKVV	EE-----	-----	-----
Gloydeus_halys_{Viperidae}	DPGVLYKYPVK	PSEEGKSAQ	LYEESLGKVV	EE-----	-----	-----
Trimesurus_stejnegeri_{Viperidae}	DPGVLYKYPVK	PSEEGKSAEQ	LYEESLREVE	KE-----	-----	-----
Bothrops_jararacussu_{Viperidae}	DPGVLDYPVK	PSEVGKSAGQ	LYEESLQKAV	EE-----	-----	-----
Echis_ocellatus_{Viperidae}	DPGLLKYPVK	PSEAGKSAGQ	LYQEALGKAV	EE-----	-----	-----
Oxyuranus_scutellatus_{Elapidae}	DPGVFKYPVK	PSEEGKSAQ	LYRESLKKVI	EE-----	-----	-----
Pseudechis_australis_{Elapidae}	DPGVFKYPVK	PSEEGKSAQ	LYRESLQKVI	EE-----	-----	-----
Bungarus_multicinctus_{Elapidae}	DPGVFKYPVK	PSEEGKSAQ	LYRESLKKII	EE-----	-----	-----
Demancia_vestigiata_{Elapidae}	NPSIFYPYVK	PSEKGSAPQ	LYRDSLQKII	EE-----	-----	-----
Dog_LAO1	NPEVLGYSVD	PVEKGGPTN	LFYQSIKVK	QN-----	-----	-----
Panda_LAO1	NPEVLGYSVS	PTEKAKSPSN	LFYQSIKVP	PA-----	-----	-----
Bovine_LAO1	NPELLGYSMN	PREKGNAIN	LFYQSIGKVT	PH-----	-----	-----
Horse_LAO1	NPELLGYSVN	PTEKGSAAK	LFYQSIKVP	P-----	-----	-----
Mouse_LAO1	NPGILGYPLR	PSEKNTVTD	LFYQAITKIK	PH-----	-----	-----
Opossum_LAO1	NPNILGYSVS	PKESGMPSE	LFQEAIKIV	DE-----	-----	-----
Horse_LAO2	DPRLGYPVR	ADEERKTAEQ	LFEDSLRKIM	EE-----	-----	-----
Opossum_LAO2	NPGLLGYPVR	SDEKGTADQ	LFDESRLKVV	EE-----	-----	-----
Flounder_LAO3	DPDNMGYNLE	GHEKGSADQ	LLQQSLEKVN	EY-----	-----	-----
Flounder_LAO2	HPDSLGYNLE	GHEKGSANE	LLQQALEKVN	DY-----	-----	-----
Flounder_LAO1	HPDILGYNLE	GNEKGSADQ	LLQQALKKVN	VY-----	-----	-----

Rockfish_LAO	DPDVLKYHVE	ASEKGKSADE	LLQHALQKVQ	DE-----	-----	-----
Green_pufferfish_LAO	DPDVLQYQVW	RNESGRSAGE	LKNQALQAIK	DY-----	-----	-----
Zebrafish_LAO	NPDLVNYPVY	NQERGNASE	LFNIALSKLQ	DD-----	-----	-----
Panda_IL4I1	MPEKLGYPRLD	PREKGHSPPEE	IYQMAFNPAL	KD-----	-----	-----
Dog_IL4I1	MPEKLGYKLS	PREKGHSPPEE	IYQMALNQAL	KD-----	-----	-----
Human_IL4I1	VPEKLGALR	PQEKGHSPED	IYQMALNQAL	KD-----	-----	-----
Mouse_IL4I1	MPEKLGYNLN	NREGRHSPED	IYQMALNKAF	KD-----	-----	-----
Streptosporangium_roseum_{Actinobacteria}	DPGLVDFELA	EHERGRSYEE	LWNAATAEVR	ER-----	-----	-----
Roseiflexus_castenholzii_{Chloroflexi}	DPDALGFETT	AAEKGRLAGD	VWADTIRPLV	EQ-----	-----	-----
Bacillus_cereus_{Firmicutes}	DPSILRYPVE	MNEVGKTSEE	LLLLAVQPII	NF-----	-----	-----
Marseillevirus	KKQELEQLYN	TGTTKSVNGS	VSDAEIKLAP	EILG-----	-----	-----
Aplysia_punctata_cyplasin_L_{Mollusks}	DVGDFVFTRE	QLLKLRSVDG	RLLYQLTFDE	ALD-----	--LVASPEGK	EFARDIHFVT
Aplysia_punctata_cyplasin_S_{Mollusks}	DVGDFVFTRE	QLLKLRSVDG	RPLYQLTFDE	ALD-----	--LVASPEGK	EFARDIHFVT
Aplysia_californica_aplysianin_A_{Mollusks}	DIGNGSISRE	QLLKLRSVDG	RPLYQLTFDE	ALD-----	--LVASSEGK	EFARDVHVFT
Aplysia_punctata_ink_toxin_1_{Mollusks}	QLNGEPLKRE	VALKLTVPDG	RFLYDLSFDE	AMD-----	--LVASPEGK	EFTRDTHVFT
Aplysia_punctata_ink_toxin_2_{Mollusks}	QLNGEPLKRE	VALKLTVPDG	RFLYDLSFDE	AMD-----	--LVASPEGK	EFTRDTHVFT
Aplysia_punctata_ink_toxin_3_{Mollusks}	KLNGGPLKRE	VALKLTVPDG	RFLYDLSFDE	AMD-----	--LVASPEGK	EFTRDTHVFT
Aplysia_californica_escapin_{Mollusks}	QLNGGPLKRE	VALKLTVPDG	RFLYDLTFDE	ALD-----	--LVASPEGK	EFARDTHVFT
Achatina_fulica_achacin_{Mollusks}	DG--EVLTIPTIP	QANKLEVDG	RKLYQLTVDE	ALD-----	--KVGTPEGK	EFLKAFSTGN
Hahella_chejuensis_{Proteobacteria}	DLSLCDQMR-	-----VKVFG	KEIWKYGFWD	LLY-----	--RVLSNEGY	MFMDAGGYD
Pseudomonas_entomophila_{Proteobacteria}	KLSLAEQMQ-	-----VQVFG	KPIWRYGFWD	LLY-----	--RVLSNEGY	QFMKDAGGYD
Burkholderia_ubonensis_{Proteobacteria}	DAGLTEDQRR	QMAQQASFGG	VPLYKQGFWN	VLL-----	--RVIDGEAY	QLGVDAGGYN
Chromobacterium_violaceum_{Proteobacteria}	NPALTEEQR	EMAQSAEFGG	VPLYKQGFWN	VLL-----	--RVITGEAY	QYAEVGGYD
Chitinophaga_pinensis_{Bacteroidetes}	NPDLTEDERR	EMAKVASFDG	LPLYHWGFWN	LLY-----	--RVISSEGY	QFAMDAGGYD
Flavobacterium_johnsoniae_{Bacteroidetes}	DWDEIKPRLV	YNFPKSPYDK	RKVNDLGFWN	LIK-----	--DQVSQEGY	EFLANAGGY
Dyadobacter_fermentans_{Bacteroidetes}	DWDKVKPHLR	YHPPGSPYDG	RKVNDLGFWN	LIK-----	--DQVSQEGY	LFVANAGGY
Staphylococcus_aureus_{Firmicutes}	EWDDIKLNLV	YKKEGSPYDG	LPISRIGFWN	LLK-----	--DMLGNEGY	AFLADAGGY
Clostridium_botulinum_{Firmicutes}	---LSTELRK	ELIQ-VKSEY	SKSITEIDKL	SYRNAY----	ENVDLSDAI	SMLGYLEGKE
Clostridium_carboxidivorans_{Firmicutes}	---LRPEIRA	EILK-ILPKY	NPSYNTLLNI	SIRQNF----	EMLGLSPDAI	DMIASVDAFT
Turkey_LAO	---FQTMNCK	E----YLAK	HDSFSTKEYL	IKVG-----	---NLSRGAV	QMIGDLLNED
Chicken_LAO	---FQTMNCK	E----YLAK	HDSFSTKEYL	IKVG-----	---NLSRGAV	QMIGDLLNED
Zebrafinch_LAO	---FQSTDC	K----FLAE	HDSYSTKEYL	IKVG-----	---ELSRGAV	DMIGDVLNED
Ophiophagus_hannah_{Elapidae}	---VTDDCT	L-----QKKEK	YDSFSTKEYL	IKEG-----	---KLSTGAV	EMIGDFLNEE
Crotalus_atrox_{Viperidae}	---LKRTNCK	Y-----ILDK	YDTYSTKEYL	LKEG-----	---NLSPGAV	DMIGDLLNED
Sistrurus_catenatus_{Viperidae}	---LRSTNCK	Y-----ILDK	YDTYSTKEYL	LKEG-----	---NLSPGAV	DMIGDLLNED
Gloydeus_halys_{Viperidae}	---LKRTNCS	Y-----ILNK	YDTYSTKEYL	LKEG-----	---NLSPGAV	DMIGDLMNED
Trimesurus_stejnegeri_{Viperidae}	---LKRTNCS	Y-----ILNK	YDTYSTKEYL	LKEG-----	---NLSPGAV	DMIGDLMNED
Bothrops_jararacussu_{Viperidae}	---LRRTNCS	Y-----MLNK	YDTYSTKEYL	LKEG-----	---NLSPGAV	DMIGDLLNED
Echis_ocellatus_{Viperidae}	---LKRTNCS	Y-----MLNK	YDTYSTKEYL	IKEG-----	---NLSTGAV	DMIGDLMNED
Oxyuranus_scutellatus_{Elapidae}	---LKRTNCS	Y-----ILNK	YDTYSTKEYL	IKEG-----	---NLSRGAV	DMIGDLLNED
Pseudechis_australis_{Elapidae}	---LKRTNCS	Y-----ILNK	YDTYSTKEYL	IKEG-----	---NLSPGAV	DMIGDLLNED
Bungarus_multicinctus_{Elapidae}	---LKRTNCS	Y-----ILDK	YDSYSTKEYL	IKEG-----	---NLSRGAV	DMIGDLLNED
Demancia_vestigiata_{Elapidae}	---YGRSNCS	Y-----ILNK	YDTYSTKDYL	IKEG-----	---NLSPGAV	DMIGDLLNEG
Dog_LAO1	---LKNFNCS	R-----LISF	YDSYSTKAYL	LKEG-----	---ALSEGAV	KMIGTLMNED
Panda_LAO1	---SPLPGSG	KKKFWPKVTW	QVRGQTQAYL	VKEG-----	---ELSEGAV	KMIGTVMNED
Bovine_LAO1	---LKELNCS	H-----LMSF	YDSYSTKAYL	LKEG-----	---MLSQRGV	KMIRDVMNED

Horse_LAO1	-----	-----	-----ASP	LPG-----	-----	-----
Mouse_LAO1	---RKTSNCS	Q----	LLSL	YDSYSTKAYL	MKEG-----	---TLSKGAI
Opossum_LAO1	---LQHTNCS	Y-----	ILSK	YDTFSTKAYL	IKEG-----	---KLSKGAV
Horse_LAO2	---LKTSSCS	Q-----	VLEK	YDSFSTKEYL	IKVG-----	---NLSLGA
Opossum_LAO2	---LKMSNCG	Q-----	ILEK	YDSFSTKEYL	IKVG-----	---NLSRGAV
Flounder_LAO3	---IAKHGCC	E-----	ALKK	YDHYTVKDYL	KTEG-----	---NLSAETV
Flounder_LAO2	---VATHGCS	E-----	ALKK	YDHYSVKRYL	KKEG-----	---GLSAEAV
Flounder_LAO1	---VEEHGCS	E-----	ALKK	YDHYTVKEYL	KTEG-----	---GLSSEAV
Rockfish_LAO	---VEASGCR	A-----	ALLK	YDRYSVKDYL	KEEG-----	---GLSSEAV
Green_pufferfish_LAO	---VRTHGCE	A-----	AWSR	YSRYSWKEYL	ETEG-----	---RLSPEAQ
Zebrafish_LAO	---LHKMGCE	K-----	MLNT	YDSYSVKEYL	VNVA-----	---NLSRGAL
Panda_IL4I1	---LKALGCR	K-----	AMKK	FERHTLLEYL	LGEG-----	---NLSYPAV
Dog_IL4I1	---LKTLLGCR	K-----	AMRK	FEKHTLLEYL	LGEG-----	---NLSQPAV
Human_IL4I1	---LKALGCR	K-----	AMKK	FERHTLLEYL	LGEG-----	---NLSRPAV
Mouse_IL4I1	---LKALGCK	K-----	AMNK	FNKHTLLEYL	LEEG-----	---NLSRPAV
Streptosporangium_roseum_{Actinobacteria}	---YSAEGGA	A--LDRLCAD	YDHHSIRSFL	RER-----	---	GFSPGAV
Roseiflexus_castenholzii_{Chloroflexi}	---VERDQGA	G--WEQIYAT	YDEYSVREFL	ELQ-----	---	GWSEGLI
Bacillus_cereus_{Firmicutes}	---IKRNPEK	N--WDVVVKD	FGRYSTGQFL	KYHPYQ----	YNTYFSPVTI	EMIGVLLDLE
Marseillevirus	--DWTRMFSN	-----	QK	LNDSIYGESL	IQKG-----	---VSCGTI
Aplysia_punctata_cyplasin_L_{Mollusks}	TEVSDANAV	SVFDDHLGED	GVGEEIH---	-TVQEGMQKV	PEQLLRAFGN	SSVFGH----
Aplysia_punctata_cyplasin_S_{Mollusks}	TEVSDANAV	SVFDDHLGED	GVGEEIH---	-TVQEGMQKV	PEQLLRAFGN	SSVFGH----
Aplysia_californica_aplysianin_A_{Mollusks}	SEVTSANAL	SVFDDHLGED	GVGDNIL---	-TVKNGMQKV	PKELIKKFRK	TSTLN-----
Aplysia_punctata_ink_toxin_1_{Mollusks}	GEVTLDASAV	SLFDDHLGED	YYGSEIY---	-TLKEGLSSV	PQGLLQAFLD	AADSN-----
Aplysia_punctata_ink_toxin_2_{Mollusks}	GEVTLGASAV	SLFDDHLGED	YYGSEIY---	-TLKEGLSSV	PQGLLQAFLD	AADSN-----
Aplysia_punctata_ink_toxin_3_{Mollusks}	GEVTLDASAV	SLFDDHLGED	YYGSEIY---	-TLKEGLSSV	PQGLLQTFLD	AADSN-----
Aplysia_californica_escapin_{Mollusks}	SEVTLDASAI	SIFDDHLGED	YYGSEIY---	-TLEEGMSSV	PQGLLQTFLD	AAKSN-----
Achatina_fulica_achacin_{Mollusks}	TEFIEGVSVA	NYFLVELGER	--EEEIL---	-TLTDGMSAL	PQALADAFLK	SSTSH-----
Hahella_chejuensis_{Proteobacteria}	ANVAN-ANAV	TQLP--ATEY	SDET----	QF	LTLKHGFQSL	PLTLCEQFVQ
Pseudomonas_entomophila_{Proteobacteria}	ANVAN-ASAV	TQLP--ATEY	SDAT----	EF	RTLKDGQSL	PLTLAQRVFE
Burkholderia_ubonensis_{Proteobacteria}	TTLTN-WNAA	DAIPWFLSDF	GVGA----	SY	MGFKKGFQEV	PKSVAGLFMQ
Chromobacterium_violaceum_{Proteobacteria}	STLCN-WNAA	DAIPWYLSDF	GVDP----	KY	KGFCCKGFQV	PLSLAQLFEQ
Chitinophaga_pinensis_{Bacteroidetes}	STLVN-WNAC	DAIPWYLSDF	GISP----	KY	KGFTNGFQV	PIALAELEFEK
Flavobacterium_johnsoniae_{Bacteroidetes}	SNTIN-WNSA	EAFPYMVGDF	TAGT----	IY	KTIEEGYDSI	AYAVANSYME
Dyadobacter_fermentans_{Bacteroidetes}	SNTIN-WNSA	EAFPYMVGDF	SADV----	TY	KTIGEGYDSI	AYALANQYTG
Staphylococcus_aureus_{Firmicutes}	SNTLS-WNSA	EAFSYMVGDF	TDNV----	EY	KTIKNGYDQL	AYAIGEKVSK
Clostridium_botulinum_{Firmicutes}	-QFFGLSLT-	--EMLQQYYT	VDHEY----	T	YRITDGMISL	PHSLY-----
Clostridium_carboxidivorans_{Firmicutes}	GALIDL SYN-	--EVLQEDYP	ENFSY----	L	YRVAGGNVNL	PIAFY-----
Turkey_LAO	SGFYLSFLA-	--SLWDFDIF	SQGES----	F	DEITGGFDQL	PKAFH-----
Chicken_LAO	SGFYLSFLA-	--SLWDFDIF	SNGES----	F	DEITGGFDQL	PKAFH-----
Zebrafinch_LAO	SGFYLSFLA-	--SLWDFDIF	SN-DS----	F	DEITGGFDQL	PRAFH-----
Ophiophagus_hannah_{Elapidae}	AGFHNSFLI-	--SVMDFLFL	LN-NS----	F	DEITGGFDQL	PERFF-----
Crotalus_atrox_{Viperidae}	SGYYVSFIE-	--SLKHDDIF	GYEKR----	F	DEIVGMDQL	PTSMY-----
Sistrurus_catenatus_{Viperidae}	SGYYVSFIE-	--SLKHDDIF	GYEKR----	F	DEIVGMDQL	PTSMY-----
Gloydeus_halys_{Viperidae}	SGYYVSFPE-	--SLRHDDIF	AYEKR----	F	DEIVGMDKL	PTSMY-----
Trimesurus_stejnegeri_{Viperidae}	AGYYVSFIE-	--SMKHDDIF	AYEKR----	F	DEIVDGMKL	PTSMY-----
Bothrops_jararacussu_{Viperidae}	SGYYVSFIE-	--SLKHDDIF	AYEKR----	F	DEIVGMDKL	PTSMY-----

Chicken_LAO	-----	---IKFNCT	VEKIMTKGGK	VR-----	VFYRAPDTLA	PSI---VTAD
Zebrafinch_LAO	-----	---VRFNCT	VEKIMTKDNK	VR-----	VFYRAPDTLA	PTV---LTAD
Ophiophagus_hannah_{Elapidae}	-----	---VHLNST	VEKIVHINNK	VT-----	VFYEGLSTNM	R-----LVAD
Crotalus_atrox_{Viperidae}	-----	---QVHFNAR	VEIQNDRE	AT-----	VTYQTSANEM	SS----VTAD
Sistrurus_catenatus_{Viperidae}	-----	---QVHFNAR	VEIQNDRE	AT-----	VTYQTSANEM	SS----VTAD
Gloydeus_halys_{Viperidae}	-----	---VHLNAQ	VIKIQNAEK	VT-----	VVYQTPAKEM	AS----VTAD
Trimesurus_stejnegeri_{Viperidae}	-----	---VHFNAQ	VIKIQNAEE	VT-----	VTYQTPEKDT	SF----VTAD
Bothrops_jararacussu_{Viperidae}	-----	---VHLNAR	VIKIQDVKE	VT-----	VTYQTSEKET	LS----VTAD
Echis_ocellatus_{Viperidae}	-----	---VLFKAR	VTKIQNAEK	VR-----	VTYQTAAKTL	SD----VTAD
Oxyuranus_scutellatus_{Elapidae}	-----	---VHLNAQ	VIKIQHNAEK	VR-----	VAYQTPAKTL	SY----VTAD
Pseudechis_australis_{Elapidae}	-----	---VHLNAQ	VIKIQNAED	VR-----	VTYQTPAKTL	SY----VIAD
Bungarus_multicinctus_{Elapidae}	-----	---VHLNAQ	VTKIQHDAEK	VR-----	VAYQTPAKTL	SY----VTAD
Demancia_vestigiata_{Elapidae}	-----	---VHLNAR	VIKIQNAEG	VR-----	VTYQTPAKNL	SY----VTAD
Dog_LAO1	-----	---TIRLGSK	VETVVRDGPT	VQ-----	VSYRVGKHSS	RLYT--LTAD
Panda_LAO1	-----	---TIRLGSN	VETVVRDGPK	VQ-----	VSYRVGKPGS	ALRT--LTSD
Bovine_LAO1	-----	---TIRLGSK	VEKVVRDGPE	VR-----	ISYRMGETNS	PLHT--LTAD
Horse_LAO1	-----	---TIRLGSK	VETVVRDGPK	VR-----	ISYRVDEPNS	ELHT--LTAD
Mouse_LAO1	-----	---TIRLGSK	VERVVRDGPK	VK-----	VMYRTDGPTS	ALHK--LTAD
Opossum_LAO1	-----	---TVRFHST	VEKLERDGDK	IR-----	ITYRTERPHS	VPVT--ITAD
Horse_LAO2	-----	---TVWLHSP	AEEVETNGDR	VH-----	ITYRTPDPLQ	PRAR--LTAD
Opossum_LAO2	-----	---TVHLHSQ	AEEVVRDGDG	VH-----	IIHQTPDPLQ	PRAH--LTAD
Flounder_LAO3	-----	---ALLNSK	VKRISRSDRG	VI-----	ISYKKDK-QS	FLTD--LKAD
Flounder_LAO2	-----	---ALLNSK	VKRISRSDKG	VV-----	ISYKKDK-QS	FLTD--LEAD
Flounder_LAO1	-----	---ALLNSR	VKRISRSETG	VF-----	ISYQKDK-QS	SLTD--LEAD
Rockfish_LAO	-----	---ILLNST	VKRISQSDKG	VI-----	VSYEKGQ-QS	SLTD--LTAD
Green_pufferfish_LAO	-----	---VLLRSK	VKRISQSDG	VT-----	VSYQRGQ-ES	TLTH--LQAD
Zebrafish_LAO	-----	---ILMNSK	VQAISQTQDG	VT-----	VSYQDWRNLG	EMTN--ITGD
Panda_IL4I1	-----	---VLLHAP	VVAITQGTHD	VR-----	VHIASSRRAR	SLKA--MTAD
Dog_IL4I1	-----	---VLLHAP	VVAITQGTHD	VR-----	VHIASSRRAR	SLKA--MTAD
Human_IL4I1	-----	---VLLNAP	VVAMTQGPHD	VH-----	VQIETSPPAR	NLKV--LKAD
Mouse_IL4I1	-----	---LLNAP	VVSITQGRND	VR-----	VHIATS--LH	SEKT--LTAD
Streptosporangium_roseum_{Actinobacteria}	-----	---VHFHGE	VHAIEQDDHS	VT-----	LHVRT---AA	GRTE--MTGD
Roseiflexus_castenholzii_{Chloroflexi}	-----	---IRYGAR	VIALDQTPHE	AI-----	VHYQT---MS	GRFQ--VTAD
Bacillus_cereus_{Firmicutes}	-----	---IIYNQK	LMKLHQHDNG	VT-----	AFYRNEE-TF	EYSS--ITGD
Marseillevirus	-----	---RLTNT	EIVLGATLVS	-----	--FDKLECK	ILGVGKVKTK
Aplysia_punctata_cyplasin_L_{Mollusks}	QIILALPVFA	LMQVDWPPLR	ENRAQK----	-AYGAVRTIP	ASKVFMTFDQ	PWWLQN----
Aplysia_punctata_cyplasin_S_{Mollusks}	QIILALPVFA	LMQVDWPPLR	ENRAQK----	-AYGAVRTIP	ASKVFMTFDQ	PWWLQN----
Aplysia_californica_aplysianin_A_{Mollusks}	QVILALPVYA	LRRLDWPPLL	EDRAET----	-AYA AVRNPMA	ASKVFMTFDQ	AWWLDS----
Aplysia_punctata_ink_toxin_1_{Mollusks}	RVILAMPVYA	LNQLDWNQLR	NDRATQ----	-AYA AVRNPPI	ASKVFMSFDQ	PWWLEN----
Aplysia_punctata_ink_toxin_2_{Mollusks}	RVILAMPVYA	LTQLDWNQLR	NDRATQ----	-AYA AVRNPPI	ASKVFMTFDQ	PWWLEN----
Aplysia_punctata_ink_toxin_3_{Mollusks}	RVILAMPVYA	LNQLDWNQLR	NDRATQ----	-AYA AVRNPPI	ASKVFMTFDQ	PWWLEN----
Aplysia_californica_escapin_{Mollusks}	RVILAMPVYA	LRQLDWSQLR	NDRATQ----	-AYRAVRPMP	ASKVFMTFDQ	PWWLQN----
Achatina_fulica_achacin_{Mollusks}	KVILAIPQSA	LIHLDWKPLR	SETVNE----	-AFNAVKFIP	TSKVFLTFPT	AWWLSD----
Hahella_chejuensis_{Proteobacteria}	RVILAMPRRS	LELIQS--EF	FNDSWL---Q	ENLPSVLIQS	AFKFLFLAYEK	PWWRN----
Pseudomonas_entomophila_{Proteobacteria}	QVILALPRRS	LELIDS--PL	FDDPWL---K	DNLKSVLVQS	AFKFLFLAYEQ	PWWRN----
Burkholderia_ubonensis_{Proteobacteria}	QVILAMPRRA	IDLLAQSSAM	LEEIS-----	GLTSSVTPRP	LFKFLFTTYAN	PWWRASGYTR

Chromobacterium_violaceum_{Proteobacteria}	TLILAMPRRS	LELLTATSPA	LQDAKT---Q	ALISTVTPRP	LFKLFTTYDS	PWWRNTGCTV
Chitinophaga_pinensis_{Bacteroidetes}	KLILAMPARRA	LDLIMPDSP	LKRIQ-----	PLISSVTPRP	LFKLFTTYAN	PWWRRIAGYTN
Flavobacterium_johnsoniae_{Bacteroidetes}	SIVLAMPRRKS	LELLDQNNFF	FNVNENSVLN	ENIRSVIMEP	AFKILMGFEY	PWWKE-----
Dyadobacter_fermentans_{Bacteroidetes}	HIILGMPRRKS	LQLLDQENFF	FNANENARLC	GNIESVIMEP	AFKILMGFPE	PWWKK-----
Staphylococcus_aureus_{Firmicutes}	HIILAMPKRS	LELLDQDNFF	FEDASNSKLR	KLVDTVYAEP	SLKLLLGFD	PWWKEC----
Clostridium_botulinum_{Firmicutes}	YVICAIPFSS	LRRJETGP--	LFTTK---KV	QAINEMNYEI	AHKIYLYFKE	RFWEMGN----
Clostridium_carboxidivorans_{Firmicutes}	YVICAIPFTT	LSTMDIAP--	FFSNR---KM	QAIRESINYVD	GHRITLLCKK	RFWEENA----
Turkey_LAO	YVLVASSAKA	TRHIQFFP--	PLSPT---KN	DALRSIHYAS	ASKIALVCTE	KFWEK-----
Chicken_LAO	YVLVTSSAKA	TRHIQFFP--	PLSPA---KN	EALRSIHYAS	ASKIALACTE	KFWEK-----
Zebrafinch_LAO	FVLVTSSAKA	TRHIRFLP--	PLSPA---KA	HALRSIYYAS	ASKIILVCSE	KFWEK-----
Ophiophagus_hannah_{Elapidae}	YVLITATARA	TRLIKFVP--	PLSIP---KT	RALRSLIYAS	ATKIILVCTD	KFWEK-----
Crotalus_atrox_{Viperidae}	YVIVCTTSRA	ARRIKFEP--	PLPPK---KA	HALRSVHYRS	GTKIFLTCTK	KFWED-----
Sistrurus_catenatus_{Viperidae}	YVIVCTTSRA	ARRIKFEP--	PLPPK---KA	HALRSVHYRS	GTKIFLTCTK	KFWED-----
Gloydeus_halys_{Viperidae}	YVIVCTTSRA	TRRIKFEP--	PLPPK---KA	HALRSVHYRS	GTKIFLTCTK	KFWED-----
Trimesurus_stejnegeri_{Viperidae}	YVIVCTTSGA	ARRIKFEP--	PLPLK---KA	HALRSVHYRS	GTKIFLTCTK	KFWED-----
Bothrops_jararacussu_{Viperidae}	YVIVCTTSRA	ARRIKFEP--	PLPPK---KA	HALRSVHYRS	GTKIFLTCTK	KFWED-----
Echis_ocellatus_{Viperidae}	YVIVCTTSRA	ARRINFKP--	PLPPK---KA	HALRSVHYRS	ATKIFLTCTK	KFWED-----
Oxyuranus_scutellatus_{Elapidae}	YVIVCSTTSA	ARRIYFEP--	PLPPK---KA	HALRSIHYKS	GTKIFLTCSK	KFWEA-----
Pseudechis_australis_{Elapidae}	YVIVCSTTSA	ARRIHFEF--	PLPPK---KA	HALRSIHYRS	STKIFLTCSQ	KFWEA-----
Bungarus_multicinctus_{Elapidae}	YVIVCATSRA	VRRISFEP--	PLPSK---KA	HALRSIHYKS	ATKIFLTCTQ	KFWEA-----
Demancia_vestigiata_{Elapidae}	YVIVCSTSRA	ARRIYFEP--	PLPPE---KA	HALQSIHYRS	ATKIFLTCTK	KFWED-----
Dog_LAO1	FVVIITASAKA	TRLITFKP--	LLSPD---KM	EALRLVHYTS	ATKVALVCEE	LFWEQ-----
Panda_LAO1	FVVIITASAKA	TRLITFKP--	PLSLD---KM	EALRLVHYTS	ATKVILACKE	PFWER-----
Bovine_LAO1	FVVIISASAKA	THLITFEP--	PLSQD---KM	DALRSVHYTS	ATKVVLACNE	SFWER-----
Horse_LAO1	FVVIISASAKA	TRLITFKP--	ALSPD---KV	DALRSVHYTS	ATKVILACNE	PFWER-----
Mouse_LAO1	YAIITASAKA	TRLITFQP--	PLSRE---KT	HALRSVHYTS	ATKVVLVCNE	RFWEQ-----
Opossum_LAO1	FAIISPTAKA	TRLIQFEP--	PLSLA---KQ	DALRSIHYTS	ATKVALVCKE	PFWEQ-----
Horse_LAO2	YVIVASTAKA	ARLLHFQP--	PLSPG---KQ	DALRSVHYNS	ATKVILACTQ	RFWED-----
Opossum_LAO2	YAIVATTAKA	ARLLHFHP--	PLSPG---KE	DALRSVHYNS	ATKVILACTK	RFWEQ-----
Flounder_LAO3	AVLVTTTTKA	ALFIEFEP--	PLPVD---KI	EALRSVHYAS	STKIILTFSE	KFWER-----
Flounder_LAO2	AVLVTTTTKA	ALFIEFDP--	PLPVD---KM	EALRSVHYGS	STKIILTFSE	KFWEK-----
Flounder_LAO1	AVLVTTTTKA	ALFIDFDP--	PLPIK---KM	EALRVVHYDS	STKIILTFSE	KFWER-----
Rockfish_LAO	VVLVTTTTKA	ALFMDFDP--	PLPIK---KM	EALRAAHYDS	STKILLTFSE	RFWEK-----
Green_pufferfish_LAO	AVVVTTTARA	ALFIDFVP--	SLSIK---KK	EALRAAHYMG	LTKVFLTFSQ	RFWEK-----
Zebrafish_LAO	YVLVTSTAKA	TLFFDFNP--	PLSAD---KM	EALRSVHYSS	STKVVLFSFSQ	KFWKNN----
Panda_IL4I1	VVLLTASGPA	LQRITFSP--	PLSRR---RE	EALRALHYVP	ATKVFLSFRR	PFWHD-----
Dog_IL4I1	VVLLTASGPA	LQRITFSP--	PLSRR---RQ	EALRALHYVP	ATKVFLSFRR	PFWHD-----
Human_IL4I1	VVLLTASGPA	VKRITFSP--	PLPRH---MQ	EALRRLHYVP	ATKVFLSFRR	PFWRE-----
Mouse_IL4I1	VVLLTASGPA	LQRITFSP--	PLTRK---RQ	EALRALHYVA	ASKVFLSFRR	PFWHE-----
Streptosporangium_roseum_{Actinobacteria}	YAVCTMPFV	LRDIEVRP--	AFTRR---KQ	RAIRELNYNA	STKILFQVRE	RFWEHT----
Roseiflexus_castenholzii_{Chloroflexi}	DAIITVPPFV	LRHIETLK--	PFSRA---KQ	RAIRQLHYDA	AAKIFFQCR	RFWETD----
Bacillus_cereus_{Firmicutes}	LVIVTIPFST	MRFVEVDFD	SISHE---KW	KAIRELHYMP	ATKIGIQFKS	RFWE-E----
Marseillevirus	NLILALPPNA	LCLLGIDY--	-----	---FPYVENWS	AFKAFFIVPD	ETWRILS----
Aplysia_punctata_cyplasin_L_{Mollusks}	-----DVT	DFPAFVTKGD	TFFSQMYDWK	KSNVS-----	-----	---GDYILIA
Aplysia_punctata_cyplasin_S_{Mollusks}	-----DVT	DFPAFVTKGD	TFFSQMYDWK	KPNVS-----	-----	---GDYILIA
Aplysia_californica_aplysianin_A_{Mollusks}	-----DFT	NSSAYVTKGD	TPFSQMYDWK	KSNVS-----	-----	---GDFILIA

Aplysia_punctata_ink_toxin_1_{Mollusks}	-----ERK	---SWVTKSD	ALFSQMYDWQ	KSEAS-----	-----	---GDYILIA
Aplysia_punctata_ink_toxin_2_{Mollusks}	-----ERK	---SWVTKSD	ALFSQMYDWQ	KSEAS-----	-----	---GDYILIA
Aplysia_punctata_ink_toxin_3_{Mollusks}	-----ERK	---SWVTKSD	ALFSQMYDWQ	KSEAS-----	-----	---GDYILIA
Aplysia_californica_escapin_{Mollusks}	-----ERK	---SWVTKSD	ALFSQMYDWQ	KSEAS-----	-----	---GDYILIA
Achatina_fulica_achacin_{Mollusks}	-----AVK	N-PAFVVKST	SPFNQMYDWK	SSNVT-----	-----	---GDAAMIA
Hahella_chejuensis_{Proteobacteria}	-----L	GLVAGRSVTD	LPVVRQIYYMG	TECEQPGGEP	-----	--FLNSLLMA
Pseudomonas_entomophila_{Proteobacteria}	-----L	GLVAGRSVTD	LPVVRQIYYMG	TECDQPGGEP	-----	--TFNSLLMA
Burkholderia_ubonensis_{Proteobacteria}	TTATGESEYV	PVELGRSVTD	LPVVRQIYYWP	KSDGTAATG-	-----	---GPSMLLA
Chromobacterium_violaceum_{Proteobacteria}	SGTDGKPVYA	AVEAGRSVTD	LPVVRQIYYWP	KDNGKPATS-	-----	---GHAMLLA
Chitinophaga_pinensis_{Bacteroidetes}	-----AEGKFV	PVQSGRSVTD	LPVVRQIYYWP	NSDGTPAVN-	-----	---GRAMLLA
Flavobacterium_johnsoniae_{Bacteroidetes}	-----L	GIDSGHSITD	LPMRQCYFYG	TDKKT-----	-----	---KNSMLLG
Dyadobacter_fermentans_{Bacteroidetes}	-----L	GIDSGHSITD	LPMRQCYFYG	TDEQT-----	-----	---NNAMLLG
Staphylococcus_aureus_{Firmicutes}	-----L	GAEHGKSTTD	LPMRQCYFYG	TDEAN-----	-----	---NKSLLLA
Clostridium_botulinum_{Firmicutes}	-----ASK	KIIGGSTYTD	LP-LVSMYYP	SDHSRPVTNK	YGKWLKAGA	SPEEAGVLLA
Clostridium_carboxidivorans_{Firmicutes}	-----DYG	RIVGGVSNTD	LS-ITNILYP	SDH-----	-----VMTGA	NPNEPGVLIG
Turkey_LAO	-----D	GIRGGQSITD	RP-SRFIYYP	SHNF-----	-----	---SSGVGVILA
Chicken_LAO	-----D	GIQGGQSITD	RP-SRFIYYP	SHNF-----	-----	---SSGVGVILA
Zebrafinch_LAO	-----D	GIRGGYSVTD	RP-SRFIYYP	SHNF-----	-----	---SSGVGVLLA
Ophiophagus_hannah_{Elapidae}	-----D	GIHGGRSITD	LP-SRVIYYP	NHDF-----	-----	---TNGIGVLLA
Crotalus_atrox_{Viperidae}	-----D	GIRGGKSTTD	LP-SRFIYYP	NHNF-----	-----	---TSGVGVIIA
Sistrurus_catenatus_{Viperidae}	-----E	GIHGGKSTTD	LP-SRSIYYP	NHNF-----	-----	---TSGVGVIIA
Gloydeus_halys_{Viperidae}	-----E	GIHGGKSTTD	LP-SRFIYYP	NHNF-----	-----	---TSGVGVIIA
Trimesurus_stejnegeri_{Viperidae}	-----E	GIHGGKSTTD	LP-SRFIYYP	NHNF-----	-----	---TSGVGVIIA
Bothrops_jararacussu_{Viperidae}	-----D	GIHGGKSTTD	LP-SRFIYYP	NHNF-----	-----	---PNGVGVIIA
Echis_ocellatus_{Viperidae}	-----D	GIQGGKSTTD	LP-SRFIYYP	NHNF-----	-----	---TSGVGVIIA
Oxyuranus_scutellatus_{Elapidae}	-----D	GIHGGKSTTD	LP-SRFIYYP	NHNF-----	-----	---TSGVGVIVA
Pseudechis_australis_{Elapidae}	-----D	GIHGGKSTTD	LP-SRFIYYP	NHSF-----	-----	---TSGIGVIVA
Bungarus_multicinctus_{Elapidae}	-----D	GIHGGKSTTD	LP-SRFIYYP	NHNF-----	-----	---TSGVGVIVA
Demancia_vestigiata_{Elapidae}	-----D	GIHGGKSTTD	RP-SRLIHP	NHNF-----	-----	---PNGIGVLVI
Dog_LAO1	-----D	GIRGGFSITD	RP-SRHIYYP	SHSF-----	-----	---PQKGVILLA
Panda_LAO1	-----D	GIRGGVSITD	RP-SRHIYYP	SHSF-----	-----	---PSGKSILLA
Bovine_LAO1	-----D	GIQGGVSITD	LP-SRYIYYP	SHRL-----	-----	---PSGKGVLLA
Horse_LAO1	-----D	GIRGGVSITD	RP-SRYIYYP	SHSL-----	-----	---PSGKGVLLA
Mouse_LAO1	-----D	GIRGGYSITD	RP-SRFIYYP	SHSL-----	-----	---PGKGVLLA
Opossum_LAO1	-----D	NIKGGATITD	LP-TRFVYYP	SHDF-----	-----	---PGNIGVLLA
Horse_LAO2	-----E	GIFGGKSSTD	RP-SRFIYYP	SHIF-----	-----	---PNGTGVILA
Opossum_LAO2	-----D	GIYGGKSITD	RP-SRFIFYP	NHDF-----	-----	---PNGTGVILA
Flounder_LAO3	-----D	GIKGGKSITD	RP-SRFIYYP	SHGF-----	-----	---INKDIGVLLA
Flounder_LAO2	-----D	GIKGGKSITD	RP-SRFIYYP	SHSF-----	-----	---INKDIGVLLA
Flounder_LAO1	-----D	GIKGGKSITD	RP-SRFIYYS	SHSF-----	-----	---QIKDIGVLLA
Rockfish_LAO	-----D	GIRGGKSITD	GP-SRYIYYP	SHSFP-----	-----	---TNKNIGVLLA
Green_pufferfish_LAO	-----E	GIRGGKSITD	RP-SRVIHP	SHSFP-----	-----	---DNQTAGVLLA
Zebrafish_LAO	-----D	GIKGGKSITD	LP-SRFIYYP	SHEF-----	-----	---PGITGGAILA
Panda_IL4I1	-----E	HIEGGHSSTA	RP-SRVIFYP	PPGE-----	-----	---GALLLA
Dog_IL4I1	-----E	HIEGGHSSTA	RP-SRVIFYP	PPGE-----	-----	---GALLLA
Human_IL4I1	-----E	HIEGGHSNTD	RP-SRMIFYP	PPRE-----	-----	---GALLLA
Mouse_IL4I1	-----E	HIEGGHSNTD	RP-SRLIFYP	AQGE-----	-----	---GSLLLA

Streptosporangium_roseum_{Actinobacteria}	-----D	GIVGGTTVTD	LP-VRRICYP	SHSD-----	-----	PDERRGVLLA
Roseiflexus_castenholzii_{Chloroflexi}	-----D	GIDGGGTVD	LP-IRNLYYT	DWG-----	-----	AETGRGVLLA
Bacillus_cereus_{Firmicutes}	-----Q	GQLGGRIITD	LP-IRYAYYP	SHGI-----	-----	GEKGFAMMLG
Marseillevirus	-----LD	GQRKGRNVSS	GVARQIWFYS	EKPY-----	-----	-----VLM
Aplysia_punctata_cyplasin_L_{Mollusks}	SYADGNNTLF	QRVLRDQGEP	INGSEAGAH	VSEPLKNQIL	DHLA-----	-----
Aplysia_punctata_cyplasin_S_{Mollusks}	SYADGSTQPW	IH-----	-----	-----	-----	-----
Aplysia_californica_aplysianin_A_{Mollusks}	SYADGNNTLY	QRVLRDHGQP	INGSEPGSHI	VSEPLKEYIL	HHLS-----	-----
Aplysia_punctata_ink_toxin_1_{Mollusks}	SYADGLKAQY	LRELKNQGED	IPGSDPGYNQ	VTEPLKDTIL	DHLT-----	-----
Aplysia_punctata_ink_toxin_2_{Mollusks}	SYADGLKAQY	LRELKNQGED	IPGSDPGYNQ	VTEPLKDTIL	DHLT-----	-----
Aplysia_punctata_ink_toxin_3_{Mollusks}	SYADGLKAQY	LRELKNQGED	IPGSDPGYNQ	VTEPLKDTIL	DHLT-----	-----
Aplysia_californica_escapin_{Mollusks}	SYADGLKAQY	LRELKNQGED	IPGSDPGYNQ	VTVPLKDAIL	EHLT-----	-----
Achatina_fulica_achacin_{Mollusks}	SYADTSDTKF	QENLNSKGL	IPGSAPGANR	VTVALKEELL	SQLS-----	-----
Hahella_chejuensis_{Proteobacteria}	SYNDIGTVPF	WKGLEDGLPF	IG----YKPS	CLETEISADR	IVPR-----	-----T
Pseudomonas_entomophila_{Proteobacteria}	SYNDIGTVPF	WKGLEDGPEF	VG----YTPR	SLEGRIANDA	VVPR-----	-----T
Burkholderia_ubonensis_{Proteobacteria}	SYDDGTNVGF	WDGLRPQRGQ	ARQGGREVAE	VTDPFIGADA	DLA-----	----DELPHW
Chromobacterium_violaceum_{Proteobacteria}	SYDDGDNTGF	WDGLRAKRRQ	PRARGLDVAP	LADPFIGVDD	DVMR-----	----NELEWH
Chitinophaga_pinensis_{Bacteroidetes}	SYDDGNNIGF	WDGLRPQRSA	AWRAGLSHAK	IADPFIGDDD	QKIDGKNAAP	VQQQLNQTDW
Flavobacterium_johnsoniae_{Bacteroidetes}	SYGDMETETF	WKALSDDK--	--VLFEVKAA	KSASLKELHQ	LNDV-----	-----
Dyadobacter_fermentans_{Bacteroidetes}	SYGDMETETF	WKALSENE--	--VLFKVRAA	RSASLDELKA	LEHE-----	-----
Staphylococcus_aureus_{Firmicutes}	SYNDMRTVNF	WKSMMKSKEN	KCIKLDVSKS	KCELDLYNE	EYSD-----	-----
Clostridium_botulinum_{Firmicutes}	SYSWCQEA-V	RLGNENPELQ	IDDVMYRIEK	AHGLSPH---	-----	-----
Clostridium_carboxidivorans_{Firmicutes}	SYNLNKYA-T	HIGAIKGDH	FQQVKRQVEQ	VHGLPRN---	-----	-----
Turkey_LAO	SYTWNNDA-D	FLMPLADEKY	LDLVLQDLAD	IHQVSKS---	-----	-----
Chicken_LAO	SYTWNNDA-E	FLIPLADEKY	LDVVLQDLSD	IHRVSKS---	-----	-----
Zebrafinch_LAO	SYTWNSDA-E	FFLPLSDEKC	LDVVLQDLAD	IHQVSKS---	-----	-----
Ophiophagus_hannah_{Elapidae}	SYTWYSDS-E	FYTTLSDKEC	VDVVMDDLVE	IHNVSKD---	-----	-----
Crotalus_atrox_{Viperidae}	-YGIGDDA-N	FFQALDFKDC	ADIVINDLSL	IHQLPKE---	-----	-----
Sistrurus_catenatus_{Viperidae}	-YGIGDDA-N	FFQALDFKDC	ADIVINDLSL	IHQLPKE---	-----	-----
Gloydeus_halys_{Viperidae}	-YGIGDDA-N	FFQALDFKDC	ADIVINDLSL	IHQLPKE---	-----	-----
Trimesurus_stejnegeri_{Viperidae}	-YGIGDDA-N	FFQALDLKDC	GDIVINDLSL	IHQLPKE---	-----	-----
Bothrops_jararacussu_{Viperidae}	-YGIGDDA-N	YFEALDFEDC	GDIVINDLSL	IHQLPKE---	-----	-----
Echis_ocellatus_{Viperidae}	-YGIGDDA-N	FFLSLTLNEC	ADIVFSDLSS	IHQLPKN---	-----	-----
Oxyuranus_scutellatus_{Elapidae}	-YTISSDA-D	FFQSLDIKTS	ADIVINDLSL	IHQLPKK---	-----	-----
Pseudechis_australis_{Elapidae}	-YTLADDT-D	FFQALDIETS	ADIVINDLSL	IHQLPKE---	-----	-----
Bungarus_multicinctus_{Elapidae}	-YVLADDS-D	FFQALDIKTS	ADIVINDLSL	IHQLPKN---	-----	-----
Demancia_vestigiata_{Elapidae}	-YTIADDA-D	FFLALDNKTI	ADIVIHDLSL	IHQLPKE---	-----	-----
Dog_LAO1	-YTVDDDS-R	FFTSMTHEQM	EDVLEDVAA	LHQIPKD---	-----	-----
Panda_LAO1	SYTVDDDS-L	FFTSMTHEQM	EDVLEDVAA	VHQIPKD---	-----	-----
Bovine_LAO1	SYTVDKDS-L	FFISMQRDQV	VDIVLRDLAA	VHQIPKE---	-----	-----
Horse_LAO1	SYTVDDDS-L	FFISMKHDQV	VDIVLEDLAA	VHQIPKG---	-----	-----
Mouse_LAO1	SFTVGGDS-S	FFAALKPNQV	VDVVLDDLAA	VHRIPKE---	-----	-----
Opossum_LAO1	SYTVGGDS-T	FFAGMKHEKV	VDLVLGDLAT	IHQRPKK---	-----	-----
Horse_LAO2	SYTVDDDS-S	FFAAMDHTRA	VDVVLDDLAA	VHHRPKE---	-----	-----
Opossum_LAO2	SYTLDDDS-T	FFAAMDQKRV	VDIVLEDLAA	VHNRPKE---	-----	-----
Flounder_LAO3	SYTWEEDS-L	LFLGATDEDL	KELVLKDLAA	IHG---K---	-----	-----
Flounder_LAO2	SYTWAEDS-L	LFLGATDENL	KELVLGDLAA	IHG---E---	-----	-----

Flounder_LA01	SYTWSDDS-L	LFLGATDEDL	KELVLGLDAA	IHG---E---	-----	-----
Rockfish_LAO	SYTWSDDS-L	LFLGASDEDL	KELALRDLAK	IHG---E---	-----	-----
Green_pufferfish_LAO	SYTWSDDS-E	TLAGASDEV	KDLLLRDLEQ	LHG---R---	-----	-----
Zebrafish_LAO	SYTTSDDA-T	LLQTLDEEEL	KAVVNLNLVK	IHG---E---	-----	-----
Panda_IL4I1	SYTWSEAA-G	LFAGLSTEDA	MRVALDDVAA	LHG--PI---	-----	-----
Dog_IL4I1	SYTWSGAA-A	TFAGLSAEDA	MRVALDDVAA	LHG--PI---	-----	-----
Human_IL4I1	SYTWSGAA-A	AFAGLSREEA	LRLALDDVAA	LHG--PV---	-----	-----
Mouse_IL4I1	SYTWSGAA-A	PFAGLSTDQT	LRLVLQDVAA	LHG--PV---	-----	-----
Streptosporangium_roseum_{Actinobacteria}	SYTWGQDA-L	RWGAMSREKR	IQQAVEDVAK	VHP-----	-----	-----
Roseiflexus_castenholzii_{Chloroflexi}	SYTWAEDA-Q	RWGSLSPDR	IEQALENVAV	IHP-----	-----	-----
Bacillus_cereus_{Firmicutes}	SYTWSYDA-L	LWDGLSKGDR	IYYALHNLAT	ILGG-----	-----	-----
Marseillevirus	LYCDNASGVF	WRNKIPKEHN	GKFESCKKYP	ELTENFR---	-----	-----
Aplysia_punctata_cyplasin_L_{Mollusks}	--DAFGVP--	-----	-----RS	DIQEPKTAVS	KFWTDYPFGC	GWITWRAGYH
Aplysia_punctata_cyplasin_S_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_californica_aplysianin_A_{Mollusks}	--EAYGVD--	-----	-----RS	AIPEPKTAVS	QFWDYPPFGS	GWITWRAGYH
Aplysia_punctata_ink_toxin_1_{Mollusks}	--EAYGVE--	-----	-----RD	SIPEPVTAAS	QFWDYPPFGC	GWITWRAGFH
Aplysia_punctata_ink_toxin_2_{Mollusks}	--EAYGVE--	-----	-----RD	SIREPVTAAS	QFWDYPPFGC	GWITWRAGFH
Aplysia_punctata_ink_toxin_3_{Mollusks}	--EAYGVE--	-----	-----RD	SIPEPVTAAS	QFWDYPPFGC	GWITWRAGFH
Aplysia_californica_escapin_{Mollusks}	--EAYGVE--	-----	-----RD	SIPEPVTAAS	QFWDYPPFGC	GWITWRAGYH
Achatina_fulica_achacin_{Mollusks}	--QAYGIE--	-----	-----RS	DIPEPKSGTS	QFWSSYPFEG	DWTVWKAGYH
Hahella_chejuensis_{Proteobacteria}	RYQVSEDMVR	AAQQQVRQVH	D-----QV	ELPEPYSAVY	HAWDDDPYGG	GWHEWKANYR
Pseudomonas_entomophila_{Proteobacteria}	QFQISDEMVR	IAQRQVTLQH	A-----QV	ELPAPYSAVY	HAWDADPYGG	GWHEWKANYR
Burkholderia_ubonensis_{Proteobacteria}	RYHAPRRMVA	EVARQLATVH	G-----LA	HTPEVRNAAF	RDWGDPPYGG	GWNSWNIGVK
Chromobacterium_violaceum_{Proteobacteria}	QYKAPRMMTE	EVTQRLTVMH	S-----LS	YTPKVRNAAY	RDWGDPPFGG	GWNSWNIGVK
Chitinophaga_pinensis_{Bacteroidetes}	EYQAPRRMVA	EIARQLQMQH	G-----LD	YTPLVKSAAF	RDWGEDPYGG	GWNSWNIGIR
Flavobacterium_johnsoniae_{Bacteroidetes}	--QATKLMVD	ELMNQLRELH	GK-----DV	TIPEPVVITYF	KDWTDEPFGA	GYHAWKAGFS
Dyadobacter_fermentans_{Bacteroidetes}	--QATQLMVN	EIMSQLRELH	GH-----EV	EIPEPVVITYF	RDWSDDPFGA	GYHAWKAGVA
Staphylococcus_aureus_{Firmicutes}	--EVTNVMVK	ESIEELKELH	-----DI	EIPMPYVAMV	KDWSADPFGG	GYHAWYTGIN
Clostridium_botulinum_{Firmicutes}	-----	-----	-----Y	LDDKLIDYKS	LIWSDVQYIW	TAGTLSKPED
Clostridium_carboxidivorans_{Firmicutes}	-----	-----	-----Y	LDSIVTQSKF	IHWNNNEWFR	GAVAFFTPYQ
Turkey_LAO	-----	-----	-----Y	LQYTCDRYVI	QKWQLDRHSL	GAFAAFTPYQ
Chicken_LAO	-----	-----	-----Y	LQYTCDRYVI	QKWQLDRHSL	GAFAAFTPYQ
Zebrafinch_LAO	-----	-----	-----Y	LQYTCQHLV	QKWQLDRHSL	GAFAHFTPFQ
Ophiophagus_hannah_{Elapidae}	-----	-----	-----Y	LKSVCGKHVV	QKWALDQYSM	GAFSTYTPYQ
Crotalus_atrox_{Viperidae}	-----	-----	-----D	IQTFCRPSMI	QRWSLDKYAM	GGITFTTPYQ
Sistrurus_catenatus_{Viperidae}	-----	-----	-----D	IQTFCRPSMI	QRWSLDKYAM	GGITFTTPYQ
Gloydeus_halys_{Viperidae}	-----	-----	-----E	IQTFCYPSMI	QKWSLDKYAM	GGITFTTPYQ
Trimesurus_stejnegeri_{Viperidae}	-----	-----	-----E	IQTFCYPSMI	QKWSLDKYAM	GGITFTTPYQ
Bothrops_jararacussu_{Viperidae}	-----	-----	-----E	IQAICRPSMI	QRWSLDKYAM	GGITFTTPYQ
Echis_ocellatus_{Viperidae}	-----	-----	-----D	IQKFCNPSVI	QKWSLDKYAM	GAITFTTPYQ
Oxyuranus_scutellatus_{Elapidae}	-----	-----	-----E	IQALCYPSMI	KKWSLDKYAM	GSITSFAPYQ
Pseudechis_australis_{Elapidae}	-----	-----	-----Q	IQALCYPSKI	QKWSLDEYAM	GAITSFTPYQ
Bungarus_multicinctus_{Elapidae}	-----	-----	-----E	IQALCYPSLI	KKWSLDKYTM	GALTSFTPYQ
Demancia_vestigiata_{Elapidae}	-----	-----	-----K	IRDLCYVSMI	KKWSLDKYSM	GSITTFAPYQ
Dog_LA01	-----	-----	-----K	LRRMCPSSVI	KRWSLDPFTM	GAFAEFTPYQ
Panda_LA01	-----	-----	-----E	LRRICPSSVA	KRWSLDPLAM	GAFAEFTPYQ

Bovine_LAO1	-----	-----	-----E	LRRMCPSSVV	KRWSLDPLFM	GAFTEFTPYQ
Horse_LAO1	-----	-----	-----E	LRRMCPSSVL	KRWSLDPLTM	GAFTEFTPYQ
Mouse_LAO1	-----	-----	-----E	LKRMCPKSAI	KHWSLDPLTI	GAFTEFTPYQ
Opossum_LAO1	-----	-----	-----E	LQKLCQTSVV	KRWTLDPFPL	GAFTEFTPYQ
Horse_LAO2	-----	-----	-----E	LRTLCPYSMV	KHWQDPYSM	GGFAFFTPYQ
Opossum_LAO2	-----	-----	-----E	LQALCPYSVV	KRWSQDSYSM	GCFAFFTPYQ
Flounder_LAO3	-----	-----	-----Y	VRHLCTGVVV	KKWSLDPYSL	GAFALFTPYQ
Flounder_LAO2	-----	-----	-----Y	VRHLCTGVVV	KKWSLDPYSL	SAFALFTPYQ
Flounder_LAO1	-----	-----	-----Y	VRSLCTGVVV	KKWSLDPYSL	GAFALFTPYQ
Rockfish_LAO	-----	-----	-----H	VRSLCTGVLV	KKWSMDPYSL	GAFALFTPYQ
Green_pufferfish_LAO	-----	-----	-----Q	VWALCTGVLV	KRWQDPFNL	GGVAILTPYQ
Zebrafish_LAO	-----	-----	-----H	IRQLCTGGAV	KKWMDPYSH	GAFALFTPFQ
Panda_IL4I1	-----	-----	-----V	YRLWDGSGII	KRWAEDPHSQ	GGFVVQPPTL
Dog_IL4I1	-----	-----	-----V	YRLWDGSGIV	KRWGEDPHSQ	GGFVVQPPLL
Human_IL4I1	-----	-----	-----V	RQLWDGTGVV	KRWAEDQHSQ	GGFVVQPPAL
Mouse_IL4I1	-----	-----	-----V	FRLWDGRGVV	KRWAEDPHSQ	GGFVVQPP-L
Streptosporangium_roseum_{Actinobacteria}	-----	-----	-----E	IVDVFEFGVS	HAWYEDPFAA	GAFALFEPHQ
Roseiflexus_castenholzii_{Chloroflexi}	-----	-----	-----Q	IEEFEVGAS	YMWHDDEFAG	GAFALFEPGQ
Bacillus_cereus_{Firmicutes}	-----	-----	-----Q	VYDEFISGIS	KSWTLDPYAL	GGFALFQAGQ
Marseillevirus	-----	-----	-----E	RCSKMGVPE	AKIELESVLF	YYHNHGAFW
Aplysia_punctata_cyplasin_L_{Mollusks}	FDDVMNT---	--MRRPSLT-	----DEVYV	VGADYSWGLI	SSWVEGALET	SYEVIDTYFK
Aplysia_punctata_cyplasin_S_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_californica_aplysianin_A_{Mollusks}	FDDVMNT---	--MRRPSLK-	----DEVYV	VGADYAWGLM	SSWIEGSLET	TDAVLKEYFK
Aplysia_punctata_ink_toxin_1_{Mollusks}	FDDVIST---	--MRRPSLK-	----DEVYV	VGADYSWGLI	SSWIEGALET	SENVINDYFL
Aplysia_punctata_ink_toxin_2_{Mollusks}	FDDVIST---	--MRRPSLK-	----DEVYV	VGADYSWGLI	SSWIEGALET	SENVINDYFL
Aplysia_punctata_ink_toxin_3_{Mollusks}	FDDVIST---	--MRRPSLK-	----DEVYV	VGADYSWGLI	SSWIEGALET	SENVINDYFL
Aplysia_californica_escapin_{Mollusks}	FDDVIST---	--MRRPSLK-	----DEVYV	VGSDYSWGLI	SSWIEGALET	SENVINDYFL
Achatina_fulica_achacin_{Mollusks}	CEYQYI---	--IERPSLI-	----DDVVF	VGSDHVNCIE	NAWTESAFLS	VENVFEKYF-
Hahella_chejuensis_{Proteobacteria}	LDKIMRR---	--MRHPVED-	----QQIYI	VGEAYSY--D	QGWVEGALTV	AESTLEDFFA
Pseudomonas_entomophila_{Proteobacteria}	VDLI IQK---	--MRHPVKD-	----QQVFI	VGEAYSY--G	QGWVEGALTT	AESALQEFFE
Burkholderia_ubonensis_{Proteobacteria}	SWEVKHK---	--IVQPIDG-	----RPLFI	CGEAYS--A	QGWVEGALQT	ADFLAKFGI
Chromobacterium_violaceum_{Proteobacteria}	SWEVKHA---	--VVQPTD-	----LPLYI	CGEAYS--A	QGWVEGALQT	AGYLLGKLGV
Chitinophaga_pinensis_{Bacteroidetes}	SWEVRDK---	--ITNPFAE-	----IPLYI	CGEAYS--A	QGWVEGALQT	AEIMLGKFLA
Flavobacterium_johnsoniae_{Bacteroidetes}	VGDMVKY---	--MRKPKHD-	----EQIHI	CGEAYS--Q	QGWVEGAFCE	AEKMLQDYFG
Dyadobacter_fermentans_{Bacteroidetes}	VWDVMPY---	--MRKPNAD-	----ENIYV	VGEAYS--Q	QGWVEGAFCE	AEKMLDHFQ
Staphylococcus_aureus_{Firmicutes}	VKEVMKE---	--IRKPYFN-	----ESIYI	VGEAYSS--D	QGWTEGAFKT	AENMLQDHFQ
Clostridium_botulinum_{Firmicutes}	KTLFSYA---	VTEPEMENK-	-----VFF	AG-EHISQ-K	HVSQQGALQS	GMIANEVAK
Clostridium_carboxidivorans_{Firmicutes}	KRIFSHN---	ILKPEYDNR-	-----VFF	AG-EHTSA-T	HGWMQGALST	GKLAANSLVR
Turkey_LAO	FTDYSQA---	--LFEHEGR-	-----VHF	AG-EHAAQ-P	HAWIDTSIKA	AVRAASNIHD
Chicken_LAO	FTDYSQA---	--LFEHEGR-	-----VHF	AG-EHTAQ-P	HAWIDTSMKA	AVRAASNIHD
Zebrafinch_LAO	FVDYSRV---	--LFAHEGR-	-----VHF	AG-EHAAQ-P	PAWIDTAVKS	AVRAASNIHH
Ophiophagus_hannah_{Elapidae}	ITHYSQM---	--LAQNEGR-	-----IYF	AG-EYTAH-P	HGWIETSMKS	AIREAINIHN
Crotalus_atrox_{Viperidae}	FQHFSEA---	--LTAPFKR-	-----IYF	AG-EYTAQ-F	HGWIDSTIKS	GLTAARDVNR
Sistrurus_catenatus_{Viperidae}	FQHFSEA---	--LTAPFNR-	-----IYF	AG-EYTAQ-F	HGWIDSTIKS	GLTAARDVNR
Gloydeus_halys_{Viperidae}	FQHFSES---	--LTASVDR-	-----IYF	AG-EHTAE-A	HGWIDSTIKS	GLRAARDVNR
Trimesurus_stejnegeri_{Viperidae}	FQHFSEA---	--LTSHVDR-	-----IYF	AG-EYTAH-A	HGWIDSSIKS	GLTAARDVNR

Bothrops_jararacussu_{Viperidae}	FQHFSEA---	--LTAPVDR-	-----IYF	AG-EYTAQ-A	HGWIASTIKS	GPEGL-DVNR
Echis_ocellatus_{Viperidae}	FQDYSKA---	--LTAPAGR-	-----VYF	AG-EYTAN-A	HGWIDSTIKS	GLTAARDVNO
Oxyuranus_scutellatus_{Elapidae}	FQDFIER---	--VAAPVGR-	-----IYF	AG-EYTAR-V	HGWL DSTIKS	GLTAARDVNR
Pseudechis_australis_{Elapidae}	FQDFFEI---	--VAAPVGR-	-----IYF	AG-EYTAS-V	HGWL DSTIKS	GLTAARDVNL
Bungarus_multicinctus_{Elapidae}	FQDYSET---	--VAAPVGR-	-----IYF	AG-EYTAR-V	HGWL DSTIKS	GLTAARDVNR
Demancia_vestigiata_{Elapidae}	FQEFYFET---	--VAAPVGR-	-----IYF	AG-EYTAR-A	HGWIDSTIKS	GLKAARDVNR
Dog_LAO1	FTDYSQE---	--LFKPEGR-	-----IHF	AG-EHTSM-P	HGWIDTAIKS	GLQAARNIQA
Panda_LAO1	FIDYSQE---	--LFKPEGR-	-----IHF	AG-EHTSM-P	HGWIDTAIKS	GLQAARNIQA
Bovine_LAO1	FVDYSQQ---	--LFQPEGR-	-----IHF	AG-EHTCL-P	HAWIDTAIKS	GLQVAKNIQA
Horse_LAO1	FADYSQQ---	--LFQPEGR-	-----IYF	AG-EHTCL-P	HAWIDTAIKS	GLQAARNIQA
Mouse_LAO1	FVDYSKQ---	--LSQPEGR-	-----IYF	AG-EHTCL-P	HSWIDTAIKS	GIRASCNIQA
Opossum_LAO1	FVDYSRP---	--LFEPEGK-	-----IHF	AG-EHTCQ-P	HGWIDTAIKS	GLRASKNIQK
Horse_LAO2	YVDYARE---	--LCKPEGR-	-----VYF	AG-EHTTL-P	HGWIDTAIKS	GLRVAQSIQE
Opossum_LAO2	YVDYSQE---	--LFQPEGR-	-----IHF	AG-EHTTL-P	HGWIDTAIKS	GLRAAQGIQE
Flounder_LAO3	HVEYAKE---	--LFQSEDR-	-----LHF	AG-EHTGF-P	HAWIDTAMKT	GIRAAININK
Flounder_LAO2	HLEYAKE---	--LFKSEGR-	-----LHF	AG-EHTGF-P	HAWIETAMKT	AIRAAINIYK
Flounder_LAO1	HLEYSKE---	--LFKSEGR-	-----LHF	AG-EHTGF-P	HAWIETAMKT	GIRAATSIYS
Rockfish_LAO	HLEFAKE---	--LFRSEGR-	-----VHF	AG-EHTAF-P	HAWIEASLKS	AIRAATNINK
Green_pufferfish_LAO	PLQYSQH---	--LSRSEGR-	-----IHF	AG-EHTAV-P	HAWMDTSMKS	AVRVAANINR
Zebrafish_LAO	MRDYSAS---	--LVQNEGR-	-----IYF	AG-EHTAR-P	HGWIETAMKS	ALRAADKIND
Panda_IL4I1	WPEDKEEGSD	YDWA VPYGR-	-----IYF	AG-EHTAY-P	HGWVETAVKS	ALRAALLINS
Dog_IL4I1	WHEDREDGKD	YNWAVPYGR-	-----IYF	AG-EHTAY-P	HGWVETAVKS	ALRAAVLINS
Human_IL4I1	WQTEKDD---	--WTVPYGR-	-----IYF	AG-EHTAY-P	HGWVETAVKS	ALRAAIKINS
Mouse_IL4I1	YGREAEED---	YDWSAPFGR-	-----IYF	AG-EHTAL-P	HGWVETAVKS	GLRAAVRINN
Streptosporangium_roseum_{Actinobacteria}	QTTLHEA---	--IIQPEGR-	-----VHF	AG-EHCSL-W	HAWIEGALES	GLRAAAAIHD
Roseiflexus_castenholzii_{Chloroflexi}	QTTLLHDA---	--IVKPEGR-	-----FHF	AD-EHASL-Y	HAWIQGAVDS	GLRAAMAVHR
Bacillus_cereus_{Firmicutes}	ESELQPA---	--IVKPEGR-	-----IFF	AG-DHTTL-Y	HGWIQGAIES	GIFVAMEVNE
Marseillevirus	KAGGYRD---	--LTKIREN-	-----VSV	IGSAISMS--	PGWVNGALQS	SEGV LK KYGI
Aplysia_punctata_cyplasin_L_{Mollusks}	SERSHNVQPP	SHMASHVG--	-----	-----	-----	-----
Aplysia_punctata_cyplasin_S_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_californica_aplysianin_A_{Mollusks}	AECR-DFPNN	NHLGSHMA--	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_1_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_2_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_3_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_californica_escapin_{Mollusks}	-----	-----	-----	-----	-----	-----
Achatina_fulica_achacin_{Mollusks}	-----	-----	-----	-----	-----	-----
Hahella_chejuensis_{Proteobacteria}	MSRPSWLPPE	QQFSLMPVPS	PDGCAESCDC	LTCDDCKKVL	DEVTQFAYKG	IDNVEG----
Pseudomonas_entomophila_{Proteobacteria}	LPRPSWLP--	ASYQLLPTPA	PEEIDYSKPP	MPAHP-AQVL	DGITQNICAG	IKP-----
Burkholderia_ubonensis_{Proteobacteria}	GAL-----	-----	-----	-----	-----	-----
Chromobacterium_violaceum_{Proteobacteria}	SAFPR-----	-----	-----	-----	-----	-----
Chitinophaga_pinensis_{Bacteroidetes}	PSANAKQTNN	VSQIQPS---	-----	-----	-----	-----
Flavobacterium_johnsoniae_{Bacteroidetes}	LKRPFWLPDN	YYLGW----	-----	-----	-----	-----
Dyadobacter_fermentans_{Bacteroidetes}	LTRPHWLNDR	YYMGW----	-----	-----	-----	-----
Staphylococcus_aureus_{Firmicutes}	LNWPDWLEKE	YYLGW----	-----	-----	-----	-----
Clostridium_botulinum_{Firmicutes}	QIKAN-----	-----	-----	-----	-----	-----
Clostridium_carboxidivorans_{Firmicutes}	SVKAERKM--	-----	-----	-----	-----	-----

Turkey_LAO	DS-----	-----	-----	-----	-ETQNLN---	LNLEGFVEKG
Chicken_LAO	DS-----	-----	-----	-----	-ETRNLSPNH	VHLESFVEKG
Zebrafinch_LAO	ES-----	-----	-----	-----	-AEAPGR---	-GFGRVQRE
Ophiophagus_hannah_{Elapidae}	A-----	-----	-----	-----	-----	-----
Crotalus_atrox_{Viperidae}	AS-----	-----	-----	-----	-ENPSGI---	----HLSNDN
Sistrurus_catenatus_{Viperidae}	AS-----	-----	-----	-----	-ENPSGI---	----HLSNDN
Gloydeus_halys_{Viperidae}	AS-----	-----	-----	-----	-EQ-----	-----
Trimesurus_stejnegeri_{Viperidae}	AS-----	-----	-----	-----	-ENPSGI---	----HLSNDN
Bothrops_jararacussu_{Viperidae}	AS-----	-----	-----	-----	-E-----	-----
Echis_ocellatus_{Viperidae}	AS-----	-----	-----	-----	-EL-----	-----
Oxyuranus_scutellatus_{Elapidae}	AS-----	-----	-----	-----	-QKPSRR---	----QLSNDN
Pseudechis_australis_{Elapidae}	AS-----	-----	-----	-----	-QKPSRI---	----QLSNDN
Bungarus_multicinctus_{Elapidae}	AS-----	-----	-----	-----	-QKPSRI---	----HLSNDN
Demancia_vestigiata_{Elapidae}	AS-----	-----	-----	-----	-QKPSRI---	----QLSNDN
Dog_LAO1	AV-----	-----	-----	-----	-DEEATGKQT	TFTYS-----
Panda_LAO1	-----	-----	-----	-----	-----	-----
Bovine_LAO1	AV-----	-----	-----	-----	-DKEITER--	-----
Horse_LAO1	AV-----	-----	-----	-----	-DQEAMGRHK	TFTNNQSPS-
Mouse_LAO1	AV-----	-----	-----	-----	-DKEATRGT	AL-----
Opossum_LAO1	AI-----	-----	-----	-----	-DALSEAHND	TDLFHGVVDD
Horse_LAO2	SA-----	-----	-----	-----	-DLALTKGPR	DSKEPHSKTE
Opossum_LAO2	TV-----	-----	-----	-----	-GL-LKQDKE	ARKENGPRNE
Flounder_LAO3	EL-----	-----	-----	-----	-NDVST---	-----
Flounder_LAO2	EL-----	-----	-----	-----	-NCVFT---	-----
Flounder_LAO1	NL-----	-----	-----	-----	-LDVSTQTRD	EF-----
Rockfish_LAO	ES-----	-----	-----	-----	-ARSPHDEL-	-----
Green_pufferfish_LAO	AA-----	-----	-----	-----	-LRRPRSSDL	LSGAAAKNAN
Zebrafish_LAO	DV-----	-----	-----	-----	-K-----	-----
Panda_IL4I1	RK-----	--EHALVDSD	AE-----	---EGVVRL	VPSRP-----	--RCGFRKGG
Dog_IL4I1	RE-----	--EHTWSDSN	SE-----	---EGLVHL	VPNHPRLVPH	HPRCEFQKGG
Human_IL4I1	RK-----	--GPASDTAS	PEGHSD---	-MEGQGHVHG	VASSP-----	--SHDLAKEE
Mouse_IL4I1	NYGYGEVDPQ	MMEHAYAEAN	YLDQYPEGER	PEEQQAREEV	SPDEQEPSHK	HLLVETSPEG
Streptosporangium_roseum_{Actinobacteria}	GPS-----	-----	-----	-----	-----	-----
Roseiflexus_castenholzii_{Chloroflexi}	AA-----	-----	-----	-----	-----	-----
Bacillus_cereus_{Firmicutes}	-----	-----	-----	-----	-----	-----
Marseillevirus	PSVLQP---	-----	-----	-----	-----	-----
Aplysia_punctata_cyplasin_L_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_cyplasin_S_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_californica_aplysianin_A_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_1_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_2_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_ink_toxin_3_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_californica_escapin_{Mollusks}	-----	-----	-----	-----	-----	-----
Achatina_fulica_achacin_{Mollusks}	-----	-----	-----	-----	-----	-----
Hahella_chejuensis_{Proteobacteria}	-----	-----	-----	-----	-----	-----
Pseudomonas_entomophila_{Proteobacteria}	-----	-----	-----	-----	-----	-----

Burkholderia_ubonensis_{Proteobacteria}	-----	-----	-----	-----	-----	-----
Chromobacterium_violaceum_{Proteobacteria}	-----	-----	-----	-----	-----	-----
Chitinophaga_pinensis_{Bacteroidetes}	-----	-----	-----	-----	-----	-----
Flavobacterium_johnsoniae_{Bacteroidetes}	-----	-----	-----	-----	-----	-----
Dyadobacter_fermentans_{Bacteroidetes}	-----	-----	-----	-----	-----	-----
Staphylococcus_aureus_{Firmicutes}	-----	-----	-----	-----	-----	-----
Clostridium_botulinum_{Firmicutes}	-----	-----	-----	-----	-----	-----
Clostridium_carboxidivorans_{Firmicutes}	-----	-----	-----	-----	-----	-----
Turkey_LAO	EL-----	-----	-----	-----	-----	-----
Chicken_LAO	EL-----	-----	-----	-----	-----	-----
Zebrafinch_LAO	EL-----	-----	-----	-----	-----	-----
Ophiophagus_hannah_{Elapidae}	-----	-----	-----	-----	-----	-----
Crotalus_atrox_{Viperidae}	EF-----	-----	-----	-----	-----	-----
Sistrurus_catenatus_{Viperidae}	EF-----	-----	-----	-----	-----	-----
Gloydeus_halys_{Viperidae}	-----	-----	-----	-----	-----	-----
Trimesurus_stejnegeri_{Viperidae}	EL-----	-----	-----	-----	-----	-----
Bothrops_jararacussu_{Viperidae}	-----	-----	-----	-----	-----	-----
Echis_ocellatus_{Viperidae}	-----	-----	-----	-----	-----	-----
Oxyuranus_scutellatus_{Elapidae}	EL-----	-----	-----	-----	-----	-----
Pseudechis_australis_{Elapidae}	EL-----	-----	-----	-----	-----	-----
Bungarus_multicinctus_{Elapidae}	QL-----	-----	-----	-----	-----	-----
Demancia_vestigiata_{Elapidae}	EL-----	-----	-----	-----	-----	-----
Dog_LAO1	-----	-----	-----	-----	-----	-----
Panda_LAO1	-----	-----	-----	-----	-----	-----
Bovine_LAO1	-----	-----	-----	-----	-----	-----
Horse_LAO1	-----	-----	-----	-----	-----	-----
Mouse_LAO1	-----	-----	-----	-----	-----	-----
Opossum_LAO1	YDAKDSYDSN	VALDEGSFLF	LESKGGKPQEV	CSSKSSH---	-----	-----
Horse_LAO2	LQPTS----	-----	-----	-----	-----	-----
Opossum_LAO2	L-----	-----	-----	-----	-----	-----
Flounder_LAO3	-----	-----	-----	-----	-----	-----
Flounder_LAO2	-----	-----	-----	-----	-----	-----
Flounder_LAO1	-----	-----	-----	-----	-----	-----
Rockfish_LAO	-----	-----	-----	-----	-----	-----
Green_pufferfish_LAO	RDGEY----	-----	-----	-----	-----	-----
Zebrafish_LAO	-----	-----	-----	-----	-----	-----
Panda_IL4I1	ATDAPAAQSL	TAR-----	-----HT	THKRPEH---	-----	-----
Dog_IL4I1	ATHSPGEHRI	TVR-----	-----HS	THKRAEH---	-----	-----
Human_IL4I1	GSHPPVQQQL	SLQ-----	-----NT	THTRTSH---	-----	-----
Mouse_IL4I1	QQHAFVEAIP	ELQGHVVFET	VPQEKGHAHQ	NIYPSEHVQV	HGEVIPEWHG	HGGSGTPQMH
Streptosporangium_roseum_{Actinobacteria}	-----	-----	-----	-----	-----	-----
Roseiflexus_castenholzii_{Chloroflexi}	-----	-----	-----	-----	-----	-----
Bacillus_cereus_{Firmicutes}	-----	-----	-----	-----	-----	-----
Marseillevirus	-----	-----	-----	-----	-----	-----
Aplysia_punctata_cyplasin_L_{Mollusks}	-----	-----	-----	-----	-----	-----
Aplysia_punctata_cyplasin_S_{Mollusks}	-----	-----	-----	-----	-----	-----

Aplysia_californica_aplysianin_A_{Mollusks} -----
Aplysia_punctata_ink_toxin_1_{Mollusks} -----
Aplysia_punctata_ink_toxin_2_{Mollusks} -----
Aplysia_punctata_ink_toxin_3_{Mollusks} -----
Aplysia_californica_escapin_{Mollusks} -----
Achatina_fulica_achacin_{Mollusks} -----
Hahella_chejuensis_{Proteobacteria} -----
Pseudomonas_entomophila_{Proteobacteria} -----
Burkholderia_ubonensis_{Proteobacteria} -----
Chromobacterium_violaceum_{Proteobacteria} -----
Chitinophaga_pinensis_{Bacteroidetes} -----
Flavobacterium_johnsoniae_{Bacteroidetes} -----
Dyadobacter_fermentans_{Bacteroidetes} -----
Staphylococcus_aureus_{Firmicutes} -----
Clostridium_botulinum_{Firmicutes} -----
Clostridium_carboxidivorans_{Firmicutes} -----
Turkey_LAO -----
Chicken_LAO -----
Zebrafinch_LAO -----
Ophiophagus_hannah_{Elapidae} -----
Crotalus_atrox_{Viperidae} -----
Sistrurus_catenatus_{Viperidae} -----
Gloydeus_halys_{Viperidae} -----
Trimesurus_stejnegeri_{Viperidae} -----
Bothrops_jararacussu_{Viperidae} -----
Echis_ocellatus_{Viperidae} -----
Oxyuranus_scutellatus_{Elapidae} -----
Pseudechis_australis_{Elapidae} -----
Bungarus_multicinctus_{Elapidae} -----
Demancia_vestigiata_{Elapidae} -----
Dog_LAO1 -----
Panda_LAO1 -----
Bovine_LAO1 -----
Horse_LAO1 -----
Mouse_LAO1 -----
Opossum_LAO1 -----
Horse_LAO2 -----
Opossum_LAO2 -----
Flounder_LAO3 -----
Flounder_LAO2 -----
Flounder_LAO1 -----
Rockfish_LAO -----
Green_pufferfish_LAO -----
Zebrafish_LAO -----
Panda_IL4I1 -----
Dog_IL4I1 -----
Human_IL4I1 -----

Mouse_IL4I1	RVGDHS
Streptosporangium_roseum_{Actinobacteria}	-----
Roseiflexus_castenholzii_{Chloroflexi}	-----
Bacillus_cereus_{Firmicutes}	-----
Marseillevirus	-----