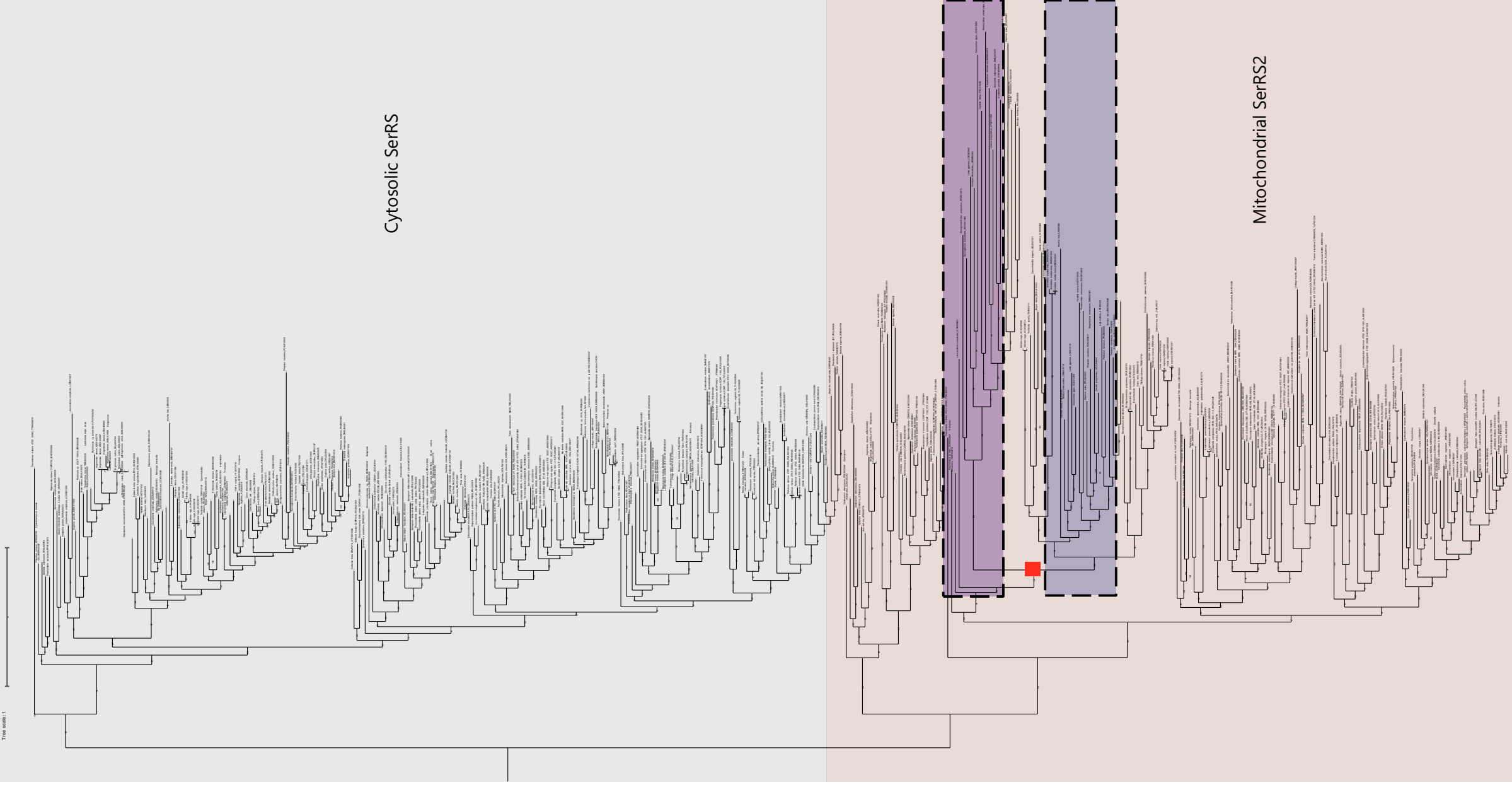


Supplementary figure 1. Phylogenetic analysis of metazoan SerRS, SerRS2, SLIMP, and SerRS2 α sequences.



Duplication node

Supplementary Figure 2

<i>Drosophila_melanogaster_SLIMP</i>	LSKVAEERERVTKRL----KELTKS---GSSAVQLEELKEHGKSLRNELKALKQOTLYPIE	137
<i>Acanthaster_planci_SLIMP</i>	KSCIEDRRSKVNEIDI----KRLRKK---GGAKEQKDKLQQMGSLSREELRQINF'SIASLS	196
<i>Strongylocentrotus_purpuratus_SLIMP</i>	KNQMERKKKALNTRA----KELSKQ---KGSVTKQEKVQLEGRKIREEVKSLN'TSLNGLM	191
<i>Triboleum_casteum_SLIMP</i>	KTVLEFTRSEIQNLI----NKLKQDGEE--KNQSDIEKLLHIIKVVKDDLKNVKEFTYGLE	133
<i>Stegodyphus_mimosarum_SLIMP</i>	YQEIVEKEEEYQKEL----ERLQSLDL--ET--EIKDITEKRIALSQNLRLKEKEKLYDVE	156
<i>Ramazzottius_varieronatus_SLIMP</i>	RAELETRRKQSVENF-----SKPSDVDEESKLGKGRLLRGEIKQLNKDIAEIE	168
<i>Pediculus_humanus_SLIMP</i>	KLQLEKRKTQIADNI----KDLKKIGNDGEAKQEMEKLKIEGRIVREDLKTLMKAFWEVE	140
<i>Octopus_bimaculoides_SLIMP</i>	KKKLEEEERKNIASMM----AALSKVKETEDVKRSKELLKSRGKSLRQLLKTNLNADFNILE	178
<i>Limulus_polyphemus_SLIMP</i>	LQELLRRKENISQKL----QELSKTNH--ITSEEKENWVKVEGRKVRREEIKHVTEKMWDYE	160
<i>Lottia_gigantea_SLIMP</i>	KCDFESERKDIGKRVTELINLMKKSSENDNLVKSVDVLKSRGNKLLKLEKELSDRYFAIK	173
<i>Hyalella_azteca_SLIMP</i>	IEELEKQADELTVTS----NEMK-----GKEDVKDDEVKVRISQLRSKTKILKARLNELE	347
<i>Daphnia_pulex_SLIMP</i>	REDLETRRIEVTQLM----KQVASHTADTTRPNKIEEVKQEGIRLRTQLKELTKVWWDVE	63
<i>Capitella_teleta_SLIMP</i>	KDLLEKQHKELSRGFAELVRAKK---NDDIAKEAKKELSEKGRELRPRLKAAITSYYEAE	226
<i>Anopheles_gambiae_SLIMP</i>	KKEIEQYRVDLQKRI----Q----Q---SSSKEEQQLKSRAVLARDDLKMLKEQSYKVA	127
<i>Drosophila_melanogaster_SerRS2a</i>	-----HKL	75
<i>Acanthaster_planci_SerRS2a</i>	LNDLQDEG-----SSPALANHLDDLKTQIRETE	148
<i>Strongylocentrotus_purpuratus_SerRS2a</i>	VHDVQLRLQTDIDK-----GLNTKELESMLKEKKNQLDRAQ	160
<i>Triboleum_casteum_SerRS2a</i>	-----DKLYNATK	82
<i>Stegodyphus_mimosarum_SerRS2a</i>	--D-----IEKCQILK	33
<i>Ramazzottius_varieronatus_SerRS2a</i>	-----	0
<i>Pediculus_humanus_SerRS2a</i>	-----GKRETLW	92
<i>Octopus_bimaculoides_SerRS2</i>	-----MKKQGLI	113
<i>Limulus_polyphemus_SerRS2a</i>	--E-----ETERALLE	99
<i>Lottia_gigantea_SerRS2a</i>	--A-----SHK-DRIW	113
<i>Hyalella_azteca_SerRS2a</i>	-----SLNSVTSEDEL	87
<i>Daphnia_pulex_SerRS2a</i>	-----SADQMELK	82
<i>Capitella_teleta_SerRS2a</i>	SDR-----SEEFMSLQ	90
<i>Anopheles_gambiae_SerRS2a</i>	-----ESERGTLQ	83
<i>Homo_sapiens_SerRS2</i>	IRSLEEEKAAVTEAVRALLANQDSGEV--QQDPKYQGLRARGREIRKELVHLYPREAQLE	160
<i>Bos_taurus_SerRS2</i>	IRSLEEEKEAVTEAVRALVVNQDNSQV--QQDPQYQSLRARGREIRKQLTLLYPKEAQLE	160
<i>Danio_rerio_SerRS2</i>	ISHLEGRKQVVSSTVRELVGKHDKSTL--SSLEEYGHAREEGRAIREKLNQLYLQEKLE	186
<i>Xenopus_tropicalus_SerRS2</i>	IKTLEEEKSAIAKEVKHVMVISEEKQNL--QTNPRYALIRKRGKDIRLELSTLYKEESNLE	233
<i>Caenorhabditis_elegans_SerRS2</i>	GEK----Q-----TNGAVSEQKYKQLW	106
<i>Trichinella_spiralis_SerRS2</i>	KNP-----TMTMNELTSMW	82

Full-length sequence alignment of SerRS2, SLIMP, and SerRS2 α metazoan sequences (labeled accordingly).

Supplementary Figure 2

<i>Drosophila_melanogaster_SLIMP</i>	DDFIH-DYLHLPLNLLHVQCVPVGEEK-----LLYRHGIP-K-----S-----	172
<i>Acanthaster_planci_SLIMP</i>	DEFYP-AVLKLPNKLHPAVSLFFQTQPCGSMLKILETFGTD-K-EEKSDKP-----	244
<i>Strongylocentrotus_purpuratus_SLIMP</i>	NRLYP-LALALPNSLHNAVVPV-----DENVVKETVGDG-L-VSLE-----	229
<i>Triboleum_casteum_SLIMP</i>	ENANL-GVLSLPNFLHPKTPPLDSQTI-----I-HEFLEQ-P-----K-----	167
<i>Stegodyphus_mimosarum_SLIMP</i>	DIVMP-KLQKIPNLIDAATPTQFDT-----ADICQK-S-PDFEFKV-----	194
<i>Ramazzottius_varieronatus_SLIMP</i>	IDTIT-TLLKLPVRLHXYVPMGNPF-----VSFDTTAD-QEVQFMECSKLNNSVNA	219
<i>Pediculus_humanus_SLIMP</i>	EKVIM-KGLSLPNELHKDTPDGEDKI-----V-HQYKDR-P-----I-----	174
<i>Octopus_bimaculoides_SLIMP</i>	ETVIM-RSLKLPNVLHRDTPSDEVKI-----LQETVLEK-DLADFA-----	217
<i>Limulus_polyphemus_SLIMP</i>	DDAIP-VLLSIPNNIHPDTPLODDDI-----I-GNFCSN-N-QDNCIQN-----	200
<i>Lottia_gigantea_SLIMP</i>	HAVML-DGLKIPNRIHPETPTSAQIL-----RSF-----G-NIMDFSK-----	209
<i>Hyalella_azteca_SLIMP</i>	VTAIP-AMLDLPNTVNLPPGDGGVV-----VSLNDP-PIFDFSPKP-----	386
<i>Daphnia_pulex_SLIMP</i>	ETAVT-RALSLPNSLHSETPIEDSRE-----L-YSFIPP-K-----S-----	97
<i>Capitella_teleta_SLIMP</i>	NTFNL-MALKLPVELAPETQPDSTL-----AELGVK-AAES--QKSHLEL--L-G	270
<i>Anopheles_gambiae_SLIMP</i>	DAFIANSFLSIPNDLHERTPPEGAKC-----I-YEKPVP-P-----R-----	162
<i>Drosophila_melanogaster_SerRS2a</i>	RQLQA-ELEQLPNATHPRLR-DYGEE-----PRELAQYVHRQLTPQSRLKEFSELAR---	125
<i>Acanthaster_planci_SRS2a</i>	DVFYQ-SAARLPNRTHPEVPMGGGDE-----PRLVMLIGEK-PSFNFPKSHVELGE---	198
<i>Strongylocentrotus_purpuratus_SerRS2a</i>	NDFYR-IAVAIPNSIHPDVPLTEDAD-----PVLIEEINEK-RSFDFFIKGHVELGE---	210
<i>Triboleum_casteum_SerRS2a</i>	SEFET-EVLRIPNRTHPQVA-GYGDS-----PKTVEIVGT--KPPDSSHLDQEIICK---	130
<i>Stegodyphus_mimosarum_SerRS2a</i>	EKIAP-QLLWFPNLTHPKVLENKSEE-----PFLQKVGK-K-TAFTYFPTKFESLTK---	83
<i>Ramazzottius_varieronatus_SerRS2a</i>	-----M-----AAAVEVIGTK-QAFRFAPKSIETLAA---	26
<i>Pediculus_humanus_SerRS2a</i>	QSLVK-EAGSLPNKTHPAVK-EYGER-----PRVLKSSEH--VTHSFI PKDFQELAK---	140
<i>Octopus_bimaculoides_SerRS2</i>	DKLKS-LAADI PNKIHPPLAPIGNESC-----NRVVKTFGKE-SVNVGKVKGVVEIGE---	163
<i>Limulus_polyphemus_SerRS2a</i>	EKLIS-EAAKLPNKTHPKVLENSDQ-----PVEVETVGSAPVFDKPKQFHELAL---	149
<i>Lottia_gigantea_SerRS2a</i>	KDLIK-EASDIPNTHHPDPSPIGEEEN-----SRLVETVGEPTRFNFKPRTVVRIGE---	163
<i>Hyalella_azteca_SerRS2a</i>	INMYK-NLSKLPNATCPIAE--ELSG-----PKIIGLFGTKRVLDDALML--EQLSH---	134
<i>Daphnia_pulex_SerRS2a</i>	KTLA-EALKIPNNSHPRLH-AYGDA-----PHVVETPGEK-PNWSFKPLEFHSAK---	131
<i>Capitella_teleta_SerRS2a</i>	EKFHK-SAGVIPNMSHPDAPIGGEDK-----AILVETFGKEK-QDFDFAPKGVVEIGE---	140
<i>Anopheles_gambiae_SerRS2a</i>	AQLDA-ELAKLPNRTHPAVV-GYRTE-----PRIERYNEHAKRTDRKYFQFGDICK---	133
<i>Homo_sapiens_SerRS2</i>	EQFYL-QALKLPNQTHPDVPGDESQ-----ARVLHMGVDK-PVFSFQPRGHLEIGE---	210
<i>Bos_taurus_SerRS2</i>	EQFYL-RALRLPNQTHPDVPGDESQ-----ARVLHMGVDK-PAFSFQPRGHLEIAE---	210
<i>Danio_rerio_SerRS2</i>	KEHYC-RALRLPNRTHPSVPIGDESQ-----ARVVEVVGEK-REFDFKPKGHLQIGE---	236
<i>Xenopus_tropicalus_SerRS2</i>	GSFYR-RALRLPNRTHPNTVPGDESK-----ARVLEVVGVK-PEFDFKICGHLEIGE---	283
<i>Caenorhabditis_elegans_SerRS2</i>	DELYD-EAILIPNMTQDGVPRGSEDQ-----AKIVAWEWGEKREDECLTAEKLVQ-----	154
<i>Trichinella_spiralis_SerRS2</i>	DRFYE-EALLIPNDTHPEAPVGDSESV-----AKI IHTNGSK-PIFTFKPLFGEDIAV---	132

Supplementary Figure 2

<i>Drosophila melanogaster</i> _SLIMP	-----ENKTTS----HLARQELVHFVDN NR YYLMEQAALFDV NAMQ SLARYFV	216
<i>Acanthaster planci</i> _SLIMP	-----KEQS--PNI ^{FL} TESHPMSHG GY AYLEHEAALLELAL TQ --WVKQQL	286
<i>Strongylocentrotus purpuratus</i> _SLIMP	-----SRK--EHPSI ^{STHHP} MVHP GY CYTEGELVIKELDLVL--SAASHL	270
<i>Triboleum castaeum</i> _SLIMP	-----PIQ--ENHL--QIAKSQNLIEY TSPT LCYLKSDAALFEFAIT N --YFQSNL	212
<i>Stegodyphus mimosarum</i> _SLIMP	-----ISHAEL--GKLM S LLEF S NNDP TV YYMKGK L SELELATQ I --YFSDKL	238
<i>Ramazzottius varieronatus</i> _SLIMP	ANRVARREKVRVEAHDVNKA--LQQSRLVEY TDEAP RG YFLRGQA E LELKL LN --YGRSFL	277
<i>Pediculus humanus</i> _SLIMP	-----INQKYSHL--DIGQKQNLIDYRDP SL CYLK SE AALFELAT S --YFSEGL	220
<i>Octopus bimaculoides</i> _SLIMP	-----QVNHVVA--GEQYNWIKFSNIG P AYFLLG PL AWSERHF IN --HFSENL	262
<i>Limulus polyphemus</i> _SLIMP	-----LKACRSHL--QVLPNDIQFSNV SP CSYYLTRNAALLELAL IY --FFSHHL	246
<i>Lottia gigantea</i> _SLIMP	-----SRSHIEI--GREKDLIKFSDIG PK SFY LK GD LAL CELELID--KTKKFL	254
<i>Hyalella azteca</i> _SLIMP	-----H---TLLR--TQSPNSLEFLDV SP GA F YLSGD LAE CEVLLDR--YWTGLL	429
<i>Daphnia pulex</i> _SLIMP	-----AHS---PS--DSTKLDVKFVSH SP TA F YMRGLSARLELN W MR--NFSNDW	140
<i>Capitella teleta</i> _SLIMP	GSGIH----LRYV---FPAS--SPHINTPCPSDI SP GA Y YLTGNVSN S ERQLVQ--WTKKFM	321
<i>Anopheles gambiae</i> _SLIMP	-----AATSNRPS--NVD P VQE Q LEEF GP ACLYMTGDAAWMDLRL PM --YCSELF	208
<i>Drosophila melanogaster</i> _SerRS2a	-----AL--NLYRMDHLGNY TGH K S YYLT G QLATLE Q AI I Q--YALQAV	165
<i>Acanthaster planci</i> _SRS2a	-----HL--DIIRIKNLGHV TGH R S YFFKGAAAMLEHAL IC --FTVDRL	238
<i>Strongylocentrotus purpuratus</i> _SerRS2a	-----DL--DIIRLKNLGH T T GH R S YFLKGAGSMLE D ALVR--FTLDRL	250
<i>Triboleum castaeum</i> _SerRS2a	-----KL--RLRTDQIGN F CG S K S YFLGELAELEHALVR--YVTSKL	170
<i>Stegodyphus mimosarum</i> _SerRS2a	-----RL--NVLRTKHLGHMS G S K SYFLKNDLSLLE Q ALVR--FALS K L	123
<i>Ramazzottius varieronatus</i> _SerRS2a	-----GYAGSLRR T KL S LL ST D RAY ILGGLFAKLE Q AL S --FTTGFL	67
<i>Pediculus humanus</i> _SerRS2a	-----DL--KLLR M EDL T VAG Q R S YFF T GD L ADLE Q AL I K--Y T ISRL	180
<i>Octopus bimaculoides</i> _SerRS2	-----KA--GWLRTSNV G TT TG Q R SYFL N QLARLELAL V N--YCLDKL	203
<i>Limulus polyphemus</i> _SerRS2a	-----KL--DMLR M ENLGLV TGH R S YYL K RELA Q LE Q AL L H--F S VKRL	189
<i>Lottia gigantea</i> _SerRS2a	-----KL--DILRTDNV N F ST GI R TY F Y K DELVDLE M AL I K--FTLN T L	203
<i>Hyalella azteca</i> _SerRS2a	-----HGVD M N M TGN F T G S R SYYL R G S MAHLE S KL T Q--YALEHL	172
<i>Daphnia pulex</i> _SerRS2a	-----DL--DLLR T ENLGN L T G P R SYYL I KEL A QLE Q AL I H--FTVDAL	171
<i>Capitella teleta</i> _SerRS2a	-----KL--GVLRTQNV T Y T T G P R SYY F MG D LAELE D AL V E--FT I SRL	180
<i>Anopheles gambiae</i> _SerRS2a	-----RM--NLYR M ENLGN F T G H R SYYL T DE L AEL E HAL I C--Y A VDSL	173
<i>Homo sapiens</i> _SerRS2	-----KL--DIIRQ R L S HV S GH R SYYL R GAGAL L Q H GL V N--F T F N KL	250
<i>Bos taurus</i> _SerRS2	-----KL--DIIRQ R L S HV S GH R SYYL R GAGAL L Q H GL V N--F T L N KL	250
<i>Danio rerio</i> _SerRS2	-----SL--DIIRQ R L S HV S GH R SYYL R GAG A Q L Q F AL Q N--F A MD L L	276
<i>Xenopus tropicalis</i> _SerRS2	-----DL--DIIRQ R L S HV S GH R SYYL R GAG S L L Q H AL V N--F T I S KL	323
<i>Caenorhabditis elegans</i> _SerRS2	-----TW R SL L H P T D AS G Q R S V FL G ALASLE K AL L D--Y A HER V	192
<i>Trichinella spiralis</i> _SerRS2	-----K F --K I L--WQDV G FCC G E K A Y FL N Q L A I LELAL I R--F C R D RL	171

Supplementary Figure 2

<i>Drosophila_melanogaster_SLIMP</i>	N-HGHFIQTANPDFVRCVLL---EANATPL--SDYHLVQE-----EHL-----	253
<i>Acanthaster_planci_SLIMP</i>	L-DQGFTPPLSCPAMYKSIAL---ESLGLDP--DNSNETYAIET-----	323
<i>Strongylocentrotus_purpuratus_SLIMP</i>	T-SNGFTRFAMPDMYKPLLR---EALGLNA--EEFNETYAIQT-----	307
<i>Triboleum_casteum_SLIMP</i>	V-SQSFTQFSNADFVRSLVV---EGCGTDY--LDKNKIFTLDGS--NNE-----	253
<i>Stegodyphus_mimosarum_SLIMP</i>	I-SLSYAPLSCVDFCKSFII---EAVGLDP--HSNADCIP LKS---KSS-----	278
<i>Ramazzottius_varieronatus_SLIMP</i>	E-EKGYSGISGPHLYRSVVV---EGTGFIS--DDHDDVSATTGSLINVKPNQPFLIDTVD	331
<i>Pediculus_humanus_SLIMP</i>	K-ADEYI PFSNPDFVRSLVV---EGCGADH--SDPNSIFTVLLP--NEK-----	261
<i>Octopus_bimaculoides_SLIMP</i>	I-QNGFQMMVCPEIFKAVVV---EGCGVDI--TDTGKIYTLEN---NEE-----	302
<i>Limulus_polyphemus_SLIMP</i>	A-DAGL TEISCPDIVKSVIV---EGCGNSF--MSSIS-----LIS-----	280
<i>Lottia_gigantea_SLIMP</i>	Q-QNGMTTFLLPDKVRSIIM---EGCGFDV--DSDKILTIHDP---DPR-----	294
<i>Hyalella_azteca_SLIMP</i>	D-AAGYL RQCNP DFAKEVLV---EGCGGAS--SLKTQL-----K-----	462
<i>Daphnia_pulex_SLIMP</i>	I-SKGYNLISPPDFVRS LIV---DGCGLDF--NNPQKVL SLATVPDHGS-----	183
<i>Capitella_teleta_SLIMP</i>	N-DLSIPRISCP ELFREAIV---EGCGFTD--EEHISHAC-----	355
<i>Anopheles_gambiae_SLIMP</i>	R-RNKCILFCNP D FVRSFLV---EAAMVSK--ESLFLVQE-----EDEP-----	246
<i>Drosophila_melanogaster_SerRS2a</i>	T-EHGFKLISVPDILPKEVI---ESCGMRT-EGERTQVYKLD T-----	203
<i>Acanthaster_planci_SRS2a</i>	L-GRGFRAISVPDLVHP I VF---EGCGMRT-KGLHTQVYQLDHRKH-----	279
<i>Strongylocentrotus_purpuratus_SerRS2a</i>	IKNHGFKI IKVPDLIKPVV FVSIEACGMRT- EGLHTQVYPLSPEYH-----	295
<i>Triboleum_casteum_SerRS2a</i>	L-FNK FELVSVPDILPRGTI---EGCGMNT-KGARTQVYALDSTLH-----	211
<i>Stegodyphus_mimosarum_SerRS2a</i>	I-KKGFQMVSVPDVVSQTSF---EGCGMKT-DGKHSQVYHIEDSWA-----	164
<i>Ramazzottius_varieronatus_SerRS2a</i>	K-QRGFEFISVPDIISPEVL---DGCGERL KGRHNMIYLLDEQRH-----	109
<i>Pediculus_humanus_SerRS2a</i>	L-KKNFQLISVPDILPMEVL---ERCGMTP-NALQTQVYQLDES-H-----	220
<i>Octopus_bimaculoides_SerRS2</i>	R-LEGFQLVSVPEILRPEII---EGCGFKT-TGQRTQVYKLD A KRH-----	244
<i>Limulus_polyphemus_SerRS2a</i>	M-SKGF TLVSVPDILHPSAI---EACGM TT-QGKRTQVYHLEPNFG-----	230
<i>Lottia_gigantea_SerRS2a</i>	K-QHGFHVISVPDLIYAPVI---EACGFKT--TGENQVYKLNDNFY-----	243
<i>Hyalella_azteca_SerRS2a</i>	K-RKGFKLMSVPDLVTE DIL---ESCGVPV-HGERTMVYSVSPSHLGLP-----S	217
<i>Daphnia_pulex_SerRS2a</i>	E-KKGFILYSVPDLLHSRLI---ESCGMDT-KSERTQVYKLEPKFY-----	212
<i>Capitella_teleta_SerRS2a</i>	Q-AMGFCVISVPNLLHSSVI---EGCGFQV-QGERTQVYRSQ--DD-----	219
<i>Anopheles_gambiae_SerRS2a</i>	R-QRNFQLVTVPDVLPGR I I---ESCGMSV-HGERNQVYKLGHRDG-----	214
<i>Homo_sapiens_SerRS2</i>	L-RRGFTPMTVPD L LRGA VF---EGCGMTP-NANPSQIYNIDPARF-----	291
<i>Bos_taurus_SerRS2</i>	I-HRGFTPM TVPD L LRGVVF---EGCGMTP-NAKPSQIYNIDPSRF-----	291
<i>Danio_rerio_SerRS2</i>	Q-KRGFIPMVVPDILKSVVF---EGCGMQP-HAQKSQVYSLNPKRS-----	317
<i>Xenopus_tropicalus_SerRS2</i>	V-KKGFIPMSVPDMLRGAVF---EGCGMQA-DAHASQVYSDVPLQH-----	364
<i>Caenorhabditis_elegans_SerRS2</i>	C-ALGFRPITVPDIVSGEVT---QACGVMQ-RSDHPIQYTLAGEES-----	233
<i>Trichinella_spiralis_SerRS2</i>	R-SSGYEEVVVPDVI PKRIV---ENCGLMN-RTDKEIVYSIHGL-----	210

Supplementary Figure 2

<i>Drosophila_melanogaster_SLIMP</i>	-QNKINTAYLTGG ASF ESYLGAMTKLCVYPS-----VLPLRYVCCGRSY NRAE	300
<i>Acanthaster_planci_SLIMP</i>	----HENVQYLAG VSSL AFVAYFMMSVVEAS-----DLPYRCFTVGRSY KQHQ	367
<i>Strongylocentrotus_purpuratus_SLIMP</i>	----RENLMHLAG TS PMGFLAYYMNSVLEAS-----DLPQRCFAVGRHY NAAA	351
<i>Triboleum_casteum_SLIMP</i>	----INRLHLVGG AS LYSFMAYFAKNSIQSA-----LLPLKFFTLGRKY SPGS	297
<i>Stegodyphus_mimosarum_SLIMP</i>	-RESGQKLNLVGG AS LEMFCAYLTNMNVDKS-----SFPLRYYSLGRRY NAQN	325
<i>Ramazzottius_varieronatus_SLIMP</i>	TRGSLFRSLFLT NST VNLYAAHFTNCEAAEN-----ILPIRLHSSSRVY RAVS	379
<i>Pediculus_humanus_SLIMP</i>	-VQPNYRLHLVGG AS IYPFCAFHTKYTIGFS-----SLPLKYFTVGRQY KPTL	308
<i>Octopus_bimaculoides_SLIMP</i>	-TMKIEHICHFIG VSP MSFAAFWTRMTVDCE-----ATPQTYFTIGKCY HPVV	349
<i>Limulus_polyphemus_SLIMP</i>	-EQKGAMSI L TGG AS FESLIAYFTRSIVEKT-----SLPLTFFSVGRCY QSLN	327
<i>Lottia_gigantea_SLIMP</i>	-ESKVIDEHHLQ NS VQSFVAFLMRQMVDNS-----QLPLKYFSVGSRY VSG	340
<i>Hyalella_azteca_SLIMP</i>	-EEDKTPVYLVGG AS LPAYLGYFARRAVKKT-----SKFLPQKLYACQRTY TPLR	511
<i>Daphnia_pulex_SLIMP</i>	-LEKGNGFHLVGG SSL PAMVAFLTKNAIEE-----PIPLRLASAGRTY HPPT	229
<i>Capitella_teleta_SLIMP</i>	-----IFMRLIFPFN-----ATHRR-----	370
<i>Anopheles_gambiae_SLIMP</i>	-VDKVNLLHL CGGS LLSFLGYFTKLSVFPSS-----ALPLRLVASGKRY HFE	292
<i>Drosophila_melanogaster_SerRS2a</i>	-----GECLSG TSEM ALAGFFANKLLSED-----QLPLKVTAVSR CYRAET	244
<i>Acanthaster_planci_SerRS2a</i>	-----NMDLCLSG TA EVGIAGYFMDTVLDVA-----ELPQKKFAISQ CFRAET	322
<i>Strongylocentrotus_purpuratus_SerRS2a</i>	-----NSDLWLAG TA EVGIAGYLMNKTIPMA-----ELPLRIA AVSR CYRAET	338
<i>Triboleum_casteum_SerRS2a</i>	-----GPDWCLSG TSEM ALAGYLSNKTTLNSD-----ILPLKLA AVSR CYRAET	254
<i>Stegodyphus_mimosarum_SerRS2a</i>	-----PRLCLSG TSE I AL ASHFSQKTFQNS-----NLPLKL CAAS R CYRAEA	206
<i>Ramazzottius_varieronatus_SerRS2a</i>	-----GRFALSG TSEM A IA ALHRNKIHRD-----QLPIKLS AMSR CYRAEV	151
<i>Pediculus_humanus_SerRS2a</i>	-----GQNI AL SG TSEM ALAAMNSNVVFNLK-----DLPVN LA AVSR CFRSEV	263
<i>Octopus_bimaculoides_SerRS2</i>	-----GSA CL SG TSEM ALAGYFQ NQ EFSLQ-----DLP IKL TAVSR CHRAEI	286
<i>Limulus_polyphemus_SerRS2a</i>	-----GDLCLSG TA EMAFGAFFANKTL SLN -----ELPQK LA AVSR CFRAET	272
<i>Lottia_gigantea_SerRS2a</i>	-----QDVCLAG TA EMSLAGFMSDEKLTTE-----NLPTK L TAVSR CFRREA	285
<i>Hyalella_azteca_SerRS2a</i>	PSKEESKKVCLSG TSEM ALGGWLRNHSFTEE-----QLPLKL CAV SR CYRAET	265
<i>Daphnia_pulex_SerRS2a</i>	-----GDICL SG TA EMALASYFTGS AV PVS-----ELP IKM AVSR CYRAET	254
<i>Capitella_teleta_SerRS2a</i>	-----PSVCLAG TG EMPLAGYFM NKQ FDIK-----DLPQ RV ATVSR CYRAET	261
<i>Anopheles_gambiae_SerRS2a</i>	-----REPLCLSG TSEM ALAGYLAGRVLPAD-----RLPQ KL MAVSR CYRAET	257
<i>Homo_sapiens_SerRS2</i>	-----KDLNLAG TA EVGLAGYFMDHTVAFR-----DLPV RM VCS STCYRAET	333
<i>Bos_taurus_SerRS2</i>	-----EDLNLAG TA EVGLAGYFMDH S VAFR-----DLP I ----- STCYRAET	328
<i>Danio_rerio_SerRS2</i>	-----PDLNLAG TG EVGVAGYFMDH AV NFK-----DLPV RT VCS STCYRAET	359
<i>Xenopus_tropicalus_SerRS2</i>	-----PDLNLAG TSE VGIAGFFMDH AV MLQ-----DLPV RT VCC STCYRAET	406
<i>Caenorhabditis_elegans_SerRS2</i>	-----HTKLSG TA EMG IA AF LR GR TF NQD-----QLP IR LV SL SR CFRTEI	274
<i>Trichinella_spiralis_SerRS2</i>	-----PNWTL SG TA EMGLAS F IENR IF DVN-----EMP KK FFSVSR CFRPEV	252

Supplementary Figure 2

Drosophila_melanogaster_SLIMP	ADL-----YGP ^I PSLY T ATQ T NAV Q IFVATQTD--NEADSQLEHILNLATD	344
Acanthaster_planci_SLIMP	ES-----TYFEG LQ ES FQ SQR VEL FGVCENT--EAASNALFNQFLSTARG	410
Strongylocentrotus_purpuratus_SLIMP	ES-----AK FQ L HQ Y QD SR LE IFGVSEGA--EDSSNALLFQYLHIVTD	394
Triboleum_casteum_SLIMP	G-----P DL L NLS Q N TV GQ IFVATSNN--SNE---IFDSL VQ QIRE	333
Stegodyphus_mimosarum_SLIMP	-----R VNS Q DLF S VVQ S TNI H S VILCDQN---SEKEEFSAFFNSVLL	365
Ramazzottius_varieronatus_SLIMP	NK----G LE EEEE---DEKYCR I R PS Q T H TV S FCTAFTDA--ETTEEYLTETLELFKS	428
Pediculus_humanus_SLIMP	QE Q -----D DE SS SGL F NL W Q R TC V DM FALTADN--YNEMMSIFGKTLNIVIN	354
Octopus_bimaculoides_SLIMP	SS-----C AN M GLY N T S Q T TK C EV CSVCHDD--TMAD NQ F Q Q FL TMIWN	391
Limulus_polyphemus_SLIMP	P Q -----Q L T I P GL F S V PQ R TE I H F I IACEES---NEKENFGKLVTL LQ Q	369
Lottia_gigantea_SLIMP	-----T EL P GL F FG H Q Y AN A V I F GASLSE--TESS NL F Q E Y SELIWS	380
Hyalabella_azteca_SLIMP	DL CP P DR GL HAP HE GLY AP Q M R G VMS S MQ S T SV S L L T MY TNE--SKFKDLVKDEV LGV V VQ	570
Daphnia_pulex_SLIMP	ES N -----H E ----D L T N T Q A SS I H L L T VM KNC--PDAM F KE V VR VQ ET IS M	271
Capitella_teleta_SLIMP	-----W F T L Q VD M F SL NK SK--DESS L S MA E L A F N I T Q	401
Anopheles_gambiae_SLIMP	-----S AQ S NE V Q V F GA HT TA--Q G A V E L F D E M V Q I Y Q Q	324
Drosophila_melanogaster_SerRS2a	S G L-----Q E E K G I R V H Q F N K V E M F A I C T E E ---Q S E A E L E E F K N I E V D	286
Acanthaster_planci_SRS2a	T H S-----A E A R G L Y R V H Q F M K V E M F C V A T E D ---Q S E Y I F D E L I A I Q R D	364
Strongylocentrotus_purpuratus_SerRS2a	A H S-----A D A R G L Y R V H Q F T K V E M F C V A A N E S G K E S E Q I H Q E L V G I E R E	383
Triboleum_casteum_SerRS2a	S N L-----L E E R G I R V H E F T K V E M F V V T Q P Q ---N S E Q A E D I L K L E M D	296
Stegodyphus_mimosarum_SerRS2a	N K H-----Q K E K G I F R V H H F T K V E M F G I T A N D S G N E S E L L E E F T E L Q K E	251
Ramazzottius_varieronatus_SerRS2a	S D V-----Q --- E G I R V H E F T K V E M F G L C Q P D ---D S K T M L E E F V T I Q K D	191
Pediculus_humanus_SerRS2a	S H F-----A E E K G L Y R V H Q F T K V E M F G I S H P D ---N S E E M M Q N F V D I Q E E	305
Octopus_bimaculoides_SerRS2	S E L-----E E E K G I R V H N F T K V E M F S V V A Q E T G K E S D D S L Q E F I D L Q T D	331
Limulus_polyphemus_SerRS2a	S T V-----Q E E K G I F R V H Q F T K L E M F G V T A N E T S T E S E Q L L D E F T T I Q R S	317
Lottia_gigantea_SerRS2a	S D A-----K E E Q G I R V H Q F T K I E M F G V T E N D K G T E S E L L Q H F L D I E K S	330
Hyalabella_azteca_SerRS2a	S K L-----K L E Q G I F R V H H F T K V E M F G I T S N E T G Q E S D D L Y Q E L V Q I Q I E	310
Daphnia_pulex_SerRS2a	S N V-----Q E E R G I R V H Q F T K V E M F G V T S G E A A --A S D A L L E E F V A I Q K E	298
Capitella_teleta_SerRS2a	S T V-----D E E R G I F R V H Q F T K V E M F G V T A N E S G E E S S Q L L S Q L I E I Q K N	306
Anopheles_gambiae_SerRS2a	S A L-----Q E E K G I R V H Q F T K V E M F A V C Q P G ---Q S A T V L E E F R A I E V Q	299
Homo_sapiens_SerRS2	N T G-----Q E P R G L Y R V H H F T K V E M F G V T G P G --L E Q S S Q L L E E F L S L Q M E	377
Bos_taurus_SerRS2	D T G-----K E P W G L Y R V H H F T K V E M F G V T G P G --L E Q S S E L L E E F L S L Q M E	372
Danio_rerio_SerRS2	D T G-----R E T W G L Y R V H H F T K I E M F G V S A N E T G E E S S Q L L D Q F V T L Q K E	404
Xenopus_tropicalus_SerRS2	D T G-----R E T W G L Y R V H H F T K V E M F G V T A N E S G I E S Q E M L D E F L G L Q K E	451
Caenorhabditis_elegans_SerRS2	S K S-----A S E A K L Y R V H E F S K V E M F V V S T P E ---Q S A A E L D Y L V E V Q K G	316
Trichinella_spiralis_SerRS2	A T G-----K L S K G L Y R V H E F T K V E M F I C T A N E T G L E S N I S H L E I L E M Q K L	297
Schistostoma_mansoni_SerRS2	P N -----Q E P T L Y R V H Q F T K V E M F A I T T P S --L P V S D A M F N Q I K L Q I C	338
Intoshia_linea_SerRS2	S P L-----K S E S G L Y R V H D F S K V E M F G I T E N S --I E K S N L V F Q E F L N I Q N E	295

Supplementary Figure 2

<i>Drosophila_melanogaster_SLIMP</i>	FYKALDIPFRISYATAADLTPAESIRAVIEVYAPSL-----QRYV CVGR ISN	391
<i>Acanthaster_planci_SLIMP</i>	LLSLLPLHGRIVEVPSARLLPSMYRKAIEVWIPDA-----GKFV EVAS VSN	457
<i>Strongylocentrotus_purpuratus_SLIMP</i>	LITFDLPPFRVVEVSSRNLLPCMHRQMAVELWIPSE-----RNYI EVAN VCN	441
<i>Triboleum_casteum_SLIMP</i>	IYEPLNYHFRLVYAPAVDLKVGESLKVSIEMFSNYS-----GTYV EVGY LSL	380
<i>Stegodyphus_mimosarum_SLIMP</i>	CYQALGLPYRTVDVAAKNLIIITESRRKQLELWSPSF-----KKYV PVAH VSQ	412
<i>Ramazzottius_varieronatus_SLIMP</i>	FYLSLGLRFRVLVSLPASKLGISEALRYELKVWSPLL-----SEFV PCGH IAF	475
<i>Pediculus_humanus_SLIMP</i>	LYEQLGHHFRVVYVNASSLECWECRASIQMYSCHE-----QKYI EVGN ISI	401
<i>Octopus_bimaculoides_SLIMP</i>	FYSDLNLPVRLLLLPA SQLHVSESKKAI IEMWAPSQ-----QQYL TVAS VYL	438
<i>Limulus_polyphemus_SLIMP</i>	CYSLINLPFRIKKLASKNLGAAESLRIEFEVWAPAL-----NDYAL CATI IR	416
<i>Lottia_gigantea_SLIMP</i>	FLESFNLPIRQILVVPVQDLSLSESLRSEFQMWSPSL-----EDFV NMGY LCM	427
<i>Hyalella_azteca_SLIMP</i>	AYQKLGHLHFRIVRPEPRDLRVYERDALVVQMLSTSYPEGRNTVYIGENKMTYI EVGR ISI	630
<i>Daphnia_pulex_SLIMP</i>	QLQKLDVNFRI IAVPARQLESWEQYRSSVELFSSSS-----KKFI QVAN ISI	318
<i>Capitella_teleta_SLIMP</i>	FYEEIKIPIRINHVGSSSLRTSESQRIDFEVWSSAF-----NRYF KIGE VSD	448
<i>Anopheles_gambiae_SLIMP</i>	FYDQLPVGYRIVQVPAPDLRPTESMRVDIEIFDGRN-----QRHV KVAE ELGY	371
<i>Drosophila_melanogaster_SerRS2a</i>	LFRRRLGNFRLLDMPPELGPAYQKYDIEAWMPGR-----QMWG EISS CSN	333
<i>Acanthaster_planci_SRS2a</i>	LFTELGLHFQVLDMP SHDLGAPAYRKYDIEAWMPAR-----QSYG EISS SASN	411
<i>Strongylocentrotus_purpuratus_SerRS2a</i>	LFSDLGLHFQILDMPAHDLGAPAYRKF DCEAWMPHR-----KAYG EVSS TSN	430
<i>Triboleum_casteum_SerRS2a</i>	IFESLGLHFQVLDMPPELGAQAYRKYDIEAWMPGR-----GLYG EISS CSN	343
<i>Stegodyphus_mimosarum_SerRS2a</i>	LYSELGLHFKILEMPPCELGLPAYHKIDMEAWIPTQ-----KLYG EISS SASN	298
<i>Ramazzottius_varieronatus_SerRS2a</i>	LVSTLGLHAQVLDMPKEELGLAASRKFDIEAWMPGS-----QRYG EISS SASN	238
<i>Pediculus_humanus_SerRS2a</i>	IFSSLGLDYQILDMPMHGELGASAYRKHDIEAWFP GK-----EITY GEISS CSN	352
<i>Octopus_bimaculoides_SerRS2</i>	LYQSLGLHCRLLDMASQELGAPASRKFDYETWMPAK-----GFWG EISS SASN	378
<i>Limulus_polyphemus_SerRS2a</i>	LFQEIGLHFKLLDMPASDLGAPAYRKF D IEAWMPGR-----GIYG EISS SASN	364
<i>Lottia_gigantea_SerRS2a</i>	LFSQLGLHFRILEMSTECLGAPAYRKYDME TWMPGK-----HFWG EISS SASN	377
<i>Hyalella_azteca_SerRS2a</i>	LLQGLGLHGQVVLMPPEELGNPAYSKTDLEVWLPGR-----RRYA EELT SASN	357
<i>Daphnia_pulex_SerRS2a</i>	LFSSLGLHYQLLDMP LHELGAPAYRKF D IEAWMPGR-----NMYG EISS SASN	345
<i>Capitella_teleta_SerRS2a</i>	LFSSLDLHVRVLDMP TQELGAPATRKFDMEAWMPAK-----KFWG EISS SASN	353
<i>Anopheles_gambiae_SerRS2a</i>	LF DQLGLHFLLDMPPELGPAYRKYDIEAWMPGR-----AMYG EISS CSD	346
<i>Homo_sapiens_SerRS2</i>	ILTELGLHFRVLDMP TQELGLPAYRKF D IEAWMPGR-----GRFG EVTS SASN	424
<i>Bos_taurus_SerRS2</i>	ILTELGLHFRVLDMP TQELGLPAYRKF D IEAWMPGR-----GRFG EVTS SASN	419
<i>Danio_rerio_SerRS2</i>	IFSSLQLHYRVLDMP TQELGPPAYRKF D IEAWMPGR-----GSFG EISS SASN	451
<i>Xenopus_tropicalus_SerRS2</i>	IFSELGLHFVKVLEMP TQELGLPAYRKYDIEAWMPGR-----GKYG EISS TSN	498
<i>Caenorhabditis_elegans_SerRS2</i>	TFQALGVHCRQLEMPSEELGASAARKFDIEAWMPGR-----KLYG EVSS SASN	363
<i>Trichinella_spiralis_SerRS2</i>	LFSELNLHFNVLEMPTEELGASAFRKFDIE SWFPGR-----DCYG EISS SASN	344

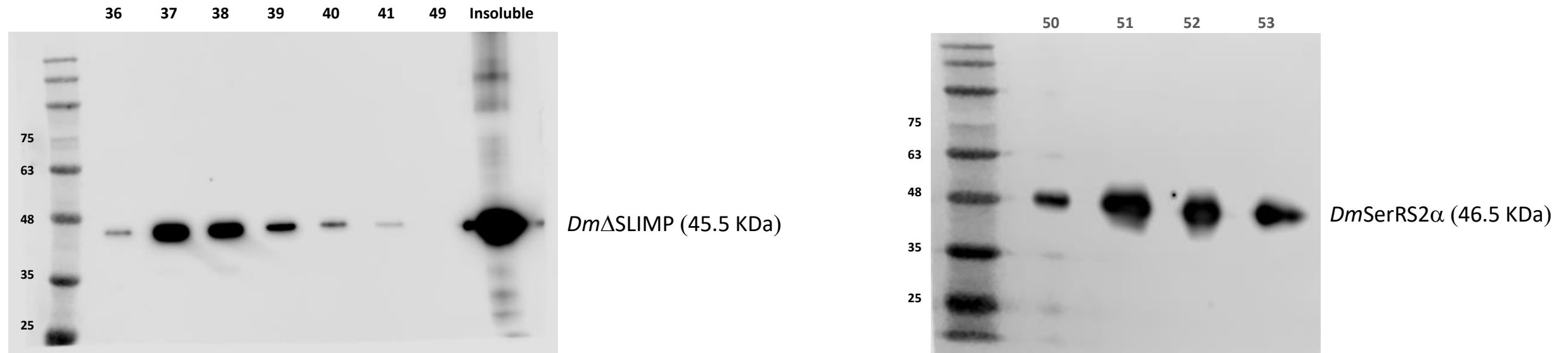
Supplementary Figure 2

<i>Drosophila_melanogaster_SLIMP</i>	YGDFVSKRILFSTRRE-----KHYDFLHMV-----GGPVL	421
<i>Acanthaster_planci_SLIMP</i>	CTDYISRVRKMRYPALPSQK-----AAQSRQRNFPHTV-----HCTAL	495
<i>Strongylocentrotus_purpuratus_SLIMP</i>	CTDFISRRLKIRYPTNPRES-----AAQSRKRSFGHTI-----HGTAL	479
<i>Triboleum_casteum_SLIMP</i>	YGDYISKRLLFTHVTKP-----PAFQYIILS-----GATHL	411
<i>Stegodyphus_mimosarum_SLIMP</i>	RNNFLSKRLLHITYGIQH-----SVEGYCSIV-----DGIVV	443
<i>Ramazzottius_varieronatus_SLIMP</i>	HDDFVSKRRLRCHVDKP-----EQNKFLRFF-----TGSL	505
<i>Pediculus_humanus_SLIMP</i>	SDKYICQRLLMYSYQMADK-----DDKSRFMKLV-----SGTIV	434
<i>Octopus_bimaculoides_SLIMP</i>	TGTYIGERLMISSSTQ-----D--KVAHVV-----HADLL	467
<i>Limulus_polyphemus_SLIMP</i>	NGEYISKRLMMRHCSKG-----NPNGLFLHLI-----HGTVV	447
<i>Lottia_gigantea_SLIMP</i>	CDDFVSRRLMCLHDSKK-----EGSMFVHMI-----GGEVI	458
<i>Hyalella_azteca_SLIMP</i>	IGDYISKRLLMMYVKDGRASSTSPRDGRAATGAVERLGFLQAV-----YAQAM	679
<i>Daphnia_pulex_SLIMP</i>	IGDYISRRLSIYG-----PNKEWPGFV-----TSQAL	345
<i>Capitella_teleta_SLIMP</i>	RSDFISRRLMITNSSNARGF-----KEASPPFLI-----HATLT	482
<i>Anopheles_gambiae_SLIMP</i>	YTDFLSKRIAFIYHEG-----KVQRFPHVI-----AGTAM	401
<i>Drosophila_melanogaster_SerRS2a</i>	CTDYQARRLGIRYRRSA-----DGQILHAHTI-----NGTAT	365
<i>Acanthaster_planci_SRS2a</i>	CTDYQSRRLRIKYRSK-----EGDLRHAYTL-----NGTAC	442
<i>Strongylocentrotus_purpuratus_SerRS2a</i>	CTDFQSRRLHIQYKPSF-----ESQAKYAHTL-----NGTAC	462
<i>Triboleum_casteum_SerRS2a</i>	CLDYQARRLGIRTHD-----GFVHTL-----NGTAC	369
<i>Stegodyphus_mimosarum_SerRS2a</i>	CTDYQSRRLAIKYYNPL-----SNETKFCHTV-----NGTAC	330
<i>Ramazzottius_varieronatus_SerRS2a</i>	CKDFQSSRLNITYQKKP-----QETKDTLPFVHTV-----NGTAC	273
<i>Pediculus_humanus_SerRS2a</i>	CIDYQSRRLNIKYRDE-----DKLFHVHTV-----NGTAC	382
<i>Octopus_bimaculoides_SerRS2</i>	CTDYQSRRLGAKYK-----NKADQLTYVHTI-----NGTAC	409
<i>Limulus_polyphemus_SerRS2a</i>	CTDYQSRRLHIKYETQS-----PDGRRVLKHVHTV-----NGTAC	399
<i>Lottia_gigantea_SerRS2a</i>	CTDYQSRRLGIKYT-----DINGNYRHAHTV-----NGTAC	408
<i>Hyalella_azteca_SerRS2a</i>	CTSQAARLGASYV-----NKKGQRKLVHTV-----NGTAV	388
<i>Daphnia_pulex_SerRS2a</i>	CTDYQARRLNIQSI-----DSSDTRRFVHTV-----NGTAC	376
<i>Capitella_teleta_SerRS2a</i>	CTDFQSRRLNIKYR-----NSNGELGHCHTV-----NGTGC	384
<i>Anopheles_gambiae_SerRS2a</i>	CTDYQARRLGIRVRTGQ-----EE--TFAHTV-----NGTAC	376
<i>Homo_sapiens_SerRS2</i>	CTDFQSRRLHIMFQ-----TEAGELQFAHTV-----NATAC	455
<i>Bos_taurus_SerRS2</i>	CTDFQSRRLHIMFQ-----TEAGELQFAHTV-----NATGC	450
<i>Danio_rerio_SerRS2</i>	CTDYQSRRLDIRYE-----GEDGKLQYAHTV-----NATAC	482
<i>Xenopus_tropicalus_SerRS2</i>	CTDYQSRRLNIMYQ-----RQDGLRHAHTV-----NGTAC	529
<i>Caenorhabditis_elegans_SerRS2</i>	CTDFQSRRLGIKYK-----TADGTTKYAHTC-----NGTAL	394
<i>Trichinella_spiralis_SerRS2</i>	CTDYQSRRLLTKYK-----SSDGNLKFVHTVNKSIKLAQNVNGTAC	386

Supplementary Figure 2

Drosophila_melanogaster_SLIMP	YTS R LIAALVEHGVRLE-----DCKLLGSI S QKPVHQOD-LQQ-----F	459
Acanthaster_planci_SLIMP	DTS V ILAALLPSVHQQL-PEV--LK-----PY----LPQAI P K-----	526
Strongylocentrotus_purpuratus_SLIMP	KTS V LLSAML D YGALDL-KEA--KS-----	501
Triboleum_casteum_SLIMP	KSP--PNCST S R L PQTA-PIY--NI--RHP V VLQAHVRE P MTRIT P LQ N -----ATYAYL	459
Stegodyphus_mimosarum_SLIMP	NIP V LIACIMEN F QTKN-YGF--EI--PP--VLKEIM D NLYA-----	478
Ramazzottius_varieronatus_SLIMP	DLT P FVACCIDGSEGGI-FEH--IRRNPACVL-----	534
Pediculus_humanus_SLIMP	DVP K LLGCLIEEQEDED-KKF--PI--PDFLVI-----	462
Octopus_bimaculoides_SLIMP	DVS R MLAFLIEHGKIGE-NEL--LQ--LP-----RLKLD A IPELIP-----	503
Limulus_polyphemus_SLIMP	SIP T LIAAI I ENCQ T SD-CSF--VV--PK--VLQ S Y M LS-----	479
Lottia_gigantea_SLIMP	NIT N LLAL M LEYDLP-----LIS N K-----	478
Hyalella_azteca_SLIMP	DV T RVLAVAVENLQDAQ-GEA--NL--GK--LIDK L SS-----	710
Daphnia_pulex_SLIMP	SVP K LLYCYLKN-----	357
Capitella_teleta_SLIMP	SIQ P LLAAI L ENSQSKD-GRI--CL--PG-----VY-----	508
Anopheles_gambiae_SLIMP	SSL E L I KLL L NGITMQ-----DLPMLN T LENE-----	429
Drosophila_melanogaster_SerRS2a	AIP R LLIALLESYQKED-G-I--EI--PA--VLR P FM D NQELITR N KRI-----PETK L V	412
Acanthaster_planci_SRS2a	AV P R V LLTLLECNQERD-GSV--SI--PK--ALQ P Y M NGK T VITK P PGG-----FLH H T	489
Strongylocentrotus_purpuratus_SerRS2a	AV P R L IAI L ENNQQRD-GSI--TI--PE--PLQ P Y M DGMREIT R PASG-----KLH F T	509
Triboleum_casteum_SerRS2a	AV P R L LIALVEMGQ R KN-GTV--GL--PE--VLW P Y M GGK Q LIG K Q S V-----PDL R LI	417
Stegodyphus_mimosarum_SerRS2a	AIP R LLMTIFENFQ N LD-GSI--TV--PA--PLQ K Y M GK D VI-KEK F S-----E-KI--L	374
Ramazzottius_varieronatus_SerRS2a	AV P R M IAI L EQ N QLSN-GII--TI--PE--V L RRY F DN A VTLSK P TGA-----T-GLY W R	321
Pediculus_humanus_SerRS2a	AIP R MLMALFETHQ Q Q N -GNI--LL--PK--PLR P FLNGKEVIQ V Q N SI-----PKL I SR	430
Octopus_bimaculoides_SerRS2	AV P R L VM A I I ENNQL P N-GSV--LL--PQ--VLH P Y F Q G SL L TVE P K-----SLN H W K	455
Limulus_polyphemus_SerRS2a	AIP R MLIAI L ENFQ T KD-GDI--RI--PD--PLI P H M RGLAVIK N RR T K-----D-KI Y W T	447
Lottia_gigantea_SerRS2a	AIP R MIAI L EQ F Q T KD-WNV--NI--PE--VLQ P Y M NN K T Q L T GP Q NK-----H-PT K W I	456
Hyalella_azteca_SerRS2a	AV P R C II A LCETHQ E AT-GRRAL Q L--PA--FLG L AP A HP Q Q F Q P NET S VDTG H E H NA F L	443
Daphnia_pulex_SerRS2a	AV P R T LIALLE T HQ Q SN-GEV--II--PA--VLQ P Y L NG M Q R LR N PT Q P-----F-K M K W I	424
Capitella_teleta_SerRS2a	AV P R V LS L I E NNQ Q SD-GTV--VI--PT--AL R S F M A G Q QL I S A SE D V-----L P N T H W I	433
Anopheles_gambiae_SerRS2a	AIP R MLIALLENFQ N ED-YTI--TV--PE--V L RRY M GGK Q LL R RR R K V L-----PE L K L T	424
Homo_sapiens_SerRS2	AV P R L LIALLES N Q Q KD-GSV--LV--PP--ALQ S Y L GT D RIT A PT H V-----P L Q Y I	501
Bos_taurus_SerRS2	AV P R L LIALLESY Q Q K D-GSV--LV--PP--ALQ P Y L GT D RIT T P T H V -----P L Q Y I	496
Danio_rerio_SerRS2	AIP R T I IAI L E T Y Q T K K-GTV--Q V --PE--VLQ Q Y I G M E V I E K P K Y T-----P I K Y I	528
Xenopus_tropicalus_SerRS2	AV P R L LIAI L ES N Q R KD-GAV--LI--PE--VLQ P Y M GT D VIE K PR Y I-----P A R Y I	575
Caenorhabditis_elegans_SerRS2	AS T R A LISV L E T FQ N DK K GLG--EL--PE--PLR K R V K Q R G S-----P L R F Q	435
Trichinella_spiralis_SerRS2	ALS R T L I A MLEQ F Q C KN-RQ V --NI--PK--F L LD V Y N V E M K R Q Y A E R K-----P L S L L	433

Supplementary Figure 3



Western blot analyses of purified 6His-tagged *Dm*ΔSLIMP and *Dm*SerRS2α using an Anti-His antibody. These proteins were used to attempt the reconstitution of the *Dm*SerRS2α/ *Dm*ΔSLIMP complex.