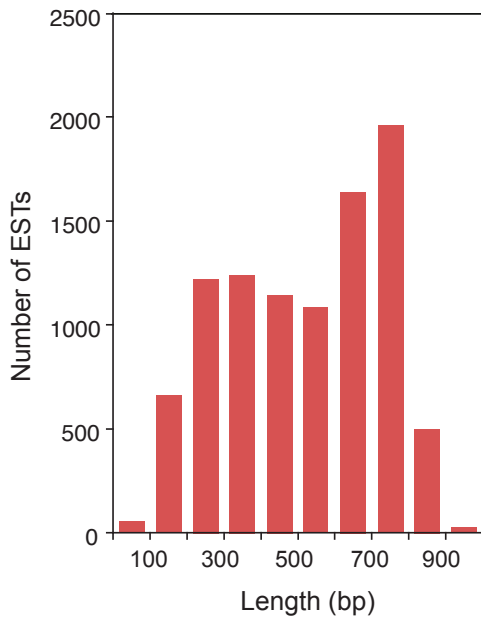


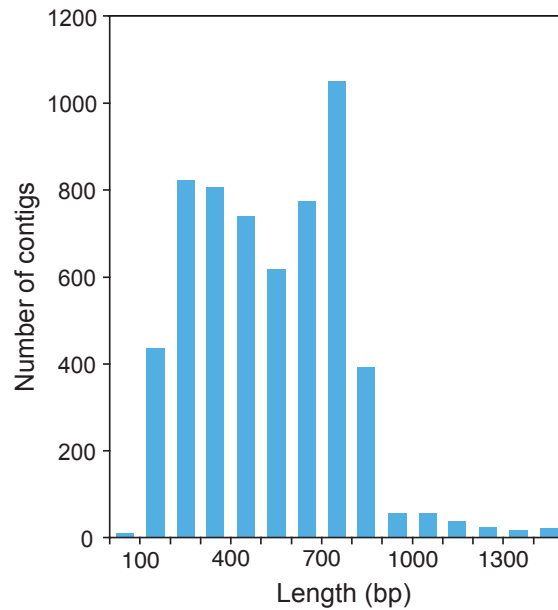
Additional figures

Figure S1. Distribution of the length of EST sequence (A) and length of contiged cluster of transcripts (B). Distribution of the size of EST clusters (C). This values correspond to the number of transcripts encoding for the same protein and are supposed to be related to gene expression level.

A Distribution of EST length



B Distribution of contig length



C Distribution of number of ESTs per cluster

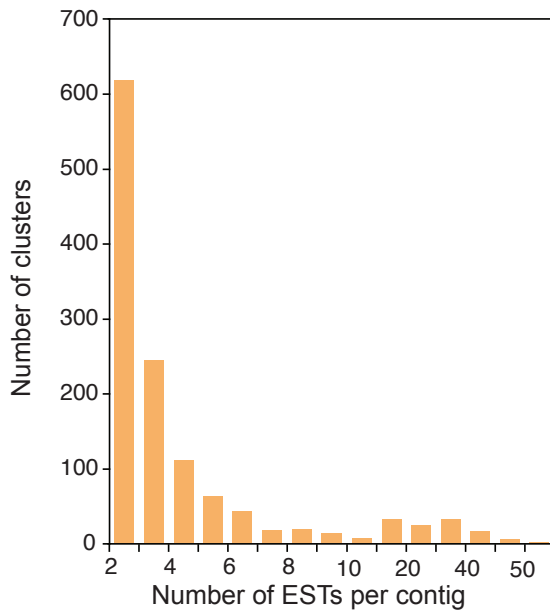
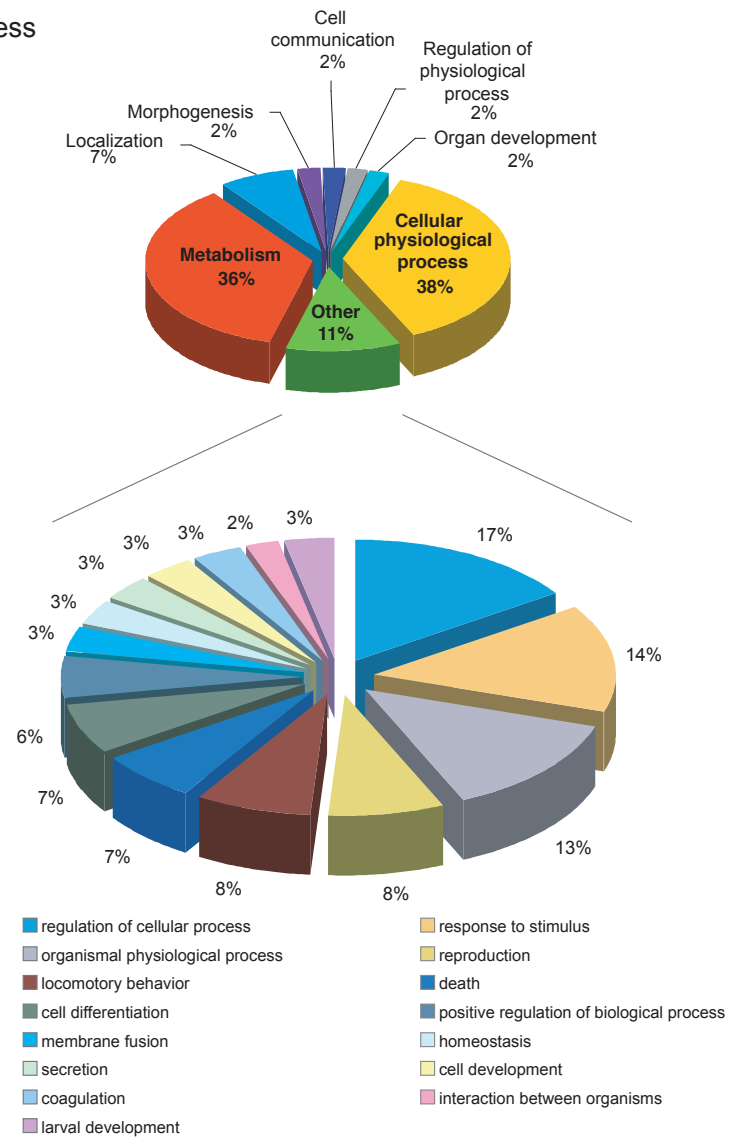


Figure S2. Summary of gene ontology annotation with plotting of the frequency of functional classes among transcript.

A Biological Process



B Molecular Function

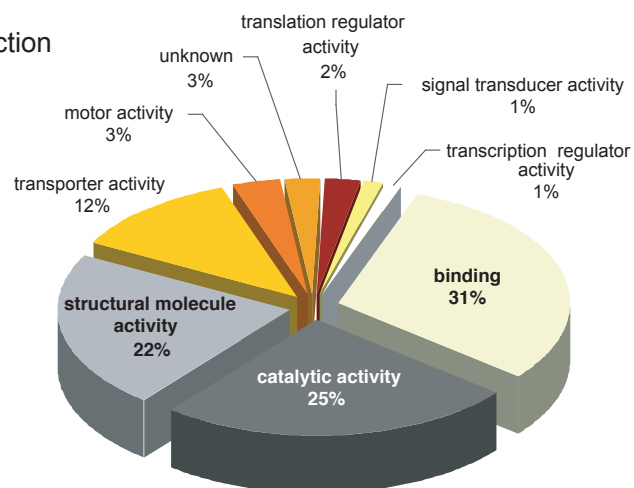


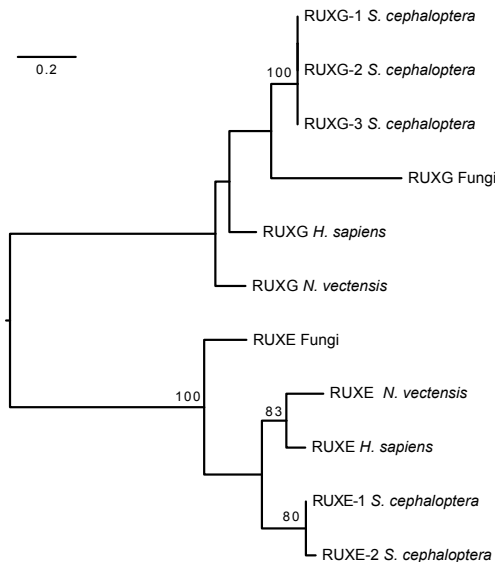
Figure S3. Alignment of Guanidinoacetate N-methyltransferase enzyme (GAMT) retrieved from selected taxa. This gene was not found in complete genomes of several lophotrochozoans (*Capitella capitata*, *Helobdella robusta*, *Lottia gigantea*, *Aplysia californica*, *Schmidtea mediterranea* and *Schistosoma mansoni*) nor in ecdysozoan protostomes (nematodes and insects) that are strongly sampled at the molecular level. The conserved positions are shown in red and the similar ones in blue.

Alignment of GMT sequences from representative organisms

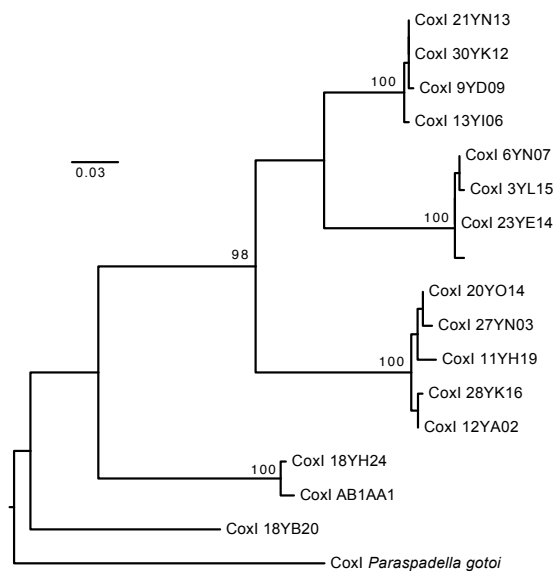
| | | |
|-----------------|-----|--|
| Viridiplantae | 1 | WEKPLMEAHAKAICLN GGH ----- IL NVGFG MGL VD TAI QRYNPV-K HTIIE AHPE VYK |
| Fungi | 1 | WEDE IM QKS AD LLVSRADKESDGPV V LN V GF LGI IDTYLQSKKP-SKH YIC E AHPD VLE |
| Porifera | 1 | WETPY MH K LAT I AAG NGGR----- VLE IGF G L AI AAT KIQ SHNNV SE H VII E CN ED VFH |
| Cnidaria | 1 | WETPY MH Q LAD I AC SK GG R----- VLE IGF G M AI A AS RM ET FK-L A EH VIV E CN ED VFK |
| Acoela | 1 | WETP FM HE LAR V SML NGGA----- VLE V G F G M GI SAT GI Q Y GP-TR HLI E FN Q AV ID |
| Chaetognatha | 1 | WETPY MH SL AR V AR SH GG R----- VLE L G F L A IA ATE IE K G -NL EE H VIV E CN EG VFK |
| Cephalochordata | 1 | WETPY MH K LQ V AS CK GG R----- VLE IGF G M AI A G SE IER Q-D IE EH VII E CN D GV FE |
| Craniata | 1 | WETPY MH SL ST V A ASK GG R----- VLE IGF G M AI AAT KI ES Y -P IE EH VII E CN D GV FA |
| Urochordata | 1 | WETPY MH LL AT I AS SK GG K----- VLE IGF G M AI A AS K I Q SR -A ISE H VII E CN A GV FD |
| Hemichorda | 1 | WETPY MH AL AK V AS SK GG K----- VLE IGF G M AI AAT KI E EY -D IK EH VII E CN D GV FK |
| Echinodermata | 1 | WETPY MH E LAK V AS SK GG C----- VLE IGF L A IA AAT KIQ E APT VT EH V II E CN D GV FD |
| Viridiplantae | 54 | RM IES G W G EKEN V K I V F GR WQ D V L DK L DD N-- S FD G I F FD TY GE Y ED----- L RF H Q H |
| Fungi | 60 | K ME KD GW MD K P GV T VL V GR WQ D TP GL L S Q GV Y FD G MY Y DT F SE N Y S D----- L V D FD H |
| Porifera | 55 | E LL K W AA ES PR P V TP LQ L WQ D V VP TL PD N -- S FD G IL Y DT Y PL S E E T WH TH Q F E F I KA H |
| Cnidaria | 54 | G LE K F AV D AP N K V T PL K L WQ D V I PT L ED G-- S FD G IM Y DT Y PL S ED T WH TH Q F E F I Q K H |
| Acoela | 54 | K EG K S F AA A HP S VE I L AG D W K D VM G SI AD N-- S L D GV L Y D TY P M N K Q E Q HL H Q F FI Q LA |
| Chaetognatha | 54 | R LE A W A KE Q PN K V T PL K L W ED V V H TL AD N-- S FD G IL Y DT Y PL T E K EW HT H Q F A F I V G H |
| Cephalochordata | 54 | R LE K W A KE Q K H I V PL K GM WQ D V V AT LP D G-- H FD G IL Y DT Y PL S E A EW HT H Q F D FI G K H |
| Craniata | 54 | R LE N W A K S Q PH K V V PL K L W EN V V ST L PD N -- H FD G IL Y DT Y PL S ED T WH TH Q F D FI G H |
| Urochordata | 54 | R L Q T W GD Q PH T V V PL K GM W E V VP I LP S G-- H FD G IL Y DT Y PL S E D WH TH Q F A F I K N H |
| Hemichorda | 54 | R LE E W A KK Q PH K I T PL K GM W ED V SP T L ED N-- Q FD G IL Y DT Y PL S E Q D WH TH Q F N FI K Q H |
| Echinodermata | 55 | R LE E WR K T Q PH T V T PL K GM W ED V VP TL PD N -- K FD G IL Y DT Y PL S D A T WH TH Q F E F I K N H |
| Viridiplantae | 107 | L PR LL K P D GV Y S Y F NG F CG S NA FF H V Y C N----- L V-T LE I EN L G F ST Q L I |
| Fungi | 115 | V VG LL A P T GV F S F FN GL G AD R Q V C Y D V Y K N----- V VE D L Q E Y GL N VE Y Q V I K V |
| Porifera | 113 | A Y R LL K P G GV L T Y C N L T SW G EL M K S S F DN----- I D K M F Q E T Q V S H L I D A G F R R E N I |
| Cnidaria | 112 | A S R LL K P G GV L T Y C N L T SW G E F M K G Y DD----- I E K M F V E T Q I P K L I E A G F K R E N I |
| Acoela | 112 | R P K L R - T GG V L T Y C N L T S L G L L Y S K Y E K EL G AD K D K I W E A I W R E T Q V P N L L K A G W A D E L |
| Chaetognatha | 112 | A K R LL K P G GV L T Y C N L T SW G E Y M K K E F K G Q ----- S L N D M F E ST Q M P R L L D A G F K R E N I |
| Cephalochordata | 112 | A C R LL K P G GV L S Y C N L T SW G D L L K G Y DN----- I E T M F K E T Q I S H L E E A G F K K E N I |
| Craniata | 112 | A N R LL K S G GV L T Y C N L T SW G EL L K T K Y DN----- I E K M F E E T Q V P H L L Q A G F K K E K I |
| Urochordata | 112 | A K R LL K P G GV L T Y C N L T SW G EL M K N K Y TD----- I E Q M F Q E T Q V P X L V E A G F M K N K I |
| Hemichorda | 112 | A F R LL K P G GV L T Y C N L T SW G EL L K G K F DD----- I E K M F Q E T Q V S H L E D A G F K K E N I |
| Echinodermata | 113 | A F R LL K P G GV L T Y C N L T SW G E F M K T K Y TD ----- I R Q M F Q E T Q V P S L C E A G F K K E N I |
| Viridiplantae | 153 | PL P V K D CL G D E V W E G V K Q Y W Q L D T Y Y L P V C Q F S - |
| Fungi | 165 | N K D V T G A D G - H W D G I K R R Y W V E D F Y L P V C T F -- |
| Porifera | 165 | K T E V M P I ----- S P P S E C R Y Y S Y D K M I A P T I T K -- |
| Cnidaria | 164 | S W K V T D I ----- V P E K E C R Y Y S Y S K M I A P T V V K S- |
| Acoela | 171 | A Y H I F T L P Q D A I E A R G N C E Y Y S H A T C L V P L L T K K R |
| Chaetognatha | 166 | S T E L M K I ----- E P E P G C R Y Y E H E Q M I T P T I I K A- |
| Cephalochordata | 164 | S W E C I T N ----- Q P P K D C K Y Y Q F P L M L A P K C I K A- |
| Craniata | 164 | S T T T M D I ----- A P P T E C K Y Y S F N K M I T P T I V K D- |
| Urochordata | 164 | T T Q V I D N ----- K P P Q D C K Y Y S T S K M I G P T I I N E- |
| Hemichorda | 164 | S T E V M D I ----- E P E K E C K Y Y S F R K M I T P T I I K -- |
| Echinodermata | 165 | S T A L L P I ----- S P P K E C R Y Y A F N H M I T P T I I K A- |

Figure S4. Neighbor-joining trees of selected strongly diverging genes from nuclear and mitochondrial genomes. (A) Tree from aminoacid alignment of RUX genes showing the ancient RUX-E and RUX-G that have both undergone subsequent duplication within the chaetognath lineage. (B,C) Relationships between the highly polymorphic sequences of mitochondrial genes Cytochrome Oxidase I (B) and III (C). Bootstrap support are indicated for selected nodes.

A RUX Genes



B CoxI (Mitochondrial)



C CoxIII (Mitochondrial)

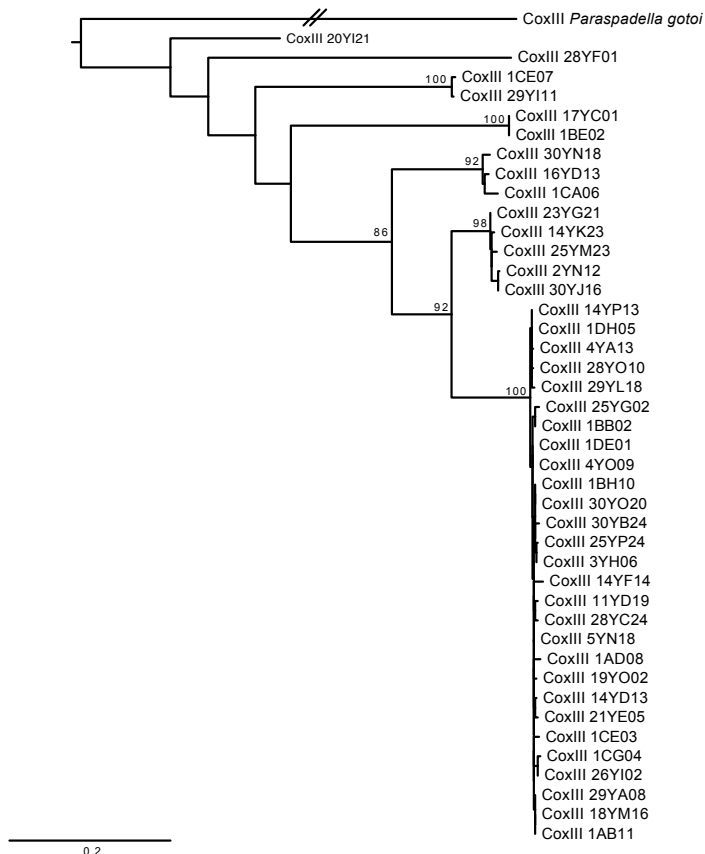


Figure S5. Transition versus transversion ratios for the 5 targeted genes. Pairwise divergence is computed assuming a kimura 2 parameters model.

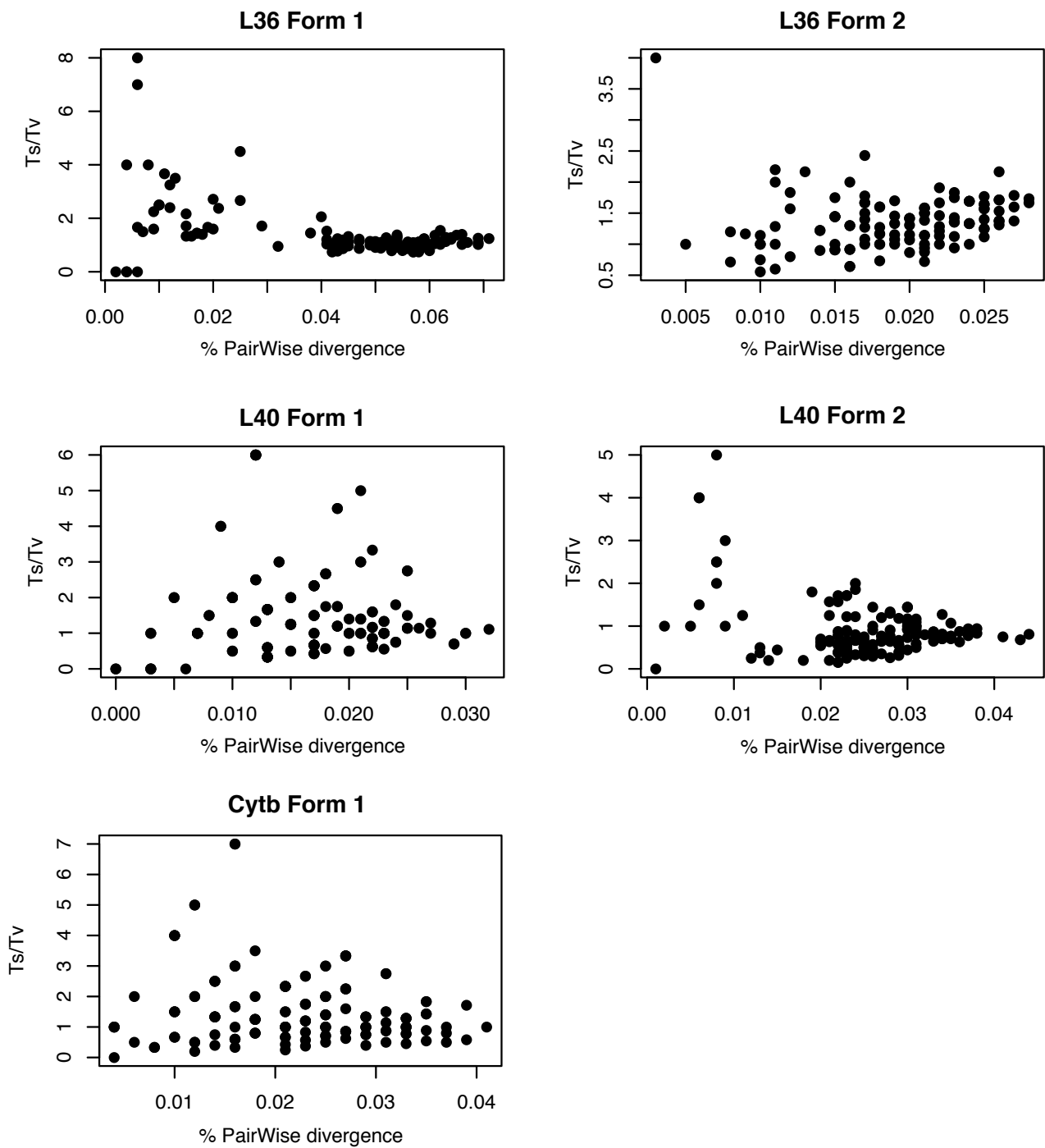


Figure S6. Mismatch analysis with distribution of pairwise divergence (case of cyt b, A) as well as Tajima and Fu & Li testing (B).

