

Title: Non-collinear Hox gene expression in bivalves and the evolution of morphological novelties in mollusks

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Supplementary Data 1. Examining Convergence of Bayesian Phylogenetic Analysis. A and B: Computed likelihoods for the selected model parameters. C and D: Topological distance for the resulting tree topologies from the focal tree. All above as function of the number of sampled generations during the phylogenetic analysis (after a burn-in of 25%). E: Cumulative change in split frequencies as a function of chain length. F: Split frequency comparisons showing convergence on topology, supporting values, and posterior probabilities for all clades.

Supplementary Data 2. Raw alignment of homeodomains and flanking regions of both directions without trimming of gene candidates and ortholog sequences. Columns are colored following the ClustalX color scheme based on a minimum percentage identity threshold (>30%). The alignment conservation annotation represented by the histograms is the quantitative numerical index that reflects the conservation of the amino acids' physico-chemical properties for each column of the alignment.

Supplementary Data 3. Phylogeny of *Dreissena rostriformis* Hox and ParaHox genes analysed in this study. Phylogenetic tree built from amino acid sequences of candidate orthologs produced with Bayesian inference. Branch support values are indicated on each major branch as posterior probability values. Scale bar in the lower left corner shows amino acid substitution rate per site. Red arrowheads mark sequences from *Dreissena rostriformis*.

Supplementary Data 4. Phylogeny of amino acid sequences of candidate orthologs inferred by maximum likelihood. Bootstrap support values are indicated on each major branch. Scale bar in the lower left corner shows amino acid substitution rate per site. Arrows point at candidate sequences from *Dreissena rostriformis*.

Supplementary Data 5. Relative expression levels (transcripts per kilobase million, TPM) of *Dreissena rostriformis* Hox genes. A: Histogram grouping individual expression levels of all detected genes. B-N: Individual quantities for each gene through developmental time. Raw values are found in Supplementary Table 1.

Supplementary Data 6. General Feature Format (GFF3) file providing information for exonic regions and coding region sequences (CDS) from all identified Hox, ParaHox, and non-Hox genes found on the respective scaffolds in the genome of *Dreissena rostriformis*.

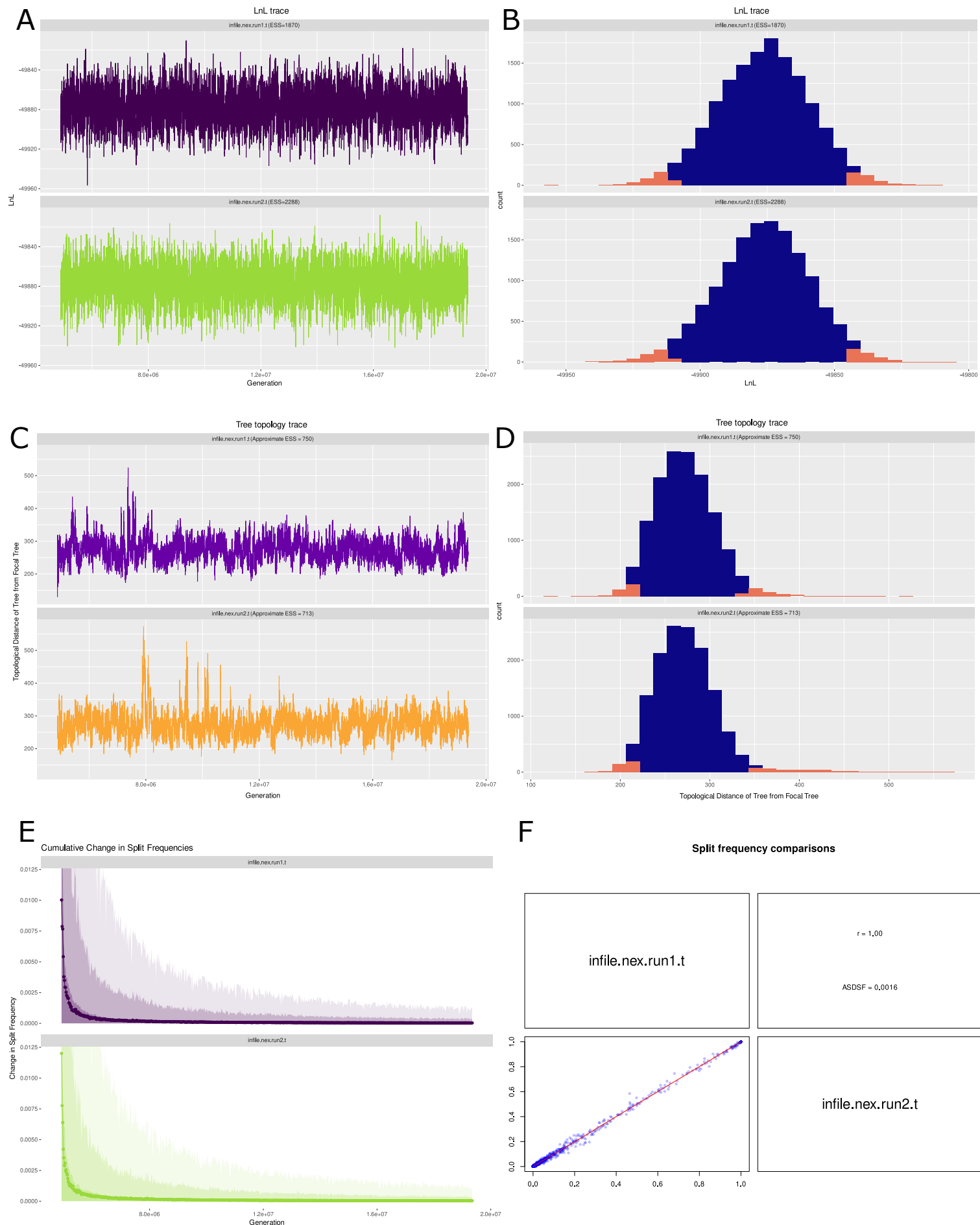
Supplementary Table 1. Raw data of relative expression levels (transcripts per kilobase million, TPM) of *Dreissena rostriformis* Hox genes throughout development.

Supplementary Table 2. List of primers for each gene used for cloning. Forward and reverse primers used for amplifying each gene by PCR are indicated.

Supplementary Table 3. Orthologs listed by taxonomic classification, code names, and accession numbers used for the phylogenetic reconstructions in this study.

Supplementary Table 4. Scaffold characteristics of the genome assembly. Genes found in each scaffold and the corresponding sizes are indicated.

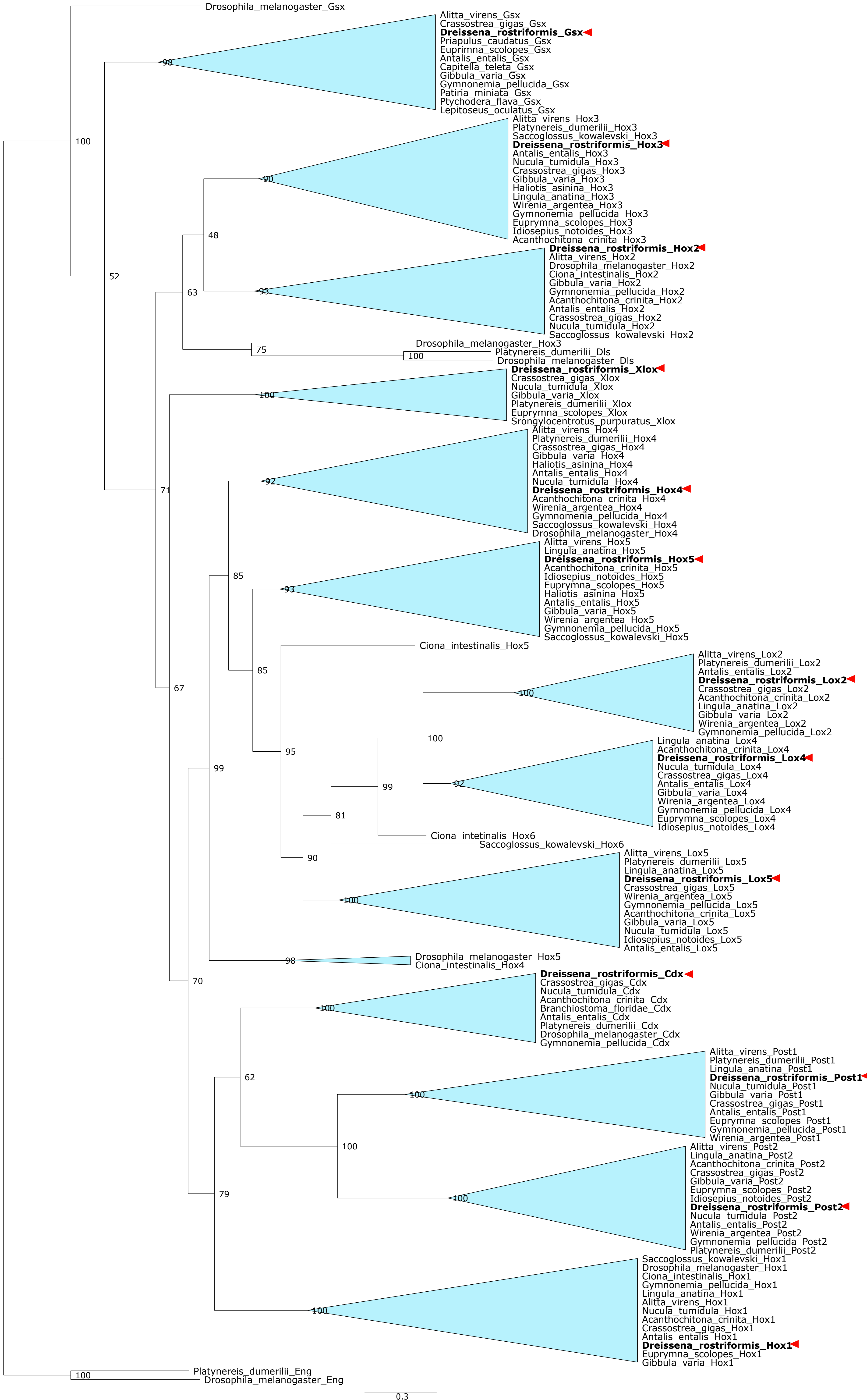
Supplementary Data 1

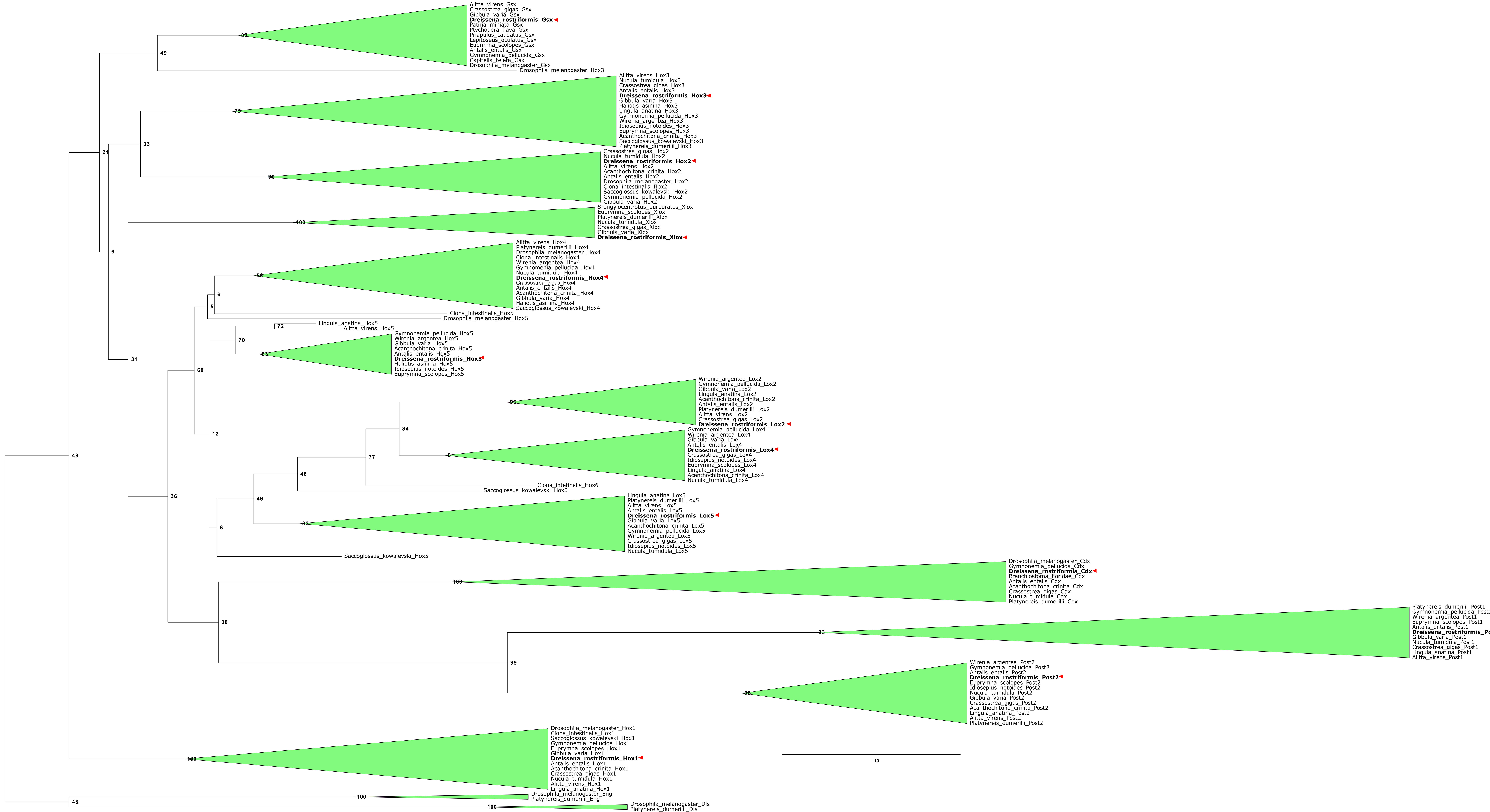


Age Group	Number of People
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15-24	20
25-34	30
35-44	40
45-54	50
55-64	60
65+	70

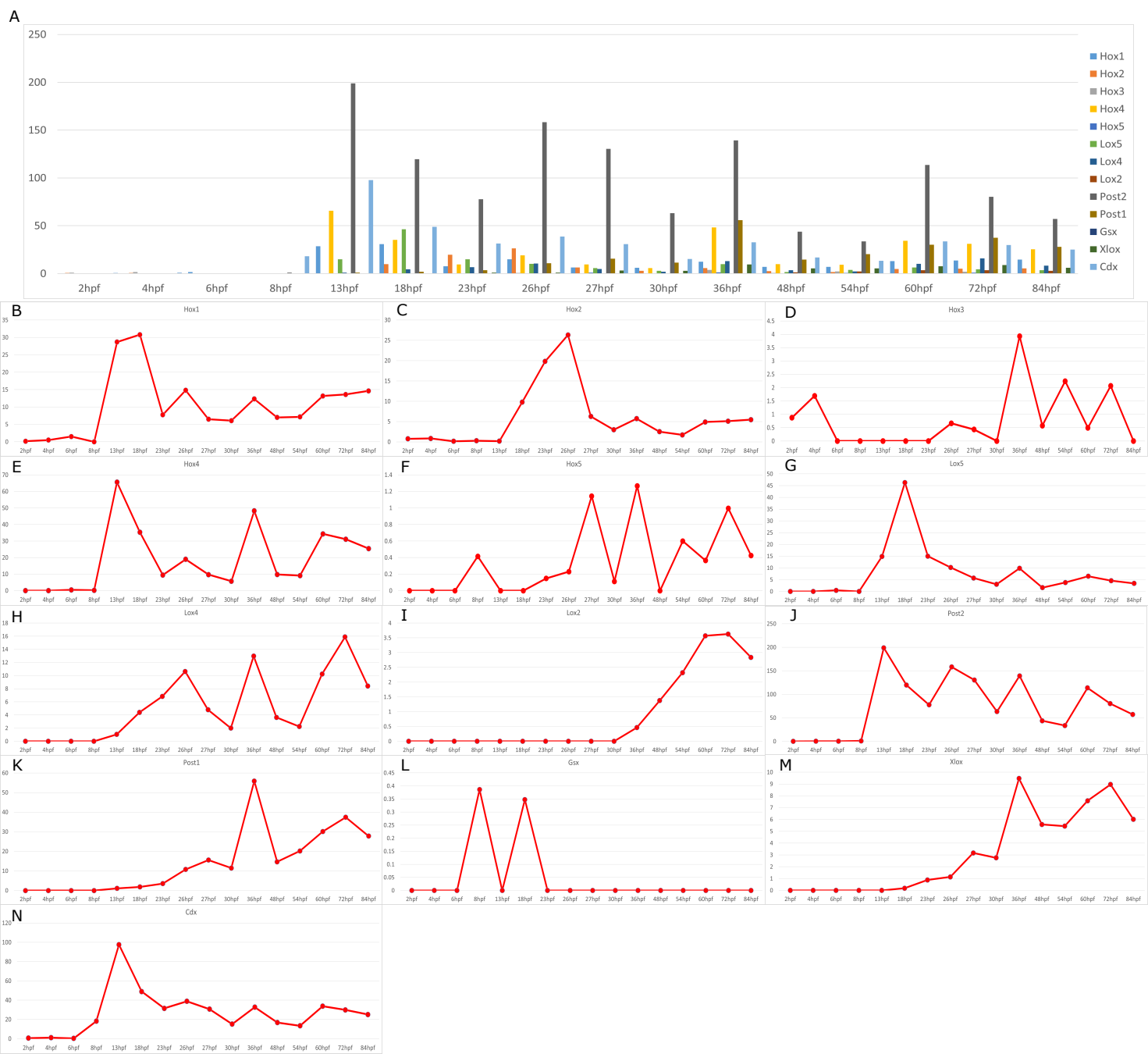
[illegible]

Supplementary Data 3





Supplementary Data 5



Supplementary Data 6

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scaffold1633	transdecoder	CDS	71195	71287	.	+	0	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	73198	73290	.	+	.	ID=Gene.35389:exon5;Parent=Gene.35389
scaffold1633	transdecoder	CDS	73198	73290	.	+	0	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	73886	74053	.	+	.	ID=Gene.35389:exon6;Parent=Gene.35389
scaffold1633	transdecoder	CDS	73886	74053	.	+	0	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	75018	75081	.	+	.	ID=Gene.35389:exon7;Parent=Gene.35389
scaffold1633	transdecoder	CDS	75018	75081	.	+	0	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	75554	75601	.	+	.	ID=Gene.35389:exon8;Parent=Gene.35389
scaffold1633	transdecoder	CDS	75554	75601	.	+	2	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	75911	76006	.	+	.	ID=Gene.35389:exon9;Parent=Gene.35389
scaffold1633	transdecoder	CDS	75911	76006	.	+	2	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	78550	78636	.	+	.	ID=Gene.35389:exon10;Parent=Gene.35389
scaffold1633	transdecoder	CDS	78550	78636	.	+	2	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	89972	90024	.	+	.	ID=Gene.35389:exon11;Parent=Gene.35389
scaffold1633	transdecoder	CDS	89972	90024	.	+	2	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	90545	90670	.	+	.	ID=Gene.35389:exon12;Parent=Gene.35389
scaffold1633	transdecoder	CDS	90545	90670	.	+	0	ID=cds.Gene.35389;Parent=Gene.35389

scaffold1633	transdecoder	exon	91028	91091	.	+	.	ID=Gene.35389:exon13;Parent=Gene.35389
scaffold1633	transdecoder	CDS	91028	91091	.	+	0	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	92004	92424	.	+	.	ID=Gene.35389:exon14;Parent=Gene.35389
scaffold1633	transdecoder	CDS	92004	92424	.	+	2	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	92469	92806	.	+	.	ID=Gene.35389:exon15;Parent=Gene.35389
scaffold1633	transdecoder	CDS	92469	92806	.	+	1	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	92945	93058	.	+	.	ID=Gene.35389:exon16;Parent=Gene.35389
scaffold1633	transdecoder	CDS	92945	93058	.	+	2	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	93331	93587	.	+	.	ID=Gene.35389:exon17;Parent=Gene.35389
scaffold1633	transdecoder	CDS	93331	93587	.	+	2	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	exon	96796	97155	.	+	.	ID=Gene.35389:exon18;Parent=Gene.35389
scaffold1633	transdecoder	CDS	96796	97155	.	+	0	ID=cds.Gene.35389;Parent=Gene.35389
scaffold1633	transdecoder	gene	119547	127110	.	-	.	ID=22880;Name=ORF
scaffold1633	transdecoder	mRNA	119547	127110	.	-	.	ID=Gene.35372;Parent=22880;Name=ORF
scaffold1633	transdecoder	exon	127014	127110	.	-	.	ID=Gene.35372:exon1;Parent=Gene.35372
scaffold1633	transdecoder	CDS	127014	127110	.	-	0	ID=cds.Gene.35372;Parent=Gene.35372
scaffold1633	transdecoder	exon	125833	126138	.	-	.	ID=Gene.35372:exon2;Parent=Gene.35372
scaffold1633	transdecoder	CDS	125833	126138	.	-	2	ID=cds.Gene.35372;Parent=Gene.35372
scaffold1633	transdecoder	exon	124913	125042	.	-	.	ID=Gene.35372:exon3;Parent=Gene.35372
scaffold1633	transdecoder	CDS	124913	125042	.	-	2	ID=cds.Gene.35372;Parent=Gene.35372
scaffold1633	transdecoder	exon	124151	124620	.	-	.	ID=Gene.35372:exon4;Parent=Gene.35372
scaffold1633	transdecoder	CDS	124151	124620	.	-	1	ID=cds.Gene.35372;Parent=Gene.35372
scaffold1633	transdecoder	exon	120534	120679	.	-	.	ID=Gene.35372:exon5;Parent=Gene.35372
scaffold1633	transdecoder	CDS	120534	120679	.	-	2	ID=cds.Gene.35372;Parent=Gene.35372
scaffold1633	transdecoder	exon	119547	119978	.	-	.	ID=Gene.35372:exon6;Parent=Gene.35372
scaffold1633	transdecoder	CDS	119547	119978	.	-	0	ID=cds.Gene.35372;Parent=Gene.35372
scaffold1633	transdecoder	gene	136037	153238	.	-	.	ID=22882;Name=ORF
scaffold1633	transdecoder	mRNA	136037	153238	.	-	.	ID=Gene.35387;Parent=22882;Name=ORF
scaffold1633	transdecoder	exon	153080	153238	.	-	.	ID=Gene.35387:exon1;Parent=Gene.35387
scaffold1633	transdecoder	CDS	153080	153238	.	-	0	ID=cds.Gene.35387;Parent=Gene.35387
scaffold1633	transdecoder	exon	151166	151244	.	-	.	ID=Gene.35387:exon2;Parent=Gene.35387
scaffold1633	transdecoder	CDS	151166	151244	.	-	0	ID=cds.Gene.35387;Parent=Gene.35387
scaffold1633	transdecoder	exon	149540	149680	.	-	.	ID=Gene.35387:exon3;Parent=Gene.35387
scaffold1633	transdecoder	CDS	149540	149680	.	-	2	ID=cds.Gene.35387;Parent=Gene.35387
scaffold1633	transdecoder	exon	149122	149206	.	-	.	ID=Gene.35387:exon4;Parent=Gene.35387
scaffold1633	transdecoder	CDS	149122	149206	.	-	2	ID=cds.Gene.35387;Parent=Gene.35387
scaffold1633	transdecoder	exon	147966	148076	.	-	.	ID=Gene.35387:exon5;Parent=Gene.35387
scaffold1633	transdecoder	CDS	147966	148076	.	-	1	ID=cds.Gene.35387;Parent=Gene.35387
scaffold1633	transdecoder	exon	143898	144000	.	-	.	ID=Gene.35387:exon6;Parent=Gene.35387
scaffold1633	transdecoder	CDS	143898	144000	.	-	1	ID=cds.Gene.35387;Parent=Gene.35387
scaffold1633	transdecoder	exon	143265	143381	.	-	.	ID=Gene.35387:exon7;Parent=Gene.35387
scaffold1633	transdecoder	CDS	143265	143381	.	-	0	ID=cds.Gene.35387;Parent=Gene.35387
scaffold1633	transdecoder	exon	140093	140174	.	-	.	ID=Gene.35387:exon8;Parent=Gene.35387
scaffold1633	transdecoder	CDS	140093	140174	.	-	0	ID=cds.Gene.35387;Parent=Gene.35387
scaffold1633	transdecoder	exon	139031	139110	.	-	.	ID=Gene.35387:exon9;Parent=Gene.35387

scaffold1633	transdecoder	CDS	139031	139110	.	-	2	ID=cds.Gene.35387;Parent=Gene.35387
scaffold1633	transdecoder	exon	136037	136228	.	-	.	ID=Gene.35387:exon10;Parent=Gene.35387
scaffold1633	transdecoder	CDS	136037	136228	.	-	0	ID=cds.Gene.35387;Parent=Gene.35387
scaffold1276	transdecoder	gene	47193	50809	.	+	.	ID=11425;Name=ORF
scaffold1276	transdecoder	mRNA	47193	50809	.	+	.	ID=Gene.17656;Parent=11425;Name=ORF
scaffold1276	transdecoder	exon	47193	47712	.	+	.	ID=Gene.17656:exon1;Parent=Gene.17656
scaffold1276	transdecoder	CDS	47193	47712	.	+	0	ID=cds.Gene.17656;Parent=Gene.17656
scaffold1276	transdecoder	exon	49403	49560	.	+	.	ID=Gene.17656:exon2;Parent=Gene.17656
scaffold1276	transdecoder	CDS	49403	49560	.	+	2	ID=cds.Gene.17656;Parent=Gene.17656
scaffold1276	transdecoder	exon	50486	50809	.	+	.	ID=Gene.17656:exon3;Parent=Gene.17656
scaffold1276	transdecoder	CDS	50486	50809	.	+	0	ID=cds.Gene.17656;Parent=Gene.17656
scaffold1276	transdecoder	gene	85669	103137	.	+	.	ID=11428;Name=ORF
scaffold1276	transdecoder	mRNA	85669	103137	.	+	.	ID=Gene.17658;Parent=11428;Name=ORF
scaffold1276	transdecoder	exon	85669	86161	.	+	.	ID=Gene.17658:exon1;Parent=Gene.17658
scaffold1276	transdecoder	CDS	85669	86161	.	+	0	ID=cds.Gene.17658;Parent=Gene.17658
scaffold1276	transdecoder	exon	102683	103137	.	+	.	ID=Gene.17658:exon2;Parent=Gene.17658
scaffold1276	transdecoder	CDS	102683	103137	.	+	2	ID=cds.Gene.17658;Parent=Gene.17658
scaffold1276	transdecoder	gene	108163	111679	.	+	.	ID=11429;Name=ORF
scaffold1276	transdecoder	mRNA	108163	111679	.	+	.	ID=Gene.17661;Parent=11429;Name=ORF
scaffold1276	transdecoder	exon	108163	108300	.	+	.	ID=Gene.17661:exon1;Parent=Gene.17661
scaffold1276	transdecoder	CDS	108163	108300	.	+	0	ID=cds.Gene.17661;Parent=Gene.17661
scaffold1276	transdecoder	exon	108515	108615	.	+	.	ID=Gene.17661:exon2;Parent=Gene.17661
scaffold1276	transdecoder	CDS	108515	108615	.	+	0	ID=cds.Gene.17661;Parent=Gene.17661
scaffold1276	transdecoder	exon	109100	109217	.	+	.	ID=Gene.17661:exon3;Parent=Gene.17661
scaffold1276	transdecoder	CDS	109100	109217	.	+	1	ID=cds.Gene.17661;Parent=Gene.17661
scaffold1276	transdecoder	exon	109449	109498	.	+	.	ID=Gene.17661:exon4;Parent=Gene.17661
scaffold1276	transdecoder	CDS	109449	109498	.	+	0	ID=cds.Gene.17661;Parent=Gene.17661
scaffold1276	transdecoder	exon	110250	110439	.	+	.	ID=Gene.17661:exon5;Parent=Gene.17661
scaffold1276	transdecoder	CDS	110250	110439	.	+	1	ID=cds.Gene.17661;Parent=Gene.17661
scaffold1276	transdecoder	exon	110741	110797	.	+	.	ID=Gene.17661:exon6;Parent=Gene.17661
scaffold1276	transdecoder	CDS	110741	110797	.	+	0	ID=cds.Gene.17661;Parent=Gene.17661
scaffold1276	transdecoder	exon	111052	111132	.	+	.	ID=Gene.17661:exon7;Parent=Gene.17661
scaffold1276	transdecoder	CDS	111052	111132	.	+	0	ID=cds.Gene.17661;Parent=Gene.17661
scaffold1276	transdecoder	exon	111371	111679	.	+	.	ID=Gene.17661:exon8;Parent=Gene.17661
scaffold1276	transdecoder	CDS	111371	111679	.	+	0	ID=cds.Gene.17661;Parent=Gene.17661

Supplementary Table 1

Gene Name	2hpf	4hpf	6hpf	8hpf	13hpf	18hpf	23hpf	26hpf	27hpf	30hpf	36hpf	48hpf	54hpf	60hpf	72hpf	84hpf
<i>Hox1</i>	0.17120 ₁	0.51196 ₅	1.51738	0	28.6844	30.8001	7.76521	14.8163	6.5041	6.08023	12.3281	7.00236	7.16333	13.1674	13.6035	14.6324
<i>Hox2</i>	0.76116 ₂	0.83091 ₉	0.15361 ₈	0.28719 ₉	0.17231 ₄	9.79244	19.8087	26.316	6.26163	2.98155	5.72044	2.50905	1.70803	4.89708	5.09231	5.46748
<i>Hox3</i>	0.87159 ₆	1.69144	0	0	0	0	0	0.66443 ₈	0.43223 ₇	0	3.93071	0.57667 ₂	2.24315	0.49431	2.0662	0
<i>Hox4</i>	0	0	0.47359 ₇	0.19633 ₉	65.6164	35.3547	9.41803	18.9779	9.67464	5.69592	48.2808	9.78839	9.08917	34.3133	31.1308	25.4243
<i>Hox5</i>	0	0	0	0.41437 ₄	0	0	0.14836 ₃	0.23029 ₃	1.14313	0.11133 ₆	1.26658	0	0.59958	0.36475 ₅	0.99578	0.42368
<i>Lox5</i>	0	0	0.48635 ₈	0	14.8949	46.3018	15.0134	10.1943	5.70952	3.03321	9.8611	1.62441	3.79211	6.47783	4.5803	3.43496
<i>Lox4</i>	0	0	0	0	1.04993	4.40817	6.84024	10.6252	4.79951	2.00322	12.9751	3.63628	2.24748	10.2473	15.8881	8.42197
<i>Lox2</i>	0	0	0	0	0	0	0	0	0	0	0.46489 ₄	1.37844	2.32229	3.57047	3.62816	2.8405
<i>Post2</i>	0	0.24766	0.27559 ₄	1.02603	198.836	119.598	77.6776	158.209	130.492	63.2854	139.221	43.7139	33.6725	113.673	80.3193	57.0943
<i>Post1</i>	0	0	0	0	1.11113	1.85571	3.52344	10.7707	15.5632	11.4728	55.8559	14.6378	20.1796	30.1239	37.3983	27.7983
<i>Gsx</i>	0	0	0	0.38637 ₂	0	0.34779 ₈	0	0	0	0	0	0	0	0	0	0
<i>Xlox</i>	0	0	0	0	0	0.18467 ₅	0.88101 ₆	1.13956	3.16778	2.75472	9.47121	5.57624	5.43959	7.58132	8.95903	6.00995
<i>Cdx</i>	0.68931 ₁	1.12868	0.38701 ₁	18.2354	97.5659	48.9117	31.5202	38.8104	30.7053	15.2073	32.7694	16.754	13.4254	33.7677	29.9453	25.0949

Supplementary Table 2

Genes	Primers	
	Forward	Reverse
<i>Dro-Hox1</i>	TATCAGCGATCACCTGTGACAG	CACAACGCCATGGAAGTAACAC
<i>Dro-Hox2</i>	CGGTACCGGATATGACTGGATG	GAATCGTCCGAAGCATTGTCC
<i>Dro-Hox3</i>	TGAGTCCGAACCATTACGATGA	GGACATGTTACCGTCCAGCTT
<i>Dro-Hox4</i>	AATGGATTCACTTCGCCGACG	TGCTCATATGGTGTCCGATCTG
<i>Dro-Lox5</i>	TGTGTTACGACCATGAAGCAATG	ATGTCATCTCACGTGGTCTATCG
<i>Dro-Lox2</i>	GGACTACCGGTCATCGAGGTATT	TTCCTTAATCGCCTGCAGTTCTT
<i>Dro-Lox4</i>	TCTAGTGAGAATCCGCATGTTGG	AGTGTGCCACTTCTATTCTTCGT
<i>Dro-Post2</i>	ACATGTCGCCGCTTAATCCTAT	AAGTGTTGTTGTGACAGTGAGTG
<i>Dro-Xlox</i>	GATCTTGCGCCTATTACAACCAG	CAAGGCAGCATCAATGTACACAA

Supplementary Table 3

Phylum	Class	Species	Code name	GeneBank
Mollusca	Bivalvia	<i>Nucula tumidula</i>	Nucula_tumidula_Hox1	APD15698
			Nucula_tumidula_Hox2	APD15699
			Nucula_tumidula_Hox3	APD15700
			Nucula_tumidula_Hox4	APD15701
			Nucula_tumidula_Lox5	APD15702
			Nucula_tumidula_Lox4	APD15703
			Nucula_tumidula_Post1	APD15704
			Nucula_tumidula_Post2	APD15705
			Nucula_tumidula_Cdx	APD15706
			Nucula_tumidula_Xlox	APD15707
Mollusca	Gastropoda	<i>Gibbula varia</i>	Gibbula_varia_Hox1	ACX84671
			Gibbula_varia_Hox2	ADJ18233
			Gibbula_varia_Hox3	ADJ18232
			Gibbula_varia_Hox4	ACX84672
			Gibbula_varia_Hox5	ADJ18234
			Gibbula_varia_Lox5	ADJ18235
			Gibbula_varia_Lox4	ADJ18237
			Gibbula_varia_Lox2	ADJ18238
			Gibbula_varia_Post1	ACX84673
			Gibbula_varia_Post2	ACX84674
			Gibbula_varia_Gsx	ALM30866
			Gibbula_varia_Xlox	ADJ18240
Mollusca	Polyplacophora	<i>Acanthochitona crinita</i>	Acanthochitona_crinita_Hox1	APD15641
			Acanthochitona_crinita_Hox2	APD15642
			Acanthochitona_crinita_Hox3	APD15643
			Acanthochitona_crinita_Hox4	APD15644
			Acanthochitona_crinita_Hox5	APD15645
			Acanthochitona_crinita_Lox5	APD15646

			Acanthochitona_crinita_Lox4	APD15647
			Acanthochitona_crinita_Lox2	APD15648
			Acanthochitona_crinita_Post2	APD15649
			Acanthochitona_crinita_Cdx	APD15650
Annelida	Polychaeta	<i>Alitta virens</i>	Alitta_virens_Hox1	AAD46166
			Alitta_virens_Hox2	AAD46167
			Alitta_virens_Hox3	AAD46168
			Alitta_virens_Hox4	AAD46169
			Alitta_virens_Hox5	AAD46170
			Alitta_virens_Lox5	AAD46174
			Alitta_virens_Lox2	AAD46171
			Alitta_virens_Post1	AAD46175
			Alitta_virens_Post2	AAD46176
			Alitta_virens_Gsx	ABB59695
Chordata	Actinopterygii	<i>Lepisosteus oculatus</i>	Lepisosteus_oculatus_Gsx	XP_006627824
Echinodermata	Asteroidea	<i>Patiria miniata</i>	Patiria_miniata_Gsx	AGK89736
Priapulida	Priapulimorpha	<i>Priapulus caudatus</i>	Priapulus_caudatus_Gsx	XP_014665932
Annelida	Polychaeta	<i>Capitella teleta</i>	Capitella_telleta_Gsx	AAZ23124
Hemichordata	Enteropneusta	<i>Ptychodera flava</i>	Ptychodera_flava_Gsx	AAR07642
Chordata	Leptocardii	<i>Branchiostoma floridae</i>	Branchiostoma_floridae_Cdx	AAC39017
Echinodermata	Echinoidea	<i>Strongylocentrotus purpuratus</i>	Strongylocentrotus_purpuratus_Xlox	AAN17337
Annelida	Polychaeta	<i>Platynereis dumerilii</i>	Platynereis_dumerilii_Hox3	ABD04656
			Platynereis_dumerilii_Hox4	ABD04658
			Platynereis_dumerilii_Lox5	ABD04654
			Platynereis_dumerilii_Lox2	ABD04659
			Platynereis_dumerilii_Post1	ABD04653
			Platynereis_dumerilii_Post2	ABD04651
			Platynereis_dumerilii_Dls	CAJ38799
			Platynereis_dumerilii_Eng	CAE46753
			Platynereis_dumerilii_Xlox	ACH87551
			Platynereis_dumerilii_Cdx	ACH87546
Brachiopoda	Lingulata	<i>Lingula anatina</i>	Lingula_anatina_Hox1	AAD45587

			Lingula_anatina_Hox3	AAD45588
			Lingula_anatina_Hox5	AAD45589
			Lingula_anatina_Lox5	AAD45591
			Lingula_anatina_Lox4	AAD45593
			Lingula_anatina_Lox2	AAD45592
			Lingula_anatina_Post1	AAD45594
			Lingula_anatina_Post2	AAD45595
Mollusca	Neomeniomorpha	<i>Wirenia argentea</i>	Wirenia_argentea_Post1	APD15718
			Wirenia_argentea_Post2	APD15719
			Wirenia_argentea_Hox3	APD15711
			Wirenia_argentea_Hox4	APD15712
			Wirenia_argentea_Hox5	APD15713
			Wirenia_argentea_Lox5	APD15714
			Wirenia_argentea_Lox2	APD15716
Mollusca	Bivalvia	<i>Crassostrea gigas</i>	Crassostrea_gigas_Hox1	EKC32705
			Crassostrea_gigas_Hox2	EKC32708
			Crassostrea_gigas_Hox3	EKC32709
			Crassostrea_gigas_Hox4	EKC32713
			Crassostrea_gigas_Lox5	EKC41105
			Crassostrea_gigas_Lox4	EKC41102
			Crassostrea_gigas_Lox2	EKC39601
			Crassostrea_gigas_Post1	EKC29602
			Crassostrea_gigas_Post2	EKC29599
			Crassostrea_gigas_Xlox	XP_011426134
			Crassostrea_gigas_Cdx	XP_011420260
			Crassostrea_gigas_Gsx	XP_011426138
Chordata	Ascidacea	<i>Ciona intestinalis</i>	Ciona_intestinalis_Hox1	NP_001122333
			Ciona_intestinalis_Hox2	CAD59668
			Ciona_intestinalis_Hox4	NP_001027781
			Ciona_intestinalis_Hox5	NP_001027665
			Ciona_intestinalis_Hox6	CAD59670
Arthropoda	Insecta	<i>Drosophila melanogaster</i>	Drosophila_melanogaster_Hox1	CAB57787

			Drosophila_melanogaster_Hox2	CAA45271
			Drosophila_melanogaster_Hox3	P09089
			Drosophila_melanogaster_Hox4	P07548
			Drosophila_melanogaster_Hox5	NP_524248
			Drosophila_melanogaster_Dls	NP_726486
			Drosophila_melanogaster_Eng	P02836
			Drosophila_melanogaster_Cdx	NP_599128
			Drosophila_melanogaster_Gsx	NP_996087
Hemichordata	Enteropneusta	<i>Saccoglossus kowalevskii</i>	Saccoglossus_kowalevskii_Hox1	AAP79296
			Saccoglossus_kowalevskii_Hox2	ABK00018
			Saccoglossus_kowalevskii_Hox3	AAP79286
			Saccoglossus_kowalevskii_Hox4	AAP79297
			Saccoglossus_kowalevskii_Hox5	ABK00019
			Saccoglossus_kowalevskii_Hox6	ABK00020
Mollusca	Cephalopoda	<i>Euprymna scolopes</i>	Euprymna_scolopes_Hox1	AAL25804
			Euprymna_scolopes_Hox3	AAR16188
			Euprymna_scolopes_Hox5	AAR16189
			Euprymna_scolopes_Lox4	AAL25810
			Euprymna_scolopes_Post1	AAL25811
			Euprymna_scolopes_Post2	AAL25812
			Euprymna_scolopes_Xlox	ABD16192
			Euprymna_scolopes_Gsx	AAV85466
Mollusca	Cephalopoda	<i>Idiosepius notoides</i>	Idiosepius_notoides_Hox3	APD15688
			Idiosepius_notoides_Hox5	APD15689
			Idiosepius_notoides_Lox5	APD15686
			Idiosepius_notoides_Lox4	APD15720
			Idiosepius_notoides_Post2	APD15690
Mollusca	Gastropoda	<i>Haliotis asinina</i>	Haliotis_asinina_Hox3	AAK17185
			Haliotis_asinina_Hox4	AAK11240
			Haliotis_asinina_Hox5	AAF78248
Mollusca	Scaphopoda	<i>Antalis entalis</i>	Antalis_entalis_Hox1	APD15651
			Antalis_entalis_Hox2	APD15652

			Antalis_entalis_Hox3	APD15653
			Antalis_entalis_Hox4	APD15654
			Antalis_entalis_Hox5	APD15655
			Antalis_entalis_Lox5	APD15656
			Antalis_entalis_Lox4	APD15658
			Antalis_entalis_Lox2	APD15657
			Antalis_entalis_Post1	APD15659
			Antalis_entalis_Post2	APD15660
			Antalis_entalis_Cdx	APD15661
			Antalis_entalis_Gsx	APD15662
Mollusca	Solenogastres	<i>Gymnomenia pellucida</i>	Gymnomenia_pellucida_Hox1	APD15663
			Gymnomenia_pellucida_Hox2	APD15664
			Gymnomenia_pellucida_Hox3	APD15665
			Gymnomenia_pellucida_Hox4	APD15666
			Gymnomenia_pellucida_Hox5	APD15667
			Gymnomenia_pellucida_Lox5	APD15668
			Gymnomenia_pellucida_Lox4	APD15670
			Gymnomenia_pellucida_Lox2	APD15671
			Gymnomenia_pellucida_Post1	APD15672
			Gymnomenia_pellucida_Post2	APD15673
			Gymnomenia_pellucida_Cdx	APD15674
			Gymnomenia_pellucida_Gsx	APD15675

Supplementary Table 4

Scaffolds	Genes	Size
953	<i>Dro-Hox1</i>	232,15 Kb
280	<i>Dro-Hox2</i>	369,15 Kb
	<i>Dro-Hox3</i>	
	<i>Dro-Hox4</i>	
	<i>Dro-Hox5</i>	
826	<i>Dro-Lox4</i>	246,17 Kb
	<i>Dro-Lox5</i>	
180	<i>Dro-Lox2</i>	421,98 Kb
446	<i>Dro-Post1</i>	314,96 Kb
	<i>Dro-Post2</i>	
1633	<i>Dro-Cdx</i>	177,01 Kb
1276	<i>Dro-Gsx</i>	199,78 Kb
	<i>Dro-Xlox</i>	