

Additional file 1. Parameters of gene structure, base composition and nucleotide evolution for each gene.

Gene	Specie	Gene length ^a	Protein length ^b	C. Bias ^c N _c	G+C content measures ^d			<i>t</i>	<i>d_N</i>	<i>d_S</i>	κ	ω
					GC	GC2	GC3					
Hox genes												
<i>abd-A</i>	<i>Dbuz</i>	20665	536	51.16	0.5815	0.4795	0.6493	1.82426	0.09071	2.46771	1.66636	0.03676
	<i>Dmel</i>	18315	590	49.63	0.6006	0.4915	0.7080					
	<i>Dpse</i>	18244	568	38.13	0.6450	0.4947	0.8145					
	Avg	19074.7	564.7	46.31	0.6090	0.4886	0.7240					
<i>lab</i>	<i>Dbuz</i>	21166	659	52.98	0.5544	0.4355	0.5799	2.80665	0.24208	3.28391	1.66998	0.07372
	<i>Dmel</i>	16276	629	41.98	0.6078	0.4674	0.7368					
	<i>Dpse</i>	15388	691	48.00	0.5808	0.4443	0.6642					
	Avg	17610.0	659.7	47.65	0.5810	0.4491	0.6603					
<i>pb</i>	<i>Dbuz</i>	34287	763	53.81	0.5343	0.4404	0.5670	1.69659	0.14613	2.02037	1.39885	0.07233
	<i>Dmel</i>	31889	782	50.90	0.5631	0.4348	0.6554					
	<i>Dpse</i>	32676	801	50.00	0.5589	0.4444	0.6087					
	Avg	32950.7	782.0	51.57	0.5521	0.4399	0.6104					
Hox genes:	<i>Dbuz</i>	25372.7	652.7	52.65	0.5567	0.4518	0.5988	2.10917	0.15964	2.59066	1.57840	0.06094
	<i>Dmel</i>	22160.0	667.0	47.50	0.5905	0.4646	0.7000					
	<i>Dpse</i>	22102.7	686.7	45.38	0.5949	0.4611	0.6958					
	Avg	23211.8	668.8	48.51	0.5807	0.4592	0.6649					
Hox-derived genes												
<i>bcd</i>	<i>Dbuz</i>	2385	542	52.41	0.5387	0.4428	0.5532	2.37143	0.21122	2.47837	1.70016	0.08523
	<i>Dmel</i>	2593	489	49.76	0.5828	0.4540	0.6624					
	<i>Dpse</i>	1829	536	48.35	0.5777	0.4366	0.6245					
	Avg	2269.0	522.3	50.17	0.5664	0.4444	0.6134					
<i>zen</i>	<i>Dbuz</i>	1057	331	44.79	0.5498	0.4441	0.6384	2.47931	0.27517	2.74878	1.33133	0.10011
	<i>Dmel</i>	1123	353	48.56	0.5420	0.4448	0.6499					
	<i>Dpse</i>	1198	378	48.76	0.5785	0.4815	0.6458					
	Avg	1126.0	354.0	47.37	0.5568	0.4568	0.6447					
<i>zen2</i>	<i>Dbuz</i>	958	297	57.00	0.4478	0.4074	0.4134	6.73935	0.69501	7.60078	0.93934	0.09144
	<i>Dmel</i>	823	252	59.77	0.4563	0.3810	0.4669					
	<i>Dpse</i>	880	270	56.94	0.4951	0.3889	0.5625					
	Avg	887.0	273.0	57.91	0.4664	0.3924	0.4810					
Hox-derived genes:	<i>Dbuz</i>	1466.7	390.0	51.40	0.5121	0.4314	0.5350	3.86336	0.39380	4.27598	1.32361	0.09226
	<i>Dmel</i>	1513.0	364.7	52.69	0.5271	0.4266	0.5931					
	<i>Dpse</i>	1302.3	394.7	51.35	0.5504	0.4356	0.6109					
	Avg	1427.3	383.1	51.82	0.5299	0.4312	0.5797					

Gene	Specie	Gene length ^a	Protein length ^b	C. Bias ^c N _c	G+C content measures ^d			<i>t</i>	<i>d_N</i>	<i>d_S</i>	κ	ω
					GC	GC2	GC3					
Non-Hox genes												
<i>Adhr</i>	<i>Dbuz</i>	939	274	45.14	0.5535	0.3650	0.7422	2.49544	0.10802	3.61777	0.95355	0.02986
	<i>Dmel</i>	1293	272	59.09	0.4792	0.3750	0.5333					
	<i>Dpse</i>	1200	278	45.14	0.5396	0.3885	0.6667					
	Avg	1144.0	274.7	49.79	0.5241	0.3761	0.6474					
<i>α-Est2</i>	<i>Dbuz</i>	1991	565	46.22	0.5558	0.4071	0.6904	3.72951	0.25409	4.94931	1.23819	0.05134
	<i>Dmel</i>	2226	566	56.00	0.5106	0.3710	0.5885					
	<i>Dpse</i>	1978	566	45.14	0.5648	0.3799	0.7234					
	Avg	2065.0	565.7	49.12	0.5437	0.3860	0.6674					
<i>α-Est3</i>	<i>Dbuz</i>	1820	541	47.73	0.5471	0.4011	0.6842	3.40410	0.25436	4.38895	1.14458	0.05796
	<i>Dmel</i>	2154	543	50.73	0.5476	0.3831	0.6647					
	<i>Dpse</i>	1808	543	44.83	0.5641	0.3923	0.6783					
	Avg	1927.3	542.3	47.76	0.5529	0.3921	0.6757					
<i>Ccp84Ac</i>	<i>Dbuz</i>	701	215	50.81	0.5705	0.3907	0.6168	5.11649	0.18095	6.70225	1.38891	0.02700
	<i>Dmel</i>	715	217	39.06	0.6129	0.3917	0.7083					
	<i>Dpse</i>	783	231	35.67	0.6075	0.4026	0.6870					
	Avg	733.0	221.0	41.85	0.5970	0.3950	0.6707					
<i>Ccp84Ae</i>	<i>Dbuz</i>	647	195	45.63	0.5932	0.5026	0.5361	3.87698	0.16555	3.67507	1.16139	0.04505
	<i>Dmel</i>	742	208	38.71	0.6346	0.5144	0.6618					
	<i>Dpse</i>	722	217	43.55	0.6175	0.5161	0.6435					
	Avg	703.7	206.7	42.63	0.6151	0.5110	0.6138					
<i>Ccp84Af</i>	<i>Dbuz</i>	491	145	36.71	0.6092	0.4000	0.6875	1.98417	0.09926	2.44754	1.68720	0.04055
	<i>Dmel</i>	511	151	35.28	0.6225	0.3907	0.7667					
	<i>Dpse</i>	512	151	40.76	0.6093	0.3775	0.6933					
	Avg	504.7	149.0	37.59	0.6137	0.3894	0.7158					
<i>Ccp84Ag</i>	<i>Dbuz</i>	573	162	44.07	0.6173	0.4938	0.6584	1.28347	0.04913	1.42169	2.41924	0.03455
	<i>Dmel</i>	788	191	35.13	0.6754	0.5393	0.7526					
	<i>Dpse</i>	690	198	40.37	0.6364	0.5404	0.6244					
	Avg	683.7	183.7	39.86	0.6430	0.5245	0.6785					
<i>CG13617</i>	<i>Dbuz</i>	2401	734	54.38	0.5050	0.3828	0.5461	4.45418	0.38303	5.12077	1.80499	0.07480
	<i>Dmel</i>	2440	737	50.56	0.5364	0.3894	0.6335					
	<i>Dpse</i>	2420	745	50.60	0.5427	0.3933	0.6598					
	Avg	2420.3	738.7	51.85	0.5280	0.3885	0.6131					
<i>CG14290</i>	<i>Dbuz</i>	587	108	81.73	0.5278	0.5370	0.5960	4.24639	0.17265	6.25148	0.67744	0.02762
	<i>Dmel</i>	756	107	56.68	0.5483	0.4766	0.6939					
	<i>Dpse</i>	640	107	52.11	0.5701	0.4673	0.7347					
	Avg	661.0	107.3	63.51	0.5487	0.4936	0.6748					

Gene	Specie	Gene length ^a	Protein length ^b	C. Bias ^c N _c	G+C content measures ^d			<i>t</i>	<i>d_N</i>	<i>d_S</i>	κ	ω
					GC	GC2	GC3					
CG14609	<i>Dbuz</i>	2603	599	51.51	0.4802	0.2838	0.5930	5.31870	0.21768	7.00844	1.87039	0.03106
	<i>Dmel</i>	2191	597	55.15	0.4662	0.2714	0.5986					
	<i>Dpse</i>	2126	594	51.29	0.4703	0.2677	0.5904					
	Avg	2306.7	596.7	52.65	0.4722	0.2743	0.5940					
CG14899	<i>Dbuz</i>	1023	258	52.22	0.4974	0.3721	0.5667	2.17723	0.08058	2.54854	1.71101	0.03162
	<i>Dmel</i>	923	261	46.42	0.5504	0.3831	0.6911					
	<i>Dpse</i>	982	258	46.08	0.5413	0.3915	0.6502					
	Avg	976.0	259.0	48.24	0.5297	0.3822	0.6360					
CG2520	<i>Dbuz</i>	14173	477	50.22	0.5059	0.4465	0.5098	0.91112	0.02653	1.04662	2.03996	0.02535
	<i>Dmel</i>	11011	468	56.50	0.5228	0.4423	0.5588					
	<i>Dpse</i>	11681	473	56.62	0.5159	0.4440	0.5439					
	Avg	12288.3	472.7	54.45	0.5149	0.4443	0.5375					
CG31363	<i>Dbuz</i>	8491	203	57.49	0.4663	0.4877	0.4192	1.95356	0.15912	2.32116	1.30436	0.06855
	<i>Dmel</i>	13033	208	41.71	0.5833	0.4904	0.7376					
	<i>Dpse</i>	12208	227	45.20	0.5786	0.5066	0.7227					
	Avg	11244.0	212.7	48.13	0.5427	0.4949	0.6265					
<i>Lsp1β</i>	<i>Dbuz</i>	2427	788	39.80	0.4820	0.2605	0.7236	1.18839	0.09959	2.69820	1.62088	0.03691
	<i>Dmel</i>	2435	789	27.24	0.5560	0.2763	0.9260					
	<i>Dpse</i>	2432	787	28.45	0.5417	0.2630	0.8873					
	Avg	2431.3	788.0	31.83	0.5266	0.2666	0.8456					
<i>Lsp1γ</i>	<i>Dbuz</i>	2376	773	38.94	0.4981	0.2717	0.7348	1.53426	0.11973	2.90247	1.41796	0.04125
	<i>Dmel</i>	2381	772	41.20	0.4965	0.2642	0.7480					
	<i>Dpse</i>	2383	773	29.41	0.5395	0.2600	0.8804					
	Avg	2380.0	772.7	36.52	0.5113	0.2653	0.7877					
<i>Non-Hox genes:</i>	<i>Dbuz</i>	2749.5	402.5	49.51	0.5340	0.4002	0.6203	2.91160	0.15802	3.80668	1.49600	0.04156
	<i>Dmel</i>	2906.6	405.8	45.96	0.5562	0.3973	0.6842					
	<i>Dpse</i>	2837.7	409.9	43.68	0.5626	0.3994	0.6924					
	Avg	2831.3	406.0	46.38	0.5509	0.3989	0.6656					
ALL CLASSES:	<i>Dbuz</i>	5798.1	436.4	50.23	0.5341	0.4120	0.6050	2.96138	0.23715	3.55777	1.46600	0.06492
	<i>Dmel</i>	5458.0	437.2	47.15	0.5569	0.4111	0.6735					
	<i>Dpse</i>	5370.5	447.2	45.02	0.5655	0.4134	0.6812					
	Avg	5542.2	440.3	47.46	0.5522	0.4121	0.6532					

^a Gene length (in base pairs), excluding 5' and 3' UTRs (includes exons and introns only from the 'start' to the 'stop' codons in the CDS)

^b Protein length (in amino acids)

^c Codon Bias measure: *Effective Number of Codons* (Wright 1990)

^d G+C content measures: percentage of G+C at all coding positions (GC), second coding positions (GC2) and third coding positions (GC3)