

Supp. Table 1: Information about all the data of the species used. In bold are the 40 core species.

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Running number (for internal use only)	Species name	Four letters representation	Phylum	# Phyla	Class	Proteome source	Size (M)	Number of predicted proteins	Included in Aco (44 taxa)	Included in Xen (41 taxa)	C% *min valt	te (C) y (S) id (D) xd (F) g (M)	C% *min value gray	% te (C) y (S) id (D) xd (F) g (M)								
1	<i>Helobdella robusta</i>	HERO	Annelida	1	Clitellata	Ensembl	13	22812	Y	Y	97.3 S:96.5%,D:0.8%,F:1.6%,M:1.1%	248 246 2 4 3	90.1 S:89.3%,D:0.8%,F:4.7%,M:5.2%	860 852 8 45 49								
2	<i>Capitella teleta</i>	CATE	Annelida	1	Polychaeta	Ensembl	17	29584	Y	Y	94.1 S:93.7%,D:0.4%,F:4.3%,M:1.6%	240 239 1 11 4	95 S:93.8%,D:1.2%,F:2.8%,M:2.2%	906 895 11 27 21								
3	<i>Ixodes scapularis</i>	IXSC	Arthropoda	2	Arachnida	Ensembl	11	20361	Y	Y	72.6 S:71.4%,D:1.2%,F:16.9%,M:10.5%	185 182 3 43 27	78.3 S:77.9%,D:0.4%,F:12.7%,M:9.0%	747 743 4 121 86								
4	<i>Daphnia pulex</i>	DAPU	Arthropoda	2	Branchiopoda	Ensembl	15	28309	Y	Y	97.7 S:96.5%,D:1.2%,F:0.4%,M:1.9%	249 246 3 1 5	94.9 S:93.5%,D:1.4%,F:1.5%,M:3.6%	905 892 13 14 35								
5	<i>Drosophila melanogaster</i>	DRME	Arthropoda	2	Insecta	Ensembl	13	15929	Y	Y	100 S:97.6%,D:2.4%,F:0.0%,M:0.0%	255 249 6 0 0	99.3 S:95.7%,D:3.6%,F:0.2%,M:0.5%	947 913 34 2 5								
6	<i>Saccharomyces cerevisiae</i>	SACE	Ascomycota	3	Saccharomycetes	Ensembl	3.9	6600	Y	Y	93.3 S:92.5%,D:0.8%,F:1.2%,M:5.5%	238 236 2 3 14	39.9 S:35.5%,D:4.4%,F:4.1%,M:56.0%	381 339 42 39 534								
7	<i>Schizosaccharomyces pombe</i>	SCPO	Ascomycota	3	Schizosaccharomycetes	Ensembl	3.7	5146	Y	Y	96.9 S:95.3%,D:1.6%,F:0.4%,M:2.7%	247 243 4 1 7	49.8 S:46.1%,D:3.7%,F:2.8%,M:47.4%	475 440 35 27 452								
8	<i>Magnaporthe oryzae</i>	MAOR	Ascomycota	3	Sordariomycetes	Ensembl	8.4	12755	Y	Y	98.5 S:97.3%,D:1.2%,F:0.8%,M:0.7%	251 248 3 2 2	48.9 S:47.5%,D:1.4%,F:4.7%,M:46.4%	466 453 13 45 443								
9	<i>Cryptococcus neoformans var. neoformans JEC21</i>	CRNE	Basidiomycota	4	Tremellomycetes	Ensembl	4.9	19447	Y	Y	96.9 S:95.7%,D:1.2%,F:2.4%,M:0.7%	247 244 3 6 2	51.1 S:49.8%,D:1.3%,F:4.9%,M:44.0%	487 475 12 47 420								
10	<i>Allomyces macrogynus</i>	ALMA	Blastocladiomycota	5	Blastocladiomycetes	Ensembl	13	6863	Y	Y	92.1 S:23.9%,D:68.2%,F:3.5%,M:4.4%	235 61 174 9 11	60.1 S:16.6%,D:43.5%,F:4.3%,M:35.6%	573 158 415 41 340								
11	<i>Monosiga brevicollis</i>	MOBR	Choanozoa	6	Choanoflagellata	NCBI	7.1	9091	Y	Y	78.8 S:78.8%,D:0.0%,F:7.5%,M:13.7%	201 201 0 19 35	59.7 S:59.3%,D:0.4%,F:6.4%,M:33.9%	570 566 4 61 323								
12	<i>Salpingoeca rosseta</i>	SARO	Choanozoa	6	Choanoflagellata	NCBI	10	11731	Y	Y	83.1 S:82.7%,D:0.4%,F:6.7%,M:10.2%	212 211 1 17 26	66.1 S:65.5%,D:0.6%,F:6.9%,M:27.0%	631 625 6 66 257								
13	<i>Danio rerio</i>	DARE	Chordata	7	Actinopterygii	Ensembl	25	31537	Y	Y	99.3 S:92.2%,D:7.1%,F:0.8%,M:0.1%	253 235 18 2 0	98.1 S:90.3%,D:7.8%,F:0.7%,M:1.2%	935 861 74 7 12								
14	<i>Xenopus tropicalis</i>	XETR	Chordata	7	Amphibia	Ensembl	17	20388	Y	Y	93.3 S:83.1%,D:10.2%,F:3.9%,M:2.8%	238 212 26 10 7	94.2 S:82.3%,D:11.9%,F:2.1%,M:3.7%	899 785 114 20 35								
15	<i>Ciona intestinalis</i>	CIIN	Chordata	7	Ascidiacea	Ensembl	8.8	16918	Y	Y	85.5 S:83.1%,D:2.4%,F:7.1%,M:7.4%	218 212 6 18 19	78.7 S:76.8%,D:1.9%,F:6.4%,M:14.9%	751 733 18 61 142								
16	<i>Gallus gallus</i>	GAGA	Chordata	7	Aves	Ensembl	16	21062	Y	Y	95.7 S:86.7%,D:9.0%,F:2.4%,M:1.9%	244 221 23 6 5	91.8 S:82.6%,D:9.2%,F:2.3%,M:5.9%	876 788 88 22 56								
17	<i>Branchiostoma floridae</i>	BRFL	Chordata	7	Leptocardii	refSeq	15	27718	Y	Y	87.9 S:87.5%,D:0.4%,F:8.2%,M:3.9%	224 223 1 21 10	91.5 S:89.7%,D:1.8%,F:3.6%,M:4.9%	873 856 17 34 47								
18	<i>Homo sapiens</i>	HOSA	Chordata	7	Mammalia	Ensembl	32	50304	Y	Y	100 S:91.4%,D:2.0%,F:0.0%,M:0.0%	255 182 73 0 0	100 S:74.6%,D:25.4%,F:0.0%,M:0.0%	954 712 242 0 0								
19	<i>Spizellomyces punctatus DAOM BR117</i>	SPPU	Chytridiomycota	8	Chytridiomycetes	Ensembl	6.6		Y	Y	94.9 S:93.3%,D:1.6%,F:2.7%,M:2.4%	242 238 4 7 6	70.1 S:66.6%,D:3.5%,F:3.5%,M:26.4%	668 635 33 33 253								
20	<i>Acropora digitifera</i>	ACDI	Cnidaria	9	Anthozoa	refSeq	19	33878	Y	Y	76 S:63.1%,D:12.9%,F:16.5%,M:7.5%	194 161 33 42 19	77.5 S:63.5%,D:14.0%,F:10.2%,M:12.3%	740 606 134 97 117								
21	<i>Nematostella vectensis</i>	NEVE	Cnidaria	9	Anthozoa	refSeq	14	15881	Y	Y	93.4 S:91.4%,D:2.0%,F:5.5%,M:1.1%	238 233 5 14 3	89.7 S:87.9%,D:1.8%,F:4.8%,M:5.5%	856 839 17 46 52								
22	<i>Hydra magnipapillata</i>	HYMA	Cnidaria	9	Hydrozoa	refSeq	13	32714	Y	Y	86.7 S:85.5%,D:1.2%,F:10.2%,M:3.1%	221 218 3 26 8	83.1 S:80.5%,D:2.6%,F:8.9%,M:8.0%	793 768 25 85 76								
23	<i>Mnemiopsis leidyi</i>	MNLE	Ctenophora	10	Tentaculata	Neurobase	9.8	15881	Y	Y	83.5 S:82.7%,D:0.8%,F:7.8%,M:8.7%	213 211 2 20 22	73.5 S:73.0%,D:0.5%,F:4.9%,M:21.6%	701 696 5 47 206								
24	<i>Pleurobrachia bachei</i>	PLBA	Ctenophora	10	Tentaculata	Neurobase	22	17190	Y	Y	46.7 S:46.7%,D:0.0%,F:19.2%,M:34.1%	119 119 0 49 87	47.2 S:46.3%,D:0.9%,F:11.3%,M:41.5%	441 442 9 108 395								
25	<i>Acanthaster planci</i>	ACPL	Echinodermata	11	Asteridea	refSeq	26	33214	Y	Y	99.6 S:69.8%,D:29.8%,F:0.4%,M:0.0%	254 178 76 1 0	98.8 S:62.6%,D:36.2%,F:0.5%,M:0.7%	942 597 345 5 7								
26	<i>Strongylocentrotus purpuratus</i>	STPU	Echinodermata	11	Echinoidea	ryaniab	21	26776	Y	Y	86.3 S:82.4%,D:3.9%,F:11.0%,M:2.7%	220 210 10 28 7	87.9 S:83.4%,D:4.5%,F:7.4%,M:4.7%	839 796 43 71 44								
27	<i>Australostichopus mollis</i>	AUMO	Echinodermata	11	Holothuroidea	ryaniab	6.4	49301	N	N	3.1 S:3.1%,D:0.0%,F:35.3%,M:61.6%	8 8 0 90 157	5.9 S:5.8%,D:0.1%,F:30.6%,M:63.5%	56 55 1 292 606								
28	<i>Ophioneis fasciata</i>	OPFA	Echinodermata	11	Ophiuroidea	ryaniab	13		N	N	3.9 S:3.5%,D:0.4%,F:36.1%,M:60.0%	10 9 1 92 153	5.2 S:5.0%,D:0.2%,F:36.5%,M:58.3%	50 48 2 348 556								
29	<i>Ptychodera flava</i>	PTFL	Hemichordata	12	Enteropneusta	Okinawa Institute of Science and Technology Graduate Universit	16		Y	Y	53 S:51.4%,D:1.6%,F:25.1%,M:21.9%	135 131 4 64 56	56.4 S:54.0%,D:2.4%,F:15.3%,M:28.3%	538 515 23 146 270								
30	<i>Saccoglossus kowalevskii</i>	SAKO	Hemichordata	12	Enteropneusta	Okinawa Institute of Science and Technology Graduate Universit	6.5	22111	Y	Y	87.8 S:84.3%,D:3.5%,F:9.4%,M:2.8%	224 215 9 24 7	90 S:84.4%,D:5.6%,F:7.1%,M:2.9%	858 805 53 68 28								
31	<i>Capsaspora owczarzaki</i>	CAOW	Ichthyospore	13	Filasterea	NCBI	7.2	8932	Y	Y	93.8 S:91.8%,D:2.0%,F:2.4%,M:3.8%	239 234 5 6 10	74.7 S:72.3%,D:2.4%,F:3.7%,M:21.6%	713 690 23 35 206								
32	<i>Sphaeroforma arctica</i>	SPAR	Ichthyospore	13	Ichthyophonida	NCBI	6.9	18730	Y	Y	63.1 S:60.0%,D:3.1%,F:23.5%,M:13.4%	161 153 8 60 34	47.5 S:45.4%,D:2.1%,F:14.8%,M:37.7%	453 433 20 141 360								
33	<i>Lottia gigantea</i>	LOGI	Mollusca	14	Gastropoda	Ensembl	13	23340	Y	Y	96.5 S:95.7%,D:0.8%,F:2.4%,M:1.1%	246 244 2 6 3	96.6 S:95.9%,D:0.7%,F:1.5%,M:1.9%	922 915 7 14 18								
34	<i>Caenorhabditis elegans</i>	CAEL	Nematoda	15	Chromadorea	Ensembl	14	21607	Y	Y	98.1 S:96.9%,D:1.2%,F:0.8%,M:1.1%	250 247 3 2 3	78.5 S:75.3%,D:3.2%,F:2.1%,M:19.4%	749 718 31 20 185								
35	<i>Pristionchus pacificus</i>	PRPA	Nematoda	15	Chromadorea	Ensembl	13	28489	Y	Y	55.3 S:54.5%,D:0.8%,F:22.7%,M:22.0%	141 139 2 58 56	54.3 S:52.8%,D:1.5%,F:12.2%,M:33.5%	518 504 14 116 320								
36	<i>Holiumia hongkongensis</i>	HOHO	Placozoa	16		Data repository for: Eitel, M. https://doi.org/10.1371/journal.pbio.2005359	26	64753	Y	Y	96.8 S:42.7%,D:54.1%,F:2.7%,M:0.5%	247 109 138 7 1	92.8 S:41.4%,D:51.4%,F:3.0%,M:4.2%	885 395 490 29 40								
37	<i>Trichoplax adhaerens</i>	TRAD	Placozoa	16		Ensembl	6.9	11349	Y	Y	92.9 S:92.5%,D:0.4%,F:4.7%,M:2.4%	237 236 1 12 6	89.3 S:88.9%,D:0.4%,F:4.6%,M:6.1%	852 848 4 44 58								
38	<i>Schistosoma mansoni</i>	SCMA	Platyhelminthes	17	Trematoda	Ensembl	7.8	11774	Y	Y	87.5 S:80.8%,D:6.7%,F:6.7%,M:5.8%	223 206 17 17 15	70.9 S:63.7%,D:7.2%,F:6.5%,M:22.6%	677 608 69 62 215								
39	<i>Sycon ciliatum</i>	SYCI	Porifera	18	Calcarea	Link Email https://datadryad.org/resource/doi:10.5061/dryad.tn0f3r1	57.3	50731	Y	Y	97.3 S:91.0%,D:6.3%,F:2.0%,M:0.7%	248 232 16 5 2	90.5 S:81.6%,D:8.9%,F:2.2%,M:7.3%	863 778 85 21 70								
40	<i>Amphimedon queenslandica</i>	AMQU	Porifera	18	Demospongiae	Ensembl	22	43615	Y	Y	92.5 S:88.2%,D:4.3%,F:7.1%,M:0.4%	236 225 11 18 1	89.9 S:84.4%,D:5.5%,F:4.2%,M:5.9%	857 805 52 40 57								
41	<i>Tethya wilhelma</i>	TEWI	Porifera	18	Demospongiae	Lab souece	14	26225	Y	Y	67.5 S:65.1%,D:2.4%,F:16.9%,M:15.6%	172 166 6 43 40	66.1 S:63.9%,D:2.2%,F:13.6%,M:20.3%	631 610 21 130 193								
42	<i>Oscarella carmela</i>	OSCA	Porifera	18	Homoscleromorpha	compagen	4.6	11152	Y	Y	45.1 S:44.3%,D:0.8%,F:22.4%,M:32.5%	115 113 2 57 83	41.3 S:41.0%,D:0.3%,F:14.5%,M:44.2%	394 391 3 138 422								
43	<i>Meara stichopi</i>	MEST	Xenacoelomorpha	19	Acoelomorpha	figshare	20	130113	Y	N	35.3 S:34.9%,D:0.4%,F:28.6%,M:36.1%	90 89 1 73 92	34.1 S:33.6%,D:0.5%,F:22.5%,M:43.4%	326 321 5 215 413								
44	<i>Nemertodermis westbladi</i>	NEWU	Xenacoelomorpha	19	Acoelomorpha	figshare	17	80966	Y	N	62 S:60.8%,D:1.2%,F:24.7%,M:13.3%	158 155 3 63 34	64.2 S:62.7%,D:1.5%,F:15.4%,M:20.4%	612 598 14 147 195								
45	<i>Pseudaphanostoma variabilis</i>	PSVA	Xenacoelomorpha	19	Acoelomorpha	figshare	21	115245	Y	N	34.9 S:33.7%,D:1.2%,F:38.0%,M:27.1%	89 86 3 97 69	35.7 S:34.8%,D:0.9%,F:24.8%,M:39.5%	341 332 9 237 376								
46	<i>Symsagittifera roscoffensis</i>	SYRO	Xenacoelomorpha	19	Acoelomorpha	figshare	24	113993	Y	N	45.1 S:43.9%,D:1.2%,F:28.2%,M:26.7%	115 112 3 72 68	45.7 S:43.6%,D:2.1%,F:19.0%,M:35.3%	436 416 20 181 337								
47	<i>Xenoturbella bocki</i>	XEBO	Xenacoelomorpha	19	Xenoturbellidae	figshare	8.7	24134	N	Y	44.3 S:43.9%,D:0.4%,F:29.4%,M:26.3%	113 112 1 75 67	46.5 S:45.8%,D:0.7%,F:22.3%,M:31.2%	444 437 7 213 297								
MIN BUSCO											3.1	0					5.2	0				
MAX BUSCO											100	157					100	606				
AVERAGE BUSCO											78.4	27.4					70.0	204.9				
MEADIAN BUSCO											87.9	10					74.7					