

TAXON	SPECIES NUMBER	BUSCO (RANGE)	CHROMOSOME- LEVEL ASSEMBLY SPECIES	ESTIMATED OPSIN NUMBER (NODE)	PHOTORECEPTIVE STRUCTURES	FREE SWIMMING LARVAE (ANCESTRAL CONDITION)	REFERENCES
Annelida-Sabellida/Spionida	3	58.3-69.9	1	12	Pigmented cup with lenses - Cirri - Pinhole eyes - rPRSC + vestigial cilium	Yes	Bok et al. (2017), Purschke et al. (2022)
Annelida-Clitellata	8	53.5-94.6	1	1	Phaosomal PRCs	No	Doring et al (2013), Purschke et al. (2022)
Annelida-Errantia*				8	Pigmented cup with lenses - Cirri - Pinhole eyes - rPRSC + vestigial cilium	Yes	Arendt et al. (2002) , Purschke et al. (2022), *Gühhmann et al. (2015)
Annelida-Dinophilidae	1	32.8	1	4	Pigmented cup	Yes	Kerbl et al. (2015) , Purschke et al. (2022)
Annelida-Owenidae	1	97.2		7	Pigment spot eyes - Tubular eyes	Yes	Purschke et al. (2022)
Brachiopoda	1	98.6		6	Pigmented cup	Yes	Passamaneck et al. (2011)
Phoronida	1	70.6		1	Unknown	Yes	Temereva (2015)
Nemertea	1	81.1	1	6	Pigmented cup	Yes	Dohren et al. (2007)
Mollusca-Polyplacophora	1	75.0		9	Aesthetes - Ocelli	Yes	Serb et al. (2008)
Mollusca-Cephalopoda	6	4.6-98.4	1	6	Pinhole eye - Camera eyes	Paralarvae	Serb et al. (2008)
Mollusca-Bivalvia	6	95.4-98.6	5	13	Open pit - Lens eyes - Multifaceted compound eye	Yes	Serb et al. (2008)
Mollusca-Gastropoda	9	52.4-98.5	2	16	Open pit - Lens eyes	Yes	Serb et al. (2008)
Bryozoa	2	56.4-76.2	1	1	Pigmented cup	Yes	Doring et al. (2020)
Acanthocephala	1	23.0		0	Unknown	No	Kennedy (2015)
Orthonectida	1	50.01		0	Unknown	No	Mikhailov et al. (2016)
Platyhelminthes-Macrostomida	1	86.7		1	Pigmented cup	No	Wudarski et al. (2020)
Platyhelminthes-Polycladida*				3	Pigmented cup - Phaosomes	Yes	*Rawlison et al. (2019)
Platyhelminthes-Cestoda	11	32-72.7	1	1	Presumptive photoreceptors in the larvae	Yes - No in terrestrial species	Biserova (2015)
Platyhelminthes-Trematoda	19	38.1-78.8	4	4	Pigmented cup	Yes	Rohde & Watson (1991)
Platyhelminthes-Monogea	1	20.7		1	Pigmented cup with lenses	Yes	Rohde et al. (1999)

Supplementary Figure S3 – Taxa composition, photoreceptive structures and larvae. Table showing the different taxa relative to the number of species analysed, their BUSCO score, the number of species with a chromosome-level assembled genome, the number of opsins estimated, the known photoreceptive structures in each taxa, and the presence of swimming larvae.