

CLADE	SPECIES NUMBER	BUSCO (RANGE)	CHROMOSOME LEVEL ASSEMBLY SPECIES	ESTIMATED OPSIN NUMBER (NODE)	PHOTORECEPTIVE STRUCTURES	FREE SWIMMING LARVAL STAGES (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	K. Rohde & N. A. Watson (1991)
Platyhelminthes-Monogea	1	20.7		1	Pigmented cup with lenses	Yes	Rohde et al. (1999)

Supplementary Figure S3 – Clade composition, photoreceptive structures and larval stages. Table showing the different clades relative to the number of species analysed, their BUSCO score, the presence of species chromosome level assembly, the number of opsin estimated, the known photoreceptive structures in each taxa, and the presence of a swimming larvae stage.