

Table S1. Primers used in this study.

Genomic region	Primer name	Sequence	Source
TNUC813	TNUCF6	CTTTGGGATACTGCTGG	Present study
	TNUCR6	GCAAAACAAAACCAATCC	Present study
COI	BarS	GTTATGCCTGTAATGATTG	Álvarez-Presas <i>et al.</i> (2011)
	COIR	CCWGTYARMCCHCCWAYAGTAAA	Lázaro <i>et al.</i> (2009)
	COIF	CCNGGDTTGGDATDRTWTCWCA	Lázaro <i>et al.</i> (2009)
18S rDNA type II	18S1F	TACCTGGTTGATCCTGCCAGTAG	Giribet <i>et al.</i> (1996)
	18S7R	GCATCACAGACCTGTTATTGC	Giribet <i>et al.</i> (1996)
	18S4F	CCAGCAGCCGCGCTAATTC	Giribet <i>et al.</i> (1996)
	18S9R	GATCCTTCCGCAGGTTACCTAC	Giribet <i>et al.</i> (1996)
28S rDNA	28S1F	TATCAGTAAGCGGAGGAAAAG	Álvarez-Presas <i>et al.</i> (2008)
	28S6R	GGAACCCCTTCTCCACTTCAGT	Álvarez-Presas <i>et al.</i> (2008)
EF-1a	EFPlatF	GATTGCYCCWGGYCATCG	Carbayo <i>et al.</i> 2013
	EFPlatR	GCRATWGAYTCGTGRTGC	Carbayo <i>et al.</i> 2013
Nd4toCox1	Kete	CATGGTTTTTGTCTTC	Solà <i>et al.</i> 2015
	Peten	CCAAAACCACCAATC	Solà <i>et al.</i> 2015

References:

- Álvarez-Presas M, Baguñà J, Riutort M. 2008. Molecular phylogeny of land and freshwater planarians (Tricladida, Platyhelminthes): from freshwater to land and back. *Molecular Phylogenetics and Evolution* 47: 555–568. <https://doi.org/10.1016/j.ympev.2008.01.032>
- Álvarez-Presas M, Carbayo F, Rozas J, Riutort M. 2011. Land planarians (Platyhelminthes) as a model organism for fine-scale phylogeographic studies: understanding patterns of biodiversity in the Brazilian Atlantic Forest hotspot. *Journal of Evolutionary Biology* 24: 887–896. <https://doi.org/10.1111/j.1420-9101.2010.02220.x>
- Carbayo F, Álvarez-Presas M, Olivares CT, Marques FPL, Froehlich EM, Riutort M. 2013. Molecular phylogeny of Geoplaninae (Platyhelminthes) challenges current classification: proposal of taxonomic actions. *Zoologica Scripta* 42: 508–528. <https://doi.org/10.1111/zsc.12019>
- Giribet, G, Carranza, S, Baguñà, J, Riutort, M, Ribera, C. 1996. First molecular evidence for the existence of a Tardigrada + Arthropoda clade. *Molecular Biology and Evolution*, 13(1), 76–84. <https://doi.org/10.1093/oxfordjournals.molbev.a025573>
- Lázaro EM, Sluys R, Pala M, Stocchino GA, Baguñà J, Riutort M. 2009. Molecular barcoding and phylogeography of sexual and asexual freshwater planarians of the genus *Dugesia* in the Western Mediterranean (Platyhelminthes, Tricladida, Dugesidae). *Molecular Phylogenetics and Evolution* 52: 835–845. <https://doi.org/10.1016/j.ympev.2009.04.022>
- Solà, E., Álvarez-Presas, M, Frias, C, Littlewood, T, Rozas, J, Riutort, M. 2015. Evolutionary analysis of mitogenomes from parasitic and free-living flatworms. *PLoS ONE*, 10(3), e0120081. <https://doi.org/10.1371/journal.pone.0120081>