

Table S1. Nematode species, hosts, localities, GenBank accession numbers, and references used in phylogenetic analyses.

Families	Species	Host	Locality	Accession numbers	Reference
Cosmocercidae	<i>Aplectana pella</i> Santos, Borges and Melo, 2023	<i>Osteocephalus cabrerai</i> (Cochran and Goin, 1970)	Brazil	XXXXXX	Present study
	<i>Aplectana hylambatis</i> (Baylis, 1927)	<i>Pithecopus azureus</i> (Cope, 1862)	Brazil	PQ037030	Santos et al. (2024)
	<i>Aplectana dayaoshanensis</i> Chen, Ni, Gu, Sinsch and Li, 2021	<i>Hylarana spinulosa</i> (Smith, 1923)	China	OK045516	Chen et al. (2021a)
	<i>Aplectana chamaeleonis</i> (Baylis, 1929)	<i>Hyperolius kivuensis</i> Ahl, 1931	Rwanda	OK045518	Chen et al. (2021a)
	<i>Aplectana xishuangbannaensis</i> Chen, Ni, Gu and Li, 2021	<i>Polypedates megacephalus</i> Hallowell, 1861	China	MW329041	Chen et al. (2021b)
	<i>Cosmocerca longicauda</i> (Linstow, 1885)	Snail	-	OL468616	Unpublished
	<i>Cosmocerca simile</i> Chen, Zhang, Feng and Li, 2020	<i>Bufo gargarizans</i> Cantor, 1842	China	MN839758	Chen et al. (2020)
	<i>Cosmocerca</i> sp. 1	<i>Hoplobatrachus chinensis</i> (Osbeck, 1765)	China	MW329987	Chen et al. (2021b)
	<i>Cosmocerca</i> sp. 2	<i>Bufo melanostictus</i> (Schneider, 1799)	China	MW329990	Chen et al. (2021b)
	<i>Cosmocercoides dukae</i> (Holl, 1928)	<i>Deroceras panormitanum</i> Lessona, and Pollonera, 1882	USA	FJ516753	Ross et al. (2010)
	<i>Cosmocercoides pulcher</i> Wilkie, 1930	<i>Bufo formosus</i> Boulenger, 1883	Japan	LC018444	Tran et al. (2015)
	<i>Cosmocercoides qingtianensis</i> Chen, Zhang, Nakao, and Li, 2018	<i>B. gargarizans</i>	China	MH178321	Chen et al. (2018)
	<i>Cosmocercoides tonkinensis</i> Tran, Sato, and Luc, 2015	<i>Acanthosaura lepidogaster</i> Cuvier, 1829	Vietnam	AB908160	Tran et al. (2015)
	<i>Nemhelix bakeri</i> Morand and Petter, 1986	Snail	-	HM627010	Saito et al. (2021)
	<i>Ichtyobronema hamulatum</i> (Moulton, 1931)	<i>Lota lota</i> (Linnaeus, 1758)	Russia	KY476351	Sokolov & Malysheva (2017)
Quimperiidae (Outgroup)					

Cucullanidae (Outgroup)	<i>Dichelyne grandistomis</i> (Ferraz & Thatcher, 1988)	<i>Oxydoras niger</i> (Valenciennes, 1821)	Brazil	KX752094	Pereira & Luque (2017)
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References cited in Table S1

Chen H-X, Ni X-F, Gu X-H, Sinsch U, Li L. Morphology, genetic characterization and phylogeny of *Aplectana dayaoashanensis* n. sp. (Nematoda: Ascaridida) from frogs. *Infect Genet Evol* 2021a; 96: 105123. <https://doi.org/10.1016/j.meegid.2021.105123>.

Chen H-X, Gu X-H, Ni X-F, Li L. Description of a new species of *Aplectana* (Nematoda: Ascaridomorpha: Cosmocercidae) using an integrative approach and preliminary phylogenetic study of Cosmocercidae and related taxa. *Parasit Vectors* 2021b; 14(1): 165. <https://doi.org/10.1186/s13071-021-04667-9>.

Chen H-X, Zhang L-P, Feng Y-Y, Li L. Integrated evidence reveals a new species of *Cosmocerca* (Ascaridomorpha: Cosmocercidae) from the Asiatic toad *Bufo gargarizans* Cantor (Amphibia: Anura). *Parasitol Res* 2020; 119: 1795–1802. <https://doi.org/10.1007/s00436-020-06687-3>.

Chen H-X, Zhang L-P, Nakao M, Li L. Morphological and molecular evidence for a new species of the genus *Cosmocercoides* Wilkie, 1930 (Ascaridida: Cosmocercidae) from the Asiatic toad *Bufo gargarizans* Cantor (Amphibia: Anura). *Parasitol Res* 2018; 117: 1857-1864. <https://doi.org/10.1007/s00436-018-5877-8>.

Pereira FB, Luque JL. An integrated phylogenetic analysis on ascaridoid nematodes (Anisakidae, Raphidascarididae), including further description and intraspecific variations of *Raphidascaris (Sprentascaris) lanfrediae* in freshwater fishes from Brazil. *Parasitol Int* 2017; 66(1): 898–904. <https://doi.org/10.1016/j.parint.2016.10.012>.

Ross JL, Ivanova ES, Spiridonov SE, Waeyenberge L, Moens M, Nicol GW, et al. Molecular phylogeny of slug-parasitic nematodes inferred from 18S rRNA gene sequences. *Mol Phylogenet Evol* 2010; 55(2): 738–743. <https://doi.org/10.1016/j.ympev.2010.01.026>.

Saito T, Hayashi K, Hayashi K, Akita Y, Une Y, Kuroki T, Shibahara T, et al. Morphological observation and first molecular characterization of *Grassennema procaviae* Petter, 1959 (Cosmocercidae: Atractidae) in the stomach of Cape hyrax (*Procavia capensis*) raised in a zoo in Japan. *Parasitol Int* 2021; 84: 102385. <https://doi.org/10.1016/j.parint.2021.102385>.

Santos PS, Silva ICO, Ferreira VL, Tavares LER, Paiva F, Pereira FB. First genetic characterisation and phylogenetic position of *Aplectana hylambatis* (Nematoda: Cosmocercidae), infecting *Pithecopus azureus* (Anura: Hylidae) in the Brazilian Pantanal. *J Helminthol* 2024; 98: e62, 1–5.

<https://doi.org/10.1017/S0022149X24000609>.

Sokolov SG, Malysheva SV. Molecular characterization of *Ichtyobronema hamulatum* (Moulton, 1931) (Nematoda: Quimperiidae), a common parasite of burbot *Lota lota* (Linnaeus) (Actinopterygii: Lotidae). *Helminthologia* 2017; 54(3): 183–188.

Tran BT, Sato H, Luc PV. A new *Cosmocercoides* species (Nematoda: Cosmocercidae), *C. tonkinensis* n. sp., in the scale-bellied tree lizard (*Acanthosaura lepidogaster*) from Vietnam. *Acta Parasitol* 2015; 60(3): 407–416. <https://doi.org/10.1515/ap-2015-0056>.