GENOME SEQUENCING

The Complete Genome Sequences of 38 Species of Elephantfishes (Mormyridae, Osteoglossiformes)

Rose Peterson[1], John Sullivan[2], Stacy Pirro[3]

[1] Department of Biological Sciences, The George Washington University, [2] Cornell University Museum of Vertebrates, [3] Iridian Genomes

Biodiversity Genomes

We present the complete genome sequences of 38 species of elephantfishes from 20 genera. Illumina sequencing was performed on genetic material from single wild-caught individuals. The reads were assembled using a *de novo* method followed by a finishing step. The raw and assembled data is publicly available via Genbank.

Introduction

The Mormyridae are a family of weakly electric freshwater fish found over most of Africa, with the exception of the Sahara, northernmost Mahgreb and southernmost Cape provinces. They are an important food source in Africa's inland regions where they are often the most abundant fish available (Sullivan and Lavoué 2022).

Elephantfishes possess organs that generate weak electric fields, and electroreceptors that can sense nearby objects and prey as distortions to their self-produced detect the electric fields generated by prey in low visibility conditions (Carlson et al. 2019).

We present the complete genome sequences of 38 species of elephantfishes from 20 genera. Tissue samples were obtained from preserved museum specimens.

Methods

DNA extraction was performed using the Qiagen DNAeasy genomic extraction kit using the standard process. A paired-end sequencing library was constructed using the Illumina TruSeq kit according to the manufacturer's instructions. The library was sequenced on an Illumina Hi-Seq platform in paired-end, 2 × 150 bp format. The resulting fastq files were trimmed of adapter/primer sequence and low-quality regions with Trimmomatic v0.33 (Bolger, Lohse, and Usadel 2014). The trimmed sequence was assembled by SPAdes v2.5 (Bankevich et al. 2012) followed by a finishing step using Zanfona (Kieras, O'Neill, and Pirro 2021).

Results and Data Availability

All data, including raw reads and assembled genome sequence, is available via Genbank.

taxname	specimen_voucher	raw_read_data	genome
Boulengeromyrus knoepffleri	CUMV 81643-2254	SRR8717394	JABJVO000000000
Brevimyrus niger	CUMV 94596	SRR8717240	JAABNY000000000
Brienomyrus brachyistius	CUMV 89979	SRR8717393	JAODOV000000000
Brienomyrus longianalis	AMNH 257030	SRR8717273	JABJVP000000000
Campylomormyrus numenius	CUMV 97364	SRR8717166	JAODOW000000000
Campylomormyrus tamandua	CUMV 87879	SRR8717220	JABJVQ000000000
Cryptomyrus ogoouensis	CUMV 98155	SRR8717184	JAOYFF000000000
Cyphomyrus discorhynchus	CUMV 82809	SRR8717165	JABJVS000000000
Cyphomyrus wilverthi	AMNH 253525	SRR8717167	JAODKV000000000
Genyomyrus donnyi	CUMV 96735	SRR8794244	JAODJT000000000
Gnathonemus echidnorhynchus	CUMV 96186	SRR8794645	JAODJU000000000
Gnathonemus longibarbis	CUMV 90412	SRR8794644	JAODJV000000000
Hippopotamyrus longilateralis	SAIAB 78793	SRR9215643	JAOXXE000000000
Hippopotamyrus pictus	CUMV 94598	SRR8793730	JAODLC000000000
Hyperopisus bebe	CUMV 91467	SRR8794911	JAODJW000000000
Isichthys henryi	CUMV 84650-2051	SRR8794571	JAODJX000000000
Ivindomyrus marchei	CUMV 83105	SRR8794910	JAODJY000000000
Ivindomyrus opdenboschi	CUMV 83107	SRR8795503	JAODJZ000000000
Marcusenius schilthuisiae	CUMV 87790	SRR8794570	JAODKA000000000
Marcusenius ussheri	CUMV 97730	SRR8794646	JAODKB000000000
Mormyrops attenuatus	CUMV 88155	SRR8844661	JAODKC000000000
Mormyrops boulengeri	CUMV 87730	SRR8844538	JAODLD000000000
Mormyrops zanclirostris	CUMV 96834	SRR8844858	JAODKD000000000
Mormyrus hasselquistii	CUMV 94650	SRR9055927	JAODKE000000000
Mormyrus iriodes	AMNH 263510	SRR9056052	JAAGVU000000000
Mormyrus lacerda	SAIAB 87199	SRR9215603	JAABNX000000000
Mormyrus proboscirostris	CUMV 96245	SRR8844651	JAODKF000000000
Myomyrus macrops	AMNH 231025	SRR6399006	JAODKG000000000
Myomyrus pharao	CUMV 96474	SRR9214507	JAODKH000000000
Paramormyrops hopkinsi	CUMV 89281-5497	SRR9214432	JAODKI000000000
Petrocephalus microphthalmus	CUMV 97508	SRR6399355	JAODKK000000000
Petrocephalus schoutedeni	CUMV 97510	SRR9214420	JAODKL000000000
Petrocephalus sullivani	CUMV 79700	SRR6410432	JAODKM000000000
Petrocephalus zakoni	CUMV 87787	SRR9214598	JAODKN000000000
Pollimyrus isidori	CUMV 97714	SRR9215378	JABFDZ000000000
Pollimyrus plagiostoma	CUMV 96188	SRR9214508	JABFEA000000000
Stomatorhinus ivindoensis	CUMV 92286	SRR9214431	JABFEB000000000
Stomatorhinus walkeri	CUMV 95160	SRR9214424	JAODUD000000000

Discussion

These published data have already been used in recent publications on mormyrid phylogenomics and taxonomy (Peterson et al. 2022; Sullivan et al. 2022) and will serve a resource for future studies of this group of fishes.

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