

Murillo Fernando Rodrigues

Evolutionary biologist and aspiring data scientist

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Currently

I'm a Master's in the Department of Genetics and Evolutionary Biology (started 2016) and an undergraduate student of Applied Mathematics, both at University of Sao Paulo. During my Master's, I've been working on contemporary selection in *Drosophila melanogaster*'s immune system.

Skills

Population genetics
Phylogenetics

Bioinformatics
Data science

Statistics

Education

2016–

University of Sao Paulo Evolutionary biology MSc student (supervisor: Rodrigo Cogni)

2016–

University of Sao Paulo BSc Applied mathematics

2012–15

University of Sao Paulo BSc Biology (second in my class)

Languages

Portuguese (native)

English (fluent)

Spanish (proficient)

Research projects

Population genomics of

Drosophila melanogaster 2015–

Clinal variation in immune-related genes of *Drosophila melanogaster*

Selective pressures imposed by natural enemies may vary clinally, and the strongest pressure occurs in tropical regions. This spatial structure in selective forces may lead to the evolution of clines in polymorphisms related to resistance to natural enemies. The goal of this project is to investigate, with clinal variation, contemporaneous selection in genes of the *Drosophila melanogaster* immune system. Genomic data for natural populations distributed along a broad latitudinal transect was made available by previous studies; thus, it will be possible to examine the presence of clines in immune-related genes, comparing them to control genes without immune function.

Molecular phylogenetics of

Cestoda 2013–14

Diversity and phylogenetic positioning of freshwater lineages of *Rhinebothrium* Linton, 1890 (EUCESTODA: RHINEBOTHRIIDEA) from Lake Maracaibo and Orinoco basin, Venezuela.

The study of the phylogenetic relationships is essential to understand biological phenomena from an evolutionary standpoint. Host-parasite systems can be used as biological models for the study of historical associations. Neotropical stingrays and their parasites are an interesting model system because it should reflect the biogeographical history of the host and parasites into the Neotropical freshwater environment. Several authors have devoted efforts to understand the diversification of parasites of stingrays in South America. *Rhinebothrium* is genus of parasitic cestods of freshwater stingrays. The systematics of this genus was revised in 2011, but the authors of this study had no specimens from the region of Lake Maracaibo and Orinoco, which are essential for understanding the diversification of this group. This study aims to include specimens of these regions in order to obtain a more complete picture of the composition of this genus. Nucleotide sequences of the CO I gene along with morphological cohesion will be used to propose a phylogenetic hypothesis for freshwater lineages of the genus *Rhinebothrium*. The boundaries between species will be tested using the phylogenetic and morphological congruence with statistical support, provided by the program SPLITS.

Conferences, meetings and workshops

2014

8th Workshop on Cestode Systematics and Phylogeny, Sao Paulo, Brazil

Teaching

2016

Introduction to Biostatistics using R, IB, USP

Short course at Institute of Biosciences - University of Sao Paulo
24h work load

References

Available on request.