

curriculum vitae of
Murillo F. Rodrigues

PHD CANDIDATE · INSTITUTE OF ECOLOGY AND EVOLUTION · UNIVERSITY OF OREGON

🏠 m-rodriques.me ✉ murillofer.rodrigues@gmail.com
🌐 mufernando in murillo-fernando-rodrigues 📄 google scholar

EDUCATION

2018 – present	Ph.D. in Biology Provisional dissertation title: “Simulation-based inference in population genetics: tools, methods and applications”. Expected to defend by January 2024.	UNIVERSITY OF OREGON, UNITED STATES
2016 – 2018	M.Sc. in Genetics and Evolutionary Biology Thesis title: “Adaptive or neutral clines? Integrating genome-wide clinal and seasonal variation to infer natural selection in <i>Drosophila melanogaster</i> ”.	UNIVERSIDADE DE SÃO PAULO, BRASIL
2012 – 2015	B.Sc. in Biology Thesis title: “Diversity and phylogenetic positioning of freshwater lineages of <i>Rhinebotrhium</i> Linton, 1890 from Lake Maracaibo and Orinoco basin, Venezuela”.	UNIVERSIDADE DE SÃO PAULO, BRASIL

SKILLS

Coding	Python, R, Bash, C++.
Computing	Unix, HPC, SLURM, Snakemake, git.
Bioinformatics	Next-gen sequencing data quality control and preprocessing, Genome and transcriptome alignment, SNP calling, Differential expression analysis.
Statistics	Frequentist and bayesian statistics (using R and Stan), Simulation-based inference, Machine learning (CNN, GraphNN, RNN).

PUBLICATIONS

- [7] **Rodrigues, M. F.**, Kern, A. D., Ralph, P. L. “Shared evolutionary processes shape landscapes of genomic variation in the great apes”. In: *bioRxiv* (2023), pp. 2023–02.
- [6] Baumdicker, F., Bisschop, G., Goldstein, D., Gower, G., Ragsdale, A. P., Tsambos, G., Zhu, S., Eldon, B., Ellerman, E. C., Galloway, J. G. et al. “Efficient ancestry and mutation simulation with msprime 1.0”. In: *Genetics* 220.3 (2022), iyab229.
- [5] Lauterbur, M. E., Cavassim, M. I. A., Gladstein, A. L., Gower, G., Pope, N. S., Tsambos, G., Adrion, J., Belsare, S., Biddanda, A., Caudill, V. et al. “Expanding the stdpopsim species catalog, and lessons learned for realistic genome simulations”. In: *BioRxiv* (2022), pp. 2022–10.
- [4] Estevez-Castro, C. F., **Rodrigues, M. F.**, Babarit, A., Ferreira, F. V., Marois, E., Cogni, R., Marques, J. T., Olmo, R. P. “The origin and evolution of loqs2: a gene encoding an antiviral dsRNA binding protein in *Aedes* mosquitoes”. In: *bioRxiv* (2021), pp. 2021–12.
- [3] **Rodrigues, M. F.**, Cogni, R. “Genomic Responses to Climate Change: Making the Most of the *Drosophila* Model”. In: *Frontiers in Genetics* 12 (2021), p. 676218.

- [2] **Rodrigues, M. F.**, Vibranovski, M. D., Cogni, R. "Clinal and seasonal changes are correlated in *Drosophila melanogaster* natural populations". In: *Evolution* 75.8 (2021), pp. 2042–2054.
- [1] Stankowski, S., Chase, M. A., Fuiten, A. M., **Rodrigues, M. F.**, Ralph, P. L., Streisfeld, M. A. "Widespread selection and gene flow shape the genomic landscape during a radiation of monkeyflowers". In: *PLoS biology* 17.7 (2019), e3000391.

SCHOLARSHIPS AND AWARDS

2022 – 2023	Harvey E Lee Graduate Scholarship	UNIVERSITY OF OREGON
2022 – 2023	Marthe E. Smith Memorial Science Scholarship	CAS, UNIVERSITY OF OREGON
2019 – 2020	Hill Fund Award	CAS, UNIVERSITY OF OREGON
2019 – 2021	Genetics Training Grant	CAS, UNIVERSITY OF OREGON
2017 – 2018	Research Internship Abroad Fellowship	THE SÃO PAULO RESEARCH FOUNDATION
2016 – 2018	Master's Fellowship	THE SÃO PAULO RESEARCH FOUNDATION
2013 – 2014	Undergraduate Research Fellowship	THE SÃO PAULO RESEARCH FOUNDATION

RESEARCH EXPERIENCE

2018 – present	PhD Student	UNIVERSITY OF OREGON, UNITED STATES
	<ul style="list-style-type: none"> Developed open source population genetics simulation tools within the <code>tskit</code> and <code>stdpopsim</code> communities (mostly in Python and C++). Analyzed population genomic data and used simulations to gain insights into the role of natural selection in shaping genetic variation in the great apes Developed a machine learning framework that takes tree sequences as input to infer evolutionary processes. 	
	Advised by Drs. Andrew Kern and Peter Ralph.	
2017 – 2018	Visiting Researcher	UNIVERSITY OF WISCONSIN, UNITED STATES
	<ul style="list-style-type: none"> Phenotyped <i>D. melanogaster</i> populations for different immunity phenotypes. Analyzed population genomic data to find unusually differentiated immunity genes. 	
	Advised by Dr. John Pool.	

2016 – 2018

Master's Student

UNIVERSIDADE DE SÃO PAULO, BRASIL

- Implemented a pipeline to analyze Pool-seq dataset of geographically distributed samples.
- Evaluated the association between spatial and temporal variation in allele frequencies to understand the importance of selection in structuring clinal patterns.

Advised by Drs. Rodrigo Cogni and Maria Vibranovski.

2013 – 2014

Undergraduate Researcher

UNIVERSIDADE DE SÃO PAULO, BRASIL

- Performed DNA extraction and Sanger sequencing of animal samples.
- Analyzed DNA sequence data to build a new phylogeny for *Rhinebothrium*, a genus of tapeworms found in freshwater stingrays.

Advised by Dr. Fernando Portella de Luna Marques.

TEACHING

2019

Introduction to Programming for Biologists

UNIVERSITY OF OREGON, UNITED STATES

Teaching assistant for consecutive terms (12h/week for 10 weeks).

2018

General Biology III: Populations

UNIVERSITY OF OREGON, UNITED STATES

Teaching assistant (12h/week for 10 weeks).

2017

Molecular Ecology

UNIVERSIDADE DE SÃO PAULO, BRASIL

Teaching assistant (6h/week for 16 weeks).

2016

Evolutionary Processes

UNIVERSIDADE DE SÃO PAULO, BRASIL

Teaching assistant (6h/week for 16 weeks).

2015

Introduction to Biostatistics

UNIVERSIDADE DE SÃO PAULO, BRASIL

Invited to give a short course on Biostatistics in Semana Temática da Biologia – IB/USP (12h)

2015

Introduction to Statistics

UNIVERSIDADE DE SÃO PAULO, BRASIL

Undergraduate teaching assistant (6h/week for 16 weeks).

2013

Introduction to Systematics and Biogeography

UNIVERSIDADE DE SÃO PAULO, BRASIL

Undergraduate teaching assistant (6h/week for 16 weeks).

PRESENTATIONS AND POSTERS

2022

Population, Evolutionary, and Quantitative Genetics Conference

ORGANIZED BY THE GENETICS

SOCIETY OF AMERICA, HELD IN CALIFORNIA, UNITED STATES.

Poster title: Why are landscapes of diversity correlated in the great apes? [See poster here.](#)

2021

SMBE2021

ORGANIZED BY THE SOCIETY FOR MOLECULAR BIOLOGY AND EVOLUTION, HELD

VIRTUALLY.

Poster title: Natural selection and landscapes of diversity in the great apes.

2021

Probabilistic Modeling in Genomics

ORGANIZED BY COLD SPRING HARBOR LABORATORIES, HELD

VIRTUALLY.

Poster title: Natural selection and landscapes of diversity in the great apes. [See poster here.](#)

2020

The Allied Genetics Conference

ORGANIZED BY THE GENETICS SOCIETY OF AMERICA, HELD

VIRTUALLY.

2014 8th Workshop on Cestode Systematics and Phylogeny UNIVERSIDADE DE SÃO PAULO, BRASIL

SERVICE

Reviewing GENETICS, Molecular Ecology Resources, G3, Proceedings of the Royal Society B: Biological Sciences

Treasurer Graduate Evolutionary Biology and Ecology Students
A student led organization that aims to provide career-building activities to graduate students and to promote outreach programs to the general community.

Developer tskit
Part of a community of developers that maintain different population genetics open-source software.