

Aryeh H. Miller

Computational Biologist

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Education

Aug 2020 – Present | **School of Medicine, Washington University in St. Louis**
PhD in Ecology and Evolutionary Biology

Aug 2016 – May 2020 | **University of North Carolina at Asheville**
BS in Biology with honors

Experience

2020 - Present | **PhD Candidate – School of Medicine, Washington University in St. Louis**

- Research on the predictability of genomic variants underlying complex traits using large whole genome datasets and various statistical approaches

2018 - 2020 | **Research Fellow – National Museum of Natural History, Smithsonian Institution**

- Designed, deployed, and executed a cost-efficient, high-throughput wet and dry lab pipeline to generate multi-locus genetic sequence data of vertebrate biodiversity in Vietnam

Skills

Code: R, python, awk, bash

Bioinformatics: Illumina whole genome assembly, alignment, and SNP calling with bwa, GATK, samtools, and vcftools. Workflow engineering and management in Snakemake

Computing: SLURM, Unix tools, git

Statistics: GWAS, linear models, classical frequentist statistics (e.g., t-tests, ANOVAs), hidden Markov models, maximum likelihood estimation, Bayesian inference

Machine Learning: Decision trees, cross-validation, random forest, K-nearest neighbor, K-means clustering, multivariable dimensionality reduction

Highlighted Publications (full list at <https://scholar.google.com/citations?user=c1LSZQYAAAAJ&hl=en>)

- 2023 | 1. **Miller, A. H.**, Stroud, J. T. & Losos, J. B. The ecology and evolution of key innovations. *Trends in Ecology and Evolution* **38**, 122–131 (2023).
- 2022 | 2. **Miller, A. H.** & Stroud, J. T. Novel tests of the key innovation hypothesis: Adhesive toepads in arboreal lizards. *Systematic Biology* **71**, 139–152 (2022).
3. Reynolds, R. G. *et al.* Phylogenomics and Historical Biogeography of West Indian Rock Iguanas (genus *Cyclura*). *Molecular Phylogenetics and Evolution* **174**, 107548 (2022).
- 2019 | 4. **Miller, A. H.** *et al.* The complete mitochondrial genome of the critically endangered Lesser Antillean iguana (*Iguana delicatissima*; Squamata: Iguanidae). *Mitochondrial DNA Part B* **4**, 2479–2481 (2019).

Funding and Awards

1. NSF Graduate Research Fellow Award Finalist (2020, 2021)
2. University Research Scholar, UNC Asheville (2020)
3. Smithsonian Institution Global Genome Initiative Award (2018)