

FENNER MACRAE

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EDUCATION

- Reed College, B.A. Biology, Portland, Oregon

May 2016

RESEARCH

Lab Manager / Bioinformatics Technician

Jul 2017–Present

Reed College, Portland, Oregon

- Designed a pipeline for a large-scale genome sequencing project including sequence decontamination, *de novo* genome assembly and variant calling.
(github.com/fennerm/megadaph)
- Supervised volunteer scheduling/training and provided technical support for student research.

Research Assistant

Dec 2016–Jul 2017

Reed College, Portland, Oregon

- Analyzed mutation rate variation in the mitochondrial genomes of two *Daphnia* species.
(github.com/fennerm/daphnia-mtdna-ma)
- Developed novel statistical technique for high-coverage multisample variant calling which enabled sensitive detection of low-frequency mutations.

SKILLS

Languages/Frameworks: Python (biopython, numpy), R (bioconductor, dplyr, data.table, parallel, ggplot2), Docker, Bash, C++, Rmarkdown, LaTeX

Bioinformatics: Pipeline development (Snakemake), next-generation and Sanger sequence analysis, HPC cluster scheduling, genome assembly, variant calling, sequence decontamination

Programming: Git version control, test-driven development, HPC cluster scheduling, object oriented and functional programming, package development

PROJECTS

flashfocus (python): Simple focus animations for tiling window managers.

(github.com/fennerm/flashfocus)

pmultinom (R, C++): R package for computing the multinomial cumulative distribution function.

(github.com/fennerm/pmultinom)

ACADEMIC HONORS & AWARDS

- National Science Foundation S-STEM scholarship, 2013–2016, nominated by the Reed College faculty (2013–2016)
- Divisional commendation, 2013–2016.
- Summer Undergraduate Research Fellowship (2015)
- Reed College Science Research Fellowship (2014)

SELECTED PRESENTATIONS

- *Direct estimate of intra- and interspecific variation in the rate and spectrum of mitochondrial mutation in the genus Daphnia* - Evolution, 2017