FENNER MACRAE

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EDUCATION

- Reed College, B.A. Biology, Portland, Oregon   May 2016

RESEARCH

Lab Manager   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

- Built a pipeline for variant calling in the mitochondrial genome of *Daphnia*. (*github.com/fennerm/daphnia-mtdna-ma*)
- Developed novel statistical technique for high-coverage multisample variant calling which allowed for sensitive detection of low-frequency mutations.

PROJECTS

pmultinom (R, C++): R package for computing the multinomial cumulative distribution function. (*github.com/fennerm/pmultinom*)

i3restore (Python): Workspace layout save/restore for the i3 window manager. (*github.com/fennerm/i3restore*)

SKILLS

Languages/Frameworks: Python (biopython), R (bioconductor, dplyr, data.table, parallel, ggplot2), Bash, C++, Rmarkdown, LaTex, Microsoft Excel, Microsoft Word

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

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*