Barney Potter

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My goal is to apply my skills in computer science, mathematics, and research to a challenging position in computational biology.

Undergraduate thesis

title: *Modeling Cell Signaling Networks with Prize-Collecting Subhypernetworks*

supervisors: James D. Fix & Anna M. Ritz

description: Developed the notion of a "hypershrub," a multi-source, multi-target generalization of a hyperpath. Created a formulation that finds specific, prize-dense hypershrubs representative of biological phenomena, which was implemented in Python. Finally, applied this formulation to the human Hedgehog signaling pathway, related to Basal Cell carcinoma, to analyze the effectiveness of the algorithm in real data.

Education

Reed College **Portland, OR**
B.A. Mathematics & Biology *2012-2016*
Main subjects: Computer Science, Computational Biology, Genomics, Statistics

Experience

Research

Reed College **Portland, OR**
Research Assistant *2015-2016*
Bioninformatic analysis of the effect of whole genome duplication on the transcriptome of *Arabidopsis thaliana*. Design and development of bioinformatic pipelines. Data acquisition and analysis. Molecular biology techniques including DNA/RNA extraction, RNA-Seq (including library preparation), and RNA-FISH.
Detailed achievements:
- Recipient of Summer Undergraduate Research Fellowship, Reed College 2015;
- Presented research poster at Inland Northwest Genomics Research Symposium, University of Idaho 2015;
- Recieved funding to continue with post-baccalaureate research.

Reed College **Portland, OR**
Independent Research *2014-2016*
Took part in 6 week independent research projects as part of coursework. Research topics included:
- Impact of predator cues on tadpole development in *Bombina orientalis*.
- Optogenetics in motor neurons of *Drosophila melanogaster*.
- Selection rates in genes correlated with heavy-metal chelation.

Additionally, took part in a semester-long project assessing the gene expression profile of two *A. thaliana* ecotypes following synthetic whole genome duplication.

Teaching

Reed College **Portland, OR**

Teacher's Assistant & Tutor, Academic Support Services *2014-2016*

Oversaw introductory computational biology and genomics labs. Tutored undergraduates in computational biology, introductory computer science, and biology. Co-taught a cocurricular leadership course to undergraduates for the Reed Leadership Academy.

Reed College **Portland, OR**

Lead Teacher, Reed Science Outreach *2012-2016*

Developed and taught science curriculum to students at low-income elementary and middle schools in Portland. Acted as a mentor and role model for at-risk students. Cooridinated directly with program manager and classroom teachers to ensure the highest quality of lessons possible for students.

Service

Restaurants Unlimited Inc. **Seattle, WA; Portland, OR**

Servers' Assistant & Food Quality Specialist, Palisade & Portland City Grill *2013-2014*

Responsible for timely delivery of food to restaurant guests. Ensured that food met high quality standards, prior to delivery and that used dishware was removed promptly. Facilitated communication between restaurant guests and chefs to maximize the quality of guests' dining experience.

Languages

Python: 3 years — *All thesis work, and most class work.*

Scala: 1 year — *Class work.*

Java: 6 months — *Class work.*

HTML & CSS: 6 months — *Personal projects..*

C#: 6 months — *Game development through Unity.*

C++: 6 months — *Personal projects.*

Computer skills

Operating Systems: Windows, Mac OS X, Unix, Ubuntu

Programming: Algorithm Design, Linear Programming, Pipeline Tuning, Shell Scripts

Web: Git, Google Suite, Social Media, SSH

Development Platforms: Unity, Android Studio

Other: LaTeX, Inkscape, CPLEX, R

Interests

Birding: Interested in the shorebirds of the Pacific Northwest.

Game Development: Member of Portland Indie Game Squad.

Horticulture: Making diverse garden beds of native Northwestern herbs and flowers.

References

James Fix: jimfix@reed.edu; 503-929-2732 — *Thesis co-advisor and academic advisor.*

Anna Ritz: aritz@reed.edu; 503-517-4177 — *Thesis co-advisor.*

Jeremy Coate: jcoate@reed.edu; 971-295-8785 — *Research supervisor.*