

Cameron Prybol

email: cameron.prybol@gmail.com | phone: 404 683 7308 | GitHub: @cjprybol

Mission Statement

Advancing our understanding of soilborne microbes and their role in agricultural productivity and ecosystem regeneration

Genomics and Data Science

High Throughput Genomics Terabyte-scale genomics pipeline development and data processing

7 years

- Genome assembly, classification, quantification, variant calling
- Transcriptome assembly and differential expression analysis
- Human, model organism, gut, airborne, and soil microbiome datasets

Unix/Linux

9 years

Data acquisition, cleaning, parallel processing and pipeline automation

- Academic HPC clusters, AWS, GCP
- SLURM & Sun Grid Engine (SGE) job schedulers
- Singularity/Docker containers
- Managing, editing, and parsing of data using awk, sed, grep, parallel, and other GNU/POSIX tools
- Bash/Shell scripting for automated analysis pipelines
- Managing File/Folder permissions

Python

7 years

Proficiency with language and core data analytics/visualization libraries

- Rosalind bioinformatic challenges (<http://rosalind.info/users/cameron.prybol/>)
- Recruited by Google after successful completion of foobar challenges (declined to pursue PhD)
- Data visualization with Matplotlib and Plotly
- Data analysis with pandas, scikit-learn, scipy, numpy

Julia

3 years

Proficient with language understanding/development and package development/maintenance

- Language of choice for developing custom bioinformatics software
- Contributor and developer of several core data analytics packages, including DataFrames.jl
- Previous member of JuliaData organization
- Data visualization with Plots.jl and custom visualizations with Luxor.jl

Open Source Contributions

3 years

Notable Personal Projects

- reproducibility-via-singularity - 25 stars
- uCSV.jl - 6 stars
- foobar_solutions - 4 stars

Existing Projects

- JuliaLang/Julia
- JuliaData/DataFrames.jl
- JuliaGraphs/LightGraphs.jl
- sylabs/singularity
- Homebrew/homebrew-science
- JuliaStats/Distributions.jl
- JuliaStats/StatsBase.jl
- JuliaData/CSV.jl
- JuliaStats/DataArrays.jl
- JuliaStats/NullableArrays.jl
- JuliaData/CategoricalArrays.jl
- JuliaData/Missings.jl

Education

PhD 2015-2019	Genetics, Stanford University, Stanford, CA - Incomplete
BS 2010-2014	Biochemistry and Molecular Biology, University of Georgia, Athens, GA - Cum Laude, Graduation with Honors

Research Experience

2016-2019	Ashley/Snyder Labs, Precision Medicine, Department of Genetics, Stanford University - Probabilistic Graph-based Approaches to Genome Assembly, Identification, Analysis, and Quantification
2015	Li Lab, RNA-editing, Department of Genetics, Stanford University - <i>rotation</i> - Quantitative trait loci analysis of RNA editing effects of genetic variants - Differential gene expression in <i>in-vivo</i> protein knockdown samples
2015	Montgomery Lab, Human Population Genetics, Department of Genetics, Stanford University - <i>rotation</i> - Expression quantitative trait loci analysis during human bacterial infections
2014-2015	Lewis lab, Chromatin Function and Regulation, Department of Microbiology, University of Georgia - Heterochromatin regulation in knockout strain libraries and genetic crosses - High-throughput genetic screens, DNA sequencing, and bioinformatic analysis
2012-2013	Adams lab, BESC biofuels project, Department of Biochemistry, University of Georgia - Media and growth condition optimization in hyperthermophilic biomass fermentations - Reaction rates and enzyme kinetics of recombinant synthesis pathways
2012-2015	Un estudio de Lepidoptera en el valle de San Luis (Costa Rica), independent research project - Investigated phenology, voltinism, and abundance of tropical Lepidoptera - Acquired funding, developed sampling protocols, trained and managed interns
2011-2015	Pickering lab, Odum School of Ecology, University of Georgia - Factors of Lepidopteran phenology, voltinism, and abundance across latitudes - Developed species identification guides for academic/public use - Managed databases and webpages in Unix (Sun Solaris) environment - Identification of North, Central, and South American Lepidoptera

Publications

<i>manuscript in prep</i>	Prybol, CJ , Jiang, C, Snyder, M. Probabilistic Graph-based Genome Assembly and Analysis with Metagenomic Applications.
2019	Frésard, L. et al. Identification of rare-disease genes using blood transcriptome sequencing and large control cohorts. <i>Nature Medicine</i> 25, 911–919 (2019).
2019	Zastrow, DB, et al. A toolkit for genetics providers in follow-up of patients with non-diagnostic exome sequencing. <i>Journal of genetic counseling</i> 28.2 (2019): 213-228.
2017	Sochat VV, Prybol CJ , Kurtzer GM (2017) Enhancing reproducibility in scientific computing: Metrics and registry for Singularity containers. <i>PLoS ONE</i> 12(11)
2015	Basenko, EY, Sasaki, T, Ji, L, Prybol, CJ , Burckhardt, RM, Schmitz, RJ, & Lewis, ZA (2015). Genome-wide redistribution of H3K27me3 is linked to genotoxic stress and defective growth. <i>Proceedings of the National Academy of Sciences</i> .
2014	Basen, M, Rhaesa, AM, Kataeva, I, Prybol, CJ , Scott, IM, Poole, FL, & Adams, MWW (2014). Degradation of high loads of crystalline cellulose and of untreated plant biomass by the thermophilic bacterium <i>Caldicellulosiruptor bescii</i> . <i>Bioresource Technology</i> , 152, 384-392. http://doi.org/10.1016/j.biortech.2013.11.024
2014	Basen, M, Schut, GJ, Nguyen, DM, Lipscomb, GL, Benn, RA, Prybol, CJ , et al. (2014). Single gene insertion drives bioalcohol production by a thermophilic archaeon. <i>Proceedings of the National Academy of Sciences</i> , 111(49), 17618-17623. http://doi.org/10.1073/pnas.1413789111

Posters, Presentations and Conferences

<i>March 2019</i>	JIMB/NIST Trainee Symposium
<i>April 2016</i>	NHGRI Career Development Symposium
<i>April 2013</i>	UGA CURO symposium
<i>June 2012</i>	Costa Rica Live
<i>March 2012</i>	UGA Discussion Circles

Scholarships, Grants, Awards, and Funding

<i>2016-2019</i>	Joint Initiative for Metrology in Biology
<i>2015-2016</i>	Stanford Genome Training Program
<i>2015-2015</i>	Stanford ADVANCE Summer Institute
<i>2013</i>	UGA Honors International Scholar Program
<i>2012</i>	UGA CURO Summer Fellowship
<i>2010-2014</i>	Hope Scholarship