

Tara Furstenau, Ph.D.

Contact

The School of Informatics,
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Website:
<http://tfursten.github.io>

Github:
<https://github.com/TFursten>

Bitbucket:
<https://bitbucket.org/TaraFurstenau>

Skills

Programming Languages

Proficient: C++, Python, R

Familiar: Julia, Mathematica,
Rust, SQL

Visualization

Matplotlib, Seaborn, Lattice,
ggplot2, ggtree, Graphviz

Markup & Typesetting

HTML, Markdown, \LaTeX

Systems

Unix, Linux, Windows,
Macintosh OS X

Other

Version Control Systems: Git,
Github, Bitbucket

Research Experience

- 2018–Present **Assistant Research Professor**
The School of Informatics, Computing, and Cyber Systems · Northern Arizona University · Flagstaff, AZ
- 2016–2017 **Postdoctoral Scholar** in Viacheslav Fofanov's lab
The School of Informatics, Computing, and Cyber Systems · Northern Arizona University · Flagstaff, AZ
- 2013–2016 **Graduate Student** in Reed Cartwright's Lab
Center for Human and Comparative Genomics · The Biodesign Institute · Arizona State University · Tempe, AZ
- 2010–2013 **Research Associate** in Roberto Gaxiola's Lab
School of Life Sciences · Arizona State University · Tempe, AZ
- 2009–2010 **Undergraduate Student Researcher** in Lei Lei's Lab
School of Life Sciences · Arizona State University · Tempe, AZ

Education

- 2010–2016 **Ph.D.** in Molecular and Cellular Biology Arizona State University
Advisor: Reed Cartwright
Dissertation: Spatial Genetic Structure under Limited Dispersal: Theory, Methods and Consequences of Isolation-by-Distance
- 2008–2010 **B.S.** in Bioinformatics and Genomics Arizona State University
Dean's List · *magna cum laude*

Publications

Fofanov, VY*, **Furstenau, TN***, Sanchez, D, Hepp, CM, Cocking, J, Sobek, C, Pagel, N, Walker, F, and CL Chambers. (2018). Guano Exposed: Impact of aerobic conditions on bat fecal microbiota. *Ecology and Evolution*. [doi:10.1002/ece3.4084](https://doi.org/10.1002/ece3.4084)

Furstenau, TN, and RA Cartwright (2017). The role of self-incompatibility systems in the prevention of bi-parental inbreeding. *PeerJ Preprints*. [doi:10.7287/peerj.preprints.3042v1](https://doi.org/10.7287/peerj.preprints.3042v1)

Furstenau, TN, and RA Cartwright (2016). The effect of the dispersal kernel on isolation-by-distance in a continuous population. *PeerJ* 4:e1848. [doi:10.7717/peerj.1848](https://doi.org/10.7717/peerj.1848)

Pizzio GA, Paez-Valencia J, Khadilkar AS, Regmi K, Patron-Soberano A, Zhang S, Sanchez-Lares J, **Furstenau T**, Li J, Sanchez-Gomez C, Valencia-Mayoral P, Yadav UP, Ayre BG and RA Gaxiola (2015). *Arabidopsis* proton-pumping pyrophosphatase AVP1 expresses strongly in phloem where it is required for PPI metabolism and photosynthate partitioning. *Plant Physiology* 167:1541-1553. [doi:10.1104/pp.114.254342](https://doi.org/10.1104/pp.114.254342)

Submitted

Furstenau, TN, Cocking, J, Sahl, JW, and VY Fofanov. Variant Site Strain Typer (VaST): Efficient strain typing using a minimal number of variant genomic sites. Accepted with revision to *BMC Bioinformatics*.

Presentations

Talks

- May 2017 Strain-level pathogen identification using targeted PCR amplicon sequencing
The Biodefense and Disease Ecology Center Meeting
The Pathogen and Microbiome Institute · Flagstaff, AZ
- Dec 2015 Spatial genetic structure under limited dispersal
Informatics and Computing Program · Flagstaff, AZ
- Sep 2015 Bayesian estimation of neighborhood size using composite marginal likelihoods
Molecular and Cellular Biology Colloquium · The Biodesign Institute · Tempe, AZ
- July 2015 Bayesian estimation of neighborhood size using composite marginal likelihoods
Society for Molecular Biology and Evolution · Vienna, Austria
- Sep 2014 Evolution of Self-Incompatibility: Investigating the role of self-incompatibility systems in the prevention of biparental inbreeding
Molecular and Cellular Biology Colloquium · The Biodesign Institute · Tempe, AZ
- Oct 2013 Evolution of Self-Incompatibility: Investigating the role of self-incompatibility systems in the prevention of biparental inbreeding
Molecular and Cellular Biology Colloquium · Arizona State University · Tempe, AZ
- March 2012 The roll of the H⁺-pyrophosphatase in the regulation of sucrose transport in plants
Molecular and Cellular Biology Colloquium · Arizona State University · Tempe, AZ

Posters

- April 2018 Culturing and Sequencing Causative Agents of Early Childhood Caries
College of Engineering, Forestry, and Natural Sciences Undergraduate Research and Design Symposium · Flagstaff, AZ
Presented by Daryn Erickson (Undergraduate Student Mentee)
- June 2017 Effects of Exposure on Bat Guano Microbiome
Microbiome Bioinformatics with QIIME 2 Workshop · Las Vegas, NV
- June 2017 Preemptive establishment of baseline bat microbiome diversity before White-Nose Syndrome strikes the Southwest
Microbiome Bioinformatics with QIIME 2 Workshop · Las Vegas, NV
Presented by Nicole Pagel (Graduate Student Mentee)
- June 2014 The effect of the dispersal distribution on isolation-by-distance in a continuous population
Society for the Study of Evolution · Raleigh, NC
- March 2014 Characterization of Transgenic *Arabidopsis thaliana* overexpressing *AVP1* and *PLAFP*
Arizona State University Undergraduate Research Poster Symposium · Tempe, AZ
Presented by Sean Wilson (Undergraduate Student Mentee)
- Aug 2012 H⁺-PPase AVP1 is necessary for phloem development in *Arabidopsis thaliana*
Molecular and Cellular Biology Graduate Student Retreat · Tempe, AZ
- July 2012 H⁺-PPase AVP1 is necessary for phloem development in *Arabidopsis thaliana*
American Society of Plant Biologists Annual Meeting · Austin, TX

Teaching Experience

Courses:

Arizona State University

Fall 2014	BI0340 General Genetics	Head Teaching Associate
Spring 2014	BI0355 Introduction to Computational Molecular Biology	Innovative Teaching Associate
Fall 2013	PLB108 Concepts in Plant Biology iCourse	Instructor
Spring 2013	BI0340 General Genetics	Teaching Associate
Fall 2012	BI0340 General Genetics	Teaching Associate
Spring 2012	BI0340 General Genetics	Teaching Associate
Fall 2011	BI0340 General Genetics	Teaching Associate
Summer 2011	BI0181 General Biology I Laboratory	Teaching Associate
Spring 2011	BI0182 General Biology II Laboratory	Teaching Associate
Fall 2010	MBB343 Genetic Engineering and Society Laboratory	Teaching Associate

Northern Arizona University

Spring 2017	INF503 Large-Scale Data Structures and Organization	Guest Lecture
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Workshops:

May 2016	Software Carpentry Instructor	Biodesign Institute · ASU · Tempe, AZ
June 2015	Software Carpentry Helper	Wrigley Institute of Sustainability · ASU · Tempe, AZ

Mentoring:

2011–2013	Honor's Thesis Mentor Sean Wilson	
	Thesis: Wilson S, Furstenau T , and R Gaxiola. Characterization of Transgenic <i>Arabidopsis thaliana</i> Overexpressing a Type I H ⁺ -Pyrophosphatase and the Phloem Lipid-Associated Family Protein.	

Service and Outreach

- Software Carpentry Certified Instructor
- Night of the Open Door Volunteer
- Ask-A-Biologist Volunteer Correspondent
- Green Labs Initiative Coordinator and Promoter
- Phosphorus Sustainability Research Coordination Network Core Participant
- Obama Scholars Mentor

Professional Development

April 2018	AnacondaCon Anaconda, Inc. · Austin, TX
June 2017	Microbiome Bioinformatics with QIIME 2 Workshop QIIME Development Team · Las Vegas, NV
July 2013	Next Generation Population Genomics for Non-model Taxa Workshop American Genetics Association · Cornell University · Ithica, NY
Dec 2011	Univector Plasmid-Fusion System training with Kendal Hirschi Childrens Nutritional Research Center · Baylor College of Medicine · Houston, TX

Society Memberships

- Society for the Study of Evolution
- Society for Molecular Biology and Evolution
- Central Arizona Chapter of the Association for Women in Science