

VIVASWAT SHASTRY

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EDUCATION

Doctor of Philosophy 2020 - present University of Chicago
Committee on Genetics, Genomics and Systems Biology
Advisor: [Dr. Jeremy J. Berg](#)

Master of Science 2018 - 2020 University of Wyoming
Botany
Advisor: [Dr. C. Alex Buerkle](#)

Bachelor of Science 2014 - 2017 University of Wyoming
Major: Electrical Engineering
Minor: Interdisciplinary Computational Science
Honors: *summa cum laude*
Advisor: [Dr. Suresh S. Muknahallipatna](#)

PUBLICATIONS

2020 J. G. Harrison, W. J. Calder, **V. Shastry**, C. A. Buerkle. Dirichlet-multinomial modelling outperforms alternatives for analysis of microbiome and other ecological count data. (published in *Molecular Ecology Resources*; [bioRxiv](#))

2021 **V. Shastry**, P. Adams, D. Lindtke, E. G. Mandeville, T. L. Parchman, Z. Gompert, C. A. Buerkle. Model-based genotype and ancestry estimation for potential hybrids in mixed-ploidy populations. (published in *Molecular Ecology Resources*; [bioRxiv](#))

RESEARCH AND TRAVEL GRANTS

2018–INBRE Bioinformatics Core Travel for Training Award (\$1,200)
2015–Wyoming EPSCoR Research Fellowship (\$1,600)

AWARDS AND HONORS

2020–Aven Nelson Fellowship in Systematic Botany (\$1,300)
2019–Department of Botany Wilhelm G Solheim Scholarship (\$600)
2017/2018–National Tau Beta Pi Scholarship Award (\$2,000)
2017/2018–W. E. Kuhn Foreign Student Scholarship (\$816)
2014 to 2017–Engineering Undergraduate Research Award (total \$24,000)
2014 to 2017–Rocky Mountain International Scholarship (total \$17,500)
2014 to 2017–Rocky Mountain Plus International Scholarship (total \$1,750)

2014 to 2017–University of Wyoming President’s Honor Roll (6 semesters) & Dean’s Honor Roll (1 semester)

2017–Best Poster at the Rocky Mountain Advanced Computing Consortium HPC Symposium (Boulder, CO)

2017–Best Software Design Project at the Wyoming Undergraduate Research Day (Laramie, WY)

2016–Carl Oslund (Wyoming Engineering Society) Scholarship (\$2,500)

2016–University of Wyoming Tau Beta Pi Outstanding Junior

2015–University of Wyoming Tau Beta Pi Outstanding Freshman

TECHNICAL EXPERTISE

Pedagogical skills

Certified Instructor for Software and Data Carpentry workshops.

Computational skills

Programming languages: R, Python, MATLAB, C/C++, Eidos, Perl, bash, Verilog HDL, x86 assembly

Packages and paradigms: SLiM3, tskit, GATK, SAMtools, bwa, GSL, HDF5, Stan, JAGS/BUGS, mlr, OpenMP, OpenACC, MPI protocols

Miscellaneous: Job scheduling and management with Slurm, html, L^AT_EX, MS Office, Make & autotools, version control with git, basic regular expressions, general-purpose parallel programming via multithreading & distributed computing

Analytical expertise

Statistical: data wrangling and various analytical methods, including Bayesian statistical modeling, frequentist univariate and multivariate techniques, including machine learning approaches and neural networks, generalized linear models for spatial statistics, Markov-chain Monte Carlo sampling techniques

Biological: variant calling for polyploid sequencing data, bioinformatics for GBS-based population genetics and genomics, coalescent and forward genetic simulations, macroevolutionary principles (phylogenetics, trait evolution and diversification)

Mathematical: numerical methods to solve linear (first- and second-order) ODEs, PDEs, matrix theory and linear algebra as applied in image processing and computer vision algorithms

SCIENCE OUTREACH AND VOLUNTEERING

Software Carpentry workshop, Biological Sciences Division, University of Chicago, Chicago

2021

Helper. Assisted the tutors in running the workshop smoothly and answering the learners’ questions.

International Graduate Student Orientation, University of Wyoming, Laramie
2019
Panelist. Briefing incoming students on the general topic of how to navigate
graduate school.

Data Science Center, University of Wyoming, Laramie
2018–2020
Active member. Assisted other members with a variety of computational tasks.

“Ask an Expert” session at the NCAR booth, Supercomputing17, Denver
November 2017
Student assistant. Volunteered at a ‘High-Performance Computing and Weather
Forecasting on a Raspberry Pi’ station set up for high-schoolers attending the
conference.

NCAR Diversity in Parallel Computing Workshop series, Miami Dade College,
Miami
March 2017
Student presenter. Conducted a tutorial on distributed parallel programming
with a cluster of Raspberry Pis to junior faculty members.

Open Science Days, NCAR Wyoming Supercomputing Center, Cheyenne
2015–2017
Science outreach volunteer. Presented basic projects in science, engineering,
and computing in an effort to encourage participation in typically
underrepresented communities in computing.

Electrical and Computer Engineering, University of Wyoming, Laramie
2014–2017
Undergraduate ambassador. Organized and conducted research exhibition
demos of ongoing projects to Women in Computing symposiums, Wyoming
government officials, high-school students, and prospective donors.

SELECTED PRESENTATIONS

Spoken presentations

December 2018–Genotype and Ancestry Estimation in Polyploids. ForBio
course: Population Genetics for Polyploids (Drøbak, Norway)

March 2017–Parallel computing with the Raspberry Pi. NCAR Diversity in
Parallel Computing Workshop (Miami, FL)

Poster presentations

August 2021–Quantifying genetic diversity of *Wolbachia* in *Lycaeides* butterfly.
Midwest Popgen Meeting (Madison, WI)

August 2017–Parallel Optimization to Obtain a High-Quality Depth Map from
an Uncalibrated Small Motion Clip. Rocky Mountain Advanced Computing
Consortium HPC Symposium (Boulder, CO)

May 2016–GPGPU Computing for Numerical Integration Methods on the
NVIDIA Jetson TK1. Wyoming Undergraduate Research Day (Laramie, WY)

LEADERSHIP AND PROFESSIONAL ACTIVITIES

September 2019–Participant at the Introduction to Data Science and Machine Learning in R Workshop (Laramie, WY)

July/August 2019–Participant of the Long Course at the Computational Genomics Summer Institute (CGSI) in UCLA (Los Angeles, CA)

December 2018–Participant of ForBio course: Polyploid Population Genetics (Drøbak, Norway)

2017–Senator for the College of Engineering and Applied Sciences, Associated Students of the University of Wyoming (ASUW)

2017/2018–Recording Secretary for the Tau Beta Pi Wyoming Alpha chapter

November 2016–Exploring HPC for Undergraduates at SC16 (one of 30 students selected worldwide for an all-expense paid trip to Salt Lake City, UT)

2016/2017–Secretary for the International Students' Association at the University of Wyoming

2016–President of the Indian Students' Organization at the University of Wyoming

2015–Vice President of the Indian Students' Organization at the University of Wyoming

September 9, 2021