Breanna Sipley

NSF Graduate Research Fellow, University of Idaho
Bioinformatics and Computational Biology (BCB) · Moscow, ID, USA
breanna.sipley@gmail.com sipley breanna_sipley sipley.github.io

Background

Computational biologist who likes coevolution · phylogenetic comparative methods · R Markdown hoping to explore non-ac graduate internship opportunities in affirming spaces

Non-binary (*they/them*) · first-gen, low-income background · LGBTQ+ · Neurodivergent

Education

Ph.D. Bioinformatics and Computational Biology, Math Focus, *University of Idaho* Anticipated 2024

M.S. Biological Sciences, *Auburn University* 2019

B.S., summa cum laude, Zoology, *University of Florida* 2013

International Baccalaureate, *Seminole High School* 2009

Fellowships and Grants

Competitive national research experiences

NSF Graduate Research Fellow, BCB, *University of Idaho* 2019-2021

NSF Graduate Research Fellow, Evolutionary Biology, *Auburn University* 2018-2019

NMNH Smithsonian Intern, Marine Ecology, *Smithsonian Marine Station* 2014

NSF REU Fellow, Comparative Physiology, *Mount Desert Island Biological Laboratory* 2010

Competitive internal fellowships

Cellular and Molecular Biosciences Summer Research Fellow, *Auburn University* 2018

Cellular and Molecular Biosciences Graduate Research Fellow, *Auburn University* 2016-2017

HHMI Science for Life Undergraduate Research Fellow, *University of Florida* 2010-2011

Honors and Awards

Outstanding Senator, Graduate Student Council, *Auburn University* 2019

Best Talk, *Southeastern Population Ecology & Evolutionary Genetics* 2015

Best Paper, *University of Florida Student Science Training Program* 2008

Publications

Peer-reviewed journal articles

Sipley BN, Michonneau F, & Paulay G. In preparation. "Surprisingly low genetic diversity despite considerable morphological variation in the sea cucumber genus *Opheodesoma*." Targeting *PeerJ*. Available upon request.

Whelan NV, Galaska MP, *Sipley BN*, Weber J, Johnson PD, Halanych KM, & Helms BH. 2019. "Population genomics of the federally threatened Round Rocksnail, *Leptoxis ampla*, reveal migration patterns, landscape genetic structure, and genetic influence on shell shape variation." *Molcular Ecology* 28(7): 1593-1610. DOI: https://doi.org/10.1111/mec.15032

Other publications and reports

Sipley BN. 2019. "Venom allergen-like protein diversification in flatworms." *Auburn University Electronic Theses and Dissertations*. URI: http://hdl.handle.net/10415/6830

Helms B, Whelan NV, Tolley-Jordan L, Halanych KM, *Sipley BN*, Wicker D, Weber J, Galaska MP. 2017. "Population structure of the Round Rocksnail (*Leptoxis ampla*) in the Cahaba River." Report, *Alabama Department of Conservation and Natural Resources*

Sipley BN. 2013. "Developing genetic markers to infer phylogenetic relationships in *Opheodesoma* (Echinodermata: Holothuroidea: Apodida: Synaptidae)." *University of Florida Undergraduate Honors Theses* http://ufdc.ufl.edu/AA00057336/00001

Presentations

Invited seminars

Sipley BN, "What's VAP got to do with it? Venom allergen-like protein diversification in flatworms." *Masters Thesis Seminar* (Auburn, AL).

Sipley BN, Bullard SA, & Halanych KM. (2017). "Genomics of parasites: Investigating the evolution of blood parasitism in parasitic flatworms." *Interdisciplinary Colloquium* (Auburn, AL).

Sipley BN & McKeon CS. (2014). "Ecological drivers of benthic community assemblages in the St. Lucie Estuary & Southern Indian River Lagoon: Freshwater discharge from Lake Okeechobee results in major, predictable disturbance events." *Smithsonian Seminar* (Fort Pierce, FL).

Conferences

Sipley BN, Bullard SA, Oaks JR, & Halanych KM. (2018). "What's VAP got to do with it? The evolution of blood parasitism in flatworms." *Society of Systematic Biologists Standalone Meeting* (Columbus, OH). Lightning Talk. Slides: http://phyletica.org/ssb-recap/.

Helms B, Whelan N, *Sipley BN*, Weber J, Tolley-Jordan L, Halanych KM. (2018). "Population genetic structure and morphological variation of the round rocksnail (*Leptoxis ampla*) a federally threatened species in the Cahaba River of AL, USA." *Society for Freshwater Science Annual Meeting*. Talk. Abstract: https://sfsannualmeeting.org/Schedule/grid_details.cfm?aid=9225.

Sipley BN, Bullard SA, & Halanych KM. (2018). "The evolution of blood parasitism in trematodes: What's VAP (venom allergen-like protein) got to do with it?" *Society of Integrative & Comparative Biology* 58(1): E213 (San Francisco, CA). Talk. Abstract: https://doi.org/10.1093/icb/icy001.

Whelan NV, *Sipley BN*, Galaska MP, Helms BH, Johnson PD, & Halanych KM. (2018). "Populations of Round Rocksnail (*Leptoxis ampla*), a Federally Threatened Freshwater Snail, Are Surprisingly Distinct." *Integrative and comparative biology* 58(1): E250 (San Francisco, California). Talk. Abstract: https://doi.org/10.1093/icb/icy001.

Sipley BN, Bullard A, & Halanych KM. (2017). "How does endoparasitism evolve? Insights from Venom allergen-like proteins in blood flukes (Platyhelminthes: Trematoda: digenea)". *Evolution* (Portland, Oregon). Poster: https://doi.org/10.6084/m9.figshare.5131981.v1.

Sipley BN, Bullard A, & Halanych KM. (2017). "Evolution of Venom Allergen-Like Proteins in Fish Blood Flukes (Platyhelminthes: Trematoda: Digenea)." *Society of Systematic Biologists Standalone Meeting* (Baton Rouge, LA). Lighting talk.

Larsen M, Cortes-Hinojosa G, Lo R, *Sipley BN*, Eckert L, Tsang T, & Wayne M. (2016). "Potential Effects of *Wolbachia* on Male Transmission of Sigma in *D. melanogaster*. *Southeastern Population Ecology & Evolutionary Genetics* (Madison, FL). Poster.

Sipley BN, Michonneau F, & Paulay G. (2015). "Genetic markers reveal surprisingly low genetic variation in the sea cucumber genus *Opheodesoma*". *Southeastern Population Ecology & Evolutionary Genetics* (Eatonton, GA). Talk. **Awarded Best Talk.**

Internal Symposia

Watson A, *Sipley BN*, & Halanych KM. (2018). Glutamate Decarboxylase Gene Family Evolution in Flatworms. *REU Poster Symposium*, Computational Biology (Auburn, AL). Poster. **Awarded runner up for Best Poster.**

Sipley BN, Bullard SA, Oaks JR, & Halanych KM. (2018) "What's VAP got to do with it? The evolution of blood parasitism in flatworms." *AU DBS graduate student recruitment welcome event* (Auburn, AL). Poster.

Sipley BN, Bullard SA, & Halanych KM. (2017). "Host-Parasite Coevolution: Blood flukes a good model?" *Biol Grad Research Poster Forum* (Auburn, AL). Poster.

Sipley BN, Michonneau F, & Paulay G. (2013). "Developing genetic markers to infer phylogenetic relationships in the sea cucumber genus *Opheodesoma*". *Undergraduate Research Symposium* (Gainesville, FL). Oral presentation.

Sipley BN, Crombie T, & Julian D. (2011). "Juglone-induced oxidative damage & temperature stress interact synergistically on survival in *C. elegans*." *Creativity in the Arts & Sciences Event* (Gainesville, FL). Poster.

Sipley BN & Julian D. (2010). "Combined salinity stress & simulated oil exposure on metabolic rate in the bivalve *Mercenaria mercenaria*." *REU Chalk Talks* (Salsbury Cove, ME). Chalk talk.

Sipley BN, Domsic T, & McKenna R. (2008). "Isolation & purification of human carbonic anhydrase VI: a structural study." *Student Science Training Program Symposium* (Gainesville, FL). Talk.

Teaching

Workshops

Instructor, Software Carpentry, Remote Summer Boot Camp 2: Computing, Data, & Visualization, *Center for Advanced Energy Studies* (Virtual) https://jtvanleuven.github.io/2020-08-10-CAES/ 2020

Helper, Software Carpentry, Remote Summer Boot Camp: Computing, Data, & Visualization, *CAES/INL* (Virtual) https://bsurc.github.io/2020-06-08-inl-bootcamp/ 2020

Helper, Date Carpentry, Introduction to Geospatial Applications in R (BCB 503 03), *IMCI, University of Idaho* (Virtual) https://erichseamon.github.io/2020-03-26-uidaho-geospatial/ 2020

Helper, Software Carpentry, Introduction to R for Reproducible Science (BCB 503 02), *IMCI, University of Idaho* (Moscow, ID) https://dearmint.github.io/2020-02-27-uidaho/ 2020

Instructor, Software Carpentry: Unix, Git, and Python for Novices (BCB 503 01), *IMCI, University of Idaho* (Moscow, ID) https://astahlke.github.io/2020-01-30-uidaho/ 2020

Teaching assistantships

Genomic Biology (BIOL 3020), *Auburn University* (Auburn, AL) 2018

Genetics (PCB 3063), *University of Florida* (Gainesville, FL) 2012

Student mentoring

Career/College Prep mentor, Katelynn, Palouse Pathways Scholar (Virtual). Currently high school student in Lewiston, ID 2020-present

Research mentor, Alexia Watson, NSF REU in Computational Biology, *Auburn University* (Auburn, AL). Awarded Runner Up for Best Poster 2018

Research mentor, Rachel Lo, undergraduate researcher, *University of Florida* (Gainesville, FL). Currently Researcher at USGS 2015-2016

Service

Service to University

BCB Graduate Student Representative to Faculty, *University of Idaho* 2020-present

Graduate Student Council, *Auburn University* 2018-2019

- Senator for Biological Sciences to Graduate School
- Graduate Student Representative to Associate Dean of Research for COSAM
- Group leader, Graduate Student Health Insurance Subcommittee; Graduate Student Mental Health Subcommittee, Welfare and Continuous Improvement Committee
- Mentor for First Year Experience

Biological Sciences, *Auburn University* 2017 - 2019

- Host, DBS Seminar Series
- Faculty search committee for Global Change Biologist in Marine Systems
- Volunteer, Graduate Student Recruitment
- Coordinator, Evolutionary Genetics and Genomics Seminar

Service to profession

Writing consultations for NSF GRFP (3 successful applicants) and NSF PRFB fellowships (2 successful applicants) 2018-present

Panel speaker, NSF GRFP Writing Workshop, *University of Idaho* 2019

Graduate Women in STEM, *Auburn University* 2016-2019

- Vice President 2018-2019
- Volunteer, Jr Mad Scientist 2016 - 2018

Panel speaker, Graduate & Professional Schools, NSF REU Program, *Auburn University* 2018

Panel speaker, NSF GRFP Writing Workshop, *Auburn University* 2018

Judge, Greater East Alabama Regional Science and Engineering Fair, *Auburn University* 2017

Service to community

Volunteer, Pathways to College, *Palouse Pathways* 2019-present

Recovery Peer Volunteer, Mental Health & Substance-Abuse, *Latah Recovery Center* 2020-present

Alabama Prison Arts + Education Project, *Auburn University and AL Dept of Corrections* 2017-2019

- Coordinator, SPARKs STEM lecture series, *Staton Correctional Facility* 2018
- Tutor, Finite Mathematics (MATH 1100), *Draper Correctional Facility* 2017

Volunteer, Project Mosquito Education to Empower Malagasy Kids, *Auburn University* 2018

Volunteer, Museum Open House, *Auburn Museum of Natural History* 2016

Center for Precollegiate Education and Training, *University of Florida* 2011-2016

- Research Supervisor, Evolutionary Genetics, Student Science Training Program 2016
- Head Counselor, Student Science Training Program 2015
- Program Assistant, Student Science Training Program 2012
- Program Assistant, Junior Science, Engineering, & Humanities Symposium 2012
- Counselor, Student Science Training Program 2011
- Program Assistant, Duke Talent Identification Program 2011

Volunteer, Community Research Lab Visits, *Smithsonian Marine Station* 2014

Science Outreach Volunteer, Low-income (Title 1) Elementary School, *UF Chemistry Club* 2009-2010

Volunteer, Family Science Night, *Mount Desert Island Biological Laboratory* 2010

Additional Training

Professional

Lab Manager, Evolutionary Genetics, *University of Florida* 2015-2016

Collections Assistant · Molecular Lab Technician, Invertebrate Zoology, *UF FLMNH* 2012 - 2013

Undergraduate Research Assistant, Comparative Physiology, *University of Florida* 2010

Research

Daybrook Fellow, Marine Ecology, *Science Under Sail Institute for Exploration* 2016

Student Science Training Program, Biochemistry & Molecular Biology, *University of Florida* 2008

Workshops

Posterior Predictive Simulation, *The Ohio State University* 2018

Workshop on Molecular Evolution, *Marine Biology Laboratory* 2017

RevBayes, TreeScaper, & DendroPy, *Louisiana State University* 2017

R, *Auburn University* 2016

Bioinformatics Bootcamp, *Auburn University* 2016

Teaching

Risk Management Best Practices, *Palouse Pathways Mentoring Program* (Virtual) 2020

Mentoring Role & Responsibilities, Trauma-Informed, *Palouse Pathways Mentoring Program* 2020

Instructor Training, Software Carpentries, *The Carpentries* (Virtual) 2019

Service

Advancing Chicanos/Hispanics and Native Americans in Science (Virtual) 2020

Anti-Racism Workshop, Women's Center, *University of Idaho* (Virtual) 2020

Question Persuade Refer Suicide Prevention Training, *University of Idaho* (Virtual) 2020

Peer Recovery Volunteer Training, *Latah Recovery Center* 2020

Mental Health First-Aid Certification, *University of Idaho* 2019

Prison Rape Elimination Act (PREA) Training, *Auburn University* 2017,2018

Portal to the Public Science Communication Workshop *Auburn University* 2017

Fieldwork

Mouse lemurs and their ectoparasites and viruses, Ranumafauna, Madagascar 2018

Round rocksnail, Cahaba River, Alabama 2016

Coral reefs, Exuma, Bahamas 2016

Benthic community assemblages, Indian River Lagoon, Florida 2014

Intertidal snails and other tropical marine macrofauna, San Salvador, Bahamas 2012

Blood worms, Salsbury Cove, Maine 2010

Travel Awards

Lauren Ancel Meyers Registration Award for SACNAS 2020

Biological Sciences Graduate Student Association Travel Award for SICB 2018

Stanley W. Watson Foundation Education Fund for Workshop on Molecular Evolution 2017

American Society of Naturalists Travel Award for Evolution 2017

Society of Systematic Biologists Travel Award for Workshop on TreeScaper 2017

Professional Affiliations

Society for Advancing Chicanos/Hispanics & Native Americans in Science 2020-present

Society of Systematic Biologists 2017-2019

Society of Integrative and Comparative Biologists 2018-2019

American Society of Naturalists 2015-2018

Languages

From most to least proficient

English · R · Bash/Shell-Scripting · Spanish · Python · ASL · Malagasy

References

Available upon request. Depends upon nature of request, though likely would include Luke Harmon, Scott Nuismer, and Jamie Oaks.