

Matthew C Farnitano

PhD Candidate

University of Georgia
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Department of Genetics

EDUCATION

University of Georgia, Athens, GA

Ph.D. Candidate, Department of Genetics, August 2019 - present

Advisor: Andrea Sweigart

Thesis proposal: Variation in the Genetic Basis of Reproductive Isolation across *Mimulus*.

Expected defense date: December 2024

Duke University, Durham, NC

B.S. Biology, May 2016

Concentration: *Cell and Molecular Biology*, Minor: *Music*

GPA 3.96, Summa Cum Laude, Graduation with High Distinction in Biology

Organization for Tropical Studies, Skukuza, South Africa

Semester Study Abroad, Fall 2014

PUBLICATIONS

Peer-reviewed:

Matthew C. Farnitano and Andrea L. Sweigart. 2023. Strong postmating reproductive isolation in *Mimulus* section *Eumanus*. *Journal of Evolutionary Biology* 36(10):1393-1410.
<https://doi.org/10.1111/jeb.14219>

Garner, Austin G., Benjamin E. Goulet, **Matthew C. Farnitano**, Y. Franchesco Molina-Henao, and Robin Hopkins. 2018. Genomic signatures of reinforcement. *Genes* 9(4):191.

Preprints:

Benjamin E. Goulet-Scott, **Matthew C. Farnitano**, Andrea L. M. Brown, Charles O. Hale, Meghan Blumstein, and Robin Hopkins. 2023. A multi-dimensional selective landscape drives adaptive divergence between and within closely related *Phlox* species. *bioRxiv*, 2023.04.18.537324. <https://doi.org/10.1101/2023.04.18.537324>

FELLOWSHIPS, GRANTS, AND AWARDS

Fellowships:

Linton and June Bishop Fellowship, UGA Genetics Department

2022 \$1,000 award

2023 \$1,000 award

NIH T32 Training Grant Fellowship, UGA Genetics Department

July 2021 – June 2022 \$31,500 fellowship

July 2020 – June 2021 \$30,000 fellowship

Dean's Summer Research Fellowship, Duke University, 2015

Research Experiences for Undergraduates (REU) Fellows Program, NSF, 2015

Howard Hughes Undergraduate Research Fellowship, Duke University, 2013

Grants:

Graduate School Travel Grant, UGA Graduate School

2023 \$850 travel funding

2022 \$1,746 travel funding

Doctoral Dissertation Improvement Award, UGA Plant Center, 2021

\$5,000 research grant

R.C. Lewontin Early Award, Society for the Study of Evolution, 2020

\$2,500 research grant

Other awards:

Poster award, UGA Genetics Annual Retreat, 2022

Excellence in Plant Science Award, Duke University Biology Department, 2016

Team Silver Medal, iGEM competition, Toronto, 2013

Eagle Scout, Boy Scouts of America Troop 239, 2011

CONFERENCE PRESENTATIONS

Evolution, June 21-25, 2023, Albuquerque, NM. Oral presentation, “Ongoing hybridization dynamics in a hybrid population of *Mimulus* monkeyflowers.”

Population, Evolutionary, and Quantitative Genetics (PEQG). June 7-10, 2022, Pacific Grove, CA. Poster presentation. “Reproductive Isolation and Divergence in *Mimulus* section *Eunanus*.”

Southeastern Population Ecology and Evolutionary Genetics (SEPEEG). March 25-27, 2022, Eagle Rock, GA. Lightning talk, “Reproductive Isolation and Divergence in *Mimulus* section *Eunanus*.”

RESEARCH EXPERIENCE

Sweigart Lab, Department of Genetics, University of Georgia, Athens, GA

PhD Candidate, January 2020 – present (Qualifying exam passed Spring 2021)

Proposal: Variation in the Genetic Basis of Reproductive Isolation across *Mimulus*.

I am interested in how reproductive isolation and hybridization vary across different scales in *Mimulus* monkeyflowers. I aim to address this question at three scales, by measuring reproductive isolation and hybridization between species, populations, and individuals. Specifically, I aim to address three main questions:

1. What are the patterns of reproductive isolation, divergence, and hybridization in the *Mimulus brevipes* species group?
2. How do extrinsic and intrinsic reproductive barriers influence the dynamics and composition of a hybrid population between *Mimulus guttatus* and *Mimulus nasutus*?

3. Does the degree and genetic basis of intrinsic reproductive incompatibility vary within and between species in the *Mimulus guttatus* species complex?

Integrated Life Sciences Rotation Program, University of Georgia, Athens, GA

PhD Rotation Student, August – December 2019

Hopkins Lab, Harvard University, Boston, MA

Research Technician, September 2017 – July 2019

Willis Lab, Duke University, Durham, NC

Undergraduate Honors Thesis, April 2015 – May 2016

Kim Lab, American Museum of Natural History, New York, NY

National Science Foundation Undergraduate Research Fellow, June 2015 – August 2015

Buchler Lab, Duke University, Durham, NC

Undergraduate Research Assistant, September 2013 – August 2014

Howard Hughes Undergraduate Research Fellow, June 2013 – August 2013

TEACHING EXPERIENCE

GENE3200, Genetics, University of Georgia, Athens, GA

Teaching assistant, Spring semester 2024, Fall semester 2023

- Ran three (two in Fall) weekly discussion sections, with interactive mini-reviews and practice problems. Proctored and graded exams.
- Focus: transmission genetics, molecular genetics

BIOL1108L, Principles of Biology II Lab, University of Georgia, Athens, GA

Graduate Laboratory Assistant, Fall semester 2022

- Ran two weekly sections of introductory biology lab, with 44 students total.
- Focus: experimental design, scientific writing, field and laboratory data collection.

BIOL1107L, Principles of Biology I Lab, University of Georgia, Athens, GA

Graduate Laboratory Assistant, Spring semester 2020

- Ran two weekly sections of introductory molecular biology lab, with 47 students total.
- Focus: experimental design, scientific writing, molecular laboratory techniques.

Halifax County School District, Halifax, NC

High School Math Teacher, August 2016 – January 2017

- Taught algebra and geometry to 70 high schoolers in an underserved community.
- Prepared and taught daily lessons involving lectures, hands-on activities, and exercises.
- Managed classroom behavior and expectations.
- Monitored and assessed student progress and proficiency.

Mentor to undergraduate research assistants, University of Georgia

- Primary research mentor for three students for a combined seven semesters.
- Assisted with mentoring for four additional students across three semesters.

TEACHING PROFESSIONAL DEVELOPMENT

GRSC 7770 Graduate Teaching Seminar, Spring 2020
WIPP 7001 Pedagogy of Writing in the Disciplines, Spring 2020
Teach for America Summer immersive training, Eastern North Carolina, Summer 2016

OTHER EXPERIENCE

Sylvan Heights Waterfowl Park, Scotland Neck, NC

Bird keeper, January 2017 – August 2017

- Fed and cared for over 100 bird species, including rare and endangered waterfowl.
- Led weekly education talks, visitor tours, and outreach programs.
- Assisted with construction of new aviary exhibit and general park maintenance.

OUTREACH AND SERVICE

UGA Genetics Graduate Student Association

Secretary, 2022. Assisted with planning of departmental retreat, recruitment and social events, and the advancement of graduate student well-being. Summer-Fall 2022.

Georgia Junior Science and Humanities Symposium

Paper reader and in-person judge, 2022

Paper reader, 2021

Clarke County School District Middle School Science Fair

Poster/Presentation judge, 2022

Radloff Middle School, Gwinnett County, GA

Visited middle school science classrooms to discuss genetics and research science, 2021

Athens Science Observer

Photo contributor, “Field Guide to Athens Plants”, 2021

CURO undergraduate research symposium

Paper reader/judge, 2020

MEMBERSHIPS

Society for the Study of Evolution, Student member, 2019-2023

Genetics Society of America, Student member, 2022

Phi Beta Kappa Society, Duke University, May 2016

OTHER PRESENTATIONS

EDGE seminar series, University of Georgia, Spring 2023. Oral Presentation: “Double feature: reproductive isolation and hybridization in *Mimulus*.”

Plant Functional Genetics (PFG) seminar series, University of Georgia, Spring 2022. Oral Presentation: “Reproductive Isolation and Divergence in *Mimulus* section *Eunanus*.”

EDGE seminar series, University of Georgia, Fall 2020. Oral Presentation: “Comparative genetics of reproductive isolation in *Mimulus*.”

Senior Thesis Symposium, Duke University Biology Department, May 2016. Poster: “One gene or many? Different genetic mechanisms drive convergent evolution in monkey flowers.”

NSF REU Fellows Symposium, American Museum of Natural History, New York, NY, August 2015. Oral Presentation: “Compartmentalization: a tool for improving phylogenetic inference with large, messy data sets.”

Organization for Tropical Studies Final Symposium, Kruger National Park, South Africa, November 2014. Oral Presentation: “Message in a Bottleneck: Vulnerability assessments of mutualisms in *S. lugardii*.”

International Genetically Engineered Machines Jamboree, University of Toronto, Canada, October 2013. Poster and Oral Presentation: “Designing synthetic gene networks using artificial gene networks in yeast.”

Howard Hughes Undergraduate Research Fellows Symposium, Duke University, August 2013. Poster and Oral Presentation: “Designing standard parts for synthetic bistable and oscillatory gene circuits.”

OTHER REPORTS

One gene or many? Different genetic mechanisms drive convergent evolution in monkey flowers. Senior Thesis report, May 2016. Submitted to Duke University Libraries *DukeSpace* thesis archive.

Compartmentalization: Testing a tool for phylogenetic inference with large, messy data sets. NSF REU Program final report, August 2015.

Message in a Bottleneck: Reproductive strategies increase demographic vulnerability of *Sesamothamnus lugardii*. OTS South Africa final report, November 2014

Oxpecker feeding preferences in two regions of Kruger National Park. OTS South Africa faculty field project, October 2014