

# Sarah B. Carey

## *Curriculum vitae*

Department of Biology  
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## Education

Expected May 2020 **University of Florida, Gainesville, Florida**  
Ph.D., Botany

2014 **University of Florida, Gainesville, Florida**  
B.S., Biology, *Summa cum laude*

2012 **Saint Johns River State College, St. Augustine, Florida**  
A.A., *Summa cum laude*

## Research Experience

2014-present **Doctoral Research, University of Florida**  
Advisor: Stuart McDaniel  
Dissertation topic: *Sex-biased evolutionary processes in mosses*

- Evolutionary genetics, genomics, transcriptomics, phylogenomics

2016-present **Research Assistant, University of Florida**  
*Genealogy of Flagellate Plants Project*  
Advisors: J. Gordon Burleigh, Emily Sessa, Stuart McDaniel, and E. Christine Davis

- Molecular lab work, phylogenomics

2013-2014 **Undergraduate Research Assistant, University of Florida**  
Advisor: Stuart McDaniel

- Sterile-tissue culture, molecular lab work

2011-2012 **Chemistry Lab Assistant, Saint Johns River State College**  
Advisor: Nell Freeman

- Maintain lab inventory, prep chemicals

## Publications

Luo, F., N. Valle, E. Sessa, G. Burleigh, L. Endara, S. McDaniel, **S. Carey**, and E. C. Davis. Collaborative Design Reasoning in a Large Interdisciplinary Learning Tool Design Project. *International Journal of Designs for Learning* 11, no. 1 (2020): 85-97.

Pereira, M.R., P.E.A.S. Câmara, B.S. Amorim, S.F. McDaniel, A.C. Payton, **S.B. Carey**, A.M. Sierra, and C.E. Zartman. Advances in Calymperaceae (Dicranidae, Bryophyta): Phylogeny, divergence times and pantropical promiscuity. *The Bryologist* 122, (2), 183-196. 2019

Lewis, L.R., E.M. Biersma, **S.B. Carey**, K. Holsinger, S.F. McDaniel, R. Rozzi, and B. Goffinet. Resolving the northern hemisphere source region for the long-distance dispersal event that

gave rise to the South American endemic dung moss *Tetraplodon fuegianus*. *American Journal of Botany* 104 (11), 1651-1659. 2017

**Carey, S.B.**, A.C. Payton, and S.F. McDaniel. A method for eliminating bacterial contamination from in vitro moss cultures. *Applications in Plant Sciences* 3(1):1400086. 2015  
doi:/10.3732/apps.1400086

## Publications in Progress

Shortlidge, E.E., S.F. McDaniel, **S.B. Carey**, A.C. Payton, T.N. Rosenstiel, S.M. Epply. Microarthropods increase fitness and promote sexual selection in the moss *Ceratodon purpureus*. *Submitted*

Valle, N., P. Anonenko, L. Endara, E.C. Davis, G. Somarriba, E. Sessa, F. Luo, **S. Carey**, S. Dogan, G. Burleigh, M. von Konrat and S. McDaniel. Inquiry learning, storytelling or community science? Exploring affective outcomes and the role of gender in online botany learning. *Submitted*

**Carey, S.B.**, M.G. Johnson, A.C. Payton, J.G. Burleigh, S. Rensing, F. Maumus, N.F. Pozo, G. Tiley, N. Wickett, S. Olsen, S. Huttunen, L.M. Kollar, R. Conrad, J. McBreen, K. Barry, S. Shu, J. Grimwood, J. Jenkins, J. Schmutz, S.F. McDaniel, et al. The *Ceratodon purpureus* genome uncovers ancient, highly-dynamic haploid sex chromosomes. *In prep*

McDaniel, S.F., A.C. Payton, **S.B. Carey**. Sexual selection drives local adaptation in male maturation rate in a moss. *In prep*

Nieto-Luilde, M., O. Werner, **S.B. Carey**, S.F. McDaniel, R.M. Ros. Testing the evolutionary history of the mosses *Ceratodon amazonum*, *C. purpureus*, and recombinant *C. x conicus*. *In prep*

Breinholt, J., G. Tiley, **S.B. Carey**, L. Neves, E.C. Davis, E. Sessa, S.F. McDaniel, J.G. Burleigh. A targeted sequence capture approach for the flagellate plant phylogeny. *In prep*

## Grants Awarded

2018	Botanical Society of America Genetics Section Student Award (\$1000)
2016	Sigma Xi Grant-In-Aid of Research (\$1000)
2015	Society for the Study of Evolution Rosemary Grant Award (\$2500)
2015	microMORPH Cross-Disciplinary Training Grant (\$3254)
2015	Mildred Mason Griffith Botany Grant, UF (\$1000)

## Honors and Awards

2018	Best talk iMoss Meeting, St. Petersburg, FL
2016	NSF GRFP Honorable Mention
2015	Runner-up best graduate student talk, South Eastern Population Ecology and Evolutionary Genetics Meeting, Eaton, GA
2014	Runner-up best talk, UF URAP, Gainesville, FL
2012	Saint Johns River State College Hall of Fame
2012	Organic Chemistry Award, Saint Johns River State College
2012	Composition I and II Award, Saint Johns River State College
2012	Dr. Gary B. Lott Memorial Scholarship (\$750)

## Travel Funding

- 2018 Wellcome Genome Campus 30 Year Anniversary Award (\$300)
- 2017 International Botanical Congress Outstanding Student Award (\$300)
- 2017 Botanical Society of America IBC Travel Award (\$2400)
- 2016 UF Graduate Student Council Travel Grant (\$350)
- 2016, 2020 UF College of Liberal Arts and Sciences Travel Award (\$475)

## Invited Conference Presentations

- 2020 *Remarkable genome stability in autosomes contrasts with dynamic sex chromosomes in mosses.* Plant and Animal Genome Conference. San Diego, CA
- 2020 *Implications of whole-genome duplications on sex chromosomes in mosses.* Plant and Animal Genome Conference. San Diego, CA
- 2019 *Phylogenomic analyses uncover ancient but highly dynamic moss sex chromosomes.* Plant and Animal Genome Conference. San Diego, CA
- 2017 *An ancient UV sex chromosome system in mosses.* International Botanical Congress. Shenzhen, China

## Meeting Oral Presentations

- 2019 *An ancient, dynamic sex chromosome system in plants.* UF HiPerGator Symposium
- 2019 *Genomic consequences of UV sex chromosomes.* Botany Conference. Tucson, AZ
- 2019 *Genomic consequences of UV sex chromosomes.* Evolution Meeting. Providence, RI
- 2018 *Genome analysis in a polymorphic moss with large, ancient sex chromosomes.* Genome Informatics. Hinxton, UK
- 2018 *Ancient sex chromosomes in plants.* Botany Conference. Rochester, MN
- 2018 *Ancient sex chromosomes in bryophytes.* iMoss Meeting, St. Petersburg, FL
- 2017 *An ancient UV sex chromosome system in mosses.* Evolution Meeting. Portland, OR
- 2016 *Sex-biased gene expression in 6 day old *Ceratodon purpureus*.* South Eastern Population Ecology and Evolutionary Genetics Meeting. Madison, FL
- 2016 *Using a SNP-corrected genome-guided approach to infer transcriptional dimorphism in *Ceratodon purpureus*.* Evolution Meeting. Austin, TX
- 2016 *Transcriptional dimorphism in juvenile tissue of the moss *Ceratodon purpureus*.* UF Plant Molecular and Cellular Biology Meeting. Daytona, FL
- 2015 *The genetic basis of spore production in the moss *Ceratodon purpureus*.* South Eastern Population Ecology and Evolutionary Genetics Meeting. Eaton, GA
- 2014 *A method for eliminating bacterial contamination from in vitro moss cultures.* UF URAP. Gainesville, FL

## Meeting Poster Presentations

- 2019 *Near universal sex-linked marker in mosses.* Botany Conference. Tucson, AZ
- 2019 *Transcriptional dimorphism driven by large sex chromosomes in fire moss.* Evolution Meeting. Providence, RI
- 2017 *An ancient UV sex chromosome system in mosses.* Evolution Meeting. Portland, OR
- 2014 *A method for eliminating bacterial contamination from in vitro moss cultures.* UF Undergraduate Research Symposium Poster Session

2013     *A method for eliminating bacterial contamination from in vitro moss cultures.* UF Chemistry Department Alumni Weekend Poster Session

## Teaching Experience

### *Teaching Assistant*

Spring semesters 2018-present     **Plant Diversity Online**

- Assist with running online course

Fall semesters 2015-2019     **Introductory Botany**

- Taught labs and assisted in lecture
- Wrote three labs for doing semester-long growth experiments in mosses (1. Setting up experiments, 2. Image analyses using ImageJ, 3. Statistical analyses using R)
- Wrote a lab to learn mitosis and meiosis

Spring semesters 2015-2017     **Plant Diversity**

- Taught labs and assisted in lecture
- Edited lab manual, developed new questions

Fall 2014, Summer 2015     **Principles of Biology II Lab**

- Taught labs

### *Non-refereed Publications*

F.E. Putz, E.C. Davis, and **S.B. Carey**. University of Florida Introductory Botany Laboratory Manual. 2016-2019.

G. Ionta, M. Blanco, B. Knorr, S. Allen, **S. Carey**, and S. McDaniel. University of Florida Plant Diversity Lab Manual. 2016-2018.

### *Guest Lectures*

2019     **Orthofinder**. Bioinformatic Users Group Series. Texas Tech University. Lubbock, TX

2018     **Genetic Frontiers**. Introductory Botany. University of Florida

## Mentoring

### *Undergraduates*

2016-present     **Wes Burtscher**. *Sexual dimorphism in juvenile tissue across mosses*

- Now lab assistant in McDaniel lab

2018-2019     **Tikahari Khanal**. *Mapping improvement in polymorphic *Ceratodon purpureus**

- REU recipient

2016-2019     **Emily Lockwood**. *Species-level phylogeny of *Equisetum**

- UF University Scholars Program recipient
- Now Master's Student, UF

Summer 2018     **Joan Glenny-Pescov**. *Sex-biased gene expression in *Ceratodon purpureus**

- UF Summer Undergraduate Research Fellow visiting from Florida International University

- Summer 2018     **Jordan McBreen.** *Tissue perturbations and RNA extractions for *Ceratodon purpureus* genome annotation*
- Now PhD student, UF
- 2017-2018     **Kaylee Hoffman.** *Trained on molecular lab techniques*
- 2017-2018     **Kristen Gaines.** *Testing a near-universal sex-linked marker in mosses*
- 2015-2016     **Marna List.** *Evaluating methods for growth analyses in mosses*
- UF University Scholars Program recipient
  - Now UF Medical Honors Student
- 2014-2016     **Roth Conrad.** *Transcriptomic analyses in *Ceratodon purpureus**
- UF University Scholars Program recipient
  - Now PhD Candidate, Georgia Tech

## Academic Service and Outreach

- Summer 2019     Co-organizer Population Biology Summer Seminar Series
- 2016     Invited scientist at *She's a Scientist!*, FL Museum of Natural History
- 2015-2018     UF Biology Department URAP Committee
- 2015-2016     Organizer of Art of Biology Art Exhibition, UF Dept. of Biology
- 2015-2016     UF Biology Department Awards Committee
- 2014, 2019     Poster judge, UF Biology Department URAP Symposium
- 2014-2016     Graduate Student Advisor, GROW Botany
- 2013, 2014     Undergraduate Researcher Panelist, UF FYI Biology
- 2013-2014     Vice-President & Founding Member, GROW Botany  
(Recipients of Champions for Change Award, Campus Organization of the Year)
- 2013-2014     Vice-President, Botanical Society of America UF Student Chapter

## Professional Affiliations

- 2015-present     Society for the Study of Evolution
- 2013-present     Botanical Society of America

## Additional Roles

- Manage the lab's research computing account
- Maintain the lab's genome/transcriptome lines