

Erin M. Sigel

Curriculum Vitae

University of Louisiana at Lafayette
Department of Biology
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EDUCATION

- 2014 Ph.D., Biology
Duke University, Durham, NC; Advisor: Dr. Kathleen M. Pryer
- 2008 M.Sc., Botany
University of Vermont, Burlington, VT; Advisor: Dr. David S. Barrington
- 2003 B.Sc., Environmental Science, *Summa Cum Laude*
University of New Hampshire, Durham, NH

ACADEMIC APPOINTMENTS

- 2017–
present **Assistant Professor of Integrative Genomics**
University of Louisiana at Lafayette
- 2014–2016 Peter Buck Postdoctoral Fellowship
Smithsonian Institution, Washington, DC; Advisor: Dr. Eric Schuettpelz

AWARDS AND FELLOWSHIPS

- 2017-2018 Louisiana Sea Grant's Discovery, Integration and Application
(LA DIA) Fellowship, Louisiana Sea Grant Program
- 2014 Semester Fellowship, Biology Department, Duke University
- 2013 Conference Travel Award, Graduate School, Duke University
- 2012 Conference Travel Award, Graduate School, Duke University
- 2012 Natural Sciences Summer Research Fellowship, Graduate School, Duke
University
- 2012 Graduate Student Travel Award, American Fern Society
- 2008 1st Year Graduate Student Fellowship, Biology Department, Duke University
- 2007 Graduate Student Scholarship, Vermont Botanical and Bird Club

RESEARCH FUNDING

- 2013 Biology Department, Duke University, Grant-in-Aid of Research, \$1000
- 2013 American Society of Plant Taxonomists, Graduate Student Research Grant,
\$1000
- 2012 Sigma Xi, Grant-in-Aid of Research, \$1000

- 2012 NSF DEB 1110775, Dissertation Research: *Patterns of Gene Expression in an Allopolyploid Taxon of Recurrent Origin: A Case Study of the Polypod Ferns*. PI: Kathleen M. Pryer; Co-PI: Erin M. Sigel; \$14996
- 2012 Biology Department, Duke University, Grant-in-Aid of Research, \$1000
- 2008 Biology Department, Duke University, Grant-in-Aid of Research, \$1000

PUBLICATIONS (*signifies co-first authors)

- Grusz*, A. L., **E. M. Sigel***, and C. Witherup. *In press*. Invited article for 25th anniversary edition: Homeologous chromosome pairing across the eukaryote phylogeny. *Molecular Phylogenetics and Evolution*.
- The Pteridophyte Phylogeny Group[†]. 2016. A community-derived classification for extant lycophytes and ferns. *Journal of Systematics and Evolution* 54: 563–603.
[†] This project was organized by E. Schuettpelz and H. Schneider with 92 other contributors including **E. M. Sigel**
- Sigel, E. M.** 2016. Invited article for special issue on the Systematics and Evolution of Lycophytes and Ferns: Genetic and genomic aspects of hybridization in ferns. *Journal of Systematics and Evolution* 54: 638–655.
- Windham, M. D., J. B. Beck, F.-W. Li, L. Allphin, J. G. Carman, D. A. Sherwood, C. A. Rushworth, **E. M. Sigel**, P. J. Alexander, C. D. Bailey, and I. A. Al-Shehbaz. 2015. Searching for diamonds in the apomictic rough: case study involving *Boechera lignifera* (Brassicaceae). *Systematic Botany* 40: 1031–1044.
- Wolf, P. G., E. B. Sessa, D. B. Marchant, F.-W. Li, C. J. Rothfels, **E. M. Sigel**, M. A. Gitzendanner, C. J. Visger, J. A. Banks, D. E. Soltis, P. S. Soltis, K. M. Pryer, and J. P. Der. 2015. An exploration into fern genome space. *Genome Biology and Evolution* 7: 2533–2544.
- Rothfels, C. J., F.-W. Li, **E. M. Sigel**, L. Huiet, A. Larsson, D. O. Burge, M. Ruhsam, M. Deyholos, D. E. Soltis, C. N. Stewart, Jr., S. W. Shaw, L. Pokorny, T. Chen, C. W. dePamphilis, L. DeGironimo, L. Chen, X. Wei, X. Sun, D. W. Stevenson, S. W. Graham, G. K.-S. Wong, and K. M. Pryer. 2015. Curated phylogenomics: The evolutionary history of ferns inferred from 25 single-copy nuclear genes. *American Journal of Botany* 102: 1–19.
- Sigel, E. M.**, M. D. Windham, and K. M. Pryer. 2014. Evidence for reciprocal origins in *Polypodium hesperium* (Polypodiaceae): a fern model system for investigating how multiple origins shape allopolyploid genomes. *American Journal of Botany* 101: 1476–1485.
- Sigel, E. M.**, M. D. Windham, C. Haufler, and K. M. Pryer. 2014. Phylogeny, divergence time estimates, and phylogeography for the diploid species of the *Polypodium vulgare* complex (Polypodiaceae). *Systematic Botany* 39: 1042–1055.
- Sigel, E. M.**, A. K. Johnson, and C. H. Haufler. 2014. A first record of *Polypodium saximontanum* for the flora of Montana. *American Fern Journal* 104: 22–23.

- Sigel, E. M.**, M. D. Windham, A. R. Smith, R. J. Dyer, and K. M. Pryer. 2014. Rediscovery of *Polypodium calirhiza* (Polypodiaceae) in Mexico. *Brittonia* 63: 278–286.
- Li, F.-W., J. C. Villarreal, S. Kelly, C. J. Rothfels, M. Melkonian, E. Frangedakis, M. Ruhsam, **E. M. Sigel**, J. P. Der, J. Pittermann, D. O. Burge, L. Pokorny, A. Larsson, T. Chen, S. Weststrand, P. Thomas, E. Carpenter, Y. Zhang, Z. Tian, L. Chen, Z. Yan, Y. Zhu, X. Sun, J. Wang, D. W. Stevenson, B. J. Crandall-Stotler, A. J. Shaw, M. K. Deyholos, D. E. Soltis, S. W. Graham, M. D. Windham, J. A. Langdale, G. K.-S. Wong, S. Mathews, and K. M. Pryer. Horizontal transfer of an adaptive chimeric photoreceptor from bryophytes to ferns. 2014. *Proceedings of the National Academy of Sciences of the United States of America* 111: 6672–6677.
- Sessa, E. B., J. A. Banks, M. S. Barker, J. P. Der, A. M. Duffy, S. W. Graham, M. Hasebe, J. Langdale, F.-W. Li, D. B. Marchant, K. M. Pryer, C. J. Rothfels, S. J. Roux, M. L. Salmi, **E. M. Sigel**, D. E. Soltis, P. S. Soltis, D. W. Stevenson, and P. G. Wolf. 2014. Between two fern genomes. *GigaScience* 3: 15.
- Floyd, S. K., J. G. Ryan, S. J. Conway, E. Brenner, K. P. Burris, J. N. Burris, T. Chen, P. P. Edger, S. W. Graham, J. H. Leebens-Mack, J. C. Pires, C. J. Rothfels, **E. M. Sigel**, D. W. Stevenson, C. N. Stewart, G. K.-S. Wong, and J. L. Bowman. 2014. Origin of a novel regulatory module by duplication and degeneration of an ancient plant transcription factor. *Molecular Phylogenetics and Evolution* 81: 159–173.
- Rothfels, C. J., A. Larsson, F.-W. Li, **E. M. Sigel**, L. Huiet, D. O. Burge, M. Ruhsam, S. Graham, D. Stevenson, G. K.-S. Wong, P. Korall, and K. M. Pryer. 2013. Transcriptome-mining for Fern Single-copy Nuclear Regions. *PLoS One* 8: e76957.
- Rothfels, C. J., **E. M. Sigel**, and M. D. Windham. 2012. *Cheilanthes feei* T. Moore (Pteridaceae) and *Dryopteris erythrosora* (D.C. Eaton) Kunze (Dryopteridaceae) new for the flora of North Carolina. *American Fern Journal* 102(2): 184–186.
- Sigel, E. M.**, M. D. Windham, L. Huiet, G. Yatskievych, and K. M. Pryer. 2011. Species relationships and farina evolution in the cheilanthoid fern genus *Argyrochosma* (Pteridaceae). *Systematic Botany* 36: 554–564.

PRESENTATIONS (*presenting author underlined*)

Invited talks at conferences

- Sigel, E. M.**, A. G. Grusz, E. Schuettpelez. 2017. A Phylogenetic Approach to Assessing the Evolution of Genomic Repetitive Elements Across the Fern Family Pteridaceae. In: Phylogenomic perspectives on flagellate plant evolution. XIX International Botanical Congress, Shenzhen, China.
- Sigel, E. M.**, E. Schuettpelez, J. P. Der. 2016. Phase-specific gene expression in the homosporous fern *Polypodium amorphum*. In: *Seed-free Plants at the Genomic Scale* Colloquium. Botanical Society of America annual meeting, Savannah, GA.
- Sigel, E. M.** 2016. So, we meet again... Gene expression in recurrent origins of the allopolyploid fern *Polypodium hesperium*. In: Speciation Genomics Workshop. International Plant and Animal Genome Conference XXIV, San Diego, CA.

- Sigel, E. M.**, J. P. Der, M. D. Windham, and K. M. Pryer. 2015. So, we meet again...Gene expression in recurrent origins of the allopolyploid fern *Polypodium hesperium*. In: Colloquium on Genomics and Transcriptomics of Ferns and Lycophytes. Next Generation Pteridology, Smithsonian Institution, Washington, DC.
- Li, F.-W.**, S. Cheng, J. P. Der, B. Song, X. Liu, X. Xu, A. Bräutigam, C. J. Rothfels, **E. M. Sigel**, P. G. Wolf, Y. Kato, H. Schlupmann, G. K.-S. Wong, and K. M. Pryer. 2015. The *Azolla* genome and the metagenomes of its obligate endosymbionts: unlocking the massive green potential of a little fern. In: Colloquium on Genomics and Transcriptomics of Ferns and Lycophytes. Next Generation Pteridology, Smithsonian Institution, Washington, DC.
- Wolf, P. G.**, E. B. Sessa, D. B. Marchant, F-W Li, C. J. Rothfels, **E. M. Sigel**, M. A. Gitzendanner, C. J. Visger, J. A. Banks, D. E. Soltis, P. S. Soltis, K. M. Pryer, and J. P. Der. 2015. Skimming the surface of fern nuclear genomes. In: Colloquium on Genomics and Transcriptomics of Ferns and Lycophytes. Next Generation Pteridology, Smithsonian Institution, Washington, DC.
- Zhan, S. H.**, C. J. Rothfels, A. Larsson, S. Westrand, D. Burge, M. Rusham, F.-W. Li, **E. M. Sigel**, S. Ellis, S. Shaw, A. Calcedo, T. Chen, L. DiGironomo, E. Sessa, J. P. Der, M. Barker, J. Leebens-Mack, M. Deyholos, G. K.-S. Wong, D. Stevenson, and S. W. Graham. 2015. Phylotranscriptomics of the seed-free vascular plants. In: Colloquium on Genomics and Transcriptomics of Ferns and Lycophytes. Next Generation Pteridology, Smithsonian Institution, Washington, DC.
- Sigel, E. M.**, M. D. Windham, and K. M. Pryer. 2010. Using spore data to infer ploidy and reproductive mode in land plants. In: *Leveraging the use of herbarium collections in modern systematics—examples from Pteridology* Colloquium. Botanical Society of America annual meeting, Providence, RI.

Contributed talks and seminars

- Sigel, E. M.** 2015. So, we meet again...Systematics and genome evolution of the allopolyploid fern *Polypodium hesperium*. The Botanical Society of Washington, Washington, DC.
- C. J. Rothfels, F.-W. Li, **E. M. Sigel**, L. Huiet, A. Larsson, S. W. Graham, G. K.-S. Wong, and K. M. Pryer. 2015. Curated phylogenomics and the first single-copy nuclear phylogeny of ferns. Botanical Society of America annual meeting, Edmonton, Alberta, Canada.
- Sigel, E. M.** A next-generation approach to systematics in a classic fern reticulation complex. 2014. Botany Department Seminar, Smithsonian Institution, Washington, DC.
- Rothfels, C. J.**, S. Zhan, F-W. Li, **E. M. Sigel**, K. M. Pryer, and S.W. Graham. 2014. Phylogenetic and genomic projects in monilophytes. 1KP Sporophyte- Gametophyte Transcriptome Meeting, Florida Museum of Natural History, University of Florida, Gainesville, FL (<https://sites.google.com/site/1kp1n2n/home>).
- Der, J. P.**, **E. M. Sigel**, K. M. Pryer, P. Wolf, C. W. dePamphilis, and P. Szovenyi. 2014. Gametophyte-sporophyte transcriptomics in ferns: two case studies from *Pteridium*

aquilinum and *Polypodium amorphum*. 1KP Sporophyte-Gametophyte Transcriptome Meeting, Florida Museum of Natural History, University of Florida, Gainesville, FL (<https://sites.google.com/site/1kp1n2n/home>).

Sigel, E. M., J. P. Der, C. W. dePamphilis, and K. M. Pryer. 2013. Gene expression patterns in a non-model plant: developing a phylogenetic approach for deciphering transcriptome data. Systematics Discussion Group, Duke University, Durham, NC.

Sigel, E. M., J. P. Der, C. W. dePamphilis, and K. M. Pryer. 2013. Time after time: Comparing homeolog expression patterns between two independent origins of the allotetraploid fern *Polypodium hesperium*. Botanical Society of America annual meeting, New Orleans, LA.

Li, F. W., C. J. Rothfels, A. Larsson, **E. M. Sigel**, L. Huiet, P. Korall, M. Ruhsam, D. Stevenson, S. Graham, G. K.-S. Wong, and K. M. Pryer. 2013. Transcriptome-mining for fern single-copy nuclear regions. Botanical Society of America annual meeting, New Orleans, LA.

Sigel, E. M., M. D. Windham, C. Haufler, and K. M. Pryer. 2012. Reassessing phylogenetic relationships in the *Polypodium vulgare* complex (Polypodiaceae) using nuclear *gapCp* sequence data. Botanical Society of America annual meeting, Columbus, OH.

Johnson, A. K., C. J. Rothfels, A. L. Grusz, **E. M. Sigel**, M. D. Windham, and K. M. Pryer. 2011. Sporophytes and gametophytes of notholaenid ferns (Pteridaceae) show correlated presence/absence of farina. Botanical Society of America annual meeting, St. Louis, MO.

Sigel, E. M., M. D. Windham, L. Huiet, G. Yatskievych, and K. M. Pryer. 2011. Species relationships and farina evolution in the cheilanthoid fern genus *Argyrochosma* (Pteridaceae). Systematics Discussion Group, Duke University, Durham, NC.

Sigel, E. M., M. D. Windham, and K. M. Pryer. 2009. To have or have not: Using farina to delineate major clades within the false cloak ferns *Argyrochosma*. Botanical Society of America annual meeting, Snowbird, UT.

Sigel, E. M. and **D. S. Barrington**. 2008. Polyphyly of polyploid species: an inquiry into the origin of *Dryopteris campyloptera* and *Dryopteris dilatata* (Dryopteridaceae). Botanical Society of America annual meeting, Vancouver, British Columbia, Canada.

Sigel, E. M. and **D. S. Barrington**. 2007. The adaptive significance of polyploidy within the *Dryopteris carthusiana* complex (Dryopteridaceae). Student Research Conference, University of Vermont, Burlington, VT.

PROFESSIONAL EXPERIENCE

2012–2013 Guest Lecturer
Organismal Diversity Course, Duke University, Durham, NC

2009–2013 Teaching Assistant
Duke University, Durham, NC: Ecology for a Crowded Planet (Fall 2011, Fall 2012, Fall 2013), Organismal Evolution (Spring 2013), Plant Systematics and Evolution (Spring 2011, 2012), Molecular Biology and Genetics (Spring

- 2010), Microbiology (Fall 2009)
University of Vermont, Burlington, VT: Genetics (Fall 2007, Spring 2008), Ecology and Evolution (Spring, Fall 2006), Plant Systematics (Summer 2006), General Biology (Fall 2005)
- 2009 Herbarium Apprenticeship
 DUKE Herbarium, Duke University, Durham, NC
 Supervisor: Dr. Michael D. Windham
- 2007 Research Associate
 USDA CSREES: *Genetic features and origins of wild polyploid species*.
 University of Vermont, Burlington, VT; Supervisor: Dr. David S. Barrington
- 2004 State Park Manager
 Silver Lake State Park, Vermont State Parks
- 2002 Environmental Educator and Curriculum Design Intern
 Farm and Wilderness Foundation, Plymouth, VT
- 2001 Environmental Education Intern
 Chesapeake Bay Foundation, Smith Island, MD

TEACHING EXPERIENCE (*semester taught: F=fall, S=spring*)

- S2017 BIOL 452: Senior Seminar (1 credit)
 F2017 BIOL 559: Systematic Methods (4 credits)

MENTORING

Graduate students

- 2017-present Jonas Mendez Reneau, PHD student, ULL University Fellow

PROFESSIONAL ACTIVITIES AND OUTREACH

Graduate Student Committees

- 2017-present Jaymes Awbrey, PHD student, University of Louisiana at Lafayette
 advisor: Dr. Scott France

Service to the Department, College, and University of Louisiana at Lafayette

- 2017 Member: Evolutionary Developmental Biology faculty search committee

Service to the Scientific Community

- 2016 Symposium Organizer: *Seed Free Plants at the Genomic Scale*
 Botanical Society of America annual meeting, Savannah, GA
- 2015 Grant Proposal Reviewer: National Science Foundation, Arlington, VA
- 2015 Conference Coordinator: Next Generation Pteridology Conference
 Smithsonian Institution, Washington, DC

- 2011–2012 Seminar Coordinator: Systematics Discussion Group, Duke University
- 2010–2016 Invited Peer Reviewer: *American Fern Journal*, *American Journal of Botany*, *Ecology and Evolution*, *Journal of Plant Research*, *Journal of Systematics and Evolution*, *Molecular Phylogenetics and Evolution*, *New Phytologist*, *PLoS ONE*, *Taxon*, *Turkish Journal of Botany*
- 2010 Symposium Organizer: *Leveraging the use of herbarium collections in modern systematics—examples from Pteridology*
Botanical Society of America annual meeting, Providence, RI
- 2006–2008 Graduate Student Senator for Plant Biology, Graduate Student Senate, University of Vermont

Community Outreach

- 2015 Women in Science Lecture Series, Alice Deal Middle School, Washington, DC
- 2013 Edited plant inventory of preserved lands, Ellerbe Creek Watershed Association, Durham, NC
- 2013 Leader of “Fern Foray”, Ellerbe Creek Ellerbe Creek Watershed Association, Durham, NC
- 2011 Instructor for *Females Excelling More in Math, Engineering and Science* Program (FEMMES)
- 2010 Mentor for *Women and Math Mentoring* Program (WAMM), Duke University

BOTANICAL FIELD EXPERIENCE

- 2015 Mexico (Smithsonian Pteridological Expedition)
- 2011 American Southwest and Montana (Dissertation Research)
- 2011 American Pacific Northwest (Dissertation Research)
- 2010 Ecuador (Research Field Assistant)
- 2008 Costa Rica (OTS Tropical Ferns and Lycophytes Course)
- 2007 Costa Rica (UVM Tropical Plant Systematics Course)
- 2007 British Isles, The Azores, Madeira (Master’s Thesis Research)
- 2006 Gaspé Peninsula, Canada (Master’s Thesis Research)

PROFESSIONAL AFFILIATIONS

American Fern Society, American Society of Plant Taxonomists, Botanical Society of America, Sigma Xi, Society of Systematic Biologists