

## RYAN FOLK

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### POSITIONS HELD:

<i>Postdoctoral associate</i>	University of Florida	2017 –
<i>Postdoctoral fellow</i>	University of Florida	2015 – 2017
<i>Graduate research assistant</i>	The Ohio State University	2015
<i>Graduate teaching associate</i>	The Ohio State University	2012 – 2014
<i>Graduate fellow</i>	The Ohio State University	2010 – 2012, 2014 – 2015

### OBJECTIVE:

Faculty position with balanced teaching and research components.

### EDUCATION:

*Ph.D.*, Evolution, Ecology, and Organismal Biology, The Ohio State University, 2010-2015 (4 yr 10 mo). Dissertation: Biosystematics of the Genus *Heuchera* (Saxifragaceae).

*B.S.*, Biology, *Summa cum Laude*, University of Akron, 2006-2010 (3 yr 11 mo), GPA 3.994. Minor, Chemistry.

### RESEARCH INTERESTS:

Biodiversity from an organismal perspective, collections-based research, particularly: (1) integration of niche modeling in a phylogenetic framework, with methodological development and a case study in the Saxifragales; (2) systematics of the genus *Heuchera* with a focus on ancient hybridization and statistical species delimitation.

### RESEARCH GRANTS RECEIVED:

- 2017, co-PI: Research Opportunity Fund (University of Florida, \$99,976, PI D. Soltis)  
 Focuses on multimedia outreach and scientific communication using the Tree of Life.
- 2017, PI: XSEDE start-up allocation (50,000 system units, approx. \$1,739 equivalent value)
- 2017, co-PI: Biodiversity Institute Seed Grant (University of Florida, \$40,000, PI D. Soltis)  
 On phylogenomics and niche evolution in the nitrogen-fixing rosid – contextualizing multiple origins of one of the most critical symbioses on Earth. *Served as writing lead.*
- 2016, co-PI: Genetics Institute Pilot Grant (University of Florida, \$49,727, PI R. Guralnick)  
 On redevelopment of phylogenomic DNA assembler aTRAM, and integration with the Sequence Read Archive and other online repositories.
- 2015, PI: Post-Doctoral Fellowship in Biology (NSF, \$138,000)  
 Phylogenomics and niche evolution in the Saxifragales, and methods development.
- 2014, co-PI: Doctoral Dissertation Improvement Grant (NSF, \$15,502; PI J. Freudenstein)  
 Detection of hybridization using phylogenomic data. *Served as writing lead.*
- 2013, PI: American Society of Plant Taxonomists Research Grant (\$800)
- 2013, PI: AGGRS Alumni Grant (The Ohio State University, \$1,900)
- 2012, PI: R. L. Stuckey Endowment Fund (The Ohio State University, \$1,500)

2011, PI: Beatley Fund (The Ohio State University, \$1,200)  
 2008, 2009, PI: Dr. Paul Acquarone Award in Plant Sciences (University of Akron, \$450 each)

RESEARCH GRANT IN PROCESS:

2017, PI: Systematics and Biodiversity Science Cluster (NSF, ~\$500,000, *invited*)  
 2017, Sr. Pers.: Systems Biology Research to Advance Sustainable Bioenergy Crop Development (DOE, ~\$7,000,000, *invited*)

PUBLICATIONS:

- García, N., **R.A. Folk**, A.W. Meerow, S. Chamala, M.A. Gitzendanner, R.S de Oliveira, D.E. Soltis, and P.S. Soltis. Accepted. Deep reticulation and incomplete lineage sorting obscure the diploid phylogeny of rain-lilies and allies (Amaryllidaceae tribe Hippeastreae). *Molecular Phylogenetics and Evolution*.
- Freudenstein, J.V., M.B. Broe\*, **R.A. Folk\***, and B.T. Sinn\*. 2016. Biodiversity and the species concept – Lineages are not enough. *Systematic Biology*. Advance access at <http://sysbio.oxfordjournals.org/content/early/2016/10/26/sysbio.syw098.abstract>
- Folk, R.A.**, J.R. Mandel, and J.V. Freudenstein. 2016. Ancestral gene flow and parallel organellar genome capture result in extreme phylogenomic discord in a lineage of angiosperms. *Systematic Biology*. Advance access at <http://sysbio.oxfordjournals.org/content/early/2016/09/15/sysbio.syw083.abstract>
- Folk R.A.** and P.J. Alexander. 2015. Two new species, *Heuchera soltisii* and *H. inconstans*, with further taxonomic notes for the western group of *Heuchera* section *Heuchera* (Saxifragaceae). *Systematic Botany* 40(2): 489-500.
- Folk, R.A.**, J.R. Mandel, and J.V. Freudenstein. 2015. A protocol for targeted enrichment of intron-containing sequence markers for recent radiations: A phylogenomic example with genomic resources from *Heuchera* (Saxifragaceae). *Applications in Plant Sciences* 3(8): 1500039.
- Folk, R.A.** and J.V. Freudenstein. 2015. "Sky islands" in the eastern U.S.A.? – Strong phylogenetic structure in the *Heuchera parviflora* group (Saxifragaceae). *Taxon* 64(2): 254-271.
- Folk, R.A.** and J.V. Freudenstein. 2014. Phylogenetic relationships and character evolution in the genus *Heuchera* L. (Saxifragaceae) on the basis of nuclear loci. *American Journal of Botany* 101(9): 1532-1550.
- Folk, R.A.** and J.V. Freudenstein. 2014. Revision of *Heuchera* section *Rhodobeuchera* subsections *Hemsleyanae* and *Rosendabliae* subsect. nova (Saxifragaceae). *Systematic Botany* 39(3): 850-874.
- Folk, R.A.** 2013. *Heuchera lakelae* (Saxifragaceae), a new species from the Sierra La Marta and Sierra Coahuilón, Coahuila and Nuevo León, Mexico. *Phytotaxa* 124(1): 37-42.

MANUSCRIPTS IN PROCESS:

- Folk, R.A.\***, Julian C. Ginori\*†, P.S. Soltis, D.E. Soltis, Aaron J. Floden. Submitted. Integrative identification of incipient lineages in *Heuchera longiflora* (Saxifragaceae).
- Folk, R.A.**, C.J. Visger, D.E. Soltis, P.S. Soltis. Submitted. Geographic range dynamics drove ancient hybridization in a lineage of angiosperms. Preprint deposited at <https://doi.org/10.1101/129189>.

- Folk, R.A.**, P.S. Soltis, R.P. Guralnick, and D.E. Soltis, R.P. Guralnick. New prospects in the detection and comparative analysis of hybridization. Invited review for a special issue of the *American Journal of Botany* (on the tree of life).
- Folk, R.A.**, M. Sun, S.A. Smith, P.S. Soltis, R.P. Guralnick, and D.E. Soltis. Wrestling with the rosids: Progress in and challenges of a large, hyper-diverse angiosperm clade. Invited review for a special issue of the *American Journal of Botany* (on the tree of life).

BOOK CHAPTERS AND OTHER NON-PEER-REVIEWED CONTRIBUTIONS:

- Folk, R.A.** and A.S. Weakley. Treatment of *Heuchera*. In A.S. Weakley. *Flora of the Southern and Mid-Atlantic States*.
- Folk, R.A.** and R.L. Stubbs. [In review] Treatment of Saxifragaceae. In R.F.C. Naczi, revised *Manual of Vascular Plants of the Northeastern United States and Adjacent Canada*.

\**equally contributing authors*  
 †*undergraduate author*

AWARDS:

- 2017, Travel award, Florida Museum of Natural History (\$1,000)
- 2015, Travel award for the Phylogenomics Symposium and Software School, Ann Arbor, Michigan (\$500).
- 2014, George R. Cooley Award for best contributed paper in plant systematics (“Sky islands’ in the eastern US? – Strong phylogeographic structure in the *Heuchera parviflora* group (Saxifragaceae)”); American Society of Plant Taxonomists, \$500)
- 2010, Susan L. Huntington Distinguished University Fellowship (3 yr; \$64,800)
- 2010, Young Botanist Award (Botanical Society of America)
- 2006 – 2010, Dean’s List (The University of Akron)

INVITED PRESENTATIONS:

- Folk, R.A.**, R.P. Guralnick, P.S. Soltis, D.E. Soltis, J.M. Allen. 2017. Data assembly and post-processing in aTRAM for museum phylogenomics. International Botanical Congress.
- Folk, R.A.**, C.J. Visger, R.P. Guralnick, D.E. Soltis, P.S. Soltis. 2017. Assessing ancestral niche suitability and geographic range dynamics as drivers of hybridization in *Heuchera* (Saxifragaceae). International Botanical Congress.
- Folk, R.A.** 2016. Hybridization and diversification: Extreme phylogenomic discord in *Heuchera*. School of Integrative Plant Science, Cornell University.
- Folk, R.A.** 2016. Hybridization and diversification: Extreme phylogenomic discord in *Heuchera*. Department of Biology, San Francisco State.
- Folk, R.A.** 2016. Hybridization and diversification: Extreme phylogenomic discord in *Heuchera*. Department of Biological Sciences, University of Alabama.
- Folk, R.A.** 2016. Hybridization and diversification: Extreme phylogenomic discord in *Heuchera*. Department of Biological Sciences, Texas Tech University.
- Folk, R.A.** 2016. New sequencing strategies for radiations ancient and recent — An explicit test of reticulate evolution in the *Heuchera* clade (Saxifragaceae). Royal Botanic Garden Edinburgh.
- Folk, R.A.** 2015. Phylogenomics of *Heuchera* – Organellar capture and trait evolution. Florida Museum of Natural History, University of Florida.

## CONFERENCE PRESENTATIONS:

- Soltis, D.E., P.S., Soltis, J. Beach, A. Stewart, A. Thompson, J. Cavner, C.J. Grady, S. Smith, J. Fortes, **R.A. Folk**, M. Gitzendanner. 2017. Biotaphy—Connecting resources to enable large scale biodiversity analyses. International Botanical Congress.
- Stubbs, R.L., **R.A. Folk**, D.E. Soltis, N. Cellinese. 2017. Investigating the Sierra Nevada-Rocky Mountain disjunction in *Micranthes* (Saxifragaceae) with a target enrichment approach. Botanical Society of America.
- Soltis, D.E., P.S., Soltis, J. Beach, A. Stewart, A. Thompson, J. Cavner, C.J. Grady, S. Smith, J. Fortes, **R.A. Folk**, M. Gitzendanner. 2017. Biotaphy: Mobilizing and integrating big data in studies of spatial and phylogenetic patterns of biodiversity. Botanical Society of America.
- Folk, R.A.**, Stubbs, R.L., Cellinese, N., Mort, M.E., Soltis, P.S., Soltis, D.E., Guralnick, R.P. 2017. Dynamics of niche evolution in the Saxifragales. Botanical Society of America.
- Folk, R.A.**, Guralnick, R.P., Soltis, P.S., Soltis, D.E., Allen, J.M. 2017. Data assembly and post-processing in aTRAM for museum phylogenomics. Botanical Society of America.
- Folk, R.A.**, C.J. Visger, R.P. Guralnick, D.E. Soltis, P.S. Soltis. 2017. Historical range dynamics drove hybridization in a lineage of angiosperms. Society of Systematic Biologists Standalone Meeting.
- Soltis, D.E., M. Sun, C. Germain-Aubrey; S. Smith; P.S. Soltis, Z. Chen, **R.A. Folk**, R.P. Guralnick. 2016. Wrestling with the rosids II: too big to nail— challenges in conducting comprehensive analyses in the angiosperms. Botanical Society of America.
- Stubbs, R., **R.A. Folk**, D.E. Soltis, N. Cellinese. 2016. Specialized adaptations and restricted niche preferences of cold-adapted saxifrages (*Micranthes*, Saxifragaceae). Botanical Society of America.
- Folk, R.A.**, C.J. Visger, R.P. Guralnick, D.E. Soltis, P.S. Soltis. 2016. Ancestral reconstruction of habitat shifts from ecological niche models of extant species: A pipeline with applications to ancestral hybridization in *Heuchera* (Saxifragaceae). Botanical Society of America.
- García, N., A.W. Meerow; S. Chamala, M. Gitzendanner, R.S. Oliveira, **R.A. Folk**, D.E. Soltis, P.S. Soltis, Revisiting incongruence in the diploid phylogeny of Amaryllidaceae tribe Hippeastreae (Asparagales): hybridization or incomplete lineage sorting? Botanical Society of America.
- Tarullo, C., **R.A. Folk**, D.E. Soltis, P.S. Soltis, B. Drew. 2016. Using a supermatrix approach to explore historical biogeography, divergence times and phylogenetics of Saxifragales. Botanical Society of America.
- Folk, R.A.**, J.R. Mandel, J.V. Freudenstein. 2015. Phylogenomic approaches in the genus *Heuchera* (Saxifragaceae) elucidate deep reticulation and simultaneous mitochondrial and chloroplast capture. Botanical Society of America.
- Folk, R.A.**, J.R. Mandel, J.V. Freudenstein. 2015. Protocol for targeted enrichment of intron-containing sequence markers for recent radiations: A phylogenomic example from *Heuchera* (Saxifragaceae). Botanical Society of America.
- Folk, R.A.**, J.V. Freudenstein. 2014. “Sky islands” in the eastern US? – Strong phylogeographic structure in the *Heuchera parviflora* group (Saxifragaceae). Botanical Society of America (systematics section winner).

- Folk, R.A.** 2014. Phylogenetic relationships in *Heuchera* (Saxifragaceae) based on ribosomal and low-copy nuclear loci. Invited presentation, department of EEOB, the Ohio State University.
- Folk, R.A., J.V. Freudenstein.** 2013. Phylogenetic relationships in *Heuchera* (Saxifragaceae) based on ribosomal and low-copy nuclear loci. Botanical Society of America.
- Folk, R.A., J.V. Freudenstein.** 2012. Reticulate evolution and phylogenetic relationships in the genus *Heuchera* (Saxifragaceae). Botanical Society of America.

#### SCIENTIFIC WORKSHOPS:

- 2017 (*forthcoming*), Co-organizer and lecturer for Ecological Society of America iDigBio/BiotaPhy workshop: “Using Digitized Herbarium Data in Research; Applications for Ecology, Phylogenetics, and Biogeography”
- 2017 (*forthcoming*), Co-organizer and lecturer for Botanical Society of America iDigBio/BiotaPhy workshop: “Using Digitized Herbarium Data in Research; Applications for Ecology, Phylogenetics, and Biogeography”
- 2016, Organizing volunteer and lecturer for Botanical Society of America iDigBio workshop: “Using Digitized Herbarium Data in Research: A Crash Course”

#### FORMAL TEACHING EXPERIENCE:

- 2016, UF, co-lecturer (instructor of record with P. and D. Soltis), Molecular Systematics (graduate-level)
- 2013 – 2014, OSU, Graduate Teaching Assistant, CLSE (BIO1114: Evolution, Ecology, and Systematics; early undergraduate)
- 2013, OSU, Graduate Teaching Assistant, EEOB (EEOB3410: Ecology; advanced undergraduate)
- 2012 – 2013, OSU, Graduate Teaching Assistant, CSLE (BIO1114: Evolution, Ecology, and Systematics; early undergraduate)

#### FURTHER TEACHING ACTIVITIES:

- 2014, OSU, BIO 1114H guest lecture (“Fungi” – ~ 500 students)
- 2013, OSU, BIO1114 guest lecture (“Angiosperms” – ~ 500 students)

#### STUDENT RESEARCH MENTORSHIP:

- OSU: 3 undergraduates (one female, two immigrants)
- UF: 5 undergraduates (two female, two immigrants), 1 high school student (Indo-American)  
*Nameby:* Julian Ginori (NSF REU, recipient of Botanical Society of America Young Botanist Award, UF Biology Undergraduate Assistant Award), Jay Talati (UF SSTP high school summer program), Tatyana Srybnykh, Ian Cooney, Amelia Krusell
- Formal mentorship programs:* REU mentor to one student (UF; 12 wk, 15 hr/wk); research mentor to a high school student under UF’s SSTP program (7 wk, 35 hr/wk).

#### SERVICE:

- Numerous peer reviews for: *Molecular Ecology*, *American Journal of Botany*, *Taxon*, *PLoS One*, *Botany Letters*, *Phytotaxa*, *Evolution*, *PeerJ*, *Systematic Botany*, *Journal of Systematics and Evolution*
- Grant reviews for: NSF DEB (external), American Society of Plant Taxonomists (graduate student awards)

## PUBLIC OUTREACH:

- 2016, Organizing volunteer, several Tree of Life pop-up tent events (UF campus, FLMNH public museum, local brew-pub)
- 2016, Table volunteer for iDigBio at BSA
- 2015 –, Website with rare images, botanical illustrations, and accessible natural history information on *Heuchera*, primarily used by naturalists and horticulturists. Averages ~500 hits per month during the growing season. URL: <https://sites.google.com/site/ryanheuchera/>
- 2014, Oral presentation, Ohio Botany Research Symposium – “Evolutionary Relationships and Hybridization among Species of Coral Bells (*Heuchera*)”
- 2011 – 2015, Organizing volunteer, OSU Museum of Biological Diversity Open House
- 2009, Oral presentation, Ohio Natural History Conference in Columbus – “The Jaw Morphology of the Parasitic Rotifer *Proales werneckii*”

## OUTSIDE COURSES:

- 2015, Phylogenomics Symposium and Software School (Ann Arbor, Michigan)
- 2011, Cladistics Workshop by the Willi Hennig Society (INECOL, Xalapa, Mexico)

## ADVISORS:

- John Freudenstein (Ph.D.)
- Robert Guralnick (post-doctoral studies)
- Douglas Soltis (post-doctoral studies)
- Pamela Soltis (post-doctoral studies)

## COLLABORATORS:

- Patrick Alexander, University of New Mexico
- Julie Allen, University of Florida
- Michael Broe, The Ohio State University
- Nico Cellinese, University of Florida
- Aaron Floden, University of Tennessee Knoxville
- Nicolás García, Universidad de Chile
- Tracy Heath, Iowa State University
- Matias Kirst, University of Florida
- Steven Manchester, University of Florida
- Jennifer Mandel, University of Memphis
- Matt Gitzendanner, University of Florida
- Mark Mort, University of Kansas
- Aimee Stewart, University of Kansas
- Brian Stucky, University of Florida
- James Beach, University of Kansas
- Stephen Smith, University of Michigan
- James Oliverio, University of Florida
- Brandon Sinn, The Ohio State University
- Rebecca Stubbs, University of Florida
- Miao Sun, University of Florida
- Clayton Visger, University of Florida
- Chunlei Xiang, Kunming Institute of Botany

**PROFESSIONAL SOCIETIES:**

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

**RESEARCH SKILLS:**

Python, Perl, R, bioinformatics pipeline design, DNA extraction, PCR, qPCR, Sanger sequencing, Next-Generation Sequencing (NGS) library preparation (including shearing, quantification, etc.), NGS target enrichment, Illumina MiSeq sequencing (operated four runs, including machine maintenance and diagnostics), NGS assembly, phylogenetics, botanical monography, alpha taxonomy, extensive U.S. field experience