

curriculum vitae

DEREN A. R. EATON

Columbia University

Department of Ecology, Evolution, and Environmental Biology

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Appointments

- 7/2017 - Assistant Professor, Columbia University, Ecology, Evolution, & Environmental Biology
- 5/2016 - 7/2017 Associate Research Scientist, Yale University, Ecology and Evolution
- 1/2014 - 5/2016 Postdoctoral researcher, Yale University, Ecology and Evolution

Education

- 9/2008 - 12/2013 Ph.D. University of Chicago, Committee on Evolutionary Biology
- 9/2003 - 5/2007 B.S. University of Minnesota, Plant Biology (Honors)
- 9/2003 - 5/2007 B.S. University of Minnesota, Ecology, Evolution and Behavior

Grants and Awards

Grants Awarded:

Field course; Principles and Practice of Modern Genomic Data Science

Source: Earth Institute Course Support Grant for travel expenses

Duration: 1/2019 - 5/2019

Funding: \$4,000

Role: PI

Principles and Practice of Modern Genomic Data Science

Source: Columbia University Center for Teaching and Learning Hybrid Learning Grant

Duration: 9/2018 - 5/2019

Funding: \$13,400

Role: PI

Genomic and Chemical Consequences of Different Levels of Gene Flow in the Fig-Wasp Pollination Mutualism

Source: Smithsonian Scholarly Studies Award

Duration: 9/2016

Funding: \$50,324

Role: Co-PI

Replicated Evolution of Leaf Form in a Neo-tropical Radiation of Viburnum

Source: NSF DEB 1557059

Funding: \$996,515

Duration: 5/2016 - 5/2019

Role: Co-PI

Comparative Studies in Reproductive Interference: Linking Floral Adaptations and Species

Divergence.

Source: NSF Doctoral Dissertation Improvement Grant

Funding: \$15,000

Duration: 5/2011 – 5/2014

Role: PI

Grants Contributed to:

The Evolutionary Roles of Hybridization and Introgression: Investigating Species and Genomic Boundaries Under Climate Change; Primula Genomics: PrimGEN

Source: Swiss National Science Foundation

Duration: 5/2018 – 5/2022

Funding: CHF 700,000

Role: Personnel

Dimensions: Tropical Niche Conservatism in Drosophila: Testing the Genetic and Functional Constraints on Diversification

Source: NSF DEB 1737752

Duration: 5/2017 - 5/2020

Funding: \$1,946,771

Role: Personnel

Fellowships:

9/2011 - 9/2012 Lester Armour Graduate Fellowship, Field Museum; \$30,000

6/2010 - 9/2010 NSF East Asian Pacific Summer Institutes, China; \$5,600

Small Awards:

2015 Yale Postdoctoral scholars travel award
2012 Micromorph workshop, Harvard, travel and board
2011 Hinds Fund Grant, University of Chicago
2009 Pritzker Laboratory Grant, The Field Museum
2008 NSF Graduate research fellowship; *Honorable Mention*
2007 Honors, *summa cum laude*, U Minnesota
2007 Ernst Abbe Award for Plant Biology Majors, U Minnesota
2005-2007 Dean's List scholarship, U Minnesota
2006 Center for International Education Exchange (CIEE) Student of the Year
2004-2007 Soil, Water, Climate Department scholarship, U Minnesota
2004-2006 College of Agriculture, Food and Environmental Science scholarship, UMN

Publications

2019 Satler, J.D., Herre, A., Jander, C., **Eaton, D.A.R.**, Machado, C.A., Heath, T.A., and J.D. Nason (2019). *Inferring Processes of Coevolutionary Diversification in a Community of Panamanian Strangler Figs and Associated Pollinating Wasps*. BioRxiv, December, 490862. <https://doi.org/10.1101/490862>.

2019 Spriggs, E.L., **Eaton, D.A.R.**, Sweeney, P., Schlutius, C., Edwards, E., and M.J. Donoghue. (2019) *RAD-seq data reveal a cryptic Viburnum species on the North*

American Coastal Plain. American Journal of Botany. In Press.

- 2018 Miller, J., Quinzin, M., Edwards, **D.**, **Eaton, D.A.R.**, Jensen, E., Russello, M., Gibbs, J., Tapia, W., Rueda, D., and A. Caccone. (2018). *Genome-wide assessment of diversity and divergence among extant Galápagos giant tortoise species*. Journal of Heredity. doi: 10.1093/jhered/esy031.
- 2018 Park, B., Sinnott-Armstrong, M., Schlutius, C., Penagos Zuluaga, J., Spriggs, E.L., Simpson, R., Benavides, E., Landis, M., Sweeney, P., **Eaton, D.A.R.**, and M.J. Donoghue. (2018). *Sterile marginal flowers increase visitation and fruit set in the hobblebush (*Viburnum lantanoides*, Adoxaceae) at multiple spatial scales*. Annals of Botany; doi: 10.1093/aob/mcy117
- 2018 Federman, S., Donoghue, M.J., Daly, D., and **D.A.R. Eaton**. (2018). *Reconciling Species Diversity in a Tropical Plant Clade (*Canarium*, Burseraceae)*. PLoS One 13(6): e0198882.
- 2018 McKain, M.R., Johnson, M.G., Uribe-Convers, S., **Eaton, D.A.R.**, and Y. Yang *(All authors contributed equally) (2018). *Practical Considerations for Plant Phylogenomics*. Applications in Plant Sciences 6(3):e1038.
- 2017 Forsman, Z.H., Knapp, I.S.S, Tisthammer, K., **Eaton, D.A.R.**, Belcaid, M., and R.J Toonen (2017). *Coral hybridization or phenotypic variation? Genomic data reveal gene flow between *Porites lobata* and *P. compressa**. Molecular Phylogenetics and Evolution 111:132-148.
- 2016 **Eaton, D.A.R.**, Spriggs, E.L., Park, B. and M.J. Donoghue (2016). *Misconceptions on missing data in RADseq phylogenetics with a deep-scale example from flowering plants (*Viburnum*: Adoxaceae)*. Systematic Biology (<https://doi.org/10.1093/sysbio/syw092>).
- 2015 **Eaton, D.A.R.**, Hipp, A., Gonzalez-Rodriguez, A. and J. Cavender-Bares (2015). *Historical introgression among the American live oaks and the comparative nature of tests for introgression*. Evolution 69(10): 2587-2601.
- 2015 Cavender-Bares, J., Gonzalez-Rodriguez, A., **Eaton, D.A.R.**, Hipp, A., Buelke, A., and P. Manos (2015). *Phylogeny and biogeography of the American live oaks (*Quercus* subsection *Virentes*): A genomic and population genetic approach*. Molecular Ecology, 24(14): 3668-3687
- 2014 Escudero, M., **Eaton, D.A.R.**, Hahn, M. and A. Hipp (2014). *Genotyping-by-sequencing as a tool for phylogenetic inference and testing ancestral hybridization: A case study in *Carex* (Cyperaceae)*. Molecular Phylogenetics and Evolution 79: 359-367.
- 2014 **Eaton, D.A.R.** (2014). *On the Evolutionary Consequences of Interspecific Reproductive Interactions*. Ph.D. Dissertation. University of Chicago.

- 2014 **Eaton, D.A.R.** (2014). *PyRAD: de novo Assembly of RAD/GBS data for phylogenetic and introgression analyses*. *Bioinformatics*, 30(13): 1844-1849.
- 2014 Hipp, A., **Eaton, D.A.R.**, Cavender-Bares, J., Fitzek, E., Nipper, R. and P. Manos (2014). *A framework phylogeny of the New World oak clade based on sequenced RAD data*. *PLoS ONE* 9(4): e93975.
- 2013 **Eaton, D.A.R.** and R.H. Ree (2013). *Inferring Phylogeny and Introgression using genomic RADseq Data: An Example from Flowering Plants (Pedicularis: Orobanchaceae)*. *Systematic Biology*, 62: 689-706
- 2013 Wang, X., Zhao, L., **Eaton, D.A.R.** and Z. Guo (2013). *Identification of SNP markers for inferring phylogeny in temperate Bamboos (Poaceae: Bambusoideae) using RAD tag sequencing*. *Molecular Ecology Resources*, 13: 938-945.
- 2013 Fournier-Level A., Wilczek, A.M., Cooper, M.D., Roe, J.L., Anderson, J.A., **Eaton, D.A.R.**, Moyers, B.T., Petipas, R.H., Schaeffer, R.N., Pieper, B., Reymond, M., Koorneef, M., Welch, S.M., Remington, D.L. and J.S. Schmitt (2013). *Paths to selection on life-history loci in different natural environments across the native range of Arabidopsis thaliana*. *Molecular Ecology*, 22: 3552-3566.
- 2012 **Eaton, D.A.R.**, Fenster, C.B., Hereford, J., Huang, S-Q. and R.H. Ree (2012). *Floral diversity and community structure in Pedicularis (Orobanchaceae)*. *Ecology*, 93: S182-S19

Other publications (non peer-reviewed)

- 2013 Hipp, A.L., Manos, P.S., Cavender-bares, J.C., **Eaton, D.A.R.**, and R. Nipper *Using Phylogenomics to infer the evolutionary history of Oaks*. *The Journal of International Oaks*. *International Oak Journal*, 24: 61-71

Presentations

Invited talks:

- 3/2019 CUNY City College – Biology Department Seminar
- 2/2019 University of Wisconsin Madison – J.F. Crow Evolution Institute Seminar
- 2/2019 University of Wisconsin Madison – Darwin Day *Public Invited Speaker*
- 11/2018 CUNY City Tech – Bioinformatics Colloquium Seminar Series
- 11/2018 Pace University – Biology Department Seminar
- 7/2018 Kunming Institute of Botany, Chinese Academy of Sciences
- 5/2018 Universidad Nacional Autonoma de Mexico, Mexico City
- 4/2018 Columbia University – Evolutionary Genomics Supergroup
- 10/2017 Missouri Botanic Garden – Annual Fall Symposium
- 8/2017 Workshop on Molecular Evolution – Marine Biological Laboratory
- 4/2017 University of Michigan – EEB Department Seminar
- 4/2016 Universidad Nacional Autonoma de Mexico, Morelia – Invited seminar
- 4/2016 NSF-NSFC China-US biodiversity workshop, Zhejiang University, China
- 3/2016 University of Arkansas – *Graduate Student Elected Invited Speaker*
- 3/2016 Rancho Santa Ana Botanic Garden – Graduate Student Elected Speaker
- 2/2016 University of Idaho – IBEST RAD-seq symposium

2/2016 University of Minnesota – Plant Biology Department Seminar
 2/2016 Columbia University – E3B Department Seminar
 10/2015 Amherst College – Biology Department Seminar
 10/2015 American Museum of Natural History – Comparative Biology Seminar
 7/2015 Universidad Nacional Autonoma de Mexico, D.F.
 3/2015 Harvard University – C. Davis Lab seminar
 3/2015 University of Hawaii – Department seminar
 3/2015 Hawaii Institute of Marine Biology – Department seminar
 2/2014 Yale University – EEB Department Seminar
 6/2013 Ernst Mayr Symposium – Evolution Meeting, Snowbird, Utah
 4/2013 Yale University – Donoghue/Near lab seminar
 1/2013 Field Museum – Chicago Plant Science Symposium
 12/2012 University of Illinois at Chicago, Ecology and Evolution Dept. Seminar
 8/2012 Association for Tropical Biology and Conservation Conf., Bonito, Brazil
 8/2012 Arnold Arboretum of Harvard University, microMORPH workshop
 7/2010 Shangri-la Alpine Botanic Garden, Yunnan, China, S-Q. Huang Lab

Talks at Meetings/Conferences

1/2019 *International Biogeography Conference, Malaga, Spain*
 7/2016 *Botany meeting, Savannah, Georgia*
 6/2016 *Evolution meeting, Austin, Texas*
 7/2015 *Botany meeting, Edmonton, Alberta*
 1/2015 *Society for Systematic Biologists stand-alone meeting, Ann Arbor, Michigan*
 7/2014 *Botany meeting, Boise, Idaho*
 6/2014 *Evolution meeting, Raleigh, North Carolina*
 6/2013 *Evolution meeting, Snowbird, Utah*
 6/2012 *Evolution meeting, Ottawa, Canada*
 11/2012 *Field Museum Plant Sciences Symposium*
 6/2012 *Field Museum Pritzker Laboratory Seminar*
 6/2009 *Evolution meeting, Moscow, Idaho*

Teaching (courses)

2019 Spring Instructor, GR6300 Research Seminar, Columbia University
 2019 Spring Instructor, GR4055 Principles and Applications of Modern DNA Sequencing, Columbia University
 2018 Fall Instructor, GR6110 Fundamentals of Evolution, Columbia University
 2018 Fall Instructor, GR6300 Research Seminar, Columbia University
 2018 Spring Instructor, GR4050 Programming and Data Science for Biology, Columbia University
 2017 Fall Instructor, GR6110 Fundamentals of Evolution, Columbia University
 2013 Spring Teaching Assistant, Ecology, Evolution of the Southwest Deserts, UChicago
 2011 Spring Teaching Assistant, Environmental Ecology, UChicago
 2009 Spring Teaching Assistant, Ecology, Evolution of the Southwest Deserts, UChicago
 2009 Summer Teaching Assistant, Field Course in Desert Ecology, U of Chicago
 2007 Spring Teaching Assistant, Introduction to Biochemistry, U of Minnesota

Organized Workshops: “Instructor: reproducible genomics workshop”

1/2019 International Biogeography Conference, Malaga, Spain

10/2018 RADCamp 3-day genomics workshop, Columbia University, New York
11/2017 Universidad Nacional Autonoma de Mexico, D.F.
8/2017 Workshop on Molecular Evolution, Woods Hole, MA
4/2017 University of Oldenburg, Germany
4/2016 Universidad Nacional Autonoma de Mexico, Morelia
7/2016 Botany conference, Savannah, Georgia
3/2016 University of Arkansas
3/2016 Rancho Santa Ana Botanic Garden
2/2016 University of Idaho
5/2015 Universidad Nacional Autonoma de Mexico, D.F.

Professional Societies

Society of Systematic Biologists (SSB)
Society for the study of Evolution (SSE)
Botanical Society of America (BSA)

Scientific Software (github.com/dereneaton, github.com/eaton-lab)

simcat – machine learning analysis of multidimensional phylogenetic invariants
strange – species tree and gene tree analysis in sliding windows
toytree – interactive tree plotting library for Python
tetrad – quartet based super tree inference using phylogenetic invariants
ipyrad – interactive assembly and analysis of RAD-seq data sets
pyRAD – assembly of RAD and GBS data sets
simrrls – simulate RADseq reads for analysis of mutation-disruption
simloci – simulate RADseq loci for analysis of mutation-disruption

Signature



4/22/2019