

Carolyn A. Wessinger

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Education & Professional Experience

Assistant Professor, Dept of Biological Sciences, University of South Carolina	2020 – Present
Postdoctoral Associate, University of Kansas	2017-2019
NIH NRSA Postdoctoral Fellow, University of Kansas, Advisors: Lena Hileman & John Kelly	2014-2017
PhD, Duke University Program in Genetics and Genomics, Advisor: Mark Rausher	2013
Research Technician, University of California, Davis, Advisor: Julin Maloof	2004-2006
BSc, Honors, Brown University, Advisor: Johanna Schmitt	2004

Recent Award

2022-2025 U of SC College of Arts and Sciences, Peter and Bonnie McCausland Faculty Fellowship

Current Grants

2021–2026	NSF DEB 2052904, <i>The contribution of introgression to convergent floral adaptation in Penstemon</i> . PI: <u>C.A. Wessinger</u> . \$953,034 total costs
2021-2026	NIH R35 GM142626, <i>Quantitative genetics and population genomics of repeated complex trait evolution</i> . PI: <u>C.A. Wessinger</u> . \$1,840,840 total costs

Prior Grants & Fellowships

2015–2020	NSF DEB-1542402, Dimensions: Collaborative research: <i>The evolution of pollination syndrome diversity in Penstemon</i> . PI: L.C. Hileman (KU), co-PI: <u>C.A. Wessinger</u> (KU), PI: M.D. Rausher (Duke U). \$999,783 total costs awarded to KU
2014–2017	NIH F32 GM110988 Ruth L. Kirschstein Postdoctoral National Research Service Award: <i>The genetic and developmental basis of repeated phenotypic shifts in Penstemon</i> . \$159,906
2010	NSF DEB-1010886, Dissertation research: <i>Genetic basis of parallel flower color shifts in Penstemon</i> . PI: M.D. Rausher (thesis advisor), co-PI: <u>C.A. Wessinger</u> . \$15,000
2007–2012	Duke University Biology Department Grant-In-Aid. \$1,000 (awarded four times), Duke University Conference Travel Fellowship. \$500 (awarded three times)
2006, 2008	Honorable Mention, National Science Foundation Graduate Research Fellowship (awarded two times).
2004	Society for the Study of Evolution, Undergraduate Diversity Travel Award for Evolution Conference 2004.
2002	Brown University Undergraduate Teaching and Research Award

Peer-Reviewed Publications

2024	Stone, B.W. and C.A. Wessinger . Ecological diversification in an adaptive radiation of plants: the role of de novo mutation and introgression. <i>Molecular Biology and Evolution</i> , doi: 10.1093/molbev/msae007.
2023	Wessinger, C.A. How the switch to hummingbird pollination has greatly contributed to our understanding of evolutionary processes. <i>New Phytologist</i> 241: 59-64.

- 2023 **Wessinger, C.A.**, A.M. Katzer, P.M. Hime, M.D. Rausher, J.K. Kelly, and L.C. Hileman. A few essential genetic loci distinguish *Penstemon* species with flowers adapted to pollination by bees or hummingbirds. *PLoS Biology* 21: e3002294.
- 2023 Stevens, J.T.E., L.C. Wheeler, N.H. Williams, A.M. Norton, and **C.A. Wessinger**. Predictive links between petal color and pigment quantities in natural *Penstemon* hybrids. *Integrative and Comparative Biology* 63: 1340-1351.
- 2023 Dellinger, A.S., A.M. Hamilton, **C.A. Wessinger**, and S.D. Smith. Opposing patterns of altitude-driven pollinator turnover in the tropical and temperate Americas. *The American Naturalist* 202: 152-165
- 2022 Hamilton, A.M., and **C.A. Wessinger**. Adaptation to lower latitudes and lower elevations precedes the evolution of hummingbird pollination in western North American *Penstemon*. *American Journal of Botany* 109: 1047-1055
- 2021 **Wessinger, C.A.** From pollen dispersal to plant diversification: genetic consequences of pollination mode. *New Phytologist* 229: 3125-3132
- 2020 **Wessinger, C.A.** and L.C. Hileman. Parallelism in flower evolution and development. *Annual Reviews of Ecology, Evolution, and Systematics* 51: 387-408
- 2020 Colicchio, J., P. Monnahan, **C. Wessinger**, K. Brown, J. Kern, J. Kelly. Individualized mating system estimation using genomic data. *Molecular Ecology Resources* 20: 333-347
- 2019 **Wessinger, C.A.**, M.D. Rausher, and L.C. Hileman. Adaptation to hummingbird pollination is associated with reduced diversification in *Penstemon*. *Evolution Letters* 3: 521-533
- 2019 Katzer, A.M., **C.A. Wessinger**, and L.C. Hileman. Nectary size is a pollination syndrome trait in *Penstemon*. *New Phytologist* 223: 377-384
- 2018 **Wessinger, C.A.**, J.K. Kelly, P. Jiang, M.D. Rausher, and L.C. Hileman. SNP-skimming: a fast approach to map loci generating quantitative variation in natural populations. *Molecular Ecology Resources* 18: 1402-1414
- 2018 **Wessinger, C.A.** and J.K. Kelly. Selfing can facilitate shifts in pollination syndrome. *The American Naturalist* 191: 582-594
- 2016 Becklin, K.M., J.T. Anderson, L.M. Gerhart, S.M. Wadgymar, **C.A. Wessinger**, J.K. Ward. Examining plant physiological responses through an evolutionary lens. *Plant Physiology* 172: 635-649. *All authors contributed equally to this publication*
- 2016 **Wessinger, C.A.** and L.C. Hileman. Accessibility, constraint, and repetition in adaptive floral evolution. *Developmental Biology* 419: 175-183
- 2016 **Wessinger, C.A.**, C.C. Freeman, M.E. Mort, M.D. Rausher, and L.C. Hileman. Multiplexed shotgun genotyping resolves species relationships within the North American genus *Penstemon*. *American Journal of Botany* 103: 912-922
- 2015 **Wessinger, C.A.**, and M.D. Rausher. Ecological transition predictably associated with gene degeneration. *Molecular Biology and Evolution* 32: 347-354
- 2014 **Wessinger, C.A.**, L.C. Hileman, and M.D. Rausher. Identification of major QTLs underlying floral syndrome divergence in *Penstemon*. *Philosophical Transactions of the Royal Society B* 370: 20130349
- 2014 **Wessinger, C.A.** and M.D. Rausher. Predictability and irreversibility of genetic changes underlying flower color change in *Penstemon barbatus*. *Evolution* 68: 1058-1070
- 2012 **Wessinger, C.A.** and M.D. Rausher. Lessons from flower color evolution on targets of selection. *Journal of Experimental Botany* 63: 5741-5749
- 2008 Filiault, D.L*, **C.A. Wessinger***, J.R. Dinneny, J. Lutes, J.O. Borevitz, D. Weigel, J. Chory, and J.N. Maloof. Amino acid polymorphisms in *Arabidopsis* phytochrome B cause differential responses to light. *Proceedings of the National Academy of Sciences, U.S.A.* 105: 3157-3162. **These authors contributed equally*

- 2007 Balasubramanian, S., S. Sureshkumar, M. Agrawal, T.P. Michael, **C. Wessinger**, J.N. Maloof, R. Clark, N. Warthmann, J. Chory, and D. Weigel. The PHYTOCHROME C photoreceptor gene mediates natural variation in flowering and growth responses of *Arabidopsis thaliana*. *Nature Genetics* 38: 711-715

Non-Peer Reviewed Invited Commentaries

- 2022 **C.A. Wessinger**. Small genetic steps lead to mechanical isolation in hummingbird-pollinated gingers. *Molecular Ecology* 31: 4205-4207
- 2015 **C.A. Wessinger**. A genetic route to yellow flowers. *New Phytologist* 206: 1193-1195

Invited Talks

- 2024 Chicago Plant Science Symposium, The Field Museum
- 2023 Dept of Botany, University of Wisconsin
- 2023 Dept of Biology, Brigham Young University
- 2023 Inst of Ecology and Evolution, University of Oregon
- 2022 Dept of Ecology, Evolution, & Behavior, Indiana University
- 2022 Dept of Botany & Plant Pathology, Oregon State University
- 2022 Dept of Biology, University of Toronto Mississauga
- 2021 Dept of Genetics, University of Georgia
- 2020 Evolution Letters Online Summer Talks
- 2020 Chicago Plant Science Symposium 2020, The Field Museum, Chicago *canceled due to COVID*
- 2020 Dept of Biology, Pop Bio Seminar, Duke University
- 2019 Dept of Ecology, Evolution, and Marine Biology, University of California, Santa Barbara
- 2019 Dept of Biology and Biochemistry, University of Houston
- 2019 Dept of Ecology and Evolutionary Biology, Brown University
- 2018 Dept of Biological Sciences, University of South Carolina
- 2018 Dept of Biology, Emporia State University
- 2017 International Botanical Congress, Shenzhen, China
- 2017 Div of Biology, Kansas State University
- 2017 Dept of Biology, University of Denver
- 2017 MicroMORPH workshop, Arnold Arboretum of Harvard University
- 2017 Dept of Plant and Microbial Biology, North Carolina State University
- 2017 Dept of Biology, University of Virginia
- 2016 Dept of Biology, Texas Tech University
- 2016 Dept of Plant Biology, University of Minnesota.

Submitted Talks

- 2024 PEQG, Washington D.C.
- 2023 Evolution, Albuquerque, New Mexico
- 2022 Evolution, Cleveland, Ohio
- 2021 Evolution, Online virtual meeting
- 2020 Botany, Online virtual meeting
- 2019 Unveil Symposium, Lincoln, Nebraska
- 2019 Evolution, Providence, Rhode Island
- 2018 Botany, Rochester, Minnesota
- 2018 PEQG, Madison, Wisconsin
- 2017 Evolution, Portland, Oregon.

- 2016 Evolution, Austin, Texas.
- 2015 Pan-American Society for Evolutionary Developmental Biology, Berkeley, California
- 2014 Ecological Genomics Symposium, Kansas City, Missouri.
- 2014 Evolution, Raleigh, North Carolina.
- 2013 Evolution, Snowbird, Utah.
- 2012 Southeast Population, Ecology, and Evolutionary Genetics Meeting. Clemson, South Carolina.
- 2012 Evolution, Ottawa, Canada.
- 2010 Evolution, Portland, Oregon.
- 2009 Evolution, Moscow, Idaho.
- 2008 *Poster Presentation.* Evolution, Minneapolis, Minnesota.
- 2004 *Poster Presentation.* Evolution, Fort Collins, Colorado.

Teaching

- University of South Carolina, Assistant Professor, *Ecology and Evolution* (Lecture, 24 students) Spring 2024
- University of South Carolina, Assistant Professor, *Speciation* (Seminar, 9 students) Fall 2023
- University of South Carolina, Assistant Professor, *Evolutionary genetics* (Seminar, 9 students) Fall 2022
- University of South Carolina, Assistant Professor, *Ecology and Evolution* (Lecture, 56 students) Spring 2022
- University of South Carolina, Assistant Professor, *Speciation* (Seminar, 12 students) Fall 2021
- University of South Carolina, Assistant Professor, *Ecology and Evolution* (Lecture, 47 students) Spring 2021
- University of South Carolina, Assistant Professor, *Ecology and Evolution* (Lecture, 48 students) Spring 2020
- University of Kansas, Guest Lecturer, *Evolution* 2016
- Duke University, Teaching Assistant, multiple courses 2008-2011
- Duke University, Guest Lecturer, *Ecology and Evolution* 2009

Training in Teaching

- Duke University Teaching Triangles Program 2011
- Duke University Seminar in Teaching Biology, Julie Reynolds, PhD 2009
- Duke University Teaching Mentorship with Alison Hill, PhD 2009
- Duke University Introduction to College Teaching, Hugh Crumley, PhD 2009

Student Mentorship & Outreach

- 2021 - Mentor for University of South Carolina Top Scholars program
- 2021 - Mentor for Society for the Study of Evolution Student-Faculty Networking program
- 2020 - Mentored 2 postdocs, 2 technicians, 3 graduate students, and 5 undergraduates in independent lab projects at the University of South Carolina
- 2005-2019 Mentored 11 undergraduates, 2 high school students in independent research projects at Duke University and University of Kansas (including 9 women & 5 minority students)
- 2018 Panelist for Big Botany Symposium, Spencer Art Museum. Public discussion of my research and panel discussion with artists and poets.
- 2017 Spencer Art Museum Integrated Arts Research Initiative (IARI) research forum. Public discussion of my interdisciplinary work with poet and IARI fellow Megan Kaminski (Dept English, KU)
- 2016 Volunteer, Deerfield Elementary School, Lawrence, KS. Led students through activities to explain pollination and floral adaptations to different animal pollinators
- 2015 Volunteer, Girl Scouts of Lawrence, KS. Led Scouts through activities to explain and identify floral pollination syndromes

Service Activities at U of SC

2023	Award committee for the Kathryn Hinnant-Johnson fellowship, Dept of Biological Sciences
2023	Search Committee for Bridge to Faculty Plant Biologist, Dept of Biological Sciences
2022	McCausland Faculty Fellowship Nomination Review Panel
2022	Search Committee for Associate Dean for Research and Graduate Studies
2021	New Faculty Orientation event panelist, College of Arts and Sciences
2021-2022	Search Committee for Experimental Community Ecologist, Dept of Biological Sciences
2020-Present	Future Hires Committee, Dept of Biological Sciences
2020	Continuing Student Outreach Initiative participant
2020-Present	Diversity Committee, Dept of Biological Sciences
2020	Catalyst First Gen in STEM event panelist, College of Arts and Sciences

Professional Service

Manuscript Reviewer for the following journals

American Journal of Botany, The American Naturalist, Annals of Botany, Botanical Journal of the Linnean Society, Brittonia, Ecology, Ecology Letters, Evolution, Evolution Letters, Frontiers in Plant Sciences, Genetics, Genome Biology and Evolution, G3, International Journal of Plant Sciences, Journal of Heredity, Journal of Plant Research, Molecular Biology and Evolution, Molecular Ecology, New Phytologist, Perspectives in Plant Ecology, Evolution and Systematics, Plant Cell, PLoS Biology, PLoS Genetics, PLoS One, PNAS, Seminars in Cell and Developmental Biology, Systematic Botany

Research Proposal Reviewers

2023	National Science Foundation, ad-hoc reviewer (one proposal)
2022	National Science Foundation, panelist (one panel), ad-hoc reviewer (one proposal)
2019	European Research Council (ad-hoc reviewer)

Member

Society for the Study of Evolution (2008-present), Botanical Society of America (2016-present), Genetic Society of America (sporadic)