

Lana G. Bolin

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Appointments

2023–present **National Science Foundation Postdoctoral Fellow**
Department of Biology
University of New Mexico
Supporting scientist: Dr. Jennifer Rudgers

Education

2018–2023 **Indiana University – Bloomington**
Ph.D. Dept. of Biology / Evolution, Ecology, and Behavior Program
Advisor: Dr. Jennifer A. Lau

2017–2018 **Michigan State University – Kellogg Biological Station**
Doctoral Studies in Dept. of Biology / Ecology, Evolution, and Behavior Program
Advisor: Dr. Jennifer A. Lau

2016 **University of Minnesota – Twin Cities**
B.S. with High Distinction, Ecology, Evolution, and Behavior & Plant Biology
GPA: 4.0

Fellowships

2022 William R. Ogg Fellowship – Indiana Univ. Dept. of Biology
2021 Charles Heiser Graduate Fellowship in Plant Evolution – Indiana Univ. Dept. of Biology
2019 NSF Graduate Research Fellowship – National Science Foundation
2019 Floyd Summer Fellowship – Indiana Univ.
2018 Graduate School Research Fellowship – Michigan State Univ.
2018 K-12 Summer Institute Fellowship – Kellogg Biol. Station
2018 K-12 Partnership Science Education & Outreach Fellowship (declined) – Kellogg Biol. Station
2017 University Enrichment Fellowship – Michigan State Univ.
2017 Plant Sciences Fellowship (declined) – Michigan State Univ.
2017 College of Natural Sciences Recruiting Fellowship (partial acceptance) – Michigan State Univ.

Grants

2024 Sevilleta LTER Research Faculty Summer Award (\$5,000)
2022 GEMS Summer Seed Funding – GEMS Institute, National Science Foundation (\$5,000)
2022 DEI Grant – Indiana Academy of Sciences (\$3,000)
2022 McCormick Science Grant – Indiana Univ. College of Arts and Sciences (\$3,500)
2022 Education Grant – GEMS Institute, National Science Foundation (\$4,500)
2021 PfEC High Impact Grant – Environmental Resilience Institute (\$6,250)
2019 Cleland Plant Sciences Travel Funds – Indiana Univ. (\$500)

2018 Paul Taylor Travel Funds – Michigan State Univ. (\$1,500)

Awards & Honors

2023 William J. Rowland Mentoring Award – Indiana Univ. CISAB and Animal Behavior Program
2020 Fred Seward Award – Indiana Univ. Dept. of Biology
2017 Young Botanist of the Year Award – Botanical Society of America
2017 Phillip C. Hamm Memorial Scholarship in the Plant Sciences – Univ. of Minnesota
2013 Award for Excellence in Mathematics – Minneapolis Comm. And Tech. Coll.
2005 Presidential Scholarship – DePaul Univ.

Publications

Published or In Press:

- (6) Lau, J.A., and **L.G. Bolin**. *In press*. The tiny drivers behind plant ecology and evolution. *American Journal of Botany* (draft available upon request).
- (5) **Bolin, L.G.**, and J.A. Lau. 2024. Microbial responses to stress cryptically alter natural selection on plants. *New Phytologist*.
- (4) Irvine, R., M. Houser, S.T. Marquart-Pyatt, **L.G. Bolin**, E.G. Browning, G. Dott, S. Evans, M. Howard, J.A. Lau, and J.T. Lennon. 2023. Soil health through farmers' eyes: Toward a better understanding of how farmers view, value, and manage for healthier soils. *Journal of Soil and Water Conservation*.
- (3) **Bolin, L.G.**, J.T. Lennon, and J.A. Lau. 2022. Traits of soil bacteria predict plant responses to soil moisture. *Ecology*.
- (2) **Bolin, L.G.**, and J.A. Lau. 2022. Linking genetic diversity and species diversity through plant-soil feedback. *Ecology*.
- (1) **Bolin, L.G.**, J.W. Benning, and D.A. Moeller. 2018. Mycorrhizal interactions do not influence plant-herbivore interactions in populations of *Clarkia xantiana* ssp. *xantiana* spanning from center to margin of the geographic range. *Ecology & Evolution*.

In Review, In Prep, and/or Preprints:

Bolin, L.G. Soil microbes influence the ecology and evolution of plant plasticity in response to stress. In prep (draft available upon request).

Teaching Positions

2021–Present **Science CORPS** – summer program providing hands-on research opportunities to community college students (sciencecorpsprogram.org) – Indiana University & University of Illinois.
Founder, Organizer & Teacher. I created this program that completed its third session in summer 2023. I organize the deployment of a distributed ecological experiment by ~20 community college students across Indiana, Illinois, and Michigan, lead evening professional development meetings that provide scientific training and discuss career opportunities in STEM, and mentor students in creating a poster to present at the Indiana Academy of Sciences Meeting. We have trained 55 community college students to date.

Mentor. I organized an overnight visit for Science CORPS student Emily Gonzalez to travel to IU and gain experience with research in ecology. I mentored her on data collection and experimental design for three ongoing projects in our lab.

- 2021–Present **L390: Transitions to Careers and Research in Biology** – course aimed to help non-traditional students (such as community college transfer students or students returning after an extended absence from college) explore careers, learn skills for success at IU and in future STEM careers, interface with faculty (with the aim of leading to research opportunities), and build community with other non-traditional students – Indiana University.
Course Creator. I created and designed this course which is offered each fall.
Instructor of Record. I taught this course each fall while I was a doctoral candidate.
- 2022 **CI494: Translating Science**, Guest Lecturer – University of Illinois at Urbana Champaign
- 2018 **L113: Biology Laboratory**, Assistant Associate Instructor – Indiana University

Presentations

Invited Seminar

Bolin, L.G. 2023. The cryptic role of microbes in plant ecology and evolution. University of Minnesota, St. Paul, MN.

*Contributed Presentations (*Undergraduate author, Undergraduate presenter)*

- Callahan, C.*, Ziss, J.*, **Bolin, L.G.**, Gellinger, M., Lau, J.A. 2023. Microbe-mediated drought responses in plant communities. Ecological Society of America Meeting, Portland, OR. (Poster)
- Bolin, L.G.** 2023. The cryptic role of microbes in plant ecology and evolution. University of New Mexico Fungal Ecology Seminar, Albuquerque, NM. (Talk)
- Carpenter, C.*, Mann, D.*, Turnbull, H.*, Ewert, C.*, Riley, A., **Bolin, L.G.** 2023. Seed predation differs between native and exotic plant species, and between light and dark colored seeds. Indiana Academy of Sciences Annual Meeting, Indianapolis, IN. (Poster)
- Bolin, L.G.** 2022. Hidden consequences: How farm management practices affect crop yield and drought tolerance by altering soil microbes. Indiana University Brown Bag Seminar, Bloomington, IN. (Talk)
- Bolin, L.G.** 2022. Science CORPS: A remote, paid summer research experience for community college students. NSF Biology Integration Institutes 2022 Awardees Meeting. (Virtual talk)
- Bolin, L.G.**, Howard, M.M., Gellinger, M., Lau, J.A. 2022. Microbes and N affect plant resistance: Two vignettes. LTER All Scientists Meeting, Pacific Grove, CA. (Poster)
- Bolin, L.G.**, Lennon, J.T., Lau, J.A. 2022. Traits of soil microbes predict plant responses to soil moisture. Changing Microbiomes Symposium, State College, PA. (Poster)
- Bolin, L.G.**, Lau, J.A. 2022. Soil microbes alter selection on plant traits in response to stress. Evolution and Long-Term Ecology Working Group, Lay Joya, NM. (Poster)
- Gonzalez, E.*, Moffett, M.*, Muñoz, T.*, Koch, K.*, Betteridge, N.*, Riley, A., **Bolin, L.G.** 2022. Seed predation rates in native and exotic plant species across an environmental gradient. Indiana Academy of Sciences Annual Meeting, Indianapolis, IN. (Poster)
- Bolin, L.G.**, Gellinger, M. 2022. Microbial rescue in soybeans under drought. Kellogg Biological Station LTER Rain Exclusion Experiment (REX) All-Hands Meeting, Hickory Corners, MI. (Talk)
- Bolin, L.G.** 2021. When and how do microbiomes affect host adaptation? Sevilleta Long-Term Ecological Research (LTER) Brown Bag. (Virtual talk)
- Bolin, L.G.**, Lau, J.A. 2021. Can plant-soil feedback link genetic diversity and species diversity?

- Ecological Society of America Meeting. (Virtual talk)
- Bolin, L.G.,** Lau, J.A. 2021. Friends in low places: Soil microbes influence plant fitness, plasticity, and selection in response to abiotic stress. EcoLunch Seminar, Bloomington, IN. (Talk)
- Bolin, L.G.,** Lennon, J.T., Lau, J.A. 2020. Linking bacterial traits to plant stress responses. Genomics of Eco-evolution of Multi-Scale Symbiosis (GEMS) seminar. (Virtual talk)
- Bolin, L.G.,** Lennon, J.T., Lau, J.A. 2020. Linking bacterial traits to plant growth and plasticity under drought. Indiana University EcoLunch Seminar, Bloomington, IN. (Talk)
- Bolin, L.G.,** Lau, J.A. 2019. Do microbial responses to stress influence plant adaptation? Ecological Society of America Meeting, Louisville, KY. (Poster)
- Bolin, L.G.,** Lau, J.A. 2018. Plant-soil feedbacks mediate interactions between genetic diversity and species diversity. Indiana University EcoLunch Seminar, Bloomington, IN. (Talk)
- Bolin, L.G.,** Lau, J.A. 2018. Plant-soil feedbacks mediate interactions between genetic diversity and species diversity. LTER All Scientists Meeting, Pacific Grove, CA. (Poster)
- Bolin, L.G.,** Lau, J.A. 2018. Plant-soil feedbacks mediate interactions between genetic diversity and species diversity. Ecological Society of America Meeting, New Orleans, LA. (Poster)
- Bolin, L.G.** 2018. Do Microbes Drive Adaptive Plasticity in Plants? A Proposal. MSU Research Symposium, East Lansing, MI. (Poster)
- Bolin, L.G.** 2018. Do Microbes Drive Adaptive Plasticity in Plants? A Proposal. Kellogg Biological Station Brown Bag Seminar, Hickory Corners, MI. (Talk)
- Bolin, L.G.,** Benning, J.W., Moeller, D.A. 2018. Multispecies Interactions in a California Wildflower. Midwest Ecology and Evolution Conference, Hickory Corners, MI. (Poster)

Outreach

- 2021 **IU Science Fest** – All-day science festival with 150+ hands-on activities and demonstrations for preK-12 kids – Indiana University.
Volunteer. I helped run a booth where kids set up an experiment testing whether microbes affect seed germination.
- 2020 **“A Moment of Science,” Indiana Public Media** – Radio program about science.
Writer. I wrote an episode titled “The Trees That Farm Their Own Drought Tolerance” (tinyurl.com/3uad3xp4) that aired on October 7, 2020.
- 2018 **K-12 Partnership Summer Institute** – Three-day professional development workshop for ~50 K-12 educators from across Michigan – Kellogg Biological Station.
Organizer & Coordinator. I worked with two other graduate students to organize two days of sessions that provided teachers with activities and lesson plans in diverse science topics. I coordinated schedules, equipment setup, transportation, and tech for all of the sessions.
Lead Organizer. I was responsible for organizing a one-day field trip to the Kellogg Experimental Forest, where the teachers learned about current research projects and forestry techniques.
Session Leader. I wrote and presented an inquiry-based lesson about the ecology of leaf endophytes for 22 middle and high school teachers to use in their classroom. The lesson included slides, an activity protocol, and a worksheet. My session received 100% positive reviews.
- 2018 **Olivet Middle School Field Trip** – Full day field trip to Kellogg Biological Station for ~120 students.
Lead Organizer. I scheduled and coordinated activities for the students at the Kellogg Bird Sanctuary, Kellogg Experimental Forest, and Gull Lake. I also presented a “Meet A Scientist” talk to teach students about science as a career option.

- 2015–2016 **Market Science** – Science outreach program for children and adults that engages the public in current science issues at the Midtown Farmers Market – Minneapolis, MN. *Session volunteer*. I performed science demonstrations, ran activities for children, and discussed my research with adults.

Service

- Scientific Journals Reviewed for:* Nature Ecology and Evolution, Ecology Letters (2), Evolution, New Phytologist (2), Journal of Ecology (2), American Journal of Botany, Functional Ecology, Plant and Soil, Microbial Ecology
- 2022 *Panelist*, “Women in STEM: Panel Discussion,” Ivy Tech Community College – Bloomington, IN
- 2018–2021 EcoLunch ecology seminar and professional development series – Indiana University: *Chair* (2020-2021), *Secretary* (2019-2020), *Committee Member* (2018-2019)
- 2021 *Graduate Representative*, Genomics of Eco-Evolution of Multi-Scale Symbiosis (GEMS) Institute – NSF Biology Integration Institutes 2021 Awardees Meeting
- 2021 *Committee Member*, Education and Outreach Committee – Genomics of Eco-Evolution Of Multi-Scale Symbiosis (GEMS) Institute
- 2019 *Graduate Committee Member*, Evolutionary Biology Faculty Search – Indiana University
- 2018 *Panelist*, “Getting Into & Succeeding at Graduate School,” Midwest Ecology & Evolution Conference – Hickory Corners, MI
- 2017–2018 *Committee Member*, Outreach Committee – Kellogg Biological Station

Mentoring

- 2023 Mentoring UNM undergraduate researcher and community college transfer student / returning student Darian Reid on a project testing for differences in seed fungal microbiome between drought-stressed vs. well-watered black grama grasses.
- 2022 Co-mentored IU undergraduate researchers Jordan Ziss and Caleb Masterson on a project testing how drought-induced changes to microbial communities affect plant community and ecosystem processes in response to drought. Jordan and Caleb presented their research at the Ecological Society of American (ESA) meeting.
- 2021 Mentored Daniel Lukovic, IU undergraduate researcher and community college transfer student, on two directed research projects exploring how soil microbes influence plant drought tolerance and habitat selection.

Additional Professional Training

- 2023 SEV/KNZ LTER Joint Fungal Bioinformatics Workshop – University of New Mexico.
- 2022 Evolution and Long-Term Ecology Working Group member – Sevilleta LTER, New Mexico. As part of this working group, I helped create a framework that describes how long-term experiments can be used to examine eco-evolutionary dynamics. An article describing this framework is forthcoming.
- 2021 Sociological Interviews – Indiana University. As part of a broad interdisciplinary group working on a CNH2 grant funded by the NSF, I was trained in conducting sociological interviews and conducted in-depth, hour-long interviews with ten farmers.

2017, 2018 Workshops: Enhancing Linkages Between Math and Ecology (ELME) – Kellogg
Biological Station.
 Structural Equation Modeling
 Stochastic Modeling
 Theoretical Ecology
 Bayesian Models in Ecology

Professional Memberships

Ecological Society of America
American Society of Naturalists

Professional References

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Dr. Jennifer Rudgers

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