

Ian S. Gilman, Ph.D.

Biology Department, Fairfield University

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Professional appointments

Assistant Professor of Biology 2026 – Present
Fairfield University, Fairfield, CT

National Science Foundation Postdoctoral Research Fellow in Biology 2023 – 2026
(Area 3: Plant Genome)

Hosted by Dr. Robert VanBuren, Michigan State University, East Lansing, MI

Education

Ph.D., Ecology & Evolutionary Biology 2023
Yale University, New Haven, CT
Primary advisor: Dr. Erika J. Edwards

M.S., Ecology & Evolutionary Biology 2021
Yale University, New Haven, CT

M.S., Biological Sciences 2017
University of Idaho, Moscow, ID
Primary advisor: Dr. David C. Tank

B.S., Physics 2015
Bucknell University, Lewisburg, PA

Peer reviewed publications

11. Rose A. Marks, Llewelyn Van Der Pas, Jenny Schuster, **Ian S. Gilman**, Robert VanBuren. 2024. Convergent evolution of desiccation tolerance in grasses. *Nature Plants* 10: 1112–1125
10. **Ian S. Gilman**, Karolina Heyduk, Carlos A. Maya-Lastra, Lillian P. Hancock, Erika J. Edwards. 2024. Predicting photosynthetic pathway from anatomy using machine learning. *New Phytologist* 242: 1029–1042
9. Rowan F. Sage, **Ian S. Gilman**, J. Andrew C. Smith, Katia Silvera, Erika J. Edwards. 2023. Atmospheric CO₂ decline and the timing of CAM plant evolution. *Annals of Botany* 132: 753–770
8. **Ian S. Gilman**, J. Andrew C. Smith, Joseph A.M. Holtum, Rowan F. Sage, Katia Silvera, Klaus Winter, Erika J. Edwards. 2023. The CAM lineages of planet Earth. *Annals of Botany* 132: 627–654
7. Jose J. Moreno-Villena, Haoran Zhou, **Ian S. Gilman**, S. Lori Tausta, C. Y. Maurice Cheung, Erika J. Edwards. 2022. Spatial resolution of an integrated C₄+CAM photosynthetic metabolism. *Science Advances* 8:eabn2349
6. **Ian S. Gilman**, Jose Moreno-Villena, Zachary R. Lewis, Eric W. Goolsby, Erika J. Edwards. 2022. Gene co-expression reveals the modularity and integration of C₄ and CAM in *Portulaca*. *Plant Physiology* 189: 735–753

5. Aaron K. Lee*, **Ian S. Gilman***, Mansa Srivastav, Ariel D. Lerner, Michael J. Donoghue, Wendy L. Clement. 2021. Reconstructing Dipsacales phylogeny using Angiosperms353: Issues and insights. *American Journal of Botany*. 108(7): 1122–1142
* indicates equal authorship
4. **Ian S. Gilman** and Erika J. Edwards. Crassulacean Acid Metabolism. 2020 *Current Biology*. 30 (2), R57–R62
3. Karolina Heyduk, Jose J. Moreno-Villena, **Ian S. Gilman**, Pascal-Antoine Christin, Erika J. Edwards. 2019. The genetics of convergent evolution: Insights from plant photosynthesis. *Nature Reviews Genetics*. 313:1–9
2. Christopher T. Martine, Ingrid E. Jordon-Thaden, Angela J. McDonnell, Jason T. Cantley, Daniel S. Hayes, Morgan D. Roche, Emma S. Frawley, **Ian S. Gilman**, David C. Tank. 2019. Phylogeny of the Australian *Solanum dioicum* group using seven nuclear genes: testing Symon’s fruit and seed dispersal hypotheses. *PLoS ONE*. 14:e0207564
1. **Ian S. Gilman** and Tank David C. Species tree estimation using ddRADseq data from historical specimens confirms the monophyly of highly disjunct species of *Chloropyron* (Orobanchaceae). 2018. *Systematic Botany*. 43(3):701–708

Grants, fellowships, and awards

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| 14. Plant Resilience Institute Seed Grant (PI), Michigan State University | (\$10,000) 2026 |
| 13. Michigan State University Danny Schnell Plant Biology Outstanding Postdoc Award | 2026 |
| 12. Department of Energy’s Joint Genome Institute Community Science Project (PI) | 2025 |
| 11. Plant Resilience Institute Seed Grant, Michigan State University
(co-PI with graduate student Daniel Mok) | (\$10,000) 2024 |
| 10. Spangler Prize for Outstanding Dissertation
Department of Ecology & Evolutionary Biology, Yale University | (\$1,000) 2024 |
| 9. Plant Resilience Institute Seed Grant (PI), Michigan State University | (\$10,000) 2024 |
| 8. National Science Foundation Postdoctoral Research Fellow
in Biology (Area 3: Plant Genome) | (\$216,000) 2023 – Present |
| 7. Yale Institute for Biospheric Studies Fellowship | 2020 – 2021 |
| 6. MacMillan Dissertation Research Fellowship | (\$14,068) 2019 |
| 5. Henry Daggett Hooker Memorial Fellow, Yale Graduate School
of Arts and Science | 2017 – 2018 |
| 4. Honorable Mention National Science Foundation Graduate
Research Fellowship Program | 2017 |
| 3. American Society of Plant Taxonomists Rogers McVaugh
Graduate Student Research Award | (\$1,000) 2016 |
| 2. Honorable Mention National Science Foundation Graduate
Research Fellowship Program | 2016 |
| 1. University of Idaho Stillinger Herbarium Expedition Grant | (\$8,403) 2016 |

Selected presentations and invited lectures

13. **Ian S. Gilman** and Robert VanBuren. 2025. Single-nuclei transcriptomics of a complex photosynthetic system: C₄+CAM in *Portulaca amilis*. Botany Conference, Palm Springs, CA.
12. **Ian S. Gilman** and Robert VanBuren. 2024. Evolution of facultative and constitutive gene regulation in plants with CAM photosynthesis. XX International Botanical Congress, Madrid, Spain.
11. **Ian S. Gilman**, Karolina Heyduk, Carlos A. Maya-Lastra, Lillian P. Hancock, Erika J. Edwards. 2023. Evolution of CAM anatomy and predicting physiology from anatomy. Botany Conference, Boise, ID.
10. **Ian S. Gilman**, Karolina Heyduk, Carlos A. Maya-Lastra, Lillian P. Hancock, Erika J. Edwards. 2023. Evolution of CAM anatomy and predicting physiology from anatomy. CAM Conference, Panama City, Panama.
9. **Ian S. Gilman**. 2023. Photosynthesis and Evolution by Duplication. Invited lecture at the Yale Peabody Museum, New Haven, CT.
8. **Ian S. Gilman**. 2023. Plant carbon concentrating mechanism and the changing climate. Invited lecture for Molecular Biology & Biophysics 365/565, Yale University, New Haven, CT.
7. **Ian S. Gilman**, Jose J. Moreno-Villena, Zachary R. Lewis, Eric W. Goolsby, Erika J. Edwards. 2021. Gene co-expression reveals evolutionarily conserved and distinct photosynthetic networks in C₄+CAM *Portulaca*. Evolution Conference. Virtual.
6. **Ian S. Gilman**, Erika J. Edwards, Zachary R. Lewis. 2020. Genome sequencing of *Portulaca amilis*, a C₄+CAM plant. International Plant & Animal Genome Conference. San Diego, CA.
5. **Ian S. Gilman** and Erika J. Edwards. 2019. Using computer vision to detect CAM photosynthesis. Sussex Plant Symposium. New Haven, CT.
4. **Ian S. Gilman** and Erika J. Edwards. 2018. Distinguishing CAM photosynthesis with machine learning. Botany Conference. Rochester, WI.
3. **Ian S. Gilman**, Lillian P. Hancock, Elissa Martin, Zachary R. Lewis, Erika J. Edwards. 2018. Changes in gene expression during CAM induction in a C₄-CAM plant. CAM Conference. Phoenix, AZ.
2. **Ian S. Gilman** and David C. Tank. 2017. Sensitivity of quartet-based species tree methods to missing data. Evolution Conference. Portland, OR.
1. **Ian S. Gilman** and David C. Tank. 2016. Comparative phylogenetics of niche condition in *Cordylanthus* and *Pseudocordylanthus* (Orobanchaceae). Botany Conference. Savannah, GA.

Other publications

1. **Ian S. Gilman** *What price will we pay for defunding America's scientific research?* The Erie Times-News. Sunday June 15, 2025.

Teaching, mentorship, and service

Botanical Society of America Early Career Professional Development Committee 2025 – Present

Preparing Leaders and Nurturing Tomorrow's Scientists (PLANTS) Mentor	2016, 2023, 2025
ROOT & SHOOT Working Group for Culturally Aware Mentorship	2023 – 2025
Botanical Society of America Investment Committee	2018 – 2021
Graduate teaching fellow, Yale University <i>Courses: Ecology and Evolutionary Biology, Plants and People, Plant Diversity</i>	2017 – 2019
Scientist mentor, Planting Science (plantingscience.org) <i>Encourage and guide students as they create plant-based experiments</i>	2016 – 2019
Graduate teaching assistant, University of Idaho <i>Courses: Form and Function, Computational Skills for Biologists, Advanced Field Botany</i>	2015 – 2017
Graduate research mentor, University of Idaho <i>Mentored undergraduate through a field-based research project in plant systematics</i>	2016
<i>Ad hoc</i> reviewer for <i>Annals of Botany</i> , <i>Current Opinion in Plant Biology</i> , <i>Journal of Plant Physiology</i> , <i>Molecular Ecology</i> , <i>Molecular Plant</i> , <i>Nature Communications Biology</i> , <i>New Phytologist</i> , <i>Planta</i> , <i>The Plant Cell</i> , <i>The Plant Journal</i> , and <i>Plants, People, Planet</i> , <i>PLOS ONE</i> , <i>PNAS</i> , and the United States Geological Survey.	