

Ian S. Gilman, Ph.D.

Dept. of Plant Biology and Plant Resilience Institute, Michigan State University
612 Wilson Road ◦ East Lansing, MI, 48824 ◦ gilmania@msu.edu

Professional appointments

National Science Foundation Postdoctoral Research Fellow in Biology 2023 – Present
(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

Publications

1. 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
2. **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
3. 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
4. **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
5. 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

7. 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
8. **Ian S. Gilman** and Erika J. Edwards. Crassulacean Acid Metabolism. 2020 *Current Biology*. 30 (2), R57–R62
9. 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
10. 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
11. **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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| 1. Plant Resilience Institute Seed Grant, Michigan State University
(co-PI with graduate student Daniel Mok) | (\$10,000) 2024 |
| 2. Spangler Prize for Outstanding Dissertation
Department of Ecology & Evolutionary Biology, Yale University | (\$1,000) 2024 |
| 3. Plant Resilience Institute Seed Grant (as PI), Michigan State University | (\$10,000) 2024 |
| 4. National Science Foundation Postdoctoral Research Fellow
in Biology (Area 3: Plant Genome) | (\$216,000) 2023 – Present |
| 5. Yale Institute for Biospheric Studies Fellowship | 2020 – 2021 |
| 6. MacMillan Dissertation Research Fellowship | (\$14,068) 2019 |
| 7. Henry Daggett Hooker Memorial Fellow, Yale Graduate School
of Arts and Science | 2017 – 2018 |
| 8. Honorable Mention National Science Foundation Graduate
Research Fellowship Program | 2017 |
| 9. American Society of Plant Taxonomists Rogers McVaugh
Graduate Student Research Award | (\$1,000) 2016 |
| 10. Honorable Mention National Science Foundation Graduate
Research Fellowship Program | 2016 |
| 11. University of Idaho Stillinger Herbarium Expedition Grant | (\$8,403) 2016 |

Selected presentations and invited lectures

1. **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.

2. **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.
3. **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.
4. **Ian S. Gilman**. 2023. Photosynthesis and Evolution by Duplication. Invited lecture at the Yale Peabody Museum, New Haven, CT.
5. **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.
6. **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.
7. **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.
8. **Ian S. Gilman** and Erika J. Edwards. 2019. Using computer vision to detect CAM photosynthesis. Sussex Plant Symposium. New Haven, CT.
9. **Ian S. Gilman** and Erika J. Edwards. 2018. Distinguishing CAM photosynthesis with machine learning. Botany Conference. Rochester, WI.
10. **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.
11. **Ian S. Gilman** and David C. Tank. 2017. Sensitivity of quartet-based species tree methods to missing data. Evolution Conference. Portland, OR.
12. **Ian S. Gilman** and David C. Tank. 2016. Comparative phylogenetics of niche condition in *Cordylanthus* and *Pseudocordylanthus* (Orobanchaceae). Botany Conference. Savannah, GA.

Teaching, mentorship, and service

ROOT & SHOOT Working Group for Culturally Aware Mentorship	2023 – Present
Preparing Leaders and Nurturing Tomorrow's Scientists (PLANTS) Mentor	2016, 2023
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

2016

Mentored undergraduate through a field-based research project in plant systematics

Ad hoc reviewer for Molecular Ecology, Molecular Plant, Current Opinion in Plant Biology, New Phytologist, PLOS ONE, Planta, Journal of Plant Physiology, The Plant Journal, Annals of Botany, The Plant Cell, and Plants, People, Planet