

David Allen Wickell, PhD

NSF Postdoctoral Fellow

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EDUCATION and POSITIONS HELD:

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| NSF Postdoctoral Fellow in Biology , <i>University of Connecticut; Storrs, CT</i> | 2024 - Present |
| Postdoctoral Research Associate , <i>University of Connecticut; Storrs, CT</i> | 2023 - 2024 |
| Doctorate in Plant Biology , <i>Cornell University; Ithaca, NY</i> | 2018 - 2023 |
| Master of Science in Biology , <i>Wichita State University; Wichita, KS</i> | 2013 - 2015 |
| Bachelor of Science in Biology , <i>Wichita State University; Wichita, KS</i> | 2008 - 2013 |

FUNDING:

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| NSF 23-620: Postdoctoral Research Fellowship in Biology (PRFB), \$240,000 <i>The power of plasticity: aquatic plants' response to an ever-changing environment</i> | 2024 - 2027 |
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PUBLICATIONS:

Castanedo L., K. Melkonian, T. Vernié, L. Chauderon, T. Pellen, [...] **D.A. Wickell**, F-W. Li, J. Keller, P-M. Delaux, 2025. Symbiotic diversification relies on an ancestral gene network in plants. *bioRxiv*. <https://doi.org/10.1101/2025.04.01.646537>

Loew-Mendelson, E., **D.A. Wickell**, C. Mrozinski, E. Doan, J. Hupp, R.L. Vath, L. Yuan, and K. Heyduk, 2025. Techniques and challenges in studying photosynthetic diversity in freshwater aquatic vascular plants. *bioRxiv*. <https://doi.org/10.1101/2025.09.24.677520>

Wickell, D.A., R. Field, K. Weitz, R. Chu, *et al.* 2024. Integrative analysis of CAM photosynthesis reveals its impact on primary metabolism in *Yucca*. *bioRxiv*. <https://doi.org/10.1101/2024.11.01.621533>

Suissa, J.S., G.Y. De La Cerda, L.C. Graber, C. Jelley, **D.A. Wickell**, *et al.* 2024. Comparative phylogenomic analyses of SNP versus full locus datasets: insights and recommendations for researchers. *Applications in Plant Science*: e11611. <https://doi.org/10.1002/aps3.11611>

Wickell, D.A., J.B. Landis, E.A. Zimmer, F.W. Li. 2024. Population genomics of the *Isoetes appalachiana* (Isoetaceae) complex supports a 'diploids-first' approach to conservation. *Annals of Botany*, mcad180. <https://doi.org/10.1093/aob/mcad180>

Li*, C., **D.A. Wickell***, L-Y. Kuo, X. Chen, *et al.* 2024. Extraordinary preservation of gene collinearity over three hundred million years revealed in homosporous lycophytes. *PNAS*, 121(4): e2312607121. <https://doi.org/10.1073/pnas.2312607121>

*Equally contributed.

Huang*, X., W. Wang*, T. Gong*, **D.A. Wickell***, *et al.* 2022. The flying spider-monkey tree fern genome: Insights into fern evolution and arborescence. *Nature Plants*, 8(5): 500-512. <https://doi.org/10.1038/s41477-022-01146-6>

*Equally contributed; Featured in [New York Times](#) and [Scientific American](#)

- Wickell, D.A.**, L.Y. Kuo, H.P. Yang, A.D. Ashok. et al. 2021. Underwater CAM photosynthesis elucidated by *Isoetes* genome. *Nature Communications*, 12(1): 1-3.
<https://doi.org/10.1038/s41467-021-26644-7>
- Wickell, D.A.** and F.W. Li. 2020. On the evolutionary significance of horizontal gene transfers in plants. *New Phytologist*. 225(1):113-117 <https://doi.org/10.1111/nph.16022>
- Wickell, D.A.**, M.D. Windham, X. Wang and J.B. Beck. 2017. Can asexuality confer a short term advantage? Investigating apparent biogeographic success in the apomictic triploid fern *Myriopteris gracilis* (Pteridaceae). *American Journal of Botany*. 104.8: 1254-1265.
<https://doi.org/10.3732/ajb.1700126>
- Moore, M.R., C.F. Beza Beza, **D.A. Wickell**, J.B. Beck and M. Jameson. 2015. Molecules, morphology, and *Mimeoma* Scarabs: evolutionary implications for a palm-associated scarab group. *Systematic Entomology*. 40: 891-900. <https://doi.org/10.1111/syen.12139>

AWARDS and ACHIEVEMENTS:

- Cornell - CALS Outstanding Teaching Assistant (2023)
 Cornell - SIPS Barbara McClintock Award (2023)
 Washington Biologists Field Club - Research Award (2022)
 American Fern Society - Edgar T. Wherry Award – Honorable Mention (2021)
 Smithsonian Institution 10-week Graduate Student Fellowship (PI: Liz Zimmer; 2021)
 Schmittau-Novak Integrative Plant Science Grant (2021)
 American Society of Plant Taxonomists Graduate Student Research Grant (2014)

SELECTED PRESENTATIONS:

- From Quillworts to Shoreweed: Using non-model plants as windows into evolutionary processes **School of Biological Sciences, University of Edinburgh - Departmental Seminar***, Edinburgh, UK, November 2025.
 * *invited speaker*
- Cutting the Gordian Knot: Can HybSeq help resolve reticulate relationships in *Isoetes*? **Botany 2025: Defining forces in fern evolution***, Palm Springs, CA, July 2025.
 * *invited speaker.*
- Untangling the web: Using HybSeq to resolve the *Isoetes* phylogeny. **Association of Southeastern Biologists: Quillcon 2025***, Myrtle Beach, SC, March 2025
 * *invited speaker.*
- Multi-omics analysis in *Yucca* reveals downstream effects of CAM on nitrogen metabolism. **Botany 2024: Small molecules shaping big interactions***, Grand Rapids MI, June 2024.
 * *invited speaker.*
- Seed-free Synteny: A history of genomic stasis in homosporous ferns and lycophytes. **Botany 2023**, Boise, ID, July 2023.
- Syntenic Analysis of Seed-Free Plant Genomes Reveals Evolutionary Stasis over Hundreds of Millions of Years. **PAG 30**, San Diego, CA, January 2023.
- Allopolyploid speciation in the enigmatic quillworts of the Appalachian plateau. **Botany 2022**, Anchorage, AK, July 2022.
- The convergent evolution of aquatic CAM in *Isoetes*. **LUOMUS seminar series***, presented remotely at the Finnish Museum of Natural History for the University of Helsinki, April 2022
 * *invited speaker.*
- Gene fractionation and differential expression of homoeologues following whole genome duplication in the tree fern *Alsophila spinulosa*. **Botany 2021**, virtual meeting July 2021

The life aquatic: Genomic and transcriptomic insights into crassulacean acid metabolism in *Isoetes*. **Botany 2020**, virtual meeting, July 2020.

CAM photosynthesis in the aquatic lycophyte *Isoetes taiwanensis*. **Botany 2019**, Tucson AZ, July 2019.

Does asexuality confer a short term evolutionary advantage?: a case study of the asexual fern *Myriopteris gracilis*. - Presented at "Next Generation Pteridology" the **13th Smithsonian Botanical Symposium**, Smithsonian Institution, June 2015 and **Kansas Academy of Science**, Pittsburg KS, March 2015

MENTORSHIP:

Undergraduates:

Lily Zopelis '25 – Heterophylly and the anatomy of leaf development in *Littorella uniflora*

Kylie Hays '26 – Physiology and transcriptomics of facultative CAM in *Littorella uniflora*

Graduate students:

Ellie Loew Mendelson, G Young Kim, Claire Marino – Heyduk lab

Yanã Rizzieri – Li lab

TEACHING EXPERIENCE:

Plant structural Diversity – *University of Connecticut*; Fall 2023
Invited guest instructor for aquatic plants section

Concepts and Techniques in Computational Biology – Spring 2022 & 2023
Cornell University; Graduate TA

Vascular Plant Systematics (lab) – *Cornell University*; Spring 2020 & Fall 2022
Graduate TA (2020), Invited guest instructor for pteridophyte lab (2022)

Introductory Plant Diversity and Evolution (lab) – *Cornell University*; Graduate TA Fall 2019

Introduction to Biology I & II (lab) – *Wichita State University*; Adjunct instructor Fall 2017

Human Anatomy and Physiology – *Wichita State University*; Graduate TA Spring 2015

General Ecology – *Wichita State University*; Graduate TA Spring 2014

Introduction to Biology I – *Wichita State University*; Graduate TA Fall 2013 & 2014

VOLUNTEER/OUTREACH EXPERIENCE:

Free Science Workshop; Ithaca, NY (2019 - Present)

Physics Bus STEM outreach program; Ithaca, NY (2019 - 2023)

Big Red Barn Kid's Science Day – Pollination Station; Cornell University (2023)

In Defense of Plants Podcast – Invited guest, [Episode 331 Unraveling Quillwort Mysteries](#) (2021)

Diversity Preview Weekend; Cornell University (2019)

Judy's Day Family Learning Festival: Lycophyte booth; Cornell University (2018)
Expanding Your Horizons, STEM careers workshop; Wichita State University (2015)
Science Olympiad State Competition: Heredity; Wichita State University (2014)
Exploration Place: Insect exhibit in Kansas Pavilion; Wichita, KS (2012)

SERVICE and TRAINING:

Botany360, Science on a Budget – featured panelist (2025)
Botanical Society of America – Early Career Professional Development Committee (2024-2027)
CIMER Mentorship Training – UCONN RaMP program (2024)
Botanical Society of America – PLANTS mentor (2024)
Botanical Society of America – Cornell Student Chapter President (2022-2023)
Cornell Plant Biology Graduate Student Association – President (2019-2020)

MEMBERSHIP in PROFESSIONAL SOCIETIES:

Botanical Society of America
American Fern Society