

## Michelle L. Gaynor

University of Michigan, Ecology and Evolutionary Biology  
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### Research Interest

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Angiosperm evolution and ecology, with a focus on polyploids. My research focuses on the formation and persistence of co-occurring mixed-cytotype autopolyploid populations.

### Education

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Ph.D., Botany 2018 – 2024  
 University of Florida, Gainesville, FL; Advisor: Dr. Pamela S. Soltis and Douglas E. Soltis

B.S., Biology 2014 – 2018  
 University of Central Florida, Orlando, FL; Advisor: Dr. Eric A. Hoffman

### Research Appointments

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| 2024 – 2027 | <b>NSF Postdoctoral Research Fellow in Biology</b><br>University of Michigan, Ecology and Evolutionary Biology. Dr. Stephen A. Smith.                               |
| 2024 – 2027 | <b>Courtesy Faculty</b><br>University of Florida, Florida Museum of Natural History.  |
| 2023 – 2024 | <b>iDigBio Graduate Research Assistantship</b>  |
| 2020 – 2023 | <b>NSF Graduate Research Fellow</b>   |
| 2018 – 2020 | <b>iDigBio Graduate Research Assistantship</b><br>University of Florida, Florida Museum of Natural History. Drs. Pamela S. Soltis and Douglas E. Soltis.            |
| 2015 – 2018 | <b>Undergraduate Researcher</b><br>University of Central Florida, Department of Biology. Drs. Eric A. Hoffman and Linda J. Walters.                                 |
| 2017        | <b>NSF-funded Undergraduate Research Experience (REU)</b><br>University of Missouri, Division of Biological Sciences. Dr. J. Chris Pires.                           |
| 2017        | <b>iDigBio Undergraduate Research Internship</b><br>University of Florida, Florida Museum of Natural History. Drs. Pamela S. Soltis and Douglas E. Soltis.          |
| 2016        | <b>NSF-funded Undergraduate Research Experience (REU)</b><br>University of Colorado-Boulder, Ecology & Evolutionary Biology. Drs. Julienne Ng and Robert G. Laport. |
| 2013        | <b>Student Science Training Program Scholar</b><br>University of Florida, IFAS Department of Agronomy. Dr. Kevin Kenworthy.   |

## Publications

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\*equally contributing authors, °mentored undergraduate

[Google Scholar](#), ORCID ID: [0000-0002-3912-6079](#), *Bionomia*: [0000-0002-3912-6079](#)

12. Schley RS, Piñeiro R, Nicholls J, **Gaynor ML**, Lewis GP, Pezzini FF, Dexter KG, Kider C, Pennington RT, and Twyford AD. 2025. The frequency and importance of polyploidy in tropical trees. *New Phytologist*. doi: 10.1111/nph.70764.
11. **Gaynor ML**, Kortessis N, Soltis DE, Soltis PS, and Ponciano JM. 2025. Dynamics of mixed-ploidy populations under demographic and environmental stochasticities. *The American Naturalist*, 205(4): 413 – 434. doi: 10.1086/734411. R-package: [AutoPop](#).
10. **Gaynor ML**, Landis JB, O'Connor TK, Laport RG, Doyle JJ, Soltis DE, Ponciano JM, and Soltis PS. nQuack: An R package for predicting ploidy level from sequence data using site-based heterozygosity. *Applications in Plant Science*, 12(4): e11606. doi: 10.1002/aps3.11606. R-package: [nQuack](#).
9. Patten N °, **Gaynor ML**, Soltis DE, and Soltis PS. 2024. Geographic And Taxonomic Occurrence R-based scrubbing (gatoRs): An R package and reproducible workflow for processing biodiversity data. *Applications in Plant Science*, 12(2): e11575. doi: 10.1002/aps3.11575. R-package: [gatoRs](#).
8. Mabry ME\*, Caomhanach N\*, Abrahams RS\*, **Gaynor ML\***, Pham KK\*, Williams TM, Murphy KS, Smocovitis VB, Soltis DE, and Soltis PS. 2024. Building an inclusive plant taxonomy: A “radicle” dream. *Plants, People, Planet*, 6(3): 544 – 557. doi: 10.1002/ppp3.10478.
7. Folk RA\*, **Gaynor ML\***, Engle-Wrye NJ, O'Meara BC, Soltis PS, Soltis DS, Guralnick RP, Smith SA, Grady CJ, Okuyama Y. 2023. Identifying climatic drivers of hybridization with a new ancestral niche reconstruction method. *Systematic Biology*, 72(4): 856 – 873. doi: 10.1093/sysbio/syad018.
6. **Gaynor ML**, Fu C, Gao L, Lu L, Soltis DE, and Soltis PS. 2020. Biogeography and ecological niche evolution in Diapensiaceae inferred from phylogenetic analysis data. *Journal of Systematics and Evolution*, 58(5): 646 – 662. doi: 10.1111/jse.12646.
5. **Gaynor ML\***, Lim-Hing S\*, and Mason CM. 2020. Genome duplication impact on secondary metabolite composition in non-cultivated species: A systematic meta-analysis. *Annals of Botany*, 126: 363 – 376. doi: 10.1093/aob/mcaa107.
4. **Gaynor ML**, Walters LJ, and Hoffman EA. 2019. Assessing genetic diversity within natural populations of smooth cordgrass to ensure effective restoration efforts. *Restoration Ecology*, 27(6): 1452 – 1462. doi: 10.1111/rec.13014.
3. An H, Qi X, **Gaynor ML**, Hao Y, Grebken SC, Mabry ME, Conant GC, Barker M, Fu T, Yi B, and Pires JC. 2019. Transcriptome and organellar sequencing highlights the complex origin and diversification of allotetraploid *Brassica napus*. *Nature Communication*, 10: 2878. doi: 10.1038/s41467-019-10757-1.

2. **Gaynor ML**, Marchant DB, Soltis DE, and Soltis PS. 2018. Climatic niche comparison among ploidal levels in the classic autopolyploid system, *Galax urceolata* (Diapensiaceae). *American Journal of Botany*, 105(10): 1 – 12. doi: 10.1002/ajb2.1161.
1. **Gaynor ML**, Ng J, and Laport RG. 2018. Phylogenetic structure of plant communities: Are polyploids distantly related to co-occurring diploids? *Frontiers in Ecology and Evolution*, 6(52): 1 – 14. doi: 10.3389/fevo.2018.00052.

***In review:***

- Cockey E °, **Gaynor ML**, Weaver WN, Tesch V °, Soltis DE, and Soltis PS. Cytogeography and guard cell size of diploid, triploid, and autotetraploid *Galax urceolata* (Diapensiaceae), a classic autopolyploid system. *In Review, Systematic Botany*.
- DeLeon L\* °, Mendez K\* °, Barz J, **Gaynor ML**, Mabry ME, Soltis PS, and Soltis DE. Projected distributional shifts due to climate change for *Rhexia* (Melastomataceae). *In Review, AoB PLANTS*.

***In preparation:***

- Gaynor ML**, Conover JL, and Wakeley J. Patterns of coalescence and genetic variation in autotetraploid species conditional on the population pedigree. *In prep*.
- Gaynor ML**, Landis JB, O'Connor TK, Soltis DE, Soltis PS, and Laport RG. Demographic history and ongoing gene flow in autotetraploid and hexaploid *Larrea tridentata* (Zygophyllaceae). *In prep*.
- Gaynor ML**, Landis JB, Soltis DE, and Soltis PS. Evolutionary trajectories of a co-occurring mixed cytotype autopolyploid system. *In prep*.
- Landis JB\*, O'Connor TK\*, **Gaynor ML\***, Deanna R, Nguyen KA, Ng J, Laport RG. Investigating the origins of the American amphitropical disjuncts *Larrea tridentata* and *Larrea divaricata*. *In prep*.
- Andrade NA °, **Gaynor ML**, Glusberger PR, Triplett EW, Soltis DE, and Soltis PS. Classifying soil microbial community composition across cytotypes of *Galax urceolata* (Diapensiaceae). *In prep*.
- Edwards CE, Bassuner B, **Gaynor ML**, Koontz SM, Smith SA, and Menges ES. Fine-scale and rangewide patterns of clonality, ploidy, and genetic diversity and structure in the state-endangered Florida endemic, *Euphorbia rosescens*. *In prep*.

**Open Educational Resources**

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- Mabry ME, Caomhanach N, Abrahams RS, **Gaynor ML**, Pham KK, Williams TM, Murphy KS, Smocovitis VB, Soltis DE, and Soltis PS (2023). Building an Inclusive Botany – Structuring in Class Discussions. QUBES Educational Resources. doi: 10.25334/SQSN-QQ64

**Gaynor ML** (2020). Introduction to R with Biodiversity Data. Biodiversity Literacy in Undergraduate Education, QUBES Educational Resources. doi:10.25334/84FC-TE88

**Gaynor ML** (2020). Cleaning Biodiversity Data: A Botanical Example Using Excel or RStudio. Biodiversity Literacy in Undergraduate Education, QUBES Educational Resources. doi:10.25334/DRGD-F069

### **Non-peer-reviewed Publications**

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**Gaynor ML**. 2024. Presenting mixed-ploidy models. [Florida Museum of Natural History Travel Report](#).

**Gaynor ML**. 2022. Polyploid workshop in Drøbak, Norway. [Florida Museum of Natural History Travel Report](#).

**Gaynor ML**. 2022. *Galax* – Pirates, fire, and 100 years of confusion. [iDigBio Research Spotlight](#).

**Gaynor ML**, and Valdes I. 2021. Student Section. [Plant Science Bulletin 67\(2\): 116 – 121](#).

**Gaynor ML**, and Valdes I. 2021. Student Section. [Plant Science Bulletin 67\(1\): 40 – 53](#).

**Gaynor ML**, and Valdes I. 2020. Student Section. [Plant Science Bulletin 66\(3\): 236 – 248](#).

Min Y, and **Gaynor ML**. 2020. Student Section. [Plant Science Bulletin 66\(2\): 129 – 138](#).

Min Y, and **Gaynor ML**. 2020. Student Section. [Plant Science Bulletin 66\(1\): 38 – 39](#).

Min Y, and **Gaynor ML**. 2019. Get to know your new student representative. [Plant Science Bulletin 65\(3\): 177 – 179](#).

**Gaynor ML** and Lim-Hing S. 2019. Establishing a BSA student chapter at our university. [Plant Science Bulletin 65\(1\): 53 – 54](#).

**Gaynor ML**. 2019. Climatic niche modeling for beetleweed (*Galax urceolata*, Diapensiaceae). [iDigBio Research Spotlight](#).

**Gaynor ML**. 2018. Making the most out of summer off-campus research experiences. *University of Central Florida Office of Undergraduate Research*, [Student Blog](#).

### **Fellowships (Total ~\$393,600)**

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2024 – 27 Postdoctoral Research Fellowship in Biology, National Science Foundation. DBI-2410238. (\$240,000)

2019 – 24 Graduate Research Fellowship, National Science Foundation. DGE-1842473. (\$138,000)

2018 – 21 Grinter Fellowship Award, University of Florida. (\$6,000)

2016 – 18 Research and Mentoring Program (RAMP) Scholar, University of Central Florida. (\$5,600)

2016 – 17 Boeing Inc. Undergraduate Research Fellow, University of Central Florida. (\$2,000)

2016 NSF-funded Undergraduate Research Experience Fellow, University of Central Florida. (\$1,000)

2015 Summer Undergraduate Research Fellow, University of Central Florida. (\$1,000)

**Grants (Total ~\$18,911)**

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2024	Department of Natural History Summer 2024 Travel Award, University of Florida. (\$1000)
2023	Colloquia Honoraria, Botanical Society of America. (\$175)
2023	College of Liberal Arts and Sciences Travel Award, University of Florida. (\$300)
2023	American Society of Plant Taxonomists Travel Award for Botany 2023. (\$335)
2022	American Society of Plant Taxonomists Travel Award for Botany 2022. (\$225)
2022	Graduate Student Travel Award, Botanical Society of America. (\$500)
2022	John Paul Olowo Memorial Fund Research, University of Florida. (\$300)
2022	Graduate Student Council Travel Award, University of Florida. (\$350)
2022	Department of Natural History Spring 2022 Travel Award, University of Florida. (\$786)
2022	College of Liberal Arts and Sciences Travel Award, University of Florida (\$300)
2021	Department of Natural History Summer 2021 Travel Award. (\$1000)
2021	Graduate Student Research Award, The Society of Systematic Biologists. (\$3000)
2021	Graduate Student Research Grant, American Society of Plant Taxonomist. (\$1200)
2021	Earl Core Student Research Award, Southern Appalachian Botanical Society. (\$1200)
2021	Carrie Lynn Yoder Memorial Scholarship, Department of Biology, University of Florida. (\$500)
2021	Mildred Mason Griffith Botany Grant, Department of Biology, University of Florida. (\$1000)
2020	International Association for Plant Taxonomy (IAPT) Research Award. (\$1,100)
2020	Society of Herbarium Curators Graduate Research Award. (\$500)
2020	Michael L. May Research Award, Department of Biology, University of Florida. (\$300)
2018, 19	American Society of Plant Taxonomists Travel Award for Botany 2018, 2019. (2x, \$670 total)
2018	Student Undergraduate Research Council Research Funding, University of Central Florida. (\$300)
2017	NSF-sponsored REU Travel Grant Program for Botany 2017. Rocky Mountain Biological Laboratory. (\$1,000)
2017	The Botanical Society of America Undergraduate Student Research Award. (\$200)
2017	Undergraduate Travel Award for Botany 2017, Student Undergraduate Research Council, University of Central Florida. (\$300)
2016	Undergraduate Student Travel Award for Botany 2016, Office of Undergraduate Research, University of Central Florida. (\$300)
2016	Sigma-Xi Grant-in-Aid for Research. (\$1,000)
2016	Florida Undergraduate Research Conference Travel Grant, Office of Undergraduate Research, University of Central Florida. (\$70)
2016, 15	Undergraduate Research Grant, Office of Undergraduate Research, University of

Central Florida. (2x, \$1,000 total)

## Honors and Awards

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- 2023 Department of Biology Graduate Student Mentoring Award, University of Florida.  
 2020 Best Student Paper, *Journal of Systematics and Evolution*.  
 2019 Acclaimed Knight, University of Central Florida.  
 2018 Young Botanist Award, Botanical Society of America.  
 2018 Honorable Mention, Graduate Research Fellowship Program, National Science Foundation. \*Awarded in 2019  
 2018 Life Science Judges' Choice Award. Showcase of Undergraduate Research Excellence, University of Central Florida.  
 2017 Winter Park Garden Club Scholarship. (\$1,500)  
 2017 Best Ecology Undergraduate Presentation. Botany 2017.  
 2017 1<sup>st</sup> Place Student Presenter Award. Eureka, University of Central Florida.  
 2017 2<sup>nd</sup> Place Undergraduate Award. *Plants Beyond Limits*, University of Central Florida.  
 2017 2<sup>nd</sup> Place Undergraduate Poster Award. *American Society of Plant Biologists Southern Sectional*.  
 2016 – 18 President's Honor Roll, University of Central Florida.  
 2016 Golden Opportunity Scholars with the American Agronomy Society, Crop Science Society of America, and Soil Science Society of America.  
 2016 Genetics Section Student Award. Botany 2016.  
 2014 – 18 Florida Bright Future Scholarship. (\$8,547)  
 2014 EXCEL Program Scholar, University of Central Florida.

## Presentations

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\*equally contributing authors, °mentored undergraduate

### Oral (Total = 31)

- 2026 **Gaynor ML.** Tools for tackling the ecological, evolutionary, and genomic impacts of whole genome duplication. University of North Carolina at Charlotte. Invited Seminar  
 2026 **Gaynor ML.** Cascading ecological, evolutionary, and genomic impacts of whole genome duplication. Florida State University. Invited Seminar.  
 2025 **Gaynor ML.** Cascading ecological, evolutionary, and genomic impacts of whole genome duplication. University of Tennessee Knoxville. Invited Seminar.  
 2025 **Gaynor ML, Feng K, Soltis DE, Soltis PS, and Smith SA.** Detecting whole genome duplication in the present and the past. Botany 2025. Palm Springs, California.  
 2025 **Gaynor ML.** Accounting for unequal variance in mixed-ploidy population genetics. SMTPB Modeling and Theory in Population Biology, National Institute for Theory and Mathematics in Biology. Chicago, IL.  
 2025 **Gaynor ML.** Cascading ecological and evolutionary impacts of whole genome duplication in flowering plants.  
 University of Central Florida. Invited Seminar.

- Auburn University. Invited Seminar.
- 2025 **Gaynor ML.** Whole genome duplication in flowering plants: Challenges and mechanisms of mixed-cytotype coexistence. University of South Florida. Invited Seminar. University of South Alabama. Invited Seminar.
- 2024 **Gaynor ML, Landis JB, O'Connor T, Laport RG, Doyle JJ, Soltis DE, Ponciano Castellanos JM, and Soltis PS.** Computationally intensive methods and models to understand mixed-cytotype populations. *Polyploidy Seminar*. Invited Talk.
- 2024 **Gaynor ML, Patten NA, Soltis DE, and Soltis PS.** An introduction to Geographic And Taxonomic Occurrence R-based Scrubbing (gatoRs): An R package and workflow for processing biodiversity data. SPNHC-TDWG 2024. Okinawa, Japan. Invited Talk.
- 2024 **Gaynor ML, Andrade NA<sup>o</sup>, Cockey EC<sup>o</sup>, Soltis DE, and Soltis PS.** Understanding coexistence of mixed cytotypes in a classic autopolyploid system, *Galax urceolata* (Diapensiaceae). Evolution 2024, Montreal, Quebec.
- 2023 **Gaynor ML, Landis JB, O'Connor T, Laport RG, Soltis DE, Soltis PS, and Ponciano JM.** Unraveling theoretical expectations of mixed-cytotype autopolyploid populations. Botany 2023. Boise, ID. Invited Talk.
- 2023 **Gaynor ML, Kortessis N, Soltis DE, Soltis PS, and Ponciano Castellanos JM.** In it for the long run: Cytotype persistence under demographic and environmental stochasticity. International Polyploidy Conference. Palm Coast, FL.
- 2022 **Gaynor ML, Soltis DE, Soltis PS, and Ponciano Castellanos JM.** Joint population dynamics of autotetraploids and their diploid progenitors. Graduate Student Lightning Talks, Florida Museum of Natural History. Gainesville, FL.
- 2022 **Gaynor ML, Soltis DE, Soltis PS, and Ponciano Castellanos JM.** Formation, establishment, and persistence of autotetraploid populations. *Botany 2022*. Fairbanks, AK.
- 2021 **Gaynor ML, Soltis DE, Soltis PS, and Ponciano Castellanos JM.** Modeling the dynamics of multiple origins and gene flow in autopolyploids and their diploid progenitors. *Botany 2021*. Virtual.
- 2021 **Gaynor ML.** Introduction to R with Biodiversity Data. *Natural History Demo Camp*. Virtual.
- 2021 **Gaynor ML, Soltis DE, Soltis PS, Ponciano Castellanos JM.** Modeling the dynamics of multiple origins and gene flow in autopolyploids and their diploid progenitors. *Polyploidy Seminar*. [Virtual](#).
- 2020 **Gaynor ML, Fu C, Gao L, Lu L, Soltis DE, and Soltis PS.** Biogeography and ecological niche evolution in Diapensiaceae inferred from phylogenetic analysis data. *Botany 2020*. Virtual.
- 2020 **Gaynor ML, Soltis DE, and Soltis PS.** Florida plants and climate change: scripts and pitfalls for utilizing digitized data in course-based undergraduate research. *4<sup>th</sup> Annual Digital Data Conference*. Virtual.
- 2019 **Gaynor ML, Fu C, Gao L, Lu L, Soltis DE, and Soltis PS.** Biogeography and ecological niche evolution in Diapensiaceae inferred from phylogenetic analysis data. *iDigBio Communication Luncheon*. Gainesville, FL. Invited.

- 2019 **Gaynor ML**, Lim-Hing S, and Mason CM. Genome duplication impact on secondary metabolite composition in non-cultivated species. *Botany 2019*. Tucson, AZ. Invited.
- 2018 **Gaynor ML**, Soltis DE, and Soltis PS. Phylogenetic patterns of ecological niche evolution in Diapensiaceae. *iDigBio Communication Luncheon*. Gainesville, FL. Invited.
- 2018 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to promote effective restoration efforts. *Botany 2018*. Rochester, MN.
- 2017 **Gaynor ML**. Student scholarship recipient speaker. *University of Central Florida College of Science Scholarship Luncheon*. Orlando, FL. Invited.
- 2017 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to promote effective restoration efforts. *2017 ASA, CSSA, and SSSA International Annual Meeting*. Tampa, FL.
- 2017 **Gaynor ML**, Laport RG, and Ng J. The influence of genome duplication on Brassicaceae and Rosaceae communities across the United States. *Botany 2017*. Fort Worth, TX. **Best Ecology Undergraduate Presentation. (\$100)**
- 2017 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to promote effective restoration efforts. *Eureka*. University of Central Florida. Orlando, FL. **1<sup>st</sup> Place Student Presenter Award.**
- 2015 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to ensure effective restoration efforts. *Summer Undergraduate Research Presentation*. University of Central Florida, Orlando, FL.
- 2013 **Gaynor ML**, and Kenworthy KE. Rooting characteristics of elite Zoysiagrass genotypes. *Student Science Training Program Presentation*. University of Florida, Gainesville, FL.

**Poster (Total = 19)**

- 2019 **Gaynor ML**, Soltis DE, and Soltis PS. Phylogenetic patterns of ecological niche evolution in Diapensiaceae. *Botany 2019*. Tucson, AZ.
- 2019 **Gaynor ML**, Marchant DB, Soltis DE, and Soltis PS. Climatic niche comparison among ploidal levels in the classic autopolyploid system, *Galax urceolata* (Diapensiaceae). *International Polyploidy Conference*. Gent, Belgium.
- 2018 **Gaynor ML**, Marchant DB, Soltis DE, and Soltis PS. Climatic niche comparison among ploidal levels in the classic autopolyploid system, *Galax urceolata* (Diapensiaceae). *Science by the Shore*. St. Augustine, FL.
- 2018 **Gaynor ML**, Lim-Hing S, and Mason CM. Genome duplication impact on secondary metabolite composition in non-cultivated species. *Botany 2018*. Rochester, MN.
- 2018 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to promote effective restoration efforts.

- Showcase of Undergraduate Research Excellence*. University of Central Florida. Orlando, FL. **Life Science Judges' Choice Award. (\$500)**
- 2018 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to promote effective restoration efforts. *Indian River Lagoon Symposium*. Florida Atlantic University's Harbor Branch Oceanographic Institute. Fort Pierce, FL.
- 2017 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to promote effective restoration efforts. *Plants Beyond Limits*, University of Central Florida. Orlando, FL. **2<sup>nd</sup> Place Undergraduate Award. (\$200)**
- 2017 **Gaynor ML**, An H, and Pires JC. Unraveling the origins of allotetraploid *Brassica napus*. *University of Missouri Summer Research Forum*. Columbia, MO.
- 2017 **Gaynor ML**, Marchant DB, Soltis DE, and Soltis PS. Absence of clear niche divergence among ploidal levels in a classic autopolyploid system, *Galax urceolata*. *Botany 2017*. Fort Worth, TX.
- 2017 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to promote effective restoration efforts. *American Society of Plant Biologists Southern Sectional*. Orlando, FL. **2<sup>nd</sup> Place Undergraduate Poster Award. (\$70)**
- 2017 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to promote effective restoration efforts. *Showcase of Undergraduate Research Excellence*. University of Central Florida. Orlando, FL.
- 2017 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to promote effective restoration efforts. *Indian River Lagoon Symposium*. Florida Atlantic University's Harbor Branch Oceanographic Institute. Fort Pierce, FL.
- 2016 **Gaynor ML**, Laport RG, and Ng J. The influence of genome duplication on Brassicaceae and Rosaceae communities across the United States. *2016 ASA, CSSA, and SSSA International Annual Meeting*. Phoenix, AZ.
- 2016 **Gaynor ML**, Laport RG, and Ng J. The influence of genome duplication on Brassicaceae and Rosaceae communities across the United States. *Botany 2016*. Savannah, GA. **Genetics Section Student Award. (\$250)**
- 2016 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to ensure effective restoration efforts. *Showcase of Undergraduate Research Excellence*. University of Central Florida. Orlando, FL.
- 2016 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to ensure effective restoration efforts. *Southeastern Ecology and Evolution Conference*. Florida State University. Tallahassee, FL.
- 2016 **Gaynor ML**, Walters LJ, and Hoffman EA. Assessing genetic diversity within natural populations of smooth cordgrass to ensure effective restoration efforts. *Florida Undergraduate Research Conference*. University of Tampa. Tampa, FL.

- 2013 **Gaynor ML**, and Kenworthy KE. Rooting characteristics of elite Zoysiagrass genotypes. *Student Science Training Program Poster Showcase*. University of Florida, Gainesville, FL.

**Co-author presentations (Total = 33)**

- 2025 Strickland SE, Miller JT, Leitch IJ, **Gaynor ML**, Soltis DE, and Soltis PS. Geographic distribution of Angiosperm genome size in North America. Poster. Botany 2025. Palm Springs, California.
- 2025 Laport RG, **Gaynor ML**, Gerstner B, Landis JB, and O'Connor TK. Hidden biodiversity: Whole genome duplication shapes cryptic interspecific interactions in a dominate shrub. Botany 2025. Palm Springs, California.
- 2024 Ore-Rengifo M, Scott A, Ionta GM, **Gaynor ML**, and Majure LC. Unveiling evolutionary dynamics: Nuclear Phylogenomic and ploidy inference analysis in the genus *Rhexia* L. (Melastomataceae). *Botany 2024*. Grand Rapids, MI. Poster presentation.
- 2024 Barz J <sup>o</sup>, DeLeon L <sup>o</sup>, Mendez K <sup>o</sup>, **Gaynor ML**, Mabry ME, Soltis PS, and Soltis DE. Projected distributional shifts due to climate change for *Rhexia* (Melastomataceae). *UF Spring Undergraduate Research Symposium*. Gainesville, FL. Poster presentation.
- 2024 Cockey E <sup>o</sup>, **Gaynor ML**, Tesch V <sup>o</sup>, Soltis DE, and Soltis PS. Comparing stomata size among diploid, triploid, and autotetraploid *Galax urceolata* (Diapensiaceae). *UF Spring Undergraduate Research Symposium*. Gainesville, FL. Poster presentation.
- 2024 Cockey E <sup>o</sup>, **Gaynor ML**, Tesch V <sup>o</sup>, Soltis DE, and Soltis PS. Comparing stomata size among diploid, triploid, and autotetraploid *Galax urceolata* (Diapensiaceae). Sigma Xi, University of Florida Chapter Student Poster Session. Gainesville, FL. Poster presentation.
- 2023 Mabry ME\*, Caomhanach N\*, Abrahams RS\*, **Gaynor ML\***, Pham KK\*, Williams TM, Murphy KS, Smocovitis VB, Soltis DE, and Soltis PS. Building an inclusive plant taxonomy: A “radicle” dream. Botany 2023. Boise, ID.
- 2023 Andrade NA <sup>o</sup>, **Gaynor ML**, Glusberger PR, Triplett EW, Soltis DE, and Soltis PS. Classifying soil microbial community composition across cytotypes of *Galax urceolata* (Diapensiaceae). Botany 2023. Boise, ID.
- 2023 Cockey E <sup>o</sup>, **Gaynor ML**, Tesch V <sup>o</sup>, Soltis DE, and Soltis PS. Comparing stomata size among diploid, triploid, and autotetraploid *Galax urceolata* (Diapensiaceae). International Polyploidy Conference. Palm Coast, FL. Poster presentation.
- 2023 Andrade NA <sup>o</sup>, **Gaynor ML**, Glusberger PR, Triplett EW, Soltis DE, and Soltis PS. Classifying soil microbial community composition across cytotypes of *Galax urceolata* (Diapensiaceae). International Polyploidy Conference. Palm Coast, FL. Poster presentation.
- 2023 Stolen E <sup>o</sup>, Anderson N <sup>o</sup>, Shan S, **Gaynor ML**, Soltis DE, and Soltis PS. The impact of genome doubling on gene expression noise in *Arabidopsis thaliana*. Bristol Myers Squibb Undergraduate Symposium. Gainesville, FL. Oral Presentation.

- 2023 Stolen E<sup>o</sup>, Anderson N<sup>o</sup>, Shan S, **Gaynor ML**, Soltis DE, and Soltis PS. The impact of genome doubling on gene expression noise in *Arabidopsis thaliana*. *UF Spring Undergraduate Research Symposium*. Gainesville, FL. Poster presentation.
- 2022 Landis J, **Gaynor ML**, Deanna R, O'Connor T, Nguyen K, Ng J, and Laport R. Using RAD capture sequences to investigate the origins of the American Amphitropical disjuncts *Larrea tridentata* and *Larrea divaricata*. Fairbanks, AK. Oral presentation.
- 2022 Abrahams RS, Mabry M, Caomhanach N, **Gaynor ML**, Pham K, Williams T, Murphy KA, Smocovitis VB, Soltis DE, and Soltis PS. Reckoning with the past for building an inclusive botany. *Botany 2022*. Fairbanks, AK. Oral presentation.
- 2022 DeLeon L<sup>9\*</sup>, Mendez K<sup>9\*</sup>, Mabry M, **Gaynor ML**, Soltis DE, and Soltis PS. Projected distributional shifts due to climate change for Rhexia (Melastomataceae). *Botany 2022*. Fairbanks, AK. Poster presentation.
- 2022 Patten N<sup>o</sup>, **Gaynor ML**, Soltis DE, and Soltis PS. Geographic and taxonomic occurrence R-based scrubbing (gatoRs): An R package and reproducible workflow for processing biodiversity data. *UF Spring Undergraduate Research Symposium*. Gainesville, FL. Poster presentation.
- 2022 Stolen E<sup>o</sup>, Shan S, **Gaynor ML**, Soltis DE, and Soltis PS. The impact of genome doubling on gene expression noise in *Arabidopsis thaliana*. *UF Spring Undergraduate Research Symposium*. Gainesville, FL. Poster presentation.
- 2021 Patten N<sup>o</sup>, **Gaynor ML**, Soltis DE, and Soltis PS. Geographic and taxonomic occurrence R-based scrubbing (gatoRs): An R package and reproducible workflow for processing biodiversity data. *UF Fall Undergraduate Research Symposium*. Gainesville, FL. Poster presentation.
- 2021 Stolen E<sup>o</sup>, Shan S, **Gaynor ML**, Soltis DE, and Soltis PS. The impact of genome doubling on gene expression noise in *Arabidopsis thaliana*. *UF Fall Undergraduate Research Symposium*. Gainesville, FL. Poster presentation.
- 2021 Laport RG, Landis JB, **Gaynor ML**, O'Connor T, Deanna R, and Nguyen K. Using RAD capture sequences to investigate the origins of the American amphitropical Disjuncts *Larrea tridentata* and *Larrea divaricata*. *Botany 2021*. Virtual. Poster.
- 2021 Patten N<sup>o</sup>, **Gaynor ML**, Soltis DE, and Soltis PS. Reproducible Workflow for Projecting Climatic Impacts on Florida Plants. *UF Spring Undergraduate Research Symposium*. Virtual. Poster presentation.
- 2021 Stolen E<sup>o</sup>, Shan S, **Gaynor ML**, Soltis DE, and Soltis PS. The impact of genome doubling on gene expression noise in *Arabidopsis thaliana*. *UF Spring Undergraduate Research Symposium*. Gainesville, FL. Poster presentation.
- 2020 Andrade N<sup>\*o</sup>, Chundi A<sup>\*o</sup>, McMorrow S<sup>\*o</sup>, Patten N<sup>\*o</sup>, Soltis DE, Soltis PS, and **Gaynor ML**. Florida plants and climate change. *UF Virtual Undergraduate Research Symposium*. Virtual. (<https://cur.aa.ufl.edu/2020/04/15/cure-florida-plants-and-climate-change/>) Poster presentation.
- 2020 Depatie TH<sup>o</sup>, **Gaynor ML**, Soltis PS, Wetterer JK. Phylogeography of the burrowing four o'clock, *Okenia hypogaea* (Nyctaginaceae). *Wilkes Honors College Symposium for Scholarly and Creative Research*. Virtual. Poster presentation.

- 2020 Depatie TH<sup>o</sup>, **Gaynor ML**, Soltis PS, Wetterer JK. Phylogeography of the burrowing four o'clock, *Okenia hypogaea* (Nyctaginaceae). *Florida Atlantic University Undergraduate Research Symposium*. Virtual. Poster presentation.
- 2019 Pires JC, An H, Qi X, **Gaynor ML**, Hao Y, Mabry ME, Conant GC, and Barker MS. Transcriptome and organellar sequencing highlight the complex origin and diversification of allotetraploid *Brassica napus*. *Botany 2019*. Tucson, AZ. Oral presentation.
- 2019 Folk R, **Gaynor ML**, Soltis PS, Soltis DR, and Guralnick R. New prospects in studying hybridization: Assessing historical climatic drivers. *Botany 2019*. Tucson, AZ. Oral presentation.
- 2019 An H, Qi X, **Gaynor ML**, Hao Y, Gebken SC, Mabry ME, Conant GC, Barker MS, Fu T, Yi B, and Pires JC. The genetic structure and diversification process of allotetraploid *Brassica napus*. *Evolution 2019*. Providence, RI. Oral presentation.
- 2018 **Gaynor ML**, Laport RG, and Ng J. Waves or ripples? Whole genome duplication and plant community structure. *Ecological Society of America Annual Meeting*. New Orleans, LA. Oral presentation.
- 2018 An H, Qi X, **Gaynor ML**, Hao Y, Gebken SC, Mabry ME, Conant GC, Barker MS, Fu T, Yi B, and Pires JC. Transcriptome and organellar genome sequencing elucidate the origin and diversification of allotetraploid *Brassica napus*. *Brassica 2018*. Saint-Malo, France. Oral presentation.
- 2018 An H, **Gaynor ML**, Gebken SC, and Pires JC. Origin(s) of a hybrid: history of allopolyploid *Brassica napus* using genome-wide data. *Botany 2018*. Rochester, MN. Oral presentation.
- 2018 An H, **Gaynor ML**, Gebken SC, and Pires JC. Origin(s) of a hybrid: history of allopolyploid *Brassica napus* using genome-wide data. *Life Science Week*. University of Missouri, Columbia, MO. Oral presentation.

### Synergistic Activities and Outreach

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Freely available pipeline, tutorials, and teaching material: <https://github.com/mgaynor1>

- 2019 – Present Peer review for: *American Journal of Botany*, *Biological Journal of the Linnean Society*, *Ecology and Evolution*, *Frontiers in Plant Science*, *Journal of Evolutionary Biology*, *Scientific Reports*, *Scientific Advances*, *Proceedings of the Royal Society B: Biological Sciences*, *Heredity*, *The American Naturalist*.
- 2025 Class Guest, University of Missouri - St. Louis to discuss Gaynor et al. 2018, *American Journal of Botany*.
- 2025 Moderator, Macroevolution, *Botany 2025*.
- 2022 – 2023 Graduate Committee Student Representative, Department of Biology, University of Florida.
- 2022 – 2024 Early Career Advisory Committee, *American Journal of Botany*.
- 2021 – 2023 Public Policy Committee, Botanical Society of America.

- 2021 – 2022 Graduate Student Colloquium Representative, Department of Biology, University of Florida.
- 2020 – 2023 FLMNH Website Committee Graduate Student Representative.
- 2019 – 2021 iDigBio API Working Group.  
Hosted biweekly drop-in sessions. Helped maintain github repository ([biodiversity-specimen-data](#)).
- 2018 – 2024 iDigBio, University of Florida.  
Participated in monthly meetings, assisted at the annual ADBC conference, and assisted in community outreach including: WeDigBio at the Florida Museum of Natural History and Scientist in Every Florida School (SEFS). Helped maintain R package, ridigbio.
- 2021 Graduate Student Mentor, Graduate Research Fellowship Working Group, Botanical Society of America.
- 2021 Fellowship Panelist for the American Society of Plant Biologist.
- 2019 – 2021 Student Representative, Botanical Society of America (BSA).  
Organized workshops, Career in Botany Luncheon, annual Student Social/Networking event, CV/Resume coaching sessions, and #BSAscicomm at the annual Botany meeting.  
Responsible for articles in the Student Section of the *Plant Science Bulletin* three times a year.  
Student newsletters throughout the year (at least three a year).  
Example: [May Student Newsletter](#), [Spring Student Newsletter](#), [Fall Student Newsletter](#).
- 2020 – Present Biological Collections in Ecology and Evolution Network (BCEENET): CURE Collaborating Developer.  
Helped develop resources and material for Coursed-based Undergraduate Research Experience (CURE) utilizing natural history collections.
- 2020 Planting Science Mentor, Botanical Society of America.
- 2020 UF Biology Undergraduate Research Assistant Program Committee.
- 2019 – 2020 Volunteer for Society of Systematic Biologists 2020 standalone meeting.  
Assisted in developing the meeting website ([systbiol/ssb2020](#)).
- 2018 – 2019 Girls Who Code, Eastside High School.  
Instructor for local high school club, which meets once a week from Fall 2018 till the end of Fall 2019.
- 2018 Class Guest, University of Missouri to discuss NSF-REU opportunities.
- 2017 – 18 Botanical Society of the University of Central Florida.  
Founding member and Vice President. Helped organize a plant symposium Fall 2017 and organized networking events.
- 2017 – 18 S.T.E.A.M., University of Central Florida.  
Collaborated with a digital design student to create an art-based research poster to display at UCF and the Orlando Science Center.
- 2016 – 18 Student Undergraduate Research Council Member.

- Devoted to exposing students to the different aspects of science and helping them pursue research positions at the University of Central Florida. Presented to classes and workshops on the benefits of being involved in undergraduate research
- 2015 – 17      Girls Exceling in Math and Science (GEMS), University of Central Florida.  
Served as a mentor for eight freshmen women majoring in biology through the GEMS (Girls EXCELing in Math and Science) program.

### Scientific Workshop Organization

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- 2025      Co-Instructor. Flow cytometry for plants. Polyploidy Undergraduate Research Experience (PURE) Virtual.
- 2017 – 26      Co-Instructor. Using Digitized Herbarium Data in Research: Applications for Ecology, Phylogenetics, and Biogeography. Botany 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2025 and 2026.
- Workshop Material: [soltislab/BotanyENMWorkshops](https://soltislab.org/BotanyENMWorkshops)
- 2021      Co-instructor. Navigating the submission and peer review process. Botany 2021.
- 2021      Instructor. Using R for Digitized Natural History Collections (dNHC) in Research. BCEENET 2021 Virtual Meeting.
- [mgaynor1/R4NaturalHistoryCollections-BCEENET2021](https://mgaynor1.github.io/R4NaturalHistoryCollections-BCEENET2021)
- 2020      Co-Instructor. Data Cleaning Basics for Natural History Collections. BCEENET.
- 2020      Co-organizer. Time management and career planning: long-term, short-term, and daily goals. Botany 2020. CANCELED.
- 2020      Co-Instructor. Using Digitized Herbarium Data in Research: Applications for Ecology, Phylogenetics, and Biogeography. Society of Systematic Biologists 2020.
- 2018      Instructor. Analytical Tools: Ecological Niche Modeling. ADBC Summit.

### Teaching

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#### *Assistant instructor*

- Spring 2020      BSC2930/BOT4935: Florida Plants and Climate Change
- Course-based Undergraduate Research Experience (CURE).
  - R-based scripts available: [mgaynor1/CURE-FL-Plants](https://mgaynor1.github.io/CURE-FL-Plants)

#### *Teaching assistant*

- Summer 2020      BSC4452 Computational Tools for Research in Biology
- Command line, bash scripting, version control, high-performance computing resources, python scripting, and SQL databasing.

### Mentoring

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Undergraduate students:

- 2023 –2026 Ethan Cockey (UF)  
Project: Comparing stomata size among diploid, triploid, and autotetraploid *Galax urceolata*.
- 2021 – 2025 Nico Andrade (UF)  
Project: Classifying soil microbial community composition across cytotypes of *Galax urceolata*.
- 2020 – 2023 Natalie Patten (UF)  
Project: Reproducible workflow for projecting climatic impacts on Florida plants.
- 2020 – 2023 Ethan Stolen and Noah Anderson – co-advised with Dr. Shengchen Shan (UF)  
Project: The Impact of genome doubling on gene expression noise in *Arabidopsis thaliana*.
- 2021 – 2022 Karina Mendez and Lyanna De Leon – co-advised with Dr. Makenzie Mabry (UF)  
iDigBio Natural History Collections Summer Internship  
Project: Projected distributional shifts due to climate change for *Rhexia* (Melastomataceae).
- 2021 – 2022 Victoria Tesch  
iDigBio Natural History Collections Summer Internship  
Project: Comparing destructive and non-destructive stomata measurement techniques for the classic autopolyploid, *Galax urceolata*.
- 2020 – 2021 Max Gebhart – co-advised with Dr. Chase M. Mason (UCF)  
Project: Ecological niche evolution in *Helianthus*.
- 2020 Nico Andrade, Anand Chundi, Sarah McMorrow, Natalie Patten. (UF)  
Project: Florida plants and climate change.
- 2019 – 2020 Trinity H. Depatie – Visiting from Florida Atlantic University.  
Project: Phylogeography of the burrowing four-o'clock (*Okenia hypogaea*).

## Media Coverage

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- 2025, "[A plant you've never heard of can do what scientist once thought impossible](#)". Florida Museum of Natural History.
- 2025, "[Probing the Probability of Polyploid Persistence](#)". American Society of Naturalist, Forthcoming Papers.
- 2025, "[The Enigma of the Galax Genome](#)". In Defense of Plants, Episode 513.
- 2023, "[The Motivation and Strategy Behind Biology PhD Stipends](#)". Personal Finance for PhDs Podcast with Dr. Emily Roberts, Season 14, Episode 10.
- 2022, "[Ph.D. students demand wage increases amid rising cost of living](#)". Science, 376 (6567): 1033-1034. doi: 10.1126/science.caredit.add1421.
- 2022, "[Ph.D. students face cash crisis with wages that don't cover living costs](#)". Nature, 605: 775-777. doi:10.1038/d41586-022-01392-w.

- 2022, [“Ph.D. pay, COVID’s health-burden – the week in infographics”](#). Nature. doi: 10.1038/d41586-022-01463-y.
- 2022, [“Nature briefing: Infographic of the week”](#). Nature. doi: 10.1038/d41586-022-01488-3.
- 2021, [“Students return to the field with the aid of museum travel awards”](#), Florida Museum of Natural History, University of Florida.
- 2020, [“Bulking up: do plants make gains in secondary metabolites through genome duplication?”](#), Botany One.
- 2019, [“Florida Museum students awarded NSF graduate fellowships”](#), Florida Museum of Natural History, University of Florida.
- 2018, [“Research spotlight: Shelly Gaynor, Biology Major”](#), Research Week 2018, University of Central Florida.
- 2017, [“College of Science celebrates scholarships”](#), University of Central Florida.
- 2017, [“Student researches Roses and Cabbage”](#), University of Central Florida.
- 2017, [“Research experiences for undergraduates in digitized collections data”](#), iDigBio.
- 2017, [“Student’s award-winning restoration research”](#), University of Central Florida.
- 2016, [“Biology student receives golden opportunity”](#), University of Central Florida.