Matthew G. Johnson **October 2025**

CONTACT INFORMATION

Biological Sciences
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Texas Tech University
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EDUCATION

Ph.D. Duke University, Durham, NC — May, 2013

Dissertation: "Evolution of Mating Systems in *Sphagnum* peatmosses"

B.S. *with distinction*, Duke University, Durham, NC — May 2006

Honors Thesis: "Genetic relationships within *Sphagnum cribrosum* Lind. "wave form" and "normal form" in southeastern North Carolina using three anonymous nuclear genes."

PROFESSIONAL APPOINTMENTS

Associate Professor — September 2023 to present
Biological Sciences, Texas Tech University

Assistant Professor — September 2017 to August 2023
Biological Sciences, Texas Tech University

Director E.L. Reed Herbarium (TTC) — 2017 to present

Faculty Graduate Advisor Department of Biological Sciences — 2024 to present

Postdoctoral Research Associate — 2013 to 2017
Plant Science and Conservation Research Center
Chicago Botanic Garden
Supervisor: Norman Wickett, Ph.D

SELECTED PUBLICATIONS

Journal Articles (55 total, 12 first-author, 5 last-author)
Selected Publications - for full list, see: Google Scholar Profile

1. J.L. Krumm, C.N. Jordan, C.D. Bronson, K.M. Weglarz, K. Genet, **M.G. Johnson**, M. Phillips, A. Fleming, E.K. Shea, J. Hewlett, P.S. Soltis, J.M. McCarthy, P.A. Trillo, J. Woods. 2024. Improving access to undergraduate research using digitized natural history collections course-based research experiences. *Ecosphere* 15(11), e70038, doi:10.1002/ecs2.70038

2. A.R. Zuntini, T. Carruthers, O. Maurin, P.C. Bailey, K. Leempoel, G.E. Brewer, N. Epitawalage, E. Francoso, B. Gallego-Paramo, C. McGinnie, R. Negrao, S.R. Roy, L. Simpson, E. Toledo Romero, V.M.A. Barber, L. Boutigue, J.J. Clarkson, R.S. Cowan, S. Dodsworth, **M.G. Johnson**, J.T. Kim, L. Pokorny, et al. (279 total authors). 2024. Phylogenomics and the rise of the angiosperms. *Nature*. 629, 843-850. doi:10.1038/s41586-024-07324-0

3. N. Patel, R. Medina, L.D. Williams, O. Lemieux, B. Goffinet, and **M.G. Johnson**. 2023. Frequent allopolyploidy with distant progenitors in the moss genera *Physcomitrium* and *Entosthodon* (Funariaceae) identified via subgenome phasing of targeted nuclear genes. *Evolution*. 77(12) 2561-2575. doi:10.1093/evolut/qpad171

4. W. Freyman, **M.G. Johnson**, and C.J. Rothfels. 2023. homologizer: Phylogenetic phasing of gene copies into polyploid subgenomes. *Methods in Ecology and Evolution*. doi:10.1111/2041-210X.14072

5. Y. Chen, DW Schwilk, RD Cox, and **MG Johnson**. 2022. Including Phylogenetic Conservatism of Shortgrass Prairie Restoration Species Does Not Improve Species Germinability Prediction. *Frontiers in Ecology and Evolution* 10. doi:10.3389/fevo.2022.983192.

6. J.B. Beck, M.L. Markley, M.G. Zielke, J.R. Thomas, H.J. Hale, L.D. Williams, and **M.G. Johnson**. Is Palmer's elm leaf goldenrod real? The Angiosperms353 kit provides within-species signal in *Solidago ulmifolia* s.l. 2022. *Systematic Botany* 46(4) 1107-1113 doi:10.1600/036364421X16370109698740

7. M. Slimp*, L.D. Williams, H. Hale, and **M.G. Johnson**. On the potential of Angiosperms353 for population genomics. 2021. *Applications in Plant Sciences* doi:10.1002/aps3.11419

8. H. Hale, E.M. Gardner, J. Viruel, L. Pokorny, and **M.G. Johnson**. 2020. Strategies for reducing per-sample costs in target capture sequencing for phylogenomics and population genomics in plants. Invited Special Issue: *Low-cost methods in plant sciences Applications in Plant Sciences* e11337. doi:10.1002/aps3.11337.

9. R. Medina, **M.G. Johnson**, Y. Liu, N. Wickett, A.J. Shaw, and B. Goffinet. Phylogenomic delineation of Physcomitrium (Bryophyta: Funariaceae) based on targeted sequencing of nuclear exons and their flanking regions rejects the retention of *Physcomitrella*, *Physcomitridium* and *Aphanorrhegma*. *J. Systematics and Evolution* 57(4): 404-417. doi:10.1111/jse.12516

10. Y. Liu†, **M.G. Johnson**†, C.J. Cox, R. Medina, N. Devos, A. Vanderpoorten, L. Hedenas, N. Bell, J.R. Shevock, B. Aguero, D. Quandt, N.J. Wickett, A.J. Shaw, and B. Goffinet. 2019. Resolution of the ordinal phylogeny of mosses using targeted exons from organellar and nuclear genomes. *Nature Communications* 10, Article number: 1485. doi:10.1038/s41467-019-09454-w

11. **M.G. Johnson**†, L. Pokorny†, S. Dodsworth†, L.R. Botigue, R.S. Cowan, A. Devault, W.L. Eiserhardt, N. Epitawalage, F. Forest, J.T. Kim, J.H. Leebens-Mack, I.J. Leitch, O. Maurin, D.E. Soltis, P.S. Soltis, G.K. Wong, W.J. Baker, and N.J. Wickett. A Universal Probe Set for Targeted Sequencing of 353 Nuclear Genes from Any Flowering Plant Designed Using k-medoids Clustering. *Systematic Biology* 68(5): 594-606. doi:10.1093/sysbio/syy086

12. M.R. McKain†, **M.G. Johnson**†, S. Uribe-Convers†, D. Eaton†, and Y. Yang. 2018†. Practical considerations for plant phylogenomics. *Applications in Plant Sciences* 6(3):e01038. *Invited Special Issue: Methods for Exploring the Plant Tree of Life* doi:10.1002/aps3.1038

13. **M.G. Johnson**, E.M. Gardner, Y. Liu, R. Medina, B. Goffinet, A.J.Shaw, N.J.C. Zerega, and N.J. Wickett. 2016. HybPiper: Extracting coding sequence and introns for phylogenetics from high-throughput sequencing reads using target enrichment. *Applications in Plant Sciences*. 4(7):1600016 doi:10.3732/apps.1600016.

(†Authors Contributed Equally; *Undergraduate Student)

In Review and Revision

1. M.R. Bullock, M. Fokar, R.D. Creek, E.A. Stevens, and **M.G. Johnson**. Fun-Sized Library Prep: Miniaturization is a valid method for per-sample cost reduction for targeted sequencing of antique and fresh angiosperm DNA. *in review* preprint doi:10.1101/2025.09.17.676862

2. N. Hu, M.R. Bullock, C. Jackson, C. Miller, E.S. Hunter, C. Huff, S.M. Handy, and **M.G. Johnson** SPROUT: A computational and targeted sequencing approach for mixed plant DNA identification with Angiosperms353. *in review, code available: github.com/nhu92/SPrOUT*

3. M. Slimp, L.N. Martinez, J.D. Kapp, M.E. Kirby, G. MacDonald, D.L. Hankins, S. Melrose, **M.G. Johnson**, B. Shapiro, and R.S. Meyer. Southern California's ancient sedimentary DNA shows plant composition shifts with fire and human demography *in review*

4. A.M Patrick, M.J. Buchholtz, C.L. Ramsey, **M.G. Johnson**, and W.C. Conway. Potential pronghorn (Antilocarpa americana) susceptibility to chronic wasting disease through PRNP sequencing. *in review*

5. K. Anderson, N. Patel, **M.G. Johnson**, and B. Goffinet. Sporophytes are essential for calibrating flow cytometry estimates of genome size from gametophytes of Physcomitrium pyriforme *in review*

External Research Grants

Co-Principal Investigator: Maximizing the Impacts of Inclusive Course-based Undergraduate Research Experiences: from Hypothesis to Undergraduate Conference Participation *National Science Foundation Division of Undergraduate Education* 2023-2028. **Awarded Amount: $280,952**. NSF-DUE-2235819 PI: Dr. Lisa Limeri.

Principal Investigator: Improving detection of plant contaminants in mixed samples with targeted sequencing of 353 nuclear protein coding genes *Broad Agency Agreement – Center for Food Safety and Nutrition, US Food and Drug Administration.*. 2022-2024. **Awarded Amount: $400,765**. FSSWP19.

Principal Investigator: Collaborative Research: Diversity of *Physcomitrium pyriforme* in North America and Europe: significance of autopolyploidy within a phylogenomic and experimental framework. *National Science Foundation Division of Environmental Biology.* 2018-2023. **Awarded Amount: $417,685**. DEB-1753800

Subaward: Progress toward solving the silvery-thread moss issue in cool-season putting greens. *United States Golf Association.* 2019-2022. Total Awarded Amount: $119,991. **TTU Sub-award: $16,000**. Lead Principal Investigator: Lloyd Stark, University of Nevada Las Vegas. Collaborator: Zane Raudenbush, Ohio State University.

Subaward: Digitization TCN: Collaborative: American Crossroads: Digitizing the Vascular Flora of the South-Central United States. *National Science Foundation.* 2019-2022. Total Awarded Amount: $1,497,043. **TTU Sub-award: $29,775**. Lead Principal Investigator: Peter Fritsch, Botanical Research Institute of Texas.

Subaward: Collaborative Research: Diversity of *Physcomitrium pyriforme* in North America and Europe: significance of autopolyploidy within a phylogenomic and experimental framework. *National Science Foundation Division of Environmental Biology.* DEB-1753673. Total awarded amount: $128,732, **TTU Subaward: $62,525**. Lead Principal Investigator: Kimberly Murphy, Augustana College.

Awards and Fellowships

Faculty Peer-Mentoring Award 2025
– Office of the President, Texas Tech University

Innovation in Teaching Award 2025
– College of Arts and Sciences, Texas Tech University

Texas Tech University Teaching Academy 2023-present

Harold Sanford Perry Prize ($5,500) May 2013
- Annual departmental cash award for the best dissertation in Plant Sciences.
- Students are nominated and selected by Duke Biology faculty.

E. Bayard Halsted Scholarship ($19,836) August 2010
- Competitive fellowship awarded by the Duke University Graduate School. Ph.D. students in the sciences who were also Duke University undergraduates are eligible or a maximum of two fellowships annually.

Teaching Experience

Professor, Texas Tech University 2017 - present

Biology of Plants (BIOL 1401) *Non-majors course*
Taught 8 times between Spring 2018 and Spring 2025 Enrollment: 120-144

Phylogenetics (BIOL 6304) *Graduate course*
Taught 4 times between Fall 2018 and Fall 2024 Enrollment: 10-14

Evolution of Plants (BOT 3404) *Majors-level lab course*
Taught 3 times between Spring 2020 and Spring 2024 Enrollment: 16-20

Bioinformatics User Group Series (BIOL 4101-003) *Seminar Course*
co-instructor with Dr. Amanda Brown
Spring 2019, Fall 2019, Spring 2020 Enrollment: 10-15

Use and Abuse of Evolutionary Theory (HONS 2406) Enrollment: 12
Honors first-year experience, co-instructor with Dr. Brian Giemza
Fall 2020

Field Botany & Natural History Collections (BIOL 4302)
Fall 2021, Fall 2023, Fall 2025 Enrollment: 17

Collaborating Fellow, BCEENET 2020-present
Contributing teaching materials to Course-based Undergraduate Research Experiences (CUREs) that utilize digital natural history collections, for the Biological Collections in Ecology and Evolution Network (BCEENET)

Mentoring and Advising

Graduate Major Advisor: Current
- Madison Bullock Ph.D. Candidate 2021-
- Oluwaseun Shodipo Ph.D. Student 2023-
- Mara Hosaka M.S. Student 2023 -

Graduate Major Advisor: Past
- Yanni Chen, Texas Tech University Ph.D. 2018-2023
  Dissertation: The macroevolution, phylogenomics and phylogenetic ecology of seed germination traits
- Aman Pruthi, Texas Tech University M.S. 2019-2022
  Thesis: Development of genomic tools for the moss *Bryum argenteum* and its comparative analysis with other published moss genomes.
- Sherese Price, Texas Tech University Non-thesis M.S. 2021-2024
- Lindsay Williams, Texas Tech University Non-thesis M.S. 2021-2024

Post-Doctoral Research Advisor: Past
- Nan Hu 2023-2025

Undergraduate Researchers
- Eliot Stevens, TrUE Scholar 2025-present
- Evelyn Lavielle, Independent Research 2025-present
- Charles Huff, Honors College (URS) 2025-present
- Rylee Creek, Independent Research 2024-present
- Bowen Forman, Independent Research 2024-present

– Sofia Rodriguez, Independent Research 2024-present
– Jazlyn Salazar-Lucero, TrUE Scholar 2023-2025
– Anij Mackey, Independent Research 2022-2024
– Sofi Reyes, Independent Research 2022-2023
– William Onyedionu, BAT-LSAMP Scholar 2022-2023
– Courtney Miller, Honors College (URS) 2022-2023
– Mara Hosaka, Independent Research 2022-2023
– James Ogbeide, Independent Research 2021-2023
– Sherese Price, Independent Research 2020-2021
– Anukriti Dey, Independent Research 2021
– Cassidy Coker, Honors College (URS) *Herbarium* 2019-2021
– Madeline Slimp, Honors College (URS) *Herbarium* 2018- 2021
– Kristina Robinson *Herbarium* 2018-2019
– Lauren Winfrey, Independent Research *Herbarium* 2018-2019
– Zachary Bailey, Honors College (URS) *Herbarium* 2017-2019

Past Students Mentored

– Elliot Gardner, Northwestern University Ph.D. 2017
– Marissa Ashner, Illinois Institute of Technology REU 2016
– Lindsey Bechen, Amherst College REU 2015
– Kristen Laricchia, Northwestern University M.S. 2014

Service

Department of Biological Sciences

– *Director, E.L. Reed Herbarium* 2017-present
– *Graduate Faculty Advisor* 2024-present
– *Chair, Graduate Student Affairs Committee* 2023-present
– *Member, Access Engagement and Faculty Success Committee* 2020-2024
– *Member; Student Assessment Committee* 2022-2024
– *Chair; Seminar Committee* 2019-2022
– *Member; Space Committee* 2018-2020
– *Search Committee Member; Quantitative Biologist* 2018
– *Elected Member; Initiatives Committee* 2020-2022
– *Search Committee Member, Cell Biologist* 2022
– *Search Committee Member, Cell Biologist* 2023

Texas Tech University, College of Arts and Sciences (CAS)

– *STEM Teaching, Engagement And Pedagogy mentor* 2022-present
– *Associate Director, STEM-CORE* 2023-present
– *Steering Committee Member, CAS Undergraduate Research Academy* 2024-present
– *TTU Undergraduate Research Task Force Member* 2024-2025

Professional Service

– *Biological Collections in Ecology and Evolution Network*,
Facilitator for Course-based Undergraduate Research Experiences 2021-present
– *Applications in Plant Sciences*,
Guest Special Issue Editor: Angiosperms353 2020
– *Technology Committee Member*,
Botanical Society of America 2019-2022
– *Steering Committee Member*,
Texas and Oklahoma Regional Consortium of Herbaria 2022-present
– *Steering Committee Co-Chair*,
Texas and Oklahoma Regional Consortium of Herbaria 2023-2025

Professional Memberships

– Botanical Society of America
– American Bryological and Lichenological Society
– Society of Herbarium Curators

Other Service

Freely available bioinformatics pipelines and programming tutorials
http://github.com/mossmatters