MATTHEW W. DAVIS
mtdavis@ucdavis.edu

Education

Ph.D. in Plant Biology **Sep. 2021-Present**
University of California, Davis
Advisors: J. Grey Monroe, Patrick J. Brown

Bachelor of Science, Biology with a specialization in Biotechnology **Dec. 2020**
Minor: Entomology
University of Florida
Advisor: Patricio Munoz

Publications

Peer-Reviewed

Monroe, J. G., Lee, C., Quiroz, D., Lensink, M., Oya, S., **Davis, M.**, ... & Runcie, D. (2025). Convergent evolution of epigenome recruited DNA repair across the tree of life. *eLife*. *https://doi.org/10.7554/eLife.105016.1*

Adaskaveg, J. A., Lee, C., Wei, Y., Wang, F., Grilo, F. S., Mesquida-Pesci, S. D., **Davis, M.**, ... & Blanco-Ulate, B. (2025). In a nutshell: pistachio genome and kernel development. *New Phytologist*, *246*(3), 1032-1048. https://doi.org/10.1111/nph.70060

Davis, J. T., Li, Q., Grassa, C. J., **Davis, M. W.**, Strauss, S. Y., Gremer, J. R., ... & Maloof, J. N. (2025). A chromosome-level genome assembly of the varied leaved jewelflower, *Streptanthus diversifolius*, reveals a recent whole genome duplication. *G3: Genes, Genomes, Genetics*, *15*(4), jkaf022. https://doi.org/10.1093/g3journal/jkaf022

Groh, J. S., Vik, D. C., **Davis, M.**, Monroe, J. G., Stevens, K. A., Brown, P. J., ... & Coop, G. (2025). Ancient structural variants control sex-specific flowering time morphs in walnuts and hickories. Science, 387(6729), eado5578. https://doi.org/10.1126/science.ado5578

Sheikhi, A., Arab, M. M., **Davis, M.**, Palmer, W. J., Michelmore, R., & Brown, P. J. (2023). Contrasting allelic effects for pistachio salinity tolerance in juvenile and mature trees. Scientific Reports, 13(1), 14391. https://doi.org/10.1038/s41598-023-41195-1

Cappai, F., Garcia, A., Cullen, R., **Davis, M.**, & Munoz, P. R. (2020). Advancements in low-chill blueberry Vaccinium corymbosum L. tissue culture practices. Plants, 9(11), 1624. https://doi.org/10.3390/plants9111624

Pre-Print

Davis, M. W., Leslie, C. A., Lee, C., Long, E., Meinhold, L., Lorenc, M., ... & Monroe, J. G. (2025). Extreme somatic mutation variation through time and space in walnut clones. *bioRxiv*, 2025-07. https://doi.org/10.1101/2025.07.24.664184

Monroe, G., Lensink, M., Ahn, V., **Davis, M. W.**, Oya, S., & Zhao, K. (2025). Delineating Mutation Bias and Selection during Plant Development. bioRxiv, 2025-11. https://doi.org/10.1101/2025.11.01.686053

Miscellaneous

Pierce, A. & **Davis M.** 'Plant Diversity topic of this year's Plant Sciences Symposium' UC Davis Department of Plant Sciences, *April 10th, 2024*, https://www.plantsciences.ucdavis.edu/news/2024-plant-sciences-symposium

Davis, M. 'Going Nuts: Nut Crops as Climate Resilient Protein Alternatives for the Future' FFAR Insights, *April 24th, 2023*, https://foundationfar.org/impact/insights/going-nuts-nut-crops-as-climate-resilient-protein-alternatives-for-the-future/

Fellowships and Grants

Jastro-Shields Research Award ($3000) **2024**
Jastro-Shields Research Award ($3000) **2023**
Rockey Foundation for Food and Agriculture Research Fellow ($155,000) **2022-2025**

Presentations

Oral

Genome degradation in tissue culture **Oct. 2025**
Davis M.
U.C. Berkeley Botany Seminar, Berkeley, California

Decades of tissue culture results in vast somatic mutation accumulation **Apr. 2025**
Davis M., Leslie C., Lee C., Lewis F., Long E., Meinhold, L., Lorenc, M., Brown P., & Monroe G.
Mutations in Time and Space, Cambridge, Massachusetts

Decades of tissue culture results in vast somatic mutation accumulation **Apr. 2025**
Davis M., Leslie C., Lee C., Lewis F., Long E., Meinhold, L., Lorenc, M., Brown P., & Monroe G.
14th Annual UC Davis Plant Science Symposium

Somatic recombination and chromosome instability in walnut embryo cultures **Jan. 2025**
Davis M., Leslie C., Lee C., Long E., Meinhold, L., Lorenc, M., Brown P., & Monroe G.
Plant and Animal Genomes 32, San Diego, California

30 years of mutation in walnut somatic embryos **Dec. 2024**
Davis M., Leslie C., Lee C., Long E., Meinhold, L., Lorenc, M., Brown P., & Monroe G.
U.C. Davis Plant Breeding Annual Retreat, Bodega Bay, California

Recapitulating the evolutionary history of a 30-year-old somatic embryo culture **Oct. 2024**
Davis M., Leslie C., Lee C., Long E., Meinhold, L., Lorenc, M., Brown P., & Monroe G.
Berkeley Bay Area Population Genetics Conference, Berkeley, California

The mutational consequences of somatic embryogenesis **Sep. 2024**
Davis M., Leslie C., Lee C., Long E., Meinhold, L., Lorenc, M., Brown P., & Monroe G.
U.C. Davis Plant Biology Colloquium, Davis, California

The mutational consequences of the fountain of youth **Apr. 2024**
Davis M., Leslie C., Lee C., Long E., Meinhold, L., Lorenc, M., Brown P., & Monroe G.
U.C. Davis Plant Biology Seminar, Davis, California

Decades of mutation accumulation in walnut tissue culture **Jan. 2024**
Davis M., Leslie C., Lee C., Long E., Brown P., & Monroe G.
Plant and Animal Genomes 31, San Diego, California

30 years of mutation in walnut somatic embryos **Dec. 2023**
Davis M., Leslie C., Lee C., Long E., Brown P., & Monroe G.
U.C. Davis Plant Breeding Annual Retreat, Bodega Bay, California

End of youth? Walnut somatic embryo lineage **Sep. 2023**
Davis M., Leslie C., Lee C., Long E., Brown P., & Monroe G.
Annual UC Davis Plant Biology Graduate Group Colloquium, Davis, California

Crack the code: Genome assembly and mutation in walnut **Mar. 2023**
Davis M., Leslie C., Lee C., Brown P., & Monroe G.
2023 U.C. Davis Plant Breeding Retreat, Davis, California

Exploring mutation in embryogenic walnut **Jan. 2023**
Davis M., Leslie C., Lee C., Brown P., & Monroe G.
2023 UC Davis Plant Biology Graduate Group Recruitment, Davis, California

How time changes: long-term effect of tissue culture on embryogenic walnut populations **Sep. 2022**
Davis M., Leslie C., Brown P., & Monroe G.
UC Berkeley Plant Genome Engineering Symposium, Berkeley, California

Don't be salty: investigating salt tolerance in pistachio **Feb. 2022**
Davis M., Sheikhi A., & Brown P.
8th Annual Texas A&M Plant Breeding Symposium Hybrid Horizons, College Station, Texas

Poster

30 years of mutation accumulation in walnut tissue culture **Jan. 2024**
Davis M., Leslie C., Lee C., Long E., Brown P., & Monroe G.
Plant and Animal Genomes 31, San Diego, California

Identifying 30 years of mutation in walnut somatic embryos **Oct. 2023**
Davis M., Leslie C., Lee C., Brown P., & Monroe G.
UC Berkeley Plant Genome Engineering Symposium, Berkeley, California

Polymorphisms over time: Genetic variation in clonally propagated walnut **Jul. 2023**
Davis M., Leslie C., Lee C., Brown P., & Monroe G.
XXIII International Congress of Genetics

Genetic variation in walnut embryogenic cultures **May 2023**
Davis M., Leslie C., Lee C., Brown P., & Monroe G.
12th Annual UC Davis Plant Science Symposium

Detecting de novo mutation in walnut **Jan. 2023**
Davis M., Leslie C., Lee C., Brown P., & Monroe G.
Plant and Animal Genomes 30, San Diego, California

Investigating the genetic control of salt tolerance in pistachio rootstock **Feb. 2022**
Davis M., Sheikhi A., & Brown P.
NCSU 6th Biennial Plant Breeding Symposium, Raleigh, North Carolina

Investigating the genetic control of salt tolerance in pistachio rootstock **Jan. 2022**
Davis M., Sheikhi A., & Brown P.
ASTA's 61st Vegetable and Flower Seed Conference, San Diego, California

Optimization of tissue culture protocols for genetic transformation of blueberry **Jan. 2020**
Garcia A., Davis M., Cappai F., Grossman A., & Muñoz P.
4th Annual Plant Science Symposium Big Data in Plant Science, Gainesville, Florida

Genomics and new breeding technologies at the service of the blueberry industry **Jan. 2020**
Cappai F., Amadeu R., Benevenuto J., Ferrao L. F. V., Garcia A., Cullen R., Grossman A., Davis M., & Muñoz P.
4th Annual Plant Science Symposium Big Data in Plant Science, Gainesville, Florida

Teaching Experience

Lecturing

Guest Lecturer, PLS 206-Multivariate Statistics **Oct. 2025**
Guest Lecturer, PLS 206-Multivariate Statistics **Oct. 2024**
Guest Lecturer, PLS 152-Plant Genetics **Oct. 2024**

Instructing

Teaching Assistant, BIS 180L-Genome Biology Lab	**Mar. 2024-Jun. 2024**
Instructor and Organizer, R Club for Undergraduates	**Jul. 2022-Aug. 2022**
Paraprofessional, The Einstein School	**Feb. 2021-Jun. 2021**
Teaching Assistant, ENY 4573-Beekeeping	**May 2020-Aug. 2020**

Research Experience

Ph.D. Candidate, University of California, Davis	**Oct. 2023-Present**
Ph.D. Student, University of California, Davis	**Sep. 2021-Oct. 2023**
Research Assistant, Blueberry Breeding Program, University of Florida	**Jan. 2019-Jul. 2021**
Laboratory Assistant, Insect Physiology Lab, University of Florida	**Dec. 2017-Jun. 2018**
Laboratory Assistant, Urban Entomology Department, University of Florida	**Oct. 2017-Dec. 2017**

Leadership Experience

Faculty Search Committee, UC Davis, Department of Plant Sciences	**Nov. 2024-Mar. 2025**
President, Plant Biology Graduate Student Association, UC Davis	**Jun. 2024-Jun. 2025**
President, Plant Sciences Symposium, UC Davis	**Sep. 2023-May 2024**
Secretary/Treasurer, Plant Biology Graduate Student Association, UC Davis	**Jun. 2023-Jun. 2024**
Plant Biology Graduate Group Student Faculty Engagement Committee, UC Davis	**Jun. 2023-Jun. 2024**
Organizer, Plant Science Symposium, UC Davis	**Sep. 2022-May 2023**
Social Chair, Plant Biology Graduate Student Association, UC Davis	**Jun. 2022-Aug. 2023**
Organizer, Plant Science Symposium, UC Davis	**Sep. 2021-Apr. 2022**
Social Outreach Lead, NAPB Graduate Student Working Group	**Aug. 2021-Aug. 2022**
Director of External Affairs, Center for Undergraduate Research, University of Florida	**May 2020-May 2021**
Ambassador, Center for Undergraduate Research, University of Florida	**Sep. 2019-May2021**
Club Men's Lacrosse Team, University of Florida	**Aug. 2016-Mar. 2019**

Mentorship

Peer Mentor, Isabelle DeMarco	**Sep. 2025-Present**
Undergraduate Mentor, Percy Singson	**May 2025-Present**
Peer Mentor, Sam De Riseis	**Jul. 2023-Aug. 2024**
Undergraduate Mentor, Casey Welch	**Jun. 2023-Sep. 2023**
Undergraduate Mentor, Li Meinhold	**Apr. 2023-Jun. 2025**
Undergraduate Mentor, Megan Lorenc	**Feb. 2023-Jun. 2025**
Peer Mentor, Maria Rottersman	**Jul. 2022-Aug. 2023**
Undergraduate Mentor, Sam Qiao	**May 2022-Nov. 2023**

Internships

Entomology Intern, Walt Disney World	**Jun. 2018-Jan. 2019**

Workshops, Trainings, & Certifications

Comp Bio Asia, University of Montana & National University of Singapore	**Jul. 2023**
Certified Biotechnician, Biotility, University of Florida	**May 2016**

Awards and Recognition

Fulbright U.S. Student Program Semi-Finalist	**2025-2026**
Best Presentation Award, BAPG	**Oct. 2024**
Fulbright U.S. Student Program Semi-Finalist	**2024-2025**
National Science Foundation Graduate Research Fellowship Honorable Mention	**2023-2024**
ASTA Leadership Summit Student Connections Travel Award	**Jun. 2022**
Texas A&M Plant Breeding Symposium Traveling Scholar Award	**Feb. 2022**
American Seed Trade Association Travel Award	**Jan. 2022**
National Association of Plant Breeders Borlaug Scholar	**2021-2022**
National Science Foundation Graduate Research Fellowship Honorable Mention	**2021-2022**

Agriculture Future of America Leaders Conference Delegate	**Oct. 2020**
Biotility Student Feature	**Aug. 2020**
Top three tour guide in Walt Disney World's Agricultural Sciences Division	**Fall 2019**
College of Agricultural and Life Sciences Dean's List	**2017**
Florida Bright Futures Scholarship Program Recipient	**2016-2020**

Peer Review Activity

Nature Genetics	1
The Plant Cell	1
Genome Biology	1
New Phytologist	1
Genome Research	1