J Grey Monroe

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Assistant Professor
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University of California Davis
Department of Plant Sciences
Davis, California

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EDUCATION

PhD, Ecology — 2014 - 2019
Colorado State University, Fort Collins
Advisor: John K. McKay
Dissertation: Causes and consequences of plant climate adaptation

BSc Biology, *cum laude* — 2008 - 2012
Appalachian State University
Advisor: Matt Estep
Concentration: Evolution of centromeres in the *Andropogoneae*

EMPLOYMENT

Assistant Professor of Climate Adaptation and Plant Genomics — July 2020
University of California, Davis
Department of Plant Sciences, Davis, USA

Post Doctoral Fellow, Advisor - Detlef Weigel — 2019-2020
Max Planck Institute for Developmental Biology
Department of Molecular Biology - Adaptation to changes, Tubingen, Germany

Data Consultant — 2017 - 2019
New West Genetics, USA
Max Planck Society, Germany
United States Geological Survey, USA

CO-OP in Plant Breeding and Genetics — 2016 - 2017
Cargill
Specialty Seeds and Oil Innovation Center, Fort Collins, CO

Research Assistant — 2013 - 2014
Duke University, Durham, NC
Herman Staats Lab, Pathology Dept

PUBLICATIONS

Monroe JG, McKay JK, Weigel D, Flood P. (2021) The population genomics of adaptive loss of function. *Heredity*.

Monroe JG, Cai H, Des Marais DL. 2020. Trait plasticity and covariance along a continuous soil moisture gradient. *bioRxiv + PCI Evol Biol.* doi:10.1101/2020.02.17.952853. ver. 5 peer-reviewed and recommended by PCI Evol Biol.

Monroe JG, Arciniegas JP, Moreno JL, Sanchez F, Sierra S, Valdes S, Torkamaneh D, Chavarriaga P. 2020. The lowest hanging fruit: Beneficial gene knockouts in past, present, and future crop evolution. *Current Plant Biology.*

Baggs EL, **Monroe JG**, Thanki AS, OGrady R, Schudoma C, Haerty W, Krasileva KV. 2020. Convergent loss of an EDS1/PAD4 signaling pathway in several plant lineages reveals co-evolved components of plant immunity and drought response. *The Plant Cell*

Togninalli M, Serren U, Freudenthal JA, **Monroe JG**, Meng D, Nordborg M, Weigel D, Borgwardt K, Korte A, Grimm DG. 2019. AraPheno and the AraGWAS Catalog 2020: A major database update including RNA-Seq and knockout mutation data for Arabidopsis thaliana. *Nucleic Acids Research.*

Mason CM, Lascaleia M, De La Pascua1 D, **Monroe JG**, Goolsby EW. 2019. Learning from dynamic traits: Seasonal shifts and ecophysiological tradeoffs across scales from macroevolutionary to intra-individual. *International Journal of Plant Sciences.*

Lawrence C, Beem-Miller J, Hoyt A, **Monroe JG**, 29 others. 2019. An open source database for the synthesis of soil radiocarbon data: ISRaD version 1.0. *Earth System Science Data Discussions.*

Monroe JG, Gill B, Turner KT, McKay JK. 2019. Drought regimens predict life history strategies in *Heliophila*. *New Phytologist.* doi.org/10.1111/nph.15919

Monroe JG, Powell T, Price N, Howard A, Evans K, Mullen JL, Lovell JT, McKay JK. 2018. Drought adaptation in *Arabidopsis thaliana* by extensive genetic loss-of-function. *eLife.* doi: 10.7554/eLife.41038

Endriss SB, Vahsen ML, Bitume EV, **Monroe JG**, Turner KG, Norton AP, Hufbauer RA. 2018. The importance of growing up: juvenile environment influences dispersal of individuals and their neighbors. *Ecology Letters.* 22:45-55

Dittberner H, Korte A, Mettler-Altman T, Weber A, **Monroe JG**, de Meaux J. 2018. Natural variation in stomata size contributes to the local adaptation of water-use efficiency in *Arabidopsis thaliana*. *Molecular Ecology.* DOI 10.1111/mec.14838.

Price N, Moyers BT, Lasky JR, **Monroe JG**, Mullen JL, Lopez L, Oakley CG, Lin J, Agren J, Schrider DR, Kern AD, McKay JK. 2018. Combining population genomics and fitness QTL to identify the genetics of local adaptation in *Arabidopsis thaliana*. *Proceedings of the National Academy of Sciences.* 115:5028-5033

Monroe JG, Markman DW, Beck WS, Felton AJ, Vahsen ML, Pressler Y. 2018. Eco-evolutionary Dynamics of Carbon Cycling in the Anthropocene. *Trends in Ecology and Evolution.* 33:213-225.

Monroe JG, Allen ZA, Tanger P, Mullen JL, Lovell JT, Moyers BT, Whitley D, McKay JK. 2017. *TSPmap*, a tool making use of traveling salesperson problem

solvers in the efficient and accurate construction of high-density genetic linkage maps. *BioData Mining*. DOI 10.1186/s13040-017-0158-0.

Rockenbach K, Havrid JC, **Monroe JG**, Triant DA, Taylor DR, Sloan DB. 2016. Positive Selection in Rapidly Evolving Plastid-Nuclear Enzyme Complexes. *Genetics* 204:1507-1522.

Monroe JG, McGovern C, Lasky J, Beck J, Grogan K, McKay JK. 2016. Adaptation to warmer climates by parallel functional evolution of *CBF* genes in *Arabidopsis thaliana*. *Molecular Ecology* 15:3632-3644.

Mojica JP, Mullen J, Lovell JT, **Monroe JG**, Paul JR, Oakley CG, McKay JK. 2016. Genetics of water use physiology in locally adapted *Arabidopsis thaliana*. *Plant Science* 251:12-22.

Zhu M, **Monroe JG**, Suhail Y, Villiers F, Mullen J, Pater D, Hauser F, Jeon BW, Bader JS, Kwak JM, Schroeder JI, McKay JK, Assman SM. 2016. Molecular and Systems Approaches towards Drought-tolerant Canola Crops. *New Phytologist* 210:1169-1189.

FELLOWSHIPS

Vice President of Research Fellowship, CSU ($4,000)	2017 - 2018
USDA-NIFA National Needs Fellowship ($138,000)	2015 - 2018
Program in Molecular Plant Biology Fellowship, CSU ($39,000)	2014 - 2015

GRANTS

PI, California Pistachio Research Board ($87,000) 2021
Title: Pistachio Pan-genome for Accelerated Breeding

Co-PI, Aligning the Food System Symposium, UCD World Food Center ($25,000) 2020
Title: Catalyzing Adaptive and Resilient Food Systems

PI, Research Mentoring to Advance Inclusivity in STEM, CSU ($1,160) 2018

Co-PI, Doctoral Dissertation Improvement Grant, NSF ($19,760) 2017
Title: The evolution of plant drought tolerance and gene function across historic drought frequency gradients

PI, Evo-Devo-Eco Network Grant, Harvard University ($3,000) 2016
Title: Variation in developmental and physiological responses to a gradient of water availability in *Brachypodium*

AWARDS AND HONORS

Rising Star in Organismal Botany, SICB	2020
Graduate Degree Program in Ecology Travel Award, CSU	2018
Graduate Degree Program in Ecology Travel Award, CSU	2017
Ralph Baker Graduate Student Award for Research Excellence, CSU	2017
NSF Graduate Research Fellowship Honorable Mention	2016
Ralph Baker Graduate Student Award for Research Excellence, CSU	2016

PMPB Research and Scholarly Excellence Award, CSU 2015

NSF Graduate Research Fellowship Honorable Mention 2015

GDPE Research and Scholarly Excellence Award, CSU 2014

Frontiers and Techniques in Plant Science Workshop Scholarship,
Cold Spring Harbor Laboratory 2014

WORKSHOPS, WORKING GROUPS AND TRAINING

Research Intern, Drought Physiology group 2018
International Rice Research Institute, Los Banos, Philippines

Genotype × Environment Interactions Workshop, participant 2015
Wageningen University, Wageningen, Netherlands

microMORPH Phenotypic Plasticity Workshop, invited participant 2015
Harvard University Arnold Arboretum, Boston, MA

Plasticity and Novel Environments Working Group, invited participant 2015
National Evolutionary Synthesis Center, Durham, NC

Frontiers and Techniques in Plant Science, invited participant 2014
Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

PRESENTATIONS

UC Davis IGG Colloquium 2020
Davis, CA

UC Davis PBGG Colloquium 2020
Davis, CA

Plant Resilience Institute, Michigan State University 2020
East Lansing, MI

University of Bern 2020
Bern, Switzerland

University of Tubingen 2020
Tubingen, Germany

Carnegie Institute, Stanford University 2020
Stanford, California

Society for Integrative and Comparative Biology 2020
Austin, Texas

Climate Summit of Generations 2019
Hamburg, Germany

Plant Genome Evolution 2019
Sitges, Spain

International Center for Tropical Agriculture 2019

Palmira, Colombia

International Plant and Animal Genome Conference 2019
San Diego, California

Max Planck Institute of Plant Breeding 2018
Cologne, Germany

Department of Biology, University of Cologne 2018
Cologne, Germany

Max Planck Institute of Developmental Biology 2018
Tubingen, Germany

Lasky Lab, Department of Biology, Pennsylvania State Univeristy 2018
State College, PA

Emerging Technologies to Prevent Future Famines Symposium 2018
Fort Collins, CO

Breeding and Strategic Innovation Seminar, International Rice Research Institute 2018
Los Banos, Philippines

Department of Biology, Australian National University 2018
Canberra, Australia

Population Biology Seminar, Duke University 2017
Durham, NC

Department of Biology. Appalachian State University 2017
Boone, NC

Dupont-Pioneer Drought Tolerance Symyposium 2017
Fort Collins, CO

Evolution 2017
Portland, OR

Front Range Student Ecology Symposium 2017
Fort Collins, CO

Three Minute Thesis Competition 2017
Fort Collins, CO.

Graduate Student Showcase 2016
Fort Collins, CO

Genomics of Adaptation to Human Contexts 2016
Fort Collins, CO

Evolution 2016
Austin, TX

Guild of Rocky Mountain Ecologists and Evolutionary Biologists 2015
Boulder, CO

Evolution 2015

Sao Paolo, Brazil

MicroMOPRH Phenotypic Plasticity Workshop. Harvard Arnold Arboretum 2015
Boston, MA

NESCent Plasticity and Novel Environments Working Group 2015
Durham, NC

TEACHING

Guest lecturer
BIT 150 (2), IAD 200, PBI 291, PLS 152, PLS 220 (2) 2020

Drought Tolerance Breeding Workshop, CSU 2018

Drought Tolerance Breeding Workshop, CSU 2018

Guest lecturer
Ecosystem Ecology, CSU 2017

Teaching Assistant
Molecular and General Genetics, CSU 2017

Assistant Instructor
Software Carpentry Workshop, CSU 2016

Guest lecturer
ECOL 592: Principles of Data Visualization Using R and ggplot2, CSU 2016

MENTORSHIP

Lea Berg - bioinformatic approaches to studying stress tolerance in crops 2020-2021
UC Davis

Sebastian Vorbrugg - genome graph construction and GWAS 2019
Max Planck Institute for Developmental Biology

Karter Johansen - theoretical population genetics of poly-allelic adaptation 2017
Colorado State University

Tyler Powell - reverse genetics of adaptive loss-of-function alleles 2017
Colorado State University

Julio Flores - awarded scholarship for research on plant ecotoxicology 2014 - 2015
Poudre High School

ACADEMIC SERVICE

Mentor
American Society of Plant Biologists Plantae Mentoring Center 2021

Co-director
UC Davis Climate Adaptation Research Center 2021

Co-organizer
Catalyzing Adaptive and Resilient Food Systems 2020
UC Davis Climate Adaptation Research Center

Lecturer: Implicit Bias

CSU Research Mentoring to Advance Inclusiveness in Science 2018

Assistant organizer

BSURE Undergraduate Summer Mentorship Program 2017

Co-organizer

Drought Tolerance in Agriculture and Natural Ecosystems Symposium 2017
DuPont-Pioneer and Colorado State University

Assistant Organizer

Front Range Student Ecology Symposium 2015, 2017
Graduate Degree Program in Ecology and Colorado State University

Peer Review

Evolution, New Phytologist, Theoretical and Applied Genetics, Evolutionary Applications, Scientific Reports, PLoS One, Molecular Ecology, Nucleic Acids Research, Plant Cell and Enviroment, The Plant Journal, Genes, Heredity, Proceedings of the National Academy of Sciences of the United States of America

SOFTWARE DEVELOPMENT

J Grey Monroe. ISRaD: R package for interacting with International Soil Radiocarbon Database

J Grey Monroe. genemodel: Gene Model Plotting in R. R package version 1.1.0. https://CRAN.R-project.org/package=genemodel

J Grey Monroe., Zachary Allen, Paul Tanger, Brook Moyers and Jack Mullen (2016). TSPmap: A Method Making Use of Traveling Salesperson Problem Solvers in the Construction of Genetic Linkage Maps. R package version 0.0.0.9000. https://github.com/mckaylab/tspmap