J Grey Monroe

June 9, 2020

Assistant Professor gmonroe@ucdavis.edu Phone: 919.810.8800 University of California Davis Department of Plant Sciences Davis, California

2008 - 2012

monroelab.org

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

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

Pre-Prints

Monroe JG, Cai H, Des Marais DL. 2020. Trait plasticity and covariance along a continuous soil moisture gradient. bioRxiv. doi:10.1101/2020.02.17.952853

In Press

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

Published

- 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

- 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

2017

Co-PI, Doctoral Dissertation Improvement Grant, NSF (\$19,760)

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 \times 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	
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 Austin, Texas	2020
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 San Diego, California	2019
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 University State College, PA	2018
Emerging Technologies to Prevent Future Famines Symposium Fort Collins, CO	2018
Breeding and Strategic Innovation Seminar, International Rice Research Inst	itute 2018

	Los Banos, Philippines	
	Department of Biology, Australian National University Canberra, Australia	2018
	Population Biology Seminar, Duke University Durham, NC	2017
	Department of Biology. Appalachian State University Boone, NC	2017
	Dupont-Pioneer Drought Tolerance Symyposium Fort Collins, CO	2017
	Evolution Portland, OR	2017
	Front Range Student Ecology Symposium Fort Collins, CO	2017
	Three Minute Thesis Competition Fort Collins, CO.	2017
	Graduate Student Showcase Fort Collins, CO	2016
	Genomics of Adaptation to Human Contexts Fort Collins, CO	2016
	Evolution Austin, TX	2016
	Guild of Rocky Mountain Ecologists and Evolutionary Biologists Boulder, CO	2015
	Evolution Sao Paolo, Brazil	2015
	MicroMOPRH Phenotypic Plasticity Workshop. Harvard Arnold Arboretum Boston, MA	2015
	NESCent Plasticity and Novel Environments Working Group Durham, NC	2015
7	TEACHING	
	Guest lecturer 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				
Sebastian Vorbrugg - genome graph construction and GWAS Max Planck Institute for Developmental Biology	2019			
Thanvi Srikant - epigenetic impacts on genetic evolution Max Planck Institute for Developmental Biology	2019			
Karter Johansen - theoretical population genetics of poly-allelic adaptation Colorado State University	2017			
Tyler Powell - reverse genetics of adaptive loss-of-function alleles Colorado State University	2017			
Julio Flores - awarded scholarship for research on plant ecotoxicology 2014 Poudre High School	- 2015			
ACADEMIC SERVICE				
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 DuPont-Pioneer and Colorado State University	2017			
Assistant Organizer				
Front Range Student Ecology Symposium Graduate Degree Program in Ecology and Colorado State University	5, 2017			
Peer Review				
Evolution, New Phytologist, Theoretical and Applied Genetics, Evolutionary	Appli-			

Evolution, New Phytologist, Theoretical and Applied Genetics, Evolutionary Applications, Scientific Reports, PLoS One, Molecular Ecology, Nucleic Acids Research, Plant Cell and Environment, The Plant Journal, Genes

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