ROSE A. KEITH

Biology Department ■ St Mary's College of Maryland ■ St Mary's City, MD
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EDUCATION

2011-2017 **Duke University,** Durham, NC
Ph.D., Genetics and Genomics
Advisor: Thomas Mitchell-Olds
Genetic constraints on the evolution of chemical defenses in multiple tissues of *Boechera stricta*.

2007-2011 **Mount Holyoke College**, South Hadley, MA
Bachelor of Arts in Biological Sciences, *summa cum laude*

TEACHING EXPERIENCE

2018-present **Visiting Assistant Professor**
St Mary's College of Maryland, Biology Department
Courses:
- Genetics (co-taught)
- Evolutionary Genetics (developed)
- People, Plants, and Food (developed)
- First Year Seminar: Why Evolution is True (developed)
- Mentored four student research projects

2017-2018 **Visiting Assistant Professor**
Knox College, Biology Department
Courses:
- Ecology, Evolution and Biodiversity (co-taught)
- Introduction to Research
- Plant Physiology and Development (developed)
- Genetics

2016 **Instructor of Record**
Duke University, Biology Department
Course:
- Genetics of Species Interactions (developed)

2014-2017 **Teaching Assistant**
Duke University, Biology Department
Course:
- Evolutionary Genetics

TEACHING DEVELOPMENT

2019 **Inclusive and Innovative Instruction Conference**
St Mary's College of Maryland

2018 **Teaching Excellence Workshops**
St Mary's College of Maryland

2018 **Faculty Development Workshop**
Knox College

2015-2017 **Certificate in College Teaching**
The Graduate School, Duke University

2015-2016 **Preparing Future Faculty**
The Graduate School, Duke University

2014 **An Introduction to Evidence-Based Undergraduate STEM Teaching**
The Center for the Integration of Research and Learning

RESEARCH

2018-present **St Mary's College of Maryland**
Advised 4 undergraduate students completing year-long research projects
- Genetic variation for tolerance to herbivory
- Temporal variation in genetic diversity in duckweed

2011-2017 **Duke University**
Advisor: T. Mitchell-Olds
- Evolution of within-plant variation in defensive compounds in *Boechra stricta*
- Measuring evolutionary constraints in a common garden experiment
- GWAS mapping of glucosinolate profile in fruits

2010-2011 **Mount Holyoke College**
Advisor: A. Frary
- Honors thesis: "Occurrence of hybridization in *Quercus* section *Lobatae*: morphological and genetic analysis of local trees"

2009 **Kansas State University**
Research Experience for Undergraduates
Supervisor: M. Ungerer
- Microsatellite development and a common garden Qst-Fst experiment in *Helianthus maximilianii*

PUBLICATIONS

Keith, R. and T. Mitchell-Olds. 2019. Antagonistic selection and pleiotropy constrain the evolution of plant chemical defenses. *Evolution* 73(5): 947-960.

Rushworth, C.A., M.D. Windham, **R.A. Keith** and T. Mitchell-Olds. 2018. Ecological differentiation facilitates fine-scale coexistence of sexual and asexual *Boechera*. *American Journal of Botany* 105(12): 2051-2064.

Keith, R. and T. Mitchell-Olds. 2017. Testing the optimal defense hypothesis in nature: variation for glucosinolate profile within plants. *PLOS One* 12(7).

Keith, R. and T. Mitchell-Olds. 2013. Genetic variation for resistance to herbivores and plant pathogens; hypotheses, mechanisms, and evolutionary implications. *Plant Pathology* 62:122-132.

Kawakami, T., T.J. Morgan, J.B. Nippert, T.W. Ocheltree, **R. Keith**, P. Dhakal, and M.C. Ungerer. 2011. Natural selection drives clinal life history patterns in the perennial sunflower species, *Helianthus maximiliani*. *Molecular Ecology* 20:2318-2328.

Kawakami, T, P. Dhakal, **R.A. Keith**, N.C. Kane, and M. Ungerer. 2010. Development and characterization of 13 polymorphic EST-SSR loci for the perennial sunflower species, *Helianthus maximiliani*. In: Aurelle et al. 2010. Permanent genetic resources added to the Molecular Ecology Resources Database 1 February 2010-31 March 2010. *Molecular Ecology Resources* 10:751-754.

GRANTS

2018	Faculty Development Grant, St Mary's College of Maryland
2016	Travel award, Society for the Study of Evolution
2014	Grant-in-aid of Research, Biology Department, Duke University
2014	Doctoral Dissertation Improvement Grant, National Science Foundation
2013	Grant-in-aid of Research, Biology Department, Duke University

AWARDS AND FELLOWSHIPS

Duke University

2016	Teaching Assistant Award, Biology Department, Duke University
2016	Bass Instructor of Record Fellowship, the Graduate School, Duke University
2013	Graduate Research Fellowship, honorable mention, National Science Foundation
2012	Graduate Research Fellowship, honorable mention, National Science Foundation
2011-2015	James B. Duke Fellowship, the Graduate School, Duke University

Mount Holyoke College

2011	Mary Lyon Scholar
2011	Phi Beta Kappa
2009, 2011	Abby Howe Turner Award
2008, 2010	Beatrice MacLean Award
2009	Sarah Williston Scholar
2007-2011	Leadership Award

PRESENTATIONS AT SCIENTIFIC MEETINGS

2019 Antagonistic selection and pleiotropy constrain the evolution of plant chemical defenses.
Keith and Mitchell-Olds
Evolution Conference

2017 Genetic constraints in the evolution of chemical defenses in multiple tissues of *Boechera stricta*
Keith and Mitchell-Olds
Evolution Conference

2016 Natural selection on secondary metabolites changes direction between tissues
Keith and Mitchell-Olds
Evolution Conference

2015 The genetic architecture of tissue-specific defenses in a wild mustard
Keith and Mitchell-Olds
Southern Ecology and Evolution Conference

PROFESSIONAL ACTIVITIES

Member Society for the Study of Evolution
American Genetic Association
Phi Beta Kappa
Sigma Xi

Reviewer Nature
Molecular Ecology
New Phytologist
Ecology and Evolution

OUTREACH

2016	**Carnivorous Plants** Duke University
2014-2016	**What Is a Scientist?** Colfax Elementary School, Denver, CO
2015	**Local adaptation and constraints: the evolution of tissue-specific defenses against herbivores** North Carolina School of Science and Mathematics, Durham, NC
2014	**Food Fight!** Lowe's Grove Middle School, Durham, NC
2012	**Early childhood college and career awareness** McGlone Elementary School, Denver, CO
2011-2012	**Mentor** Women and Math Mentoring, Durham, NC