

## Brook T. Moyers

NSF Plant Genome Postdoctoral Fellow

Colorado State University

1177 Campus Delivery, Fort Collins, CO 80523-1177

(707) 235-1237 — brook.moyers@gmail.com

www.brookmoyers.com — @brooklebee

### Education

2015	University of British Columbia, Vancouver, BC	PhD, Botany
2007	Reed College, Portland, OR	BA, Biology

### Professional Appointments

2017–	Associate Features Editor, <i>The Plant Cell</i>
2015–	Postdoctoral Fellow, NSF National Plant Genome Initiative (NPGI) Colorado State University Sponsor: John McKay Project: Using genotype and environment to predict water use physiology
2007–8	Post-baccalaureate Fellow, NSF Frontiers in Integrative Bio. Research Brown University & Max Planck Institute for Plant Breeding PI: Johanna Schmitt Project: Ecological genomics of flowering in <i>Arabidopsis thaliana</i>

### Grants, Fellowships & Awards

2016	Special Event Award, American Genetics Association, \$4,000 USD Trainee-Organized Symposia, Genetics Society of America, \$2,000 USD “Genomics of Adaptation to Human Contexts” Symposium co-PI with Kathryn Turner and Chris Schell
2015–18	Postdoctoral Research Fellowship in Biology, NSF NPGI, Award #1523752, \$216,000 USD
2014	Graduate Student Teaching Award, UBC Biology, \$500 CAD
2013	New Phytologist Prize for best student talk at Canadian Society for Ecology and Evolution meeting, \$500 CAD
2010–13	Graduate Research Fellowship, NSF, \$120,000 USD
2009–13	Four-Year Fellowship, UBC, \$16,000 CAD annually plus tuition (declined funding 2010–13)
2008	Graduate Entrance Scholarship, UBC, \$4,112 CAD
2006	Miller Research Grant, Reed College, \$2,350 USD

## Brook T. Moyers — *Curriculum vitae*

### Publications

#### Peer reviewed

1. **Moyers**, Morrell and McKay. Genetic costs of domestication and improvement. *Accepted at Journal of Heredity*. Available at *bioRxiv*, doi:10.1101/122093.
2. **Moyers\***, Owens\*, Baute and Rieseberg. 2017. The genetic architecture of UV floral patterning in sunflower. *Annals of Botany*, mcx038. doi:10.1093/aob/mcx038.  
\*co-first authors
3. Tanger, Klassen, Mojica, Lovell, **Moyers**, Baraoidan, Naredo, McNally, Poland, Bush, Leung, Leach and McKay. 2017. Field-based high throughput phenotyping rapidly identifies genomic regions controlling yield components in rice. *Nature Scientific Reports 7*, Article number: 42839. doi:10.1038/srep42839.
4. **Moyers** and Rieseberg. 2016. Remarkable life history polymorphism may be evolving under divergent selection in the silverleaf sunflower. *Molecular Ecology 25*: 3817.
5. Todesco\*, Pascual\*, Owens\*, Ostevik\*, **Moyers\***, Hübner\*, Heredia\*, Hahn\*, Caseys\*, Bock\* and Rieseberg. 2016. Hybridization and extinction. *Evolutionary Applications 9*: 892.  
\* authors in reverse-alphabetical order
6. **Moyers** and Rieseberg. 2013. Divergence in gene expression is uncoupled from divergence in coding sequence in a secondarily woody sunflower. *International Journal of Plant Science 174*: 1079.
7. Renaut, Grassa, Yeaman, **Moyers**, Lai, Kane, Bowers, Burke and Rieseberg. 2013. Genomic islands of divergence are not affected by geography of speciation in sunflowers. *Nature Communications 4*: 1827.
8. Vines, Andrew\*, Bock\*, Franklin\*, Gilbert\*, Kane\*, Moore\*, **Moyers\***, Renaut\*, Rennison\*, Veen\* and Yeaman\*. 2013. Mandated data archiving greatly improves access to research data. *The FASEB Journal 27*: 1304.  
\* authors in alphabetical order, UBC Reproducibility Group
9. Ziebell, Barb, Sandhu, **Moyers**, Sykes, Doepcke, Gracom, Carlile, Marek, Davis, Knapp and Burke. 2013. Sunflower as a biofuels crop: An analysis of lignocellulosic chemical properties. *Biomass and Bioenergy 59*: 208.
10. Fournier-Level, Wilczek, Cooper, Roe, Anderson, Eaton, **Moyers**, Petipas, Schaeffer, Pieper, Reymond, Koornneef, Welch, Remington and Schmitt. 2013. Paths to selection on life history loci in different natural environments across the native range of *Arabidopsis thaliana*. *Molecular Ecology 22*: 3552.
11. Ostevik, **Moyers**, Owens and Rieseberg. 2012. Parallel ecological speciation in plants? *International Journal of Ecology 2012*: Article ID 939862.
12. Gilbert, Andrew\*, Bock\*, Franklin\*, Kane\*, Moore\*, **Moyers\***, Renaut\*, Rennison\*, Veen\* and Vines\*. 2012. Recommendations for utilizing and reporting population genetic analyses: the reproducibility of genetic clustering using the program Structure. *Molecular Ecology 21*: 4925. \* authors in alphabetical order, UBC Reproducibility Group

## Brook T. Moyers — *Curriculum vitae*

13. Renaut, Grassa, **Moyers**, Kane and Rieseberg. 2012. The population genomics of sunflowers and genomic determinants of protein evolution revealed by RNA-Seq. *Biology* 1: 575.
14. Wilczek, Roe, Knapp, Cooper, Lopez-Gallego, Martin, Muir, Sim, Walker, Anderson, Egan, **Moyers**, Petipas, Giakountis, Charbit, Coupland, Welch and Schmitt. 2009. Effects of genetic perturbation on seasonal life history plasticity. *Science* 323: 930.

### *Non-peer reviewed*

15. **Moyers**. 2015. The landscape of divergence in silverleaf sunflowers. Monograph at University of British Columbia Library. 166 pp.
16. **Moyers** and Kane. 2010. *Perspective*: The genetics of adaptation to novel environments: selection on germination timing in *Arabidopsis thaliana*. *Molecular Ecology* 19: 1270.
17. **Moyers**. 2007. Clinal variations in ribosomal RNA in the Northwest Larkspur *Delphinium nuttallii*: selection or drift? Monograph at Reed College Library. 78 pp.

### *In review or preparation*

Monroe, Allen, Tanger, Mullen, **Moyers**, Whitley and McKay. TSPmap, a method making use of traveling salesperson problem solvers in the construction of high-density genetic linkage maps. *In review at BioData Mining*.

Hübner, Bercovich, Mandel, Odenheimer, Ziegler, Todesco, Baute, Grassa, Ebert, Ostevik, **Moyers**, Kane, Swanevelder, Kubach, Muños, Langlade, Burke and Rieseberg. The cultivated sunflower pan-genome provides insights on the contribution of introgression to the breeding of modern varieties. *In review at Nature Plants*.

**Moyers**, Kelly and Rieseberg. Variable selection and plasticity counteract theoretically favorable genetic architecture for speciation. *In prep*.

Price, **Moyers**, Lasky, Monroe, Mullen, Grogan, Oakley, Ågren, Schemske, Thomashow, Schrider, Kern and McKay. Targets of balancing selection underlying fitness tradeoff QTL in locally adapted *Arabidopsis thaliana* populations. *In prep*.

## Conferences

### *Organizer*

Co-organizer, Genomics of Adaptation to Human Contexts Symposium, Colorado State University, Fort Collins, CO, USA, 28–30 July 2016.

### *Talks (invited or competitive)*

- Moyers**. 2016. Plasticity and the genetic architecture of local adaptation. Plant Speciation, Austin, TX, USA.
- Moyers** and Rieseberg. 2016. One locus to rule them all: life history QTL in the silverleaf sunflower. *Compositae Workshop*, Plant and Animal Genome XXIV, San Diego, CA, USA.

## Brook T. Moyers — *Curriculum vitae*

**Moyers** and Rieseberg. 2013. The geographic and genomic landscape of divergence in *Helianthus argophyllus*. *Compositae Workshop*, Plant and Animal Genome XXI, San Diego, CA, USA.

### Talks (contributed)

**Moyers**, Morrell, and McKay. 2017. The genetic costs of domestication and improvement. Society for the Study of Evolution, Portland, OR, USA.

**Moyers**. 2016. Using genomics to accelerate agricultural gains. Genomics of Adaptation to Human Contexts Symposium, Fort Collins, CO, USA.

**Moyers** and Rieseberg. 2016. Variable selection and plasticity counteract favorable genetic architecture for speciation. Society for the Study of Evolution, Austin, TX, USA.

**Moyers** and Rieseberg. 2015. The landscape of divergence in silverleaf sunflowers. Canadian Society for Ecology and Evolution, Saskatoon, SK, Canada.

**Moyers** and Rieseberg. 2014. The genomics of adaptation and divergence in a wild sunflower. Society for the Study of Evolution, Raleigh, NC, USA.

**Moyers** and Rieseberg. 2013. Divergence in gene expression is uncoupled from divergence in coding sequence in a secondarily woody sunflower. Canadian Society for Ecology and Evolution, Kelowna, BC, Canada. Awarded New Phytologist Prize.

**Moyers** and Rieseberg. 2012. Divergent selection in the silverleaf sunflower, *Helianthus argophyllus*. Society for the Study of Evolution, Ottawa, Canada.

### Posters

**Moyers**, Morrell, and McKay. 2017. The genetic costs of domestication and improvement. Midwest PopGen, East Lansing, MI, USA.

**Moyers**, Tanger, Klassen, Mojica, Lovell, Baraoidan, Naredo, McNally, Poland, Bush, Leung, Leach and McKay. 2017. Using field-based high-throughput phenotyping for genetic discovery in rice. Phenome 2017, Tucson, AZ, USA.

**Moyers**. 2016. Using genotype and environment to predict water use physiology in rice. National Plant Genome Initiative PI Meeting, Arlington, VA, USA.

**Moyers** and Rieseberg. 2014. Characterization of the spatial pattern of natural selection on silverleaf sunflower life history. EvoWIBO, Port Townsend, WA, USA.

**Moyers** and Rieseberg. 2013. Divergence in gene expression is uncoupled from divergence in coding sequence during rapid evolution in *Helianthus*. European Society for Evolutionary Biology, Lisbon, Portugal.

**Moyers** and Rieseberg. 2011. The evolution of flowering time in the silverleaf sunflower. Canadian Society for Ecology and Evolution, Banff, AB, Canada.

**Moyers** and Rieseberg. 2010. Why is flowering time diverging in the silverleaf sunflower? Society for the Study of Evolution, Portland, OR, USA.

## Brook T. Moyers — *Curriculum vitae*

Moyers and Karoly. 2009. Selection for alternate ribosomal RNA variants in the Northwest Larkspur *Delphinium nuttallii*. Society for the Study of Evolution, Moscow, ID, USA.

### Teaching & Mentoring

#### *Formal mentoring*

Summer 2017	Executive director of 10-week CSU BSURE Program Professional development program for undergraduates in biology
2016	Supervisor of CSU undergraduate Research Assistant
2009–15	Supervisor of ten UBC Work-Learn undergraduate Research Assistants
2011–12	UBC Independent Study Student (De Wet Van Niekerk) Project: Comparative drought tolerance in <i>Helianthus winterii</i>
Fall 2011	Field Research Assistant (Richard Sinclair, Texas A&M Kingsville) Project: Geographic distribution of <i>H. argophyllus</i> seed predators
Summer 2011	Field Research Assistant (Audrey Kelly, University of Rochester) Project: Measuring selection in natural populations
Summer 2010	NSERC Undergraduate Summer Research Awardee (Sonja Rummel) Project: Hybridization in sympatric annual sunflowers

#### *Curriculum Development*

Evolutionary Ecology, CSU, with John McKay and Cameron Ghalambor (2015–17)

- Evaluate curriculum effectiveness and student learning outcomes
- Iterative development of quantitative genetics problem set
- Curricular support for statistical analyses in R

Evolutionary Processes in Plants, UBC, with Loren Rieseberg (2014–15)

- Designed assignments, quizzes & structure for in-class discussion
- Instituted pre-assessment survey, unit evaluations & summative evaluations

Fundamentals of Evolution, UBC, with Greg Bole (2014)

- Created tutorial materials for human evolution unit

Genetics, Evolution & Ecology, UBC, with Jim Cooke (2014)

- Designed active-learning modules on genetic drift and gene flow

#### *Data and Software Carpentry Workshops*

2017	Instructor, Data Management Workshop for Undergraduates, CSU (26 Jul–17 Aug, Fort Collins, CO)
2017	Instructor, Data Carpentry Workshop at the Aspen Global Change Institute (5–6 Jan, Basalt, CO)
2016	Assistant, Software Carpentry Workshop at CSU College of Agriculture (28–28 Jul, Fort Collins, CO)

## **Brook T. Moyers** — *Curriculum vitae*

2014 Assistant, Software Carpentry Workshop at UBC Biodiversity Centre  
(6–7 Nov, Vancouver, BC)

### *Guest Instructor, UBC*

Spring 2015 Evolutionary Processes in Plants (6 lectures)

Fall 2014 Fundamentals of Evolution (1 lecture)

Spring 2014 Genetics, Evolution & Ecology (2 class sessions)

### *Teaching Assistant, UBC (student evaluations available on request)*

Five terms Biology 336: Fundamentals of Evolution (Three tutorials; Senior TA)

Two terms Biology 415: Evolutionary Processes in Plants (Tutorial lead)

Fall 2014 Biology 209: Non-Vascular Plants (Two laboratory sections)

Spring 2010 Biology 210: Vascular Plants (Two laboratory sections)

### *Additional Teaching & Mentoring Experience*

2016– Seeds!, first grade classroom visits, Poudre School District

2009–15 Let's Talk Science Teacher Partnership Volunteer

2012–13 UBC Biology Teaching Assistant Professional Development Peer Mentor

2013 Volunteer Science Writing Tutor, UBC Writing Centre

### *Pedagogical Education*

2015 Center for the Integration of Research, Teaching and Learning MOOC:  
Introduction to Evidence-Based Undergraduate STEM Teaching

2014 UBC Biology 535: Teaching and Learning in the Life Sciences

2012 UBC Biology Teaching Assistant Professional Development certificate

2009 Instructional Skills Workshop, University of British Columbia

### **Service & Community**

2016– Volunteer National Forest Service ranger, Canyon Lakes Ranger District

2014 California Native Plant Society Plant Status Reviewer

2011–14 Founding member of the UBC Reproducibility Group

2009–12 Organizer of the Vancouver Evolution Group  
Bi-monthly public science outreach event

*Reviewer:* Biology Letters, Evolution, Evolutionary Applications, Molecular Ecology, Molecular Ecology Resources, Evolutionary Ecology, Conservation Genetics, and the Biological Journal of the Linnaean Society

*Member:* Society for the Study of Evolution, American Society of Naturalists, Canadian Society for Ecology and Evolution, American Genetics Association