

# KAYLA M. HARDWICK

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kaylamhardwick@gmail.com • 360-270-1168 • kaylamhardwick.wordpress.com • github.com/kaylahardwick

## COMPUTATIONAL BIOLOGIST

Reed College Biology Department • Portland, OR

## EDUCATION

- 2015     **Ph.D. in Evolutionary Biology and Genomics • University of Idaho**  
           Dissertation: *Behavior, selection, and the genetics of adaptation during the early stages of ecological divergence.*
- 2009     **B.S. with Distinction in Biology • University of Washington**

## SKILLS & EXPERTISE

**Research:** genomics, host-parasite coevolution, molecular evolution, speciation, population genetics, animal behavior, multivariate statistics, nonparametric statistics, Bayesian analysis

**Computational:** Python, R, C++, bash/Linux, parallel computing, data visualization, DNA and RNA sequence data analysis, genome assembly and annotation, quantitative genetic simulations

**Management:** experimental design, project management, multidisciplinary collaboration, grant application preparation, research permitting through federal resource management agencies

**Lab:** molecular lab skills including DNA and RNA extraction, PCR, and gel electrophoresis, *Drosophila melanogaster* culture techniques, tissue embedding and sectioning

**Field:** drift fence construction, tissue collection and preservation, radio telemetry, techniques for capture and handling of reptiles, methods for measuring natural selection in experimental populations

**Other:** undergraduate mentorship, science communication, K-12 and adult STEM outreach

## OPEN SOURCE PROJECTS

**ARC • [github.com/ibest/ARC](https://github.com/ibest/ARC)**

An iterative approach for *de novo* assembly of genomic regions

**svsims • [github.com/kaylahardwick/svsims](https://github.com/kaylahardwick/svsims)**

A program for modeling adaptation and reproductive isolation

## EMPLOYMENT

- 2015-Present     **Postdoctoral Scholar • Reed College, Portland, OR**  
                       Genomics of host-parasite coevolution: analyzed RNA-Seq data to investigate transcriptional response of *Drosophila melanogaster* to parasitoid infection, sequenced genomes of host and parasitoid species to study the evolution of venom genes and parasite-mediated horizontal gene transfer.

- 2009-2015      **Graduate Research Assistant • University of Idaho, Moscow, ID**  
Dynamics of speciation during ecological divergence: conducted field experiments, population genetic analyses, and computer simulations to identify factors that facilitate ecological speciation.
- 2007-2009      **Undergraduate Research Assistant • University of Washington**  
Eusocial insect brain plasticity: quantified differences in brain structure volume among termite castes.

## PUBLICATIONS

- Hardwick, K.M.**, A. MacPherson, E.B. Rosenblum, L.J. Harmon. In prep. Quantitative genetic simulations show that standing variation facilitates the evolution of reproductive isolation during ecological speciation. To be submitted to *Evolution* in August 2017.
- Hunter, S.S., R. Lyon, B.A.J. Sarver, **K.M. Hardwick**, and M.L. Settles. 2015. ARC: Assembly by reduced complexity. *bioRxiv* doi: 10.1101/014662
- Laurant, S., S.P. Pfeifer, M.L. Settles, S.S. Hunter, **K.M. Hardwick**, L. Ormond, V.C. Sousa, J.D. Jensen, and E.B. Rosenblum. 2015. The population genomics of rapid adaptation: disentangling signatures of selection and demography in White Sands lizards. *Molecular Ecology*. doi: 10.1111/mec.13385
- Hardwick, K.M.**, L.J. Harmon, S.D. Hardwick, and E.B. Rosenblum. 2015. When field experiments yield unexpected results: Lessons learned from measuring selection in White Sands lizards. *PLoS ONE* 10: e0118560. doi: 10.1371/journal.pone.0118560
- Hardwick, K.M.**, J.M. Robertson, and E.B. Rosenblum. 2013. Asymmetrical mate preference in recently adapted white sands and black lava populations of *Sceloporus undulatus*. *Current Zoology* 59: 20-30.
- Rosenblum, E.B., B.A.J. Sarver, J.W. Brown, S. Des Roches, **K.M. Hardwick**, T.D. Hether, J.M. Eastman, M.W. Pennell, and L.J. Harmon. 2012. Goldilocks meets Santa Rosalia: An ephemeral speciation model explains patterns of diversification across time scales. *Evolutionary Biology* 39: 255-261.
- Akcay, C., W. Searcy, S.E. Campbell, V.A. Reed, C.N. Templeton, **K.M. Hardwick**, and M. Beecher. 2012. Who initiates extra-pair copulations in song sparrows? *Behavioral Ecology* 23: 44-50.

## SELECTED PRESENTATIONS

- 2016      **Hardwick, K.M.** Adaptation and Reproductive Isolation in Natural and Simulated Lizard Populations. Invited speaker; Reed College Biology Seminar Series. February 26, Portland, OR.
- 2016      **Hardwick, K.M.**, A. Macpherson, E.B. Rosenblum, and L.J. Harmon. Quantitative Genetic Simulations Show That Standing Genetic Variation Facilitates the Evolution of Reproductive Isolation During Adaptive Divergence. Evolution Meeting. June 17-21, Austin, TX.

- 2016 **Hardwick, K.M.**, L.C. Perkin, and T.A. Schlenke. Transcriptional response of *Drosophila melanogaster* to infection by ten different species of parasitic wasps. The Society for Integrative and Comparative Biology Annual Meeting. June 3-7, Portland, OR.
- 2013 **Hardwick, K.M.** and E.B. Rosenblum. Adaptation in White Sands lizards. Invited speaker; White Sands National Monument. June 7, Alamogordo, NM.

## GRANTS, HONORS, & AWARDS

- 2014 American Association of University of Women American Dissertation Fellowship • **\$20,000**
- 2013 NSF BEACON Graduate Research Fellowship • **\$20,000**
- 2012 America Society of Ichthyologists and Herpetologists Gaige Award • **\$500**
- 2011 Society for the Study of Evolution Rosemary Grant Award • **\$1,754**
- 2011 American Museum of Natural History Theodore Roosevelt Memorial Grant • **\$824**
- 2011 University of Idaho Student Grant Program • **\$2,989.20**
- 2010 Sigma Xi Grant-in-Aid of Research • **\$400**
- 2010 University of Idaho Student Grant Program • **\$2,949.81**
- 2009 University of Washington Mary Gates Endowment Scholarship • **\$4,000**
- 2008 National Science Foundation Research Experience for Undergraduates • **\$1,500**

## TEACHING

- 2009-2014 **Graduate Teaching Assistant • University of Idaho**  
Population Ecology (BIOL 314)  
Genetics (BIOL 210 & 310)  
Structure and Function (BIOL 213)  
Cells and the Evolution of Life (BIOL 115)

## OUTREACH AND SERVICE

- 2015-2016 **Lead teacher • Reed College Science Outreach**  
Lincoln Park Elementary School, Portland, OR
- 2012-2014 **Event coordinator • Save the Frogs Day**  
University of Idaho, Moscow, ID
- 2010-2012 **Instructor • White Sands Institute**  
White Sands National Monument, Alamogordo, NM
- 2013-2015 **Graduate student representative • Randall Women in Science Committee**  
University of Idaho, Moscow, ID
- 2012 **Event coordinator • White Sands Science Symposium**  
New Mexico State University, Las Cruces, NM

## REFERENCES

**Dr. Sarah Schaack**

Associate Professor  
Department of Biology  
Reed College  
Portland, OR 97202  
503-517-7948  
schaack@reed.edu

**Dr. Luke J. Harmon**

Associate Professor  
Department of Biological Sciences  
University of Idaho  
Moscow, ID 83844  
208-885-0346  
lukeh@uidaho.edu

**Dr. Todd Schlenke**

Associate Professor  
Entomology Department  
University of Arizona  
Tucson, AZ 85721  
520-621-7167  
schlenke@email.arizona.edu

**Dr. Erica Bree Rosenblum**

Associate Professor  
Department of ESPM  
University of California, Berkeley  
Berkeley, CA 94720  
510-642-2108  
rosenblum@berkeley.edu