

**KRISTI L. MONTOOTH**

Associate Professor of Biology

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**EDUCATION**

- 09/2002 – 01/2005 Ph.D. Genetics & Development, Cornell University, Advisor: Andrew Clark  
Dissertation: An evolutionary genetic analysis of metabolic pathways and physiological performance in *Drosophila*
- 09/1998 – 08/2002 Ph.D. Candidate in Biology, Pennsylvania State University, Advisor: Andrew Clark
- 09/1993 – 06/1998 B.S. Biology, specialization in Evolution, University of California, Irvine

**PROFESSIONAL EXPERIENCE**

- 08/2014 – present Associate Professor, School of Biological Sciences, University of Nebraska
- 03/2008 – 08/2014 Assistant Professor, Department of Biology, Indiana University
- 03/2005 – 02/2008 Postdoctoral Fellow, Brown University, Advisor: David Rand
- 11/2004 – 02/2005 Postdoctoral Associate, Cornell University, Advisor: Andrew Clark
- 01/2001 – 05/2002 Teaching Assistant:  
Physiological Ecology, Pennsylvania State University, Spring 2002  
Population Genetics, Pennsylvania State University, Spring 2001
- 09/1995 – 06/1998 Undergraduate Research Assistant, University of California, Irvine  
Biochemical adaptation of insect cuticular hydrocarbons, Advisor: Allen Gibbs

**GRANTS: current**

NSF IOS CAREER award: Physiological adaptation to a complex environment, \$1,052,975, 2012-2017

**GRANTS: completed**

- NIH NRSA award: Coping with stress: the cellular maintenance of embryonic development, sponsor for Dr. Brent Lockwood, \$146,070, 2012-2014
- NIH NRSA Postdoctoral Fellowship: *Drosophila* energetics and mito-nuclear function, \$145,200, 2006-2009
- NSF Doctoral Dissertation Improvement Grant: Pathway analysis of ethanol and acetic acid detoxification in *Drosophila*, \$9995, 2001-2004

**FELLOWSHIPS AND AWARDS**

- Indiana University Trustees Teaching Award, \$2500, 2013
- NSF CAREER Award, \$1,052,975, 2012-2017
- Howard Hughes Predoctoral Fellowship, \$160,000, 1998-2003
- J. Ben and Helen D. Hill Memorial Award, \$1200, 1999, 2001
- Braddock Scholarship, \$12,000, 1998-2000
- Goldwater Scholarship, \$7500, 1997-1998

## PROFESSIONAL ACTIVITIES

Associate Editor	Proceedings of the Royal Society B: Biological Sciences, 2014 – present
Grant Review	NSF: Antarctic Science, IOS: Physiol Struct Systems, IOS: Mol Cell Bio, DEB: Evolutionary Processes, OEI: CAREER, NSF: International Research Fellowship
Manuscript Review	Am Nat, BMC Evol Biol, Comp Biochem Physiol, Evolution, Genetica, Genetics, Genome, Genome Biol Evol, J Exp Biol, J Insect Sci, J Mol Evol, Mol Biol Evol, Mol Ecology, Mol Phylogenetic Evol, Naturwissenschaften, Physiol Biochem Zool, PLoS Genetics, PLoS ONE, PNAS, Science
Memberships	Genetics Society of America, Society for Integrative and Comparative Biology, Society for the Study of Evolution, Society for Molecular Biology and Evolution

## PUBLICATIONS

† Indicates where I am or a student from my lab is the corresponding author; \* undergraduate coauthor

Greenlee<sup>1</sup>, KJ, **Montooth**<sup>†1</sup>, **KL** and BR Helm. 2014 Predicting performance and plasticity in the development of respiratory structures and metabolic systems. *Integr Comp Biol* 54: 307-322

<sup>1</sup> Co-first and corresponding authors contributed equally to this work

Cooper<sup>†</sup>, BS, Hammad, LA and **KL Montooth**. 2014 Thermal adaptation of cellular membranes in natural populations of *Drosophila melanogaster*. *Functional Ecology* 28: 886-894

Hoekstra, LA, Siddiq, MA\*, and **KL Montooth**<sup>†</sup>. 2013 Pleiotropic effects of a mitochondrial-nuclear incompatibility depend upon the accelerating effect of temperature in *Drosophila*. *Genetics* 195: 1129-1139

Hoekstra<sup>†</sup>, LA and **KL Montooth**. 2013 Inducing extra copies of the *Hsp70* gene in *Drosophila melanogaster* increases energetic demand. *BMC Evolutionary Biology* 13: 68

Kobey<sup>†</sup>, RL, and **KL Montooth**. 2013 Mortality from desiccation contributes to a genotype-by-temperature interaction for cold survival in *Drosophila melanogaster*. *J Exp Biol* 216: 1174-1182

Meiklejohn, CD, Holmbeck, MA, Siddiq\*, MA, Abt, DN, Rand, DM and **KL Montooth**<sup>†</sup>. 2013 An incompatibility between a mitochondrial tRNA and its nuclear-encoded tRNA synthetase compromises development and fitness in *Drosophila*. *PLoS Genetics* 9: e1003238 (*F1000 selection*)

Cooper<sup>†</sup>, BS, Hammad, LA, Fisher\*, NP, Karty, JA and **KL Montooth**<sup>†</sup>. 2012 In a variable thermal environment selection favors greater plasticity of cell membranes in *Drosophila melanogaster*. *Evolution* 66: 1976-1984

Hammad, LA, Cooper, BS, Fisher\*, NP, **Montooth, KL**, and JA Karty. 2011 Profiling and quantification of *Drosophila melanogaster* lipids using liquid chromatography/mass spectrometry. *Rapid Communications in Mass Spectrometry* 25: 2959-2968

**Montooth**<sup>†1</sup>, **KL**, Meiklejohn<sup>1</sup>, CD, Abt, DN and DM Rand. 2010 Mitochondrial-nuclear epistasis affects fitness within species but does not contribute to fixed incompatibilities between species of *Drosophila*. *Evolution* 64: 3364-3379 <sup>1</sup> Co-first authors contributed equally to this work

**Montooth**<sup>†</sup>, **KL**, Abt, DN, Hofmann\*, JW and DM Rand. 2009 Comparative genomics of *Drosophila* mtDNA: Novel features of conservation and change across functional domains and lineages. *J Mol Evol* 69: 94-114

**Montooth, KL** and DM Rand. 2008 The Spectrum of Mitochondrial Mutation Differs across Species. *PLoS Biol* 6: e213

Drosophila 12 Genomes Consortium. 2007. Evolution of genes and genomes on the Drosophila phylogeny. *Nature* 450: 203-218 (contributed assembly, annotation and evolutionary analysis of mtDNAs)

Meiklejohn, CD, **Montooth, KL** and DM Rand. 2007 Positive and negative selection on the mitochondrial genome. *Trends in Genetics* 23: 259-263

**Montooth<sup>†</sup>, KL**, Siebenthal\*, KT and AG Clark. 2006 Membrane lipid physiology and toxin catabolism underlie ethanol and acetic acid tolerance in *Drosophila melanogaster*. J Exp Biol 209: 3837-3850

Zhang, M, **Montooth, KL**, Wells, MT, Clark, AG and D Zhang. 2005 Mapping multiple quantitative trait loci by Bayesian classification. Genetics 169: 2305-18

Civetta, A, **Montooth, KL** and M Mendelson. 2005 Quantitative trait loci and interaction effects responsible for variation in female postmating mortality in *Drosophila simulans* and *D. sechellia* introgression lines. Heredity 94: 94-100

**Montooth<sup>†</sup>, KL**, Marden, JH and AG Clark. 2003 Mapping determinants of variation in energy metabolism, respiration and flight in *Drosophila*. Genetics 165: 623-635

**Montooth, KL** and AG Gibbs. 2003 Cuticular pheromones and water balance in the house fly, *Musca domestica*. Comp Biochem Physiol A 135: 457-465

Marden, JH, Rogina, B, **Montooth, KL** and SL Helfand. 2003 Conditional tradeoffs between aging and organismal performance of *Indy* long-lived mutant flies. PNAS 100: 3369-3373

### INVITED SYMPOSIA AND WORKING GROUPS

APS Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology, Symposium speaker: Genomics in Integrative and Comparative Biology, San Diego, October 2014

Program of Excellence Symposium in Population Biology Speaker, Lincoln, NE, September 2014

Iowa City Darwin Day Speaker, Iowa City, February 2014

NSF-sponsored working group on Grand Challenges in Organismal Biology: Walking the tightrope between stability and change, Cold Spring Harbor Banbury Center, February 2013

IGERT Symposium Panel Member: The Future of Evo-Devo, Portland, OR February 2012

IGERT Symposium Speaker: Evolution, Genomics and Development, Bloomington, IN November 2009

U of Michigan Early Career Scientist Symposium Speaker: Networks in Ecology and Evolution, 2008

### INVITED SEMINARS

(\*) indicates graduate student-invited speaker

University of Illinois, Integrative Biology, Spring 2014, postponed to Spring 2015

Dartmouth College, Cramer Seminar Series, Fall 2013

Marine Biological Labs, Woods Hole, Spring 2013

University of Georgia, Dept. of Genetics, Spring 2013

University of Nebraska, Dept. of Biology, Spring 2013

Washington University in St. Louis, Evolution, Ecology and Population Biology Seminar, Fall 2012

Portland State University, Dept. of Biology, Spring 2011

University of Western Ontario, Dept. of Biology, Fall 2010

Stanford's Hopkins Marine Station, Fall 2010 (\*)

Binghamton University, Dept. of Biology, Fall 2010

University of Chicago, Dept. of Ecology & Evolution, Spring 2010

University of Nebraska, Dept. of Biology, Spring 2009

University of Pennsylvania, Dept. of Biology, Spring 2009

Duke University, Population Genetics Seminar Series "Super Speaker", Fall 2008 (\*)

Indiana State University, Dept. of Biology, Fall 2008

University of Massachusetts Amherst, Entomology Seminar Series, Fall 2007

University of Oregon, Center for Ecology and Evolutionary Biology, Spring 2007

Indiana University, Dept. of Biology, Spring 2007

Harvard University, Dept. of Organismal and Evolutionary Biology, Fall 2006

University of Massachusetts Lowell, Dept. of Biological Sciences, Fall 2006

University of Nevada Las Vegas, Dept. of Biological Sciences, Fall 2006

University of Oregon, Center for Ecology and Evolutionary Biology, Fall 2005

Harvard University, Population and Evolutionary Genetics/Genomics Seminar, Fall 2005

University of Rochester, Evolution seminar, Fall 2003

## CONFERENCE PRESENTATIONS

Society of Integrative and Comparative Biology 2014 (talk)  
Evolution 2013 (talk)  
Drosophila Research Conference 2013 (talk)  
Midwest Drosophila Conference 2012 (talk)  
Midwest Drosophila Conference 2011 (talk)  
Congress of the European Society of Evolutionary Biology 2011 (Symposium talk)  
Society for Integrative and Comparative Biology Meetings 2011 (talk)  
Drosophila Research Conference 2010 (poster)  
Midwest Drosophila Meetings 2009 (talk)  
Midwest Drosophila Meetings 2008 (talk)  
Society for Molecular Biology and Evolution 2008 (talk)  
American Genetics Association: Genome Evolution Meetings 2007 (poster)  
Gordon Conf Quant Genet and Genomics 2007 (poster)  
Drosophila Research Conf 2007 (poster)  
Evolution 2006 (talk)  
Drosophila Research Conf 2006 (poster)  
Drosophila Research Conf 2005 (talk)  
Society for Molecular Biology and Evolution Meetings 2004 (poster)  
Keystone Meeting on Natural Variation and Quantitative Genetics in Model Organisms 2004 (poster)  
Drosophila Research Conf 2003 (poster)  
Drosophila Research Conference 2002 (poster)  
Congress of the European Society of Evolutionary Biology 2001 (talk)  
Drosophila Research Conference 2001 (poster)  
Society for Integrative and Comparative Biology Meetings 2001 (talk)  
Drosophila Research Conference 2000 (poster)  
Society for Integrative and Comparative Biology Meetings 2000 (talk)  
Evolution 1999 (talk)  
American Genetics Association: Genome Diversity and Evolution Meeting, 1999 (poster)

## TRAINING OF STUDENTS AND POSTDOCTORAL RESEARCHERS

Postdoctoral researchers:

Omera Matoo, PhD University of North Carolina, Charlotte, starting Oct 2014  
Katherine O'Brien, PhD University of Pennsylvania, starting Oct 2014  
Brent Lockwood, PhD Stanford, 2011-2014, currently Assistant Professor of Biology, Univ of Vermont  
NIH NRSA Postdoctoral Fellowship, \$146,070

Doctoral students:

Justin Buchanan, PhD student, 2014-present  
Jeff Adrion, PhD student, NSF Graduate Research Fellow, 2013-present  
Research awards, fellowships and grants totaling \$250,000  
Robert Kobey, MS student, 2009-2014  
Research awards, fellowships and grants totaling \$85,280  
Luke Hoekstra, PhD student, 2008-2014, currently Postdoctoral Researcher, Iowa State University  
Research awards, fellowships and grants totaling \$92,864  
Brandon Cooper, PhD student, 2010-2014, currently NIH NRSA Postdoctoral Fellow, UC Davis  
Research awards, fellowships and grants totaling \$106,600

Undergraduate researchers trained: Sixteen undergraduate researchers (9 women, 7 men) have done independent research under my guidance and two have completed honors theses that have produced or are contributing to co-authored publications. Of these students, three are pursuing PhD degrees in biology at the Universities of Chicago and Georgia, and many others are pursuing professional degrees ranging from medical sciences to law.

## TEACHING ACCOMPLISHMENTS

### Classroom teaching:

Biology L111, Foundations in Biology: Ecology, Evolution & Diversity (3 credits, 100-150 students), Fall 2008, 2010, 2011, 2012, 2013, Indiana University

Biology Z620/L568, Graduate Evolutionary Genetics (3 credits, ~20 students), Fall 2009, 2011, Indiana University

Biology L433, Tropical Biology (3 credits, 15 students), Intersession 2009/2010, Indiana University

### Contributions to the Scholarship of Teaching and Learning:

Member of IU BUILD team (Biology Undergraduate Information Literacy Development), 2012-2014

Presenter at "From Note-Taking to Knowledge-Making: Engaging Students in Scientific Inquiry," 2012

Taught a master class on working with primary literature, data and graphs in intro biology lectures, 2011  
Course Development Institute, Indiana University, 2009

### Peer-reviewed publications in pedagogy:

Petzold, J, Winterman, B and **KL Montooth**. 2010 Science Seeker: A new model for teaching information literacy to entry-level biology undergraduates. Issues in Sci Tech Librarianship, <http://www.istl.org/10-fall/refereed2.html>

## SERVICE TO THE UNIVERSITY

### Departmental service:

UNL: Hiring Committee, Infectious Disease Biologist, 2014-2015

IU: Departmental Policy Committee, 2012-2014

IU: Committee to write an EEB hiring vision plan, 2012

IU: Evaluated Dissertation Year Fellowship Applications, 2012

IU: Graduate Admissions Committee, 2012

IU: Undergraduate Biology Specializations Committee, 2011

IU: Undergraduate Curriculum Study Committee, 2009-2010

IU: Graduate recruitment weekend committee, chair, 2009, 2011

IU: IGERT student steering committee, 2008-2011

### University service:

IU: Workshop presenter: CITL roundtable: Active learning in STEM, 2012

IU: Panel member: CAREER workshop offered by Proposal Development Services, 2012

IU: Discussion leader: Women in Science Luncheon, 2012

IU: BSES exchange program: I worked with a senior faculty from Hanoi University in my L111 course during Fall 2011. Invited to teach L111 at Hanoi University for two weeks in 2012, but declined.

IU: Panel member: Training Future Faculty Workshop, 2011

IU: Judge: Women in Science Research Conference, 2010, 2011

IU: Judge: STARs Undergraduate Research Symposium, 2010

IU: Panel member: Associate Instructor Workshop on Campus Climate, 2009

## PROFESSIONAL SERVICE

2014 Symposium Co-Organizer, 2014 SMBE Meetings: The Role of Epistasis in Mol Evol

2011 Conference Co-organizer, 2011 Midwest Drosophila Meetings

2010 Conference Organizer, 2010 Midwest Drosophila Meetings

2009-2010 Society for Molecular Biology and Evolution, nominating committee

2009 College of Reviewers for the Canada Research Chairs, served

2008 Society for Molecular Biology and Evolution, poster judging

## **SERVICE TO THE COMMUNITY**

### Public presentations:

*Natural history, evolution, disease and the mitochondrial DNA – That other genome in your cells.* Iowa City Darwin Day, 2014

*Evolving metabolisms: A story of why the fruit fly loves your kitchen.* Secular Alliance of Indiana University, 2010

*Lessons learned from the genomes of chimps and flies.* Isles of Shoals, New Hampshire, 2003

*Mapping complex gene interactions underlying physiological performance in Drosophila.* Cornell Life Science Forum, American Museum of Natural History 2003

### Judge:

Pennsylvania Junior Science and Humanities Symposium, State College, PA 2000, 2001

Scituate RI High School Science Fair, 2008

### Outreach:

Indiana University Jim Holland Summer Science Research Program, 2013

Indiana University Lilly Scholars Program, hosted minority high school students in the lab to do research projects using *Drosophila*, 2008, 2010, 2011

Brownie Math & Science Day, 2010

### Public Service:

Garden leader at the Bloomington Community Garden, 2010-2012