

MOLLIE K. MANIER

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EDUCATION

- 2005** **Ph.D.** Zoology (minor in Statistics) Oregon State University
(Advisor: Stevan J. Arnold)
- 1997** **B.A.** Integrative Biology, University of California, Berkeley

RESEARCH POSITIONS & TRAINING

- 2010-** **Assistant Research Professor.** Department of Biology, Syracuse University
2008-2010 **Postdoctoral Research Fellow.** Department of Biology, Syracuse University
(Sponsors: Scott Pitnick, John Belote)
- 2005-2008** **NIH NRSA Postdoctoral Research Fellow.** Hopkins Marine Station, Stanford University (Sponsor: Stephen Palumbi)
- 1998** **Herpetologist.** Blodgett Forest Research Station, UC Berkeley
- 1996-1997** **Curatorial Assistant of Herpetology.** Museum of Vertebrate Zoology, UC Berkeley

GRANTS

- pending** NSF Division of Environmental Biology, Evolutionary Processes Preliminary Proposal, Genetic analysis of sperm length evolution in *Drosophila*, DEB-1221572 (PI: M. Manier, Co-PI's: S. Pitnick, J. Belote, S. Dorus)
- 2012-2015** NSF Division of Environmental Biology, Evolutionary Processes, Evolutionary genetics of ejaculate quality and competitive reproductive success, DEB-1145965 (PI: S. Pitnick, Co-PI's: M. Manier, S. Lüpold, J. Belote); \$700,000
- 2010-2012** NSF Division of Environmental Biology, Evolutionary Processes, Genetic and functional analyses of sperm length evolution in *Drosophila*, DEB-1021240 (PI: S. Pitnick, Co-PI's: M. Manier, J. Belote); \$280,000
- 2011** NSF REU Supplemental Award to DEB-1021240
- 2010** NSF REU Supplemental Award to DEB-1021240
- 2005-2008** NIH Ruth L. Kirschstein NRSA Postdoctoral Fellowship, F32 GM073481; \$131,340
- 2003-2005** NSF Doctoral Dissertation Improvement Grant, DEB-0309017; \$12,000

HONORS & FELLOWSHIPS

- 2012** New York Academy of Sciences Blavatnik Award for Young Postdoctoral Scientist nomination
- 2011** Drosophila Research Conference, Drosophila Image Award
- 2002-2003** NSF GK-12 Teaching Fellowship
- 1999-2002** EPA Science to Achieve Results Fellowship

- 1997 Graduate Opportunities Program, UC Berkeley
- 1997 Integrative Biology Departmental Citation, UC Berkeley
- 1996 Biology Fellowship, Molecular and Cell Biology, UC Berkeley

TEACHING

- 2012 **Graduate Seminar.** Skills for Success in Academia, Dept. of Biology, Syracuse University
- 2011 **Graduate Seminar.** Proposal Writing for Life Sciences, Dept. of Biology, Syracuse University
- 2007 **Lecturer.** Applied Statistics for Science and Technology, Dept. of Mathematics and Statistics, California State University, Monterey Bay
- 2005 **Graduate Teaching Assistant.** Cell Biology Lab, Dept. of Zoology, Oregon State University
- 2003-2004 **Graduate Teaching Assistant.** Genetics, Dept. of Zoology, Oregon State Univ.
- 2002-2003 **NSF GK-12 Science Fellow.** Garfield Elem. School (Grades K-5), Corvallis, OR
- 1998-1999 **Graduate Teaching Assistant.** Principles of Biology, Dept. of Zoology, Oregon State University
- 1997 **Undergraduate Student Instructor.** Natural History of the Vertebrates, Dept. of Integrative Biology, UC Berkeley

PROFESSIONAL ACTIVITIES

Invited Talks

- 2012 Northern Arizona University, Department of Biology, Flagstaff
- 2012 The George Washington University, Dept. of Biological Sciences, Washington, D.C.
- 2012 Syracuse University, Department of Biology, NY
- 2011 State University of New York, College of Environmental Science and Forestry, Department of Environmental and Forest Biology, Syracuse
- 2011 Biology of Spermatozoa Meeting, Hassop Hall, Derbyshire, UK
- 2011 European Society for Evolutionary Biology Meeting, Novel Techniques in Behavioural Ecology Symposium, Tübingen, Germany
- 2011 Gordon Research Conference: Fertilization and Activation of Development, Holderness, NH
- 2011 University of Ottawa, Department of Biology, Ontario, Canada
- 2011 California State University, Northridge, Department of Biology
- 2011 University of California, Santa Cruz, Department of Ecology and Evolutionary Biology
- 2011 Santa Clara University, Department of Biology, California
- 2010 Queen's University, Department of Biology, Kingston, Ontario, Canada
- 2010 Lehigh University, Department of Biological Sciences, Bethlehem, PA
- 2010 University of Southern California, Department of Biological Sciences, Los Angeles
- 2010 Scripps Institution of Oceanography, University of California, San Diego
- 2010 Illinois State University, School of Biological Sciences, Normal
- 2010 University of Rochester, Department of Biology, NY
- 2010 University of Massachusetts, Department of Plant, Soil and Insect Sciences, Amherst

- 2010** Cornell University, Reproductive Physiology/Endocrinology Seminar Series, Ithaca, NY
- 2009** Biology of Spermatozoa Meeting, Losehill Hall, Derbyshire, UK
- 2009** Syracuse University, Department of Biology, NY
- 2008** Washington State University, School of Molecular Biosciences, Pullman, WA
- 2008** University of Rhode Island, Department of Biological Sciences, Kingston
- 2007** University of California, Davis, Bodega Marine Laboratory, CA

Referee or Panel Member for Funding Agencies

- 2010** NSF, Referee for Division of Environmental Biology, Evolutionary Processes Cluster
- 2010** NSF, Panel Member, Division of Environmental Biology, Evolutionary Processes Cluster

Committee Service for Graduate Students

- 2011** Elizabeth M. Droge, Ph.D. dissertation proposal defense, qualifying exams
- 2011** Dawn M. Higginson, Ph.D. dissertation defense

***Ad hoc* Reviewer**

Molecular Ecology, PLoS One, Journal of Evolutionary Biology, Integrative and Comparative Biology, BMC Genetics, Evolutionary Ecology, Journal of Theoretical Biology, Journal of Heredity, Biological Journal of the Linnean Society, Canadian Journal of Zoology, Evolutionary Applications, Conservation Genetics, Copeia, Herpetologica, Bioinformatics and Biology Insights, International Journal of Evolutionary Biology, and Biology of Boas and Pythons (book)

SELECTED OUTREACH

- 2012** **Tutoring.** Nottingham High School with the Syracuse University School of Education, Syracuse, NY
- 2010** **Interview.** *NSF Science Nation*, "Fluorescent Fruit Flies Shed New Light," http://www.nsf.gov/news/special_reports/science_nation/fruitflies.jsp
- 2008** **Interview.** *The Monterey County Herald*, "Sea urchins are strange fertility allies: study of sperm may yield answers for humans," Oct. 27.
- 2008** **Guest presenter.** Sea urchin life history with live larvae and adults. Pacific Grove Middle School, Grade 6, Pacific Grove, CA
- 2002-2003** **Assistant Teacher.** SMILE Program (Science and Math Interactive Learning Experiences), Grades 3-5, Garfield Elementary School
- 2002** **Scientist Instructor.** Corvallis Outdoor School, Grade 8, Lebanon, OR
- 2002** **Tour Leader.** American Women in Science Career Workshop, Corvallis, OR
- 1999-2003** **Guest presenter.** Reptiles and amphibians with live animals; Wilson Elementary School, Grade 2, Corvallis, OR; Lincoln Elementary School, Grade 4, Corvallis, OR; Garfield Elementary School, Grades 4-5, Corvallis, OR; Science Factory workshop, Eugene, OR
- 1999-2000** **Mentor.** CyberSisters, independent science projects for middle school girls, in one case, including presenting a poster at a regional scientific conference, Corvallis, OR

PUBLICATIONS (*undergraduate author)

- Droge-Young EM, **MK Manier**, S Lüpold, JM Belote and S Pitnick. *Accepted*. Covariance among pre-mating, postcopulatory and viability fitness components in *Drosophila melanogaster* and their influence on paternity measurement. *Journal of Evolutionary Biology*
- Pespeni MH, DA Garfield, **MK Manier** and SR Palumbi. 2011. Genome-wide polymorphisms show unexpected targets of natural selection. *Proceedings of the Royal Society of London B* doi:10.1098/rspb.2011.1823.
- Ala-Honkola O, **MK Manier**, S Lüpold and S Pitnick. 2011. No evidence for postcopulatory inbreeding avoidance in *Drosophila melanogaster*. *Evolution* 65: 2699-2705.
- Lüpold S, **MK Manier**, O Ala-Honkola, J Belote, S Pitnick. 2011. Male *Drosophila melanogaster* adjust ejaculate size based on female mating status, fecundity and age. *Behavioral Ecology* 122:184-191.
- Manier MK**, KS Berben, J Belote, D Novikov*, WT Stuart* and S Pitnick. 2010. Resolving mechanisms of competitive fertilization success in *Drosophila melanogaster*. *Science* 328: 354-357. (Highlighted as *Current Biology* "Dispatch" 20: R444-R446; in *Science* 327: 1443; *Journal of Experimental Biology* 10.1242/jeb.036715)
- Oliver TA, DA Garfield, **MK Manier**, R Haygood, GA Wray and SR Palumbi. 2010. Whole-genome positive selection and habitat-driven evolution in a shallow and deep-sea urchin. *Genome Biology and Evolution* 2:800-814.
- Pespeni MH, TA Oliver, **MK Manier** and SR Palumbi. 2010. Restriction Site Tiling Analysis: Accurate discovery and quantitative genotyping of genome-wide polymorphisms using nucleotide arrays. *Genome Biology* 11: R44.
- Pitnick SS, KRH Henn*, S Maheaux*, DM Higginson, JL Hurtado-Gonzales, **MK Manier**, KS Berben, C Guptill* and JAC Uy. 2009. Size-dependent alternative male mating tactics in the yellow dung fly, *Scathophaga stercoraria*. *Proceedings of the Royal Society of London B* 276: 3229-3237.
- Howard D, SR Palumbi, L Birge and **MK Manier**. 2009. Sperm and speciation. Pp. 367-403 In *Sperm Biology: An Evolutionary Perspective* (TR Birkhead, DJ Hosken and S Pitnick, eds.). Elsevier. Burlington, MA.
- Manier MK** and SR Palumbi. 2008. Intraspecific divergence in sperm morphology of the green sea urchin, *Strongylocentrotus droebachiensis*: implications for selection in broadcast spawners. *BMC Evolutionary Biology* 8: 283.
- Manier MK**, CM Seylor* and SJ Arnold. 2007. Adaptive divergence between ecotypes of the terrestrial garter snake, *Thamnophis elegans*, assessed with F_{ST} - Q_{ST} comparisons. *Journal of Evolutionary Biology* 20: 1705-1719.
- Manier MK** and SJ Arnold. 2006. Ecological correlates of population genetic structure: a comparative approach using a vertebrate metacommunity. *Proceedings of the Royal Society, London B* 273: 3001-3009.
- Manier MK** and SJ Arnold. 2005. Population genetic analysis identifies source-sink dynamics for two sympatric garter snake species (*Thamnophis elegans* and *T. sirtalis*). *Molecular Ecology* 14: 3965-3976.

Manier MK. 2004. Geographic variation in the long-nosed snake (*Rhinocheilus lecontei*): beyond the subspecies debate. *Biological Journal of the Linnean Society* 83: 65-85.

In review

Lüpold S, **Manier MK**, KS Berben, KJ Smith*, BD Daly*, SH Buckley, JM Belote and S Pitnick. *In review*. Sperm form, function, fitness: how multiple ejaculate traits determine competitive fertilization success. *Current Biology*

In prep

Manier MK, JM Belote, KS Berben, S Lüpold, O Ala-Honkola, WF Collins* and S Pitnick. Rapid evolutionary diversification of sperm-female interactions underlying sperm precedence in *Drosophila*. for *American Naturalist*

Manier MK, S Lüpold, S Pitnick, WT Starmer. A theoretical framework for empirically testing the loaded raffle model of sperm use. for *American Naturalist*

Manier MK, JM Belote, KS Berben, S Lüpold, O Ala-Honkola, WF Collins* and S Pitnick. Mechanisms of sperm-female interactions underlying reproductive isolation between sibling *Drosophila* species. for *Nature*

Manier MK and S Pitnick. Determinants of reproductive success in *Drosophila*. for *Proceedings of the Royal Society B*

Manier MK, JM Belote, M Wong* and S Pitnick. Complex sperm behavior *in vivo* in *Drosophila melanogaster*. for *Proceedings of the Royal Society B*

Ala-Honkola O, **Manier MK**, JM Belote, S Lüpold, KS Berben, EM Droge-Young, WF Collins* and S Pitnick. Inbreeding effects on male and female fitness in *Drosophila melanogaster*. for *Evolution*

Manier MK and SR Palumbi. Transcriptional profiling of candidate genes involved in sperm head length variation in sea urchin. for *Genome Biology and Evolution*