

## Professional Curriculum Vitae

### Sean P. Mullen

#### Fields of Interest

Hybridization, Adaptation, Speciation, Mimicry, Evolutionary Genomics, Functional Genetics

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#### Current Position

Associate Professor, Boston University, Department of Biology & Center for Ecology and Conservation Biology

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United States of America

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#### Education History

1999-2006 Ph.D., Ecology and Evolutionary Biology, Cornell University, Ithaca, NY USA

1997-1999 M.S., Biology, Villanova University, Villanova, PA, USA.

1991-1995 B.S., Biology, Dickinson College, Carlisle, PA, USA

#### Professional Employment

2015 - Present Associate Professor, Dept. of Biology, Boston University, Boston, MA, USA.

2010 – 2016 Assistant Professor. Dept. of Biology, Boston University, Boston, Ma., USA.

2007 – 2010 Assistant Professor. Dept. of Biological Sciences, Lehigh University, Bethlehem, PA., USA.

2005 – 2007 NIMH NRSA Postdoctoral Research Fellow - Department of Biology, University of Maryland, College Park, MD, USA.

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#### RESEARCH

#### Honors & Awards

- 2006 Ruth L. Kirschstein National Research Service Award Postdoctoral Fellowship – NIH  
Howard Hughes Postdoctoral Fellowship in Bioinformatics and Genomics – Declined.
- 2005 “*Advances in Genome Technology and Bioinformatics*”, Tuition Scholarship, MBL-  
Woods Hole, USA.  
Outstanding Graduate Teaching Assistant Award, Department of Ecology and  
Evolutionary Biology, Cornell University, USA.
- 2004 Doctoral Dissertation Improvement Grant, National Science Foundation, USA
- 2003 “*Workshop on Molecular Evolution*”, Tuition Scholarship, MBL-Woods Hole, USA.

2002	Cornell Environmental Inquiry Research Partnership (CEIRP) K-12 Teaching Fellowship, National Science Foundation, USA Kieckhefer Adirondack Fellowship, Three Awards (2001-03) Edna Bailey Sussman Fund, Environmental Field Research Award
2001	Theodore Roosevelt Memorial Grant, American Museum of Natural History.
2001	The Joan Mosenthal DeWind Award, The Xerces Society.
1998	Biology Department Research Fellowship, Villanova University

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### Grants and Fellowships Awarded

2014-2018	Dimensions: Collaborative Research: Connecting the proximate mechanisms responsible for organismal diversity to the ultimate causes of latitudinal gradients in species richness	
	• NSF Award #1342712 (Mullen: PI)	\$573,985
	Total Award	\$1,988,908
2010-2013	Collaborative research: The comparative genetics of wing pattern diversity in mimetic butterflies	
	• NSF Award #1020136 (Mullen: PI)	\$471,760
	Total Award	\$986,722
2010-2012	The conservation genetics of <i>Speyeria callippe</i> .	
	• Department of Interior, United States Fish & Wildlife Agency BU-USFWS Cooperative Agreement #81420-A-J506	\$90,690
2009-2010	The developmental basis of mimetic wing pattern variation in butterflies	
	• Howard Hughes, Biodynamics Summer Institute Award	\$58,000
2007-2008	Color pattern evolution and mimicry in butterflies	
	• Faculty Innovation Grant, Lehigh University	\$25,000
2003-2005	Hybridization, mimicry, and species boundaries in the <i>Limenitis arthemis</i> admiral butterfly complex.	
	• National Science Foundation DDIG Award #: 0407499	\$11,355
2000-2005	Hybridization, mimicry, and the evolution of wing pattern diversity in North American admiral butterflies	
	• Grants from multiple sources	\$30,000

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### Grant proposals - Contributor

2015	Flaxman, S.M., <b>Mullen, S.P.</b> How predictable is the evolving genomic architecture of speciation? <i>NSF DEB Evolutionary Processes – Funded as an EAGER award to Dr. Flaxman.</i>
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**Publications in print – Refereed articles**

- 2018 Schilling, MP, **Mullen SP**, Kronforst MR, Safran RJ, Nosil P, Feder JL, Gompert Z, & Flaxman, SM. Transitions from single- to multi-locus processes during speciation. *Genes*, Invited submission. Submitted.
- 2018 Finkbeiner, SD, Salazar PA, Nogales S, Rush CE, Briscoe AD, Hill RI, Kronforst MR, Willmott KR, and **Mullen SP**. Frequency-dependence shapes the adaptive landscape of imperfect Batesian mimicry. *Proc. Roy. Soc. B.*, *accepted*
- 2018 Kristiansen EB, Finkbeiner SD, Hill RI, Prusa L, and **Mullen SP**. Testing the adaptive hypothesis of Batesian mimicry among hybridizing butterfly lineages. *Evolution*, *accepted*.
- 2017 Finkbeiner SD, Briscoe AD, & **Mullen SP**. Complex dynamics underlie the evolution of imperfect wing pattern convergence in butterflies. *Evolution* 71(4):949-959.  
Doi:10.1111/evo.13165.
- 2017 Tibbets, E.A., **Mullen, S.P.**, & Dale, J. Signal function drives phenotypic and genetic diversity: the effects of signaling individual identity, quality, or behavioral strategy. *Phil. Trans. Roy. Soc. B. Biol.*, 372 (1724), 20160347.
- 2015 Ebel, E. R.\*, Hill, R., Willmott, K.W., Sorenson, M., & **Mullen, S. P.** Rapid diversification associated with ecological specialization in Neotropical *Adelpha* butterflies. *Mol. Ecol.* 24:2392-2405 DOI: 10.1111/mec.13168 (\*Denotes graduate student in Mullen Lab)
- 2015 Frentiu, F.D., Yuan, F., Savage, W.K., Bernard, G.D., **Mullen, S.P.**, & Briscoe, A.D. Opsin clines in butterflies suggest novel roles for insect photopigments. *Mol. Biol. Evol.* 32(2):369-379.
- 2014 Gallant, J. R\*\*, Imhoff, V. E., Martin, A. R., Savage, W.K., Chamberlain, N., Pote, B\*., Peterson, C.P.\*, Smith, G.E.\*, Evans, B. R., Reed, R. D., Kronforst, M. R. & **Mullen, S.P.** Ancient homology underlies adaptive mimetic diversity in butterflies. *Nat. Commun.* 5. doi:10.1038/ncomms5817. (Corresponding author)  
(\*\*Denotes postdoc, \*undergraduate or graduate student in Mullen lab)
- 2014 Shaw, K.L. and **Mullen, S.P.** Speciation Continuum. (Invited editorial). *J. of Hered.* 105(S1):741-42.
- 2014 Kunte, K., Zhang, W., Tenger-Trolander, A., Palmer, D.H., Martin, A., Reed, R.D., **Mullen, S.P.**, Kronforst, M.K. *doublesex* is a mimicry supergene. *Nature* 507(7491):229-32.
- 2014 **Mullen, S.P.** & Shaw, K. L. Recent progress connecting pattern to process in insect speciation. *Annu. Rev. Entomol.* 59:339-61. (Corresponding author)

- 2014 Iyengar, V. K., Castle, T. & **Mullen, S. P.** Signal divergence among *Calopteryx* damselflies correlated with increased male-male aggression. *Behav. Ecol. Sociobiol.* 68:275-282. (Corresponding author).
- 2013 **Mullen, S.P.** Hybrid zones. *Oxford Bibliographies in Evolutionary Biology*. Oxford University Press. <http://www.oxfordbibliographies.com/view/document/obo-9780199941728/obo-9780199941728-0040.xml>.
- 2013 Kronforst, M.K., Kapan, D.D., Hansen, M., Crawford, N., Kulathinal, R. & **Mullen, S.P.** Hybridization reveals the genomic architecture of speciation. *Cell reports* 5(3):667-677. (Corresponding author)
- 2013 The FroSpects Gregynog Workshop (incl. **Mullen S.P.**). Hybridization and speciation. Targeted Review. *J. Evol. Biol.* 26(2):229-246.
- 2012 The *Heliconius* Genome Consortium. Butterfly genome reveals promiscuous exchange of mimicry adaptations among species. *Nature* 487(7):94-98. (Co-principal investigator)
- 2012 Kronforst, M. R., Barsh, G. S., Kopp, A., Mallet, J., Monteiro, A., **Mullen, S.P.**, Protas, M., Rosenblum, E. B., Schneider, C. J., & Hoesktra, H.E. Unraveling the thread of nature's tapestry: the genetics of diversity and convergence in animal pigmentation. *Pigment Cell Melanoma Res.* 25(4):411-433.
- 2012 **Mullen, S.P.**, K. Little, K., Draud, M, Brozek J., & Itzkowitz, M. Hybridization among Caribbean damselfish species correlates with habitat degradation. *J. Exp. Mar. Biol. Ecol.* 416-17:221-229. (Corresponding author).
- 2011 Shaw, K.L\*. & **Mullen, S.P\***. Genes versus phenotypes in the study of speciation. *Genetica* 139(5): 649-661. (\*Authors contributed equally).
- 2011 **Mullen, S.P.**, Savage, W.K., Wahlberg, N. & Willmott, K.R. Rapid diversification and not clade age explains high diversity in neotropical *Adelpha* butterflies. *Proc. Roy. Soc. B.* 278(1713):1777-1785. (Corresponding author).
- 2010 Pfennig, D.W. & **Mullen, S.P.** Mimics without models: causes and consequences of allopatry in Batesian mimicry. *Proc. R. Soc. B.* 277:2577-85.
- 2009 Gommans, W.M., **Mullen, S.P.**, & Maas, S. RNA editing: a driving force for adaptive evolution? *Bioessays* 31(10): 1137-1145.
- 2009 Savage, W.K. & **Mullen, S.P.** A single origin of Batesian mimicry among hybridizing populations of admiral butterflies (*Limenitis arthemis*) rejects an evolutionary reversion to the ancestral phenotype. *Proc. Roy. Soc. B.* 276 (1677):2557-2565. (Corresponding author).
- 2008 Ries, L\*. & **Mullen, S.P\***. A rare model limits the distribution of its more common mimic: a twist on frequency-dependent Batesian mimicry. *Evolution* 62:1798-1803. (\*Authors contributed equally).

- 2008 **Mullen, S.P.**, Dopman, E.B. & Harrison, R.G. Hybrid zone origins, species boundaries, and the evolution of wing pattern diversity in a polytypic species complex of North American admiral butterflies (Nymphalidae: *Limenitis*). *Evolution* 62:1400-1417. (Corresponding author)
- 2008 **Mullen, S.P.**, Millar, J.C., Schal, C., & Shaw, K.L. Identification and characterization of cuticular hydrocarbons from a rapid species radiation of Hawaiian Swordtailed Crickets (Gryllidae: Trigonidinae: *Laupala*). *J. Chem. Ecol.* 34:198-204. (Corresponding author).
- 2007 Danley, P.D., **Mullen, S.P.**, Lui, Quakenbush, J., & Shaw, K.L. Generation and analysis of large scale cricket expressed sequence tags (EST's) derived from a normalized, nerve chord cDNA library. *BMC Genomics* 8:109.
- 2007 **Mullen, S.P.** & Andrés, J. A. Rapid evolution of sexual signals in sympatric *Calopteryx* damselfies: reinforcement or “Noisy-neighbor” ecological character displacement. *J. Evol. Biol.* 20:1637-1648. (Corresponding author).
- 2007 **Mullen, S.P.**, Mendelson, T.C., Schal, C., & Shaw, K. L. 2007. Rapid evolution of cuticular hydrocarbons in a species radiation of acoustically diverse Hawaiian crickets (Gryllidae: Trigonidiinae: *Laupala*). *Evolution* 61(1):223-231. (Corresponding author).
- 2007 Reudink, M.W., Mech, S.G., **Mullen, S.P.**, & Curry, R.L. Structure and dynamics of a chickadee hybrid zone. *The Auk* 124.463-478.
- 2006 **Mullen, S.P.** Wing pattern evolution and the origins of mimicry among North American admiral butterflies (Nymphalidae: *Limenitis*). *Molecular Phylogenetics and Evolution.* 39 (3):747-758.
- 2006 Lovejoy, N\*, **Mullen, S.P.\***, Sword, G.A., Chapman, R.F., & Harrison, R.G. Ancient trans-Atlantic flight explains locust biogeography. *Proceedings of the Royal Society Biological Series B.* 273:767-774. (\*Authors contributed equally).
- 2003 McIntyre, P.B., Dopman, E.B. & **Mullen, S.P.** *Elaphe obsoleta*. Predation. *Herpetological Review* 34: 66.

#### **Publications in print – Book reviews & popular press (total =2)**

- 2008 Reis, L. & **Mullen, S.P.** The biogeography of a mimicry complex: surprising discoveries in the July 4th data set. *American Butterflies* 15(3/4): 48-52.
- 2007 **Mullen, S.P.** Conservation and the genetics of populations. *Copeia* 2007(3):774-776.

#### **Manuscripts in preparation**

Crawford NC, McGreevy TJ, Mullen SP, & Schneider CJ. The genomic basis of local adaptation in the *Anolis marmoratus* species complex. *In prep for Mol. Ecol.*

Mullen SP, Zhang W, VanKuren NW, Nallu, S, Kristiansen EB, Hill, RI, Briscoe AD, Kronfost MK. Disentangling population history and character evolution among hybridizing lineages. *In prep for PNAS*.

Kristiansen EB, Hill, RI, Nallu S, Zhang W, Kronforst, MK, & Mullen SP. The genomic basis of convergent evolution in admiral butterflies. *In prep for Nature Communications*.

### Symposium Participation

- 2016      “**Latitudinal Gradients in Species Diversity: 50 years since Pianka**” – American Society of Naturalists, Asilomar, CA – “Rapid diversification associated with ecological specialization among Neotropical *Adelpha* butterflies”.
- 2013      "**Speciation Continuum: A discussion on the origin of species**" - American Genetics Association. Ithaca, NY - "Ancient homology underlies adaptive mimetic diversity in butterflies". Invited Talk.
- 2013      Co-organizer, Symposium on “**Speciation Genomics**”, Society for Molecular Biology and Evolution, Chicago, IL, USA
- 2013      Participant, 4<sup>th</sup> International Meeting of the *Heliconius* Genome Sequencing Consortium, Harvard Museum of Natural History, Cambridge.
- 2011      Participant in Frontiers in Speciation workshop entitled “**Hybridization & Speciation**”, Gregynog Hall, Wales, U.K.
- 2010      “**Genetics and the Origin of Species: The Continuing Synthesis**”, Ithaca, NY USA (July 22<sup>nd</sup> -23<sup>rd</sup>) – “Genes vs. Phenotypes in the Study of Speciation”. Invited Talk.
- 2010      **6<sup>th</sup> International Butterfly Biology Conference**, Edmonton, Alberta (June 2010) - “Comparative genetic mapping reveals unexpected diversity in the genetic control of mimetic wing pattern variation across three distantly related butterfly species.” Invited Talk
- 2010      “**The Genetics and Evolution of Animal Coloration**”. Hopi Hoekstra & Marcus Kronforst, Organizers, April 22-23, 2010 - “**Melanism and mimicry in butterflies**” – Harvard University’s Radcliffe Institute for Advanced Study. Invited Talk.
- 2010      Organizer – **Lehigh Valley Ecology & Evolution Symposium**, Keynote by Ryan Calsbeek.
- 2007-09   Co-organizer and participant, **Darwin Day Celebration** at the Da Vinci Science Center, with Richard Kliman.

### Conference Presentations

- 2014      **Society for the Study of Evolution**, Raleigh, NC. – “Ancient homology underlies adaptive mimetic diversity in butterflies”.

- 2009 **Society for the Study of Evolution**, Moscow, ID - “*Finding a needle in a haystack: recent progress identifying the genomic region(s) housing mimicry genes in admiral butterflies*”
- 2008 **Society for the Study of Evolution**, Minneapolis, MN - “*The origins and maintenance of an admiral butterfly hybrid zone involving mimicry*”
- 2006 **Society for the Study of Evolution**, Stony Brook, NY - “*Biogeographic patterns of intra- vs. inter-island diversity in cuticular hydrocarbons in a rapid species radiation of Hawaiian crickets*”
- 2005 **Great Lakes Odonata Meeting**, 2005. University of Ottawa, Canada.- “Hybridization, Reinforcement, and Wing Pattern Evolution among North American Jewelwing Damselflies (*Calopteryx*)”.
- 2003 **Society for the Study of Evolution**, Champaign-Urbana, IL. - “Mitochondrial DNA variation across a butterfly hybrid zone in eastern North America”. *Poster Presentation*
- 1999 **American Ornithologist’s Union**, Ithaca, New York - “Genetic and morphometric variation across a chickadee hybrid zone in southeastern Pennsylvania”. *Poster Presentation*
- 1994 **American Society of Mammologists**, Washington, D.C. - “The Raccoon roundworm (*Baylisascaris procyonis*) as a cause for decline of Allegheny woodrat (*Neotoma magister*) populations in central Pennsylvania”. *Poster Presentation*

### ***Invited Seminars:***

- 2018 Denver University, host: Shannon Murphy
- 2017 Clark University, host: John Gibbons
- 2017 Bowdoin College, host: Michael Palopoli
- 2017 Boston Evolutionary Genomics Super Users Meeting – Harvard OEB, host: Jim Mallet
- 2015 Cambridge Entomological Society, host: Naomi Pierce
- 2015 Michigan State University, host: Jason Gallant
- 2015 University of Colorado, Boulder, host: Rebecca Safran
- 2015 The University of Kansas, host: Jamie Walters
- 2014 Tufts University, host: Erik Dopman
- 2014 Temple University, host: Rob Kulathinal
- 2013 University of Hawaii, Manoa, host: Mark Wright
- Tulane University, host: Cori Richards-Zawacki
- U.C. Irvine, host: Adriana Briscoe
- 2012 Massachusetts Butterfly Club
- 2011 Stonehill College, host: Magdalena Peterson
- 2010 Cambridge Entomological Society, host: Naomi Pierce
- FAS Systems Biology Center, Harvard University, host: Marcus Kronforst
- Moravian College, host: Diane Husic
- Boston University, host: Michael Sorenson
- 2009 FMNH, University of Florida, host: Keith Willmott
- Cedar Crest College, host: Erika Iyengar
- 2008 Franklin & Marshall College, host: Dan Ardia

2007 Villanova University, host: Robert L. Curry  
 Fairfield University, host: Glenn Sauer  
 Willamette University, host: Barbara Stebbins-Boaz  
 Dickinson College, host: Carol Loeffler  
 Lehigh University, host: Murray Itzkowitz  
 North Carolina State University, host: Coby Schal

### Popular press coverage - selected

2018 PBS Nature  
 2017 The Jungle Diaries: [https://www.youtube.com/watch?v=4ax38AFL3\\_Y](https://www.youtube.com/watch?v=4ax38AFL3_Y)  
 2016 Anchor FM - This Amazing Earth  
 2014 *Nature: News & Views* - "Evolutionary Biology: Sex, Lies, and Butterflies" D.W. Loehlin & S.B. Carroll.  
 2012 *Science Daily* - "Genome research reveals key behind one butterfly's ability to mimic another."  
 2011 *This week in Evolution*, "Rapid diversification and not clade age explains high diversity in neotropical butterflies"  
 2011 *Bostonia Magazine*, "The secrets of butterfly wings"  
 2009 *Lehigh Alumni Bulletin*, "Darwin party earns national recognition for Lehigh's Sigma Xi chapter"  
 2008 *Lehigh Alumni Bulletin*, "Celebrating Darwin's birthday and legacy"  
 2006 *National Geographic Daily News*, "Ancient locust swarm crossed Atlantic, study says"

## TEACHING

### Associate Professor

*Boston University*

Introductory Biology, - 25% effort, Fall 2017 - Intro. Course for majors  
 Introductory Biology -BU Academy, Fall 2016-17 – Undergraduate Course  
 Evolution, Fall 2011-2017 – Undergraduate Course  
 Progress in Ecology, Behavior, Evolution & Marine Science, Fall 2013 – Graduate course  
 Advanced Evolutionary Analysis, Spring 2013-17 – Graduate course  
 Species & Speciation, Fall 2012, Spring 2016– Graduate course  
 Population Genetics, Spring 2011– Undergraduate course

### Assistant Professor (2007-2010)

*Lehigh University*

Integrative & Comparative Biology w/Lab, Spring 2009, 2010 – Undergraduate Course  
 Evolution, Fall 2007-2009 – Undergraduate Course  
 Species & Speciation, Spring 2008 – Graduate course



**Instructor***University of Maryland, College Park*

Principles of Evolution, Winter 2006 – Undergraduate Course

**NSF K-12 Teaching Fellow – Cornell University**

Environmental Science, The Alternative Community School, Ithaca, NY USA. - Spring 2004

Ecology, The Alternative Community School, Ithaca, NY USA - Fall 2003

**Teaching Assistant – Undergraduate Courses**

Introductory Biology, 1999-2001; 2004-2005

Evolution for non-majors, 2002-2003

Environmental Science, 1998; 1999

Animal Behavior, 1997

**DEPARTMENTAL SERVICE***Boston University*

- 2017 Chair, Graduate Committee (Spring)  
Graduate Committee Member (Fall)  
Director, Tropical Ecology Program
- 2016: Department of Biology, undergraduate advising (n=39)  
Freshman Friday  
Chair, Graduate Committee
- 2015: Department of Biology, undergraduate advising (n=23)  
EBE Graduate Committee Service – EBE grad guide revision.  
Biobugs x 2  
Freshmen Friday x 2
- 2014 Department of Biology, undergraduate advising (n=19)
- 2013 Department of Biology, undergraduate advising (n=26)
- 2012 Ecology, Behavior, Evolution, and Marine Biology Seminar Organizer  
Department of Biology, undergraduate advising (n=24)
- 2011 Ecology, Behavior, Evolution, and Marine Biology Seminar Organizer  
Department of Biology, undergraduate advising (n~18)
- 2011 Biobugs x 2
- 2010 Freshmen Friday x 3  
Biomixer

*Lehigh University*

- 2010 Department of Biological Sciences, undergraduate advising (n=19)  
Pool Scholars Pre-Medical Faculty Advisor  
Graduate Admissions Committee
- 2009 Biology Seminar Series Coordinator

- Pool Scholars Pre-Medical Faculty Advisor  
 Microbial Ecology Search Committee  
 Graduate Admissions Committee  
 Department of Biological Sciences, undergraduate advising (n=14)  
 2008 Graduate Admissions Committee  
 Department of Biological Sciences, undergraduate advising (n=11)  
 Undergraduate Curriculum Committee  
 2007 Undergraduate Curriculum Committee

### Postdoctoral advisor

- 2017 - 2019 Martin Schilling, Ph.D. - Utah State University. Co-Advised with Dr. Samuel Flaxman, CU Boulder.  
 2015 - 2018 Susan Finkbeiner, Ph.D. – UC Irvine. Co-Advised with Dr. Marcus Kronforst , UChicago  
 2011 – 2013 Jason R. Gallant. *Current Position:* Assistant Professor, Department of Zoology, Michigan State University  
 2009 - 2012 Wesley K. Savage. *Current Position:* Full-time Lecturer, Department of Biology, UMass Lowell

### Graduate advisor/ co-advisor

- 2016 - present Isabella Muratore, Ph.D., Boston University, USA - Co-Advised with Dr. James Traniello  
 2014 - present Evan Kristiansen, Ph.D., Boston University, USA  
 2012 - 2014 Emily R. Ebel, M.S., Boston University, USA  
 2007 - 2014 Vance Imhoff, Ph.D., Lehigh University, USA

### EXTERNAL PROFESSIONAL SERVICE

- Associate Editor – Journal of Heredity  
 American Genetics Association – Council Member 2014-18.

### Professional Reviews – Guest Editor

- 2013 Journal of Heredity  
 2014 Journal of Zoology

### Ad-hoc Reviews – Scientific Manuscripts

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|---------------------------------|--|
| Nature                          | PNAS                                       |
| PLoS Genetics                   | Evolution                                  |
| Journal of Evolutionary Biology | Molecular Phylogenetics and Evolution      |
| Animal Behavior                 | Proceedings of the Royal Society, Series B |
| Molecular Ecology               | Genetics                                   |
| Ethology                        | BMC Evolutionary Biology                   |
| BMC Genomics                    | Genetica                                   |

PLoS Biology  
PEERJ

Nature Ecology & Evolution  
Journal of the Lepidopterist Society

### **Ad-hoc Reviews - Proposals**

2009-2016 National Science Foundation, Division of Environmental Biology, Evolutionary Processes -External Reviewer – 2-5 proposals, annually.  
2010 BBSRC External Review, UK.  
2009 Dutch Research Council (NWO) External Reviewer

### **Grant Proposal Review Panels**

2017 National Science Foundation, Division of Environmental Biology, Evolutionary Ecology Full Proposal Panel.  
2015 National Science Foundation, Division of Environmental Biology, Evolutionary Processes, Preproposal Panel  
2014 National Science Foundation, Division of Environmental Biology, Evolutionary Processes Panel  
2014 National Science Foundation, Division of Environmental Biology, Dimensions in Biodiversity  
2012 National Science Foundation, Division of Environmental Biology, Evolutionary Process DDIG Panel  
2010, National Science Foundation, Division of Environmental Biology, Evolutionary Process DDIG Panel  
2009 National Science Foundation, Graduate Research Fellowship Panel

### **Professional Memberships**

American Genetics Association  
Society for the Study of Evolution  
Society for Molecular Biology and Evolution  
Lepidopterist's Society  
Sigma Xi Scientific Research Society