

Dr. Susan Lynn Balenger

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ACADEMIC RESEARCH APPOINTMENTS & EDUCATION

- 2012 - Postdoctoral Researcher, Department of Ecology, Evolutionary Biology, and Behavior, University of Minnesota, USA
Advisor: Dr. Marlene Zuk
- 2011 - 2012 Postdoctoral Researcher, Division of Genetics and Physiology, Department of Biology, University of Turku, Finland
Advisor: Dr. Erica Leder
- 2006 - 2011 Ph. D., Department of Biological Sciences, Auburn University, USA
Title: "Evolution of infection-induced changes in gene expression in the House Finch, *Carpodacus mexicanus*"
Advisor: Dr. Geoffrey E. Hill
- 2004 - 2008 M. S., Department of Biological Sciences, Towson University, USA
Title: "Sexual selection in a socially monogamous bird: Male color and paternity in the Mountain Bluebird, *Sialia currucoides*"
Advisor: Dr. L. Scott Johnson
- 1994 - 1998 B. S., Ecology, Evolutionary Biology and Behavior, University of Maryland-College Park

OTHER RESEARCH & PROFESSIONAL EXPERIENCE

- 2002 - 2004 Cell Culture Core Facility Manager and General Laboratory Technician, Department of Anesthesiology and Critical Care Medicine, Johns Hopkins University
- 2000 - 2002 Research Technician, Center of Biotechnology, University of Nebraska
- 1999 - 2000 Intern, National Breeding Bird Survey, Patuxent Wildlife Research Center,
- 1998 - 1999 Environmental Educator, Adirondack Park AmeriCorps, Indian Lake School (K-12), NY

PEER-REVIEWED PUBLICATIONS

- Balenger S.L.**, Bonneaud C., Sefick S., Zhang J., Edwards S.V., and Hill G.E. (In press) Plumage color and infection-induced gene expression in a wild bird. *Behavioral Ecology*.
- Balenger S.L.** (In press) Stridulated soft song in singing insects. *Animal Behaviour* (special issue – *Whispered Communication*).
- Balenger S.L.**, and Zuk M. (2015) Roaming Romeos: male crickets evolving in silence exhibit increased locomotor behaviors. *Animal Behaviour* 101: 213-219.
- Zuk M. and **Balenger S.L.** (2014) Behavioral ecology and genomics: new directions, or just a more detailed map? *Behavioral Ecology*, 1277-1282 (*invited perspective*).
- Balenger S.L.** and Zuk M. (2014) Testing the Hamilton-Zuk hypothesis: past, present, and future. *Integrative and Comparative Biology* 54: 601-613 (doi:10.1093/icb/icu059).
- Hill G. E., Fu X., **Balenger S. L.**, McGraw K. J., Girardeau M., and Hood W. R. (2013) Changes in concentrations of circulating heat shock proteins in wild songbirds in response to distinct environmental stressors. *Journal of Field Ornithology* 84: 416-424.
- Bonneaud C., **Balenger S.L.**, Hill G.E., and Russell A.F. (2012) Experimental evidence for distinct costs of pathogenesis and immunity against a natural pathogen in a wild bird. *Molecular Ecology* 21: 4787-4796 (doi: 10.1111/j.1365-294X.2012.05736.x).

- Bonneaud C., **Balenger S.L.**, Zhang J., Edwards S.V., and Hill G.E. (2012) Innate immunity and the evolution of resistance to an emerging infectious disease in a wild bird. *Molecular Ecology* 21: 2628-2639 (doi: 10.1111/j.1365-294X.2012.05551.x).
- Delaney N., **Balenger S.L.**, Bonneaud C., Marx C., Hill, G.E., Ferguson-Noel N., Tsai P., Roderigo A., and Edwards S.V. (2012) Ultrafast evolution and loss of CRISPRs following host shift in a novel wildlife pathogen, *Mycoplasma gallisepticum*. *PLoS Genetics* 8: e1002511 (doi:10.1371/journal.pgen.1002511).
- Media coverage:*
- http://www.nescent.org/news/documents/NESCENT_Spring2012.pdf
 - http://www.msnbc.msn.com/id/46343744/ns/technology_and_science-science/#.TzV2K
 - http://www.eurekalert.org/pub_releases/2012-02/nesc-dbp020212.php
 - <http://www.sciencedaily.com/releases/2012/02/120209172803.htm>
- Balenger S.L.**, McClure C. J. M. and Hill G.E. (2011) Primer design and transcript quantification of a highly multiplexed RT-PCR for a non-model avian species, *Carpodacus mexicanus*. *Molecular Ecology Resources* 12: 116-122 (doi: 10.1111/j.1755-0998.2011.03058.x).
- Bonneaud C., **Balenger S.L.**, Russell A.F., Zhang J., Hill G.E., and Edwards S.V. (2011) Rapid evolution of disease resistance is accompanied by functional changes in gene expression in a wild bird. *Proceedings of the National Academy of Sciences* 108: 7866-7871 (doi: 10.1073/pnas.1018580108).
- Balenger S.L.**, Johnson L.S., and Masters B.S. (2009) Sexual selection in a socially monogamous bird: male color predicts reproductive success in the mountain bluebird (*Sialia currucoides*). *Behavioral Ecology and Sociobiology* 63:403-411 (doi: 10.1007/s00265-008-0674-5).
- Balenger S.L.**, Johnson L.S., Mays H., and Masters B.S. (2009) Extra-pair paternity in the strongly sexually dichromatic Mountain Bluebird and its effect on the opportunity for sexual selection. *Journal of Avian Biology* 40:173-180 (doi: 10.1111/j.1600-048X.2009.04521.x).
- Balenger S.L.**, Johnson L.S., Brubaker J., and Ostlind E. (2007) Parental effort in relation to structural plumage coloration in the mountain bluebird (*Sialia currucoides*). *Ethology* 113: 838-846 (doi: 10.1111/j.1439-0310.2007.01386.x).
- Johnson L.S., Ostlind E., Brubaker J., and **Balenger S.L.** (2006) Variation in parental provisioning effort along an elevational gradient in a population of mountain bluebirds (*Sialia currucoides*). *Journal of Ornithology* 148:9-16.
- Johnson L.S., Ostlind E., Brubaker J., **Balenger S.L.**, Johnson B.G., and Golden H. (2006) Changes in egg size and clutch size with elevation in a Wyoming population of mountain bluebirds. *The Condor* 108: 591-600.
- Shawkey M.D., **Balenger S. L.**, Hill G.E., Johnson L.S., Keyser A.J., and Siefferman L. (2006) Mechanisms of evolutionary change in structural plumage coloration among bluebirds (*Sialia* spp.). *Journal of the Royal Society – Interface* 3: 527-532.
- Wagner K.F., Hellberg A.K., **Balenger S.L.**, Depping R., Dodd-O J., Johns R.A., and Li D. (2004) Hypoxia induced mitogenic factor has antiapoptotic action and is upregulated in the developing lung: coexpression with hypoxia-inducible factor-2 alpha. *American Journal of Respiratory Cellular Molecular Biology* 31:276-282.
- Rohr J., Sarkar N., **Balenger S.L.**, Jeong B., and Cerutti H. (2004) Tandem inverted repeat system for selection of effective transgenic RNAi strains in *Chlamydomonas reinhardtii*. *The Plant Journal* 40:611-621.

GRANTS, FELLOWSHIPS, and HONORS

2012-2015	Academy of Finland Postdoctoral Research Fellowship (declined to accept position at UMN)	\$390,000
2012	Oskar Öflunds Research Grant	\$6250
2011	Kenneth Otis Distinguished Graduate Award in Physiology & Molecular Biosciences, Dept of Biological Sciences, Auburn U	
2012	European Science Foundation Exchange Visit (to France) Grant	\$1885
2008-2011	National Science Foundation-Experimental Program to Stimulate Competitive Research Graduate Fellowship	\$75,000
2010	American Ornithologists' Union Research Grant	\$2470
2010	Animal Behavior Society Research Grant	\$1080
2009	NSF Animal Behavior Research Grant (P.I.'s: G.E. Hill and S.V. Edwards)	\$600,000
2009	Gordon Conference in Evolutionary and Ecological Functional Genomics Travel Award	\$850
2008	American Ornithologists' Union student Travel Grant	\$400
2007	Society of Integrative and Comparative Biology Research Grant	\$1000
2006-2007	Research Fellow, Cellular and Molecular Biosciences, Auburn University	\$18,000
2006	National Science Foundation-East Asia & Pacific Summer Institute Research Fellowship, National Taiwan University	\$10,000
2004	Sigma Xi Grant In Aid of Research	\$500

+ Professional advancement grants for travel and research from the University of Minnesota (1 grant for \$400), Auburn University (3 grants totaling \$1400), and Towson University (3 grants totaling \$2000)

PROFESSIONAL DEVELOPMENT COURSES

2012	Preparing Future Faculty Retreat, Center for Teaching & Learning, University of Minnesota
2012	Teaching That Sticks Workshop, Center for Teaching & Learning, University of Minnesota
2010	Seminar in College Teaching, (semester long graduate course) Biggio Center for the Enhancement of Teaching & Learning, Auburn University

TEACHING EXPERIENCE

2008	Teaching Assistant, General Biology for Non-Majors, Department of Biological Sciences, Auburn University
2008	Teaching Assistant, Ornithology, Department of Biological Sciences, Auburn University
2007	Teaching Assistant, Genetics, Department of Biological Sciences, Auburn University
2004-2006	Teaching Assistant, General Biology for Non-Majors, Department of Biological Sciences, Towson University (6 semesters)

Guest lecturer:

Animal Behavior (University of Minnesota), Behavioral Genetics (University of Turku),
Birds of the World (Auburn University), Advanced Evolutionary Biology (Auburn University),
Comparative Genomics (Auburn University), General Biology for Non-Majors (Towson
University)

INVITED SYMPOSIA TALKS & DEPARTMENT SEMINARS

High, low, and no amplitude signalling: courtship song in moths and crickets

- Animal Behavior Society, Princeton, New Jersey, 2014
- Behavior Group, Dept of Ecology, Evolution and Behavior, University of Minnesota, USA
2014

- Testing the Hamilton-Zuk hypothesis with 21st century genetics tools
- Society of Integrative and Comparative Biology, Austin, Texas, 2014
- Rapid Evolution in Silence: Adaptive Signal Loss in the Pacific Field Cricket
- Dept of Biology, St. Catherine University, USA 2013
- The Degenerate Male: Sex Chromosome Evolution in the Threespined Stickleback
- Edward Grey Institute of Ornithology, Oxford University, UK 2012
- Evolution of Pathogen-Induced Gene Expression in the House Finch, *Carpodacus mexicanus*
- Darwin Day Speaker, Dept of Biological Sciences, Carleton College, USA 2013
 - Behavior Group, Dept of Ecology, Evolution and Behavior, University of Minnesota, USA 2012
 - Dept of Biology, University of Turku, Finland 2011
 - College of Veterinary Sciences, Auburn University, USA 2009
- Sexual Selection in a Socially Monogamous Bird: Male Color and Paternity in the Mountain Bluebird
- Behavior Group, Dept of Ecology, Evolution and Behavior, University of Minnesota, USA 2012
 - Dept of Biological Sciences, Auburn University, USA 2008

SELECTED CONFERENCE PRESENTATIONS (List includes only first author presentations)

- 2015 It's the song, not the singers: Acoustic experience is more important than population density in shaping male field cricket alternative mating tactics. Animal Behavior Conference, Bloomington, Indiana, USA (oral)
- 2014 Roaming Romeos: Evolution in silence selects for male crickets with increased locomotory behaviors. International Society of Behavioral Ecology, New York, New York, USA (oral)
- 2013 Does exposure to sexual signals during rearing affect adult male search behavior? Animal Behavior Society, Boulder, Colorado, USA (poster)
- 2013 Genetic and calling song variation in the Pacific field cricket, *Teleogryllus oceanicus*, across a wide geographical range. Society for the Study of Evolution, Snowbird, Utah, USA (poster)
- 2013 Plumage color predicts infection-induced gene expression in a wild bird. Society for the Study of Evolution, Snowbird, Utah, USA (oral)
- 2012 Y chromosome degeneration in the threespine stickleback. Workshop in Evolution of Sex-Determination Mechanisms, La Sage, Switzerland (oral)
- 2010 Plumage color predicts infection-induced gene expression in a wild bird. International Conference of New Directions in Sexual Selection Research: Unifying Behavioural and Genomic Approaches, Bath, UK (oral)
- 2009 Genomics of a host-parasite coevolutionary interaction. EMBO World Practical Course in Advanced Bioinformatics of Gene and Genome Evolution, Medellin, Columbia (oral)
- 2009 Searching for good genes in a wild songbird. National NSF-EPSCoR Conference, Washington, DC, USA (poster)
- 2009 Plumage color predicts pathogen-induced gene expression in a wild songbird. Gordon Research Conference in Evolutionary and Ecological Functional Genomics, Tilton, New Hampshire, USA (poster)
- 2008 Searching for good genes in the house finch. 12th International Society of Behavioral Ecology Conference, Ithaca, NY, USA (poster)

- 2008 Sexual selection in a socially monogamous bird: male color and paternity in the mountain bluebird. Annual Meeting of the American Ornithologists' Union, Portland, Oregon, USA (oral)
- 2008 Gene expression and parasite-mediated sexual selection in the house finch. Annual Meeting of the Society of Integrative and Comparative Biology, San Antonio, Texas, USA (poster)
- 2005 Does male UV-blue color indicate parental effort in Mountain Bluebirds? Joint meeting of the Association of Field Ornithologists and the Wilson Ornithological Society, College Park, Maryland, USA (oral)

PROFESSIONAL SERVICE

Selected Undergraduate Directed Research Mentoring Activities:

University of Minnesota – Twin Cities

Elizabeth Schmidtman (July 2013 – present), “Effects of Coqui frog calls on field cricket mating behavior”

Laura Peterson (March 2014-December 2014), “The effect of amplitude modulation of male cricket courtship song on female phonotaxis behavior”

Henry Kunerth (March 2013-Aug 2014), “Genetic and geographic variation in the acoustically-orienting fly *Ormia ochracea*” (began PhD in Evolutionary Biology at Cornell University Fall 2014)

Paul Swim (June 2013-Aug 2014), “Reproductive behavior after immune challenge in the Pacific field cricket” (began MS in Animal Behavior at Salisbury University Fall 2014)

Zach Emberts (October 2012-May 2013), “The effect of rearing environment on female preference for male courtship song” (began PhD in Animal Behavior at University of Florida Fall 2014)

Auburn University

Emily Brennan (August 2009-May 2011), “Do maternal antibodies protect songbird nestlings from infection with a natural bacterial pathogen?” (currently pursuing an MPH at Emory University)

Manuscript Review:

Amphibia-Reptilia, Animal Behaviour, Behavioral Ecology, Behavioural Processes, Ecology and Evolution, Ethology, Heredity, Ibis, Journal of Avian Biology, Journal of Field Ornithology

Other Service Activities:

- Expert panel member, “The Nature of Research,” College of Biological Sciences, University of Minnesota, 2014
- International Society of Behavioral Ecology abstract reviewer for 2014 biannual meeting
- College of Biological Sciences Welcome Week Volunteer, University of Minnesota, 2013
- Behavior Outreach Fair, “Insect Love Songs,” Animal Behavior Society annual meeting, 2013
- Treasury officer for the Biological Sciences Graduate Student Association, 2008-2011
- Regional Science Olympiad Ornithology Coordinator, 2010
- Organizer of Hill lab group “Sexual Selection” Journal Club, 2009-2010
- Organizer of Auburn University Department of Biological Sciences “Behavior, Ecology and Evolutionary Biology” Journal Club, 2009
- Education Committee Member, North American Bluebird Society, 2007-2009
- Judge, South’s BEST Robotics Competition, 2007
- Graduate student representative on new faculty hiring committee, Towson University 2005
- Field Assistant, Department of Biological Sciences, University of Nebraska, 2000