

JONATHAN P. VELOTTA

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EDUCATION

- 2014 Ph.D., University of Connecticut, Department of Ecology and Evolutionary Biology, Advisor: Eric T. Schultz
2007 B.S., Fairfield University, Major: Biology, Minor: Biological Psychology, *Magna cum laude*.

PROFESSIONAL APPOINTMENTS

- 2017 National Institutes of Health Postdoctoral Fellow, Sponsors: Drs. Zachary Cheviron and Graham Scott
2015 Postdoctoral Scholar, Zachary Cheviron Lab, University of Montana, Division of Biological Sciences

PUBLICATIONS

11. Nelson T, Jones MR, **Velotta JP**, Dhawanjewar A, Schweizer RM. 2019. Unveiling connections between genotype, phenotype, and fitness in natural populations. **Molecular Ecology**. 2019: 1-11. DOI: 10.1111/mec.15067
10. **Velotta JP**, Ivy CM, Wolf CJ, Scott GR, Cheviron ZA. 2018. Maladaptive phenotypic plasticity in cardiac muscle growth is suppressed in high-altitude deer mice. **Evolution**. 72(12): 2712–2727. DOI: 10.1111/evo.13626
9. **Velotta JP** and Cheviron ZA. 2018. Remodeling ancestral phenotypic plasticity in local adaptation: A new framework to explore the role of genetic compensation in the evolution of homeostasis. **Integrative and Comparative Biology**. 58(6): 1098-1100. DOI: 10.1093/icb/icy117
8. **Velotta JP**, McCormick SD, Jones AW, Schultz ET. 2018. Reduced swimming performance repeatedly evolves upon loss of migration in landlocked populations of Alewife. **Physiological and Biochemical Zoology**. 91(2): 814-825. *Cover story*
7. Tate, KB, Ivy, CM, **Velotta JP**, Storz JF, McClelland GB, Cheviron ZA, Scott GR. 2017. Circulatory mechanisms underlying adaptive increases in thermogenic capacity in high-altitude deer mice. **Journal of Experimental Biology**. 220(20), 3616-3620
6. **Velotta JP**, Wegrzyn JL, Ginzburg S*, Kang L, O'Neill RJ, Czesny S, McCormick SD, Michalak P, Schultz ET. 2017. Transcriptomic imprints of adaptation to fresh water: parallel evolution of osmoregulatory gene expression in the Alewife. **Molecular Ecology**. 25(3): 831-848
5. **Velotta JP**, Jones J, Wolf CJ, Cheviron ZA. 2016. Transcriptomic plasticity in brown adipose tissue underlies an enhanced capacity for non-shivering thermogenesis in deer mice. **Molecular Ecology**. 25(12): 2870-2886
4. **Velotta JP**, McCormick SD, Schultz ET. 2015. Trade-offs in osmoregulation and parallel shifts in molecular function follow ecological transitions to freshwater in the Alewife. **Evolution**. 69(10): 2679-2688
3. **Velotta JP**, McCormick SD, O'Neill RJ, Schultz ET. 2014. Relaxed selection causes microevolution of seawater osmoregulation and gene expression in landlocked Alewives. **Oecologia**. 175(4): 1081-1092
2. Michalak K, Czesny S, Epifanio J, Snyder RJ, Schultz ET, **Velotta JP**, McCormick SD, Brown BL, Santopietro G, Michalak P. 2014. Beta-thymosin gene polymorphism facilitates freshwater invasiveness of Alewife (*Alosa pseudoharengus*). **Journal of Experimental Zoology A**. 321(4): 233-240. *Cover story*
1. Harding SM and **Velotta JP**. 2011. Comparing the relative amount of testosterone required to restore sexual arousal, motivation, and performance in male rats. **Hormones and Behavior**. 59(5): 666-673

Manuscripts in progress (available upon request)

Schweizer RM† & **Velotta JP**†, Ivy C, Jones MR, Muir SM, Bardburd GS, Storz JF, Scott G, Cheviron ZA. *In review*. Physiological and genomic evidence that selection on the transcription factor *Epas1* has altered cardiovascular function in high-altitude deer mice. **PLoS Genetics**. † *authors contributed equally*

Velotta JP, Funk EC*, Fucikova K, McCormick SD, Schultz ET. *In revision*. Restriction to freshwater leads to loss of water balance and gene expression of intestinal *aquaporin-1* in the Alewife. **Comparative Biochemistry and Physiology Part A**.

* *undergraduate mentee*

GRANTS AND AWARDS

- 2017 **Ruth L. Kirschstein National Research Service Award, National Institutes of Health** (\$177,000)
American Museum of Natural History, Gerstner Scholars Fellowship (\$132,000; awarded)
- 2014 John Moring Student Travel Award. Northeastern Division of the American Fisheries Society (\$425)
- 2012 Walter Whitworth Fund to the University of Connecticut's Department of Ecology and Evolutionary Biology and Connecticut State Museum of Natural History (\$525)
American Fisheries Society Physiology Section, Student Travel Award (\$850)
Doctoral Dissertation Fellowship Award, University of Connecticut (\$2,000)
- 2011 Ralph Wetzel Endowment to the University of Connecticut's Department of Ecology and Evolutionary Biology and Connecticut State Museum of Natural History (\$1,028)
The Sounds Conservancy of the Quebec-Labrador Foundation (\$750)
- 2010 American Society of Ichthyologists and Herpetologists Graduate Student Travel Award (\$300)
John Rankin Scholarship Fund to the University of Connecticut's Department of Ecology and Evolutionary Biology and Connecticut State Museum of Natural History (\$850)
- 2009 Connecticut Sea Grant, Developmental Grant (\$5,280)
Multidisciplinary Environmental Research Award, University of Connecticut's Center for Environmental Science and Engineering (\$5,000)
Lerner-Gray Fund for Marine Research, American Museum of Natural History (\$1,500)
Center for Conservation and Bio-diversity, University of Connecticut (\$500)
Sigma-Xi: Grants-in-aid of Research (\$400)
- 2007 Phi Beta Kappa National Honor Society, Zeta Chapter of Fairfield University

TEACHING EXPERIENCE

Instructor

- Comparative Animal Physiology**, University of Montana, *co-taught* with Zachary Cheviron 2018
- Field Methods in Fish Biology**, University of Connecticut 2013, 2014
- Introduction to Fisheries and Wildlife**, University of Connecticut, *co-taught* with Morty Ortega 2012

Teaching Assistant

- Human Evolution and Diversity, University of Connecticut 2014
- Principles of Biology II for biology majors, University of Connecticut 2011, 2012, 2013, 2014
- The Biology of Freshwater, University of Connecticut 2009, 2013
- The Biology of Fishes, University of Connecticut 2009, 2011
- Foundations of Biology for non-majors, University of Connecticut 2010, 2012
- Laboratory Techniques in Functional Genomics, University of Connecticut 2010

Guest Lecturer

Comparative Vertebrate Physiology, University of Illinois, <i>osmoregulation in fish</i>	2015
Freshwater Biology, Providence College, <i>fishes and the invasion of freshwater</i>	2014, 2015
Principles of Biology II, University of Connecticut, <i>the diversity of mammals</i>	2011
Topics in Modern Biology, University of Connecticut	2009, 2010, 2011, 2014

STUDENT MENTORSHIP

Thesis Mentees

Haley Erickson, University of Montana, <i>convergent evolution in Peromyscus mice</i>	current
Rebecca Colby*, University of Connecticut, <i>molecular evolution of gill ion transporters</i>	2012-2014
Emily Funk*, University of Connecticut, <i>gene expression in alewife gut</i>	2010-2013

Independent Study Mentees

Beverly Domschot, University of Montana, <i>deer mouse muscle histology and physiology</i>	current
Madilyn Head, University of Montana, <i>gene expression in deer mouse kidney</i>	2018-2019
Natalie Orta, University of Montana, <i>deer mouse muscle histology and physiology</i>	2018-2019
Kamilla Bentsen*, University of Montana, <i>gene expression in deer mouse skeletal muscle</i>	2017-2018
Jenna Schabacker, University of Montana, <i>convergent evolution in Peromyscus mice</i>	2015-2017

Field Assistants and Volunteers

Kristofer Sasser*, University of Montana	2016
Emily Leonhardt, University of Montana	2016
Rachel Baits, University of Illinois	2015
Danish Qazi, University of Illinois	2015
Lauren Crispino, University of Connecticut	2012-2013
Megan Cruz, University of Connecticut	2009-2011
Anne Ewert*, University of Connecticut	2009-2011

* student currently enrolled in grad program

INVITED SEMINARS

- 2019 University of California Riverside, Department of Evolution, Ecology and Organismal Biology
University of Washington, Department of Biology, Seattle WA
- 2018 Swarthmore College, Department of Biology, Swarthmore PA
Symposium on the Ecological and Physiological Impacts of Salinization of Aquatic Systems from Human Activities. University of California Davis.
- 2017 Carleton College, Department of Biology, Northfield MN
River Herring Technical Expert Working Group. Virtual conference
- 2016 Bucknell University, Department of Biology, Lewisburg PA
- 2015 Providence College, Department of Biology Providence, RI
- 2014 Fairfield University, Department of Biology, Fairfield CT

CONTRIBUTED PRESENTATIONS

- 2019 **Evolution**. Providence, RI
Velotta JP, Robertson CE, McLelland GR, Cheviron ZA. The ontogeny of thermogenesis and its evolution in high-altitude deer mice.
- 2018 **Joint Congress on Evolutionary Biology**. Montpellier, France

Velotta JP, Senner NR, Wolf CJ, Schweizer RM, Chevion ZA. Non-adaptive plasticity contributes to hypoxia adaptation across independently derived high-altitude *Peromyscus* mice

Evolutionary Genomics Symposium. Flathead Lake Biological Field Station, Montana

Velotta JP, Senner NR, Wolf CJ, Schweizer RM, Scott GR, Chevion ZA. Maladaptive phenotypic plasticity contributes to evolution at high-altitude: insights from *Peromyscus*

Society of Integrative and Comparative Biology. San Francisco, CA.

Velotta JP, Senner NR, Wolf CJ, Schweizer RM, Scott GR, Chevion ZA. Loss of maladaptive plasticity in response to hypoxia in high-altitude *Peromyscus* mice

2017 **Evolution.** Portland, OR

Velotta JP, Scott GR, Chevion ZA. Non-adaptive plasticity promotes adaptation to high-elevation in *Peromyscus* mice

2016 **Evolution.** Austin, TX

Velotta JP, Scott GR, Chevion ZA. Plasticity and evolution of heart size and gene regulation in high-altitude deer mice

12th International Congress on the Biology of Fishes. San Marcos, TX.

Velotta JP, McCormick SD, Schultz ET. Freshwater adaptation and the evolution of osmoregulation and gene expression in the Alewife

Society of Integrative and Comparative Biology. Portland, OR

Velotta JP, Jones J, Wolf CJ, Chevion ZA. Mechanisms of adaptation to cold-hypoxia in high-altitude deer mice: the role of non-shivering thermogenesis

2014 **American Physiological Society Intersociety Meeting,** San Diego, CA

Velotta JP, Schultz ET, Michalak P, O'Neill RJ, McCormick SD. Physiological and functional genomic mechanisms of salinity transitions in the Alewife

Annual Meeting of the American Fisheries Society. Quebec City, Canada.

Velotta JP, Schultz ET, McCormick SD. Physiological and performance consequences of landlocking in the Alewife

Evolution. Raleigh, NC

Velotta JP, Schultz ET, Michalak P, O'Neill RJ, McCormick SD. Genomic imprints of freshwater transitions in the Alewife

Society of Integrative and Comparative Biology. Austin, TX

Velotta JP, Schultz ET, Michalak P, O'Neill RJ, McCormick SD. Genomic mechanisms of freshwater transitions in Alewives

Connecticut Conference on Natural Resources. Storrs, CT

Velotta JP, Schultz ET, McCormick SD. Loss of anadromous migration results in reduced swimming performance and poor seawater growth in two landlocked populations of Alewife

2013 **Society of Integrative and Comparative Biology.** San Francisco, CA

Velotta JP, Schultz ET, McCormick SD. Freshwater transitions and the evolution of osmoregulation in Alewives

2012 **10th International Congress on the Biology of Fishes.** Madison, WI

Velotta JP, Schultz ET, McCormick SD. Freshwater transitions and the evolution of osmoregulatory function in Alewives

2010 **Joint Meeting of Ichthyologists and Herpetologists.** Providence, RI

Velotta JP, Schultz ET, McCormick SD, O'Neill RJ. Microevolutionary changes to osmoregulatory physiology in Alewife

Northeast Regional Sigma Xi Poster Session. New Haven, CT

Velotta JP, Schultz ET, McCormick SD. Microevolutionary changes to osmoregulatory physiology in Alewife

Connecticut Conference on Natural Resources. Storrs, CT

Velotta JP, Schultz ET, McCormick SD. Climate change and the effects of land-locking on the osmoregulatory physiology of Alewife populations in Connecticut

American Fisheries Society Southern New England Chapter Winter Meeting. Groton, CT

Velotta JP, Schultz ET, McCormick SD. Inter-population differences in the osmoregulatory physiology of Alewife in Connecticut

2007 **Northeast Undergraduate Research Organization for Neuroscience.** New York, NY

Harding SM, Velotta JP. Comparing the relative amount of testosterone required to restore sexual arousal, motivation, and performance in male rats.

PREVIOUS RESEARCH EXPERIENCE

- Biodiversity Research Collection Facility, University of Connecticut, Storrs, CT 2014
- *Curatorial technician for fish research collections*
- Eric Schultz Lab at the University of Connecticut, Storrs, CT 2008
- *Graduate research assistant: the kinematics of the copulatory organ of male poeciliid fishes*
- Brian Walker Lab at Fairfield University, Fairfield, CT and Managua, Nicaragua 2006-2008
- *Research technician: stress physiology of the house sparrow*
- Shannon Harding Lab at Fairfield University, Fairfield, CT 2006-2008
- *Research technician: the role of testosterone in the sexual behavior of male rats*

PROFESSIONAL DEVELOPMENT

- 2019 ConGen: Applications of New Sequencing Technologies to Understand Population Structure, Adaptation, and Environmental Influences on Genomic Variation

PEER REVIEW

Grant proposals

- 2017 National Science Foundation *ad-hoc* reviewer

Journals

- 2019 *Comparative Biochemistry and Physiology, Evolutionary Applications, Evolution, Frontiers Ecology and Evolution, Molecular Ecology*
- 2018 *Evolutionary Applications, Genetica, Journal of Fish Biology, Molecular Ecology, Philosophical Transactions of the Royal Society B*
- 2017 *General and Comparative Endocrinology, Genome Biology and Evolution*
- 2016 *Heredity, Scientific Reviews*
- 2015 *Evolution*

OUTREACH

- 2014 Presentation on careers in aquatic biology to Vernon Middle School, Vernon, CT
- 2011 – 2014 Graduate Student Symposium organizing committee leader
Graduate Student Invited Seminar organizing committee leader
- 2013 McNair Fellowship mentor. *A weeklong high school mentorship program for future scientists*
- 2012 Presentation on fish biology to Children's Community School 2nd grade, Waterbury, CT
Connecticut Museum of Natural History field fish sampling day, Mansfield, CT

PROFESSIONAL AFFILIATIONS

Phi Beta Kappa – Inducted May 2007

Sigma Xi – Inducted May 2007
Society of Integrative and Comparative Biology
Society for the Study of Evolution