

CURRICULUM VITAE

Timothy J. Muir

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EDUCATION

- Ph.D. (August 2009) Zoology, Miami University, Oxford, OH
Dissertation: *Mechanisms and phylogenetic breadth of urea-induced hypometabolism*
- M.S. (August 2007) Zoology, Miami University, Oxford, OH
Thesis: *Osmotic and metabolic responses to dehydration and urea-loading in a terrestrially hibernating frog*
- B.A. (June 2003) Biology, Kalamazoo College, Kalamazoo, MI
Senior project: *Factors affecting levels of oxygen in leatherback turtle nests*

PROFESSIONAL POSITIONS

- 2015-present Associate Professor of Biology, Augustana College, Rock Island, IL
2011-2013 Dr. Larry P. Jones Fellow in the Natural Sciences, Augustana College, Rock Island, IL
2009-2015 Assistant Professor of Biology, Augustana College, Rock Island, IL
2003-2009 Graduate Assistant, Miami University, Oxford, OH
2003-2004 Laboratory Coordinator, Laboratory for Ecophysiological Cryobiology, Miami University, Oxford, OH

GRANTS AND AWARDS

- 2018 Dr. Larry P. Jones Fellowship funding for “Tracking residual-yolk energy in dormant hatchling turtles” (Augustana College)
- 2012 Sigma Xi Grant in Aid of Research awarded to my student collaborator Manisha Kumar ('13)
- 2012 Recipient of the Dr. Larry P. Jones Endowed Fellowship in the Natural Sciences (Augustana College)
- 2011 Inaugural recipient of the Dr. Larry P. Jones Endowed Fellowship in the Natural Sciences (Augustana College)
- 2009 Promotion to full member of Sigma Xi Research Society
- 2009 Department of Zoology Graduate Research Award (Miami University)
- 2007 Completed the Preparing Future Faculty program, Center for Enhancement of Learning and Teaching at Miami University (selected to participate through a competitive application process)
- 2006 American Physiological Society Abstract Travel Award
- 2005-2006 Miami University Doctoral-Undergraduate Opportunities for Scholarship (DUOS) Award (Mentored Brian Dishong)

- 2005 Elected as student member of Sigma Xi Scientific Research Society
2002 Howard Hughes Medical Institute Fellowship (Kalamazoo College)

TEACHING EXPERIENCE

- Course Instructor *Applied Ecology* (BIOL 385; Winter '15-16, '17-18; Augustana College)
Becoming Biologists (BIOL 150; Winter '10-11; Augustana College)
Cell Biology (BIOL 210; Spring '10, '15, Fall '12, '15, Winter '13-14; Augustana College)
Comparative Physiology (BIOL 360; Fall '09, '10, '11, '13, '17, Spring '16; Augustana College)
Exercise and Animal Athletes (BIOL 464; Spring '16, Winter '18-19; Augustana College)
Human Physiology (BIOL 362; Fall '14, '16, '18, Winter '09-10, '10-11, '12-13, '14-15 Spring '12, '13, '14, '17, '18; Augustana College)
Winter Biology (BIOL 464; Spring '11, '13, '14, Fall '11; Winter '14-15; Augustana College)
Principles of Human Physiology (ZOO 161; Spring '09; Miami University)

MENTORED UNDERGRADUATE RESEARCH

- 2017-present Collaborative research with Augustana College undergraduates Erin Anusinha ('18), Hung (Tom) Pham ('19), Samira Radi ('19), and Jacob Wyco ('21). Their research focuses on energy transfer from yolk to somatic stores in hatchling turtles.
- 2016-present Collaborative research with Augustana College undergraduates Lawrence Catalan ('18) and Maggie Bednarek ('18). Lawrence and Maggie's research focuses on energy use of hatchling turtles over a wide range of temperatures.
- 2015-2017 Collaborative research with Augustana College undergraduate McKenna Burns ('17). McKenna's research investigates the winter physiology and biochemistry of tiger beetles.
- 2015-2017 Collaborative research with Augustana College undergraduate Dan Herrera ('17). Dan's research investigates the winter physiology of tiger beetles.
- 2012-2014 Collaborative research with Augustana College undergraduate Jimmy Wiebler ('14). Jimmy's research investigates the organismal and metabolic responses to brief chilling in hatchling turtles.

- 2010-2013 Collaborative research with Augustana College undergraduate Manisha Kumar ('13). Manisha's research investigates how seasonal energy use of an ectothermic animal is affected by environmental temperature. She is also part of a project researching the organismal and metabolic responses to brief chilling in hatchling turtles.
- 2009-2011 Collaborative research with Augustana College undergraduate Curt Perschnick ('12). Curt's research was focused on the organismal and metabolic responses to brief chilling in hatchling turtles.
- 2009 Mentored Miami University undergraduate Jennifer Krzmarzick. Jennifer's research was focused on biochemical responses to brief chilling in hatchling turtles.
- 2004-2006 Mentored Miami University undergraduate Brian Dishong as part of the DUOS program. Brian's research was focused on the energetics of overwintering in hatchling painted turtles.
- 2003-2007 Collaborative field research at Crescent Lake Wildlife Refuge with Dr. John B. Iverson (Earlham College) and Earlham College students Dan Green, Mollye Nardi, John Wagner, Tiauna Washington, David Wolfson, Hassan Salem, Rebecca Prosser, Evan Dalton.

PROFESSIONAL AFFILIATIONS

American Physiological Society
 Ecological Research as Education Network
 Sigma Xi Scientific Research Society
 Society for Integrative and Comparative Biology

PUBLIC OUTREACH & MEDIA COVERAGE

Led a week of "Kids on Campus" biological exploration for Rock Island school district sixth and seventh graders through Spring Forward Learning

Collaborative research was featured in the article, "[Sex in the City: Female turtles may be more common in urban areas](#)", on [Envirobites.org](#), 21 June 2018

Presented two public research talks as part of the Riverine Walks series sponsored by River Action, June 2018

Presented "Life Below Zero" to the Silvis Rotary Club, May 2018

Presented "Life Below Zero" to the Davenport chapter of the Philanthropic Education Organization, March 2018

Presented "Frog Adaptations" to 3rd graders at Eugene Field Elementary School, Rock Island, IL, November 2017 & November 2018

Presented a research talk to the Iowa State University Road Scholars group, September 2017 & September 2018

Presented two public research talks as part of the Riverine Walks series sponsored by River Action, June 2017

Featured in the article, "[How can turtles freeze, then thaw back to life?](#)", in the Quad City Times, 26 May 2017
 Presented a public research talk on energy use and hibernation at Holden Village, WA, February 2016
 Featured in the article, "[Into the woods: a familiar trail, seen anew](#)", in Radish magazine, November 2013
 Research was featured on the WQAD [Channel 8 news](#) at 6 pm on 19 June 2013
 Research was featured on the front page of [17 March 2013 issue](#) of the Quad City Times
 Presented "Animals in Winter" with Manisha Kumar ('13) to the residents of the Lighthouse at Silvis (IL), an assisted-living community for seniors
 Guest science teacher at The McGuffey Foundation School (K-8th grade)
 Represented the Laboratory for Ecophysiological Cryobiology at the annual "Ice Fest" in Hamilton, OH
 Served as a museum liaison to visiting high-school students and their teachers at the Hefner Zoology Museum at Miami University
 Presented the "Local Herpetofauna of Crescent Lake National Wildlife Refuge" at the CLNWR open house in Ellsworth, NE
 Member of "Science Alliance" between Miami University and Talawanda Public Schools

PROFESSIONAL SERVICE

Judge for Best Student Poster at the 2012 meeting for the Society for Integrative and Comparative Biology held in Charleston, SC
 Served as an outside reviewer for the Meritorious Teaching Award in Herpetology: 2011
 Serve as an expert reviewer for:
American Journal of Physiology – Regulatory, Integrative, and Comparative Physiology
Behavioral Ecology and Sociobiology
Cryoletters
Functional Ecology
Journal of Comparative Physiology B
Journal of Experimental Biology
Journal of Experimental Zoology A
Journal of Herpetology
Physiological and Biochemical Zoology
The Ecology and Conservation of Diamondback Terrapin (book)

INSTITUTIONAL SERVICE

2016-present	Chair of the Assessment for Improvement Committee
2015-2016	Chair of the Institutional Animal Care and Use Committee
2014-2018	Faculty mentor for the Augustana College football team
2013-2015	Member of task force for Ethical and Responsible Conduct report to the Higher Learning Commission
2012-2014	Member of the Student Research Committee
2011-2014	Assistant Professor representative on Faculty Senate

2010-2016 Member of the Symposium Day Committee
2010-2016 Member of the Institutional Animal Care and Use Committee
2010-2012 Member of the Athletics Committee
2009-present Have written letters of recommendation on behalf of 116 Augustana students

JOURNAL ARTICLES (PEER REVIEWED)

Bowne DR, Cosentino BJ, Anderson LJ, Bloch CP, Cooke S, Crumrine PW, Dallas J, Doran A, Dosch JJ, Druckenbrod DL, Durtsche RD, Garneau DE, Genet KS, Fredericksen TS, Kish PA, Kolozsvary MB, Kuserk FT, Lingquist ES, Mankiewicz C, March JG, Muir TJ, Murray KG, Santulli M, Sicignano FJ, Smallwood PD, Urban RA, Winnett-Murray K, Zimmerman CR 2018. Effects of urbanization on the population structure of freshwater turtles across the United States. *Conservation Biology*. 32:1150-1161.

Wiebler JM*, Kumar M*, Muir TJ 2017. Daily thermal fluctuations to a range of subzero temperatures enhance cold hardiness of winter-acclimated turtles. *Journal of Comparative Physiology B*. 187:1163–1172.

Muir TJ, Dishong BD*, Lee RE, Costanzo JP 2013. Differential energy use by terrestrially hibernating hatchling turtles (*Chrysemys picta*) exposed to cold, mild, or warm winter conditions. *Journal of Thermal Biology*. 38:324-330.

Kiss AJ, Muir TJ, Lee RE, Costanzo JP 2011. Seasonal variation in the hepatoproteome of the dehydration- and freeze-tolerant wood frog, *Rana sylvatica*. *International Journal of Molecular Sciences*. 12:8406-8414.

Muir TJ, Costanzo JP, Lee RE 2010. Urea-induced hypometabolism in the hibernating wood frog (*Rana sylvatica*) is not reflected in isolated mitochondria. *Journal of Comparative Physiology B*. 180:1183-1189.

Muir TJ, Costanzo JP, Lee RE 2010. Brief chilling to subzero temperature increases cold hardiness in the hatchling painted turtle (*Chrysemys picta*). *Physiological and Biochemical Zoology*. 83:174-181.

Muir TJ, Costanzo JP, Lee RE 2010. Evidence for urea-induced hypometabolism in isolated organs of dormant ectotherms. *Journal of Experimental Zoology*. 313A:28-34.

Muir TJ, Costanzo JP, Lee RE 2008. Metabolic depression induced by urea in organs of the wood frog, *Rana sylvatica*: effects of season and temperature. *Journal of Experimental Zoology*. 309A:111-116.

Muir TJ, Costanzo JP, Lee RE 2007. Osmotic and metabolic responses to dehydration and urea-loading in a terrestrially-hibernating frog. *Journal of Comparative Physiology B*. 177:917-926.

Iverson JB, Baker PJ, Muir TJ, Dishong BD* 2006. *Chrysemys picta bellii* density and biomass. Herpetological Review. 37:341.

IN PREPARATION

Burns MPA*, Herrera DJ*, Brosius TR, Muir TJ. Seasonal change in cold hardiness of adult tiger beetles.

Muir TJ, Tran D*, Catalan LB*, Bednarek M*, Sward AP, Iverson JB. Modeling energy use by hatchling turtles: effects of temperature, thermal variance, and subzero survival strategy.

*Denotes undergraduate student author

INVITED PRESENTATIONS

2012 Saving energy by accumulating urea; Rivier University, Nashua, NH

2012 Animals in Winter; Lighthouse at Silvis, Silvis, IL

2010 Saving energy by accumulating urea; Southern Illinois University-Edwardsville, Edwardsville, IL

2005 Hypometabolism induced by urea in a terrestrially hibernating frog; Kalamazoo College, Kalamazoo, MI

CONTRIBUTED PRESENTATIONS AT PROFESSIONAL MEETINGS

Muir TJ, Tran DT*, Catalan LB*, Bednarek M*, Sward AP 2018. Modeling energy use of overwintering hatchling turtles using over a decade of nest temperatures. APS, New Orleans, LA

Burns MPA*, Herrera DJ*, Brosius TR, Muir TJ 2017. Winter cold hardiness in North American tiger beetles. LSAMP IINSPIRE Conference, Ames, IA.

Kumar M*, Wiebler JM*, Muir TJ 2013. Characterizing the cold-conditioning response in a vertebrate ectotherm. ISEPEP5, London, ON.

Bowne DR, Doran A, Bloch CP, Druckenbrod DL, Dosch J, Fredricksen TS, Garneau D, Genet KS, Kish PA, Kolozsvary MB, Kuserk FT, Lindquist ES, Mankiewicz C, March JG, Muir TJ, Murray KG, Simmons JA, Urban R, Zimmermann C 2013. Population structure of freshwater turtles across North America: an Ecological as Research Education Network (EREN) collaborative project. Ecological Society of America, Minneapolis, MN.

Muir TJ, Dishong BD*, Costanzo JP, Lee RE 2012. Energy use in terrestrially hibernating hatchling turtles (*Chrysemys picta*) is extremely sensitive to overwintering temperature. SICB, Charleston, SC (Abstract: *Integrative and Comparative Biology* 52:e300)

- Kiss AJ, Muir TJ, Lee RE, Costanzo JP 2011. Comparative iTRAQ™ based mass-spectrometry used to identify seasonal variation in the hepatoproteome of the dehydration- and freeze-tolerant wood frog *Rana sylvatica*. Ohio Physiological Society, Cincinnati, OH.
- Muir TJ, Costanzo JP, Lee RE 2010. Urea-induced hypometabolism in the hibernating wood frog (*Rana sylvatica*) is not reflected in isolated mitochondria. APS, Denver, CO (Abstract: *The Physiologist* 53: 39-40).
- Muir TJ, Costanzo JP, Lee RE 2008. A comparative study of urea-induced hypometabolism in ectothermic animals. SICB, Boston, MA (Abstract: *Integrative and Comparative Biology* 49: e278)
- Muir TJ, Costanzo JP, Lee RE 2007. Urea-induced metabolic depression varies seasonally in isolated organs of the wood frog. SICB, San Antonio, TX (Abstract: *Integrative and Comparative Biology* 47: e211).
- Muir TJ, Costanzo JP, Lee RE 2006. Hypometabolism is correlated with hyperuremia in a terrestrially-hibernating frog. APS, Virginia Beach, VA (Abstract: *The Physiologist* 49: C1-28).
- Dishong BD*, Muir TJ, Costanzo JP, Lee RE 2005. Influence of temperature on overwintering energetics in the hatchling painted turtle, *Chrysemys picta*. SICB, Orlando, FL (Abstract: *Integrative and Comparative Biology* 45: 1125).
- Muir TJ, Costanzo JP, Lee RE 2005. Hypometabolism induced by urea in a terrestrially-hibernating frog. SICB, Orlando, FL (Abstract: *Integrative and Comparative Biology* 45: 1170).
- Muir TJ, Costanzo JP, Lee RE 2004. Brief cold conditioning increases freeze tolerance and chill tolerance in hatchling painted turtles. SICB, San Diego, CA (Abstract: *Integrative and Comparative Biology* 44: 610).
- Sotherland P, Wallace B, Spotila J, Ralph C, Muir T* 2004. Tidal movement of the water table and its effect on oxygen levels in leatherback turtle (*Dermochelys coriacea*) nests at Parque Nacional Las Baulas, Costa Rica. Proceedings of 24th Annual Sea Turtle Symposium.
- *Denotes undergraduate student author