

John Eme, Curriculum Vitae (February 5th, 2019)

Assistant Professor

California State University San Marcos
Department of Biological Sciences
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San Marcos, California, 92096 USA

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Website: <http://comparativephysiology.weebly.com>

EDUCATION

University of California, Irvine

Dissertation: The role of pulmonary bypass cardiac shunt and cardiovascular plasticity in the American alligator (*Alligator mississippiensis*)

Doctor of Philosophy, June 2010

University of West Florida

Thesis: Metabolic responses and dynamic temperature tolerance of selected fishes from the Wakatobi Marine National Park, Indonesia

Master of Science, July 2005

University of Illinois at Urbana-Champaign

Bachelor of Science, January 2000

RESEARCH

My research program attempts to answer the questions: *What are the limits of performance in lower vertebrates, and how are the limits integrated from the molecular to the whole organism level?*, *How can the central cardiac system of reptiles, which is relatively impervious to injury, inform us about the human heart?*, *What is the nature of vertebrate developmental plasticity in response to changing oxygen, carbon dioxide, or temperature?*, and *How will climate change affect fish from different habitats?* In Sulawesi, Indonesia, I have examined fish biology in the context of global climate change, including intertidal fishes that inhabit hyperthermic waters. My reptile research has focused on the development, regulation, evolution and adaptive significance of reptilian cardiovascular systems, and I have studied embryonic, juvenile, and large reptiles including alligators, turtles, and snakes. At McMaster University in Canada, I studied Whitefish embryos' responses to variable thermal regimes. Currently, I am an Assistant Professor at California State University San Marcos continuing my comparative physiology research and teaching biostatistics, comparative physiology, human anatomy and physiology and general biology.

PROFESSIONAL HISTORY

Assistant Professor

August 2017 - present

Adjunct Faculty

August 2016 - July 2017

Visiting Assistant Professor

August 2015 - July 2016

Department of Biological Sciences

California State University San Marcos; San Marcos, CA 92096

Supervisors: Dr. Tracey Brown (2015-2016), Dr. Deborah Kristan (2016 - 2017), Dr. William Kristan (2018 -) Chair

Instructor: BIOL 486/686 lecture (Fish Physiology): Spring 2019; BIOL 487 (Fish Physiology Lab): Spring 2019; BIOL 563 lecture (Seminar in Physiology); BIOL 486/686 lecture (Human Cardiovascular Physiology): Spring 2018; BIOL 353 lecture (Comparative Physiology): Fall 2018, Fall 2017; BIOL 353 lab (Comparative Physiology): Fall 2018, Fall 2017, Spring 2016, Fall 2016, Spring 2017 (11 total sections); BIOL 215 lecture and lab (Biostatistics): Fall 2015, Spring 2016, Fall 2016, Spring 2017 (10 total sections); BIOL 178 lecture (Human Anatomy and Physiology): Fall 2015; GES 102 lab (Introductory Biology): Fall 2015

Supervisor: BIOL 499 (Senior Laboratory Thesis): Spring 2018 (2 students); BIOL 489 (Introduction to Research): Spring 2018 (4 students), Fall 2017 (6 undergraduate researchers), Spring 2016 (1 undergraduate researcher), BIOL 496A (Supervised Laboratory Instruction for Comparative Physiology): Spring 2017 (3 undergraduate students), Spring 2016 (4 undergraduate student TAs), Fall 2016 (4 undergraduate student TAs)

Postdoctoral Fellow

August 2013 - July 2015

Department of Biology

McMaster University; Hamilton, Ontario, Canada, L8S 4K1

Supervisor: Dr. Joanna Wilson & Dr. Douglas Boreham, Primary Investigators. The development and plasticity of fish embryos in response to variable thermal regimes, including metabolic and cardiovascular measurements.

Postdoctoral Research Associate February 2011 - July 2013
 Department of Biological Sciences
 University of North Texas; Denton, TX 76203
 Supervisor: Dr. Dane A. Crossley II, Primary Investigator
<http://www.biol.unt.edu/~dc0015>. The development and plasticity of reptilian and avian cardiopulmonary systems.

Postdoctoral Research Associate September 2010 - January 2011
 Department of Biology
 University of North Dakota; Grand Forks, ND 58202
 Supervisor: Dr. Dane A. Crossley II, Primary Investigator

Staff Scientist June 2005/2010 - September 2005/2010
 Operation Wallacea
 Supervisor: Dr. David Smith, Director of Marine Research
 Lincolnshire, United Kingdom PE23 4EX www.opwall.com
 Fish ecophysiological research in the Wakatobi Marine National Park, South East Sulawesi, Indonesia.

Graduate STEM Fellow in K-12 Education July 2009 - June 2010
 National Science Foundation (DGE-0638751)
 Supervisors: Dr. L Mota-Bravo & Dr. RM Mulligan, Primary Investigators
 University of California, Irvine; Irvine, CA 92697
 K-12 education for grades 7th-12th in Santa Ana and Newport-Mesa Unified School Districts, CA, USA.

Laboratory Instructor and Teaching Assistant September 2005 - June 2009
 Department of Ecology and Evolutionary Biology
 University of California, Irvine; Irvine, CA 92697
Laboratory Instructor: BIO 112L (Physiology): Winter 2006, Spring 2006, Fall 2006, Spring 2007; BIO 100LW (Experimental Biology): Fall 2005.
Teaching Assistant: BIO 93 (DNA to Organisms): *Fall 2007**, Fall 2008; BIO E109L (Human Physiology): Summer 2008; BIO E179L (Field Freshwater Ecology): Spring 2008; BIO E142W (Philosophy of Biology): Winter 2008; BIO 11 (Marine Environmental Issues): Winter 2007.
**HHMI UCI Graduate Fellow, awarded \$1100 to present at Annual Meeting of SICB, Boston, MA, 2009.*

Laboratory Instructor and Teaching Assistant August 2002 - May 2005
 Department of Biology
 University of West Florida; Pensacola, FL 32514
Laboratory Instructor: BCH 3033L (Biochemistry I): Fall 2003, Spring 2003 Fall 2004, Spring 2004, Spring 2005 (8 *total sections*). BCH 3034L (Biochemistry II): Spring 2003, Fall 2004 (3 *total sections*).
Teaching Assistant: PCB 5527L (Molecular Biology): Spring 2005 (2 *Sections*); ZOO 4753L (Histology): Fall 2004, Fall 2003, Fall 2002 (3 *total sections*); PCB 4043L (Ecology): Fall 2003; MCB 3020L (Microbiology): Fall 2002 (2 *sections*).

Research Technologist II September 2000 - June 2002
 Department of Biochemistry, Molecular Biology and Cell Biology
 Northwestern University; Evanston, IL 60203
 Supervisor: Dr. Erwin Goldberg, Principal Investigator

STUDENT SUPERVISION (*COAUTHOR ON PEER-REVIEWED PUBLICATION)

Student	University	Years	Details
Cassidy Cooper*	CSU San Marcos	2016-	Undergraduate & Graduate Student Eme Lab
Aida Rodriguez	CSU San Marcos	2018-	Graduate Student Eme Lab
Kaven Konda	CSU San Marcos	2018-	Undergraduate Assistant Eme Lab
Lauren Sullivan	CSU San Marcos	2018-	Undergraduate Assistant Eme Lab
Jada Morales	Palomar CC	2018 -	Undergraduate Assistant Eme Lab
Juan Vasquez*	CSU San Marcos	2017-	Undergraduate Assistant Eme Lab
Thomas Schmoyer*	CSU San Marcos	2017-	Undergraduate Assistant Eme Lab
Zak Goddard	CSU San Marcos	2018-2019	Undergraduate Assistant Eme Lab
Adrian Ruiz	CSU San Marcos	2018-	Undergraduate Assistant Eme Lab
Andrew Alvo*	CSU San Marcos	2017-2018	Undergraduate Assistant Eme Lab
Susan Rayman*	CSU San Marcos	2017-2018	Undergraduate Assistant Eme Lab

Sara Muhtaseb*	CSU San Marcos	2017-2018	Undergraduate Assistant Eme Lab
Alani Diamond	CSU San Marcos	2015-2016	Undergraduate Assistant Eme Lab
Abigail Lee*	McMaster	2013-2015	Undergraduate Assistant Wilson Lab
Shayen Sreetharan*	McMaster	2013-2015	Undergraduate Assistant Wilson Lab
Kevin Tate*	U N Texas	2011-2013	Graduate Assistant Crossley Lab
Zac Kohl*	U N Texas	2011-2013	Graduate Assistant Crossley Lab
Richard Ling*	U N Texas	2011	Undergraduate Assistant Crossley Lab
Justin Orren	U N Texas	2011-2013	Undergraduate Assistant Crossley Lab
Christopher Moser	U N Texas	2011-2013	Undergraduate Assistant Crossley Lab
Christopher Slay*	U N Texas/UC Irvine	2011	Graduate Assistant Crossley Lab/Hicks Lab

PEER-REVIEWED PUBLICATIONS (N=34, N=17 1st author; supervision: [undergraduate](#), [graduate student](#))

34. Eme J, Cooper CJ, Alvo A, Vasquez J, Muhtaseb S, Rayman S, Schmoyer T, Elsey RM (2019) Scaling of major organs in hatchling female American alligators (*Alligator mississippiensis*). *Journal of Experimental Zoology A*, **331**, 38-51
33. Eme J, Mueller CA, Lee AH, Melendez C, Manzon RG, Somers CM, Boreham DR, Wilson JY (2018) Daily, repeating fluctuations in embryonic incubation temperature alter metabolism and growth of Lake whitefish (*Coregonus clupeaformis*). *Comparative Biochemistry and Physiology A*, **226**, 49-56
32. Mueller CA, Eme J, Tate KB, Crossley II DA (2018) Chronic captopril treatment reveals the role of ANG II in cardiovascular function of embryonic American alligators (*Alligator mississippiensis*). *Journal of Comparative Physiology B*, **188**, 657-669
31. Mueller CA, Doyle L, Eme J, Manzon RG, Somers CM, Boreham DR, Wilson JY (2017) Lipid content and fatty acid profile during lake whitefish embryo development at different incubation temperatures. *Comparative Biochemistry and Physiology A*, **203**, 201-209
30. Crossley II DA, Ling R, Nelson D, Gillium T, Conner JL, Hapgood J, Elsey RM, Eme J (2017) Metabolic responses to chronic hypoxic incubation in embryonic American alligator (*Alligator mississippiensis*). *Comparative Biochemistry and Physiology A*, **203**, 77-82
29. Tate KB, Rhen T, Eme J, Kohl ZF, Crossley J, Elsey RM, Crossley II DA (2016) Periods of cardiovascular susceptibility to hypoxia in embryonic American alligators (*Alligator mississippiensis*). *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*, **310**, R1267-R1278
28. Lee AH, Eme J, Mueller CA, Manzon RG, Somers CM, Boreham DR, Wilson JY (2016) The effects of increased constant incubation temperature and cumulative acute heat shock exposures on morphology and survival of Lake Whitefish (*Coregonus clupeaformis*) embryos. *Journal of Thermal Biology*, **57**, 11-20
27. Wearing OH, Eme J, Rhen T, Crossley II DA (2016) Phenotypic plasticity in the common snapping turtle (*Chelydra serpentina*): Long-term physiological effects of chronic hypoxia during embryonic development. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*, **310**, R176-R184
26. Sreetharan S, Thome C, Mitz C, Eme J, Mueller CA, Hulley EN, Manzon RG, Somers CM, Boreham DR, Wilson JY (2015) Embryonic development of Lake whitefish (*Coregonus clupeaformis*): a staging series, analysis of growth and impacts of fixation. *Journal of Fish Biology*, **87**, 539-558
25. Mueller CA, Eme J, Burggren WW, Roghair RD, Rundle SD (2015) Challenges and opportunities in developmental integrative physiology. *Comparative Biochemistry and Physiology A*, **184**, 113-124
24. Mueller CA, Eme J, Manzon RG, Somers CM, Boreham DR, Wilson JY (2015) Embryonic critical windows: Changes in incubation temperature alter hatchling phenotype, survival and cost of development in Lake Whitefish (*Coregonus clupeaformis*). *Journal of Comparative Physiology B*, **185**, 315-331
23. Eme J, Crossley II DA (2015) Chronic hypercapnic incubation increases relative organ growth and reduces blood pressure of embryonic American alligator (*Alligator mississippiensis*). *Comparative Biochemistry and Physiology A*, **182**, 53-57
22. Eme J, Mueller CA, Manzon RG, Somers CM, Boreham DR, Wilson JY (2015) Critical windows in embryonic development: Shifting incubation temperatures alter heart rate and oxygen consumption of Lake Whitefish (*Coregonus clupeaformis*) embryos and hatchlings. *Comparative Biochemistry and Physiology A*, **179**, 71-80
21. Tate KB, Kohl ZF, Eme J, Rhen T, Crossley II DA (2015) Critical windows of cardiovascular susceptibility to developmental hypoxia in Common snapping turtle embryos (*Chelydra serpentina*). *Physiological and Biochemical Zoology*, **88**, 103-115 *Focused Issue on Developmental Physiology*
20. Eme J, Rhen T, Crossley II DA (2014) Adjustments in cholinergic, adrenergic and purinergic control of cardiovascular function in snapping turtle embryos (*Chelydra serpentina*) incubated in chronic hypoxia. *Journal of Comparative Physiology B*, **184**, 891-902
19. Hendy IW, Eme J, Dabruzzi TE, Nembhard RV, Cragg SM, Bennett WA (2013) Dartfish use teredinid tunnels in fallen mangrove wood as a low-tide refuge. *Marine Ecology Progress Series*, **486**, 223-236

18. Eme J, Rhen T, Tate KB, Gruchalla K, Kohl ZF, Slay CE, Crossley II DA (2013) Plasticity of cardiovascular function in snapping turtle embryos (*Chelydra serpentina*): Chronic hypoxia alters autonomic regulation and gene expression. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*, **304**, R966-R979
17. Eme J, Elsey RM, Crossley II DA (2013) Development of sympathetic cardiovascular control in embryonic, hatchling, and yearling female American alligator (*Alligator mississippiensis*). *Comparative Biochemistry and Physiology A*, **165**, 272-280
16. Marks C, Eme J, Elsey RM, Crossley II DA (2013) Chronic hypoxic incubation blunts thermally-dependent cholinergic tone on the cardiovascular system in embryonic American alligator (*Alligator mississippiensis*). *Journal of Comparative Physiology B*, **183**, 947-957
15. Tate KB, Eme J, Swart J, Conlon JM, Crossley II DA (2012) Effects of dehydration on cardiovascular development in the embryonic American alligator (*Alligator mississippiensis*). *Comparative Biochemistry and Physiology A*, **162**, 252-258
14. Grim JM, Eme J, Rohrer JS, Ferer E, Wilkes AA, Wilborn R, Radzik K, Crocker RL, O'Farrell AJ, Pomory CM and Bennett WA (2011) Loss of structural complexity in staghorn coral rubble habitats influences the density of damselfish in Dry Tortugas National Park, Florida, USA. *Gulf of Mexico Science*, **29**, 113-118
13. Eme J, Altimiras J, Hicks JW, Crossley II DA (2011) Hypoxic Alligator Embryos: Chronic hypoxia, catecholamine levels and autonomic responses of *in ovo* alligators. *Comparative Biochemistry and Physiology A*, **160**, 412-420
12. Dabruzzi TF, Wygoda ML, Wright JE, Eme J, Bennett WA (2011) Direct evidence of cutaneous resistance to evaporative water loss in amphibious mudskipper (Family Gobiidae) and rockskipper (Family Blennidae) fishes from Pulau Hoga, Southeast Sulawesi, Indonesia. *Journal of Experimental Marine Biology and Ecology*, **406**, 125-129
11. Eme J, Hicks JW, Crossley II DA (2011) Chronic hypoxic incubation blunts a cardiovascular reflex loop in embryonic American alligator (*Alligator mississippiensis*). *Journal of Comparative Physiology B*, **181**, 981-990
10. Eme J, Dabruzzi TF, Bennett WA (2011) Thermal responses of juvenile squaretail mullet (*Liza vaigiensis*) and juvenile crescent terapon (*Terapon jarbua*) acclimated at near-lethal temperatures, and the implications for climate change. *Journal of Experimental Marine Biology and Ecology*, **399**, 35-38
9. Eme J, Crossley II DA, Hicks JW (2011) Role of the left aortic arch and blood flows in embryonic American alligator (*Alligator mississippiensis*). *Journal of Comparative Physiology B*, **181**, 391-401
8. Eme J, Gwalthney J, Owerkowicz T, Blank JM, Hicks JW (2010) Turning Crocodylian hearts into Bird hearts: Growth rates are similar for alligators with and without cardiac shunt. *The Journal of Experimental Biology*, **213**, 2673-2680
7. Eme J, Bennett WA (2009) Acute temperature quotient responses of fishes reflect their divergent thermal habitats in the Banda Sea, Sulawesi, Indonesia. *Australian Journal of Zoology*, **57**, 357-362
6. Eme J, Gwalthney J, Blank JM, Owerkowicz T, Barron G, Hicks JW (2009) Surgical removal of right-to-left cardiac shunt in the American alligator (*Alligator mississippiensis*) causes ventricular enlargement but does not alter apnoea or metabolism during diving. *The Journal of Experimental Biology*, **212**, 3553-3563
5. Eme J, Owerkowicz T, Gwalthney J, Blank JM, Rourke BC, Hicks JW (2009) Exhaustive exercise training enhances aerobic capacity in American alligator (*Alligator mississippiensis*). *Journal of Comparative Physiology B*, **179**, 921-931
4. Eme J, Bennett WA (2009) Critical thermal tolerance polygons of tropical marine fish from Sulawesi, Indonesia. *Journal of Thermal Biology*, **34**, 220-225
3. Wilkes AA, Cook MM, DiGirolamo AL, Eme J, Grim JM, Hohmann BC, Conner SL, McGill CJ, Pomory CM, Bennett WA (2008) A comparison of damselfish densities on live staghorn coral (*Acropora cervicornis*) and coral rubble in Dry Tortugas National Park, USA. *Southeastern Naturalist*, **7**, 483-492
2. Eme J and Bennett WA (2008) Low temperature as a limiting factor for introduction and distribution of Indo-Pacific damselfishes in the eastern United States. *Journal of Thermal Biology*, **33**, 62-66
1. Taylor J, Cook M, Kirkpatrick A, Galleher S, Eme J, Bennett WA (2005) Thermal tactics of air-breathing and non air-breathing Gobiids inhabiting mangrove tidepools on Pulau Hoga, Indonesia. *Copeia*, **4**, 885-892

OTHER PUBLICATIONS

- Eme J (2011) *Invited book review of Respiratory Physiology of Vertebrates: Life with and without Oxygen*. GE Nilsson (Ed), Cambridge University Press, New York. *The Quarterly Review of Biology*, **86**(2), 142
- Eme J (2011) Lessons from crocodylians on vertebrate cardiac shunting and exercise. In: *Reptiles: Biology, Behavior and Conservation*. KJ Baker (Ed), Nova Science Publishers, Hauppauge, NY, USA. pp. 57-80, ISBN: 978-1-61122-856-4

SEMINARS, PRESENTATIONS AND PUBLISHED ABSTRACTS (N >52, *speaker)

- **Eme J**, Cooper CJ, Muhtaseb S, Alvo A, Rayman S, Schmoyer T, Vasquez J, Elsey RM (2018) Scaling of major organs in hatchling female American alligators (*Alligator mississippiensis*). *APS Intersociety Meeting: Complexity and Integration*, New Orleans, LA.
- Tate K, **Eme J**, Crossley II, DA (2018) The impact of developmental hypoxia on the cardiovascular chemoreflex in embryonic Snapping turtles (*Chelydra serpentina*). *APS Intersociety Meeting: Complexity and Integration*, New Orleans, LA.
- Cooper CJ, Muhtaseb S, Alvo A, Rayman S, Schmoyer T, Vasquez J, Elsey RM, **Eme J** (2018) Allometric and biphasic allometric growth of major organs in hatchling female American alligators (*Alligator mississippiensis*). *FASEB Journal*, Meeting Abstract Supplement **32**, 602.9
- Diamond A, **Eme J** (2017) Occlusion of the left aorta in American alligators (*Alligator mississippiensis*) produces rapid onset of ventricular enlargement. 42nd Annual West Coast Biological Sciences Undergraduate Research Conference. Santa Clara University, Santa Clara, CA. **Alani won best Physiology Poster!**
- **Eme J*** (2016) Phenotypic plasticity of the cardiorespiratory system in embryonic and juvenile reptiles and fish. *Invited Seminar*. Oregon State University, Department of Integrative Biology. Corvallis, OR
- **Eme J**, Mueller CA, Manzon RG, Somers CM, Boreham DR, Wilson JY (2016) Daily, incremental changes in incubation temperature alter metabolism and hatchling phenotype of developing Lake Whitefish. *Experimental Biology*. San Diego, CA. *FASEB Journal*, Meeting Abstract Supplement **30**, 1229.5
- Mueller CA, **Eme J**, Manzon RG, Somers CM, Boreham DR, Wilson JY (2016) Hatchling phenotype of Lake Whitefish incubated at increased temperature during critical windows of development. *Experimental Biology*. San Diego, CA. *FASEB Journal*, Meeting Abstract Supplement **30**, 1229.6
- Owerkowicz T, Felbinger KL, **Eme J**, Blank JM, Hicks JW (2016) Nutrient foramen size does not predict exercise or growth physiology in an experimental archosaur model with in-parallel and in-series circulation. *Society of Vertebrate Paleontology*. Salt Lake City, UT.
- Crossley II DA, **Eme J**, Tate KB, Mueller CA (2016) Function of the Ang II system during the ontogeny of Archosaurs. *Experimental Biology*. San Diego, CA. *FASEB Journal*, Meeting Abstract Supplement **30**, 976.5
- **Eme J***, Mueller CA, Boreham DR, Manzon RG, Somers CM, Wilson JY (2015) Effects of daily, incremental changes in incubation temperature on the metabolism of Lake Whitefish embryos and hatchlings. *Canadian Society of Zoologists*. Calgary, Alberta, Canada.
- Mueller CA, **Eme J**, Manzon RG, Somers CM, Boreham DR, Wilson JY (2015) Effects of increased temperature during critical windows of development on the hatchling phenotype of Lake Whitefish (*Coregonus clupeaformis*). *Canadian Society of Zoologists*. Calgary, Alberta, Canada.
- Skates DI, Owerkowicz T, **Eme J**, Blank JM, Hicks JW (2015) Locomotor exercise exerts no systemic effect on the dentary in the American alligator. *SICB*. West Palm Beach, FL. *Integr Comp Biol* **55(suppl 1)**, 58.3
- **Eme J**, Mueller CA, Boreham DR, Manzon RG, Somers CM, Wilson JY (2014) Shifting incubation temperatures alter heart rate and oxygen consumption of Lake Whitefish embryos and hatchlings. *APS Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology*, San Diego, CA.
- Vasconcellos D, Owerkowicz T, **Eme J**, Blank J, Elsey R, Hicks JW (2014) Cervical osteoderms reveal pattern of whole body growth in juveniles of the American alligator. *APS Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology*, San Diego, CA.
- Tate K, **Eme J**, Crossley J, Rhen T, Elsey R, Kohl Z, Crossley II DA (2014) Hypoxia during critical windows of ontogeny alters organ mass and cardiovascular function in the American alligator (*Alligator mississippiensis*). *APS Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology*, San Diego, CA.
- Slay C, **Eme J**, Hicks JW (2014) Does the right-to-left shunt affect assimilation efficiency, digesta transit, and postprandial metabolism in alligators? *APS Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology*, San Diego, CA.
- **Eme J***, Mueller CA, Boreham DR, Manzon RG, Somers CM, Wilson JY (2014) Critical windows in embryonic development: Cardiac and survival effects of shifting temperatures in Whitefish embryos (*Coregonus clupeaformis*). *Canadian Society of Zoologists*. Montreal, Québec, Canada.
- Mueller CA, **Eme J**, Boreham DR, Manzon RG, Somers CM, Wilson JY (2014) Critical windows in embryonic development: Metabolic effects of shifting temperatures in Whitefish embryos (*Coregonus clupeaformis*). *Canadian Society of Zoologists*. Montreal, Québec, Canada.
- Wearing OH, **Eme J**, Kemp A, Crossley II DA (2014) Impact of hypercapnic incubation on hatchling common snapping turtle (*Chelydra serpentina*) growth and metabolism. *Experimental Biology*. San Diego, CA. *FASEB Journal*, Meeting Abstract Supplement **28**, 1101.3
- Vasconcellos D, Owerkowicz T, **Eme J**, Blank J, Elsey R, Hicks JW (2014) Osteoderm accretion as proxy for whole body growth in the American alligator. *Experimental Biology*. San Diego, CA. *FASEB Journal*, Meeting Abstract Supplement **28**, 1161.3

- Crossley II DA, Eley RM, **Eme J** (2014) Cardiovascular regulation in embryonic American alligators during chronic exposure to reduced environmental oxygen. SICB. Austin, TX. *Integr Comp Biol* **54**(suppl 1), 47
- Shartau RB, Crossley II DA, Kohl ZF, Hedrick MS, **Eme J**, Brauner CJ (2013) Evolution of preferential pHi regulation in basal fishes, insights from the spotted gar. Canadian Society of Zoologists. Guelph, Ontario, Canada.
- **Eme J***, Rhen T, Tate KB, Gruchalla K, Slay CE, Kohl ZF, Crossley II DA (2013) Chronic hypoxia (10% O₂) alters cardiovascular regulation and gene expression in Snapping turtle embryos (*Chelydra serpentina*). Experimental Biology. Boston, MA. *FASEB Journal*, Meeting Abstract Supplement **27**, 1149.14
- Felbinger K, Owerkowicz T, **Eme J**, Schriener SE, Hicks JW (2013) Pulmonary bypass shunt reduces oxidative damage in the American alligator. SICB. San Francisco, CA. *Integr Comp Biol* **53**(suppl 1), 68
- **Eme J**, Tate KB, Slay CE, Kohl ZF, Hicks JW, Crossley II DA (2012) Cardiovascular plasticity during hypoxic development in reptile embryos. Experimental Biology. San Diego, CA. *FASEB Journal*, Meeting Abstract Supplement **26**, 886.4
- Crossley II DA, Tate KB, Elfwing M, **Eme J** (2012) Chronic developmental hypoxia alters the cardiovascular regulatory phenotype of embryonic Common snapping turtles. Experimental Biology. San Diego, CA. *FASEB Journal*, Meeting Abstract Supplement **26**, 1071.11
- Owerkowicz T, Yang J, Blank JM, **Eme J**, Hicks JW (2012) Femoral growth plate is sensitive to loss of cardiac shunt in the American alligator. Experimental Biology. San Diego, CA. *FASEB Journal*, Meeting Abstract Supplement **26**, 908.3
- **Eme J***, Tate KB, Slay CE, Kohl ZF, Hicks JW, Crossley II DA (2012) Cardiovascular plasticity during hypoxic development in reptile embryos. SICB. Charleston, SC. *Integr Comp Biol* **52**(suppl 1), 54
- Owerkowicz T, Campbell C, **Eme J**, Blank JM, Hicks JW (2012) Cardiac hypertrophy in response to pressure overload and exercise training in the American alligator. SICB. Charleston, SC. *Integr Comp Biol* **52**(suppl 1), 132
- Owerkowicz T, Yang J, Blank JM, **Eme J**, Hicks JW (2012) Alligator growth plate thickness as an indicator of longitudinal growth rate and circulatory pattern. SICB. Charleston, SC. *Integr Comp Biol* **52**(suppl 1), 132
- Owerkowicz T, Yang J, Blank JM, **Eme J**, Hicks JW (2011) Microstructure of the femoral growth plate in the American alligator: effects of growth rate, locomotor activity and circulatory pattern. Society of Vertebrate Paleontology. Las Vegas, NV.
- Campbell C, Owerkowicz T, **Eme J**, Blank JM, Hicks JW (2011) Pressure overload surgery does not induce cardiac fibrosis in the American alligator. Experimental Biology. Washington, D.C. *FASEB Journal*, Meeting Abstract Supplement **25**, 858.12
- **Eme J***, Burke M*, Pratt J*, Shah K*, Blackwell L* (2010) Integrating Research into the K-12 Classroom: From Molecules to Ecosystems. Focus Meeting of STEM Fellows in K-12 Education. AAAS. San Diego, CA.
- **Eme J***, Bennett WA, Dabruzzi TF, Fanguie NA, Rummer JL (2010) Effects of warming sea temperatures on survival of juvenile reef fishes in nursery areas around Hoga Island in the Wakatobi Marine National Park. Association for Tropical Biology and Conservation. Sanur Beach, Bali, The Republic of Indonesia.
- **Eme J**, Hicks JW, Crossley II DA (2010) Cardiovascular plasticity during hypoxic incubation of American alligators (*Alligator mississippiensis*). Experimental Biology. Anaheim, CA. *FASEB Journal*, Meeting Abstract Supplement **24**, 988.6
- Owerkowicz T, **Eme J**, Gwalthney J, Blank JM, Hicks JW (2010) Cardiac shunting does not constrain aerobic capacity of the American alligator. Experimental Biology. Anaheim, CA. *FASEB Journal*, Meeting Abstract Supplement **24**, 988.5
- Owerkowicz T, Tsai HP, Sanchez L, Felbinger K, Andrade K, Blank JM, **Eme J**, Gwalthney J, Hicks JW (2010) Chronic exercise does not alter limb bone morphology or microstructure in the American alligator. Experimental Biology. Anaheim, CA. *FASEB Journal*, Meeting Abstract Supplement **24**, 637.4
- **Eme J**, Hicks JW, Crossley II DA (2010) Cardiovascular plasticity during hypoxic development of American alligators (*Alligator mississippiensis*). AAAS. San Diego, CA.
- **Eme J**, Hicks JW, Crossley II DA* (2010) Cardiovascular plasticity during development of American alligators (*Alligator mississippiensis*). SICB. Seattle, WA. *Integr Comp Biol* **50**(suppl 1), 50
- Tate K, Swart J, **Eme J**, Conlon JM, Crossley II DA (2010) Effects of dehydration on cardiovascular development in American alligators (*Alligator mississippiensis*). SICB. Seattle, WA. *Integr Comp Biol* **50**(suppl 1), 173
- Owerkowicz T, **Eme J**, Gwalthney J, Blank JM, Hicks JW (2010) Cardiac shunting does not constrain aerobic capacity of the American alligator. SICB. Seattle, WA. *Integr Comp Biol* **50**(suppl 1), 277
- Tsai HP, Owerkowicz T, Sanchez L, Felbinger K, Andrade K, Blank JM, **Eme J**, Gwalthney J, Hicks JW (2010) Exhaustive terrestrial and aquatic exercise does not affect periosteal deposition, structural properties or mineral content in limb bones of the American alligator. SICB. Seattle, WA. *Integr Comp Biol* **50**(suppl 1), 176
- Owerkowicz T, Tsai HP, Sanchez L, Gwalthney J, **Eme J**, Blank JM, Hicks JW (2009) Effect of running and swimming exercise training on skeletal growth and bone microstructure of the American alligator (*Alligator mississippiensis*) with and without cardiac shunt. Experimental Biology, New Orleans, LA. *FASEB Journal*, Meeting Abstract Supplement **23**, 1031.2

- Eme J, Crossley II DA, Hicks JW (2009) Hemodynamics of embryonic American alligators. SICB. Boston, MA. *Integr Comp Biol* **49**(1), 225
- Tate KB, Eme J, Crossley II DA (2009) Assessing the capacity for sympathetic control of cardiovascular physiology in embryonic snapping turtles (*Chelydra serpentina*). SICB. Boston, MA. *Integr Comp Biol* **49**(suppl 1), 313
- Crossley II DA, Tate KB, Eme J (2009) The impact of periodic dehydration stress on cardiovascular function in the embryonic American alligator (*Alligator mississippiensis*). SICB. Boston, MA. *Integr Comp Biol* **49**(suppl 1), 218
- Eme J, Gwalthney J, Owerkowicz T, Blank JM, Hicks JW (2008) Removal of cardiac shunt causes ventricular enlargement in American Alligator. Experimental Biology, San Diego, CA. *FASEB Journal*, Meeting Abstract Supplement **22**, 1239.26
- Eme J*, Gwalthney J, Owerkowicz T, Blank JM, Hicks JW (2007) Growth and exercise endurance of American Alligator (*Alligator mississippiensis*) with and without cardiac shunt. International Congress of Comparative Physiology and Biochemistry. Salvador, Bahia, Federative Republic of Brasil. *Comp Biochem Physiol A - Mol Integr Physiol* Supplement **148**, S83
- Gwalthney J, Eme J, Owerkowicz T, Blank JM, Hicks JW (2007) The contribution of pulmonary-to-systemic cardiac shunting to growth, metabolism, and recovery from exercise in *Alligator mississippiensis*. Experimental Biology. Washington, D.C. *FASEB Journal*, Meeting Abstract Supplement **21**, 965.8
- Blank JM, Owerkowicz T, Gwalthney J, Eme J, Rourke BC, Hicks JW (2007) Hemodynamic consequences of eliminating right-to-left cardiac shunt in the American Alligator. Experimental Biology. Washington, D.C. *FASEB Journal*, Meeting Abstract Supplement **21**, 965.7
- Eme J*, Gwalthney J, Owerkowicz T, Blank JM, Hicks JW (2007) Growth and exercise endurance of American Alligator (*Alligator mississippiensis*). SICB. Phoenix, AZ. *Integr Comp Biol* **46**(suppl 1), E39
- Blank JM, Owerkowicz T, Eme J, Gwalthney J, Hicks JW (2006) Surgical removal of cardiac shunt in American Alligator (*Alligator mississippiensis*). *APS Intersociety Meeting: Integrating Diversity*. Virginia Beach, VA.

REVIEWING SERVICE

Reviewer: Portland State University's BUILD NIH Program Reviewer Fall 2017

Reviewer: Southeast Regional Office of the National Marine Fisheries Service Marine Fisheries Initiative (MARFIN) grant competition, January 2018

23 different journals, ad hoc peer reviewer (number of manuscripts reviewed; Total N=43): *Am J Physiol: Reg Integr Comp Physiol* (2), *Anim Behav*, *Biol Letters*, *Biol J Linnean Soc*, *Comp Biochem Physiol A* (6), *Coral Reefs*, *Fish Physiol Biochem* (2), *Global Change Biol* (2), *J Exp Biol* (3), *J Exp Mar Biol Ecol* (3), *J Fish Biol*, *J Herpetology* (2), *J Therm Biol* (4), *J Sea Res*, *Mar Ecol Prog Ser*, *Nature Comm* (2), *Naturwissenschaften*, *Physiology*, *Physiol Biochem Zool* (2), *PLoS ONE* (2), *Resp Physiol Neurobiol*, *Trop Zool*, *Zool*

FUNDING, AWARDS AND SELECTED TRAVEL MONIES

TOTAL: \$56,035

- **\$300** - June 2018, Partnership for Undergraduate Life Sciences Education (PULSE), Southern California PULSE Institute, hotel accommodation for two nights in Los Angeles.
- **\$700** - January 2018, California State University San Marcos, Faculty Professional Development Grant. "Effect of clutch identity and allometric growth of young American alligators"
- **\$1000** - April 2016, California State University San Marcos, Research Scholarship and Creative Activity Grant. "Can alligators grow new heart cells?: A novel model for cardiac health."
- **\$750** - January 2016, California State University San Marcos, Faculty Professional Development Grant. "Do juvenile alligators retain the ability to make new heart cells?"
- **\$250** - May 2015, Canadian Society of Zoologists. Travel Award for CSZ meeting 2015.
- **\$1,000** - October 2014, Comparative Biochemistry and Physiology, Symposium Chair/Organizer, Intersociety Meeting in Comparative Physiology, San Diego, CA. Sponsoring journal provided funds for symposium and invited review on developmental physiology.
- **\$2,000** - October 2014, American Physiological Society, Symposium Chair/Organizer, Intersociety Meeting in Comparative Physiology, San Diego, CA, *Challenges from the Very Beginning: Developmental Physiology, Epigenetics, and Critical Windows*.
- **\$200** - April 2013, American Physiological Society, Runner-Up, Per Scholander Award Best Poster Presentation. Comparative and Evolutionary Physiology Section, Experimental Biology 2013 Meeting in Boston, MA.
- **\$2,000** - April 2013, American Physiological Society, Featured Topic Chair/Organizer, Experimental Biology 2013 Meeting in Boston, MA, *Integrative Cardiovascular and Respiratory Physiology of Non-Model Organisms*.

- **\$825** - February 2012, American Physiological Society, Comparative and Evolutionary Physiology Section's Research Recognition Award for meritorious research and *Experimental Biology* 2012.
- **\$1,500** - June 2010, Dr. William F. Holcomb Scholarship. Annual award given by UCI's School of Biological Sciences, in recognition of outstanding research in marine biology (graduate student).
- **\$30,000** - July 2009-June 2010, Graduate STEM Fellow in K-12 Education, University of California, Irvine. One-year fellowship to teach life science to 7th and 11th grade students.
- **\$2,000** - June 2009, Company of Biologists, Ltd. Journal of Experimental Biology Traveling Fellowship. "Chronic and acute effects of Left Aortic occlusion during embryonic development of American alligator (*Alligator mississippiensis*)" funded to collaborate with Dr. Dane A. Crossley II at University of North Dakota.
- **\$500** - June 2009, Grover C. Stephens Memorial Fellowship Award. Annual award given by UCI's School of Biological Sciences to an outstanding comparative physiologist (graduate student).
- **\$1,100** - January 2009, Howard Hughes Medical Institute (HHMI), HHMI UCI Graduate Fellow, awarded monies to present three papers at Annual SICB meeting, Boston, MA, 2009.
- **\$6,750** - March 2006, National Science Foundation (NSF). NSF East Asia Summer Institutes for U.S. Students Fellowship. Proposal funded with travel and expense monies (US \$1750) and stipend (US \$3000) from NSF and stipend (AU \$3000) from Australian Academy of Science to collaborate with Dr. Peter B. Frappell (La Trobe University, Melbourne, Victoria, Australia) on the plasticity of metabolism and the cardiopulmonary system in response to hyperoxia, using Murray Cod (*Maccullochella peelii peelii*) as a model.
- **\$500** - November 2004, University of West Florida, Graduate Student Scholarly and Creative Activity Award "Ecological thermal tolerance of Black snapper in Sulawesi, Indonesia".
- **\$100** - November 2004, University of West Florida, Student Government Association. Travel award to attend 4th Annual Fisheries Student Colloquium in Marineland, Florida.
- **\$2,760** - June 2004, Operation Wallacea. Travel monies provided for supervision of American undergraduate research (6 students) and British undergraduate dissertation research (2 students). Five proposals submitted to intertidal fish physiology research plan.
- **\$100** - February 2004, Florida Chapter, American Fisheries Society. Travel award.
- **\$500** - August 2003, Project AWARE® Asia Pacific, Micro Grant "Biodiversity and Community Structure of Fish Fauna Inhabiting Marginal Habitats in the Wakatobi Marine National Park, Sulawesi, Indonesia".
- **\$200** - June 2003, University of West Florida, Marine Eco-physiology Research Society Grant "Biodiversity of Fish Fauna Inhabiting Marginal Habitats in the Wakatobi Marine National Park, Sulawesi, Indonesia".

SOCIETY AFFILIATIONS

• The American Physiological Society (APS)	2005 -
• Society for Experimental Biology (SEB)	2014 -
• Society for Integrative and Comparative Biology (SICB)	2006 -
• Canadian Society of Zoologists (CSZ)	2014 -
• Florida Chapter American Fisheries Society	2002 - 2006
• Marine Eco-Physiology Research Society (UWF) - Treasurer	2002 - 2005

UNIVERSITY, SOCIETY AND COMMUNITY SERVICE

• Poster Judge - Summer Scholars Program, CSUSM	2016
• Poster Judge - American Physiological Society Experimental Biology international meeting	2016
• Fireside Chat - SuperSTEM Saturday, CSUSM	2016
• Interviewed as expert on amphibious fishes, National Geographic Online	2015
• Contributed Session Chair, CSZ Meeting 2015 in Calgary, Alberta, Canada	2015
• Symposium Chair/Organizer, APS Intersociety Meeting 2014 in San Diego, CA, <i>Challenges from the Very Beginning: Developmental Physiology, Epigenetics, and Critical Windows</i>	2014
• Featured Topic Chair/Organizer, Experimental Biology 2013 Meeting in Boston, MA, <i>Integrative Cardiovascular and Respiratory Physiology of Non-Model Organisms</i>	2013
• Student & Post-doctoral Workshop, Lead Speaker, SICB	2012
• Chair, Cardiovascular and Respiration Physiology Presentation Section, SICB	2012
• Science Fair Judge, Orange County Science Fair, CA	2010
• Organized UCI EEB departmental graduate student recruitment and social weekend	2007
• Organized UCI EEB departmental graduate student symposium	2006

SCUBA CERTIFICATIONS

- Scientific Diver - University of West Florida 2003
- Open water SCUBA diver (NAUI®) 2002

REFERENCES

- Wayne A. Bennett (wbennett@uwf.edu), Professor, University of West Florida, (850) 474 3362, M.S. Advisor
- Dane A. Crossley II (dane.crossley@unt.edu), Associate Professor, University of North Texas, (940) 369 7327, Post-doctoral Advisor
- James W. Hicks (jhicks@uci.edu), Professor, Associate Vice Chancellor for Research, University of California, Irvine, (949) 824 6386, Ph.D. Advisor
- Joanna Y. Wilson (joanna.wilson@mcmaster.ca), Associate Professor, McMaster University, (905) 525 9140 x20075, Post-doctoral Advisor