John Eme, Curriculum Vitae (August 30th, 2023)

Associate Professor

California State University San Marcos **Department of Biological Sciences** 333 Twin Oaks Valley Road San Marcos, California, 92096 USA

E-mail: ieme@csusm.edu Website: http://comparativephysiology.weebly.com

EDUCATION

University of California, Irvine

Doctor of Philosophy, June 2010 Dissertation: The role of pulmonary bypass cardiac shunt and cardiovascular plasticity in the American alligator (Alligator mississippiensis)

University of West Florida

Master of Science, July 2005 Thesis: Metabolic responses and dynamic temperature tolerance of selected fishes from the Wakatobi Marine National Park, Indonesia

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

Associate Professor (tenured)	August 2022 - present
Assistant Professor	August 2017 - July 2022
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 211 lecture (Introduction to Organismal and Population Biology): Fall 2020, Spring 2020; BIOL 423 lecture (Fish Physiology): Fall 2022, Fall 2021, Spring 2020, Spring 2019; BIOL 423 (Fish Physiology Lab): Fall 2022, Fall 2021, Spring 2019 (487L); BIOL 563 lecture (Seminar in Physiology): Spring 2018; BIOL 434 lecture (Human Cardiovascular Physiology): Spring 2022, Fall 2020, Fall 2019, Spring 2018; BIOL 353 lecture (Comparative Physiology):

Fall 2022, Fall 2019, Fall 2018, Fall 2017; BIOL 353 lab (Comparative Physiology): Spring 2022 (2 total sections), Fall 2021, Fall 2020, Fall 2019, Fall 2018, Fall 2017, Spring 2017, Spring 2016, Fall 2016 (13 total sections); BIOL 215 lecture and lab (Biostatistics): Spring 2017, Fall 2016, Spring 2016, Fall 2015 (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 2020 (1 student), Spring 2019 (1 student), Fall 2018 (1 student),

Spring 2018 (2 students): BIOL 495 (Library Thesis): Fall 2021 (1 student): BIOL 489 (Introduction to Research): Fall 2020 (3 students), Spring 2020 (4 students), Fall 2019 (3 students), Spring 2019 (4 students), Fall 2018 (6 students), 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)

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

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

Department of Biology University of North Dakota; Grand Forks, ND 58202 Supervisor: Dr. Dane A. Crossley II, Primary Investigator

Staff Scientist

Operation Wallacea Supervisor: Dr. David Smith, Director of Marine Research Lincolnshire, United Kingdom PE23 4EX www.opwall.com Fish ecophysiologal 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

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

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

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
Perla Ochoa	CSU San Marcos	2021-	Undergraduate & M.S. Student Eme Lab
Madison Conte, M.S.*	CSU San Marcos	2019-2022	Undergraduate & M.S. Student Eme Lab
Carlos Leao, M.S.	CSU San Marcos	2020-2022	M.S. Student Eme Lab
Anay Ochoa, B.S. Palon	nar CC & CSU San Marcos	2019-2022	Undergraduate Assistant Eme Lab
Michael Kuzminskiy, B.S.	CSU San Marcos	2019-2020	Undergraduate Assistant Eme Lab
Cassidy Cooper, M.S.*	CSU San Marcos	2016-2020	Undergraduate & M.S. Student Eme Lab

September 2005 - June 2009

August 2002 - May 2005

September 2010 - January 2011

August 2013 - July 2015

February 2011 - July 2013

June 2005/2010 - September 2005/2010

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September 2000 - June 2002

Ivan Gonzalez, B.S.	CSU San Marcos	2019-	Undergraduate Assistant Eme Lab
Jada Morales, B.S.	Palomar CC & UC San Diego	2018-2019	Undergraduate Assistant Eme Lab
Alyssa Spiers, B.S.	CSU San Marcos	2019-	Undergraduate Assistant Eme Lab
Kaven Konda, B.S.	CSU San Marcos	2018-2019	Undergraduate Assistant Eme Lab
Lauren Sullivan, B.S.	CSU San Marcos	2018-2019	Undergraduate Assistant Eme Lab
Juan Vasquez, B.S.*	CSU San Marcos	2017-2019	Undergraduate Assistant Eme Lab
Thomas Schmoyer, B.S. ³	CSU San Marcos	2017-2019	Undergraduate Assistant Eme Lab
Adrian Ruiz, B.S.	CSU San Marcos	2018-2019	Undergraduate Assistant Eme Lab
Andrew Alvo, B.S.*	CSU San Marcos	2017-2018	Undergraduate Assistant Eme Lab
Susan Rayman, B.S.*	CSU San Marcos	2017-2018	Undergraduate Assistant Eme Lab
Sara Muhtaseb, B.S.*	CSU San Marcos	2017-2018	Undergraduate Assistant Eme Lab
Alani Diamond, B.S.	CSU San Marcos	2015-2016	Undergraduate Assistant Eme Lab
Abigail Lee, B.Sc.*	McMaster	2013-2015	Undergraduate Assistant Wilson Lab
Shayen Sreetharan, B.So	c.* McMaster	2013-2015	Undergraduate Assistant Wilson Lab
Kevin Tate, Ph.D.*	U N Texas	2011-2013	Graduate Assistant Crossley Lab
Zac Kohl, M.S.*	U N Texas	2011-2013	Graduate Assistant Crossley Lab
Richard Ling, B.S.*	U N Texas	2011	Undergraduate Assistant Crossley Lab
Justin Orren, B.S.	U N Texas	2011-2013	Undergraduate Assistant Crossley Lab
Christopher Moser, B.S.	U N Texas	2011-2013	Undergraduate Assistant Crossley Lab
Christopher Slay, Ph.D.*	U N Texas/UC Irvine	2011	Graduate Assistant Crossley Lab/Hicks Lab

PEER-REVIEWED PUBLICATIONS

N=38 N=18 as 1st author N=4 as senior author supervision: undergraduate, <u>graduate student</u>

38. <u>Conte M</u>, de Campos DF, **Eme J** (2023) Effective practices for thermal tolerance polygon experiments using Mottled catfish *Corydoras paleatus*. *Journal of Thermal Biology*, **115**, 103616

37. Eme J, *Tate KB, Rhen T, Crossley II DA (2021) Cardiovascular responses to putative chemoreceptor stimulation of embryonic common snapping turtles (*Chelydra serpentina*) chronically incubated in hypoxia (10% O_2) Comparative Biochemistry and Physiology A, **259**, 110977

36. <u>Cooper CJ</u>, Kristan III WB, **Eme J** (2021) Thermal tolerance and routine oxygen consumption of convict cichlid, *Archocentrus nigrofasciatus*, acclimated to constant temperatures (20°C and 30°C) and a daily temperature cycle (20°C \rightarrow 30°C). *Journal of Comparative Physiology B*, **191**, 479-491

35. <u>Cooper CJ</u>, Mueller CA, **Eme J** (2019) Temperature tolerance and oxygen consumption of two South American tetras, *Paracheirodon inessi* and *Hyphessobrycon herbertaxelrodi*. *Journal of Thermal Biology*, **86**, 102434

34. Eme J, <u>Cooper CJ</u>, <u>Alvo A</u>, <u>Vasquez J</u>, <u>Muhtaseb S</u>, <u>Rayman S</u>, <u>Schmoyer T</u>, 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, <u>Lee AH</u>, <u>Melendez C</u>, 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, <u>Doyle L</u>, **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, <u>Ling R</u>, <u>Nelson D</u>, <u>Gillium T</u>, <u>Conner JL</u>, <u>Hapgood J</u>, 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, <u>Kohl ZF</u>, 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. <u>Lee AH</u>, **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. <u>Wearing OH</u>, **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 hypercaphic 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 TF, 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. Elsev RM, Crosslev 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, Croker 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 Crocodilian 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) Lessons from crocodilians on vertebrate cardiac shunting and exercise. In: Reptiles: Biology, Behavior and Conservation. KJ Baker (Ed), Nova Science Publishers, Hauppage, NY, USA. pp. 57-80, ISBN: 978-1-61122-856-4
- 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

INVITED SEMINARS, PRESENTATIONS AND PUBLISHED ABSTRACTS (N > 55, *speaker)

- Ochoa, A, Elsey RM, Eme J (2021) Effects of Egg Mass, Hatchling Size and Clutch on Growth of Female American alligators (Alligator mississippiensis). FASEB Journal, Meeting Abstract Supplement 35, S1
- Cooper CJ, Eme J (2020) Thermal tolerance and metabolism of Archocentrus nigrofasciatus acclimated to a large daily temperature fluctuation reflect its success as an invasive Species. FASEB Journal, Meeting Abstract Supplement 34. S1
- Harter T, Salmeron C, Eme J, Tift M, Wilson RW, Clifford AM, Tresguerres M (2019) Soluble adenylyl cyclase (sAC) as a conserved acid-base sensor in vertebrate red blood cells. The Royal Society Carbon Dioxide Detection in Biological Systems. Buckinghamshire, UK.
- Eme J* (2019) Phenotypic plasticity of the cardiorespiratory system in embryonic reptiles. Invited Seminar. Institute for Conservation Research - San Diego Zoo.
- Harter T, Salmeron C, Eme J, Tift M, Tresguerres M (2019) Soluble adenylyl cyclase as a conserved bicarbonate sensor in vertebrate red blood cells. The 10th International Congress of Comparative Physiology and Biochemistry. Ottawa, Canada.
- Felbinger K, Owerkowicz T, Eme J, Schriner S, Hicks JW (2019) Pulmonary bypass shunt reduces oxidative damage in the American alligator. The 10th International Congress of Comparative Physiology and Biochemistry. Ottawa, Canada.
- 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*, Eme J (2018) Oxygen Consumption and Thermal Tolerance of Amazonian Tetras Paracheirodon innessi and Hyphessobrycon herbertaxelrodi Acclimated to Increased Temperatures and Implications for Climate Change. Southwest Regional Meeting of Organismal Biologists, CSU San Marcos, San Marcos, CA.
- 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, Elsey 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. Boson, MA. *FASEB Journal*, Meeting Abstract Supplement **27**, 1149.14
- Felbinger K, Owerkowicz T, Eme J, Schriner 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 I* Tate KB, Slav CE, Kohl ZE, Hicks JW, Crosslev JL DA (2012) Cardiovascular plasticity during hyperic.
- 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, Fangue 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.
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- 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.
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- 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

John Eme Curriculum Vitae

- 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

March 2022 - present Guest editor Model Organisms: Opportunities and Challenges in Developmental Physiology December 2020 - present on the Editorial Board of a specialty section of Frontiers in Physiology entitled "Developmental Physiology"

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

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

26 different journals. ad hoc peer reviewer (number of manuscripts reviewed: Total N=59): Am J Physiol: Reg Integr Comp Physiol (2), Anim Behav, Biol Letters, Biol J Linnean Soc (2), Comp Biochem Physiol A (7), Coral Reefs, Fish Physiol Biochem (3), Frontiers Physiol (2), Global Change Biol (2), J Comp Physiol B, J Exp Biol (7), J Exp Mar Biol Ecol (3), J Exp Zool A (2), J Fish Biol (3), J Herpetology (2), J Therm Biol (6), J Sea Res, Mar Biol Res, Mar Ecol Prog Ser, Nature Comm (2), Naturwissenschaften, Physiology, Physiol Biochem Zool (3), PLoS ONE (2), Resp Physiol Neurobiol, Trop Zool, Zool

FUNDING, AWARDS AND SELECTED TRAVEL MONIES

TOTAL: \$59,635

- \$600 December 2020, California State University San Marcos, Faculty Professional Development Grant. "Thermal Tolerance and Metabolism of Archocentrus nigrofasciatus Acclimated to a Large Daily Temperature Fluctuation Reflect its Success as an Invasive Species"
- \$3000 November 2019, California State University San Marcos, Grant Proposal Seed Grant. "Fast Access Statistics Topics in Biology for the Community College-to-University Transition"
- \$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. Oneyear 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)
- Society for Integrative and Comparative Biology (SICB)

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, <u>National Geographic Online</u> 	2015
 Contributed Session Chair, CSZ Meeting 2015 in Calgary, Alberta, Canada 	2015
• Symposium Chair/Organizer, APS Intersociety Meeting 2014 in San Diego, CA, Challenges from the Very Beginning: Developmental Physiology, Epigenetics, and Critical Windows	2014
• Featured Topic Chair/Organizer, Experimental Biology 2013 Meeting in Boston, MA, Integrative Cardiovascular and Respiratory Physiology of Non-Model Organisms	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
- Open water SCUBA diver (NAUI®)

REFERENCES

- Wayne A. Bennett (<u>wbennett@uwf.edu</u>), Professor, University of West Florida, (850) 474 3362, M.S. Advisor
- Dane A. Crossley II (<u>dane.crossley@unt.edu</u>), Associate Professor, University of North Texas, (940) 369 7327, Post-doctoral Advisor
- James W. Hicks (jhicks@uci.edu), Professor, 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

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