

Curriculum Vitae
Timothy Edward Higham

Associate Professor
Department of Evolution, Ecology, and Organismal Biology
University of California, Riverside
Riverside, CA 92521

Phone: 951-827-3652
Fax: 951-827-4286
thigham@ucr.edu

ACADEMIC POSITIONS:

2015 to present: Associate professor, University of California, Riverside
2017 to 2018: Alexander von Humboldt Fellow, University of Freiburg and the Museum Koenig, Germany
2011 to 2015: Assistant professor, University of California, Riverside
2008 to 2011: Assistant professor, Clemson University

POST-DOCTORAL:

2006 to 2008: Harvard University. Advisor: Andrew Biewener

EDUCATION:

2006: Ph.D. University of California, Davis. Advisor: Peter C. Wainwright
2003: M.S. University of Cincinnati. Advisor: Bruce C. Jayne
2000: B.S. University of Calgary. Zoology

PUBLICATIONS:

- 96) Whitford, M.D., G.A. Freymiller, **T.E. Higham**, and R.W. Clark. In Review. The effects of temperature on the defensive strikes of rattlesnakes.
- 95) Wright, A.N., S. Kennedy-Gold, and **T.E. Higham**. In revision. Some like it smooth: Adhesion performance predicts habitat use in anoles and geckos. *Functional Ecology*.
- 94) Kane, E.A. and **T.E. Higham**. In revision. Dynamic functional integration during prey capture in bluegill sunfish (*Lepomis macrochirus*): The roles of variation and constraint in shaping an emergent phenotype.
- 93) **Higham, T.E.** and L. Schmitz. 2019. A hierarchical view of gecko locomotion: photic environment, physiological optics, and locomotor performance. 59, 443-455.
- 92) Zhuang, M.V. A.P. Russell, and **T.E. Higham**. 2019. Evolution of digit orientation and morphology in relation to the acquisition of the adhesive system in geckos. *Journal of Morphology*. 280, 1582-1599.
- 91) Russell, A.P., A.Y. Stark, and **T.E. Higham**. 2019. The Integrative Biology of Gecko Adhesion: historical review, current understanding and grand challenges. *Integrative and Comparative Biology*. 59, 101-116.
- 90) Naylor, E.R. and **T.E. Higham**. 2019. Attachment beyond the adhesive system: the contribution of claws in gecko clinging and locomotion. *Integrative and Comparative Biology*. 59, 168-181.
- 89) **Higham, T.E.**, A.P. Russell, P. Niewiarowski, A. Wright, and T. Speck. 2019. The ecomechanics of gecko adhesion: natural surface topography, evolution, and biomimetics. *Integrative and Comparative Biology*. 59, 131-147.

- 88) Freymiller, G.A., M.D. Whitford, **T.E. Higham**, and R.W. Clark. 2019. Escape kinematics of free-ranging desert kangaroo rats evading rattlesnake strikes. *Biological Journal of the Linnean Society*. 127, 164-172.
- 87) Whitford, M.D, G.A Freymiller, **T.E. Higham**, and R.W. Clark. 2019. Determinants of predation success: how to survive an attack from a rattlesnake. *Functional Ecology*. 33, 1099-1109. Also see <https://www.youtube.com/watch?v=svz9MPebQRw&feature=youtu.be> for video.
- 86) Pinto, B.J., G.R. Colli, **T.E. Higham**, A.P. Russell, D.P. Scantlebury, L.J. Vitt, and T. Gamble. 2019. Population Genetic Structure and Species Delimitation of a Widespread, Neotropical Dwarf Gecko, *Gonatodes humeralis* (Sphaerodactylidae: Gekkota). *Molecular Phylogenetics and Evolution*. 133, 54-66.
- 85) Kumar, C., A. Palacios*, V.A. Surapaneni, G. Bold, M. Thielen, **T.E. Higham**, T. Speck, and V. Le Houerou. 2019. Replicating the complexity of natural surfaces: technique validation and applications for biomimetics, ecology, and evolution. *Philosophical Transactions of the Royal Society A*. 377, 20180265.
- 84) **Higham, T.E.** 2019. Lizard locomotion: behavior, performance, and function. In: Lizard Behavior: Evolutionary and Mechanistic Perspectives. V. Bels and A.P. Russell (eds.). CRC Press. pp. 47-86.
- 83) Thompson, K.* , S. Van Wassenbergh, S.M. Rogers, S.G. Seamone, and **T.E. Higham**. 2018. Suction feeding performance and hydrodynamics are negatively impacted by angling-induced injuries in marine shiner perch, *Cymatogaster aggregata*. *Journal of Experimental Biology*. 221, 180935.
- 82) Foster, K.L., T. Garland, Jr., L. Schmitz, and **T.E. Higham**. 2018. Skink ecomorphology: forelimb and hind limb lengths, but not static stability, correlate with habitat use and demonstrate multiple solutions. *Biological Journal of the Linnean Society*. 125, 673-692.
- 81) Jagnandan, K. and **T.E. Higham**. 2018. Neuromuscular control of locomotion is altered by tail autotomy in geckos. *Journal of Experimental Biology*. 221, 179564.
- 80) **Higham, T.E.** S.G. Seamone, A. Arnold*, D. Toews*, Z. Janmohamed*, S.J. Smith, and S.M. Rogers. 2018. The ontogenetic scaling of form and function in the spotted ratfish, *Hydrolagus colliei* (Chondrichthyes: Chimaeriformes): fins, muscles, and locomotion. *Journal of Morphology*. 279, 1408-1418.
- 79) Schmitz, L. and **T.E. Higham**. 2018. Non-uniform evolutionary response of gecko eye size to changes in diel activity patterns. *Biology Letters*. 14, 20180064.
- 78) Jagnandan, K. and **T.E. Higham**. 2018. How rapid changes in body mass affect the locomotion of terrestrial vertebrates: ecology, evolution and biomechanics of a natural perturbation. *Biological Journal of the Linnean Society*. 124, 279-293.
- 77) Gamble, T., E. McKenna, W. Meyer, S.V. Nielsen, B.J. Pinto, D.P. Scantlebury, and **T.E. Higham**. 2018. XX/XY Sex Chromosomes in the South American Dwarf Gecko (*Gonatodes humeralis*). *Journal of Heredity*. 109, 462-468.
- 76) Harrington, S., B. Hollingsworth, **T.E. Higham**, and T. Reeder. 2018. Pleistocene climatic fluctuations drive historical isolation and secondary contact in the Red Diamond Rattlesnake (*Crotalus ruber*) in Baja California. In Press. *Journal of Biogeography*. 45, 64-75.
- 75) Collins, C.E. and **T.E. Higham**. 2017. Individuals of the common Namib day gecko vary in how adaptive simplification alters sprint biomechanics. *Scientific Reports*. 7, 15595.

- 74) Jagnandan, K. and **T.E. Higham**. 2017. Lateral movements of a massive tail influence gecko locomotion: an integrative study comparing tail restriction and autotomy. *Scientific Reports*. 7, 10865.
- 73) Freymiller, G.A., M.D. Whitford, T.E. Higham, and R.W. Clark. 2017. Recent interactions with snakes enhance escape performance of desert kangaroo rats exposed to a simulated attack. In Press. *Biological Journal of the Linnean Society*. 122, 651-660.
- 72) **Higham, T.E.**, H.A. Jamniczky, K. Jagnandan, S.J. Smith, T.N. Barry, and S.M. Rogers. 2017. Comparative dynamics of suction feeding in marine and freshwater three-spined stickleback, *Gasterosteus aculeatus*: kinematics and geometric morphometrics. *Biological Journal of the Linnean Society*. 122, 400-410.
- 71) **Higham, T.E.**, A.P. Russell, and K.J. Niklas. 2017. Leaping lizards landing on leaves: escape-induced jumps in the rainforest canopy challenge the adhesive limits of geckos. *Journal of the Royal Society Interface*. 14, 20170156
- 70) **Higham, T.E.**, T. Gamble, and A.P. Russell. 2017. On the origin of frictional adhesion in geckos: small morphological changes lead to a major biomechanical transition in the genus *Gonatodes*. *Biological Journal of the Linnean Society*. 120, 503-517.
- 69) Foster, K.L. and **T.E. Higham**. 2017. Integrating gastrocnemius force-length properties, in vivo activation, and operating lengths reveals how *Anolis* deal with ecological challenges. *Journal of Experimental Biology*. 220, 796-806
- 68) **Higham, T.E.**, R.W. Clark, C.E. Collins, M.D. Whitford, and G.A. Freymiller. 2017. Rattlesnakes are extremely fast and variable when striking at kangaroo rats in nature: Three-dimensional high-speed kinematics at night. *Scientific Reports*. 7, 40412.
- 67) Birn-Jeffery, A. and **T.E. Higham**. 2016. Light level impacts locomotor biomechanics in a secondarily diurnal gecko, *Rhoptropus afer*. *Journal of Experimental Biology*. 219, 3649-3655.
- 66) **Higham, T.E.**, S.M. Rogers, R.B. Langerhans, H.A. Jamniczky, G.V. Lauder, W.J. Stewart, C.H. Martin, and D.N. Reznick. 2016. Speciation through the lens of biomechanics: locomotion, prey capture, and reproductive isolation. *Proceedings of the Royal Society B*. 283, 20161294.
- 65) Gillis, G. and **T.E. Higham**. 2016. Consequences of lost endings: caudal autotomy as a lens for focusing attention on tail function during locomotion. *Journal of Experimental Biology*. 219, 2416-2422.
- 64) Zhuang, M.V. and **T.E. Higham**. 2016. Arboreal day geckos (*Phelsuma madagascariensis*) modulate their fore- and hind limb kinematics differentially in response to changes in habitat structure. *PLoS ONE*. doi: 10.1371/journal.pone.0153520
- 63) Birn-Jeffery, A. and **T.E. Higham**. 2016. Geckos decouple fore- and hind limb kinematics in response to changes in incline. *Frontiers in Zoology*. 13:11, DOI 10.1186/s12983-016-0144-2.
- 62) Irschick, D.I. and **T.E. Higham**. 2016. Animal Athletes: An Ecological and Evolutionary Approach. Oxford University Press.
- 61) Olberding, J.P., A. Herrel, **T.E. Higham**, and T. Garland, Jr. 2016. Limb segment contributions to the evolution of hind limb length in phrynosomatid lizards. *Biological Journal of the Linnean Society*. 117, 775-795.
- 60) **Higham, T.E.**, W.J. Stewart, and P.C. Wainwright. 2015. Turbulence, temperature, and turbidity: The ecomechanics of predator-prey interactions in fishes. *Integrative and Comparative Biology*. 55, 6-20.

- 59) Day, S.W., **T.E. Higham**, R. Holzman, and S. Van Wassenbergh. 2015. Morphology, kinematics, and dynamics: The mechanics of suction feeding in fishes. *Integrative and Comparative Biology*. 55, 21-35.
- 58) Kane, E.A. and **T.E. Higham**. 2015. Complex systems are more than the sum of their parts: Using integration to understand performance, biomechanics, and diversity. *Integrative and Comparative Biology*. 55, 146-165.
- 57) Russell, A.P., J. Baskerville, T. Gamble, and **T.E. Higham**. 2015. The evolution of digit form in Gonatodes (Gekkota: Sphaerodactylidae) and its implications for the transition from frictional to adhesive contact in gekkotans. *Journal of Morphology*. In press.
- 56) **Higham, T.E.** 2015. Bolting, bouldering, and burrowing: functional morphology and biomechanics of pedal specializations in desert-dwelling lizards. In: All Animals are Interesting: A Festschrift in Honour of Anthony P. Russell. O.R.P. Bininda-Emonds, G.L. Powell, H.A. Jamniczky, A.M. Bauer & J. Theodor (eds.) BIS-Verlag der Carl von Ossietzky Universität Oldenburg. pp. 279-302.
- 55) Van Wassenbergh, S., Day, S.W., Hernandez, P., **Higham, T.E.**, and T. Skorczewski. 2015. Suction power output and the inertial cost of rotating the neurocranium to generate suction in fish. *Journal of Theoretical Biology*. 372, 159-167.
- 54) **Higham, T.E.**, G.J. Measey, A.V. Birn-Jeffery, A. Herrel, and K.A. Tolley. 2015. Functional divergence between morphs of a dwarf chameleon: Differential locomotor kinematics in relation to habitat structure. *Biological Journal of the Linnean Society*. 116, 27-40.
- 53) **Higham, T.E.**, A. Birn-Jeffery, C.E. Collins, C.D. Hulsey, and A.P. Russell. 2015. Adaptive simplification and the evolution of gecko locomotion: Morphological and biomechanical consequences of losing adhesion. *Proceedings of the National Academy of Sciences*. 112, 809-814. Media coverage by the [Los Angeles Times](#), [UCR Today](#), [IFL Science](#), and many others. Also check out our [Cover image](#)
- 52) Collins, C.E., A.P. Russell, and **T.E. Higham**. 2015. Subdigital adhesive pad morphology varies in relation to structural habitat use in the Namib Day Gecko, *Rhoptropus afer*. *Functional Ecology*. 29, 66-77.
- 51) Foster, K.L., C.E. Collins, **T.E. Higham** and T. Garland, Jr. In Press. Determinants of lizard escape performance: decision, motivation, ability, and opportunity. In *Escaping from predators: An integrative view of escape decisions and refuge use*, eds. W.E. Cooper, Jr. and D.T. Blumstein. pp. 287-321.
- 50) Stewart, W.J. and **T.E. Higham**. 2014. Passively stuck: death does not affect gecko adhesion strength. *Biology Letters*. 10, 20140701. Media coverage by [Smithsonian](#), [UCR Today](#), [Science](#), [IFL Science](#), and many others.
- 49) Jagnandan, K., A.P. Russell, and **T.E. Higham**. 2014. Tail autotomy and subsequent regeneration alter the mechanics of locomotion in lizards. *Journal of Experimental Biology*. 271, 3891-3897.
- 48) Birn-Jeffery, A. and **T.E. Higham**. 2014. Geckos significantly alter foot orientation to facilitate adhesion during downhill locomotion. *Biology Letters* 10, 20140456. Media coverage by the [Nature World News](#), [UCR Today](#), [Adhesives.org](#), and many others.
- 47) Blob, R.W. and **T.E. Higham**. 2014. Terrestrial locomotion - Where do we stand, where are we going? *Integrative and Comparative Biology*. 54, 1051-1057.
- 46) Seamone, S., T.A. Blaine and **T.E. Higham**. 2014. Sharks modulate their escape behavior in response to predator size, speed, and approach orientation. *Zoology*. 117, 377-382.
- 45) Birn-Jeffery, A. and **T.E. Higham**. 2014. The scaling of uphill and downhill locomotion in legged animals. *Integrative and Comparative Biology*. 54, 1159-1172.

- 44) Kane, E.A. and **T.E. Higham**. 2014. Modeled 3D suction accuracy predicts prey capture success in three centrarchids. *Journal of the Royal Society Interface*. 11, 20140223. doi: 10.1098/rsif.2014.0216
- 43) Russell, A.P., E.K. Lai, G.L. Powell and **T.E. Higham**. 2014. Density and distribution of cutaneous sensilla on tails of Leopard Geckos (*Eublepharis macularius*) in relation to caudal autotomy. *Journal of Morphology*. 275, 961-979. doi: 10.1002/jmor.20269
- 42) Foster, K.L. and **T.E. Higham**. 2014. Context-dependent changes in motor control and kinematics during locomotion: modulation and decoupling. *Proceedings of the Royal Society B*. 281, 20133331. doi: 10.1098/rspb.2013.3331
- 41) **Higham, T.E.**, A.P. Russell, and P.A. Zani. 2013. Integrative biology of tail autotomy in lizards. *Physiological and Biochemical Zoology*. 86, 603-610.
- 40) **Higham, T.E.**, K.R. Lipsett, D.A. Syme, and A.P. Russell. 2013. Controlled chaos: muscle contractile dynamics, fiber types, and three-dimensional kinematics of autotomized lizard tails. *Physiological and Biochemical Zoology*. 86, 611-630.
- 39) Anderson, C.V. and **T.E. Higham**. 2013. Anatomy. In: *The Biology of Chameleons*. Tolley, K.A. and Herrel, A. (eds). University of California Press. pp. 7-56
- 38) **Higham, T.E.** and C.V. Anderson. 2013. Function and Adaptation. In: *The Biology of Chameleons*. Tolley, K.A. and Herrel, A. (eds). University of California Press. pp. 63-84.
- 37) **Higham, T.E.** and D.J. Irschick. 2013. Springs, steroids, and slingshots: the roles of enhancers and constraints in animal movement. *Journal of Comparative Physiology B*. 183, 583-595.
- 36) Kane, E.A. and **T.E. Higham**. 2012. Life in the flow lane: differences in pectoral fin morphology suggest transitions in station-holding demand across species of marine sculpin. *Zoology*. 115, 223-232.
- 35) Foster, K.L. and **T.E. Higham**. 2012. How forelimb and hindlimb function changes with incline and perch diameter in the green anole (*Anolis carolinensis*). *Journal of Experimental Biology*. 215, 2288-2300.
- 34) **Higham, T.E.** and A.P. Russell. 2012. Time-varying motor control of autotomized leopard gecko tails: multiple inputs and behavioral modulation. *Journal of Experimental Biology*. 215, 435-441.
- 33) Olberding, J.P. L.D. McBrayer, and **T.E. Higham**. 2012. Performance and three-dimensional kinematics of bipedal lizards during obstacle negotiation. *Journal of Experimental Biology*. 215, 247-255.
- 32) O'Connor, J.L., L.D. McBrayer, **T.E. Higham**, J.F. Husak, I.T. Moore, and D.C. Rostal. 2011. Effects of training and testosterone on locomotor performance in male six-lined racerunners (*Aspidoscelis sexlineata*). *Physiological and Biochemical Zoology*. 84, 394-405.
- 30) **Higham, T.E.**, P.G. Korchari, and L.D. McBrayer. 2011. How muscles define maximum locomotor performance in lizards: An analysis using swing and stance phase muscles. *Journal of Experimental Biology*. 214, 1685-1691.
- 29) Kane, E.A. and **T.E. Higham**. 2011. The integration of locomotion and feeding in cottid fishes: Functional disparity despite morphological similarity. *Journal of Experimental Biology*. 214, 1092-1099.
- 28) Clark, A.J. and **T.E. Higham**. 2011. Slipping, sliding, and stability: locomotor strategies for overcoming low-friction surfaces. *Journal of Experimental Biology*. 214, 1369-1378.

- 27) **Higham, T.E.** and A.A. Biewener. 2011. Functional and architectural complexity within and between muscles: regional variation and intermuscular force transmission. *Philosophical Transactions of the Royal Society B*. 366, 1477-1487.
- 26) **Higham, T.E.**, A.A. Biewener, and S. Delp. 2011. Mechanics, modulation and modeling: how muscles actuate and control movement. *Philosophical Transactions of the Royal Society B*. 366, 1463-1465.
- 26) Fuller, P.O, **T.E. Higham**, and A.J. Clark. 2011. Posture, speed, and habitat structure: Three-dimensional hindlimb kinematics of two species of padless geckos. *Zoology*. 114, 104-112.
- 25) **Higham, T.E.**, P.G. Korchari, and L.D. McBrayer. 2011. How to climb a tree: Lizards accelerate faster, but pause more, when escaping on vertical surfaces. *Biological Journal of the Linnean Society*. 102, 83-90.
- 24) **Higham, T.E.** 2011. The biomechanics of feeding in fishes. In: *Encyclopedia of Fish Physiology: From Genome to Environment*. Farrell, A.P. (ed.), volume 1, pp. 597-602. Sand Diego: Academic Press.
- 23) **Higham, T.E.** 2010. Book review of "Feeding and Digestive Functions of Fishes". *Quarterly Review of Biology*. 85, 374.
- 22) **Higham, T.E.** and A.P. Russell. 2010. Divergence in locomotor performance, ecology, and morphology between two sympatric sister species of desert-dwelling gecko. *Biological Journal of the Linnean Society*. 101, 860-869.
- 21) Foster, K.L. and **T.E. Higham**. 2010. How to build a pectoral fin: Functional morphology and steady swimming kinematics of the spotted ratfish, *Hydrolagus coliei*. *Canadian Journal of Zoology*. 88 (8), 774-780.
- 20) **Higham, T.E.** and A.P. Russell. 2010. Flip, flop and fly: modulated motor control and highly variable movement patterns of autotomized gecko tails. *Biology Letters*. 6, 70-73.
doi:10.1098/rsbl.2009.0577
- 19) Russell, A.P. and **T.E. Higham**. 2009. A new angle on clinging in geckos: Incline, not surface structure, triggers the deployment of adhesive system. *Proceedings of the Royal Society B*. 276, 3705-3709.
- 18) **Higham, T.E.** and A.A. Biewener. 2009. Fatigue alters *in vivo* function within and between limb muscles during locomotion. *Proceedings of the Royal Society B*. 276, 1193-1197.
- 17) Wainwright, P.C., R.S. Mehta and **T.E. Higham**. 2008. Stereotypy, flexibility and coordination: key concepts in behavioral functional morphology. *Journal of Experimental Biology*. 211, 3523-3528.
- 16) **Higham, T.E.** and F.E. Nelson. 2008. The integration of lateral gastrocnemius muscle function and kinematics in running turkeys. *Zoology* 111, 483-493.
- 15) **Higham, T.E.** and A.A. Biewener. 2008. Integration within and between muscles during terrestrial locomotion: effects of incline and speed. *Journal of Experimental Biology* 211, 2303-2316.
- 14) **Higham, T.E.**, A.A. Biewener and J.M. Wakeling. 2008. Functional diversification within and between muscle synergists during locomotion. *Biology Letters* 4, 41-44.
- 13) Day, S. W., **T. E. Higham** and P. C. Wainwright. 2007. Time resolved measurements of the flow generated by suction feeding fish. *Experiments in Fluids*. 43, 713-724.

- 12) Wainwright, P.C., A.M. Carroll, D.C. Collar, S.W. Day, **T.E. Higham** and R.A. Holzman. 2007. Suction feeding mechanics, performance and diversity in fishes. ***Integrative and Comparative Biology*** 47, 96-106.
- 11) **Higham, T.E.** 2007. The integration of locomotion and prey capture in vertebrates: evolution of morphology, behavior and performance. ***Integrative and Comparative Biology*** 47, 82-95
- 10) **Higham, T.E.**, C.D. Hulsey, O. Rican and A.M. Carroll. 2007. Feeding with speed: prey capture evolution in cichlids. ***Journal of Evolutionary Biology*** 20, 70-78.
- 9) **Higham, T.E.** 2007. Feeding, fins and braking maneuvers: locomotion during prey capture in centrarchid fishes. ***Journal of Experimental Biology*** 210, 107-117.
- 8) **Higham, T.E.**, S.W. Day, and P.C. Wainwright. 2006. The pressures of suction feeding: the relation between buccal pressure and induced fluid speed in centrarchid fishes. ***Journal of Experimental Biology*** 209, 3281-3287.
- 7) **Higham, T.E.**, S.W. Day, and P.C. Wainwright. 2006. Multidimensional analysis of suction feeding performance in fishes: fluid speed, acceleration, strike accuracy and the ingested volume of water. ***Journal of Experimental Biology*** 209, 2713-2725.
- 6) **Higham, T.E.**, B. Malas, B.C. Jayne and G.V. Lauder. 2005. Constraints on starting and stopping: behavior compensates for reduced pectoral fin area during braking of the bluegill sunfish *Lepomis macrochirus*. ***Journal of Experimental Biology*** 208, 4735-4746.
- 5) Day, S.W., **T.E. Higham**, A.Y. Cheer, and P.C. Wainwright. 2005. Spatial and temporal patterns of water flow generated by suction feeding bluegill sunfish *Lepomis macrochirus* resolved by Particle Image Velocimetry. ***Journal of Experimental Biology*** 208, 2661-2671. Also see cover.
- 4) **Higham, T.E.**, S.W. Day and P.C. Wainwright. 2005. Sucking while swimming: evaluating the effects of ram speed on suction generation in bluegill sunfish *Lepomis macrochirus* using digital particle image velocimetry. ***Journal of Experimental Biology*** 208, 2653-2660. Also see cover.
- 3) **Higham, T.E.**, and B.C. Jayne. 2004. *In vivo* muscle activity in the hindlimb of the arboreal lizard, *Chamaeleo calypttratus*: general patterns and the effects of incline. ***Journal of Experimental Biology*** 207, 249-261.
- 2) **Higham, T.E.**, and B.C. Jayne. 2004. Locomotion of lizards on inclines and perches: hindlimb kinematics of an arboreal specialist and a terrestrial generalist. ***Journal of Experimental Biology*** 207, 233-248.
- 1) **Higham, T.E.**, M.S. Davenport, and B.C. Jayne. 2001. Maneuvering in an arboreal habitat: the effects of turning angle on the locomotion of three sympatric ecomorphs of *Anolis* lizards. ***Journal of Experimental Biology*** 204, 4141-4155.

FELLOWSHIPS AND AWARDS (approximately 2.4 million USD over past 10 years):

2019-2022: NSF Award (\$240,874). Collaborative Research: Strike while the snake is hot: will increasing nighttime temperatures make an endothermic keystone species more susceptible to ectothermic predators? Awarded by the Physiological Mechanisms & Biomechanics program in the Division of Integrative and Organismal Systems (IOS). Award Number: 1856408 (in collaboration with Jeet Sukumaran and Rulon Clark).

2018-2020: NSF Award (\$294,022). The genetic architecture of biomechanical integration in fishes. Awarded by the Physiological Mechanisms & Biomechanics program in the Division of Integrative and Organismal Systems (IOS). Award Number: 1838297.

2018-2019: NSF Award (\$43,318). Workshop: Reciprocal illumination between ecology and biomechanics: evolution, integration, and constraint, March 2019, Portland, Oregon

2018-2019: NSF Award (\$15,000). Symposium grant for 2019 annual meeting of the Society for Integrative and Comparative Biology, Tampa, Florida.

2017-2018: Alexander von Humboldt Fellowship for Experienced Researchers. University of Freiburg and the Museum Koenig in Bonn, Germany (€40,000).

2017: Nouragues Travel Grant for travel to French Guiana (€7,000).

2012-2018: NSF Award (\$420,000). Locomotion and adhesion in geckos: The link between ecology, form, and function. Awarded by the Physiological and Structural Systems Cluster in the Division of Integrative and Organismal Systems (IOS). Award Number: 1147043.

2015-2018: GAANN Fellowship (\$1,477,758): Ecology, Evolution, Organismal Biology: SustainLife (co-wrote with David Reznick).

2015: Junior Excellence in Teaching Award (JET) – Honoree Select. UC Riverside.

2014: Meeting grant from the Company of Biologists (\$3,130)

2013-2015: UC MEXUS Small Grant (\$1,500).

2013: Meeting grant from the Company of Biologists (\$4,630).

2012: Meeting grant from the Company of Biologists (\$2,300).

2010: University Research Grant Committee (URGC) award (\$7,346).

2008: NSERC postdoctoral fellowship (\$80,000 – declined)

2006: *Journal of Experimental Biology* Traveling Fellowship (\$3,300).

2006: William S. Hoar Award for best student oral presentation at the 2006 annual meeting of the Canadian Society of Zoologists (\$500).

2006: Fellowship for travel to the 2006 annual meeting of the Canadian Society of Zoologists (\$300).

2004: UC Davis Graduate fellowship (\$14,000).

2003: UC Davis Graduate fellowship (\$21,500).

2003: University of Cincinnati Harry L. Wieman Summer Fellowship (\$1,100).

2002: University of Cincinnati Harry L. Wieman Summer Fellowship (\$1,000).

INVITED SEMINARS:

2020: American Museum of Natural History, Comparative Biology series.

2019: University of Calgary, Department of Biological Sciences
2017: University of Bonn, Germany
2017: University of Konstanz, Germany
2016: University of Hawaii at Manoa, Department of Biology
2016: La Sierra University, Department of Biology.
2014: University of Calgary. Department of Biological Sciences.
2013: San Diego State University. Biology Department.
2013: Claremont Colleges. Keck Science Department.
2013: California State University, San Bernardino. Department of Biology.
2013: University of Alabama, Department of Biological Sciences.
2011: University of California, Irvine. School of Biological Sciences.
2011: California State University, Long Beach. Biological Sciences.
2011: University of California, Riverside. Department of Cell Biology and Neuroscience.
2011: Bamfield Marine Sciences Centre. Evening seminar series.
2011: University of Calgary. Department of Comparative Biology and Experimental Medicine.
2011: University of Regina. Department of Biology.
2011: University of California, Riverside. Department of Biology.
2009: Simon Fraser University. Department of Biomedical Physiology and Kinesiology.
2009: University of British Columbia. Department of Zoology.
2008: College of Charleston. Department of Biology.
2008: Georgia Southern University. Department of Biology.
2008: Clemson University. Environmental Toxicology.
2008: Clemson University. Department of Biological Sciences.
2008: University of Wyoming. Department of Zoology and Physiology.
2007: University of Missouri-Columbia. Integrative Anatomy.
2007: University of Guelph. Department of Biomedical Sciences.
2005: University of California, Davis. Molecular, Cellular and Integrative Physiology.

MEDIA ATTENTION:

2017: The Wire, UCR Today (<https://ucrtoday.ucr.edu/48808>) (Pub #74)
2017: Cornell Chronicle, Phys.Org, ScienceDaily, UCR Today (<https://ucrtoday.ucr.edu/48070>) (Pub #71)
2017: UCR Today (<https://ucrtoday.ucr.edu/40236>) (Pub #70)
2017: The Mirror, Gizmodo, Press-Enterprise, Live Science (Pub #68)
2015: Los Angeles Times, IFL Science, UCR Today (<http://ucrtoday.ucr.edu/26570>), Science Daily, and many others (Pub #53)
2014: UCR Today (<http://ucrtoday.ucr.edu/25123>), ScienceDaily, EH Science (Pub #45)
2014: UCR Today (<http://ucrtoday.ucr.edu/21049>), Science News (Pub #42)
2012: National Geographic Wild – work on tail autotomy highlighted in “Animal Superpowers”, hosted by Patrick Stewart
2012: NeuroDojo, NewScientist, i09 (Pub #34)
2011: New York Times, The Telegraph (Pub #28)
2009: New York Times, Scientific American, Discovery News, Wired, Smithsonian (Pub #20)
2009: Washington Post, Science Daily, Discovery News, Globe and Mail, Physics World (Pub #19)
2008: Inside JEB (2008: The Journal of Experimental Biology **211**)
2007: Harvard Gazette & HarvardScience (Pub #14)
2006: Inside JEB (The Journal of Experimental Biology **209(17)**, ii)
2006: Inside JEB (The Journal of Experimental Biology **209(14)**, iii)
2005: Inside JEB (The Journal of Experimental Biology **208(14)**, iii)

TEACHING EXPERIENCE:

Instructor, **Herpetology** (BIOL 170), UC Riverside, 2020.

Lead Faculty, **Functional Ecology and Herpetology in Namibia**, UC Riverside, 2019

Invited instructor, **Functional Ecology**, Bamfield Marine Sciences Centre, Vancouver Island, Canada, Summer 2016.

Instructor, **Introduction to Organismal Biology** (BIOL 5B), UC Riverside, 2015 and 2017 (both co-taught with Lou Santiago).

Invited instructor, **Biology of Marine Fishes**, Bamfield Marine Sciences Centre, Vancouver Island, Canada, Summer, 2009, 2011, 2015, 2017, and 2019 (2015 & 2017 was co-taught with Sean Rogers from the University of Calgary).

Instructor, **Functional Anatomy of the Vertebrates** (BIOL 161B), UC Riverside, 2012-2017 (co-taught with Ken Halama and Christopher Clark).

Instructor, **Comparative Biomechanics** (BIOL 176), UC Riverside, 2013-2017.

Invited instructor, **Comparative Biomechanics**, Bamfield Marine Sciences Centre, Vancouver Island, Canada, Summer, 2010, 2012, 2014.

See <http://www.bms.bc.ca/university/courses2010/2010profiles/biomechanics.html> for example of course.

Instructor, **Evolutionary Physiology** (EEOB 220), UC Riverside, 2012 & 2014 (co-taught with Ted Garland).

Instructor and lab coordinator, **Comparative Physiology** (BIOSC 475), Clemson University, 2009, 2010.

Instructor and lab coordinator, **Herpetology** (BIOSC 468), Clemson University, 2011.

Instructor and lab coordinator, **Ichthyology** (BIOSC 477), Clemson University, 2009.

Guest lecturer, **Comparative Biomechanics** (OEB 173), Harvard University, 2008.

Teaching fellow, **Independent Research** (OEB 121A), Harvard University, 2007. This course involves mentoring undergraduate research projects. Students work with me to carry out independent projects in the area of muscle physiology.

Teaching assistant, **Systemic Physiology**, University of California, Davis, 2004-2006. Ran weekly labs and gave weekly lectures. Labs involved dissections and physiological experiments involving major physiological systems. Grading involved weekly quizzes and lab reports.

Teaching assistant, **Comparative Vertebrate Anatomy**, University of Cincinnati, 2002-2003. Ran weekly labs involving dissection and vertebrate classification. Generated and graded comprehensive laboratory examinations.

Teaching assistant, **Anatomy and Physiology**, University of Cincinnati, 2000-2003. Ran weekly labs involving extensive cat dissections.

Teaching assistant, **Freshman Biology**, University of Cincinnati, 2000. Ran weekly labs involving introductory biological experiments. Grading involved quizzes and lab reports.

FIELD WORK:

2009-2019: Bamfield Marine Sciences Centre, Vancouver.

2010-2019: Namibia (Gobabeb, Swakopmund, Spitzkoppe)

2015-2018: French Guiana

2012-2015: Trinidad & Tobago

2012-2017: Mojave Desert, USA

2012: Baja, California

2012: Western and Eastern Cape, South Africa.

2000: Discovery Bay Marine Laboratory, Jamaica: Collected data regarding habitat use in *Anolis* lizards.

2000: Mojave Desert, USA: Studied and collected desert lizards.

1999: Bamfield Marine Station, Vancouver: Studied habitat selection in intertidal fishes.

1999: Monkey River, Belize: Studied the locomotor behavior of howler monkeys.

CURRENT AND PAST LAB MEMBERS:

Postdoctoral fellows:

Dina Navon (February 2019 – present)

William Stewart (April 2013 – August 2014; now Assistant Professor at Eastern Florida State College)

Aleksandra Birn-Jeffery (December 2012 – August 2014; now a Lecturer at Queen Mary University of London)

Andrew Clark (August 2009 – July 2010; now an Assistant Professor at the College of Charleston)

Graduate students:

Amanda Herbert (September, 2019 – present) - PhD

Phil Sternes (September, 2019 – present) - PhD

Marina Vollin (September, 2019 – present) - PhD

Anthony Cobos (September, 2018 - present) - PhD

Grace Freymiller (September, 2016 – present) – Joint Doctoral Program b/w UC Riverside and SDSU

Emily Naylor (August, 2015 - present) – PhD

Vicky Zhuang (August, 2012 - 2018) – PhD (now Collection Manager at UTEP Biodiversity Collections)

Kevin Jagnandan (August, 2012 - 2016) – PhD (now Assistant Professor at San Diego City College)

Clint Collins (August, 2012 - 2016) - PhD (now Assistant Professor at CSU Sacramento)

Kathleen Foster (August, 2010 – 2016) – PhD (now Assistant Professor at Ball State University)

Emily Kane (August 2009 – 2014) - PhD (now Assistant Professor at Georgia Southern University)

Jeff Olberding (July, 2010 – June 2013) – MS (now postdoctoral fellow at UC Irvine)

Undergraduates:

Sophia Rogers (2019 – present)

Laura Kollmorgen (2019 – present)

Jason Ta (2018 – present)

Diana Sriudom (2018 – present)

Michelle Modert (2018) - University of Freiburg

Mara Hofmann (2018) - University of Freiburg

Elizabeth Mendoza (2015) (now MS student at Oklahoma State University)

Azeem Rahman (2015 - 2016)

Jennifer Shedden (2014 – 2016) (now MS student at Cal State Fullerton)
Angelyn Nepacena (2013 – 2016)
Jessica Vivas (2014 – 2015)
Joseph Soquiat (2013 – 2015)
Steven Torres (2014)
Shayan Amiri (2013 – 2014)
Amy Cheu (2013 – 2014) (now PhD student at Clark University with Philip Bergmann)
Cindy Olivas (2013 – 2014)
Amir Azamian (2013 – 2014)
Kevin Dinh (2012 – 2014)
Stephanie Valiente (2012 – 2013)
Sofia Iribarren (2012 – 2013)
Stephen Cabalatangan (2012)
Daryl Cheung (2012)
Stacy Tran (2012)
Clare O'Brien (2012)
Zachary Zboch (2011)
Christine Dumler (2010-2011)
Alice Goodman (2010-2011)
Erin Patten (2010)
Patrick Fuller, Undergraduate (2009-2010)
Heidi Lindler, Undergraduate (2009)
Katelyn Doerr, Undergraduate (2009)
Danielle Hulsey, Undergraduate (2009)

PROFESSIONAL ACTIVITIES:

2019: Co-organized a symposium (with Alyssa Stark and Anthony Russell) for the annual meeting of the Society for Integrative and Comparative Biology (Tampa, Florida) titled: The path less traveled: Reciprocal illumination of gecko adhesion by unifying material science, biomechanics, ecology, and evolution.

2016-2017: Chair of the **Comparative Morphology & Development** section of the Canadian Society of Zoologists.

2015: Organized a symposium (with Rich Palmer) for the annual meeting of the Canadian Society of Zoologists (Calgary, Canada) titled "From head to toe: Integrative vertebrate morphology and evolution". See <http://www.biology.ualberta.ca/CMD/home.htm> for more information.

2015: Organized a symposium (with Rich Palmer) for the annual meeting of the Canadian Society of Zoologists (Calgary, Canada) titled "Ten Years of The Triple Helix: Development, Morphology, Evolution". See <http://www.biology.ualberta.ca/CMD/home.htm> for more information.

2015: Organized a symposium (with Peter Wainwright) for the annual meeting of the Society for Integrative and Comparative Biology (West Palm Beach, Florida) titled "New insights into suction feeding biomechanics and evolution". See <http://www.sicb.org/meetings/2015/symposia/index.php> for more information.

2014: Became co-editor of ***Physiological and Biochemical Zoology***.

2014: Organized a symposium (with Rick Blob) for the annual meeting of the Society for Integrative and Comparative Biology (Austin, Texas) titled "Terrestrial locomotion: Where do we stand, where are going?" See <http://www.sicb.org/meetings/2014/symposia/locomotion.php> for more information.

2013: Organized a regional SICB conference at the University of California, Riverside. Conference consisted of 80 scientists from the SW representing the Divisions of Vertebrate Morphology and Comparative Biomechanics. See <http://www.biomechanics.ucr.edu/ucr2013/> for more information.

2013: Elected to the Executive Council of the **Canadian Society of Zoologists**.

2013: Organized a symposium (with Ted Garland) for the International Congress of Vertebrate Morphology (Barcelona, Spain) titled "The evolution of locomotion: reciprocal illumination from a diversity of approaches".

2013: Organized a symposium (with Anthony Herrel) for the International Congress of Vertebrate Morphology (Barcelona, Spain) titled "Sticks, stones, and slopes: the link between substrate characteristics, morphology, and biomechanics".

2012: Invited to join **Functional Ecology** as an editor.

2012: Organized a symposium (with Anthony Russell) for the World Congress of Herpetology (Vancouver, Canada) titled "Caudal Autotomy and Regeneration in Lizards: Patterns, Costs, and Benefits".

2011: Elected as Secretary of the Division of Comparative Biomechanics of the **Society for Integrative and Comparative Biology**.

2011-2014: Editorial board member of the **Journal of Evolutionary Biology**.

2010: Guest Editor (with Andrew Biewener) for a **Philosophical Transactions of the Royal Society B** theme issue titled "Integration of muscle function for producing and controlling movement". Volume 366, issue 1570, April 2011.

2010: Organized a symposium (with Andrew Biewener) for the annual meeting of the American Physiological Society (Westminster, Colorado) titled "Off the beaten path: Integrative aspects of muscle function during locomotion".

2007: Organized a symposium (with Peter Wainwright) for the annual meeting of the Society for Integrative and Comparative Biology (Phoenix, Arizona) titled "The evolution of feeding mechanisms in vertebrates".

Reviewed manuscripts for the following journals:

American Naturalist
Behavioural Processes
Biological Bulletin
Biological Journal of the Linnean Society
Biology Letters
BMC Evolutionary Biology
Bulletin of the Museum of Comparative Zoology
Canadian Journal of Zoology
Ecology
Ecology Letters
Evolution
Experimental Neurology
Functional Ecology
Journal of Arid Environments
Journal of Biomechanics
Journal of Comparative Physiology A
Journal of Evolutionary Biology
Journal of Experimental Biology
Journal of Experimental Zoology A
Journal of Herpetology
Journal of Fish Biology
Journal of the Royal Society Interface
Limnology and Oceanography

Naturwissenschaften
North American Journal of Fisheries Management
Physiological and Biochemical Zoology
PLoS ONE
Proceedings of the Royal Society B
Zoology
Zootaxa

Member of:

African Herpetological Association
Canadian Society of Zoologists
Society for Experimental Biology
Society for Integrative and Comparative Biology

Service:

UC Riverside EEOB Advisor for Graduate Admissions (2019 – present)
UC Riverside CNAS Executive Committee (2018 – present)
UC Riverside Natural Reserve System Advisory Committee (2013 – 2017)
Graduate Advisor for joint doctoral program between UC Riverside and SDSU (2016-2017)
Vice Chair of IACUC at UC Riverside (2016 - 2017)
Member of the IACUC at UC Riverside (2015 - 2017)
Faculty Search Committee for Community Ecology at UC Riverside (2015-2016)
GAANN Advisory Committee (2015 - 2017)
Graduate advisor for admissions, Evolution, Ecology and Organismal Biology (2015 – 2017)
Institutional Animal Care and Use Committee, UC Riverside (2015 – 2017)
Graduate Written Exam Committee, UC Riverside (2014 – Present)
University of California Education Abroad Program Faculty Advisory Committee for Africa (2015 – Present)
Ad hoc committee for the Shipley-Skinner grants at UC Riverside (2015)
Committee on Scholarships and Honors at UC Riverside (2014 – 2017)
Ad hoc committee for merit advances at UC Riverside (2013 – present)
Committee for Continuing Graduate Students at UC Riverside (2012 – 2015)
Faculty Search Committee for Behavioral Ecologist at UC Riverside (2012)
EEOB Program Committee at UC Riverside (2011 – present)
Chair of Seminar Organizing Committee at UC Riverside (2012 – 2014)
Mathias Award Committee at UC Riverside (2011)
Curriculum Committee at Clemson University (2010 – 2011)
Seminar Committee at Clemson University (2010 – 2011)

VOLUNTEER ACTIVITIES:

2016-2017: Guest symposium speaker at the Riverside STEM Academy. Involves a half day with hundreds of students from grades 5 to 12.

2014: Riverside Metropolitan Museum outreach all-day event. This event, termed “Animal Olympics”, highlighted the research in the Higham Lab by performing exercises and presentations.

2013: Animal Superpowers outreach event for grades K-6 at Alcott Elementary in Riverside, CA.

2013: Session chair at the International Congress of Vertebrate Morphology (ICVM) in Barcelona, Spain.

2013: Session chair at the annual meeting of the Canadian Society of Zoologists in Guelph, Ontario, Canada.

2013: Volunteer teaching at Alcott Elementary in Riverside, CA.

2011: Judge for the Best Poster Award of the CBP section of the Canadian Society of Zoologists, Ottawa, Ontario, Canada.

2010: Judge for the Division of Vertebrate Morphology and the Division of Comparative Biomechanics at the annual meeting of the Society for Integrative and Comparative Biology in Seattle, WA.

2010: Session chair at the annual meeting of the Society for Integrative and Comparative Biology in Seattle, WA

2007: Presenter and judge for Boston Latin School Science Fair