

# *Curriculum Vitae*

## Henry Charles Astley

Biomimicry Research & Innovation Center  
Depts. of Biology & Polymer Science  
University of Akron  
Office # 308, Phone # 330-972-8192  
[hastley@akron.edu](mailto:hastley@akron.edu)

### Education:

- PhD in Biology, Brown University, 2013  
Topic: Performance, Mechanics, and Diversity of Anuran Jumping
- M.S. in Biology, University of Cincinnati, 2008.  
Topic: Habitat structure affects arboreal locomotion of snakes
- B.S. in Biology, University of Cincinnati, 2005. Minor: Mathematics
- B.S. in Aerospace Engineering, Florida Institute of Technology, 2001

### Positions

- 8/2016 – current      Assistant Professor, University of Akron, Biomimicry Research & Innovation Center. Primary Dept.: Biology, Secondary Dept.: Polymer Science.
- 8/2013 – 7/2016      Physics of Living Systems Post-doctoral fellow, Georgia Institute of Technology, Goldman Lab

### Publications

- Astley, H.C. (2016) The diversity and evolution of locomotor muscle properties in anurans. *Journal of Experimental Biology*, 219, 3163-3173; [doi: 10.1242/jeb.142315](https://doi.org/10.1242/jeb.142315)
- Camp, A. L., Astley, H.C., Horner, A.M., Roberts, T.J., and Brainerd, E.L. (2016) Fluoromicrometry: A Method for Measuring Muscle Length Dynamics with Biplanar Videofluoroscopy. *Journal of Experimental Zoology*, Vol. 325 no 7 pp 399–408; doi: 10.1002/jez.2031
- McInroe, B.\*, Astley, H.C.\*, Gong, C., Kawano, S., Schiebel, P.E., Rieser, J.M., Choset, H., Blob, R.W., and Goldman, D.I. (2016) Tail use improves performance on soft substrates in models of early vertebrate land locomotors. *Science*, Vol. 353 no 6295 pp 154-158; [doi: 10.1126/science.aaf0984](https://doi.org/10.1126/science.aaf0984) \*Co-First-Authors
- Gong, C., Travers, M., Astley, H. C., Li, L., Mendelson, J., Goldman D. I., and Choset, H. (2016) Kinematic gait synthesis for snake robots. *The International Journal of Robotics Research*, Vol. 35 Issue 1-3, pp 100-113; [doi:10.1177/0278364915593793](https://doi.org/10.1177/0278364915593793)
- Astley, H.C., A. Haruta, and Roberts, T.J. (2015) Robust Jumping Performance and Elastic Energy Recovery from Compliant Perches in Tree Frogs. *Journal of Experimental Biology*, 218, 3360-3363; [doi:10.1242/jeb.121715](https://doi.org/10.1242/jeb.121715)
- Astley, H. C., Gong, C., Dai, J., Travers, M., Serrano, M. M., Vela, P. A., Choset, H., Mendelson, J. R., Hu, D., and Goldman, D. I. (2015) Modulation of orthogonal body waves enables high maneuverability in sidewinding locomotion. *Proceedings of the*

*National Academy of Sciences*, vol. 112 no. 19, pp. 6200–6205 [doi: 10.1073/pnas.1418965112](https://doi.org/10.1073/pnas.1418965112)

- Astley, H. C., and Roberts, T. J. (2014) The mechanics of elastic loading and recoil in anuran jumping. *Journal of Experimental Biology*, 217, 4372-4378 [doi:10.1242/jeb.110296](https://doi.org/10.1242/jeb.110296)
- Marvi, H., Gong, C., Gravish, N., Astley, H. C., Travers, M., Hatton, R. L., Mendelson III, J. R., Choset, H., Hu, D. L., and Goldman, D. I. (2014) Sidewinding with minimal slip: snake and robot ascent of sandy slopes. *Science*, Vol. 346 no. 6206 pp. 224-229; [doi: 10.1126/science.1255718](https://doi.org/10.1126/science.1255718)
- Astley, H. C., Abbot, E. M., Azizi, E., Marsh, R. L., and Roberts, T. J. (2013) Chasing maximal performance: A cautionary tale from the celebrated jumping frogs of Calaveras County. *Journal of Experimental Biology*, 216, 3947-3953. [doi:10.1242/jeb.090357](https://doi.org/10.1242/jeb.090357)
- Astley, H. C. (2012) Getting around when you're round: quantitative analysis of the locomotion of the blunt-spined brittle star *Ophiocoma echinata*. *Journal of Experimental Biology*, 215, 1923-1929. [doi: 10.1242/jeb.068460](https://doi.org/10.1242/jeb.068460)
- Astley, H. C. and Roberts, T.J. (2012) Evidence for a vertebrate catapult: elastic energy storage in the plantaris tendon during frog jumping. *Biology Letters*, vol. 8 no. 3 386-389 [doi: 10.1098/rsbl.2011.0982](https://doi.org/10.1098/rsbl.2011.0982)
- Astley, H. C. and Jayne, B.C. (2009) Arboreal habitat structure affects the performance and modes of locomotion of corn snakes (*Elaphe guttata*). *Journal of Experimental Zoology*, 311A: 207-216. [doi: 10.1002/jez.521](https://doi.org/10.1002/jez.521)
- Astley, H. C. and Jayne, B.C. (2007) Effects of perch diameter and incline on the kinematics, performance and modes of arboreal locomotion of corn snakes (*Elaphe guttata*). *Journal of Experimental Biology*, 210: 3862-3872. [doi: 10.1242/jeb.009050](https://doi.org/10.1242/jeb.009050)

### Peer-Reviewed Engineering Conference Proceedings

- Dai, J., Travers, M., Dear, T., Gong, C., Astley, H.C., Goldman, D.I., Choset, H. (2015) Robot-Inspired Biology: The Compound-Wave Control Template. *IEEE International Conference on Robotics and Automation (ICRA)*. [doi: 10.1109/ICRA.2015.7140022](https://doi.org/10.1109/ICRA.2015.7140022)
- Gong, C., Travers, M., Astley, H. C., Goldman D. I., and Choset, H. (2015) Limbless Locomotors that Turn in Place. *IEEE International Conference on Robotics and Automation (ICRA)*. [doi: 10.1109/ICRA.2015.7139720](https://doi.org/10.1109/ICRA.2015.7139720)
- Gong, C., Travers, M., Astley, H. C., Li, L., Mendelson, J., Hu, D. L., Goldman D. I., and Choset, H. (2014) Conditioned Basis Array Factorization: An Approach to Gait Pattern Extraction. *Robotics: Science and Systems*. Published [online](#), in press (Edited by Dieter Fox, Lydia E. Kavraki and Hanna Kurniawati, ISBN 978-0-9923747-0-9).

### Invited Talks

- “Control and evolution of sidewinding”, University of Akron Biology Colloquium, September 2016.
- “Crucial advantages of tail use in the evolution of vertebrate terrestrial locomotion”, Atlanta Metro Physics Teachers group, November 2015.
- “The Diversity and Evolution of Locomotor Muscle Properties in Anurans”, Determinants of Skeletal Muscle Diversity Symposium (E. Azizi & L. P. Hernandez), American Physiological Society Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology. October 2014

- “Performance, Mechanics and Diversity of Anuran Jumping”, Rowland Institute, February 2013

### **Academic and Professional Interests**

- Biomechanics
- Functional morphology
- Vertebrate evolution
- Herpetology
- Muscle physiology

### **Teaching Experience**

- Comparative Biomechanics (grad-level, dual-listed with Biology and Biomedical Engineering), lecture, U. of Akron
- Guest Lecture: Vertebrate Paleontology Through the Lens of Functional Morphology, 10/15, Georgia State University’s Vertebrate Paleontology class.
- Guest Lecture: Mechanics of Animal Locomotion, 1/15, Georgia Tech’s Vertebrate Zoology class.
- August 2009 – January 2013. Graduate Teaching Assistant, Brown University, Alpert Medical School.
  - Mean evaluation score: 4.8/5.0
  - Staffed all lab sections of a double-credit cadaver-based dissection lab, participated in lectures, exam prep, grading, and course development.
  - Guest lectures on the body wall (10/2013) and compartments of the leg (10/2012).
- September 2005 – June 2008. Graduate Teaching Assistant, University of Cincinnati, Dept. of Biological Sciences.
  - Outstanding Teaching Assistant Award, Lower-division courses
  - Staffed laboratory sections for freshman anatomy and physiology lab sections, including short lectures, exam preparation, grading, and laboratory management
  - Staffed laboratory section for an upper-level Vertebrate Zoology course, including specimen curation, exam preparation, grading, and live specimen demonstrations.
  - Staffed laboratory section for an upper-level, project-based Human Physiology & Biomechanics course, including equipment maintenance and troubleshooting, after-hours access for projects, student guidance and exam evaluation.
- September 2001 – June 2002. Graduate Teaching Assistant, University of Cincinnati, Department of Aerospace Engineering.
  - Recitation sections for sophomore-level statics and dynamics classes, including class-wide problem demonstrations and exam grading.

### **Outreach**

- Hudson High School STEM Outreach Presentations, 9/1/16
- Arts Academy At Summit STEM Outreach Demonstrations, 10/13-14/16

### **Professional Affiliations**

- Society for Integrative and Comparative Biology
- Society for Experimental Biology

- American Society of Biomechanics
- American Society of Ichthyologists and Herpetologists
- Sigma XI, Associate member.

### **Field Experience**

- With B.C. Jayne, project: Arboreal locomotion of the Brown Tree Snake (*Boiga irregularis*), Guam, August 21<sup>st</sup> to September 12<sup>th</sup>, 2005.
- With M. Bertness, project: Locomotor modes of brittle stars, Belize, January 12<sup>th</sup> to 19<sup>th</sup>, 2009
- With T. Roberts & R. Marsh, project: Maximal performance and the Celebrated Jumping Frogs of Calaveras County, Angel's Camp, CA, May 12<sup>th</sup> to 18<sup>th</sup>, 2009
- With P. Schiebel, project: Preliminary field observations of sidewinder and fringe-toed lizard locomotor behavior and habitat. Sonora Desert, Yuma, AZ, September 20<sup>th</sup> to 23<sup>rd</sup>, 2013

### **Awards**

- Outstanding Teaching Assistant – Lower Division Courses, Univ. of Cincinnati, 2008
- Best Student Presentation, Honorable Mention, SICB 2012
- 2013 John G. Peterson Pre-doctoral Fellow, Brown University

### **Grants Funded**

- Principles governing the mechanics and control of snake strikes. Collaborative Research Initiative with Zoo Atlanta, funded by The Elizabeth Smithgall Watts Endowment and the Georgia Tech School of Biology. Funded 2015. \$11,500
- Natural substrate and behavior of wild sidewinders. Collaborative Research Initiative with Zoo Atlanta, funded by The Elizabeth Smithgall Watts Endowment and the Georgia Tech School of Biology. Funded 2014. \$7,500
- Turning without legs: the mechanics and control of maneuverability in snakes. Collaborative Research Initiative with Zoo Atlanta, funded by The Elizabeth Smithgall Watts Endowment and the Georgia Tech School of Biology. Funded 2013. \$10,000
- Jumping with your ancestor's legs: The influence of phylogeny and function on musculoskeletal properties in anurans. Sigma Xi Grant In Aid of Research. Funded 2012. \$800.
- Moving on limbs without limbs: Muscular mechanisms of the arboreal locomotion of snakes. Wieman/Wendel/Benedict Award. Funded 2007. \$1,200
- Moving on limbs without limbs: How perch diameter and incline affect the arboreal locomotion of snakes. University of Cincinnati graduate student summer research fellowship. Funded July & August 2006. \$3,000

### **Peer Reviews for:**

Journal of Experimental Biology  
 Proceedings of the Royal Society B  
 Journal of Experimental Zoology A  
 Journal of Comparative Physiology B  
 Functional Ecology

The Herpetological Journal  
Herpetologica  
Journal of Zoology  
PLoS ONE  
Zoology  
Herpetological Conservation and Biology  
PeerJ

**Service:**

Organizer for Southeastern Regional Society for Integrative & Comparative Biology, October 2015, Atlanta, GA  
Session Chair, “Towards a General Framework for Predicting Animal Movement Speeds in Nature”, 2015 Meeting of the Society for Integrative & Comparative Biology  
Session Chair, “Complementary session: Terrestrial locomotion: Where do we stand, where are we going?”, 2014 Meeting of the Society for Integrative & Comparative Biology  
President, Graduate Student Association, Dept. of Ecology & Evolutionary Biology, 2012  
Session chair, “Terrestrial Biomechanics: Jumping”, 2012 Meeting of the Society for Integrative & Comparative Biology  
Brown Bag Seminar Series co-organizer, Brown University, Department of Ecology and Evolutionary Biology Spring 2011  
Session chair, “Gait, Rattle & Roll”, 2011 Meeting of the Society for Integrative & Comparative Biology

**Students supervised:**

Alex Sturbaum (High School student, currently at Oberlin)  
Alison Haruta (Undergraduate, Biology)  
Caleb Anderson (High School student)  
Benjamin McInroe (Undergraduate, Physics)  
Luke Buffardi (Undergraduate, Physics)  
Navya Palacherla (Undergraduate, Mechanical Engineering)  
Mark Lowder (Undergraduate, Biology)  
Mohammed Aamir (Undergraduate, Mechanical Engineering)

**Abstracts, Presentations & Posters**

- Astley, H. C., McInroe, B., Gong, C., Kawano, S., Blob, R., Choset, H., and Goldman, D. I. Crucial advantages of tail use in the evolution of vertebrate terrestrial locomotion. 3/2016. March meeting of the American Physical Society. (Baltimore, MD)
- McInroe, B., Gong, C., Kawano, S., Astley, H. C., Blob, R., Choset, H., and Goldman, D. I. Robotic and mathematical modeling reveals principles of appendage coordination in terrestrial locomotion. 3/2016. March meeting of the American Physical Society. (Baltimore, MD)
- Schiebel, P.E., Zhang, T., Gong, C., Yu, M., Dai, J., Astley, H.C., Travers, M., Choset, H., Goldman, D.I. Slithering on sand: kinematics and controls for success on granular media. 3/2016. March meeting of the American Physical Society. (Baltimore, MD)

- Gong, C., Astley, H. C., Schiebel, P.E., Dai, J., Travers, M., Goldman, D.I., Choset, H. Geometric Mechanics Reveals Optimal Complex Terrestrial Undulation Patterns. 3/2016. March meeting of the American Physical Society. (Baltimore, MD)
- Astley, H. C., McInroe, B., Gong, C., Kawano, S., Blob, R., Choset, H., and Goldman, D. I. Crucial advantages of tail use in the evolution of vertebrate terrestrial locomotion. 1/2016. Annual meeting of the Society for Integrative and Comparative Biology. (Portland, OR)
- Reynaga, C.M., Astley, H. C., Azizi, E. Morphological and kinematic constraints of quadrupedal walking in frogs. 1/2016. Annual meeting of the Society for Integrative and Comparative Biology. (Portland, OR)
- Gong, C., Astley, H. C., Dai, J., McInroe, B., Schiebel, P.E., Travers, M., Goldman, D.I., Choset, H. Geometric Mechanics: A Framework for Studying Animal Locomotion. 1/2016. Annual meeting of the Society for Integrative and Comparative Biology. (Portland, OR)
- Schiebel, P.E., Zhang, T., Gong, C., Dai, J., Astley, H.C., Travers, M., Choset, H., Goldman, D.I. Slithering on sand: kinematics and controls for success on granular media. 1/2016. Annual meeting of the Society for Integrative and Comparative Biology. (Portland, OR)
- McInroe, B., Gong, C., Kawano, S., Astley, H. C., Blob, R., Choset, H., and Goldman, D. I. Robotic and mathematical modeling reveals principles of appendage coordination in terrestrial locomotion. 1/2016. Annual meeting of the Society for Integrative and Comparative Biology. (Portland, OR)
- Astley, H. C., Gong, C., Choset, H., and Goldman, D. I. Geometric Mechanics of Sidewinding. 11/2015. Atlanta Area Systems Biophysics Meeting. Atlanta, GA.
- Astley, H. C., McInroe, B., Gong, C., Kawano, S., Blob, R., Choset, H., and Goldman, D. I. Crucial advantages of tail use in the evolution of vertebrate terrestrial locomotion. 10/2015. South-Eastern Society for Integrative and Comparative Biology (regional meeting). Atlanta, GA.
- Lowder, M., Astley, H. C. and Goldman, D. I. Broad Comparative Study of Snake Locomotion on Sand. 10/2015. South-Eastern Society for Integrative and Comparative Biology (regional meeting). Atlanta, GA.
- McInroe, B., Gong, C., Kawano, S., Astley, H. C., Blob, R., Choset, H., and Goldman, D. I. Crucial advantages of tail use in the evolution of vertebrate terrestrial locomotion. 7/2015. Conference of the International Physics of Living Systems (iPoLS) Network. Washington, DC.
- Astley, H. C., Gong, C., Dai, J., Travers, M., Serrano, M. M., Vela, P., Choset, H., Mendelson, J., Hu, D. L., and Goldman, D. I. Independent modulation of orthogonal body waves enables versatile and rapid maneuverability in sidewinding. 3/2015. March Meeting of American Physical Society. (San Antonio, TX).
- McInroe, B., Astley, H.C., Kawano, S., Blob, R., Goldman, D.I. Animal and robot experiments to discover principles behind the evolution of a minimal locomotor apparatus for robust legged locomotion. 3/2015. March Meeting of American Physical Society. (San Antonio, TX).
- Astley, H. C., Gong, C., Travers, M., Serrano, M. M., Vela, P., Choset, H., Mendelson, J., Hu, D. L., and Goldman, D. I. Independent modulation of orthogonal body waves enables

versatile and rapid maneuverability in sidewinding. 1/2015. Annual meeting of the Society for Integrative and Comparative Biology. (West Palm Beach, FL)

- McInroe, B., Astley, H.C., Kawano, S., Blob, R., Goldman, D.I. Biological and robotic modeling of the evolution of legged locomotion on land. 1/2015. Annual meeting of the Society for Integrative and Comparative Biology. (West Palm Beach, FL)
- Astley, H. C., Gong, C., Travers, M., Serrano, M. M., Vela, P., Choset, H., Mendelson, J., Hu, D. L., and Goldman, D. I. Independent modulation of orthogonal body waves enables versatile and rapid maneuverability in sidewinding. 10/2014. Southeastern regional meeting of the Society for Integrative and Comparative Biology. (Chapel Hill, N.C.)
- Astley, H. C., Gong, C., Serrano, M. M., Choset, H., Mendelson, J., Hu, D. L., and Goldman, D. I. Independent modulation of orthogonal body waves enables versatile and rapid maneuverability in sidewinding. 7/2014. International Meeting of the Physics of Living Systems Student Research Network. (Munich, Germany).
- McInroe, B., Astley, H.C., Kawano, S., Blob, R., Goldman, D.I. Using a robot to study the evolution of legged locomotion. 7/2014. International Meeting of the Physics of Living Systems Student Research Network. (Munich, Germany).
- McInroe, B., Astley, H.C., Kawano, S., Blob, R., Goldman, D.I. 3/2014. Using a robot to study the evolution of legged locomotion. March Meeting of American Physical Society. (Denver, CO).
- Astley, H.C., Serrano, M.M., Gong, C., Choset, H, Mendelson, J., Hu, D., and Goldman, D.I. 3/2014. Turning and maneuverability during sidewinding locomotion. March Meeting of American Physical Society. (Denver, CO).
- Astley, H.C., Serrano, M.M., Gong, C., Choset, H, Mendelson, J., Hu, D., and Goldman, D.I. 2/2014. Turning and maneuverability during sidewinding locomotion. Georgia Institute of Technology, Department of Physics, Physics of Living Systems seminar.
- McInroe, B. M., Astley, H. C., Kawano, S., Blob, R. and Goldman, D. I. 1/2014. Construction of a mudskipper-inspired robot to study crutching locomotion on flowable ground. Annual Meeting of the Society for Integrative and Comparative Biology. (Austin, TX).
- Astley, H.C. and T.J. Roberts. 1/2014. The mechanics of elastic loading and recoil in anuran jumping. Annual Meeting of the Society for Integrative and Comparative Biology. (Austin, TX).
- Astley, H.C. and T. J. Roberts. 10/2013. Performance, Mechanics and Diversity of Anuran Jumping. Georgia Institute of Technology, Department of Physics, Physics of Living Systems seminar.
- Astley, H.C. and T.J. Roberts. 1/2013. Where's the catch? Examining the catch mechanism in anuran jumping using inverse dynamics. Annual Meeting of the Society for Integrative and Comparative Biology. (San Francisco, CA).
- Astley, H.C. and T.J. Roberts. 1/2013. The diversity and evolution of locomotor muscle properties in anurans. Annual Meeting of the Society for Integrative and Comparative Biology. (San Francisco, CA).
- Astley, H.C. and T.J. Roberts. 11/2012. Where's the catch? Examining the catch mechanism in anuran jumping using inverse dynamics. Northeastern Regional Division of Vertebrate Morphology Meeting (SICB) (Amherst, MA).
- Astley, H.C. and T.J. Roberts. 06/2012. Biomechanics of frog jumping. XROMM course, Brown University.

- Astley, H.C. and T. J. Roberts. 4/2012. Performance, Mechanics and Diversity of Anuran Jumping. Brown University, Department of Ecology & Evolutionary Biology, Brown Bag seminar.
- Astley, H.C., Haruta, A. and Roberts, T.J. 1/2012. The Effects of Substrate Compliance on Jump Performance in the Cuban Tree Frog (*Osteopilus septentrionalis*). Annual Meeting of the Society for Integrative and Comparative Biology. (Charleston, SC).
- Horner, A.M., Astley,, H.C. and Roberts, T.J. 1/2012. Analysis of rat hindlimb muscle and tendon mechanics using x-ray videoradiography. Annual Meeting of the Society for Integrative and Comparative Biology. (Charleston, SC).
- Astley, H.C., Haruta, A. and Roberts, T.J. 11/2011. The Effects of Substrate Compliance on Jump Performance in the Cuban Tree Frog (*Osteopilus septentrionalis*). Northeastern Regional Division of Vertebrate Morphology Meeting (SICB) (Kingston, RI).
- Astley, H.C. and T.J. Roberts. 07/2011. Decoupling of muscle shortening and joint kinematics in frog jumping. XROMM course, Brown University.
- Astley, H.C. 1/2011. Getting around when you're round: quantitative analysis of the locomotion of the thick-spined brittle star (*Ophiocoma echinata*). Annual Meeting of the Society for Integrative and Comparative Biology. (Salt Lake City, UT).
- Astley, H.C. 10/2010. Getting around when you're round: quantitative analysis of the locomotion of the thick-spined brittle star (*Ophiocoma echinata*). Northeastern Regional Division of Vertebrate Morphology Meeting (SICB) (Boston, MA).
- Astley, H.C. and T.J. Roberts. 8/2010. Decoupling of muscle shortening and joint kinematics in frog jumping. American Society of Biomechanics. (Providence, RI).
- Astley, H.C. and T.J. Roberts. 7/2010. Decoupling of muscle shortening and joint kinematics in frog jumping. Joint Meeting of Ichthyologists and Herpetologists. (Providence, RI).
- Astley, H.C., Abbott, E.M., Marsh, R.L., Azizi, E., Roberts, T.J. 7/2010. Measuring maximal animal performance with the celebrated jumping frogs of Calaveras County. Joint Meeting of Ichthyologists and Herpetologists. (Providence, RI).
- Astley, H.C., Abbott, E.M., Marsh, R.L., Azizi, E., Roberts, T.J. 7/2010. Measuring maximal animal performance with the celebrated jumping frogs of Calaveras County. Society for Experimental Biology (Prague, C.Z.)
- Astley, H.C. and T.J. Roberts. 06/2010. Decoupling of muscle shortening and joint kinematics in frog jumping. XROMM course, Brown University.
- Abbott, E.M., Marsh, R.L., Astley, H.C., Azizi, E., Roberts, T.J. 1/2010. The celebrated jumping frogs of Calaveras County: how far can a frog really jump? Annual Meeting of the Society for Integrative and Comparative Biology. (Seattle, WA).
- Astley, H.C. and T.J. Roberts. 1/2010. Decoupling of muscle shortening and joint kinematics in frog jumping. Annual Meeting of the Society for Integrative and Comparative Biology. (Seattle, WA).
- Astley, H.C. and T.J. Roberts. 10/2009. Decoupling of muscle shortening and joint kinematics in frog jumping. Northeastern Regional Division of Vertebrate Morphology Meeting (SICB) (Providence, RI).
- Astley, H.C. and T.J. Roberts. 09/2009. Decoupling of muscle shortening and joint kinematics in frog jumping. Workshop on Multi-Scale Muscle Mechanics, Woods Hole, MA.



- Astley, H.C. and T.J. Roberts. 08/2009. Decoupling of muscle shortening and joint kinematics in frog jumping. XROMM course, Brown University.
- Astley, H.C. and T.J. Roberts. 07/2009. Decoupling of muscle shortening and joint kinematics in frog jumping. Society for Experimental Biology (Glasgow, U.K.) (abstract in Comparative Biochemistry and Physiology - Part A: Molecular & Integrative Physiology. 153,2 (Suppl 1): S128)
- Astley, H.C. and B.C. Jayne. 01/2009. Arboreal habitat structure affects the performance and modes of locomotion of corn snakes (*Elaphe guttata*). Annual Meeting of the Society for Integrative and Comparative Biology. (Boston, MA).
- Astley, H.C. and B.C. Jayne. 08/2008. Arboreal habitat structure affects the performance and modes of locomotion of corn snakes (*Elaphe guttata*). Northeastern Regional Division of Vertebrate Morphology Meeting (SICB) (Storrs, CT).
- Astley, H.C. and B.C. Jayne. 10/2008. Effects of habitat structure on the arboreal locomotion of corn snakes (*Elaphe guttata*). Brown University, Department of Ecology & Evolutionary Biology, Brown Bag seminar.
- Astley, H.C. and B.C. Jayne. 01/ 2008. Effects of incline and surface width on the climbing performance in crevices versus on cylinders of corn snakes (*Elaphe guttata*). Annual Meeting of the Society for Integrative and Comparative Biology. (San Antonio, TX). Poster.
- Astley, H.C. and B.C. Jayne. 07/2007. Effect of perch diameter and incline on arboreal locomotion of snakes. Joint Meeting of Ichthyologists and Herpetologists. (St. Louis, MO).
- Astley, H.C. and B.C. Jayne. 01/ 2007. Effect of perch diameter and incline on arboreal locomotion of snakes. Annual Meeting of the Society for Integrative and Comparative Biology. (Phoenix, AZ).
- Astley, H.C., S.M. Locketto, B. Moskalik, and B.C. Jayne. 01/ 2006. Climbing without limbs: Arboreal locomotion of snakes. Annual Meeting of the Society for Integrative and Comparative Biology. (Orlando, FL).

## Media Coverage (selected):

### Television

Animalades – Terres Humides. RTVE (Spanish Public Broadcasting), December 30, 2015. [URL](#)

Interview with Dan Riskin on Brittle Star paper, Daily Planet, Discovery Channel Canada. May 17, 2012. [URL](#)

How Toads Land (with Laura Eckstrom (collaborator) and Dan Riskin (host)), Daily Planet, Discovery Channel Canada. October 16, 2012. [URL](#)

### Print

Snake locomotion and exhibit structures. Connect (publication of the Association of Zoos & Aquariums), August 2011.

A sea creature puts its best foot forward. New York Times, Science section, D3. May 14, 2012. [URL](#)

Star's five-legged coordination. *Nature* 485, 419 (24 May 2012)  
doi:10.1038/485419d [URL](#)  
Motivating Your Frogs, Calaveras County Can Help. *Inside JEB*. 10/16/13. doi:  
10.1242/jeb.095968 [URL](#)  
A Ribbeting Tale. *The Scientist*, Volume 28 Issue 1, 1/2014. [URL](#)  
Hop-a-long Strategy. *New Scientist*, pages 36-39. 5/10/14. [URL](#)  
Secrets of the Sidewinder. *New York Times*. 10/9/14. [URL](#)  
Of Snakes and Robots. *Science* 10 October 2014: Vol. 346 no. 6206 pp. 160-161  
DOI: 10.1126/science.1259970 [URL](#)  
Soft Catch Prepares Power for Frog Leaps. 12/17/2014 *Inside JEB*. 217, 4269-  
4270 [URL](#).  
Leaping Cuban tree frogs benefit from rebound boost. 11/5/15. *Inside JEB*. 218,  
3347 [URL](#).

### *Online*

Science leaps forward with Calaveras County frog jump. *ScienceNews*, August  
14th, 2010; Vol.178 #4. [URL](#)  
Video: Catapulting Frogs. *Science Now*. November 16, 2011. [URL](#)  
Frog's leap, a marvel of muscle mechanics. *Reuters.com*. November 18, 2011.  
[URL](#)  
Frogs' Amazing Leaps Due to Springy Tendons. *NSF.gov* November 15, 2011.  
[URL](#)  
Frogs' Amazing Leaps Due to Springy Tendons. *Science Daily*. November 16,  
2011. [URL](#)  
CreatureCast – Round. *CreatureCast*. May 14, 2012. [URL](#)  
Video: Brittle star walks like a man. *Science NOW*. May 9, 2012. [URL](#)  
5-armed brittle stars always face front. *Scientific American, Observations Blog*.  
May 10, 2012. [URL](#)  
Sea creatures have 5 arms, but they move like humans. *MSNBC Science*. May 10,  
2012. [URL](#)  
Brittle star walks like a human, *Ophiocoma echinata* video shows. *Huffington*  
*Post Science*. May 10, 2012. [URL](#)  
What makes bullfrogs capable of jumping such huge distances? *Io9.com*.  
10/17/13. [URL](#)  
Pro Bullfrog Jumpers' Secrets Revealed. *Discovery News*. 10/16/13. [URL](#)  
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*Ceratophrys cornuta* skeleton (skeletonized, mounted & photographed by HCA), in  
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