

CURRICULUM VITAE

S. N. Patek

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Biographical Sketch:

Patek is the Hehmeyer Professor of Biology and a Bass Fellow at Duke University. Patek received an A.B. with honors in Biology from Harvard University followed by a Ph.D. in Biology from Duke University. Patek was then awarded a Miller Postdoctoral Fellowship at UC Berkeley. Patek leads a five-university basic research team funded by a Multidisciplinary University Research Initiative (MURI). Patek has received several honors, including a Guggenheim Fellowship, the George A. Bartholomew Award for distinguished contributions to comparative physiology, a Radcliffe Fellowship, NSF CAREER award, and the Brilliant 10 award from Popular Science magazine. Patek's research has been funded by the National Science Foundation, National Geographic Society, Hellman Family Foundation, Armstrong Fund for Science, Department of Defense, and others.

Patek currently serves as Associate Chair of Duke's Biology Department (Chair of the EEOB division), Deputy-Editor-in-Chief for the Journal of Experimental Biology, and Director of Muser, which is both a program at Duke and an open-source software application that Patek and others developed to facilitate equitable and transparent access to research in academia. Patek is past Chair of the Biomechanics Division at the Society for Integrative and Comparative Biology.

In addition to training graduate and postdoctoral scientists, Patek teaches undergraduate and graduate courses in animal physiology, biomechanics, introductory biology, invertebrate biology, and comparative evolutionary analysis. Patek led an NSF-funded Research Experience for Teachers program for five years which enables teachers to integrate their research experience with curriculum development. The Patek Lab involves high school students and undergraduate summer researchers from around the country through fellowship programs, such as the Army Educational Outreach Program. Patek regularly presents internationally, through both academic and public lectureships – including a mainstage TED talk. The lab's research has been featured in hundreds of media outlets, including the New York Times, National Public Radio (NPR), Canadian Broadcasting Corp (CBC), British Broadcasting Corp (BBC), National Geographic and others.

APPOINTMENTS

- 2020-2025 Hehmeyer Professor of Biology and Bass Fellow, Duke University
- 2020-2024 Associate Chair (Chair EEOB Division), Department of Biology, Duke University
- 2019- Professor, Biology Department, Duke University.
- 2013-2019 Associate Professor, Biology Department, Duke University.
- 2012-2013 Associate Professor, Department of Biology, University of Massachusetts, Amherst.
- 2009-2012 Assistant Professor, Department of Biology, University of Massachusetts, Amherst.
- 2004-2009 Assistant Professor, Department of Integrative Biology, University of California Berkeley.

EDUCATION

- 2001-2004 Postdoctoral Fellow. Miller Institute for Basic Research in Science, University of California Berkeley.
- 1995-2001 Ph.D. in Biology. Duke University, Durham, NC. Advisor: Stephen Nowicki.
Dissertation title: Signal-producing morphology and the evolution of palinurid lobster acoustic communication.
- 1990-1994 A.B. with honors in Biology. Harvard University, Cambridge, MA.

AWARDS AND HONORS

- 2020-2025 Heymeyer Professor of Biology, Bass Fellows Program for “professors with demonstrated excellence in research and undergraduate instruction”, Duke University.
- 2015-2016 Fellow of the John Simon Guggenheim Memorial Foundation.
- 2008-2009 Radcliffe Fellowship for “scholars, scientists, artists, and writers of exceptional promise and demonstrated accomplishments”. Radcliffe Institute for Advanced Studies, Harvard University.
- 2009 Christopher Clavius, S.J. Award “given to a researcher who also serves as an inspiration to others”. Sigma Xi, St. Joseph’s University.
- 2008 Bartholomew Award “for distinguished contributions to comparative physiology”. Society for Integrative and Comparative Biology.
- 2007 Hellman Family Faculty Fund. Awarded to junior faculty with “great promise for distinction in their research”.
- 2004 Brilliant 10 Award. Awarded annually to ten of the “most dynamic, promising young researchers at institutions around North America” by Popular Science magazine.
- 2000 Best Student Paper Award, Division of Invertebrate Zoology, Society for Integrative and Comparative Biology.

- 2000 Best Student Paper Award, The Crustacean Society.
1999-2000 Philanthropic Education Organization Scholar Award (\$7000).

DISTINGUISHED LECTURESHIPS AND PLENARY TALKS

- 2020 Plenary Lecture, Society for Integrative and Comparative Biology conference, Austin, TX.
- 2020 Frontiers in Science lecturer, Florida Atlantic University, Boca Raton, FL.
- 2019 Steelman Visiting Scientist Lecturer, Lenoir-Rhyne University, Hickory, NC.
- 2019 Keynote speaker, Graduate Symposium, College of Charleston, SC.
- 2019 Voices of Discovery Distinguished Lecturer, Elon College, Elon, NC.
- 2018 National Science Foundation Distinguished Lecturer, NSF Headquarters, Alexandria, VA
- 2016 Plenary lecture, American Society of Biomechanics, Raleigh, NC.
- 2016 Stockard Lecture in Anatomy and Physiology, Oklahoma State University.
- 2014 Plenary lecture, Society for Integrative and Comparative Biology regional conference, Chapel Hill, NC.
- 2013 Zoological Education Trust Lecturer, Canadian Society of Zoologists, Guelph.
- 2012 24th Annual Donald Putnam Abbott Memorial Lecturer, Hopkins Marine Station, Stanford University.
- 2011 Paul Illg Distinguished Lectureship, Friday Harbor Laboratories, University of Washington.
- 2006 Plenary Lecture, Invertebrate Sound and Vibration, Toronto, Canada.

GRANTS AND FELLOWSHIPS

- 2020-2023 National Science Foundation, Integrative Organismal Biology. "Moving with muscles vs. springs: evolutionary biomechanics of extremely fast, small systems". \$907,177. PI: Patek. co-PI's: M. Porter, U. Hawai'i Mānoa; M. Ilton, Harvey Mudd; A. Crosby, UMass Amherst.
- 2015-2022 Multidisciplinary University Research Initiative (MURI), Army Research Office, Department of Defense. "Evolutionary mechanics of impulsive biological systems: guiding scalable synthetic design". \$8.2 million, PI: S. Patek; co-PI's: M. Azizi, U. C. Irvine; S. Bergbreiter U. of Maryland, College Park, A. Crosby, UMass Amherst; M. Prakash, Stanford; R. Wood, Harvard.
- 2018-2019 Multidisciplinary University Research Initiative (MURI) Supplement, Army Research Office, Department of Defense. "Mechanical power enhancement: replicable and scalable device for interdisciplinary testing". \$477,940, PI: S. Patek; co-PI's: M. Azizi,

- U. C. Irvine; S. Bergbreiter, Carnegie Mellon, A. Crosby, UMass Amherst; R. Wood, Harvard.
- 2019 Jumpstart Grant for Learning Innovation, Duke University. \$4000. PI: S. Patek, co-PI: J. Harrison
- 2019 Army Educational Outreach Program, Department of Defense. \$11,000. PI: S. Patek; co-PI: C. Reynaga.
- 2018 Workshop grant, Army Research Office, Department of Defense. \$10,730. PI: S. Patek; co-PI's: J. Olberding, M. Azizi, U. C. Irvine.
- 2012-2018 National Science Foundation CAREER award, Integrative Organismal Biology. "The evolutionary mechanics of rapid movement". \$899,965, PI: S. Patek.
- 2018 Army Educational Outreach Program, Department of Defense. \$7500. PI: S. Patek; co-PI: S. Longo.
- 2017 Army Educational Outreach Program, Department of Defense. \$18,000. PI: S. Patek; co-PI's: S. Bergbreiter, U. MD College Park; R. Wood, Harvard; A. Crosby, UMass Amherst.
- 2016 Army Educational Outreach Program, Department of Defense. \$18,000. PI: S. Patek; co-PI's: S. Bergbreiter, U. MD College Park; R. Wood, Harvard; A. Crosby, UMass Amherst.
- 2015-2016 Guggenheim Fellowship, "The mechanics and evolution of ultrafast movements". \$50,000, PI: S. Patek.
- 2015-2016 Intellectual Community Planning Grant, Duke University. \$4750, PI: S. Patek.
- 2011-2012 National Geographic Society Committee for Research and Exploration. "Rumbling in the benthos: acoustics and human impacts in mantis shrimp". \$20,000, PI: S. Patek.
- 2011-2012 Armstrong Fund for Science. "The evolution of cavitation in biological systems and biologically-inspired design". \$40,000, PI: S. Patek; co-PI's: Y. Modarres-Sadeghi, D. Schmidt.
- 2007-2010 National Science Foundation, Integrative Organismal Biology. "The comparative mechanics of rapid predatory movements". \$342,000, PI: S. Patek.
- 2008-2009 Radcliffe Fellowship. Radcliffe Institute for Advanced Studies. "Acoustic communication in ancient and living seas". \$80,000, PI: S. Patek.
- 2007 Hellman Family Faculty Fund. "Evolutionary physiology of communication in the sea". \$25,000, PI: S. Patek.
- 2004-2007 Junior Faculty Research Grants, Committee on Research, UC Berkeley (net \$24,254).
- 2005-2007 Research Initiative Seed Grant - Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign. "Generating extreme speeds and force from small, simple materials: Biologically inspired models from

striking ability in trap-jaw ants". \$139,083, PI: Suarez; co-PI's: F. Delcomyn, X. Zhang, and S. Patek.

- 2001-2004 Miller Postdoctoral Fellowship. Miller Institute, University of California at Berkeley (\$180,000).
- 1999-2000 National Science Foundation Dissertation Improvement Grant (IBN – Animal Behavior). "Sound production in spiny lobsters (Palinuridae): morphological constraints and the evolution of signal diversity" (\$9812).
- 1996-2000 National Science Foundation Graduate Research Fellowship (~\$70,000).
- 1999 Sigma Xi S. Hughes-Schrader International Travel Award (\$2000). Declined.
- 1999 Graduate Award for International Research (\$2200).
- 1997-1999 Four grants under \$1000 (SICB, Sigma Xi and PADI)
- 1998 Smithsonian Institution Short-term Visitor Fellowship (\$1595).

PUBLICATIONS

*Patek Lab member authors: *current/recent undergraduate; ^graduate student; ^postdoc*

BOOK

Biewener, A. A. and **S. N. Patek**. 2018. *Animal Locomotion*. Oxford University Press.

REVIEWS AND COMMENTARIES

Patek, S. N. 2019. The power of mantis shrimp strikes: interdisciplinary impacts of an extreme cascade of energy release. *Integrative and Comparative Biology* (icz27):1-13. DOI: 10.1093/icb/icz127.

Longo[^], S. J., S. M. Cox, E. Azizi, M. Ilton, J. P. Olberding, R. St. Pierre, **S. N. Patek**. 2019. Beyond power amplification: Latch-mediated spring actuation is an emerging framework for the study of diverse elastic systems. *Journal of Experimental Biology* 222: jeb197889. DOI: 10.1242/jeb.197889.

Patek, S. N. and S. J. Longo[^]. 2018. Evolutionary biomechanics: the pathway to power in snapping shrimp. *Current Biology* 28, R115-R117

Patek, S. N. and A. P. Summers. 2017. Invertebrate biomechanics. *Current Biology* 27(10): R371-R375. DOI: 10.1016/j.cub.2017.04.012

Patek, S.N. 2016. The benefits of "strange" science. *Duke Magazine*, Spring 2016.

Patek, S. N. 2015. The most powerful movements in biology. *American Scientist* 103(5): 330-337.

Patek, S. N. 2014. Biomimetics and evolution. *Science* 345(6203): 1448-1449.

Patek, S.N. 2013. Engineering Animals: How Life Works. *Quarterly Review Biology* 88(1): 49-50.

Irschick, D., C. Albertson, P. Brennan, J. Podos, N. Johnson, **S. N. Patek**, and E. Dumont. 2013. Evo-devo beyond morphology: from genes to resource use. *Trends in Ecology and Evolution* 28(5): 267-273.

Stillman, J. H., M. Denny, D. K. Padilla, M. Wake, **S. Patek**, B. Tsukimura. 2011. Grand opportunities: strategies for addressing grand challenges in organismal biology. *Integrative and Comparative Biology* 51(1): 7-13.

Patek, S.N., D. Dudek, M.V. Rosario*. 2011. From bouncy legs to poisoned arrows: elastic movements in invertebrates. *Journal of Experimental Biology* 214: 1973-1980.

BOOK CHAPTERS

Podos, J. and **S. N. Patek**. 2014. Acoustic signal evolution: biomechanics, size, and performance. In: Animal Signaling: Functional and Evolutionary Perspectives, eds. D. Irschick, M. Briffa and J. Podos.

Patek, S.N., P. A. Green⁺, M. V. Rosario⁺. 2013. Internal Morphology. In: Treatise on Zoology - Anatomy, Taxonomy, Biology: The Crustacea. Vol. 4, Part A. Eds. J. C. von Vauple Klein, M. Charmantier-Daures, and F. Schram. Brill: Boston. pp. 202-216.

Staaterman*, E., Clark, C., Gallagher, A., Claverie, T., deVries⁺, M. and **Patek, S.** 2012. Acoustic ecology of the California mantis shrimp (*Hemisquilla californiensis*). In *The Effects of Noise on Aquatic Life*, vol. 730 eds. A. Popper and A. Hawkins), pp. 165-168: Springer New York.

Taylor[^], J. R. A. and **S. N. Patek** (equal authorship). 2010. Crustacean seismic communication: heard but not present? In: The Use of Vibrations in Communication: Properties, Mechanisms and Function Across Taxa, ed. C. E. O'Connell-Rodwell, Research Signpost, 9-23.

Patek, S.N., R. M. Feldmann, M. Porter and D. Tshudy. 2006. Phylogeny and evolution of lobsters. In: Lobsters: Biology, Management, Aquaculture and Fisheries, ed. B. F. Phillips. Blackwell Publishing.

DIGITAL DATABASE

Comparative morphology of telsons and raptorial appendages in mantis shrimp (Stomatopoda). 2018. [Morphobank Project 2785](#). 4612 photographs, 89 taxa, 411 specimens. DOI: 10.7934/P2785 Companion database to Claverie & Patek, 2013, *Evolution*. Curator: Grace Farley.

PRIMARY LITERATURE

Steinhardt, E., N. P. Hyun, J. Koh, G. Freeburn, M. H. Rosen, F. Z. Temel, **S. N. Patek**, and R. J. Wood. *In revision*. A physical model of mantis shrimp for exploring the dynamics of ultra-fast systems. *Proceedings of the National Academy of Sciences*.

Harrison⁺, J.S., M. L. Porter, M. J. McHenry, H. E. Robinson, and **S. N. Patek**. 2021. Scaling and development of elastic mechanisms: the tiny strikes of larval mantis shrimp. *Journal of Experimental Biology* 224 (8): jeb235465

Longo[^], S. J., W. Ray*, G. M. Farley*, J. Harrison⁺, J. Jorge⁺, T. Kaji, A. R. Palmer, and **S. N. Patek**. 2021. Snaps of a tiny amphipod push the boundary of ultrafast, repeatable movement. *Current Biology* 31, R101–R119.

- Jorge⁺, J.F., S. Bergbreiter, and **S. N. Patek**. 2021. Pendulum-based measurements reveal impact dynamics at the scale of a trap-jaw ant. *Journal of Experimental Biology* 224 (5): jeb232157
- Dinh⁺, J., J. Azza*, **S. N. Patek**. 2020. Switching assessment strategies and winner effects facilitate fast and frugal decisions in territorial contests. *Animal Behaviour* 170: 189-205.
- Divi, S., X. Ma, M. Ilton, R. St. Pierre, B. Eslami, **S. N. Patek**, and S. Bergbreiter. 2020. Latch-based control of energy output in spring actuated systems. *Journal of the Royal Society Interface* 17: 20200070. doi: 10.1098/rsif.2020.0070
- Ilton, M., S. M. Cox⁺, T. Egelmeers, G. P. Sutton, **S. N. Patek**, and A. J. Crosby. 2019. Size-scaling limits of impulsive elastic energy release from a resilin-like elastomer. *Soft Matter*. doi: 10.1039/C9SM00870E
- Sutton, G.P., E. Mendoza, E. Azizi, S. J. Longo[^], J. P. Olberding, M. Ilton, and **S. N. Patek**. 2019. Why don't large animals exclusively use springs to jump? Because they can jump higher without them. *Integrative and Comparative Biology* (145): 1–10. doi:10.1093/icb/icz145
- Farley*, G. M., M. J. Wise, J. S. Harrison⁺, G. P. Sutton, C. Kuo[^], and **S. N. Patek**. 2019. Adhesive latching and legless leaping in small, worm-like insect larvae. *Journal of Experimental Biology* 222: jeb201129. doi: 10.1242/jeb.201129. **Feature article**
- Green⁺, P. A., M. J. McHenry, and **S. N. Patek**. 2019. Context-dependent scaling of kinematics and energetics during contests and feeding in mantis shrimp. *Journal of Experimental Biology* 222(7): jeb198085. DOI: 10.1242/jeb.198085. **Feature article** and **Editor's Choice article**.
- Muñoz[^], M. M., Yinan Hu, P. S. L. Anderson, **S. N. Patek**. 2018. Strong biomechanical relationships guide the tempo and mode of morphological evolution. *eLife* 7:e37621. DOI: 10.7554/eLife.37621.
- Crane*, R.L., S.M. Cox⁺, S.A. Kisare*, and **S. N. Patek**. 2018. Smashing mantis shrimp strategically impact shells. *Journal of Experimental Biology* 221, jeb176099. doi:10.1242/jeb.176099. **Feature article**.
- Ilton, M., M. S. Bhamla, X. Ma, S. M. Cox⁺, L. L. Fitchett*, Y. Kim, J. Koh, D. Krishnamurthy, C.-Y. Kuo[^], F. Z. Temel, A. J. Crosby, M. Prakash, G. Sutton, R. J. Wood, E. Azizi, S. Bergbreiter, and **S. N. Patek**. 2018. The principles of cascading power limits in small, fast biological and engineered systems. *Science* 360 (6387). DOI: 10.1126/science.aao1082
- Green⁺, P. A. and **S. N. Patek**. 2018. Mutual assessment during ritualized fighting in mantis shrimp (Stomatopoda). *Proceedings of the Royal Society B: Biological Sciences* 285, 20172542. DOI: 10.1098/rspb.2017.2542
- Liu, F., R. L. Chavez, **S. N. Patek**, A. Pringle, J. J. Feng, and C.-H. Chen. 2017. Asymmetric drop coalescence launches fungal ballistospores with directionality. *Journal of the Royal Society Interface* 14 (132): 1-11. DOI: 10.1098/rsif.2017.0083
- Muñoz[^], M.M., P.S. L. Anderson, **S. N. Patek**. 2017. Mechanical sensitivity and the dynamics of evolutionary rate shifts in biomechanical systems. *Proceedings of the Royal Society B* 284 (1847). DOI: 10.1098/rspb.2016.2325

- McHenry, M. J., P. S. L. Anderson[^], S. Van Wassenbergh, D. G. Matthews*, A. Summers and **S. N. Patek**. 2016. The comparative hydrodynamics of rapid rotation by predatory appendages. *Journal of Experimental Biology* 219(21): 3399-3411. **Feature article and cover article.**
- Rosario⁺, M. V., G. P. Sutton, **S. N. Patek**, and G. S. Sawicki. 2016. Muscle-spring dynamics in time-limited, elastic movements. *Proceedings of the Royal Society B* 283: 20161561.
- Anderson[^], P.S.L., D. Smith* and **S. N. Patek**. 2016. Competing influences on morphological modularity in biomechanical systems: a case study in mantis shrimp. *Evolution and Development* 18(3):171-181.
- Kagaya[^], K. and **S. N. Patek**. 2016. Feed forward control of ultrafast, ballistic movements. *Journal of Experimental Biology* 210(3): 319-333.
- Green⁺, P.A. and **S. N. Patek**. 2015. Contests with deadly weapons: telson sparring in mantis shrimp (Stomatopoda). *Biology Letters* 11: 20150558.
<http://dx.doi.org/10.1098/rsbl.2015.0558>
- Rosario⁺, M. V. and **S. N. Patek**. 2015. Multi-level analysis of elastic morphology: the mantis shrimp's spring. *Journal of Morphology* 276: 1123-1135.
- Anderson[^], P. S. L. and **S. N. Patek**. 2015. Mechanical sensitivity reveals evolutionary dynamics of mechanical systems. *Proceedings of the Royal Society B* 282: 20143088.
- Anderson[^], P. S. L., T. Claverie[^] and **S. N. Patek**. 2014. Levers and linkages: mechanical trade-offs in a power-amplified system. *Evolution* 68(7): 1919-1933.
- Blanco*, M.M. and **S.N. Patek** (equal authorship). 2014. Muscle trade-offs in a power-amplified prey capture system. *Evolution* 68(5): 1399-1414.
- Cox⁺, S.M., D. Schmidt, Y. Modarres-Sadeghi and **S. N. Patek**. 2014. A physical model of the extreme mantis shrimp strike: kinematics and cavitation of Ninjabot. *Bioinspiration and Biomimetics* 9: 016014 (16 pp.)
- Claverie[^], T. and **S. N. Patek**. 2013. Modularity and rates of evolutionary change in a power-amplified prey capture system. *Evolution* 67(11): 3191-3207.
- Patek, S.N.**, M.V. Rosario⁺, J. R. A. Taylor[^]. 2013. Comparative spring mechanics in mantis shrimp. *Journal of Experimental Biology* 216: 1317-1329.
- deVries⁺, M.S., E. A. K. Murphy*, **S. N. Patek**. 2012. Strike mechanics of an ambush predator: the spearing mantis shrimp. *Journal of Experimental Biology* 215 (24): 4374-4384. **Feature article.**
- McHenry, M. J., T. Claverie[^], M. V. Rosario⁺ and **S. N. Patek**. 2012. Gearing for speed slows the predatory strike of a mantis shrimp. *Journal of Experimental Biology*: 215:1231-1245.
- Staaterman*, E.R., C. W. Clark, A. J. Gallagher, M. S. deVries⁺, T. Claverie[^], and **S. N. Patek**. 2011. Rumbling in the benthos: the acoustic ecology of the California mantis shrimp. *Aquatic Biology* 13: 97-105. **Feature article.**
- Claverie[^], T., E. Chan* and **S.N. Patek**. 2011. Modularity and scaling in fast movements: power amplification in mantis shrimp. *Evolution* 62: 443-461.

- Taylor[^], J.R.A. and **S.N. Patek**. 2010. Ritualized fighting and biological armor: the impact mechanics of the mantis shrimp's telson. *Journal of Experimental Biology* 213: 3496-3504. **Feature article.**
- Staaterman*, E.R., T. Claverie[^] and **S.N. Patek**. 2010. Disentangling defense: the function of spiny lobster sounds. *Behaviour* 147, 235-258.
- Zack*, T. I., T. Claverie, and **S.N. Patek**. 2009. Elastic energy storage in the mantis shrimp's fast predatory strike. *Journal of Experimental Biology* 212: 4002-4009. **Feature article.**
- Patek, S.N.**, L. E. Shipp*, and E. Staaterman*. 2009. The acoustics and acoustic behavior of the California spiny lobster (*Panulirus interruptus*). *Journal of the Acoustical Society of America* 125(5): 3434-3443.
- Spagna, J.C., A. I. Vakis, C. A. Schmidt, **S. N. Patek**, X. Zhang, N. D. Tsutsui, and A. V. Suarez. 2008. Phylogeny, scaling, and the generation of extreme forces in trap-jaw ants. *Journal of Experimental Biology* 211: 2358-2368.
- Patek, S.N.**, B. N. Nowroozi, J. E. Baio*, R. L. Caldwell and A. P. Summers. 2007. Linkage mechanics and power amplification of the mantis shrimp's raptorial strike. *Journal of Experimental Biology* 210: 3677-3688.
- Patek, S.N.** and J.E. Baio* (*equal authorship*). 2007. The acoustic mechanics of stick-slip friction in the California spiny lobster (*Panulirus interruptus*). *Journal of Experimental Biology* 210: 3538-3546. **Feature article.**
- Patek, S.N.**, J.E. Baio*, B. L. Fisher, and A. V. Suarez. 2006. Multifunctionality and mechanical origins: ballistic jaw propulsion in trap-jaw ants. *Proceedings of the National Academy of Sciences* 104(34): 12787-12792.
- Patek, S.N.** and R. L. Caldwell. 2006. The stomatopod rumble: sound production in *Hemisquilla californiensis*. *Marine and Freshwater Behaviour and Physiology* 39(2): 99-111.
- Patek, S.N.** and R. L. Caldwell. 2005. Extreme impact and cavitation forces of a biological hammer: strike forces of the peacock mantis shrimp (*Odontodactylus scyllarus*). *Journal of Experimental Biology* 208: 3655-3664. **Feature article.**
- Pringle, A, **S. N. Patek**, M. Fischer, J. Stolze, and N. Money. 2005. The captured launch of a ballistospore. *Mycologia* 97(4): 866-871. **Cover article.**
- Patek, S.N.**, W.L. Korff and R.L. Caldwell. 2004. Deadly strike mechanism of a mantis shrimp. *Nature* 428: 819-820.
- McHenry, M.J. and **S.N. Patek**. 2004. The evolution of larval morphology and swimming performance in ascidians. *Evolution* 58(6):1209-1224.
- Patek, S.N.** and T.H. Oakley. 2003. Comparative tests of evolutionary tradeoffs in a palinurid lobster acoustic system. *Evolution* 57(9): 2082-2100. **Cover article.**
- Goldman, J.A. and **S.N. Patek** (*equal authorship*). 2002. Two sniffing strategies in palinurid lobsters. *Journal of Experimental Biology* 205: 3891-3902.
- Patek, S.N.** 2002. Squeaking with a sliding joint: mechanics and motor control of sound production in spiny lobsters. *Journal of Experimental Biology* 205: 2375-2385.

- Patek, S.N.** 2001. Spiny lobsters stick and slip to make sound. *Nature* 411: 153-154.
- Brainerd, E.L. and **S.N. Patek**. 1998. Vertebral column morphology, C-start curvature, and the evolution of mechanical defenses in tetraodontiform fishes. *Copeia* 1998(4): 971-984.
- Colson, D.J., **S.N. Patek**, E.L. Brainerd, S.M. Lewis. 1998. Sound production during feeding in *Hippocampus* seahorses (Syngnathidae). *Environmental Biology of Fishes* 51: 221-229.

PUBLISHED RESEARCH PERFORMED ALL OR IN PART IN THE PATEK LAB

- Green⁺, P.A. and J. S. Harrison⁺. 2020 Quadratic resource value assessment during mantis shrimp (Stomatopoda) contests. *Animal Behaviour* DOI:10.1016/j.anbehav.2020.09.014 (2020).
- Taylor[^], J.R.A., M. S. DeVries, and D. O. Elias. 2019. Growling from the gut: co-option of the gastric mill for acoustic communication in ghost crabs. *Proceedings of the Royal Society B* 286 (1910): 2019111. DOI: 10.1098/rspb.2019.1161
- Taylor[^], J.R.A., N. I. Scott, and G. W. Rouse. 2019. Evolution of mantis shrimp telson armour and its role in ritualized fighting. *Journal of the Royal Society Interface* 16:20190203. doi: 0.1098/rsif.2019.0203
- Larabee, F. J., A. A. Smith, and A. V. Suarez. 2018. Snap-jaw morphology is specialized for high-speed power amplification in the Dracula ant (*Myrmica camillae*). *Royal Society Open Science* 5:12: 181447.
- Werth, A.J., D. Rita, M.V. Rosario⁺, M. J. Moore, and T. L. Sformo. 2018. How do baleen whales stow their filter? A comparative biomechanical analysis of baleen bending. *Journal of Experimental Biology* 221: jeb189233. doi: 10.1242/jeb.189233
- deVries⁺, M.S., B.C. Stock, J. H. Christy, G. R. Goldsmith, and T. E. Dawson. 2016. Specialized morphology corresponds to a generalist diet: linking form and function in smashing mantis shrimp crustaceans. *Oecologia* 182: 429. doi:10.1007/s00442-016-3667-5
- Anderson[^], P. S. L., LaCosse, J. and Pankow, M., 2016. Point of impact: the effect of size and speed on puncture mechanics. *Interface Focus* 6:20150111. (Note that LaCosse was a summer high school teacher fellow in the Patek lab).
- Werth A.J., R. W. Harriss, M. V. Rosario⁺, J. C. George, T. L. Sformo. 2016. Hydration affects the physical and mechanical properties of baleen tissue. *Royal Society Open Science* 3(10).
- deVries⁺ M.S., C. M. del Rio, T. S. Tunstall, and T. E. Dawson. 2015. Isotopic incorporation rates and discrimination factors in mantis shrimp crustaceans. *PLOS ONE* 10(4): e0122334.
- Clark, C. J. 2008. Fluttering wing feathers produce the flight sounds of male streamertail hummingbirds. *Biology Letters*, 4: 341-344
- Clark, C. J. and Feo, T. J. 2008. The Anna's Hummingbird chirps with its tail: a new mechanism of sonation in birds. *Proceedings of the Royal Society London B: Biological Sciences*. 275: 955-962

TEACHING EXPERIENCE & RECOGNITIONS

-
- 2014 - How Organisms Move (R-based biomechanics course), Duke University.
- 2014 - Animal Physiology (lab and lecture course), Duke University.

- 2018, 2019 Recognition as top 5% of undergraduate instructors for a *medium-sized class* (*Biology 329L Animal Physiology*), Trinity College Office of Assessment, Duke University.
- 2017, 2020 Recognition as top 5% of undergraduate instructors for a *small class* (*Biology 429S, How Organisms Move*), Trinity College Office of Assessment, Duke University.
- 2010-13 Quantitative Systems Biology (Honors math and physics-based Introductory Biology laboratory and lecture course), UMass Amherst.
- 2012 How Organisms Move (undergraduate biomechanics course with R computer programming), UMass Amherst.
- 2009 Ecological Physiology, OEB graduate core course (one week), UMass Amherst
- 2008 Invertebrate Zoology, UC Berkeley.
- 2005,6,8 Biomechanics Seminar, UC Berkeley.
- 2006-7 Presidential Chair Fellow for undergraduate education, UC Berkeley.
- 2005,6 Research Reviews in Animal Behavior, UC Berkeley.
- 2006 Comparative Analyses of Biomechanics, Behavior and Morphology, UC Berkeley.
- 2006 Invertebrate Zoology, UC Berkeley.
- 2005 Evolutionary Origins of Animal Communication, UC Berkeley.
- 2001 Laboratory Instructor, Animal Physiology, Duke University, Durham, NC.
- 1996,7 Teaching Assistant, Animal Physiology, Duke University, Durham, NC.
- 1995, 8 Teaching Assistant, Introductory Biology, Duke University, Durham, NC.
- 1994 Course Assistant, Ichthyology, Harvard University, Cambridge, MA.

SCIENTIFIC TRAINING & DEVELOPMENT

Served on >35 qualifying exams, Masters, and PhD committees

UNDERGRADUATE STUDENT RESEARCHERS

Supervised >60 student research projects, with students continuing on to PhD programs at: U. Southern California, Harvard University (3x), Scripps Institute of Oceanography, University of California Irvine, University of Virginia, University of Miami, University of Washington, etc.

CURRENT GRADUATE STUDENTS

Jason Dinh

Jacob Harrison

Justin Jorge

FORMER LAB MANAGERS

Joe Baio, Ph.D., University of Washington; Associate Professor: Oregon State University

Rachel Crane, Ph.D. graduate student, Stanford University

Grace Farley, graduate student, Duke University

Leah Fitchett, graduate student, Virginia Tech

Elizabeth Murphy, Ph.D., University of Virginia; current postdoc at Umeå University in Sweden

Billy Ray, Ph.D. student, Marine Science Institute, UC Santa Barbara

Erica Staaterman, Ph.D. Rosenstiel School of Marine and Atmospheric Sciences; Smithsonian Postdoctoral fellow; Bioacoustician, Bureau of Ocean Energy Management

FORMER GRADUATE STUDENTS

Suzanne Cox, M.S.M.E., Ph.D., University of Massachusetts Amherst; postdoctoral: Pennsylvania State University

Maya deVries, Ph.D., University of California Berkeley; postdoctoral: Scripps Institute of Oceanography; Assistant Professor, San Jose State University

Patrick Green, Ph.D., Duke University; postdoctoral: U. Exeter

Michael Rosario, M.S., University of Massachusetts Amherst; Ph.D., Duke University; postdoctoral: Brown University; Assistant Professor, West Chester University

FORMER POSTDOCTORAL RESEARCHERS

Phil Anderson, Assistant Professor, University of Illinois Urbana-Champaign

Thomas Claverie, Assistant Professor, Université Montpelier

Katsushi Kagaya, Hakubi Fellow, Kyoto University

Chi-Yun Kuo, Assistant Professor, Kaohsiung Medical University

Sarah Longo, Visiting Assistant Professor, Towson University

Martha Muñoz, Assistant Professor, Yale University

Crystal Reynaga, Assistant Professor, Bryan Mawy College

Jennifer Taylor, Associate Professor, Scripps Institute of Oceanography

SERVICE

PROGRAMS

- 2014 - Director & Founder, [Muser](#), Duke. University-wide program and software application to increase access, transparency, and reduce implicit bias for undergraduate research experience.
- 2019 - Opensource software platform, Muser, for enabling research opportunities while reducing implicit bias. Available on [Drupal](#) and [Github](#).
- 2014-2019 Director & Founder, Physical Biology of Organisms (regional six-university consortium of scientists, mathematicians and engineers)
- 2010-13 Founder & Coordinator, Biology Undergraduate Research Apprenticeships program (BURA), UMass Amherst
- 2005-7 Co-founder & coordinator, Women in Science graduate group, UC Berkeley

CONFERENCES/WORKSHOPS

- 2019 Co-organizer, Principles and analysis of small, high acceleration systems in biology and synthetic systems workshop, *Society for Integrative and Comparative Biology*, Tampa, Florida.
- 2016, 2017, 2018 PI, Impulsive MURI annual and semi-annual meetings
- 2016 Lead organizer, regional *Society for Integrative and Comparative Biology* conference, Duke University.
- 2014, 2015 Lead organizer, Physical Biology of Organisms mountain retreat workshops

- 2012 Lead organizer, regional *Society for Integrative and Comparative Biology* conference, UMass Amherst
- 2011 Moderator, Grand Challenges Workshop, *Society for Integrative and Comparative Biology*

PROFESSIONAL SERVICE

- 2020 - Deputy Editor-In-Chief, *Journal of Experimental Biology*
- 2017-2020 Monitoring & Handling Editor, *Journal of Experimental Biology*
- 2017-2019 Associate Editor, *Evolution*
- 2017-2019 Chair, Biomechanics Division, *Society for Integrative and Comparative Biology*
- 2017 External Review Committee, Ecology and Evolution Graduate Program, University of California Riverside
- 2010-16 Associate Editor, *Functional Ecology* (~12 papers/year)
- 2015-16 Chair-Elect, Biomechanics Division, *Society for Integrative and Comparative Biology*
- 2014-16 Editorial Advisory Board, *Journal of Zoology A*
- 2014-16 Chair, George Bartholomew Award Committee, *Society for Integrative and Comparative Biology*
- 2009-15 Chair, Student Support Committee, *Society for Integrative and Comparative Biology*
- 2010-13 George Bartholomew Award Committee, *Society for Integrative and Comparative Biology*
- 2013 National Science Foundation Panelist for Integrative Organismal Systems
- 2008 Student Support Committee, *Society for Integrative and Comparative Biology*
- 2004,5,9 Judge, *Society for Integrative and Comparative Biology* best student paper award
- 2002-4 Miller Institute for Basic Research in Science symposium committee
- 2002 National Science Foundation grant review panelist
- 2000 Sigma Xi Sally Hughes-Schrader grant review panelist

UNIVERSITY SERVICE

- 2020-2023 Associate Chair (Chair EEOB Division), Biology Dept., Duke U.
- 2019 Tenure Committee Co-Chair, Biology Dept., Duke U.
- 2016-8 Performance Review Committee, Biology Dept., Duke U.
- 2013-17 Awards Committee, Biology Dept., Duke U.
- 2017 Tenure Committee, Evolutionary Anthropology Dept., Duke University
- 2015-16 Duke University Marine Lab Director search committee
- 2014-15 Research Support Infrastructure Committee, Biology Dept., Duke U.
- 2014-15 Chair, Seminar Committee, Biology Dept., Duke U.
- 2012 Seminar Committee, OEB, UMass Amherst
- 2010-12 Chair, Website Committee, Dept. of Biology, UMass Amherst
- 2009,10,12 Hiring Priorities Committee, Dept. of Biology, UMass Amherst
- 2009-12 Steering Committee, Five College Coastal and Marine Sciences Program
- 2010-11 Personnel Committee, Dept. of Biology, UMass Amherst

- 2010-11 Steering Committee, Organismic and Evolutionary (OEB) graduate program, UMass Amherst
- 2009-11 Research Activities Committee, Dept. of Biology, UMass Amherst
- 2009-10 OEB Admissions Committee, UMass Amherst
- 2004-8 Advisory Board member for the Biology Scholars Program, Biology Fellows Program, and Biology Transfer Consortium, UC Berkeley
- 2007-8 Grants and Awards Committee, UC Berkeley
- 2005-6 Chair, Graduate Student Faculty Committee, Dept. of Integrative Biology, UC Berkeley
- 2006 Faculty Search Committee, Dept. of Integrative Biology, UC Berkeley
- 2004-5 Departmental Seminar Coordinator, Dept. of Integrative Biology, UC Berkeley
- 2004 Space Committee, Dept. of Integrative Biology, UC Berkeley

REVIEWER FOR FUNDING AGENCIES, JOURNALS AND PRESSES

Animal Behavior

American Naturalist

Behavioral Ecology

Behavioural Processes

Biological Journal of the Linnean Society

Biology Letters

BMC Biology

Crustaceana

Current Biology

France Berkeley Fund

Frontiers in Zoology

Functional Ecology

Guggenheim Foundation

Integrative and Comparative Biology

Invertebrate Biology

Hydrobiologia

Journal of the Acoustical Society of America

Journal of Comparative Biochemistry and Physiology

Journal of Crustacean Biology

Journal of Developmental Biology

Journal of Experimental Biology

Journal of Experimental Marine Biology and Ecology

Journal of the Royal Society Interface

Journal of Zoology

MacArthur Foundation

Marine and Freshwater Research

Marine Ecology Progress Series

National Geographic

National Oceanic and Atmospheric Administration

National Science Foundation

Nature

Nature Communications

Naturwissenschaften

New Zealand Journal of Marine and Freshwater Research

Norwegian Research Council

Oxford University Press

Physiological and Biochemical Zoology

Proceedings of the National Academy of Sciences

Radcliffe Institute for Advanced Studies

Science

Science Advances

Scientific Reports

Sinauer Associates

Yale University Press

Zoomorphology

SCIENTIFIC OUTREACH

OUTREACH PROGRAMS RUN IN THE PATEK LAB

2016, 2017, 2018, 2019 Undergraduate and high school summer research fellowships, Army Educational Outreach Program (AEOP), Department of Defense.

2016, 2017 NSF Research Experience for Teachers, high school teacher Brooke Sauer.

2015-16 High school student school year research mentorship, North Carolina School of Science and Math, Durham, NC.

2015 NSF Research Experience for Teachers, high school teacher Jeff LaCosse

2015 High school student summer research mentorship, North Carolina School of Science and Math summer research program, Durham, NC.

2014 NSF Research Experience for Teachers, high school teacher Kelsey Lamanna.

2012 NSF Research Experience for Teachers, high school teacher Janice St. Pierre.

* *Research Experience for Teachers programs were funded by my NSF CAREER Award.*

* *AEOP programs were funded via a companion grant to the MURI Award.*

PUBLIC PROGRAMS, MUSEUM EXHIBITS, WEBSITES

Events with notable impact:

2016 [PBS Newshour Perspective, >3 million views](#), about the value of basic research, aired on PBS national television

2016 Congressional Poster Session and Reception. U.S. Congress, Washington DC.

2004 [Mainstage TED talk, >1 million views](#), Monterey, CA. Invited speaker.

Additional events:

2016 Duke Alumni weekend, "Sounds of the Sea", Duke Marine Lab.

2015 [TEDx speaker](#), North Carolina School of Science and Math, Durham, NC.

2014 ["Machine Inside", Field Museum exhibit](#), Chicago, IL.

2012 [Iridescent Learning unit for the Curiosity Machine](#). Office of Naval Research outreach program for grade schools about engineering and hands-on science principles.

2012 Advisory Panel, Discovery of Sound in the Sea, University of Rhode Island

2009 The Maritime Museum and Aquarium, Göteborg, Sweden. Exhibit on mantis shrimp predatory strikes.

2008 Virginia Aquarium and Marine Science Center in Virginia Beach. Spiny lobster sounds included as part of "soundscape" exhibit.

2008 The Sant Ocean Hall, National Museum of Natural History, Washington, DC. Feature on the mechanism of sound production in spiny lobsters.

2007 Biomechanics teaching website for the Society for Integrative and Comparative Biology. Created laboratory exercise for ballistic motion in trap-jaw ants.

2007 Tree of Life scientific core contributor. Website for the spiny lobster (Palinuridae) phylogeny.

2007 Morehead Planetarium and Science Center, Chapel Hill, NC. Contributed to exhibit on biodiversity.

2007 Science Museum of Minnesota. Contributed images and sound to traveling exhibit, "Wild Music".

2006 Understanding Evolution website, University of California Museum of Paleontology. Contributed to segment designed to educate the public about evolutionary origins.

2006 Knight New Media Multimedia Reporting Workshop, University of California Berkeley. Worked with science reporters.

2005 The Rules of Life, BBC Natural History Unit Radio, Bristol, UK. Contributed to BBC radio series on animal life cycles and survival.

- 2005 DigiMorph.Org, an online site for 3-D morphology and CT scans, University of Texas at Austin. Contributed images, text and specimen.
- 2005 National Museum of Marine Biology and Aquarium (Taiwan). Contributed materials for exhibit on acoustic behavior of marine animals.
- 2003 Animal Camera, BBC Natural History Unit, Bristol, UK. Collaborated with BBC television series on the role of new technology in discoveries about organismal biology.
- 2001 [Discovery of Sound in the Sea](#), Office of Marine Programs, University of Rhode Island, Narragansett, RI. Contributed sounds, images and scientific editorial assistance.
- 2001 The Science Museum, London, U.K. Assisted curators in an exhibit on the physics of lobster sound production.
- 2001 Invertebrates computer course, The University of Western Ontario. Contributor to segment on sound production and crustacean behavior.

OUTREACH LECTURES TO PUBLIC AUDIENCES

- 2019 Opening Address, State of North Carolina Undergraduate Research and Creativity Symposium, Duke University, Durham, NC.
- 2019 *Lean In* panel discussion on women in science, North Carolina School of Sciences and Math, Durham, NC.
- 2019 Keynote address, FEMMES Capstone, Durham, NC
- 2018 Research Rodeo talk, Women's Weekend, Duke University.
- 2017, 2018 High school outreach class, Boothbay High School, Maine
- 2016 Boothbay Marine Sea and Science Center, Outreach lecture, East Boothbay, Maine.
- 2014 Outreach lecture, Sigma Xi Headquarters, RTP, NC.
- 2013 Zoological Education Trust outreach speaker, Guelph, Canada.
- 2013 AAAS Family Days outreach speaker, Boston, MA
- 2013 Science Café outreach speaker, Hadley, MA.
- 2012 Science Roundtable, Five College Learning in Retirement. Outreach program about fast movements in biology.
- 2011 Illg Distinguished Lectureship Outreach lecture, Friday Harbor, WA.
- 2010 [NYPL LIVE at the New York Public Library](#), New York, New York. A public outreach lecture exploring sound, silence and the deaf experience.
- 2009 Bedford Audubon Society, NY. Public outreach lecture.
- 2005, 2006 Cal Day, public research lecture, Berkeley, CA.
- 2000 Talent Identification Program (TIP), Duke University. Public outreach lecture.
- 1998 Scientists in the Classroom, Durham, NC. Public outreach lecture.

OUTREACH LECTURES TO UNIVERSITY AUDIENCES

- 2019 Outreach lecture, Biological Sciences Research Fellows, Duke University.
- 2018 Outreach discussion, Mississippi University for Women, Columbus, MS.
- 2018 Evening lecture and discussion, University Scholars Program, Duke University.
- 2017 NSF Days Panelist, UNC Chapel Hill.
- 2017 Plenary Lecture, University Scholars Program, Duke University.

- 2016 Outreach lecture, first-year undergraduates, Focus Program, Duke University.
- 2016 Outreach discussion with the undergraduate diversity research program, Southern California Ecosystems Research Program.
- 2016 pSearch, undergraduate research mentorship presentation, Duke University.
- 2014 Outreach lecture, BioCore Symposium for under-represented minority science engagement, Duke University, NC.
- 2013, 2015 Outreach lecture for biophysics students, Duke University, NC.
- 2013 Smith College lecture for engineering students, Northampton, MA.
- 2011, 2012, 2013 Outreach lecture for introductory biology students, Amherst College, MA.
- 2010 BIOTAP seminar, University of Massachusetts Amherst. An outreach lecture to first-year UMass undergraduates.
- 2008 Panelist for Women in Academia presentation and discussion, Massachusetts Institute of Technology (MIT). A discussion about strategies for success for women in science.
- 2006 Biology Scholars summer fellowship program designed to increase participation and support minority and economically underprivileged undergraduates in biology. Invited lecturer.

SELECTED PRESS COVERAGE

- 2019 *New York Times, NPR's All Things Considered, The Atlantic, Discover, Science News, Newsweek, German Public Radio*
- 2018 *Newsweek, New York Times, Discovery Canada, Wired (2x), Discover, Science News, Big Biology, Engineering.com, Physics Central, Popular Mechanics, Quartz, Duke Today, Science Daily, Quanta*
- 2017 *New York Times (2x), Science Friday's Undiscovered podcast, NPR's Planet Money, BBC, New Scientist, Speaking Evolution (Public Television)*
- 2016 *Huffington Post, BBC Earth, CBC Daily Planet, KQED Science, Duke's The Standard*
- 2015 *Science 360 News, Discovery Channel, National Geographic News (3x), Daily Planet, Wired (2x), National Geographic Wild, National Geographic Channel*
- 2014 *Discovery News, Daily Planet Discovery Channel Canada, Field Museum (Chicago), Phys.org, National Geographic, The Weather Channel, Popular Mechanics, Discovering Alabama*
- 2013 *Science News for Kids, Wired, The Oatmeal*
- 2012 *NPR Science Friday, Los Angeles Times, Science, 1440 Blog, BBC Wonders of Life, BBC Natural History, Grande Exhibitions, Discovery Channel, NOAA Ocean Today, Deixis Magazine*
- 2011 *National Geographic Television, Science Careers, Science Now, Science News, Live Science, Discovery News, Wired.com, OnEarth magazine, Science Channel, Empirical Zeal, ZDF German television*
- 2010 *Science, The Scientist, "Moments of Impact" television program, PBS Nature; Discovery Channel Canada television program and book section; Catalyst, Australian Broadcasting Corporation; Planetopia; Smithsonian Magazine.*

- 2007-9 *Science*, *National Geographic Magazine*, *Earthdance International Environmental Film Festival*, *Wolphin DVD Magazine*, *History Channel*, *National Geographic Television*, *Ranger Rick*, *The Helix*, *YES magazine*.
- 2006 *New York Times*; *Science*; *Discover Magazine* “Best of the Year” science story; *Nature*; *USA Today*; *ABC News*; *CBC*; *CBS News*; *CNN*; *Current Science*; *Discovery Channel*; *Houston Chronicle*; *Los Angeles Times*; *MSNBC*; *National Geographic*; *Newsday*; *Natural History Magazine*; *London Daily Telegraph*; *BBC*; *New Scientist*; *Popular Science*; *Associated Press*; *San Francisco Chronicle*; *Smithsonian magazine*; *Washington Post*; *Quirks and Quarks*.
- 2005 *BBC Radio* series “Rules of Life”; *BBC Wildlife Magazine*; *Highlights for Children*; *Berkeley Science Review*; *Sensors Magazine*.
- 2004 *BBC TV Natural History Unit*, *Animal Camera*; *New York Times*; *Discovery Canada*, TV science news program; *Quirks and Quarks*, CBC science news radio; *International Design (I.D.) Magazine*; *Natural History Magazine*; *AAAS radio*; *National Wildlife Magazine*; *Popular Science Magazine*; *San Francisco Chronicle*; *Science Daily*; *USA Today*; *Washington Post*; *Daily Californian*; *Daily Telegraph*.
- 2001-2 *Associated Press Radio*; *BBC Worldservice*, *Science in Action*; *BBC Worldservice*, *Five Alive*; *Discovery Canada*, TV science news program; *Our Ocean World*, NOAA funded radio program; *National Geographic*, *Pulse of the Planet*; *National Public Radio*, *Weekend All Things Considered*; *National Public Radio*, *Living on Earth*; *National Public Radio*, *Weekend Edition Saturday*; *Network of the World*, *Earth and Space television*; *Science and Technology News Network*; *The Herald Sun*; *London Daily Telegraph*; *National Wildlife Magazine*; *Nature’s Best*; *Natural History Magazine*; *The New York Times*; *The News and Observer*; *Science News*.

COLLECTIONS/FIELD/MARINE LABORATORY EXPERIENCE

Duke University Marine Laboratories, Beaufort, NC
 Friday Harbor Marine Laboratories, University of Washington, Friday Harbor, WA.
 Gump South Pacific Research Station, Moorea, French Polynesia.
 Harbor Branch Oceanographic Institution, Ft. Pierce, FL.
 Lizard Island Research Station, Lizard Island, Great Barrier Reef, Australia.
 National Museum of Natural History, Smithsonian Institution, Washington DC.
 Okinawa Expo Aquarium, Okinawa, Japan.
 Seto Marine Laboratory, Shirahama, Japan.
 Smithsonian Institute, Ft. Pierce, Florida.
 Smithsonian Tropical Research Institute, Panama (Galeta, Naos, and Bocas del Toro).
 Wrigley Institute for Environmental Studies, Santa Catalina Island, California.

INVITED SEMINARS AND LECTURES

2020 Marine Sciences Seminar, Florida Atlantic University, Boca Raton, FL
 2019 University of California Los Angeles, CA.

2019 Case Western University, Cleveland, OH.

2018 Johns Hopkins University, Baltimore, MD.

2018 University of Richmond, Richmond, VA.

2018 International Crustacean Congress, Washington, D.C.

2018 Triangle Soft Matter Workshop, NCSU, Raleigh.

2018 Superspeaker, University of Montana, Missoula.

2017 Superspeaker, Harvard University, Cambridge, MA.

2017 University of Minnesota, St. Paul, MN.

2017 University of Chicago, Chicago, IL

2017 Whitney Marine Lab, University of Florida, St. Augustine.

2016 Biology Dept., University of Nebraska, Omaha.

2016 Biological Collections as a Resource for Technical Innovation, National Museum of Natural History, Washington, DC.

2016 Schmidt-Nielsen Lecture, Duke University, Durham, NC.

2016 Duke University Marine Lab, Beaufort, NC.

2015 Perspectives in Biology symposium, Wake Forest University, Winston-Salem, NC.

2015 Biology Dept., North Carolina State University, Raleigh.

2015 Biology and Bioengineering Division, California Institute of Technology, Pasadena.

2015 Biology Dept., University of California Irvine.

2014 Biology Dept., University of North Carolina, Chapel Hill.

2014 World Congress of Biomechanics, Boston, MA.

2014 Biology Dept., William and Mary College, Williamstown, VA.

2013 Emergent Design symposium speaker, MIT and U.S. Army, Dedham, MA

2013 Janelia Research Farm, Ashburn, VA

2013 Physics Dept., University of Massachusetts, Amherst.

2013 Symposium speaker, Society for Integrative and Comparative Biology, San Francisco, CA.

2012 AmeriMech 2012: Mechanics in Biology, Virginia Tech, VA.

2012 Biology Dept., Dartmouth College, Hanover, NH.

2012 Biology Dept., Duke University, Durham, NC.

2012 Hopkins Marine Station, Stanford University, Monterey, CA.

2011 Friday Harbor Marine Laboratories, University of Washington.

2011 Dept. of Kinesiology, University of Massachusetts, Amherst.

2011 Grice Marine Laboratory, Fort Johnson Marine Science seminar series and Darwin Week speaker, Charleston, SC.

2011 Dept. of Biological Sciences, University of Maryland, Baltimore County.

2010 Polymer Sciences and Engineering Dept., University of Massachusetts, Amherst.

2010 Smithsonian Tropical Research Institute, Panama City, Panama.

2010 Graduate student elected speaker, Ecology, Evolution and Organismal Department, Ohio State University.

2010 Function and control of elastic systems symposium, Society for Experimental Biology, Prague, Czech Republic.

2010 Ecology and Evolution Department, Brown University, Providence, RI.

2010 Biology Department, Mt. Holyoke College, MA.

2009 Biology Department, University of Rochester, NY.
2009 James Franck Institute, University of Chicago, IL.
2009 Sigma Xi plenary speaker, St. Joseph's University, Philadelphia, PA.
2009 Radcliffe Institute for Advanced Study, Harvard University, MA.
2008 Concord Field Station, Harvard University, MA.
2008 Bartholomew Award Lecture, Society for Integrative and Comparative Biology, San Antonio, TX.
2008 Biology Department, University of Massachusetts, Amherst.
2008 Biology Department, Wellesley College, Wellesley, MA.
2007 Max Planck Institute, Evolutionary Biomaterials Group, Stuttgart, Germany.
2006 Organismic and Evolutionary Biology Department, Harvard University.
2006 Scripps Institute of Oceanography, UC San Diego, La Jolla, CA.
2006 Center for Computer Research in Music and Acoustics, Stanford University.
2006 Romberg Tiburon Marine Laboratory, San Francisco State University.
2005 Bodega Marine Laboratories, University of California, Davis.
2005 Monterey Bay Aquarium Research Institute, California.
2004 Friday Harbor Marine Labs, Friday Harbor, Washington.
2004 Evolution and Ecology Department, University of California, Davis.
2004 Biology Department, University of California, Irvine.
2003 Bioengineering Department, California Institute of Technology, Pasadena.
2003 Miller Institute for Basic Research in Science, University of California, Berkeley.
2003 Department of Integrative Biology, University of California, Berkeley.
2003 Biology Department, University of North Carolina, Chapel Hill.
2003 Moss Landing Marine Laboratories, Moss Landing, CA.
2001 Biology Department, Duke University, Durham, NC.
2001 Department of Integrative Biology, University of California, Berkeley.
2001 Neurobiology and Behavior Group, Cornell University, Ithaca, NY.
2000 Museum of Vertebrate Zoology, University of California, Berkeley.
2000 Biomechanics group, University of California, Berkeley.
2000 Population Biology Group, University of Virginia, Charlottesville, VA.
1999 Marine Biological Laboratories, Woods Hole, MA.

PRESENTATIONS AND PUBLISHED ABSTRACTS

Harrison, J. S., M. L. Porter, and S. N. Patek. "Scaling and development of elastic mechanisms: the tiny strikes of larval mantis shrimp." In *Integrative and Comparative Biology*, 60:E97–E97, 2020.

Munoz, M. M., P. S. L. Anderson, Y. Hu, S. N. Patek, and H. Camarillo. "How Predictable and Correlated are Patterns of Form-Function Evolution?" In *Integrative and Comparative Biology*, 60:E168–E168, 2020.

Patek, S. N. "Plenary Lecture - Impact and discovery: extreme movement in an interdisciplinary and political world." In *Integrative and Comparative Biology*, 60:E392–E392, 2020.

Dinh, J. P., J. Azza, and S. N. Patek. "Assessing Your Opponent: Snapping Shrimp Use Indirect Cues to Settle Ritualized Contests." In *Integrative and Comparative Biology*, 60:E58–E58, 2020.

Longo, S. J., S. M. Cox, E. Azizi, M. Ilton, J. P. Olberding, R. St Pierre, and S. N. Patek. "Beyond power amplification: new insights from latch-mediated spring actuation (LaMSA)." In *Integrative and Comparative Biology*, 60:E144–E144, 2020.

- Jorge, J., and S. N. Patek. "Taking a swing at measuring small-scale, high acceleration impacts: a novel two-pendulum approach." In *Integrative and Comparative Biology*, 60:E114–E114, 2020.
- Munoz, M., P. S. L. Anderson, Y. Hu, and S. N. Patek. "Biomechanical Relationships Shape Cranial and Locomotor Evolution in Labrid Fishes." In *Journal of Morphology*, 280:S67–S67. WILEY, 2019.
- Sawicki, G.S., E. Abbott, T. Nezwek, S. Patek, C. Wall, and D. Schmitt. 2019. Exploring the limits of muscle-based latch system for power amplification. Society for Integrative and Comparative Biology, Tampa, FL.
- Patek, S.N., 2019. The power of extreme movement: evolution, behavior, and biomechanics of mantis shrimp strikes. Society for Integrative and Comparative Biology, Tampa, FL.
- Harrison, J.S., M.L. Porter, M.J. McHenry, H.E. Robinson, and S.N. Patek. 2019. Scaling of elastic mechanisms: the tiny strikes of larval mantis shrimp. Society for Integrative and Comparative Biology, Tampa, FL.
- Jorge, J.F., J.S. Harrison, P.S. Manos, and S.N. Patek. 2019. Biomechanics of ballistic seed dispersal in the witch hazel (*Hamamelis*). Society for Integrative and Comparative Biology, Tampa, FL.
- Kaji, T., G. Farley, J. Jorge, S. Longo, J. Harrison, S. Patek, A.R. Palmer. 2019. Who knew? Ultrafast limb movements in an amphipod that snaps. Society for Integrative and Comparative Biology, Tampa, FL.
- Farley, G.M., C.N. Bedore, and S.N. Patek. 2019. Rapid hydrostatic tentacle protrusion in cuttlefish. Society for Integrative and Comparative Biology, Tampa, FL.
- Munoz, M.M., S.N. Patek. 2019. Biomechanics as a pacemaker for evolutionary diversity. Society for Integrative and Comparative Biology, Tampa, FL.
- Jorge, J., A. Kumar, G., Sutton, and S. N. Patek. 2018. Tick-tock tiny impacts: a novel pendulum mechanism for measuring the energetics of trap-jaw ant strikes. Society for Integrative and Comparative Biology, San Francisco, CA.
- Munoz, M. M., Y. Hu, P. S. L. Anderson, and S. N. Patek. 2018. Strong mechanical relationships bias the tempo and mode of morphological evolution. Society for Integrative and Comparative Biology, San Francisco, CA.
- Green, P.A. and S.N. Patek. 2018. Communication and combat: the function of ultrafast ritualized striking in mantis shrimp. Society for Integrative and Comparative Biology, San Francisco, CA.
- Temel, F.Z., G.P. Sutton, S.N. Patek, and R.J. Wood. 2018. Trap-jaw ant inspired jaw-jumping mechanisms explore energetics of insect jumping. Society for Integrative and Comparative Biology, San Francisco, CA.
- Patek, S.N., G.P. Sutton, C.Y. Kuo, F.Z. Temel, and R.J. Wood. 2018. Elastic energy delivery and power amplification of trap-jaw ant strikes. Society for Integrative and Comparative Biology, San Francisco, CA.
- Farley, G.M., J.S. Harrison, M.J. Wise, G.P. Sutton, and S.N. Patek. 2018. Leaping larvae: hydrostatic jumpers at the mm-scale. Society for Integrative and Comparative Biology, San Francisco, CA.
- Ilton, M., C. Cox, T. Egelmeers, G.P. Sutton, S.N. Patek, A. Crosby. 2018. Impulsive elastic energy release from a resilin-like elastomer. American Physical Society, Los Angeles, CA.
- Ilton, Mark., M. Saad Bhamla, Xiaotian Ma, Suzanne M. Cox, Leah L. Fitchett, Yongjin Kim, Je-sung Koh, Deepak Krishnamurthy, Chi-Yun Kuo, Fatma Zeynep Temel, Alfred J. Crosby, Manu Prakash, Gregory Sutton, Robert J. Wood, Emanuel Azizi, Sarah Bergbreiter, and S. N. Patek. 2018. Power limits of repeatable movement in small, fast organisms: guiding principles for engineering design. American Physical Society, Los Angeles, CA.
- Green, P.A., McHenry, M.J., and S.N. Patek. 2017. The energetics of ultrafast displays: kinetic energy of ritualized sparring strikes in mantis shrimp. Animal Behavior Society, Toronto, Canada.
- Kisare, S. A., R. L. Crane, and S. N. Patek. 2017. 3-D printed models reveal morphological features that cue mantis shrimp strike locations. Society for Integrative and Comparative Biology, New Orleans, LA.
- Rosario, M.V., G. P. Sutton, S. N. Patek, and G. S. Sawicki. 2017. The springs of time-limited bullfrog jumps and slow-preparation grasshopper legs are tuned to their muscle dynamics. Society for Integrative and Comparative Biology, New Orleans, LA.
- Patek, S. N. and 15 other authors. 2017. Extreme power amplification in biological systems. Society for Integrative and Comparative Biology, New Orleans, LA.
- Crane, R.L., S. S. Kisare, and S. N. Patek. 2017. Strategic strikes: how mantis shrimp crack open different prey. Society for Integrative and Comparative Biology, New Orleans, LA.

- Kuo, C.-Y., A. Ruta, C. Thompson, and S. N. Patek. 2017. Extreme asymmetry in the energy transfer rate of trap-jaw ant mandibles. Society for Integrative and Comparative Biology, New Orleans, LA.
- Muñoz, M. M., P. S. L. Anderson, and S. N. Patek. 2017. Mantis shrimp reveal the evolutionary dynamics of mechanical sensitivity in form-function relationships. Society for Integrative and Comparative Biology, New Orleans, LA.
- Green, P.A. and S. N. Patek. 2017. Mantis shrimp use ritualized sparring as an aggressive signal in escalated contests. Society for Integrative and Comparative Biology, New Orleans, LA.
- Crane, R. C., S.A. Kisare, and S.N. Patek. 2016. Strategic strikes: how mantis shrimp crack open different prey. Western Society of Naturalists, Monterey, CA.
- Green, P.A. and S. N. Patek. 2016. Contest escalation and resolution in sparring mantis shrimp: tests using network analysis. Animal Behavior Society, Colombia, MO.
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