LAURA E. BAGGE

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EDUCATION

2017	**Ph.D. Biology** Duke University, Durham, NC Advisor: Dr. Sönke Johnsen
2011	**M.S. Marine Biology** University of North Carolina Wilmington Advisor: Dr. D. Ann Pabst
2008	**B.S. Marine Biology (with honors); *summa cum laude*** University of North Carolina Wilmington Advisor: Dr. D. Ann Pabst

PROFESSIONAL EXPERIENCE

2017 - present	Postdoctoral Scholar, Department of Chemical Engineering and Materials Science University of California Irvine, Advisor: Dr. Alon Gorodetsky
2016	Bass Instructor, “Advanced Physiology,” Biology Department, Duke University
2014 - 2017	Visiting Student Researcher, Smithsonian National Museum of Natural History
2012 - 2016	Teaching Assistant, various Physiology and Evolution courses, Duke University
2009 - 2011	Teaching Assistant, various Physiology and Anatomy courses, UNCW
2009 - 2011	Graduate Research Assistant, UNCW, Dr. D. Ann Pabst
2007	Intern, Sarasota Dolphin Research Program, Dr. R. Wells and Katie McHugh

AWARDS, HONORS, AND FELLOWSHIPS

2016	Bass Instructional Fellowship (Fall semester tuition and stipend)
2016	Domestic Dissertation Travel Award ($2000)
2016	Society for Integrative and Comparative Biology Grant-in-Aid ($1000)
2014	Smithsonian NMNH Rathbun Student Grant for Crustacean Research ($1000)
2014	The Crustacean Society Fellowship in Anatomy/Paleobiology ($1000)
2013	Sigma Xi Grant-in-Aid of Research ($970)
2013	The Crustacean Society Best Student Poster at SICB ($100)
2013	Ray Huey Best Poster Award, Division of Ecology and Evolution SICB ($150)
2012 - 2016	Ray J. Tysor Summer Research Fellowship, Duke University ($5000/summer)
2012 - 2015	Biology Grant-In-Aid, Duke University ($1000/summer)
2012	Fernald Fellowship, Friday Harbor Laboratories ($2300)
2010	Graduate School Travel Grant, UNCW ($500)
2010	Graduate Student Association, UNCW ($250)
2009	NC Maritime Museum Scholarship ($250)
2009	Biology Graduate Student Association, UNCW ($500)
2007 - 2008	Corbett Scholarship, UNCW ($6350)
2007 - 2008	Bolles Marine Biology Scholarship, UNCW ($3100)
2007 - 2008	SMART Grant, ($4000 awarded, $1535 accepted)
2006 - 2007	Merit Scholarship, UNCW ($1000)

PUBLICATIONS

In-prep:
Bagge, L.E., Kier, W.A., and Johnsen, S. Ultrastructural modifications for transparency in anemone shrimp. To be submitted to *Journal of Experimental Biology*.

Peer-reviewed:
Chatterjee, A., Norton-Baker, B., **Bagge, L.E.**, Patel, P., and Gorodetsky, A.A. (2018). An introduction to color-changing materials and devices from the cephalopod protein reflectin. *Bioinspiration and Biomimetics*. 13: 045001.

Bagge, L.E., Kinsey, S.T., and Johnsen, S. (2017). Transparent anemone shrimp (*Ancylomenes pedersoni*) become opaque after exercise and physiological stress in correlation with increased hemolymph perfusion. *Journal of Experimental Biology*. 220: 4225-4233.

Netburn, A.N., Kinsey, J.D., Bush, S.L., Djurhuus, A., Fernandez, J., Hoffman, C.L., McVeigh, D., Twing, K.I. and **Bagge, L.E.** (2017). First HOV Alvin study of the pelagic environment at Hydrographer Canyon (NW Atlantic). *Deep Sea Research Part II: Topical Studies in Oceanography*. https://doi.org/10.1016/j.dsr2.2017.10.001

Bagge, L.E., Osborn, K.J., and Johnsen, S. (2016). Nanostructures and monolayers of spheres reduce surface reflections in hyperiid amphipods. *Current Biology*. 26: 3071-3076.

Bagge, L.E., Koopman, H.N., Rommel, S.A., McLellan, W.A., and Pabst, D.A. (2012). Lipid class and depth-specific thermal properties in the blubber of two species of odontocete cetaceans, the short-finned pilot whale (*Globicephala macrorhynchus*) and the pygmy sperm whale (*Kogia breviceps*). *Journal of Experimental Biology*. 215: 4330-4339.

Popular science (non-peer-reviewed):
Bagge, L.E. (2016). A living cloak of invisibility. *Biosphere*. 21:24-35.

INVITED PRESENTATIONS

"Adaptation and Evolution in Biological Materials" Symposium, Annual Meeting of the Society for Integrative and Comparative Biology, Tampa, FL (January 2019)

University of California Santa Barbara (July 2018)

La Sierra University (May 2018)

Guilford College (October 2015)

CONFERENCE ABSTRACTS – ORAL PRESENTATIONS

Bagge, L.E. and Johnsen, S. "The ultrastructure of transparent shrimp." Society for Integrative and Comparative Biology, San Francisco, CA, 2018.

Bagge, L.E. and Johnsen, S. "Anti-reflective invisibility cloak: monolayers of spheres reduce cuticle reflectance in hyperiid amphipods." Society for Integrative and Comparative Biology, New Orleans, LA, 2017.

Bagge, L.E., Kinsey, S.T., and Johnsen, S. "Transparency, Interrupted." Twelfth International Conference on Light and Color in Nature, University of Granada, Granada, Spain, 2016.

Bagge, L.E., Kinsey, S.T., and Johnsen, S. "Transparency, Interrupted." Living Light Conference, Scripps Oceanographic Institute, San Diego, CA, 2016.

Bagge, L.E., Kinsey, S.T., and Johnsen, S. "The limits of an invisibility cloak: transparent shrimp become opaque after multiple tail-flipping escapes." Society for Integrative and Comparative Biology, Portland, Oregon, 2016.

Bagge, L.E. and Johnsen, S. "Clearly camouflaged: muscle architecture in transparent shrimp." Society for Integrative and Comparative Biology, Austin, Texas, 2014.

Bagge, L.E. and Johnsen, S. "Clearly camouflaged crustaceans." Duke Biology Retreat, Beaufort, NC, 2013.

Bagge, L.E., Koopman, H.N., Pokorny, A., McLellan, W.A., Pabst, D.A. "Phase change properties of the blubber lipids of two species of odontocete cetaceans, *Globicephala macrorhynchus* and *Kogia breviceps*." Southeast and Mid-Atlantic Marine Mammal Symposium, Conway, SC, 2011.

Bagge, L.E., Koopman, H.N., Pokorny, A., McLellan, W.A., Pabst, D.A. "Depth-specific fatty acid composition and temperature dependent thermal properties of the blubber of short-finned pilot whales." Society for Integrative and Comparative Biology, Salt Lake City, Utah, 2011.

CONFERENCE ABSTRACTS – POSTER PRESENTATIONS

Bagge, L.E. and Johnsen, S. "Looking at invisibility: anti-reflective structures and strategies in hyperiid amphipods." Society for Integrative and Comparative Biology, San Francisco, California, 2013.
AWARDS: THE CRUSTACEAN SOCIETY AND INAUGURAL RAYMOND HUEY BEST POSTER.

Dolan, J.E., **Bagge, L.E.**, McLellan, W.A., and Pabst, D.A. "The thermal properties of the integument of the pygmy sperm whale (*Kogia breviceps*)." Southeast and Mid-Atlantic Marine Mammal Symposium, Conway, SC, 2011. POSTER BY UNDERGRADUATE MENTEE.

Bagge, L.E., McLellan, W.A., Koopman, H.N., Blum, J.E., and Pabst, D.A. "Thermal properties of the blubber of adult female short-finned pilot whales (*Globicephala macrorhynchus*)." 2009 Society for Marine Mammalogy Biennial Conference, Quebec City, Canada, 2009.

Bagge, L.E., McLellan, W.A., Koopman, H.N., McAlarney, R.J., Nilsson, P.B., Blum, J.E., and Pabst, D.A. "Thermal properties of the blubber of adult female short-finned pilot whales (*Globicephala macrorhynchus*)." Southeast and Mid-Atlantic Marine Mammal Symposium, Wilmington, NC, 2009.
AWARD: BEST MASTER'S STUDENT POSTER.

RESEARCH AND FIELD EXPERIENCE

2016	Selected Early Career Scientist on UNOLS Training Cruise, *R/V Atlantis*, Port-side scientist in the Deep Submergence Vehicle *Alvin* on dive #4831
2013 – 2014	Field Assistant at Carrie Bow Cay, Caribbean Coral Reef Ecosystem Program
2014	Visiting Scientist at the Smithsonian Marine Station at Ft. Pierce, FL
2012	Scientist on the *R/V Kilo Moana*, Honolulu, HI
2011	Scientist and AAUS Diver on the *R/V Endeavor*, Narrangansett, RI

TEACHING EXPERIENCE

2016	**Bass Fellow, Instructor of Record**, "Extreme Animal Adaptations" (Advanced Physiology course: sole instructor and course designer) Department of Biology, Duke University
2015 - 2017	**Preparing Future Faculty Program**, Duke University and Guilford College
2015 - 2017	**Certificate in College Teaching Program**, Duke University
2015	**Teaching Assistant**, "Organismal Evolution" Department of Biology, Duke University
2013 - 2014	**Teaching Assistant**, "Animal Physiology Lab" Department of Biology, Duke University
2011	**Teaching Assistant**, "Human Anatomy and Physiology II Lab" Department of Biology and Marine Biology, University of NC Wilmington
2010	**Teaching Assistant,** "Human Anatomy and Physiology I Lab" Department of Biology and Marine Biology, University of NC Wilmington
2009	**Teaching Assistant**, "Animal Physiology Lab" Department of Biology and Marine Biology, University of NC Wilmington
2006 - 2007	**Instructor, Marine Quest Program**, University of NC Wilmington K-8 teacher, and developer of new curricula focused on coastal biology and conservation.

OUTREACH

2012 – present	**Rho Tau GWIS (Graduate Women in Science); secretary** 2012-2014 Events: USA science and Engineering Festival; Brilliant and Beautiful Foundation SMART Scholars Science Workshop; Girl Scouts Outreach at Meredith College
2011 – present	**WISE (Women in Science and Engineering);** 2011-2012 leader for WiS Biology

2012 – present **Selected scientific outreach presentations**:
Invited Talk, Tarbut V'Torah Community Day School, Irvine CA (2018)
Duke INSPIRE's Outreach Event. Awarded "Favorite Scientist" (2017)
Live Q&A session with North Carolina Museum of Natural Sciences, Daily Planet, from onboard the R/V Atlantis (2016)
Coastal Carolina Dive Symposium (2015)
Nerd Nite Triangle (2014)

SELECTED MEDIA COVERAGE

Science News: "See-through shrimp flex invisible muscle" by Susan Milius, April 19, 2014.

Science (AAAS): "When they try to escape, these invisible shrimp become visible" by Elizabeth Pennisi, Jan 6, 2016.

National Geographic: "This Ocean Creature Makes Its Own Invisibility Cloak" by Mark Strauss, Dec 9, 2016.

Smithsonian Magazine: "The Master of Disguise of the Ocean Reveals Its Secrets" by Emily Underwood, Jan 2017.

Optics and Photonics News: "Sea creatures' nanostructures fool predators" by Patricia Daukantas, Nov 16, 2016.

Environmental Monitor: "How midwater crustaceans vanish from predators" by Daniel Kelly, Nov 2, 2016.

Physics World: "Bacteria nanospheres may help camouflage tiny crustaceans" by Michael Allen, Nov 2, 2016.

The Christian Science Monitor: "Is this tiny transparent ocean animal wearing an invisibility cloak?" by Eva Botkin-Kowacki, Oct 27, 2016.

Smithsonian.com: "These sea creatures have a secret superpower: invisibility cloaks" by Jackson Landers, Oct 27, 2016.

Science Daily, Phys.org, Daily Mail: "Midwater ocean creatures use nanotech camouflage," Oct 27, 2016.

PROFESSIONAL SERVICE AND SOCIETIES

The Optical Society of America
The Crustacean Society
Society for Integrative and Comparative Biology
Sigma Xi
University of California Irvine Postdoctoral Association Co-Chair
Duke AAUS Dive Control Board Member