

Brittany A. Leigh, Ph.D.

Postdoctoral Researcher
Department of Biological Sciences
Vanderbilt University
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Education

- B.S. Biology, 2012
University of South Florida (USF), Tampa, FL
- Ph.D. Biological Oceanography, 2017
College of Marine Science, USF, St Petersburg, FL

Experience

NSF Graduate Research Fellow 08/2014 – 08/2017
USF College of Marine Science
USF Children's Research Institute, St Petersburg, FL

Doctoral student in Dr. Mya Breitbart and Dr. Larry Dishaw's lab studying the three-tiered interactions between viruses, bacteria and host immunity within the gut of a protochordate model. Techniques utilized included recombinant protein expression and FPLC purification and quantification, Western blot, CRISPR-Cas9 gene editing, bacterial culture, bacteriophage concentration and purification, metagenomic sequencing and analyses, transmission electron microscopy, qPCR, biofilm assays, microscopy, histology and germ-free animal mariculture.

Graduate Assistant 06/2012 – 08/2014
USF Children's Research Institute, St Petersburg, FL

Researcher in Drs. Gary Litman and Larry Dishaw's lab investigating the microbial communities present in the marine invertebrate, *Ciona intestinalis*, to develop it as a model for intestinal immune homeostasis. Techniques included animal mariculture and bacterial isolation and 16S rDNA sequencing.

NSF Research Experiences for Undergraduates (REU) Fellow 05/2011 – 08/2011
Center for Shark Research, Mote Marine Laboratory, Sarasota, FL

Research fellow in Dr. Cathy Walsh and Dr. Carl Luer's laboratory. Worked on an individual project attempting to identify the receptor route used by proteins from the epigonal organ of *Elasmobranches* (sharks, skates, rays) to induce apoptosis in tumor cells. Techniques included: mammalian/non-mammalian cell culture, Western Blotting, RNA extraction, ELISA Assays, Protein Assays, and real-time PCR.

Marine Immunology Intern 01/2011 – 04/2011
Center for Shark Research, Mote Marine Laboratory, Sarasota, FL

Research Intern in Dr. Cathy Walsh and Dr. Carl Luer's lab. Aided in experiments investigating shark resistance to cancer progression via the route of cellular apoptosis in the presence of proteins from the epigonal organ, an immune organ unique to the *Elasmobranches* thought to have tumor suppression qualities.

Animal Physiological Ecology Research Assistant
Integrative Biology Department, USF, Tampa, FL

03/2009 – 05/2012

Undergraduate researcher under Dr. Lynn Martin. Carried out various aspects of quantifying invasive behavior in *Passer domesticus* (House sparrow), including quantification of corticosterone after capture in Tampa, FL. Also, involved in the sequencing of a number of up-regulated cytokines involved in responses to novel environments on the invasion front in Kenya, Africa. Techniques performed included animal surgery, DNA/RNA extraction, PCR, gel electrophoresis and corticosterone quantification.

Honors and Awards

Mahaffey Endowed Fellowship	2017
Renate E. Bernstein Outstanding Authorship Award	2017
ASM Conference on Beneficial Microbes Travel Award	2016
Frontiers in Host-Microbe Interactions MBL Course Scholarship	2015
Animal-Microbe Symbioses Gordon Conference Travel Award	2015
National Science Foundation Graduate Research Fellowship	2014
2 nd place Graduate Oral Presentation at the Biomedical and Comparative Immunology Symposium	2014
North American Comparative Immunology Workshop Student Travel Award	2013
Southern Kingfish Association Fellowship	2013-2014
Research Fellow, Association of European Marine Biological Laboratories	2013
Graduate Assistantship, USF	2012
Florida Academic Scholar	2011-2012
USF Presidential Scholar	2008-2012
USF Honors Scholar	2008-2012

Publications

Leigh, Brittany A., Anni Djuhurrus, Mya Breitbart and Larry J. Dishaw. "The gut virome of the protochordate model organism: *Ciona intestinalis*." Under review, *Virus Research*.

Leigh, Brittany A., Charlotte Karrer, John P. Cannon, Mya Breitbart and Larry J. Dishaw. "Cultivation and characterization of a phage-host system from *Ciona intestinalis*: a novel tool for studying the effects of phage on structuring the gut microbiome." *Viruses* (2017).

Leigh, Brittany A., Assunta Liberti and Larry J. Dishaw. "Generation of germ-free *Ciona intestinalis* for studies of gut-microbe interactions." *Frontiers in Microbiology* 7 (2016).

Dishaw, Larry J., **Brittany A. Leigh**, John P. Cannon, Assunta Liberti, M. Gail Mueller, Diana P. Skapura, Charlotte R. Karrer, Maria R. Pinto, Rosaria De Santis and Gary W. Litman. "Gut immunity in a protochordate involves a secreted immunoglobulin-type mediator binding host chitin and bacteria." *Nature communications* 7 (2016).

Liberti, Assunta, **Brittany A. Leigh**, Rosaria De Santis, Maria Rosaria Pinto, John P. Cannon, Larry J. Dishaw and Gary W. Litman. "An immune effector system in the protochordate gut sheds light on fundamental aspects of vertebrate immunity." *Pathogen-Host: antigenic variation v. somatic adaptations* (chapter accepted June 2015).

Dishaw, Larry J., Jaime Flores-Torres, Simon Lax, Kristina Gemayel, **Brittany A. Leigh**, Daniela Melillo, M. Gail Mueller, Lenina Natale, Ivana Zucchetti, Rosaria De Santis, Maria Rosaria Pinto, Gary W. Litman and Jack A. Gilbert. "The gut of geographically disparate *Ciona intestinalis* harbors a core microbiota." *PLoS One* 9.4 (2014): e93386.

Walsh, Catherine J., Carl A. Luer, Jennifer E. Yordy, Theresa Cantu, Jodi Miedema, Stephanie R. Leggett, **Brittany A. Leigh** et al. "Epigonal conditioned media from bonnethead shark, *Sphyrna tiburo*, induces apoptosis in a T-Cell Leukemia cell line, Jurkat E6-1." *Marine drugs* 11, no. 9 (2013): 3224-3257.

Published Abstracts and Presentations

Leigh, B., Z. Graham, A. Liberti, J.P. Cannon, M. Breitbart and L.J. Dishaw. Unraveling the role of prophages in shaping the gut microbiome. Evergreen Phage Meeting, August 2017. (Oral)

Leigh, B., Z. Graham, A. Liberti, J.P. Cannon, M. Breitbart and L.J. Dishaw. *Ciona intestinalis*: a model system for dissecting the roles of prophages in modulating host-associated microbial communities. Gordon Conference on Animal-Microbe Symbiosis, June 2017. (Poster)

Leigh, B., Z. Graham, A. Creasy, A. Liberti, J.P. Cannon, G.W. Litman, M. Breitbart and L.J. Dishaw. *Exploring phage roles in the gut of a marine protochordate, Ciona intestinalis*. ASM Conference on Beneficial Microbes, September 2016. (Oral)

Leigh, B., Z. Graham, A. Creasy, A. Liberti, J.P. Cannon, G.W. Litman, M. Breitbart and L.J. Dishaw. *Role of prophages in colonization of the gut of a marine protochordate, Ciona intestinalis*. Aquatic Viruses Workshop, July 2016. (Oral)

Leigh, B., Z. Graham, A. Creasy, A. Liberti, J.P. Cannon, G.W. Litman, M. Breitbart and L.J. Dishaw. *Ciona intestinalis*: a new model system for dissecting the roles of phages in modulating host-associated microbial communities. Viruses of Microbes, July 2016. (Oral)

Leigh, B., J.P. Cannon, A. Liberti, C. Karrer, G.W. Litman, M. Breitbart and L.J. Dishaw. *Dissecting biological principles that shape the gut microbiome using a simple model system*. Animal-Microbe Symbiosis Gordon Research Conference, June 2015. (Poster)

Dishaw, L.J., **B. Leigh**, J.P. Cannon, A. Liberti, G. Mueller, C. Karrer, D. Skapura, R. DeSantis, M.R. Pinto and G.W. Litman. *Establishment and maintenance of mucosal barriers in a protochordate gut*. North American Comparative Immunology Workshop, June 2015. (Oral)

Leigh, B., C. Karrer, G. Mueller, J.P. Cannon, R. DeSantis, M.R. Pinto, G.W. Litman and L.J. Dishaw. *Adherent bacterial communities interact with immunoglobulin-like proteins within the gut of the tunicate, Ciona intestinalis*. Biomedical and Comparative Immunology Symposium, March 2015. (Oral)

Leigh, B., J. P. Cannon, A. Liberti, C. Karrer, G. W. Litman, M. Breitbart and L. J. Dishaw. *The effects of phage on biofilm formation of a Shewanella sp. isolated from the gut of a marine invertebrate, Ciona intestinalis*. Florida Branch American Society of Microbiology Conference, September 2014. (Oral)

Leigh, B., A. Liberti, C. Karrer, G. Mueller, J. P. Cannon, R. De Santis, M. R. Pinto, G. W. Litman and L. J. Dishaw. *Selective interactions between host immunity and adherent gut bacteria in Ciona intestinalis*. Biomedical and Comparative Immunology Symposium, February 2014. (Oral)

Leigh, B., C. Karrer, G. Mueller, J. P. Cannon, G. W. Litman and L. J. Dishaw. *An invertebrate gut immunoglobulin-like protein interacts with adherent communities of bacteria*. Keystone Symposia on Invertebrate-Microbe Interactions, January 2014. (Poster)

Leigh, B., C. Karrer, J. Flores-Torres and L. J. Dishaw. *VCBPs, chemotaxis and bacterial colonization of the Ciona gut*. North American Comparative Immunology Workshop, June 2013. (Oral)

Leigh, B., M. Breitbart, and L. J. Dishaw. *Chemotaxis in host gut-microbe interactions*. Florida Branch American Society of Microbiology Conference, April 2013. (Oral)

Leigh, B., J. Flores-Torres, K. Gemayel, C. Karrer, M. G. Mueller, A. Liberti, D. Melillo, I. Zucchetti, R. De Santis, M. R. Pinto, G. W. Litman, and L. J. Dishaw. *Microbial community complexity in a protochordate model for intestinal immune homeostasis*. American Society of Microbiology Conference on Beneficial Microbes, October 2012. (Poster)

Leigh, B. "Carotenoid-based plumage and its effects on the immune system of Northern Cardinals (*Cardinalis cardinalis*) within an Urban-rural gradient." University of South Florida Honors College, May 2012. (Honors Thesis)

Leigh, B., C.J. Walsh, J.E. Yordy, J.A. Miedema, and C.A. Luer. *Determining the role of Fas receptor-mediated apoptosis in Jurkat cells treated with Sphyrna tiburo epigonal conditioned media*. Mote Marine Laboratory Research Experiences for Undergraduates, August 2011. (Poster)

Non-published Abstracts and Presentations

Leigh, B., M. Boruta, and L. B. Martin. *Does urbanization influence coloration of Northern cardinals (Cardinalis cardinalis)?* The Undergraduate Research Symposium, April 2012. University of South Florida. (Poster)

Professional Outreach

<u>Activity Coordinator- Marine Virus Lab</u> St. Petersburg Science Festival	2013-2015
<u>Instructional Counselor – Marine Biology</u> Duke Talent Identification Program	2014
<u>Teaching Assistant- General Genetics</u> University of South Florida St. Petersburg	2013-2014
<u>Science Mentor</u> Oceanography Camp for Girls	2013, 2017
<u>Treasury Chair</u> Marine Science Advisory Committee	2013-2014
<u>Education Specialist</u> Project Blue Hope (projectbluehope.com)	2012-2013

Mentoring Activities

Keep Pinellas Beautiful Mentor	2016-2017
Spoonbill Bowl Science Judge	2015-2017
Girl Scout Day of Marine Science	2014
SailFuture Mentor and Executive Board Member	2013-2017
Science Fair Judge at Henderson Hammock Charter School	2012
Great American Teach-In at Sanderlin PK-8	2012