Phillip Luke Davidson
Curriculum Vitae

Ph.D. Student
Department of Biology
Duke University, Durham, NC

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Education

Ph.D. Department of Biology, Duke University, Durham, NC — 2016-present
Certificate in Developmental and Stem Cell Biology
Advisor: Gregory Wray, Ph.D.
Thesis: "Genomic basis for a recurrent life history switch in sea urchins"

B.S. Department of Biology, University of Miami, FL — 2013-2016
Minors: Mathematics, Marine Science
Departmental Honors, Cum Laude

Other Research Positions

Visiting researcher, University of Sydney, NSW, AU — 2017-2020
Advisor: Maria Byrne, Ph.D.

Ph.D. rotations, Duke University, NC — 2016-2017
Advisors: Philip Benfey, Ph.D., Nicolas Buchler, Ph.D., Gregory Wray, Ph.D.

Undergraduate Research Assistant, University of Miami, FL — 2013-2016
Advisor: William Browne, Ph.D.
Thesis: "Comparative RNA-seq analysis of two developmental stages during embryogenesis in the ctenophore *Mnemiopsis leidyi"*

Publications

5) Devens, HR*, **Davidson, PL***, Deaker, DJ, Smith, KE, Wray, GA, Byrne, M. Ocean acidification induces distinct transcriptomic responses across life history stages of the sea urchin *Heliocidaris erythrogramma*. **Molecular Ecology**. 29: 4618-4636. https://doi.org/10.1111/mec.15664

4) Byrne, M, Koop, D, Strbenac, D, Cisternas, Paula, Balogh, R, Yang, JYH, **Davidson, PL,** Wray, GA. (2020) Transcriptomic analysis of sea star development through metamorphosis to the highly derived pentameral body plan with a focus on neural transcription factors. **DNA Research**. 27: dsaa007. *https://doi.org/10.1093/dnares/dsaa007*

3) **Davidson, PL***, Guo, H*, Wang, L, Berrio, A, Zhang, H, Chang, Y, Soborowski, AL, McClay, DR, Fan, G, Wray, GA. (2020) Chromosomal-Level genome assembly of the sea urchin *Lytechinus variegatus* substantially improves functional genomic analyses. **Genome Biology and Evolution**. 12: 1080–1086. *https://doi.org/10.1093/gbe/evaa101*

2) **Davidson, PL**, Thompson, JW, Foster, MW, Moseley, MA, Byrne, M, Wray, GA. (2019) A comparative analysis of egg provisioning using mass spectrometry during rapid life history evolution in sea urchins. **Evolution and Development**. 21: 188-204. *http://dx.doi.org/10.1111/ede.12289*

1) **Davidson, PL**, Koch, BJ, Schnitzler, CE, Henry, JQ, Martindale, MQ, Baxevanis, AD, Browne, WE. (2017) The maternal-zygotic transition and zygotic activation of Mnemiopsis leidyi genome occurs within the first three cell cycles. **Molecular Reproduction and Development.** 84: 1218-1229. *http://dx.doi.org/10.1002/mrd.22926*

**equal contribution*

In preparation or review

4) **Davidson, PL**, Guo, H, Wang, L, Edgar, A, Massri, AJ, Swart, JS, Berrio, A, Devens, HR, Zhang, H, Chang, Y, Byrne, M. DR, Fan, G, Wray, GA. Rewiring of a conserved developmental GRN during rapid life history evolution in sea urchins. *In prep*.

3) **Davidson, PL**, Byrne, M, Wray, GA. Evolutionary modifications to developmental cis-regulatory mechanisms underlie evolution of lecithotrophy in *Heliocidaris erythrogramma*. *In prep*.

2) Song, H*, Guo*, X*, Sun, L*, Wang, Q*, Han, F. Wang, H, Wray, GA, **Davidson, PL**, Wang, Q, Hu, Z, Zhou, C, Yu, Z, Yang, M, Feng, J, Shi, P, Zhou, Y, Zhang, L, Zhang, T. Hard clam genome reveals massive expansion and diversification of inhibitors of apoptosis underlying stress adaptation. *In review*.

1) Byrne, M, Koop, D, Strbenac, D, Cisternas, P, Yang, JWH, **Davidson, PL**, Wray, GA. Transcriptomic analysis of Nodal - and BMP-associated genes during development to the juvenile sea star in *Parvulastra exigua* (Asterinidae). *In review*

Conference Presentations

Developmental Biology of the Sea Urchin XXVI (Woods Hole, MA). 2021-*rescheduled*
Pan-American Society for Evolutionary Developmental Biology (Coral Gables, FL). Poster 2019
Developmental Biology of the Sea Urchin XXV (Woods Hole, MA). 2018
Undergraduate Research, Creativity, and Innovation Forum (Coral Gables, FL). Poster 2016

Invited Talks

University of North Carolina Developmental and Stem Cell Biology Club. Chapel Hill, NC. 2018

Teaching

Instructor
Marine Research in the Gulf of Mexico, Duke Talent Identification Program, Sarasota, FL. 2019

Teaching Assistant
Molecular Biology Lab, Duke University, NC. (3 sections) 2020
Genetics and Evolution Lab, Duke University, NC. (2 sections) 2019
Introduction to Marine Biology, University of Miami, FL. (1 section) 2015

Fellowship and Grants

Graduate School Conference Travel Award ($525.00) 2019
Developmental Biology of the Sea Urchin XXV Travel Award ($500.00) 2019
Department of Biology Grant-in-Aid Award. Duke University, NC ($1,000.00) 2018
Center for Computational Science Fellowship. University of Miami, FL ($500.00) 2015
Beyond the Book Summer Research Scholarship. University of Miami, FL ($4,000.00) 2015

Outreach and Leadership

Biology Graduate Student Steering Committee Co-Chair, Duke University, NC. 2017-2018
Undergraduate Research Mentor, UConnect, University of Miami, FL. 2015

Educational Support

NIH Training Program in Developmental and Stem Cell Biology, Duke University, NC. 2016-2018
Gables Scholarship, University of Miami, FL. 2013-2016
President's Scholarship, University of Miami, FL. 2013-2016

Honors

Cum laude, University of Miami, FL.	2016
Provost's Honor Roll, University of Miami, FL.	2013-2016
Dean's List, University of Miami, FL.	2013-2016
Foote Fellows Honors Program, University of Miami, FL	2013-2016
President's Honor Roll, University of Miami, FL.	2014