Phillip Luke Davidson
Curriculum Vitae

Postdoctoral Fellow
Indiana University
Bloomington, Indiana, USA

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EDUCATON

Ph.D. **Department of Biology, Duke University, Durham, NC** 2016-2021
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: Marine Science, Mathematics
Departmental Honors, Cum Laude

POSITIONS

Postdoctoral Fellow 2021-present
Department of Biology, Indiana University, Bloomington, IN
Advisor: Armin Moczek, Ph.D.

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

Research Assistant 2013-2016
University of Miami, FL
Advisor: William Browne, Ph.D.

PUBLICATIONS

Primary Research Interest

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. doi.org/10.1093/gbe/evaa101

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. doi.org/10.1111/mec.15664

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. doi.org/10.1111/ede.12289

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. doi.org/10.1002/mrd.22926 (Cover feature)

Other Works

Byrne, M, Koop, D, Strbenac, D, Cisternas, P, Yang, JWH, **Davidson, PL**, Wray, GA. (2021) Transcriptomic analysis of Nodal - and BMP-associated genes during development to the juvenile sea star in *Parvulastra exigua* (Asterinidae). **Marine Genomics**. 59:100857. doi.org/10.1016/j.margen.2021.100857

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. (2021) Hard clam genome reveals massive expansion and diversification of inhibitors of apoptosis underlying stress adaptation. **BMC Biology**. 19, 15. doi.org/10.1186/s12915-020-00943-9

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. doi.org/10.1093/dnares/dsaa007

In Review or Preparation

Davidson, PL, Guo, H, Swart, JS, Massri, AJ, Edgar, A, Wang, L, Berrio, A, Devens, HR, Zhang, H, Chang, Y, Byrne, M, Fan, G, Wray, GA. Recent reconfiguration of an ancient developmental gene regulatory network in *Heliocidaris* sea urchins. *In review.*

Davidson, PL, Byrne, M, Wray, GA. Distinct evolutionary modifications to cis-regulatory mechanisms underlie developmental life history evolution of sea urchins. *In prep.*

**equal contribution*

CONFERENCE PRESENTATIONS AND INVITED TALKS

Speaker: Developmental Biology of the Sea Urchin XXVI (Woods Hole, MA) 2021-*rescheduled*
Poster: Pan-American Society for Evolutionary Developmental Biology (Coral Gables, FL) 2019
Plenary Speaker: Developmental Biology of the Sea Urchin XXV (Woods Hole, MA) 2018
Invited Speaker: University of North Carolina Developmental and Stem Cell Biology Seminar Series (Chapel Hill, NC) 2018
Poster: Undergraduate Research, Creativity, and Innovation Forum (Coral Gables, FL) 2016

TEACHING

Instructor

Duke Talent Identification Program, New College of Florida
"Marine Research in the Gulf of Mexico" 2019
Sarasota, FL

Teaching Assistant

Duke University, Department of Biology
"Molecular Biology" (3 lab sections) 2020
"Genetics and Evolution" (2 lab sections) 2019

Durham, NC
University of Miami, Rosenstiel School of Marine and Atmospheric Science
"Introduction to Marine Biology" (1 lecture and lab section) 2015
Coral Gables, FL

OUTEREACH AND SERVICE

Education: Moczek Lab Outreach Initiative 2021-present

- Currently teaching and developing science education modules on "Genomes and DNA Sequencing" for local middle and high schools.
  Indiana University, Bloomington, IN

Volunteer: Science Fest 2021

- Local outreach event for science education for Bloomington-area residents. Assisted with "Mammal Skull Evolution" stand.
  Indiana University, Bloomington, IN

Co-Chair: Biology Graduate Student Steering Committee 2017-2018

- Organized formation of graduate student committees and other departmental needs of students.
  Duke University, Durham, NC

Undergraduate Research Mentor: UConnect 2015

- Peer-mentor in program designed to increase accessibility and awareness of research opportunities to undergraduates.
  University of Miami, Coral Gables, FL

FELLOWSHIPS 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

EDUCATIONAL SUPPORT

NIH 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