Phillip Luke Davidson
Curriculum Vitae

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

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Education

2016-present Ph.D. candidate, Department of Biology, Duke University
Certificate in Developmental and Stem Cell Biology
Thesis: "Cis-regulatory evolution during a developmental life history switch in sea urchins"
Advisor: Gregory Wray, Ph.D.

2013-2016 B.S. Biology with Honors, University of Miami, FL.
Minors: Mathematics, Marine Science
Thesis: "Comparative RNA-seq analysis of two developmental stages during embryogenesis in the ctenophore *Mnemiopsis leidyi"*
Advisor: William Browne, Ph.D.

Other Research Positions

2017-Present **Visiting researcher - University of Sydney, NSW, AU.**
Advisor: Maria Byrne, Ph.D.
- Cis-regulatory evolution during life history evolution in sea urchins
- Impact of ocean acidification on developmental gene regulation
- Developmental transcriptome of the direct developing sea star *Parvulastra exigua*

2016-2017 **Ph.D. rotations - Duke University, NC**
- Evolution and function of a hybrid animal-fungal cell cycle network in the chytrid *Spizellomyces punctatus*. Advisor: Nicolas Buchler, Ph.D.
- Natural variation in anchor root development across *Arabidopsis thaliana* ecotypes. Advisor: Philip Benfey, Ph.D.
- Lipidomic and proteomic mass spectrometry analysis of lecithotrophic and planktotrophic sea urchin development. Advisor: Gregory Wray, Ph.D.

2013-2016 **Undergraduate Research Assistant - University of Miami, FL**
Advisor: William Browne, Ph.D.
- Evolution and development of Ctenophora: gene networking and differential expression during embryogenesis in *Mnemiopsis leidyi*.

Publications

3) Devens, HR*, **Davidson, PL***, Deaker, DJ, Smith, KE, Wray, GA, Byrne, M. Impact of ocean acidification on gene expression varies across development in the sea urchin *Heliocidaris erythrogramma*. Submitted, in review. *Contributed equally

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*

Conference Presentations

Oral

2018 **Davidson, PL**, Byrne, M, Wray, GA. Embryonic cis-regulatory modifications during a life history switch in sea urchins. Developmental Biology of the Sea Urchin XXV, Woods Hole, MA, USA.

Poster

2019 **Davidson, PL**, Byrne, M, Wray, GA. Embryonic cis-regulatory modifications during a life history switch in sea urchins. 3rd Biennial Meeting of the Pan-American Society for Evolutionary Developmental Biology, Coral Gables, FL, USA.

2015 **Davidson, PL**, Browne, WE. Development of rapid gene expression profiling during embryogenesis in the ctenophore *Mnemiopsis leidyi*. Undergraduate Research, Creativity, and Innovation Forum. University of Miami, FL.

Invited Talks

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

Teaching

2019 **Instructor, Course Developer**: Marine Research in the Gulf of Mexico, Duke Talent Identification Program, Sarasota, FL

2019 **Teaching Assistant**: BIO202L- Genetics and Evolution Lab, Duke University, NC

2015 **Teaching Assistant**: MSC230- Introduction to Marine Biology, University of Miami, FL

Awards

2019 Graduate School Conference Travel Award: $525.00

2019 Developmental Biology of the Sea Urchin XXV Travel Award. $500.00

2018 Department of Biology Grant-in-Aid Award. Duke University, NC. $1,000.00

2015 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

Outreach and Leadership Experience

2017-2018 **Co-Chair**: Biology Graduate Student Steering Committee, Duke University, NC.

2015-2016 **Officer**: SCUBA Club, University of Miami, FL.

2015 **Mentor**: Undergraduate Research Mentor, UConnect, University of Miami, FL.

Educational Support

2016-2018 NIH Training Program in Developmental and Stem Cell Biology, Duke University, NC.

2013-2016 Gables Scholarship, University of Miami, FL.

2013-2016 President's Scholarship, University of Miami, FL.

Honors

2013-2016 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.

2014 President's Honor Roll, University of Miami, FL.

Professional Development

2017 Strategies for Metabolomics Data Collection, Analysis & Interpretation, Duke University, Durham, NC.
2017 Experimental Design: Get the most out of your proteome, Duke University, Durham, NC.
2016 Gene Expression Analysis in Python, Duke University, Durham, NC.
2016 Genomics in R, Data Carpentry Workshop, Miami, FL.