

# Matthew A. Birk, Ph.D.

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Assistant Professor of Biology  
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## Education

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| 2018 | <b>Ph.D. Marine Science.</b> <i>University of South Florida.</i> College of Marine Science.  |
| 2013 | <b>B.Sc. Marine Biology (with University Honors).</b> summa cum laude. <i>University of North Carolina Wilmington.</i> Department of Biology and Marine Biology. |

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## Professional Experience

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| 2021-Present | <b>Assistant Professor of Biology.</b> <i>Saint Francis University.</i> Department of Biology.  |
| 2019-2021    | <b>NSF Postdoctoral Research Fellow.</b> <i>Marine Biological Laboratory.</i> Eugene Bell Center for Regenerative Biology and Tissue Engineering. Advised by Joshua J.C. Rosenthal. |
| 2018-2019    | <b>Postdoctoral Scientist.</b> <i>Marine Biological Laboratory.</i> Eugene Bell Center for Regenerative Biology and Tissue Engineering. Advised by Joshua J.C. Rosenthal.           |
| 2016-2018    | <b>NSF Graduate Research Fellow.</b> <i>University of South Florida.</i> College of Marine Science. Advised by Brad A. Seibel.  |
| 2015-2016    | <b>NSF Graduate Research Fellow.</b> <i>University of Rhode Island.</i> Department of Biological Sciences. Advised by Brad A. Seibel.   |
| 2013-2015    | <b>Graduate Research Assistant.</b> <i>University of Rhode Island.</i> Department of Biological Sciences. Advised by Brad A. Seibel.  |
| 2011-2013    | <b>Undergraduate Research Assistant.</b> <i>University of North Carolina Wilmington.</i> Department of Biology and Marine Biology. Advised by J. Wilson White.                      |
| 2012         | <b>NOAA Hollings Scholar.</b> <i>NOAA Southwest Fisheries Science Center.</i> Fisheries Ecology Division. Advised by John C. Field.   |
| 2011         | <b>NSF REU Student.</b> <i>Marine Biological Laboratory.</i> NSF Research Experience for Undergraduates Program. Advised by Roger T. Hanlon.  |
| 2010-2011    | <b>Undergraduate Research Assistant.</b> <i>University of North Carolina Wilmington.</i> Department of Biology and Marine Biology. Advised by Sean C. Lema.                         |

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## Funding

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**Funding to date: \$508,628.**

### External funding

2023-2027	<b>Kavli Exploration Award in Neurobiology and Changing Ecosystems.</b> <i>The Kavli Foundation.</i> Effects of temperature and hypoxia on RNA editing in squid. \$1.7M total budget. \$133,320 SFU subaward budget.
2019-2022	<b>Postdoctoral Research Fellowship in Biology.</b> <i>National Science Foundation.</i> \$207,000.
2015-2018	<b>Graduate Research Fellowship.</b> <i>National Science Foundation.</i> \$138,000.
2017	<b>Travel Grant.</b> <i>Society for Experimental Biology.</i> \$185.
2014	<b>Grant-in-Aid of Research.</b> <i>Sigma Xi.</i> \$700.
2011-2013	<b>Ernest F. Hollings Undergraduate Scholarship.</b> <i>National Oceanic and Atmospheric Administration.</i> \$22,500

### Institutional funding

2022	<b>Faculty Grant.</b> <i>SFU School of STEAM.</i> \$900.
2015	<b>Enhancement of Graduate Research Award.</b> <i>URI Graduate School.</i> \$1000.
2015	<b>Student Travel Fund.</b> <i>URI College of the Environment and Life Sciences.</i> \$150.
2015	<b>Student Travel Fund.</b> <i>URI Department of Biological Sciences.</i> \$150.
2014	<b>Student Travel Fund.</b> <i>URI College of the Environment and Life Sciences.</i> \$200.
2014	<b>Student Travel Fund.</b> <i>URI Department of Biological Sciences.</i> \$200.
2013	<b>Enhancement of Graduate Research Award.</b> <i>URI Graduate School.</i> \$1000.
2013	<b>Undergraduate Travel Award.</b> <i>UNCW Center for the Support of Undergraduate Research and Fellowships.</i> \$1000.
2011	<b>Undergraduate Travel Award.</b> <i>UNCW Center for the Support of Undergraduate Research and Fellowships.</i> \$1000.
2011	<b>Research Supplies Grant.</b> <i>UNCW Center for the Support of Undergraduate Research and Fellowships.</i> \$323.
2010	<b>Undergraduate Travel Award.</b> <i>UNCW Center for the Support of Undergraduate Research and Fellowships.</i> \$1000.

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## Publications

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12. Artigas P., Meyer D.J., Young V.C., Spontarelli K., Eastman J., Strandquist E., Rui H., Roux B., Birk M.A., Nakanishi H., Abe K., Gatto C. (2023). *A Na pump with reduced stoichiometry is up-regulated by brine shrimp in extreme salinities*. **Proceedings of the National Academy of Sciences**, 120(52): e2313999120.
11. Birk M.A., Liscovitch-Brauer N., Dominguez M.J., McNeme S., Yue Y., Hoff J.D., Twersky I., Verhey K.J., Sutton R.B., Eisenberg E., Rosenthal J.J.C. (2023). *Temperature-dependent RNA editing in octopus extensively recodes the neural proteome*. **Cell**, 186(12): 2544-2555.
10. Seibel B.A., Birk M.A. (2022). *Unique thermal sensitivity imposes a cold-water energetic barrier for vertical migrators*. **Nature Climate Change**, 12: 1052-1058.
9. Seibel B.A., Andres A., Birk M.A., Burns A.L., Shaw C.T., Timpe A.W., Welsh C.J. (2021). *Oxygen supply capacity breathes new life into critical oxygen partial pressure ( $P_{crit}$ )*. **Journal of Experimental Biology**, 224(8): jeb242210.
8. Geffeney S.L., Williams B.L., Rosenthal J.J.C., Birk M.A., Felkins J., Wisell C.M., Curry E.R., Hanifin C.T. (2019). *Convergent evolution in a voltage-gated sodium channel underlies TTX-resistance in the greater blue-ringed octopus: *Hapalochlaena lunulata**. **Toxicon**, 170: 77-84.
7. Birk M.A., Mislan K.A.S., Wishner K.F., Seibel B.A. (2019). *Metabolic adaptations of the pelagic octopod, *Japetella diaphana*, to oxygen minimum zones*. **Deep-Sea Research Part I: Oceanographic Research Papers**, 148: 123-131.
6. Wishner K.F., Seibel B.A., Roman C., Deutsch C., Outram D., Shaw C.T., Birk M.A., Mislan K.A.S., Adams T.J., Moore D., Riley S. (2018). *Ocean deoxygenation and zooplankton: Very small oxygen differences matter*. **Science Advances**, 4: eaau5180.
5. Birk M.A., McLean E.L., Seibel B.A. (2018). *Ocean acidification does not limit squid metabolism via blood oxygen supply*. **Journal of Experimental Biology**, 221(19): jeb187443.
4. Birk M.A., Dymowska A.K., Seibel B.A. (2018). *Do squid breathe through their skin?* **Journal of Experimental Biology**, 221(19): jeb185553.
3. Chubb C., Chiao C.-C., Ulmer K., Buresch K., Birk M.A., Hanlon R.T. (2018). *Dark scene elements strongly influence cuttlefish camouflage responses in visually cluttered environments*. **Vision Research**, 149: 86-101.
2. Birk M.A., Paight C., Seibel B.A. (2017). *Observations of multiple pelagic egg masses from small-sized jumbo squid (*Dosidicus gigas*) in the Gulf of California*. **Journal of Natural History**, 51(43-44): 2569-2584.
1. Birk M.A., White J.W. (2014). *Experimental determination of a prey patch from the predator's perspective*. **Oecologia**, 174(3): 723-729.

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## Presentations

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### Invited presentations

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| 2025 | <b>University of Colorado Anschutz Medical Campus.</b> <i>Molecular Biology Program Symposium.</i>     |
| 2018 | <b>University of Rhode Island.</b> <i>Graduate School of Oceanography. Bio at Noon Seminar Series.</i> |

## Oral presentations

13. Birk M.A., Liscovitch-Brauer N., Eisenberg E., Sutton R.B., Yue Y., Verhey K.J., Rosenthal J.J.C. (2022). **Temperature-sensitive RNA editing causes extensive protein recoding to compensate protein function.** *Cephalopod International Advisory Council Conference*. Sesimbra, Portugal.
12. Birk M.A., Liscovitch-Brauer N., Eisenberg E., Rosenthal J.J.C. (2020). **Temperature-sensitive RNA editing causes extensive protein recoding to compensate protein function.** *Molluscan Forum*.
11. Birk M.A., Dymowska A.K., Seibel B.A. (2018). **Do squids breathe through their skin?** *Cephalopod International Advisory Council Conference*. Saint Petersburg, Florida, USA.
10. Birk M.A. (2018). **Ecophysiology of Oxygen Supply in Cephalopods.** *Dissertation Defense*. University of South Florida.
9. Birk M.A., McLean E.L., Seibel B.A. (2018). **Oxygen supply unaffected by ocean acidification in active squids (and probably most other marine animals too).** *Society for Integrative and Comparative Biology Annual Meeting*. San Francisco, California, USA.
8. Birk M.A., Seibel B.A. (2018). **Squids do not breathe through their skin.** *Society for Integrative and Comparative Biology Annual Meeting*. San Francisco, California, USA.
7. Birk M.A., Seibel B.A. (2015). **Observations of multiple pelagic egg masses from small-sized jumbo squid (*Dosidicus gigas*) in the Gulf of California.** *Cephalopod International Advisory Council Conference*. Hakodate, Japan.
6. Birk M.A. (2013). **How to choose your next meal: experimentally defining the spatial scale of a prey patch from the predator's perspective.** *Undergraduate Honors Thesis Defense*. University of North Carolina Wilmington.
5. Birk M.A., White J.W. (2013). **How to choose your next meal: determining the spatial scale of predatory foraging behavior in fishes.** *Colonial Academic Alliance Undergraduate Research Conference*. University of Delaware.
4. Birk M.A., Field J.C. (2012). **Population dynamics of the market squid, *Doryteuthis opalescens*, in the California Current System.** *State of North Carolina Undergraduate Research and Creativity Symposium*. Duke University.
3. Birk M.A., Field J.C. (2012). **Population dynamics of the market squid, *Doryteuthis opalescens*, in the California Current System.** *Science and Education Symposium*. NOAA Office of Education.
2. Birk M.A., Ulmer K.M., Chiao C.C., Chubb C., Siemann L., Hanlon R.T. (2011). **Cuttlefish camouflage: using visual psychophysics approach with grayscale disk patterns to examine disruptive body patterning.** *State of North Carolina Undergraduate Research and Creativity Symposium*. East Carolina University.
1. Birk M.A., Ulmer K.M., Chiao C.C., Chubb C., Siemann L., Hanlon R.T. (2011). **Changeable camouflage: How cuttlefish choose the right pattern.** *Undergraduate Research Symposium*. Marine Biological Laboratory.

## Poster presentations

14. Voss J., Martin N.J., Birk M.A., Eidelman M., Dick B.\*, Singer R., Hammarlund E.U., Eisenberg E., Rosenthal J.J.C. (2025). **RNA editing and environmental acclimation in the cephalopod nervous system.** *Neurobiology in Changing Environments Symposium*. Seattle, Washington, USA.
13. McNeme S., Bui A.A., Harsini F.M., Birk M.A., Rosenthal J.J.C., Sutton R.B. (2019). **ADAR-mediated mRNA recoding in C2 domains of synaptotagmin 1 in *O. bimaculoides*.** *Texas Protein Folders & Function Meeting*. Cleveland, Texas, USA.

12. Birk M.A., Mislan K.A.S., Wishner K.F., Seibel B.A. (2018). **How do mesopelagic octopods breathe in the OMZ?** *Cephalopod International Advisory Council Conference*. Saint Petersburg, Florida, USA.
11. Birk M.A., McLean E.L., Seibel B.A. (2018). **Squid oxygen supply is resilient to ocean acidification.** *Cephalopod International Advisory Council Conference*. Saint Petersburg, Florida, USA.
10. Birk M.A., Mislan K.A.S., Seibel B.A. (2018). **How do mesopelagic octopods breathe in the OMZ?** *Ocean Sciences Meeting*. Portland, Oregon, USA.
9. Birk M.A., McLean E.L., Seibel B.A. (2017). **Combined effects of CO<sub>2</sub>, temperature, and O<sub>2</sub> on squid metabolism.** *Society for Experimental Biology Annual Meeting*. Gothenburg, Sweden.
8. Birk M.A., McLean E.L., Seibel B.A. (2015). **Effects of increased CO<sub>2</sub> on squid metabolism and hypoxia tolerance.** *Cephalopod International Advisory Council Symposium*. Hakodate, Japan.
7. Birk M.A., White J.W. (2013). **How to choose your next meal: determining the spatial scale of predatory foraging behavior in fishes.** *Undergraduate Research and Creativity Showcase*. University of North Carolina Wilmington.
6. Birk M.A., White J.W. (2013). **How to choose your next meal: determining the spatial scale of predatory foraging behavior in fishes.** *Benthic Ecology Meeting*. Savannah, Georgia, USA.
5. Birk M.A., Ulmer K.M., Chiao C.C., Chubb C., Siemann L., Hanlon R.T. (2012). **Cuttlefish camouflage: using a psychophysics experiment with visual patterns to examine disruptive body patterning.** *Undergraduate Research and Creativity Showcase*. University of North Carolina Wilmington.
4. Birk M.A., Ulmer K.M., Chiao C.C., Chubb C., Siemann L., Hanlon R.T. (2012). **Cuttlefish camouflage: using a psychophysics experiment with visual patterns to examine disruptive body patterning.** *Colonial Academic Alliance Undergraduate Research Conference*. Old Dominion University.
3. Birk M.A., Ulmer K.M., Chiao C.C., Chubb C., Siemann L., Hanlon R.T. (2012). **Cuttlefish camouflage: using visual psychophysics approach with grayscale disk patterns to examine disruptive body patterning.** *Society for Integrative and Comparative Biology Annual Meeting*. Charleston, South Carolina, USA.
2. Birk M.A., Ulmer K.M., Chiao C.C., Chubb C., Siemann L., Hanlon R.T. (2011). **Effect on camouflage behavior of grayscale disk patterns in the visual environment of cuttlefish.** *Undergraduate Research Symposium*. Marine Biological Laboratory.
1. Hardy K.M., Follett C.R., Birk M.A., Burnett L.E., Lema S.C. (2011). **HIF-1 $\alpha$  and HIF-1 $\beta$  gene transcription exhibits tissue-dependent responses to hypoxia and hypercapnic hypoxia in the Atlantic blue crab, *Callinectes sapidus*.** *Society for Integrative and Comparative Biology Annual Meeting*. Salt Lake City, Utah, USA.

\* Undergraduate Student

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## Teaching

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- **Environmental Animal Physiology (BIOL 345).** *Instructor of Record*. Saint Francis University. 1 semester. Spring 2024.
- **Marine Biology (BIOL 218).** *Instructor of Record*. Saint Francis University. 4 semesters. Fall 2021-2024.

- **Oceanography (MS 223).** *Instructor of Record.* Saint Francis University. 2 semesters. Spring 2022-2025.
- **Research Diver Methods (MS 471).** *Instructor of Record.* Saint Francis University. 2 semesters. Spring 2022-2024.
- **Vertebrate Physiology Lab (BIOL 406L).** *Instructor of Record.* Saint Francis University. 1 semester. Spring 2025.
- **Introduction to Biology: Molecules, Cells, and Animal Physiology Lab (BIOL 111L).** *Instructor of Record.* Saint Francis University. 8 semesters. Fall 2021 - Spring 2025.
- **First-year Seminar (CORE 113).** *Guest Lecturer.* Saint Francis University. Fall 2021.
- **Marine Aquaculture (OCE 4930).** *Teaching Assistant.* University of South Florida. 3 semesters. Spring 2017 - Spring 2018.
- **General Animal Physiology Lab (BIO 201).** *Teaching Assistant.* University of Rhode Island. 2 semesters. Fall 2013-2014.
- **General Animal Physiology Lab (BIO 201).** *Lab Coordinator.* University of Rhode Island. Fall 2014.
- **Introduction to Marine Pollution (OCG 480).** *Guest Lecturer.* University of Rhode Island. Spring 2016.
- **Marine Environmental Physiology (BIO 345).** *Guest Lecturer.* University of Rhode Island. Spring 2014.
- **General Animal Physiology (BIO 201).** *Guest Lecturer.* University of Rhode Island. Fall 2013.

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## Mentoring

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- **Brandon Dick.** 2023-Present.
- **Taylor Harris.** 2024-Present.
- **Mary Bukowski.** 2025-Present.
- **Holly Jones.** 2023-2024. Current position: Masters of Science in Genome Bioinformatics program, University of Pittsburgh, USA.
- **Bailey McDougall.** *Jellyfish bell shape influence on movement efficiency.* 2022. Current position: Masters of Science in Marine Biology program, James Cook University, Australia.

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## Honors & Awards

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2025	<b>Swatsworth Award Finalist.</b> <i>SFU Faculty Senate.</i> (for excellence in teaching, research, and service).
2022	<b>Francis the Builder Award.</b> <i>SFU Dean's Council.</i> (for contributions to the Scuba Diving Program).
2020	<b>Sackett Prize for Innovative Research.</b> <i>USF College of Marine Science.</i>

2019	<b>"Paper of the Year" Award.</b> <i>Deep-Sea Biology Society.</i>
2018	<b>Runner-up Best Student Oral Presentation.</b> <i>SICB Division of Invertebrate Zoology.</i>
2015	<b>Runner-up Best Student Talk.</b> <i>Cephalopod International Advisory Council 2015 Symposium.</i>
2013	<b>Marine Biology Achievement Award.</b> <i>UNCW Department of Biology and Marine Biology.</i> (graduating Marine Biology student with best overall academic record).
2013	<b>Honors Project Research Poster Competition Award.</b> <i>UNCW Department of Biology and Marine Biology.</i>
2012	<b>Distinguished Undergraduate Research Scholar.</b> <i>University of North Carolina Wilmington.</i>
2012	<b>Leadership Excellence Award.</b> <i>University of North Carolina Wilmington.</i>
2010	<b>Herbert and Shirley Mintzes Memorial Award.</b> <i>UNCW Department of Biology and Marine Biology.</i> (highest standing in departmental freshman course requirements).

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## Media Coverage

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2023	<i>Octopuses tweak the RNA in their brains to adjust to warmer and cooler waters.</i> <b>National Public Radio (NPR)</b> 's "All Things Considered". <a href="https://www.npr.org/2023/06/08/1181009210/octopuses-tweak-the-rna-in-their-brains-to-adjust-to-warmer-and-cooler-waters">https://www.npr.org/2023/06/08/1181009210/octopuses-tweak-the-rna-in-their-brains-to-adjust-to-warmer-and-cooler-waters</a>
2023	<i>Octopuses edit their genetic code on the fly to adapt to changing temperatures</i> <b>Canadian Broadcasting Corporation (CBC)</b> 's "Quirks and Quarks". <a href="https://www.cbc.ca/radio/quirks/quirks-quarks-jun-10-2023-1.6870231">https://www.cbc.ca/radio/quirks/quirks-quarks-jun-10-2023-1.6870231</a>
2022	<i>Warming oceans likely to shrink the viable habitat of many marine animals – but not all.</i> <b>ScienceDaily.</b> <a href="https://www.sciencedaily.com/releases/2022/10/221018220428.htm">https://www.sciencedaily.com/releases/2022/10/221018220428.htm</a>
2021	<i>Seeking an Octopus in the Wild.</i> <b>Alert Diver Magazine</b> (Q3/Q4 2021). <a href="https://dan.org/alert-diver/article/seeking-an-octopus-in-the-wild">https://dan.org/alert-diver/article/seeking-an-octopus-in-the-wild</a>

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## Research Cruises

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2017	<b>Eastern Tropical North Pacific.</b> <i>R/V Sikuliaq.</i> 28 days at sea.
2015	<b>Gulf of California.</b> <i>R/V Oceanus.</i> 32 days at sea.
2014	<b>Northwest Atlantic.</b> <i>R/V Endeavor.</i> 6 days at sea.
2012	<b>California Current System.</b> <i>R/V Bell M. Shimada.</i> 36 days at sea.

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## Software

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### R Packages

- **measurements.** *Tools for Units of Measurement.* <http://cran.r-project.org/package=measurements>. 91st percentile on CRAN. 2,589 downloads/month. 269,519 downloads to date.

- **birk.** *MA Birk's Functions*. <http://cran.r-project.org/package=birk>. 85th percentile on CRAN. 1,109 downloads/month. 78,342 downloads to date.
- **respirometry.** *Tools for Conducting and Analyzing Respirometry Experiments*. <http://cran.r-project.org/package=respirometry>. 76th percentile on CRAN. 422 downloads/month. 47,600 downloads to date.

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## Service

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### Professional

- 2016-Present    **Journal Reviewer.** *Aquaculture, Deep-Sea Research Part II, Frontiers in Physiology, Invertebrate Biology, Marine Biology, Marine Biology Research, Marine Ecology Progress Series, Physiological and Biochemical Zoology, PLOS ONE, Proceedings of the Royal Society B, The R Journal.*
- 2022            **Student Presentation Judge.** *CIAC 2022 Conference.*
- 2019            **Student Abstract Reviewer.** *SACNAS 2019 Annual Meeting.*
- 2016            **Judge.** *CIAC 2015 Best Paper Award.*
- 2016            **Instructor.** *RhodyRStats ggplot2 Workshop.*

### Department, College, & Institution

- 2022-Present    **Member, At-large.** *SFU Committee on Faculty Development.*
- 2022-Present    **Director.** *SFU Academic Diving Program.*
- 2021-Present    **Marine Biology Program Coordinator.** *SFU Biology.*
- 2021-Present    **Faculty Advisor.** *SFU Scuba Club.*
- 2023            **Member.** *Search Committee for Exercise Physiology Faculty Hire.*
- 2020-2021       **Co-founder.** *MBL Postdoctoral Association.*
- 2018-2021       **Postdoc Representative.** *MBL Diversity Advisory Committee.*
- 2018-2019       **Tutor.** *MBL English as a Second Language Conversational Tutoring Program.*
- 2016            **Panelist.** *URI Graduate Professionalization Committee.* Panel discussing how to apply for interdisciplinary graduate grants.
- 2015            **Panelist.** *MBL Research Experience for Undergraduates Seminar.* Panel discussing how to maximize summer research experience.
- 2014            **Panelist.** *URI College of the Environment and Life Sciences.* Panel discussing how to apply to graduate school.
- 2009-2012       **Volunteer.** *UNCW Marine Mammal Stranding Program.*
- 2012            **Panelist.** *UNCW Honors College.* Panel discussing NOAA Hollings Scholarship Program.
- 2011            **Invited Speaker.** *UNCW Board of Trustees.* Invited to speak about undergraduate research at UNCW.
- 2011            **Honors College Representative.** *UNCW Visitation Day.*



## Community & Outreach

2017-Present	<b>Scientist.</b> <i>Skype a Scientist.</i> 15 classroom meetings to date.
2022	<b>Expert Panelist.</b> <i>Science Friday's Cephalopod Movie Night - Pittsburgh.</i>
2022	<b>Panelist.</b> <i>Virtual Natural Science Panel - University of Pittsburgh at Greensburg.</i>
2021	<b>Science Judge.</b> <i>Mashpee Middle-High School Science Fair.</i>
2017	<b>Science Mentor.</b> <i>USF Oceanography Camp for Girls.</i>
2015-2016	<b>Graduate Science Communications Intern.</b> <i>Metcalf Institute for Marine and Environmental Reporting.</i>
2014-2016	<b>Outreach Scientist.</b> <i>Narragansett Bay Classroom.</i>
2014	<b>Invited Speaker.</b> <i>The Goddard School.</i>
2014	<b>Science Judge.</b> <i>National Ocean Sciences Bowl.</i>
2013	<b>Dive Programs Instructor.</b> <i>UNCW MarineQuest.</i>
2013	<b>Invited Speaker.</b> <i>Myrtle Grove Christian School.</i>

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## Certifications

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- AAUS Scientific Diver (100 foot depth certification).
- NAUI Intro to Technical Diving (Instructors: Dave Caldwell & Heather Knowles).
- PADI Open Water Scuba Instructor.
- Relevant specialty scuba certifications:
  - PADI Search and recovery instructor.
  - PADI Deep instructor.
  - PADI Enriched air nitrox instructor (Max 40% O<sub>2</sub>).
  - PADI Drysuit diver.
- DAN Instructor for:
  - Basic Life Support: CPR and First Aid (BLS).
  - Emergency Oxygen for Scuba Diving Injuries (EO<sub>2</sub>).
  - Diving First Aid for Professional Divers (DFA Pro).
- PSI-PCI Visual Cylinder Inspector.

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## Professional Society Memberships

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- Cephalopod International Advisory Council (CIAC).
- Society for Experimental Biology (SEB).
- Society for Integrative and Comparative Biology (SICB).
- The Oceanography Society (TOS).
- Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS).

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## References

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- **Postdoctoral Advisor and Collaborator.** *Dr. Joshua J. C. Rosenthal.* Senior Scientist, Eugene Bell Center, Marine Biological Laboratory. [jrosenthal@mbi.edu](mailto:jrosenthal@mbi.edu).
- **Ph.D. Advisor and Collaborator.** *Dr. Brad A. Seibel.* Professor, College of Marine Science, University of South Florida. [seibel@usf.edu](mailto:seibel@usf.edu).