

Monica D. Schul

Ph.D. Marine Ecologist

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Professional Overview

Ph.D. marine ecologist with demonstrated success in guiding product development projects, delivering technical reports, and building cross-functional collaborations that inform conservation and restoration initiatives at national and international levels. Extensive experience in molecular and microbial biology of marine invertebrates, leading laboratory and field research, engaging cross-sector stakeholders, and securing funding through grants, investor pitching, and product development contracts.

Research Experience

Jan 2023- Current

Co-founder and Chief Science Officer

Cordelia Biosciences, Alachua, FL

- Established and scaled the R&D department from the ground up, including SOP development, team recruitment, laboratory equipment and supply procurement, and vendor relationship management for scientific supplies.
- Performed microbial isolation, genome sequencing, secondary metabolite extraction, and qualitative and quantitative chemical analyses using standard ASTM and ISO methods for two Florida Sea Grant product development projects targeting marine bacteria-derived antimicrobial and antioxidant metabolites.
- Secured and managed over \$200K (non-dilutive funding and in-kind services) and oversaw budgets and deliverables.
- Established and maintained cross-sector partnerships with industry, investors, NGOs, and government professionals to advance the Blue Economy and enhance sustainability by driving investment in ocean-tech startup companies.

Aug 2021- Jul 2025

Graduate Research Assistant

University of Florida, Gainesville, FL

- Performed various molecular techniques, including DNA extraction, PCR, and NGS library preparation of diverse marine biological sample types, to investigate marine invertebrate microbiome assembly and transmission dynamics.
- Created bioinformatic workflows using the command line and R to perform multivariate statistical modeling and identify taxonomic, functional, and environmental drivers of marine invertebrate associated microbiomes.
- Isolated and grew marine microorganisms to develop and validated novel methods for microbiome manipulation and probiotic delivery to marine invertebrates.
- Led and participated in extended field expeditions in Panama, the Cayman Islands, and Florida for the collection of mucus or tissues from corals and other marine invertebrates.
- Logged over 100 AAUS dives in the support of underwater surveys or *in situ* experimentation in coral reefs and seagrass habitats.

Aug 2020 – Jul 2021

Biological Scientist I

University of Florida, Gainesville, FL

- Assessed the effectiveness of field applied experimental probiotic treatments for diseased corals by quantifying probiotic strain colonization using droplet digital PCR (ddPCR) and 16S rRNA amplicon sequencing.
- Developed and optimized bioinformatic workflows in R to evaluate probiotic disease treatment success in stony corals using metagenomic and coral physiology data. Utilized data to generate insights for coral disease mitigation strategies at state and international levels.
- Prepared technical figures, interpreted microbial datasets, and contributed to DEP scientific reports to support the development of coral conservation strategies at the state level.

Internships

Sep 2024 – Dec 2024

Chemist

HOPO Therapeutics, Berkeley, CA

- Assisted in the design and optimization of experiments to contaminate macroalgae and investigate its potential to uptake and act as reservoir for rare earth elements.
- Prepared analytical standards and samples for liquid chromatography, mass spectrometry, and inductively coupled plasma optical spectroscopy (ICP-OES) analysis.
- Analyzed LCMS and ICP-OES data with Benchling insights and R statistical software.
- Assisted in writing ARPA-E quarterly reports.

Jan 2020 – Jul 2020

Coral Disease Chemical Ecologist Intern

Smithsonian Marine Station, Fort Pierce, FL

- Extracted secondary metabolites from healthy and diseased coral tissues using rotary evaporation and column chromatography to support efforts in identifying coral-derived chemical compounds and their role in coral disease resistance or disease lesion progression.
- Processed coral mucus and tissues for 16S rRNA amplicon microbiome analyses to identify microbial shifts linked to SCTLD progression and resistance.

Skills

Software and Programs:

- R
- MS Office
- Procreate
- Canva
- Adobe Lightroom
- Benchling
- Geneious Prime
- JGI IMG/M
- CoralNet

Laboratory and Analytical Techniques:

- Sample collection and preservation
- Dissection of marine invertebrates
- Microbial isolation
- DNA/RNA extraction
- PCR and ddPCR
- Gel Electrophoresis
- 16S rRNA amplicon analysis
- NGS library preparation
- Sanger Sequencing prep and analysis
- JGI IMG/M data visualization and analysis for metagenomes
- sterile technique
- LCMS sample preparation and sample analysis
- ICP-OES sample preparation and sample analysis
- Rotary evaporation for chemical separation

- Water quality testing and chemical analysis
- Aquarium building and maintenance for reef aquariums and experimentation

Field Techniques

- Small boat operation
- AAUS Scientific diving 130ft
- Scuba Diver (800+ total dives)
- Gill net deployment
- Water quality sampling and measurement
- Shark tagging
- Live animal collection
- Underwater PAM fluorometry
- Dive propulsion vehicle certified
- Underwater photography
- NAUI Cave II Diver

Select Grants, Awards and Fellowships

2024 University of Florida Big Idea Competition

2023 Ocean Exchange Collegiate Award

2022 National Science Foundation Graduate Research Fellowship Program

2021 UF Herbert Wertheim College of Engineering Dean's Research Award

Education

2021-2025 PhD Soil, Water and Ecosystem Sciences, *University of Florida*, Gainesville, FL

2015-2019 BS Marine Science, *University of Florida*, Gainesville, FL

2015-2019 BS Biotechnology, *University of Florida*, Gainesville, FL