

## MS Opportunities in Biology or Marine Biology at the University of New England (UNE)

# Role of microplastics in microbial colonization of oysters

### Faculty supervisors:

Dr. Carrie J. Byron (School of Marine Programs; [cbyron@une.edu](mailto:cbyron@une.edu))

Dr. Kristin M. Burkholder (School of Biological Sciences; [kburkholder@une.edu](mailto:kburkholder@une.edu))



### Why do the science?

Microplastics are ocean pollutants that reach high concentrations in bivalves such as oysters. Pathogens attach to buoyant microplastics, and these microplastics may aid microbial entry into marine foods. We aim to hire two M.S. students to explore this topic through two distinct projects:

**M.S. Project 1** will compare microplastic load in oysters reared in traditional plastic netting versus plastic-free gear. The M.S. student engaged in this project will work with a partner oyster farmer. Oysters will be reared and collected on-farm, then brought to the laboratory to extract and quantify microplastics from oyster tissues.

**M.S. Project 2** will examine microplastic effect on pathogen entry into oysters. The M.S. student engaged in this project will cultivate oysters in the laboratory and perform microplastic-bacteria exposure experiments to examine the role of microplastics on microbial entry, colonization, and tissue dissemination within the oysters.

Findings from both projects will help to inform best practices in bivalve cultivation and will aid in future strategies aimed at protecting microbiological safety of marine foods.

### What's in it for you?

The students will gain **microbiology laboratory experience** in:

- Histology and microscopy (microscopic imaging to assess microplastic/bacteria tissue dissemination) – Projects 1 & 2

- Aseptic technique and biosafety procedures for handling bacterial pathogens – Project 2
- Classical microbiological techniques (bacterial cultivation and enumeration by plating) – Project 2

The student will have **opportunities in marine science**, including:

- Harvesting oysters from ocean farm sites – Project 1
- Interacting with aquaculture industry partners and building professional network – Projects 1 & 2

## Who should apply?

We are seeking applications from recent BS graduates who have research experience and interest in biological science, microbiology, marine science, food safety, microplastics, or ocean food systems. Applicants with strong writing and computation skills are strongly encouraged to apply. Students must be self-motivated, detail-oriented, and be able to effectively communicate and work with aquaculture industry partners.

**Start date:** June 01, 2024 or September 01, 2024

For further information or informal discussion about the position, please email your CV and a brief statement of interest to Dr. Carrie Byron ([cbyron@une.edu](mailto:cbyron@une.edu)) and Dr. Kristin Burkholder ([kburkholder@une.edu](mailto:kburkholder@une.edu)). Sending a demonstration of your scientific writing is also appreciated.

## Funding support

Support for these projects will be provided through a Maine Sea Grant award to Drs. Byron & Burkholder and with additional support from UNE College of Arts and Sciences (CAS).

Project 1 – The successful applicant will be funded through a Teaching Assistantship at the rate of approximately \$13,000 per year for two years with health benefits. Tuition is covered.

Project 2 - The successful applicant will be funded for two academic years and two summers through a Research Assistantship. The Assistantship stipend is approximately \$20,000 per year for two years and includes health benefits. Tuition is covered.

## Application process

Please complete the attached Byron & Burkholder lab application form in addition to UNE's formal application. The Byron & Burkholder lab application must be submitted as a single PDF document (application form first, then CV) using the following naming scheme, "*Last\_name\_FirstName\_GradApplication*" and emailed to Dr. Carrie Byron ([cbyron@une.edu](mailto:cbyron@une.edu)) and Dr. Kristin Burkholder ([kburkholder@une.edu](mailto:kburkholder@une.edu)) by February 01, 2024. Information on the University application process and applicant requirements can be found at:

- <https://www.une.edu/cas/marine/graduate/admissions> (MS in Marine Biology)
- <https://www.une.edu/cas/biology/graduate/admissions> (MS in Biological Sciences)