

Graduate student positions available in environmental microbiology and biogeochemistry

Applications are invited for two fully funded positions at Carleton University to investigate microbial and geochemical controls on biodegradation of microplastics in wetlands.

Microplastics persist in aquatic and terrestrial ecosystems, posing risks to sensitive ecosystems such as wetlands. Although laboratory studies have identified microorganisms capable of degrading plastics such as polyethylene terephthalate (PET), very little is known about whether these processes occur naturally in complex environmental settings. Geochemical characterization of water and sediments, phospholipid fatty acid biomarker analysis, metagenomics, and cultivation studies will be used to advance knowledge of the fate of microplastics within wetlands and the potential for biodegradation and putative mechanistic pathways. Two positions are available:

1. Ph.D. Biology – working with Dr. Allyson Brady this student will determine whether naturally occurring microbial communities degrade persistent microplastics in wetland sediments using lipid biomarker and natural-abundance radiocarbon isotope techniques. Interested students will ideally have a relevant degree and experience in biogeochemistry, organic geochemistry, geomicrobiology, microbial ecology, and/or microbiology. Prior experience with mass spectrometry would be considered a strong asset. This position is open to Canadian domestic students. If interested, please contact AllysonBrady@cunet.carleton.ca and refer to this ad.

2. M.Sc. or Ph.D. Chemistry – working with Dr. Daniel Grégoire this student will investigate how environmental conditions such as redox state, nutrient availability, mineralogy, and geochemistry influence microbial plastic degradation through controlled laboratory enrichment experiments. There is room to expand this into a Ph.D. that leverages mass spectrometry to characterize pharmaceutical transformed by microbes associated with plastic. If interested, please contact DanielGregoire@cunet.carleton.ca and refer to this ad.

Students will be part of an interdisciplinary and collaborative team. Our research group is committed to maintaining a welcoming, respectful, and collaborative environment where all members can succeed. We encourage applications from individuals of diverse backgrounds and are dedicated to fostering equity, inclusion, and equal opportunity for everyone. *Students from historically underrepresented groups are strongly encouraged to apply.*

As part of your application, please include:

- 1) A description of how this project builds on your previous experience and fits within your own education or career goals
- 2) A short academic CV
- 3) Transcripts (unofficial are fine)