

On the hunt for oil-eating fungi #WhatLearningLooksLike

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Our oceans are full of interesting organisms, including many species of fungi. No, they don't look like the mushrooms you'd find on a forest hike but they are just as interesting. And, although you need a microscope to see them suspended in sea water, they have the potential to perform environmentally significant work. Some can even "eat" oil.

"Through research and some unfortunate recent environmental emergencies, we already know that fungi found in the Gulf of Mexico and in the Mediterranean Sea consume oil," says Brandon Landry, fourth-year biology student and Arthur Irving Scholar in Environmental Science. "What we don't know is whether or not these fungi thrive in the waters off the coast of Nova Scotia because no one has looked in waters this far north or that are this cold. We've already found 150 potential species of fungi, the most common of which have been Zygomycota, so what we next need to find out is if they can live on oil."

Testing theory

Brandon's lab in the Acadia biology building contains petri dishes that are quietly and quite successfully growing cultures that look like what you'd find on a loaf of bread that has been left on a kitchen counter for far too long. "So, now that we can grow these fungi large enough to be able to see them with the naked eye, our next step is to replace the medium, or food source, with oil to see if they will grow in the same way. If so, then these fungi are likely able to break down oil and use it as an energy source," explains Brandon. "We will then move the research into the phytotrons in the K.C. Irving Environmental Science Centre so we can perform our experiments on a larger scale and in an environment where we can more easily replicate natural conditions."

Brandon, who grew up in the community of Amirault's Hill in Yarmouth County, Nova Scotia says he is an outdoor enthusiast, interested in any activity from hiking to fishing to kayaking. The field research work he's doing – collecting sea water samples up and down the south coast of the Bay of Fundy -- suits his outdoor personality perfectly. Academically, Brandon says he has always been interested in the environmental science side of biology and even in high school knew he wanted to pursue research. After coming to Acadia, he saw research as a real possibility and plans to continue with his studies at the post-graduate level. An opportunity to work with mycologist Dr. Allison Walker on a funded research project where he is also co-supervised by Dr. Don Stewart, fit perfectly with Brandon's career objectives.

Finding the right experience

"When I decided to come to Acadia, I called up the head of the biology department to ask if I could come see what kind of work was going on," says Brandon. "It was very cool to be shown around the building by Dr. Brian Wilson and look in on the labs and classes. I saw other students doing the things I wanted to be doing and that experience left a lasting impression. I tell other students to do the same thing. Come and see for yourself the labs in which first year students are working alongside senior students. Here, regardless of what you are interested in, there is likely someone who is working on it or will support you in your own research."

"A naturally curious and enthusiastic student like Brandon is a great fit for this project, because Brandon always gives 110% in pursuit of his academic and research goals," says Dr. Walker. "I'm very interested in the natural resiliency of marine and estuarine ecosystems like those found in the Bay of Fundy, in terms of how they would recover from events like marine oil spills, and the understudied roles that microbes such as fungi play in these processes. Brandon is a skilled communicator and his enthusiasm for his project and fungal research helps motivate the entire lab. Brandon is very tenacious and quickly assimilates new knowledge and techniques, which are vital skills for research."

Financial support makes a difference

Brandon says that the financial support he has received means he can devote his full attention to his research. His research is partially funded by Canada's Natural Sciences Engineering and Research Council (NSERC) but his Arthur Irving Academy Scholarship in Environmental Science means he doesn't have to be concerned about finding additional work on top of his already busy schedule.

"The Arthur Irving Academy Scholarships are intended to encourage students to start looking for research opportunities earlier in their academic career than might otherwise be the case," says Dr. Dave Kristie, Director of Research at the K.C. Irving Environmental Science Centre and Harriet Irving Botanical Gardens. "With a scholarship in place, a student can afford to pursue full-time studies and their research interests without having to rely on a mundane summer job to fund their education. For students and faculty, it's a winning combination."

“The support Brandon receives as an Arthur Irving Scholar provides vital and generous financial support which allows top students like him to focus on their academic and research goals while pursuing their undergraduate degrees,” says Dr. Walker. “I am extremely grateful for the support my students have received from these scholarships, because it allows them the freedom to really delve into and create innovative research as part of my research team.”

Dr. Kristie also says that the third-year Arthur Irving Scholars play an important role in their labs by acting as mentors to their first-year colleagues and this is definitely the case for Brandon. “I think my favourite thing to do at Acadia is to be a teaching assistant,” he says. “I really enjoy working in the lab with all of my colleagues and encouraging others to pursue their passion.”

For more information about Brandon’s fungal research follow this [link](#) and for more information on the Arthur Irving Scholarships in Environmental Science, click [here](#).

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