PDF Position - Polar microbiome research of unique cryoenvironments in the Canadian high Arctic – Biosignature detection and planetary protection assessments

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Prof. Whyte's Polar Microbiology Research Group at McGill University currently has PDF position (2-3 years) to study the microbial ecology of unique cryo-ecosystems in the Canadian high arctic which are considered significant astrobiology analogues.

We are looking for a Postdoctoral Fellow that is strongly motivated by the intersection between extremophile microbiology and astrobiology / planetary science. The PDF would have a leadership role in conducting science investigations and managing 2 Canadian Space Agency (CSA) FAST-funded projects. These projects include:

i. performing metagenomics and phenotypic (mouse models; human cell lines) analyses of high-fidelity Mars and Icy Moon analogue samples from our cryoenvironment sites to determine pathogenicity risk assessments for Mars Sample Return (MSR) ie backward contamination from Mars;
ii. developing and optimizing Nanopore sequencing for biosignature detection and planetary protection applications for future planetary science missions;
iii. helping to develop and field test a prototype melt probe to access and sample the shallow subsurface ice on the icy moons and for analyses analyzed by 3 prototype biosignature detection instruments (Nanopore sequencing, uMAMA, LIBS).

The projects will combine aspects of microbial ecology, genomics (metagenomics, genome binning, metatranscriptomics), bioinformatics approaches (programming languages) assess pathogenicity risk. The PDF will play a leading role in helping to supervise 2 graduate students and 1 undergraduate summer student for polar microbiome analyses of the polar samples in both laboratory and field investigations. The PDF will also work with an engineering graduate student to develop the melt probe and to integrate and test the 3 biosignature instruments into the prototype melt probe. This project is funded by the CSA FAST Grant Program (2024-2027) with collaborations with Honey Robotics (USA), and several McGill University labs with pathogenicity expertise, and the University of Winnipeg.

The anticipated start date of the position is as soon as possible. The successful candidate will be supervised by Prof. Lyle Whyte in the Department of Natural Resource Sciences of McGill University, at the beautiful MacDonald Campus located in Saint Anne-de-Bellevue, Quebec which is very close to Montreal.

Required qualifications

Our ideal candidate:

- Recently obtained a PhD within the last 2-3 years.
- Should have a strong background in microbiology and molecular biology, "-omics" / bioinformatics, and a strong interest in polar microbiology;
- Is equally comfortable working as a member of a team as well as working independently;
- Highly motivated to perform field research activities in the Canadian arctic and working with local communities;
- Interested in obtaining project management and supervision skills.

Proficiency in spoken and written English is mandatory.

Please send a detailed CV and contact information for three references by email to:

Lyle.Whyte@mcgill.ca

Lyle Whyte

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Start date: as soon as possible.
Length: 2-3 years
Salary: competitive with a strong McGill PDF Benefits package (medical and dental) included.
Application deadline: Open until filled