

ENVIRONMENT SECTOR

Biotechnology Research Institute

INFORMATION

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"Our team has developed unique molecular tools. They allow us to quickly identify target genes in microbial communities in natural or polluted sites. Applications include bioremediation of contaminated soils, analysis of elemental cycles in natural ecosystems and efforts to address climate change."

Environmental Microbiology
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ENVIRONMENTAL MICROBIOLOGY

Characterizing microbial populations found in soils and groundwater is of critical importance in determining whether the bacterial flora has the potential to remediate a contaminated site. This characterization is also essential in tracking the biodiversity of an ecosystem and in better understanding the cycle of its natural elements. The ecological impact of pollutants as well as the effect of remediation of a contaminated site can be assessed. The BRI's **Environmental Microbiology Group** works at each of these levels.

Our Research Activities

- ▶ Developing molecular-based techniques to isolate, monitor and quantify microorganisms in soil and groundwater.
- ▶ Using DNA microarrays to rapidly verify if microbial communities possess the genes that encode certain specific enzymes.
- ▶ Developing protocols to evaluate and monitor ecosystem biodiversity.
- ▶ Contributing to the analysis of the natural cycle of carbon, sulphur, nitrogen or other nutrients as part of studies related to climate change.
- ▶ Enhancing phytoremediation processes.

Our Services

- ▶ Analysis and characterization of microbial populations in soils and water.
- ▶ DNA extraction and nucleic acid amplification techniques to test for specific catabolic genes.
- ▶ Assessment of methods to enhance site bioremediation.

- ▶ Estimation of microbial activity to determine whether biodegradation is possible in soil or water.

Research Examples

- ▶ Demonstration and enhancement of the effectiveness of a phytoremediation process. The project examined the remediation of soils contaminated with heavy metals and polycyclic aromatic hydrocarbons. Performed in collaboration with the Montréal Centre of Excellence in Brownfields Rehabilitation (MCEBR), Institut de recherche en biologie végétale (IRBV), Consortium de recherche minérale (COREM) and Inspec-Sol inc.
- ▶ Characterization of microbial communities at a high Arctic site and development of a treatment process to accelerate hydrocarbon biodegradation. Performed on Ellesmere Island (Nunavut), the project was supported by Public Works and Government Services Canada and Environment Canada.
- ▶ Assessment of greenhouse gas emissions from the surface of hydroelectric reservoirs. Performed in collaboration with the University of Victoria in British Columbia and Université du Québec à Montréal.

Our Business Approach

Our team is flexible and tailors its collaborations to meet the needs of its partners. We engage in service contracts and license out our technologies. With BRI, you have access to advanced technologies and a broad diversity of experts who publish in leading scientific journals.

Contact us for more details.



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