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Applied Metagenomics of the Watershed Microbiome

Status	Approved
Competition	2010 Large-Scale Applied Research Project Competition
Sector	Environment
Genome Centre	Genome British Columbia
Project Leaders	Patrick Tang and Judith Isaac-Renton, University of British Columbia

Project Description

Maintenance of Canada's precious fresh water supplies. Canada's watersheds are among our most important natural resources, providing water for drinking, agriculture, industry and recreation. Currently, the health of our water systems is monitored at the tap, well downstream from the potential sources of pollution. Genome Canada is funding research that will allow scientists to detect changes in the watershed much sooner, saving millions of dollars in downstream drinking water treatment and monitoring as well as ensuring the long-term sustainability of our watersheds and surrounding ecosystems.

Scientists will use the new field of metagenomics (the study of microbial communities) to compare microbes of healthy watersheds with those that have been affected by pressures from industry, population growth, environmental degradation or changing land uses. Changes in the microbial population will help to serve as an early warning of problems in a watershed. They will also develop tools to match the microbial fingerprint of contaminated watersheds to the specific source of pollution. An ongoing GE3LS-based consultation will be undertaken with stakeholders to facilitate wider adoption of this new approach to monitoring the health of watersheds, engaging with the potential polluters in a proactive manner to avert polluting events.