



# ALBERTA INNOVATES

## Research and Innovation Project – Knowledge Transfer Summary

<b>Project Title:</b>	<b>Rapid Multi-Parameter Assessment Of Natural Recreational Waters In Alberta</b>
<b>Project No:</b>	<b>2332</b>
<b>Project Lead:</b>	<b>Patrick Hanington, University of Alberta</b>
<b>Partners:</b>	<b>Alberta Innovates, University of Alberta, Freshwater Solutions LLC</b>
<b>Status:</b>	<b>Ongoing</b>

### Project Summary:

Innovative approaches to monitoring recreational water are required to advance the ability to protect both the natural water ecosystems of Alberta as well as recreational water users. The project team has designed molecular tests that are able to amplify specific DNA or RNA targets from biological recreational water hazards that are relevant to Alberta. These targets include, swimmer's itch-causing parasites, toxin-producing cyanobacteria, the parasites that cause whirling disease and two species of invasive mussel. These are organisms that are considered either health or environmental risks in Alberta, as well as in Canada, and their presence is commonly associated with the closure of lake beaches to recreational use, and/or significant economic impacts to local or provincial economies.

Accompanying the development and validation of the above tests is the transition of each test from reliance on core laboratory facilities towards implementation at the site of sample collection. Working to accomplish this objective, the project team has engaged with Government, industrial and public stakeholders to begin assessing the challenges and advantages of near-real time DNA-based hazard monitoring using 'citizen scientists' and portable molecular detection tools.

In accomplishing the project objectives, the project team will develop, validate and thereby provide, viable and appealing replacements for many recreational water monitoring tests, while also collecting important environmental, ecological and biological data related to the indicated organisms. The data collected here will provide the foundation for adoption of improved water monitoring techniques, and thus, will improve our capacity to protect the health of recreational water users.

### Outcomes:

- DNA-based tests for all target organisms have been developed
- Four portable testing units were used for field validation of testing for toxin-producing cyanobacteria and swimmer's itch causing parasites
- Sampling methods have been developed to facilitate field collection and analysis for each hazard
- Preliminary comparison of citizen scientist and core lab results indicate a strong correlation between results obtained.
- Training and public engagement videos have been developed to facilitate training of citizen scientists

### Links:

<http://swimmersitch.ca/>

### Alberta Innovates Contact:

Vicki Lightbown

[vicki.lightbown@albertainnovates.ca](mailto:vicki.lightbown@albertainnovates.ca)