

# CLEAN RESOURCES

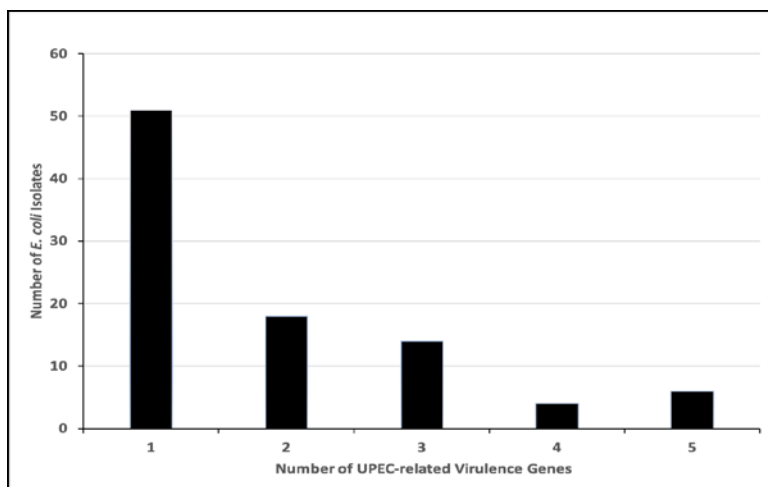
## ENVIRONMENTAL INNOVATION

### WATER INNOVATION PROGRAM

## FUNDING DETAILS

## Evidence for the Evolution of Water Treatment Resistant Pathogenic *E. coli* - are we on cusp of a public health crisis?

Drinking water treatment and waste sanitation are the most important strategies for disease control in society. *What would happen if pathogenic microbes became resistant to water treatment?* The project team has recently demonstrated that certain strains of pathogenic *E. coli* appear to be developing resistance to water treatment, and many of these strains are also antibiotic-resistant. The potential for microbes to evolve resistance to water treatment and antibiotics is a significant public health concern. *This project aims to address whether microbial pathogens have evolved resistance against our most fundamental disease prevention barrier in modern society – drinking water treatment and sanitation.*



**RECIPIENT:**  
University of  
Alberta



**TOTAL BUDGET:**  
\$784,600



**PROJECT DATES:**  
APRIL 2019 –  
AUGUST 2022



**PARTNERS:**  
City of Calgary,  
University of Calgary



**AI FUNDING:**  
\$375,000

## APPLICATION

End users of the information generated from this project include:

- water/wastewater utilities
- municipal treatment plant operators
- government policy regulators, including health and environment agencies responsible for water and wastewater treatment.



# ALBERTA INNOVATES CLEAN RESOURCES

## ENVIRONMENTAL INNOVATION

### WATER INNOVATION PROGRAM

## PROJECT GOALS

The key goals of the project include the following:

- Develop a detailed understanding of how effective the current water treatment strategies are for inactivating water-treatment resistant pathogenic E. coli.
- Understand the genetic and cellular mechanisms that allow bacteria to resist water treatment technologies, including chlorine, ozone and UV.
- Identify and characterize pathogenic E. coli surviving water treatment (full scale and artificial treatment in the lab) and discharged into receiving waters in Alberta (as well as nationally and internationally).
- Develop a treatment strategy for inactivating water-treatment resistance pathogenic E. coli in both water and wastewater.

## BENEFITS TO ALBERTA

- Safe secure drinking water.
- Improving water quality in Alberta and decreasing public health risks associated with waterborne disease.
- Safe, secure, and efficient recycling of water in society.
- Policies and strategies to protect the health of Albertans from waterborne disease.



6 Publications



3 Students Trained

## CURRENT STATUS

**APRIL 2020**

This project is in progress. Sample collection from wastewater treatment plants in Alberta is underway.