

MICROBIAL SOURCE TRACKING

RECREATIONAL WATER MONITORING FOR MICROBIAL POINT SOURCE CONTAMINANTS IN MUSKEGON, MICHIGAN



Microbial Source Tracking (MST) can be used to determine the source of *E. coli* contamination.

The Michigan Network for Environmental Health and Technology (MiNET) collaborates with the State of Michigan to assess recreational waters for *E. coli*, while developing technology to improve public and environmental health efforts, this includes MST for identification of contaminant sources.

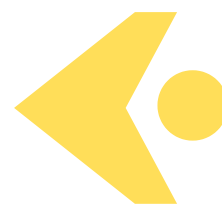
HOW THE MAGIC HAPPENS



COLLECT WATER SAMPLES
Beach water samples are collected per EPA guidance for sample collection from lakes, streams, and rivers.

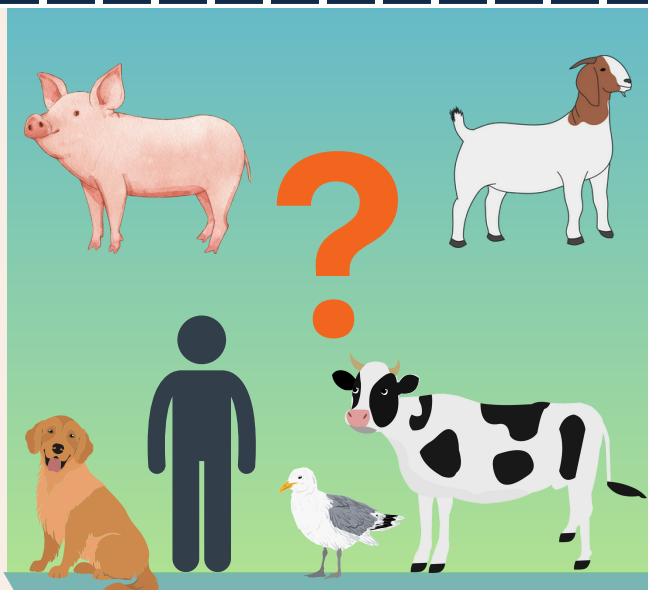
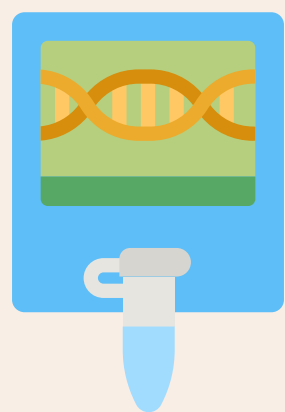
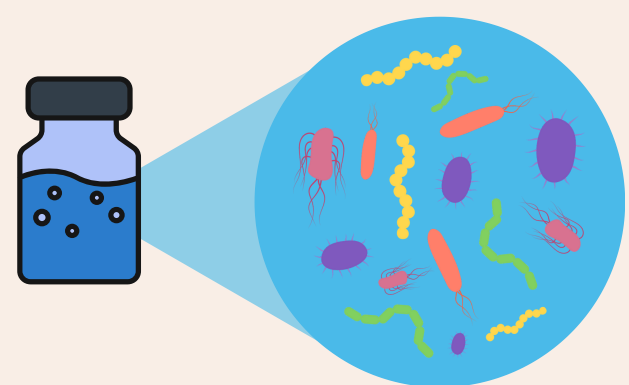


ANALYZE FOR E. COLI
E. coli is analyzed with Colilert-18, a culture-based media, and left to grow for 18 hours. Where *E. coli* results are > 300 *E. coli* per 100 mL, MST is conducted.



IDENTIFY SOURCE
MST is done by filtering DNA from water sample and using state guided molecular methods for identification of target. The DNA is linked to a specific source.

How to be a DNA Detective



Analyze water sample for presence of *E. coli* contamination

Evaluate what DNA is found in the water sample

Link DNA to identified source of contamination

Goals of MST

- Monitor beaches, streams, and rivers for public safety
- Where *E. coli* levels are persistent or high, conduct MST
- Identify pollutant sources and work to remediate effects
- Public communication and knowledge

Here's the Plan

MST works to identify locations and sources of fecal contamination that negatively impact waterways feeding locations the public uses for recreational purposes. Once sources are located and identified, the information will be given to necessary agencies so that appropriate remedial measures can be taken to eliminate those sources, restore the beneficial use, and keep the beaches safe and open.

Curious what it takes to be a waterway DNA detective? Scan here.



Interested in learning more about MST in your local waterways?

www.gvsu.edu/wri/otter/