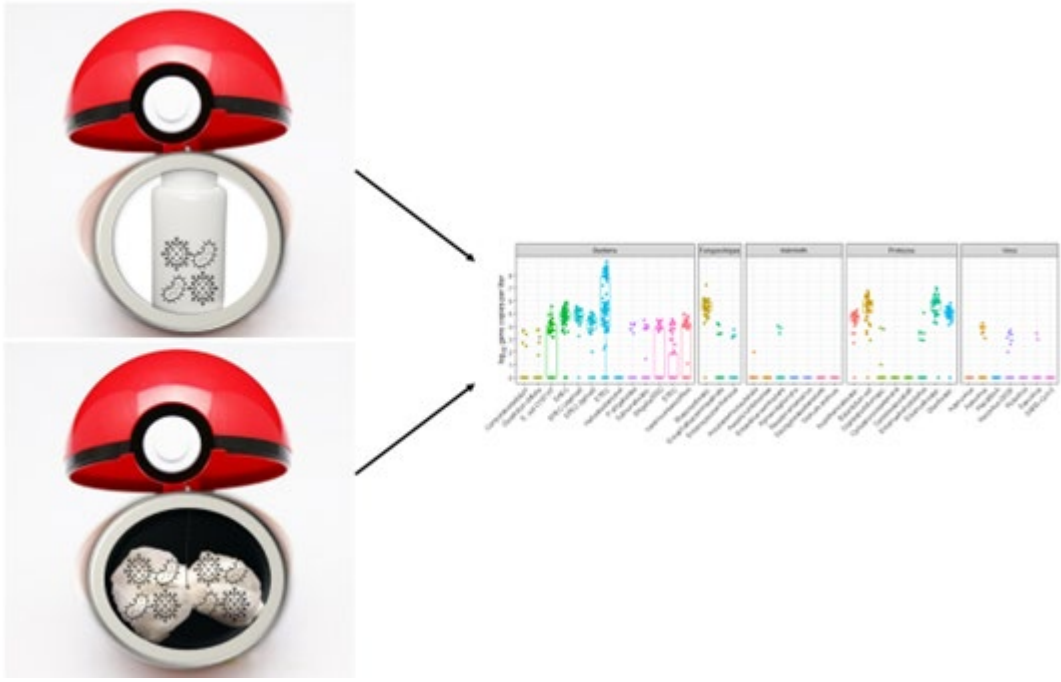

Wastewater surveillance: gotta catch ‘em (microbes) all!

Gouthami Rao

Ph.D. Student

Environmental Sciences and Engineering

Wednesday, September21, 2022

12:20 - 1:10 P.M.

https://unc.zoom.us/s/7046117908

Wastewater surveillance, also known as wastewater-based epidemiology (WBE), is a growing tool to assist in understanding population trends associated with pathogens in wastewater and complement current infectious disease surveillance systems. Historically, environmental surveillance of wastewater was for the detection of poliovirus or Salmonella typhi (cause of Typhoid fever), but the COVID-19 pandemic sparked new interest in sampling methods, processing, and need for multiple pathogen detection markers. Broadly, the application of wastewater for current and future surveillance efforts requires adaptable tools and appropriate methods to perform at-scale. They also must be adapted to non-wastewater fecal waste flows: over half the world’s population is not served by conventional wastewater systems.

This seminar will discuss concentrated wastewater samples collected from four wastewater treatment plants in Atlanta, GA from February to October 2020 for the simultaneous detection of 36 pathogen targets using Taqman Array Cards (RT-qPCR). Additional experimental data on passive sampling with Moore swabs was collected to further characterize the sensitivity of different sampling mechanisms and efficiencies. While standardized methods continue to develop, the scalability of passive samplers may be a more feasible option for low-resource settings, which remains to be investigated for non-traditional wastewater collection sites.

Learning objectives are to:

1. Recognize the value of using multiple pathogen detections targets in wastewater.
2. Identify different wastewater matrices and sampling techniques.
3. Understand challenges of wastewater surveillance in low-resource settings.