Immediate Release

Researchers tracking COVID-19 in wastewater to join forces

on framework for translating data into a public health response

With funding from the Alfred P. Sloan Foundation, the work builds a communications strategy that other areas can replicate

MILWAUKEE, Wisconsin and BROOKLYN, New York, Wednesday, July 1, 2020 – The virus that causes COVID-19 – SARS-CoV-2 – passes through the body and ends up in sewage. Therefore, cities across the nation already have facilities that could help officials track the spread of the disease locally: sewage treatment plants. Monitoring the concentration of the virus in wastewater has the potential to be more comprehensive than individual testing, and can signal when a hotspot is developing.

However, deploying sewage surveillance programs for SARS-CoV-2 is complex in practice, requiring not only wastewater sampling and analysis, but also data interpretation and communication of results to public health officials who can act on it.

Researchers at the New York University Tandon School of Engineering, the University of Wisconsin-Milwaukee, Stanford University and the University of Notre Dame are collaborating to create a "startup blueprint" for municipalities that plan to implement SARS-CoV-2 sewage surveillance. It would address dual challenges: implementation of best practices for sample collection, analysis, and interpretation, and speedy and appropriate translation and communication of results to public health decision makers.

The goal of the project, which is supported by a $250,000 grant from the Alfred P. Sloan Foundation, is to transfer lessons learned to other cities and regions to aid in the deployment of impactful

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wastewater surveillance programs for COVID-19 and other pathogens that arise as future health threats.

The project extends translational work being conducted in partnership with the [Wisconsin State Lab of Hygiene](#) and the [New York City Department of Environmental Protection](#) (NYC DEP) by, respectively, Sandra McLellan, professor in the School of Freshwater Sciences at the University of Wisconsin, and [Andrea Silverman](#), assistant professor of civil and urban engineering at NYU Tandon. A central goal of the collaboration is making data from their research usable to health authorities and policymakers.

McLellan's work involves implementing a surveillance program that generates SARS-CoV-2 data for the state of Wisconsin, including weekly data at 42 wastewater treatment plants in the most populated counties. Silverman is working with the NYC DEP to implement a wastewater monitoring program in NYC that can quantify genetic markers for SARS-CoV-2 and potentially other human pathogens. The program will standardize methods and develop quality controls at the NYC DEP's laboratory at the Newtown Creek Wastewater Resource Recovery Facility in Brooklyn, to routinely evaluate samples from NYC's 14 wastewater treatment plants.

"The pandemic response is constantly evolving, and data and knowledge for decision-making is lacking," said McLellan, the lead investigator on the grant. "This project will bridge the gap between rapidly evolving research in wastewater surveillance and the public health entities that can use this information to better respond to this threat."

The proposal will focus on two key objectives:

- To support the ongoing initiative led by Silverman in partnership with the NYC DEP, to develop and implement NYC's SARS-CoV-2 wastewater monitoring program.
- To convene a national panel of experts from academia, wastewater utilities, and health departments who would devise a process for translating the data for public health use and develop communication networks needed to convey the data between city and state agencies.

"These methods may make it possible to proactively scan for the presence of SARS-CoV-2 and other pathogens, even before cases appear," said Silverman. "By implementing these monitoring techniques, the NYC DEP and other wastewater utilities can complement other forms of testing traditionally used for disease surveillance–not just for the ongoing COVID-19 pandemic."

Besides McLellan and Silverman's efforts, other co-investigators on the grant bring experience from wastewater surveillance projects around the country.

- Kyle Bibby, an associate professor in Notre Dame's College of Engineering, is currently working on SARS-CoV-2 wastewater monitoring methods with support from the National Science Foundation's RAPID Response grant.
- Alexandria Boehm, a Stanford professor of civil and environmental engineering, is leading a large donor-funded project to test 50 wastewater treatment plants around the United States and develop a model that incorporates health and epidemiology data.

McLellan said using data from Wisconsin, New York and other projects across the nation would make it possible to develop a national monitoring network, and that the findings from the expert panel and surveillance methods development will also be offered as open source to public health officials and practitioners.

About the New York University Tandon School of Engineering
The NYU Tandon School of Engineering dates to 1854, the founding date for both the New York University School of Civil Engineering and Architecture and the Brooklyn Collegiate and Polytechnic Institute (widely known as Brooklyn Poly). A January 2014 merger created a comprehensive school of education and research in engineering and applied sciences, rooted in a tradition of invention and entrepreneurship and dedicated to furthering technology in service to society. In addition to its main location in Brooklyn, NYU Tandon collaborates with other schools within NYU, one of the country's foremost private research universities, and is closely connected to engineering programs at NYU Abu Dhabi and NYU Shanghai. It operates Future Labs focused on start-up businesses in downtown Manhattan and Brooklyn and an award-winning online graduate program. For more information, visit engineering.nyu.edu.

About the University of Wisconsin-Milwaukee
Recognized as one of the nation's 131 top research universities, UW-Milwaukee provides a world-class education to 26,000 students from 91 countries on a budget of $689 million. Its 15 schools and colleges include Wisconsin's only schools of architecture, freshwater sciences and public health, and it is a leading educator of nurses and teachers. UW-Milwaukee partners with leading companies to conduct joint research, offer student internships and serve as an economic engine for southeastern Wisconsin. The Princeton Review named UW-Milwaukee a 2020 "Best Midwestern" university based on overall academic excellence and student reviews.

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