



Dutch Israeli Mini-Symposium on Rapid and Accurate Viral Detection and Monitoring in Wastewater

7 December 2021 16:00-18:00 IL time 15:00-17:00 NL time / Webinar through Zoom

Registration through Eventbrite: <https://www.eventbrite.com/e/dutch-israeli-mini-symposium-on-rapid-and-accurate-viral-detection-and-moni-tickets-154413610265>

Objective: exchange experiences on technologies to detect virus substances in wastewater as a diagnostic tool to monitor pandemics.

Background

Any epidemiological indicator has biases and limitations. Diagnostic testing capacity may be insufficient; hospitalizations lag infections by weeks and do not report on people with mild or asymptomatic disease. Experience with other viral diseases has shown that monitoring sewage for traces of a pathogen enables effective surveillance of entire communities, providing a sensitive signal of whether the pathogen is present in the population and whether transmission is increasing or declining. Researchers around the world are now pursuing the same approach for COVID-19 with the belief that wastewater data can supplement current measures of its prevalence. The coronavirus, SARS-CoV-2 and its variants, has been widely detected in wastewater in the Netherlands¹. Scientific results of experiments carried out in the Netherlands, in the USA and in Israel (among other countries) strengthen the evidence that wastewater monitoring could be a powerful tool in tracking the spread of COVID-19 and other viruses. What challenges have been identified and how can we overcome them from a perspective of innovative technology and policy?

Program

- 16:00-16:03 **Welcome note**
[Hans Docter](#), Ambassador of the Kingdom of the Netherlands in Israel
- 16:03-16:05 **Welcome note**
[Jasper van Mastrigt](#), First Secretary Water & Climate, Netherlands Embassy in Israel
- 16:05-16:20 **Applied wastewater surveillance for SARS CoV2 in Israel**
Dr. [Itay Bar Or](#), National Center for Environmental Virology - Head Laboratory of Environmental Virology, Public Health Services, Israel Ministry of Health, Israel

¹ To determine if SARS-CoV-2 RNA was present in sewage during the emergence of COVID-19 in The Netherlands, sewage samples of six cities and the airport were tested using four qRT-PCR assays, three targeting the nucleocapsid gene (N1-N3) and one the envelope gene (E). <https://pubs.acs.org/doi/abs/10.1021/acs.estlett.0c00357>



- 16:20-16:35 **Setting up a national sewage surveillance for COVID-19 and beyond**
 Dr. [Ana Maria de Roda Husman](#), Head of the environmental department, RIVM Laboratories, Bilthoven, The Netherlands²
- 16:40-16:55 **Protecting public health using wastewater derived data**
[Ido Blank](#), VP Business Development, KANDO Environment Services, Israel
- 16:55-17:10 **High-resolution monitoring of SARS-CoV-2 circulation through sewage surveillance**
[Frederic Been](#), Wastewater-Based Epidemiology (WBE), KWR Water Research Institute (KWR), The Netherlands
- 17:15-17:30 **Wastewater Based Epidemiology: SARS-CoV-2 variants of concern detection and quantification in wastewater**
 Prof. [Ariel Kushmaro](#), Head of Environmental Biotechnology Lab, Avram and Stella Goldstein-Goren Department of Biotechnology Engineering, Ben Gurion University, Israel
- 17:30-17:45 **Mobile microbial water testing: Udetect's opportunities**
[Marc van Bommel](#), Managing Director, [Orvion](#), The Netherlands
- 17:45-18:00 **Discussion**

Relevant Horizon Europe calls

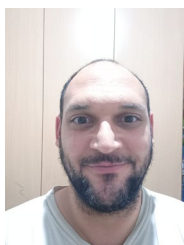
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HORIZON-CL6-2022-ZEROPOLLUTION-01-01: Preventing groundwater contamination and protecting its quality against harmful impacts of global and climate change	5	2-4	3	RIA	15.2.2022
HORIZON-CL6-2022-ZEROPOLLUTION-01-02: Piloting innovative governance solutions to limit nitrogen and phosphorus emissions at the interface of rural/coastal and urban/industrial environments	7-8	6	2	IA	15.2.2022
HORIZON-CL6-2022-ZEROPOLLUTION-01-03: EU-China international cooperation on nature-based solutions for nutrient management in agriculture	7	6	2	IA	15.2.2022
HORIZON-CL6-2022-ZEROPOLLUTION-01-04: Securing drinking water quality by protecting water sources against pollution, providing innovative monitoring and treatment solutions and ensuring safe distribution	5	2-4	4	RIA	15.2.2022

HORIZON-HLTH-2022-DISEASE-07-02	Pandemic preparedness	3	21/04/2022	3	RIA
Address priority research and innovation gaps that would support the establishment and work of a potential future Health Emergency Preparedness and Response Authority (HERA). Focus on 'pathogen X' from threat assessment, horizon scanning for the identification of potential medical countermeasures and innovative technologies and develop standardised research protocols.					

² <https://newseu.cgtn.com/news/2020-07-21/Netherlands-leads-the-way-with-nationwide-COVID-19-sewage-testing-ShzEz63aMg/index.html>



Biosketches



Dr. Itay Bar Or

Dr. Itay Bar-Or researching environmental virology in the central virology lab of Israel ministry of health. He earned his PhD in 2016 at Ben Gurion University of the Negev and started his work in the Israel national center of environmental virology. He is in charge of Israel national environmental polio surveillance from sewage. His main focus of research is wastewater based epidemiology, tracking pathogenic viruses outbreaks in raw sewage from all parts of Israel. During the last few years he monitored HAV, HEV and SARS CoV2 outbreaks using wastewater. His research includes also monitoring pathogenic viruses in variety sampling materials. Monitoring of enteroviruses, adenovirus noroviruses and parecho viruses in drinking water and treated water for infiltration for from wastewater and treated sludge's approval for agricultural use as biosolid are also important parts of his research routine. His lab uses different concentration methods, molecular method (qPCR) and culture method with different cell lines (RD, BGM, etc.) for detecting the different enteric viruses.



Frederic Béen

Frederic Béen works as a researcher at KWR Water Research Institute in The Netherlands, where he also coordinates the analytical chemistry and chemical safety research themes. His research activities focus on (i) the implementation of analytical and sampling techniques to monitor emerging contaminants in the water cycle; (ii) advanced data analysis approaches to interpret chemical and environmental data and (iii) the further development of wastewater analysis as a tool to monitor human health at the population scale. In this context, Frederic has been actively involved in the research around the monitoring of SARS-CoV-2 in wastewater which is being carried out at KWR. Frederic obtained his PhD at the University of Lausanne in Switzerland, and then worked as a postdoctoral researcher at the University of Antwerp in Belgium. Since 2018 he has been working as a researcher in the department Chemical Water Quality and Health at KWR.



Marc van Bommel

Marc van Bommel is CEO of Orvion, The Netherlands. Marc studied Environmental Technology at Wageningen University and started his company Orvion in 2013. Orvion develops DNA techniques for the Water & Environmental sector. Orvion applies its DNA monitoring techniques to monitor pathogens in water, to show degradation of harmful substances by bacteria, for treating wastewater and cleaning soils and groundwater. We believe that we can learn from nature how to make the world clean and sustainable by using bacteria and other micro-organisms.



Ido Blank



Ido is a lifelong entrepreneur with a proven track record of 10+ years in senior business and financial roles in global companies. Ido offers a long history of successful enterprises as an expert in business development, sales and management. Since 2018 Ido serves as VP Business Development of Kando. Focusing on new markets penetrations and identifying new opportunities and segments to support Kando growth. Prior to that, Ido served as the CEO of SITECH in Panama, part of IIASA group (over 1,000 employees). As CEO, Ido managed extensive local and global strategic, sales, business development and financial operations. Ido has a proven ability in leadership, with a long and successful track record of cost optimization, revenue increases and overall profitability. Ido Specializes in Sales, Business development, Creating sales array, New markets penetration, People Management, Team leadership, Financial optimization, Project management, Consultative Sales, Marketing, implementing internal & organizational processes, increasing revenues & maximizing profits, developing & establishing new ventures, Construction technology, Real estate, Renewable energy, Fund raising, Go To Market Strategy, Business-to-Business (B2B), International Business Development, Start-ups, International Sales.

Prof. Ariel Kushmaro

Professor Ariel Kushmaro research activities focus on environmental microbiology, environmental virology, the development of various techniques for environmental sensing, biofilm, bacterial communication, bioremediation. His research aimed at understanding the structure and function of microbial communities and their dynamics regarding the environment. These investigations include environmental monitoring of various microorganisms, pollutants, the isolation of bacteria and their study under defined conditions in the laboratory. Research projects include: SARS-CoV-2 detection in sewage, wastewater viromics, wastewater microbiology and treatment, bioremediation, microbial encapsulation technology, discovery of novel bioactive materials from cultured and uncultured microorganisms. The group of A. Kushmaro includes 10 PhD students and 4 MSc students, 3 post-docs and 4 technicians. So far, he published more than 120-refereed journal articles, over 150 conferences abstracts, 9 book chapters and several patent. This research and achievements described above established his position in the international scientific arena as a leading scientist in microbial ecology.

Prof. Dr Ana Maria de Roda Husman



Prof. Dr Ana Maria de Roda Husman studied molecular biology at VU University Amsterdam (1991). In 1995, she earned her PhD with her thesis 'Human Papillomaviruses and cervical carcinogenesis' at the VU University Medical Center Amsterdam. She then worked at a postdoctoral study 'Viral and host determinants of HIV-1 infection AIDS pathogenesis' at the central laboratory for the Sanquin Blood Supply in Amsterdam. In 1998, she came to work for RIVM National Institute for Public Health and the Environment as a Health-related Water Virologist. At the end of 2002, she became the project leader for Health-related Water Microbiology. She is currently leading the environmental division at the Centre for Infectious Disease Control



(CIb) at RIVM (since 2009). In May 2012, Ana Maria de Roda Husman was appointed professor of 'Global changes and environmentally transmitted infectious diseases' at Utrecht University. Ana Maria de Roda Husman works at RIVM as well as Utrecht University in prevention and control of infectious diseases that can be transmitted through the environment, i.e., by water, soil, and air. Changes in the environment, e.g., climate change, in the pathogen, e.g., antimicrobial resistance, and the human host, e.g., technical innovations and ageing, are playing an important role in exposure to pathogenic viruses, parasites and bacteria and the subsequent disease burden.

Racheli Kreisberg, Ph.D., MBA
racheli@nost.org.il
+972-52-9530385

Innovation Attaché
Netherlands Innovation Network
Ministry of Economy and Climate Policy

[Israeli Dutch Innovation Center](#) (IDIC)
Netherlands Embassy in Israel
Abba Hillel 14, Ramat Gan, Israel