

Airborne Transmission of SARS-CoV-2: A Virtual EHMI Workshop

Committee

Jonathan M. Samet

Chair

Jonathan M. Samet is a pulmonary physician and epidemiologist and is currently Dean of the Colorado School of Public Health. Dr. Samet's research has focused on the health risks posed by inhaled pollutants and tobacco. Previously, he was the Distinguished Professor and Flora L. Thornton Chair for the Department of Preventive Medicine at the Keck School of Medicine at the University of Southern California. Dr. Samet received the 2004 Prince Mahidol Award for Global Health awarded by the King of Thailand, the Edward Livingston Trudeau Medal from the American Thoracic Society/American Lung Association, the Luther Terry Award for Distinguished Career from the American Cancer Society, and the Fries Prize for Health. He has served on numerous committees concerned with public health and the environment: the U.S. EPA Science Advisory Board; committees of the National Academies, including chairing the Biological Effects of Ionizing Radiation VI Committee, the Committee on Incorporating 21st Century Science in Risk-Based Evaluations, the Committee on Research Priorities for Airborne Particulate Matter, the Committee to Review EPA's Draft Integrated Risk Information System Assessment of Formaldehyde, the Committee to Review the IRIS Process, and the Board on Environmental Studies and Toxicology, among others; and the National Cancer Advisory Board. He is a member of the National Academy of Medicine. Dr. Samet received his MD from the University of Rochester, School of Medicine and Dentistry and his master's degree in epidemiology from the Harvard T.H. Chan School of Public Health.

Georges C. Benjamin

Member

Georges C. Benjamin is executive director for the American Public Health Association, the nation's oldest and largest organization of public health professionals. He is also a former secretary of health for the state of Maryland. He is board-certified in internal medicine, a Master of the American College of Physicians, a fellow of the National Academy of Public Administration, a fellow emeritus of the American College of Emergency Physicians, and a member of the National Academy of Medicine. He serves on several nonprofit boards such as Research!America, the Truth Foundation and, the Reagan-Udall Foundation. He is also a member of the National Infrastructure Advisory Council, a council that advises the President on how best to assure the security of the nation's critical infrastructure. Dr. Benjamin is a graduate of the Illinois Institute of Technology and the University Of Illinois College Of Medicine.

Seema S. Lakdawala

Member

Seema Lakdawala is an assistant professor at the University of Pittsburgh School of Medicine. Dr. Lakdawala started an independent laboratory at the University of Pittsburgh School of Medicine in 2015 studying influenza virus transmission, pathogenesis, and assembly. The Lakdawala Lab has published multiple papers on the persistence of influenza viruses in aerosols and droplets and demonstrated that viruses are stable for long periods of time in small aerosols and droplets in the presence of respiratory mucus. Their research has been featured in the popular press on NPR, Gizmodo, and This Week in Virology. In addition, Dr. Lakdawala co-authored an article on non-pharmaceutical strategies to limit influenza virus transmission that was published in the Washington Post in 2018. Dr. Lakdawala recently co-authored a Perspective in Science on the animal models under development to study COVID-19 pathogenesis and SARS-CoV-2 transmission. In 2009, she began a post-doctoral fellowship with Dr. Subbarao at the NIH to study airborne transmission of emerging influenza viruses. During this time she made important discoveries regarding the presence of influenza viruses in aerosols of varying sizes, and she defined the soft palate as an important site for viral adaptation and transmission. Dr. Lakdawala received her PhD in Molecular Biology and Virology from the University of California, San Diego Skalko Institute.

John-Martin J. Lowe

Member

John-Martin Lowe is the executive director of training and education for the Global Center for Health Security, assistant vice chancellor for health security training and education, and director of research for the Nebraska Biocontainment Unit at the University of Nebraska Medical Center. At the University of Nebraska Medical Center, he leads research and training initiatives to advance environmental risk assessment, infection control and has an adjunct appointment at Indiana University. As a virologist and environmental exposure scientist, Dr. Lowe has worked extensively throughout the U.S., Africa, Asia and Europe as an educator, researcher, and in health emergency risk management related to infectious disease, infection control and emergency response. As a clinical scientist and environmental scientist, his expertise focuses on risk, specifically identification, characterization, and management of risk for patient- community- and industry-centered environments, particularly related to emerging infectious diseases. Dr. Lowe also has extensive experience in emerging pathogens and health security. He is currently co-PI for the U.S. National Emerging Special Pathogens Training and Education Center, established an international network for emerging infectious diseases, and is lead investigator for a multi-country bio-surveillance network in Africa and has experience in a broad range of health security topics from surveillance, public health response and clinical response to health emergencies. Dr. Lowe led successful COVID-19 efforts in 2020 at the National Quarantine Unit and Nebraska Biocontainment Unit to provide monitoring and care for repatriated U.S. citizens exposed to and infected with SARS Coronavirus 2. He also led early and continued efforts to characterize the transmission dynamics of SARS Coronavirus 2 which were presented to in a joint meeting hosted by the Academy of Medicine and American Public Health Association on April 15, 2020. Professor Lowe has co-authored numerous book chapters and scientific papers on control and response to emerging pathogens. He also provided technical consultation and participated in infection prevention and control as well as industrial hygiene in over 23 countries to a variety of industry sectors including healthcare, food production, hospitality, finance, and insurance for issues related to emerging pathogens including Ebola virus disease and COVID-19. Dr. Lowe received his PhD in Medical Science from the University of Nebraska Medical Center.

Linsey C. Marr

Member

Linsey Marr is the Charles P. Lunsford Professor of Civil and Environmental Engineering at Virginia Tech. Her research group applies interdisciplinary approaches to study pollutants in indoor and outdoor air. She is especially interested in emerging or non-traditional aerosols such as engineered nanomaterials and viral pathogens and how they can be physically and chemically transformed in the environment. Marr is a recipient of an NSF CAREER award and an NIH New Innovator award. In 2018, she was named a fellow of the International Society of Indoor Air Quality and Climate. She is an associate editor of *Microbiome* and also serves on the editorial advisory boards of *Environmental Science & Technology Letters*, *Environmental Science: Processes & Impacts*, and *Aerosol Science & Technology*. She is a member of the National Academies' Board on Environmental Science and Toxicology and recently served on the committee on Grand Challenges in Environmental Engineering for the 21st Century. Marr received a BS in Engineering Science from Harvard College and a PhD in Civil and Environmental Engineering from the University of California at Berkeley and completed her post-doctoral training in Earth, Atmospheric, and Planetary Sciences at the Massachusetts Institute of Technology.

Kimberly A. Prather

Member

Kim Prather is distinguished professor and distinguished chair in atmospheric chemistry at Scripps Institution of Oceanography and in the Department of Chemistry and Biochemistry at the University of California, San Diego. Her work focuses on how humans are influencing the atmosphere and climate. Dr. Prather is working to understand the health and environmental impact of ocean-derived pollutants and toxins in run-off and outfalls, specifically the ocean-to-atmosphere transfer and subsequent atmospheric transport and extent of human exposure. Her research specifically focuses on measurements of the concentration of particles that are small enough to be inhaled deep into our lungs and the subsequent impact on human health. She is working collaboratively with a team of interdisciplinary scientists including in the health sciences sphere to study the potential health effects of these ocean-derived natural microbes and anthropogenic pollutants under changing climate conditions. Early in her career, Professor Prather developed a technique known as aerosol time-of-flight mass spectrometry that is being used in atmospheric field studies worldwide to determine the sources of atmospheric aerosols. A primary focus of her research involves understanding how aerosols impact climate, with a major emphasis on their role in modifying clouds and precipitation processes. She is the founding director of the NSF Center for Aerosol Impacts on Chemistry of the Environment (CAICE), an NSF Center for Chemical Innovation. CAICE focuses on developing a better understanding of how ocean biology influences atmospheric chemistry, clouds, and climate. She also serves as co-principal investigator on a project to build the Scripps Ocean Atmosphere Research Simulator (SOARS), a new state-of-the-art wind-wave channel that will mimic the ocean with unprecedented accuracy, enabling scientists to explore how the introduction of pollutants by human activities is changing the chemistry of the ocean and atmosphere. Slated for operation in 2020, SOARS will be the only facility in the world capable of simulating future atmospheres with increasing pollution under different ocean and atmospheric conditions. She has authored over 200 publications in refereed scientific journals. Some of her more recent awards include election into the National Academy of Sciences (2020), National Academy of Engineering (2019), the 2020 American Chemical Society Frank H. Field & Joe L. Franklin Award for Outstanding Achievement in Mass Spectrometry, 2018 Chancellor's Associates Excellence Award in Research in Science and Engineering, 2015 Haagen-Smit Clean Air Award, the 2010 American Chemical Society Award for Creative Advances in Environmental Science & Technology. Dr. Prather is the first woman at UC San Diego to be elected to membership in the National Academy of Engineering (NAE) for contributions including "technologies that transformed understanding of aerosols and their impacts on air quality, climate, and human health." Dr. Prather is an elected fellow at the American Geophysical Union, the American Association for the Advancement of Science, and the American Academy of Arts and Sciences. Dr. Prather received her PhD in physical and organic chemistry from the University of California, Davis.

Arthur L. Reingold

Member

Arthur Reingold is professor and head of the Division of Epidemiology at the School of Public Health at the University of California, Berkeley, having joined the faculty there in 1987. His research interests encompass the prevention and control of infectious diseases in the US and internationally, particularly infections spread via the respiratory route and vaccine preventable diseases. He has previously served on the Advisory Committee on Immunization Practices (ACIP) of the US Department of Health and Human Services and on the Strategic Advisory Group of Experts on immunizations (SAGE) of the World Health Organization. He has directed or co-directed the California Emerging Infections Program since its inception in 1994. He has published almost 300 original research papers on these subjects and teaches a wide variety of courses on related subjects at the University of California, Berkeley and at numerous other universities around the world. He was elected to membership National Academy of Medicine and the National Academy of Sciences in 2003 and has previously served on multiple NASEM committees. Dr. Reingold received his MD from the University of Chicago.

John Volckens

Member

John Volckens is a professor of Mechanical Engineering and the director of the Center for Energy Development and Health at Colorado State University (CSU). He holds affiliate appointments in Environmental Health, Biomedical Engineering, the Colorado School of Public Health, and the CSU Energy Institute. His research interests involve air quality, exposure science, and air pollution-related disease. In March of 2020, his lab at CSU was appointed as the official respirator performance testing center for Colorado Governor Jared Polis' COVID-19 Response Task Force. He is a founding member of the CSU Partnership for Air Quality, Climate, and Health – an organization that seeks to develop practical, science-vetted solutions to intertwined problems of air quality, climate, and health that we face as a society. He received postdoctoral training at the U.S. EPA's National Exposure Research Laboratory in Research Triangle Park, NC. At CSU, he has pioneered the development of several new pollution sensor technologies, which have been deployed for public health research in over 30 different countries and as far away as the International Space Station. Dr. Volckens is the recipient of the 'Best Paper' award from the American Industrial Hygiene Association (1999, 2017) and the Journal of Indoor Air (2013). He was a 2018 finalist for the NASA Earth, Space, Air Prize. He has published over 100 manuscripts related to exposure science, aerosol technology, and air pollution-related disease. He is a co-founder of Access Sensor Technologies, a company started through his research collaborations at Colorado State University and receives grant funding from the US EPA, NIH, CDC, and NASA. Dr. Volckens received his PhD in Environmental Health Engineering from the University of North Carolina at Chapel Hill.