UNIVERSITY OF OREGON

June 26, 2020

The Honorable Lamar Alexander
Chairman, U.S. Senate Committee on Health, Education, Labor and Pensions
United States Senate
428 Senate Dirksen Office Building
Washington, DC 20510

The Honorable Patty Murray
Ranking Member, U.S. Senate Committee on Health, Education, Labor and Pensions
United States Senate
428 Senate Dirksen Office Building
Washington, DC 20510

Dear Chairman Alexander and Ranking Member Murray,

Thank you for giving the University of Oregon an opportunity to provide feedback to the U.S. Senate Committee on Health, Education, Labor and Pensions on how our nation will prepare for the next pandemic. As the Director of the Institute for Health in the Built Environment and the Biology & The Built Environment Center at the University of Oregon, I write to convey how research of the built environment and indoor microbiomes is critical in the federal government's pursuit to *Expand the Ability to Detect, Identify, Model, and Track Emerging Infectious Diseases.*

Disease Surveillance – Expand Ability to Detect, Identify, Model, and Track Emerging Infectious Diseases: The vision needed to safely reopen our buildings and economy, to promote "both lives and livelihoods" is found in monitoring building microbes. We cannot test every person every day for coronavirus, but we just might be able to test every building every day. This is the evidence that can help guide decision makers about how to most safely reopen the economy. This is the information that will give a hospital engineer confidence that their building air systems are as safe as possible, or knowledge that more extensive mitigation strategies are required. This knowledge will give travelers the confidence to stay in a hotel room or visit a restaurant, and family members with loved ones in assisted living centers the peace of mind they desperately desire.

It is the type of data that university administrators can use to guide classroom occupancy decision making and evaluation of progressive risk mitigation strategies as campuses open for fall classes. It is also a type of monitoring plan and safety precaution that our most vulnerable populations, and really everyone, deserves. We should be able to walk into a building without fear and anxiety that we may become sick because we entered that building. But although we have made rapid advancements, more research and deployment needs to be done and should be funded at the federal level. Specifically, rapid expansion of emerging building testing services is needed and will help pave the way for real-time indoor pathogen monitoring technology development. Possible partners include the General Services Administration, US Department of Energy (Buildings), National Institutes of Health, the Center for Disease Control, US Department of Defense, US Department of Homeland Security and the US Environmental Protection Agency.

Studying the built environment and the indoor microbiome: The Biology of the Built Environment Center, founded in 2010 with support from the Alfred P. Sloan Foundation, studies the microbiome inside buildings, where people spend 90 percent or more of their lives, especially lately. In collaboration with the UO Institute for Health in the Built Environment, the center has been collaborating with Oregon Health & Science University (OHSU) since 2018 on a study of health-care-associated infections and the relationship to architecture,

specifically looking at factors that encourage the spread of pathogens responsible for highly morbid infections transmission possibly mediated by hospital environments.

In March of 2020, our team at the University of Oregon, alongside colleagues at the University of California, Davis, wrote a paper offering guidance to building operators about how to reduce coronavirus transmission risks indoors. The paper includes recommendations for disinfecting surfaces and increasing airflow from the outdoors, as well as other considerations such as humidity, daylight and spatial configurations.

In April of 2020, the University of Oregon and OHSU launched a study to learn how the new coronavirus is dispersed in the air and onto surfaces in the hospital setting, information vital to all hospitals, health care workers and the public. The study is not only examining factors influencing the dispersal of coronavirus genetic material in the environment but is also exploring new ways to determine whether any of this genetic material remains present in the form of virus particles that are potentially infectious.

To expand the ability to detect, identify, model, and track emerging infectious diseases, the federal government must leverage the infrastructure of public universities.

The University of Oregon is testing buildings for coronavirus right now. We are working with facility engineers to determine the best strategies to mitigate indoor transmission risk. Together, we are conceiving ways to integrate large scale building testing with human testing to comprise more targeted and effective contact-tracing programs. We are creating SARS-CoV-2 building reports within a matter of hours from environmental collection, for a modest number of buildings, at a cost of thousands of dollars per report. We need to accelerate this timeline, increase this scale, and slash these costs. To implement this plan, we need to enlist a coalition of those willing to lead and serve their communities. There are thousands of microbiology wet labs currently sitting empty at universities across the globe, and these could immediately be utilized for environmental testing without detracting from CLIA approved labs focused on human testing. This two pronged testing approach is not dissimilar from early-detection progress associated with waste-water systems, but it is much faster and more spatially relevant, and therefore the results are far more actionable and useful.

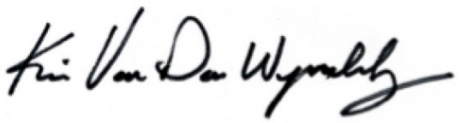
Universities, and private enterprises can team up to treat the cause, and more safely rebuild economic activity in buildings. We have heard from many universities that are willing, even pleading to help. We are also rapidly building collaborations with multiple private organizations (Enviral Tech, TRC Solutions, and Phylagen) that are offering aspects of these services. This emerging private enterprise will need policy leadership and technical rigor and oversight, and in the near term, it needs the testing capacity already present, and dormant, at universities. Furthermore, university interest and capabilities are distributed globally and perfectly engaged with the local communities to enact this plan quickly, and be at the ready for the next pandemic.

Furthermore, we are developing several concepts through multiple high-profile partnerships, to achieve building pathogen testing in a near real time fashion through new technology development, at a fraction of the current cost per test, with more rapid result communication and triggering automated action steps. Until then, our current, more labor-intensive, approaches to environmental sampling can be economical enough to make an immediate and positive impact, reducing or possibly avoiding new outbreaks. As with any product or service, with increased scale comes efficiency and affordability. And therefore, with scale comes equity, so that it is not only the well-funded organizations that can afford to provide safety to building occupants.

Testing buildings offers a scale of implementation that is actionable, in the precise location where action is required to create safer spaces. It can bridge the gap in human testing where it is not possible or unwanted. Leveraging the infrastructure of public universities to implement large-scale coronavirus testing of our nation's

buildings will expand our ability to detect, identify, model, and track emerging infectious diseases. Thank you for your consideration.

Sincerely,



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