UNIVERSITY of HOUSTON

CULLEN COLLEGE of ENGINEERING

Department of Civil & Environmental Engineering

Distinguished Lecture Series

Kerry A. Kinney, Ph.D.
University of Texas at Austin

Exploring the Microbiome of the Built Environment

Monday, February 4, 2013

10:30 to 11:30AM
Seminar Room D3 W122

Abstract

Recently, there has been an increasing interest in delineating the microbiome of the built environment where we spend nearly 90% of our time. The diverse communities of bacteria and fungi present indoors are influenced by building occupants, building design, and outdoor sources, among other factors. Molecular technologies are now available to allow a more accurate assessment of human exposure to microorganisms, including potential pathogens, in homes, stores, office buildings and hospitals. The results from two recent indoor microbiome studies will be presented in this talk. In the first study, the airborne microorganisms captured on the dust in heating, ventilation and air conditioning (HVAC) filters recovered from 14 stores in Texas and Pennsylvania were characterized using a variety of culture-independent methods including 454-sequencing and qPCR. The results were examined to determine the effect of store type, store location and season on the microbial community. In addition, the bacterial community recovered from the stores was compared to the human microbiome to assess how microorganisms recovered from occupied retail stores compare to human-associated bacteria. In the second study, the airborne fungal community in a residential shower was investigated before, during and after shower operation. A range of fungal species were detected; the dominant fungal species present in the air during shower operation was *Alternaria alternata*, a human allergen and asthma trigger. Thorough cleaning of the shower stall and showerhead changed the composition of the fungal community present but did not eliminate *A. alternata*. The results of these studies and others provide insights into the microbiome of the built environment and human exposure to microorganisms.

About the speaker

Professor Kerry A. Kinney is a Professor in the Civil, Architectural and Environmental Engineering Department at The University of Texas at Austin. Dr. Kinney's cross disciplinary research in environmental engineering and molecular biology centers on the investigation of microorganisms in natural and engineered systems. She has extensive experience with multidisciplinary projects including serving as co-PI on a recently completed Integrative Graduate Education and Research Traineeship Program (IGERT) on Indoor Environmental Science and Engineering.

Her most recent research related to the indoor microbiome focuses on examining the fungal and bacterial community present in residential and retail environments. In other projects, Dr. Kinney is examining the potential to use a fungal enzymatic treatment process to remove PPCPs from wastewater. She also has investigated the quality of harvested rainwater as a function of roofing material. Finally, in cooperation with faculty across UT Austin, her research group is developing technologies to optimize algae harvesting and oil recovery from aqueous solutions.

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