Environmental Science Graduate Program Seminar Series

The Relationship between Housing Characteristics and Indoor Fungi in New York City Puerto Rican Cohort

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Smith Laboratory, Room 3150

Abstract

The indoor microbiome is home to numerous bacteria, archaea, fungi, protists, and viruses. Human exposure to these communities is extensive, yet the health impacts from these exposures are largely unknown. Limited research to date connects certain indoor microbial communities to certain diseases common in western society including allergies and asthma, while other indoor microbiomes appear confer protection against such diseases. As scientific understanding of what constitutes a healthy indoor microbiome emerges, identification of the building characteristics and occupant behaviors responsible for shaping the indoor microbiome will be needed. Our study will assess the impacts of building characteristics and occupant behaviors on indoor fungal communities in a Puerto Rican immigrant cohort at high risk of asthma living in New York City. Special attention will be given to occurrence of *Cryptococcus* fungi. Certain *Cryptococci,* including *C. neoformans,* have been linked to asthma, whereas other species and increased diversity within *Cryptococcus* may protect against asthma. Bedroom dust samples from 131 homes in New York and additional sites visited in Puerto Rico were collected. DNA was extracted and total fungal and bacterial DNA will be determined using qPCR. Fungal DNA will be sequenced at the Ohio State Molecular and Cellular Imaging Center. Sequence data will be made quantitative by converting sequence relative abundance to absolute abundance. Subsequent analysis of fungal communities will then include richness, evenness, β diversity, and taxonomic identification using Qiime 2, BLAST, FHiTINGS, and R.