## **REMNet: A Student's Introduction to Urban Microbiomes**

By Jessica Lee Joyner

Have you ever wondered about your environment? Well, I'm going to show you another element of thinking about your environment: the small places. In everything that we do everyday there's bacteria, and in our built environment, they're everywhere. My name is Jessica Lee Joyner, and I do research and teach at the City University of New York.

What we're going to do today is learn about that microbiome, the built microbiome, and I want you to consider and think about it in five different ways:

- (1) that we have this unique built environment, and (2) that the bacteria are everywhere,
- (3) that we have unique variables in this environment, and we can consider them and how they drive the bacteria that are around us,
- (4) that we can define this built environment in similar ways to defining the natural environment—that the history of ecology can also come into the urban setting, and lastly, we can do research about this, and I want you to feel that you can go out and explore your urban microbiome, or the built environment, at a micro-scale.

Elements like sun and wind and temperature can contribute and drive what bacteria we find. Some bacteria don't like to be in the light, and others don't like to be in the cold. Those are outdoor variables. Inside there's other things we can consider. Of course temperature and light still come into play, but we all have air conditioning. So that's more of a climate controlled set-up, and could influence the indoor microbiome.

All of these variables again contribute to what we see as a unique niche. This is our built environment and the ecosystem and characteristics that help us define and understand a little bit more at the micro-scale as well.

When we think about the microbiome, we use it as a term all its own, but it's actually a community of bacteria. This community of bacteria allows for unique microbiomes and different environments because each member of the community can react differently to the variables we've covered. Some bacteria may prefer to be in bright light, dry and easy, clean surfaces, whereas others may prefer to be associated with plants and living in the soil around their roots. Because of this difference in preference, we get different microbiomes throughout the built environment.

What are you going to consider when you think about the built environment and the microbiome? All of the different conditions and ways of interacting with our environment? And the variables that influence that microbiome? What is more interesting to you? Is it going to be the question on a micro-scale for why we have houseplants, or why we have street trees? Maybe it's a unique perspective that you bring, and something we haven't covered today.

Think critically about your everyday environment. We usually see and recognize the big things in life, but what about those small things? What about the bacteria living in the crevices, the nooks and the crannies, how do they contribute to your everyday life?