Seminar/Talk

Biology in the air: from hitchhiking microbes to jumping electrified nematodes

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Host: Scott Waitukaitis

Airborne microbes critically impact our lives, from the spread of diseases to rainfall and food production. Yet the survival of microbes during aerosolization and atmospheric transport is not well understood. Although bacteria have been found in the atmosphere, even larger organisms such as nematodes and spiders can drift in the air for many kilometers. In this talk, I will discuss two research projects where we investigate how the atmosphere plays a crucial role in micro- and meso-scale ecology. I will show how salt and humidity help bacteria survive during desiccation. In dried droplets on flat surfaces, the spatial structure generated by the dried film can trap water to facilitate survival. 3D Bacterial suspensions dried under acoustic levitation survive even better. In a separate project, I will discuss how jumping, parasitic nematodes rely on electrostatic forces to infect their insect hosts. A model combining electrostatics, aerodynamics, and Bayesian inference indicates that the electrostatic charge on jumping nematodes is ~ 0.1 pC, which aligns with theoretical predictions for electrostatic induction. In fact, we show that infection through jumping may necessitate electrostatic forces as a successful evolutionary strategy.

Thursday, April 30, 2026 11:00am - 12:00pm
Office Bldg West / Ground floor / Heinzel Seminar Room (I21.EG.101)

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