Biology Seminar

12:30 - 1:30 pm
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BGS 0165

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Co-occurrence is associated with horizontal gene transfer across marine bacteria independent of phylogeny

Horizontal gene transfer (HGT), the exchange of genetic material outside of vertical reproduction, is a major force in bacterial evolution, but its driving factors remain poorly understood. While bacteria living in the same environment exchange genes more frequently, this pattern could simply reflect that related bacteria tend to live together.

To disentangle these possibilities, we analyzed over 15,000 marine bacterial genomes tracked across 1,862 ocean samples worldwide. Our key finding: bacteria that co-occur exchange genes more frequently even after accounting for relatedness and shared environmental conditions. We also identified specific environmental features associated with HGT, such as elevated rates in particle-attached bacteria and complex patterns related to depth and other factors.

This talk is meant for non-specialists regarding metagenomics and molecular evolution, and will introduce foundational concepts while highlighting key findings. I'll also briefly overview my newly established research program and planned projects.