Bacterial traits match their host trees in neotropical forests

Geneviève Lajoie
Rémi Maglione
Steven W. Kembel

Video Byte

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Abstract

Trees support so much life on Earth – but one important component might easily be overlooked. The phyllosphere – the aerial surfaces of plants, including leaves – is a microbial habitat for diverse microorganisms. Phyllosphere bacteria play key roles in plant health, human health, and ecosystem function, but unfortunately, not much is known about how plants and their associated microbes influence each other. A recent study evaluated this relationship in a diverse neotropical forest. Using shotgun metagenomics, researchers found that the metabolic functions of phyllosphere microbes varied based on their tree hosts. While overall there was low variability in plant-associated microbes, suggesting that certain microbes form a “core microbiota” for neotropical trees, bacterial metabolism and membrane transport functions varied between plant species. Trees’ leaf traits, including area and mass per area, were associated with the metabolic functions of their associated microbes, suggesting that host plants' characteristics influence which bacteria successfully colonize their surfaces. Further studies will focus on testing the fitness consequences of variation in bacterial traits, allowing researchers to better understand adaptive mechanisms in the plant microbiome.