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2022

May 18th, 5:00 PM - 7:00 PM

Osmotic Perturbation Promotes Competition Between Bacteria in Gut

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Abstract (Submitted by Shaikh Obaidullah)

Osmotic Perturbation Promotes Competition Between Bacteria in Gut

The microbes that live in our bodies connect human physiology -- from immune status to metabolic functions. Changes in metabolic activities have a long-term effect on human health and may cause the extinction of some of these microbes if they are not reintroduced. One reason for the extinction of these microbes is an intake of laxatives -- a common digestive remedy for occasional constipation. To understand the extinction of microbiota, we need to know the dynamics of the microbes let alone their spatial and temporal distribution throughout the digestive tract. This task is complicated since the digestive tract expands into diverse micro-environments shaped by the microbes, i.e., they induce a response from the host to regulate conditions such as temperature, pH, water content, and salt. In this talk, we discuss how osmotic perturbation causes a long-term effect on microbial communities, by analyzing the experimented data under the classical competitive exclusion framework. We further investigate the alternations of these microbes by including their spatial and temporal behaviors.