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The Puppetmasters of Traditional Food Fermentation: Phages as the Good, the Bad, and the Ugly

Vendredi 27 septembre 2024 à 11 h 15

Pavillon Charles-Eugène Marchand, salle Hydro-Québec (1210)

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Abstract:

Phages, viruses of microbes, are ubiquitous in natural microbial ecosystems. In food microbiology, they are traditionally seen as detrimental due to their reliance on lysing their microbial hosts for replication. However, phages are also key regulators of microbial diversity and evolution. Notably, they are common and persistent in traditional cheese-making practices, where we have shown that they significantly influence the composition and evolution of cheese-relevant bacterial strains. Despite this, the non-canonical lifestyles of phages in food fermentation remain largely unexplored. I propose to investigate the roles of phages in traditional food fermentation systems, where phage infections are frequent. This will involve screening large fermentation collections to assess phage diversity and genome content, as well as isolating non-model phages to experimentally test their phenotypic effects. Ultimately, this research will provide a more holistic understanding of human-managed fermentation systems and open up new possibilities for the application of phages in modern biotechnology.