International Seminar supported by One Health Research Center

Phage predation, pattern formation, and the spread of antibiotic resistance

Speaker:

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Abstruct

Phage play a central role in directing the structure, functioning and evolution of microbial systems, with significant implications for human health, biotechnology and environmental remediation. Here, I will illustrate how phage predation can modulate the spatial organization of different microorganisms, which can then have consequences for the spread of plasmid-encoded antibiotic resistance between them. Using two strains of *Escherichia coli* where one is a plasmid donor and the other a potential recipient, I will show how phage predation can increase the spatial intermixing of the strains. This, in turn, increases the number of cell-cell contacts and amplifies the rate of plasmid transfer between them. I will also present the underlying mechanism, which is that phage predation increases spatial intermixing by shifting the location of maximal growth from the outer edges of the biomass to the interior. I will highlight two main consequences of phage predation: i) it can promote the spread of antibiotic resistance with potential implications for phage therapy, and ii) it provides a mechanism for how costly functions that are deleterious for human and environmental health can proliferate in the environment.

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If you have any questions or comments, please feel free to contact us!

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