Phages and the Evolution of Microbial Pathogens

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Abstract
Historically, bacteriophages have been of interest to scientists as tools and simple model systems to elucidate fundamental mechanisms of molecular biology. Since then, researchers have drifted away from phages, favoring bacteria and higher organisms. In recent years, phages have come back into the spotlight, as we are now beginning to understand that not only are they the most abundant organisms in the biosphere, but they are also the most effective gene-transfer agents in nature. In this seminar, we will focus on phage-mediated gene transfer between bacterial cells, and its role as one of the major driving forces shaping bacterial ecology and evolution. We will also discuss the recently identified concept of “silent” transduction, which has remained an unrecognized aspect of phage biology and pathogen evolution. By the end of this seminar, students should gain a sense of the enormity of the collective phage-mediated networks of genetic exchange, and that it serves to interconnect the microbes of this planet.

Selected Publications / References