

Table 1: Defining Phage Ecology

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| Ecology | A bacterium is... | Considerations | Experiments |
|------------|---|---|---|
| Organismal | A bacterium is a target, or an entity that impacts on phage phenotype | Phage anatomy, physiology, and behavior characterized from an <i>in situ</i> or a Darwinian perspective; virion stability, survival, and adsorption; eclipse period, latent period, and burst size; adaptations overcoming barriers to transmission between hosts | Single-step growth; adsorption curves; kinetics of phage decay |
| Population | A bacterium is an environmental resource | Phage population growth and density; liquid versus spatially structured environments (broth growth versus plaque growth); low versus high phage multiplicity; lysogeny versus active phage replication; within-bacteria competition | Batch growth; plaque growth; phage stock preparation |
| Community | A bacterium is a partner in coevolution | Phage-host coevolution; impact of phage density on density of uninfected bacteria and <i>vice versa</i> ; community stability; host resistance; phage host-range breadth and variation; transduction and phage (or lysogenic) conversion; interaction between different phage species | Phage-host continuous-culture or serial-transfer experiments; <i>in situ</i> observation and experiment |
| Ecosystem | A bacterium is a lower trophic level | Phage impact on ecosystem nutrient cycling and energy flow; short circuiting of the microbial loop; nutrient release from eukaryote tissues due to attack by phage-encoded toxins | <i>In situ</i> observation and experiment |