

Copy of a printed diagram referenced as "Life cycle of phages"

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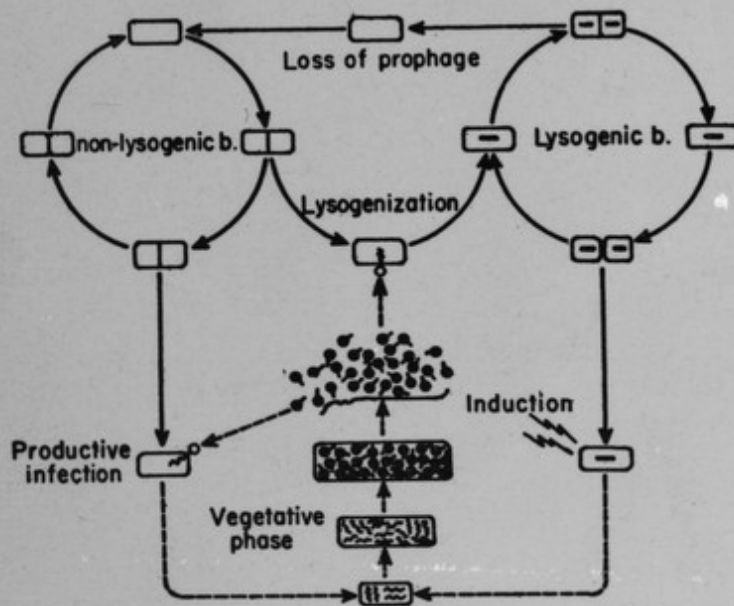


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structure of the virus.

II. THE BACTERIOPHAGE

A bacteriophage is a particle built up of nucleic acid and protein and provided with a tail. When the tip of the tail meets a receptive bacterium, it attaches itself to the bacterial wall. Then the genetic material of the phage, mostly nucleic acid, passes into the bacterial cytoplasm. The infected bacterium can evolve in two ways: (1) The vegetative phase is initiated, bacteriophage particles are produced, and the bacterium dies. (2) The genetic material does not enter the vegetative phase. It is converted into a prophage. The bacterium remains alive and is now lysogenic. Let us consider more closely these two types of bacterial responses (Fig. 1).



The life cycle of a temperate bacteriophage. The prophage is represented by a dash; b = bacterium.

A. The Vegetative Phase

The vegetative phase is characterized by the multiplication of the genetic material of the phage, by the synthesis of phage proteins, and by the morphogenesis of phage particles. Each infected bacterium produces some 100 particles which are liberated as a result of bacterial lysis.

How is phage reproduced during the vegetative phase? It is admitted that the phage constituents, the amino acids, the purine and pyrimidine bases, and