



Lytic cycle of Phages

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Phages

- The word Phages means “Eater” or bacteria eater.
- On the basis of general characteristic there are two main types of the bacterial viruses, namely are
- Lytic Phages (Virulent)
- Lysogenic Phages (Avirulent or Temperate)

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Lytic Phages

- A virulent phage is capable of causing infection and, eventually, the destruction and death of a bacterial cell. Lytic Phages or Virulent phages introduces Lytic cycle.
- Bacterial Cell Lyses when replicated new viruses come out through the cell membrane.
- The viral DNA or RNA is expressed by the host organism's cellular mechanism.
- The enzyme lysozyme, which is coded for by a phage gene, breaks down the cell wall, allowing viruses to escape. They lyse and destroy the bacteria they infect they are said to be Virulent Phages.

- The released phages can now infect more susceptible bacteria, starting the infection process all over again. Such infections by virulent phages represent a lytic cycle of infection.
- The time from adsorption to release is called the burst time; it varies from 20 to 40 minutes for different phages.
- The number of new virions released from each bacterial host represents the viral yield, or burst size.
- In phages such as T4, anywhere from 50 to 200 new phages may be released from one infected bacterium.

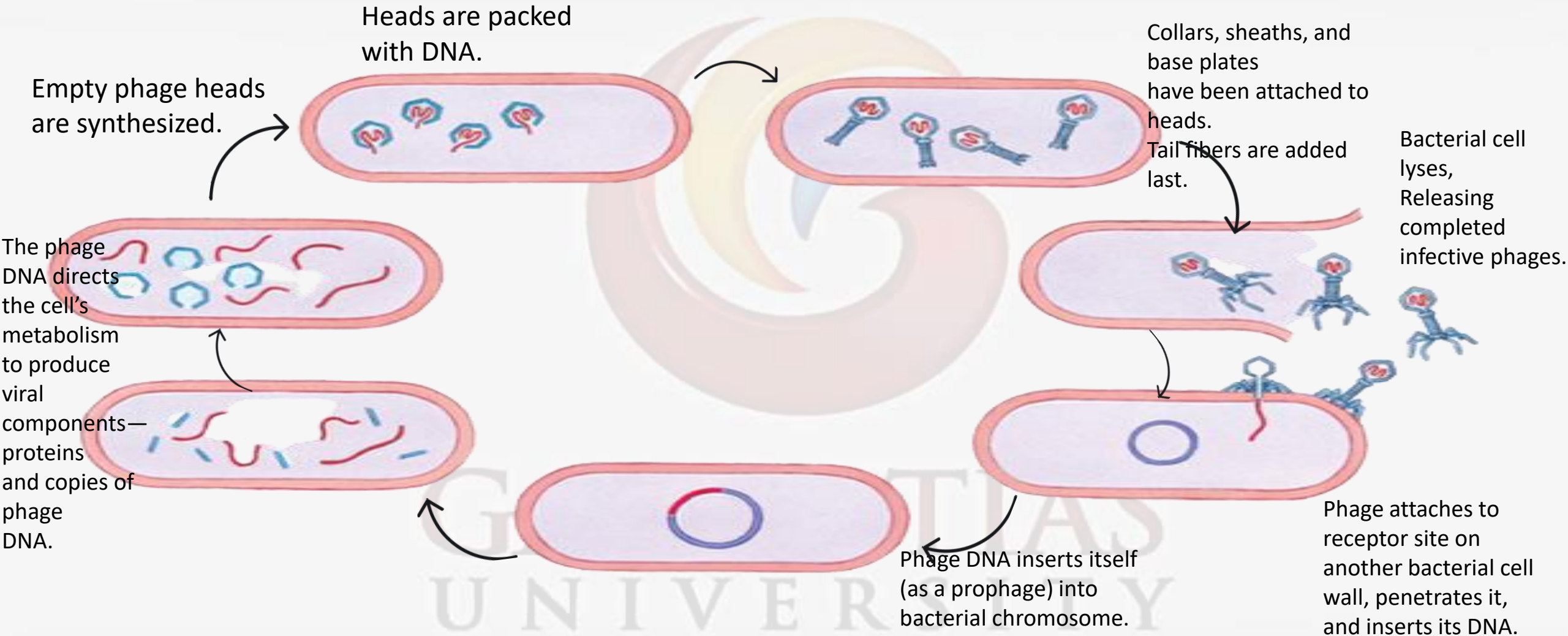
- Phages carrying out these stages of replication, leading to host cell destruction, represent a lytic cycle of infection.
- The sequence of events in which a bacteriophage infects a bacterial cell, replicates, and eventually causes lysis of the cell lytic phage.
- A bacteriophage that enters the lytic cycle when it infects a bacterial cell, causing eventual lysis and death of the host cell.

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- When bacterial cells containing phage DNA enter the lytic cycle, phage enzymes break host cell DNA into many small segments.
- Once the phage nucleic acid enters the cell, phage genes direct the cell to synthesize phage-specific nucleic acids and proteins.
- Some of the proteins destroy the host cell's DNA, whereas other proteins and the nucleic acids assemble into complete phages.

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- As the phage directs synthesis and assembly of new phage particles, it packages DNA by the “headful” (enough DNA to fill the head of a virus).
- This allows a bacterial DNA fragment occasionally to be incorporated into a phage particle.
- Likewise, DNA from plasmids, or other viruses infecting the cell can be packaged into the phage head.
- When the cell becomes filled with a hundred or more phages, phage enzymes rupture the cell, releasing newly formed phages, which can then infect other cells. Because this cycle results in lysis or rupture of the infected (host) cell, it is called a Lytic cycle.



Lytic cycle of a phage (<https://biotechkhan.wordpress.com/2014/06/28/lytic-cycle>)

- Once this phage particle, with its newly acquired bacterial DNA, leaves the infected host, it may infect another susceptible bacterium, thereby transferring the bacterial genes through the process of GENERALIZED TRANSDUCTION.
- During lytic replication the circular phage DNA replicates independently of the host DNA and does not integrate into the genome of the host.

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Thank you

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