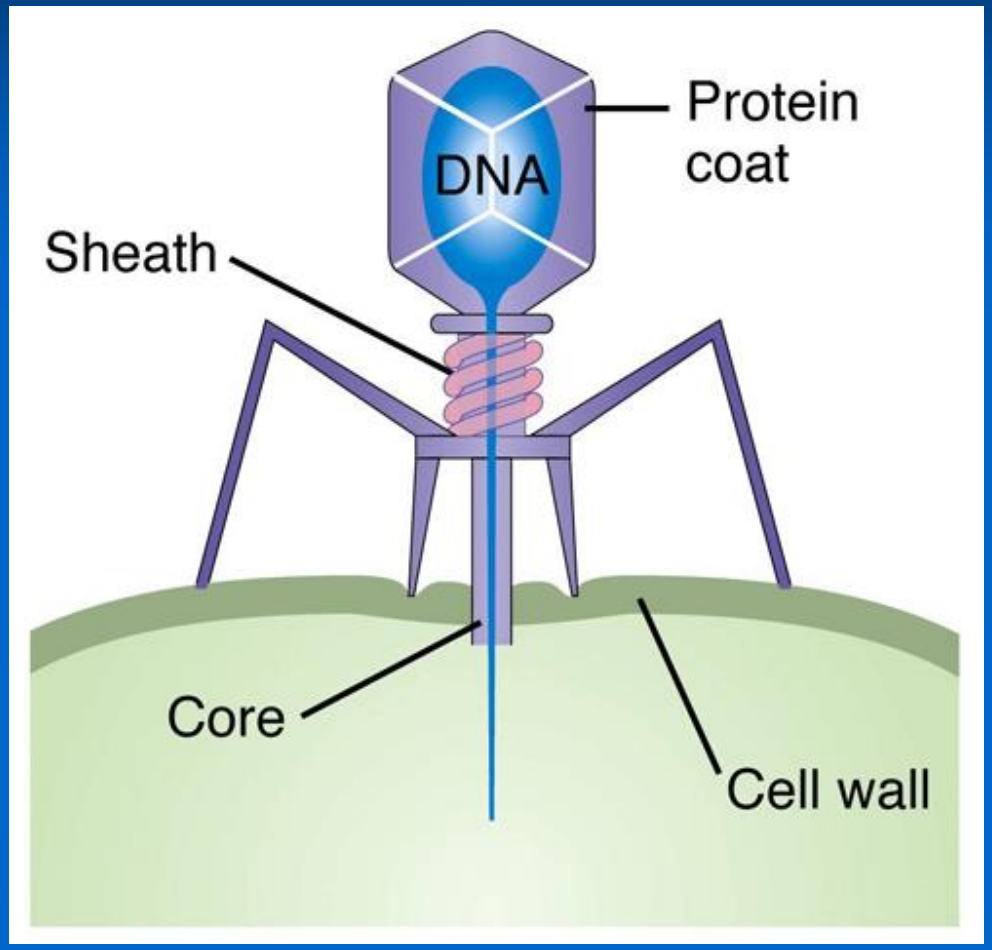
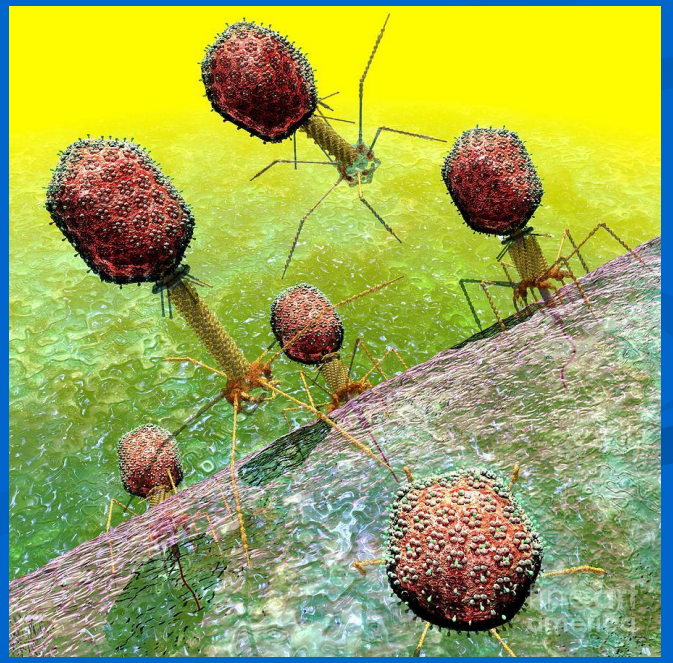
BACTERIOPHAGES

- Are viruses which are specific to bacteria and they infect the bacteria

- Bacteriophages carry the general characteristics of the virus. They only have one DNA or RNA.


DNA
Protein coat
Sheath
Core
Cell wall



- It may have the structure such as the viral capsid according to the type.
- Bacteriophages are classified in various ways
- By structures,
- By shape,
- By the nucleic acid content.

Enveloped/nonenveloped phages; DNA phages/RNA phages (single-stranded/ double-stranded)

- According to another classification, classification of phages from A type to F type is also available.

- Having the capsid and envelope structures, phages have antigenic specificity.

- Phages have to reside in bacterial cells in order to replicate.

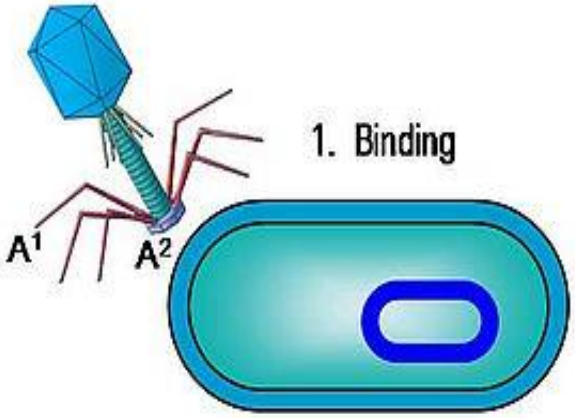
- To infect and replicate in bacteria, phage takes place in 4 phases :

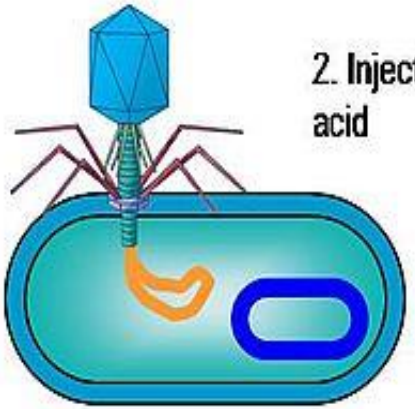
- Adsorption : The process of connection between phage and bacterial cell. Because bacterial surface structure is species-specific most phages can infect only certain species.
  Penetration : The step of penetration of phage's genetic material or itself into the bacterial cell.

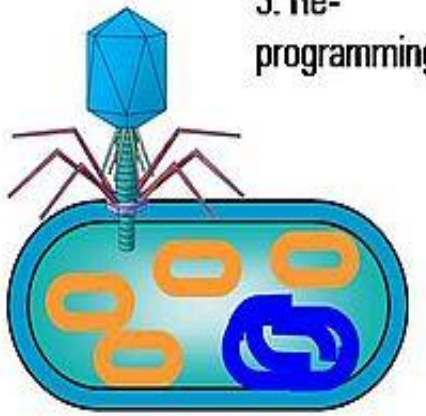
- The latent period : During this period genetic material of the phage reproduce in several ways and mechanisms and phage constructs synthesized mounted.
- Lysis : This stage is not seen in all phages. Some phages after being mature and reaching a certain number of phage particles go out of the bacterial cell by destroying the cell. Some phages may come out without destroying the cell. Some areintegrated into bacterial DNA and transferred from generation to generation.

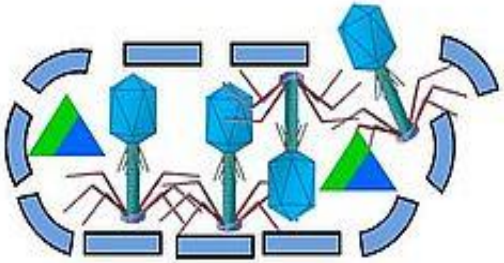
- The types of phage infection : In sensitive bacteria phage usually produces 3 types of infection :
- Lytic infection : This type of phages destroys the infected bacteria. They also called virulent phage. This kind of phages are detected by drop of phage liquid on bacteria produced on solid media. Faj plaques occurs in liquid drops area.
- Non-lytic infection : Although phages infect the bacteria, phages do not destroy the bacteria cell and effect proliferation and feeding . Such phage also called temperate phage.

- Latent infection : For some phages, phage genetic material integrates into bacterial genomes and become its extension. This is also called prophage. Replicate together with the bacterial DNA. This condition is called lysogeny, the bacteria in this case is called lysogenic bacteria. In this case, under certain circumtances (uv rays, mitomycin) become active and can destroy the bacteria and can go out of the bacteria.

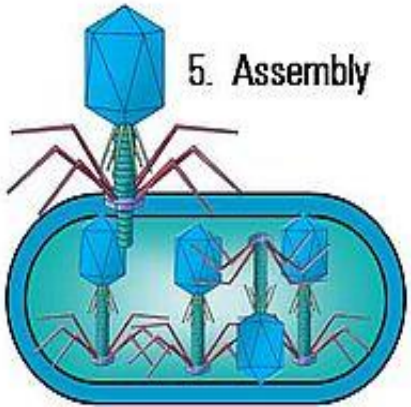


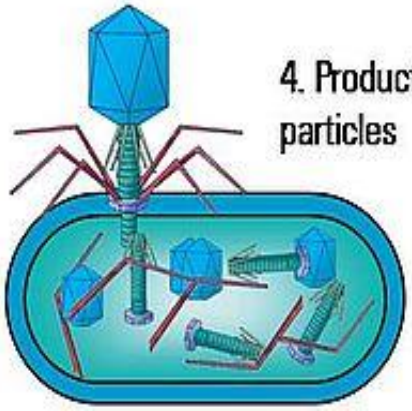






6. Lysin, lysis and escape





Hyglos technology – the 3 key components:

A: Two types of tail protein ligands
B: Lytic enzyme (disruption of the bacteria from the inside)
C: Binding ligand from the lytic enzyme – called the 'Cell wall Binding Domain' (or CBD)