

* Transduction:- Transfer of DNA from one cell to another cell through virus is called "transduction".

⇒ This was proved by "Zinder and Lederberg"

⇒ He worked on E. coli or K₁₂ strain.

⇒ He worked on organism Salmonella-Typhimurium.

* Mechanism of Transduction:-

* Stage's * Lytic-cycle:-

1.) Attachment:- The bacteriophage comes in contact of bacteria on specific receptor site, which causes formation of weak bond in between attachment-site and receptor side.

2.) Penetration:- During this process, the capsid remains outside the bacterial cell-wall.

⇒ Finally DNA injects in the bacterial-cell.

3.) Biosynthesis:- When DNA of bacteriophage reached in the cytoplasm of bacterial cell.

⇒ The Biosynthesis of viral nucleic acid and protein takes place.

explain by Amket-Bhardwaj →
Udaan

page no. → ②

⇒ The transcription and translation of phage-DNA continues, which causes formation of certain-phage enzyme and capsid protein.



④ Eclipse-period:- The period after entry of viral-DNA till the formation of progeny-virus is called "Eclipse-period".



⑤ maturation:- During this process, the bacteriophage DNA and capsid assemble into viral-particle.



⇒ The head and tail region of phage are separately assembled from protein-subunit.



⑥ Release:- The final stage of viral-multiplication finally leads to release of virions from the host-cell.



⇒ The phage gene which is coded for lysozyme are synthesized within the cell.



⑦ Burst-time:- The time-period in between attachment of phage with bacterial cell till the release of virions is called burst time, on an average it is 20-40 minutes.

(3) Page no. - 3 Explain by: Aniket Bhardwaj and
Gaurav

(8) Burst size: - The number of newly synthesized phage particle which is release from a single host cell is referred as single Burst size and this number varies in between 50 to 200 virions.

* Lysogenic: - The Lysogenic-phage is also called "Temperate phase."



⇒ In Lysogenic the phage remains inactive and the participating bacterial host cell are known as "Lysogenic-carrying cell."

* λ -Bacteriophage: - Penetrates into E. coli cell is very good example of Lysogenic-cycle.



⇒ The various stages of Lysogenic-cycle are as following :-

i.) Attachment of Bacteriophage - λ to the host cell.

ii.) Penetration: - The originally linear phage DNA goes inside the host cell and this DNA forms a circle.



iii.) Multiplication of Phage DNA along with transcription and translation take's place.



iv) The Phage DNA at this point may enter into
-lytic or lysogenic-cycle.



⇒ The Phage DNA recombine with the circular-
Bacterial DNA (lysogenic-cycle).



⇒ This gene of Phage DNA become's turn Off.



⇒ The machinery of host cell replicates the
Bacterial chromosome.



⇒ There are three important results of lysogenic-
cycle:-

i) The lysogenic cells are immune to
re-infection by the same Phage.



ii) Phage Conversion:- It means host cell exhibits
new properties.



iii) It makes specialised transduction-
possible.

Phages - Explain by: - Amiket Bhargava
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⇒ When bacterial genes can be picked up in a phage coat and transfer to another bacterium is called "Generalised-Transduction".

* Types of Transduction :-

i) Specialised-Transduction: - In case of specialised-transduction only certain bacterial genes can be transferred. By: - Amiket Bhargava
and Gaurav.



⇒ The specialised transduction is mediated by lysogenic phage which pack bacterial DNA along with its own DNA with the same capsid.



⇒ The λ -bacteriophage picked up the "lact gene" for lactose fermentation from its host cell.



⇒ In prophage it is excise from the host-chromosome. By: - Amiket Bhargava and Gaurav.



⇒ The adjacent gene of host chromosome remains attach with phage DNA.

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and Gourav.



⇒ Along with the prophase the bacterial gal gene become's integrated into new host DNA, now lysogenic cell can able to metabolise Galactose.



⇒ By this way, the Galactose negative recipient cell converted into Galactose positive recombinant cell.

* ii.) Generalised Transduction: - Process start's with Penetration.



⇒ Bacterial chromosome is fragmented into pieces

Occasionally, the phage may excise from the bacteriophage by a reverse combination event initiating a lytic cycle.



Lyso-genic-Bacterium reproduces normally

Experiment - 1
Bhargava and Gokul

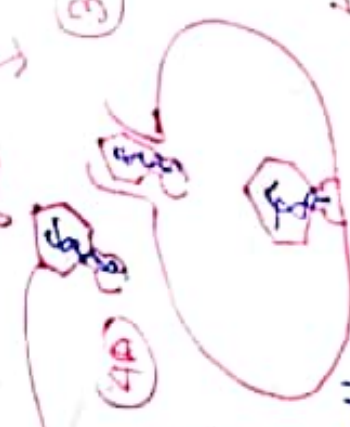
1 Phage attached to host cell and injects - DNA

Phage DNA circularizes and enters lytic cycle or lysogenic cycle

Lyso-genic-cycle

Lytic cycle

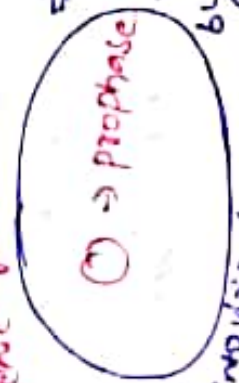
New phage DNA and proteins synthesized and assembled into virions.



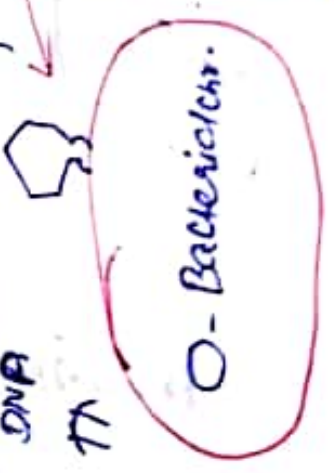
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Cell lysis releasing of phage virion

Phase DNA - integrates within the bacterial chromosome by recombination, becoming a prophage



New phage DNA and protein are synthesized and assembled into virions.



Epithelial - Drives Blood and Connective Tissue

