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B.Sc. PART- I
PAPER- I, GROUP- [C]

(i) BACTERIOPHAGE.

Paper - I, Group - C,

Bacteriophage
or
Bacteria Eating Agent
or
Bacterial virus

Bacteriophage [Bacteria = Bacteria] →
[Phagos = Engulphment]

"That virus which is parasite on bacteria or which engulf bacterium is called bacteriophage." It is also called bacteria-eating agent or bacterial virus or just 'phage'. They are dependent on living bacteria for their existence, as such they occur in substrata where bacteria are found.

Discovery

Bacteriophages were independently worked out by F.W. Twort (1915) in England and by F. d'Herelle (1917) in Paris.

Structure
of
Bacteriophage

It is ultramicroscopic. A bacteriophage has a hexagonal to polyhedral head and a rigid tail which are almost same in length. Head measures 9500 while or

tail measures 1000 \AA in length. width of head is 650 \AA while as tail is 30 \AA . The tail has a central core surrounded by a contractile sheath. The tail serves as an adsorption organ. The portion of a head closer to the head has a projected structure called collar and the tail is terminated by six plates each of which again has contractile fibres.

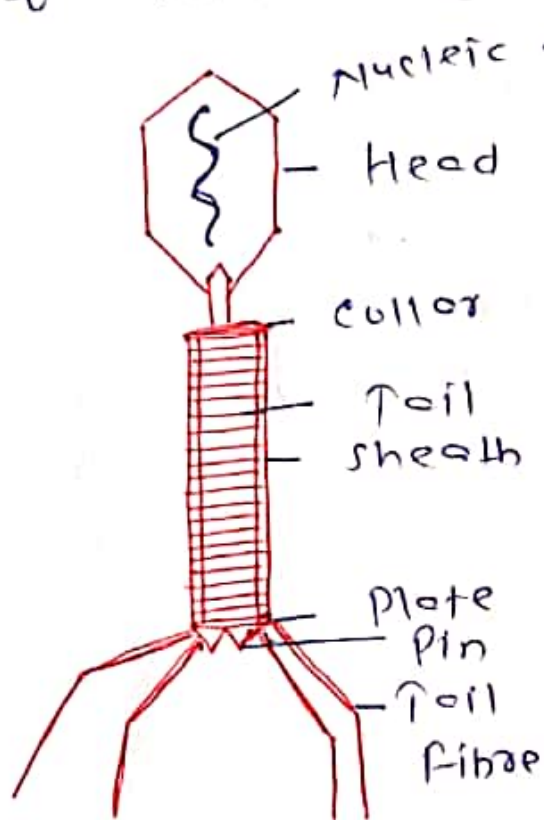


Figure - Structure detail

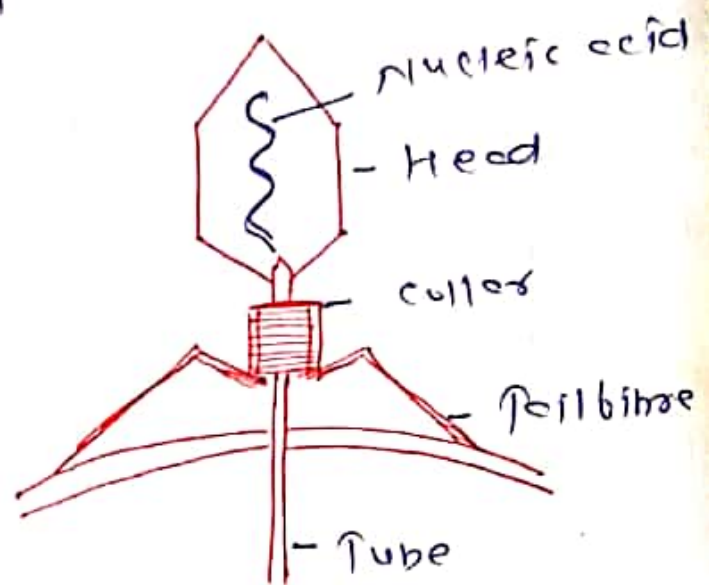
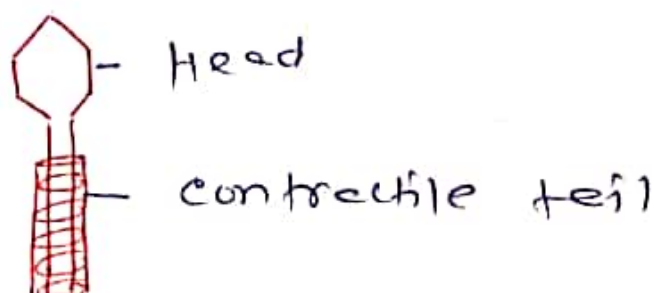


Figure - Bacteriophage cell infection by tail like tube.

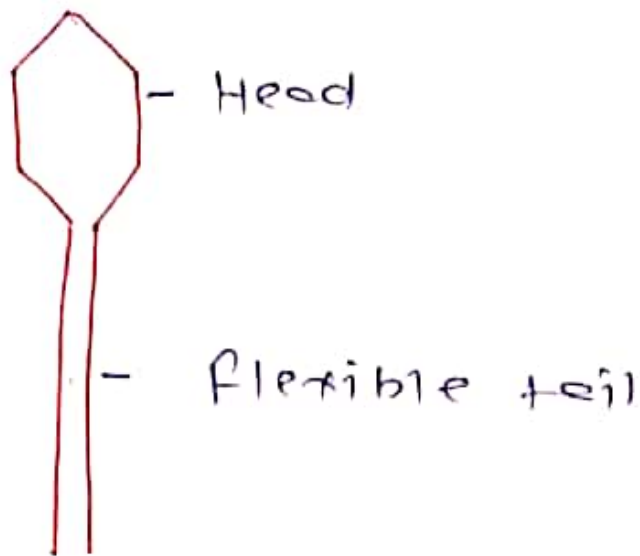
Bacteriophages occur in

Six morphological types -

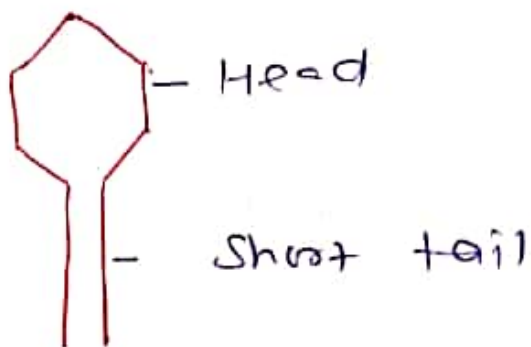
- (i) A head with a rigid tail having contractile tail and tail fibres.



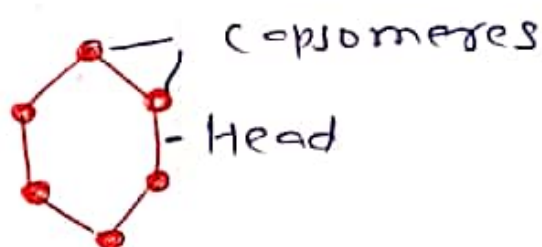
<2> A head with a flexible tail without ^③ contractile sheath. It may or may not have terminal appendages.



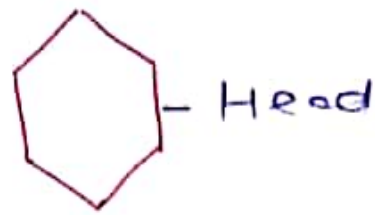
<3> A head with a short tail, the tail is without contractile apparatus and may or may not have appendages



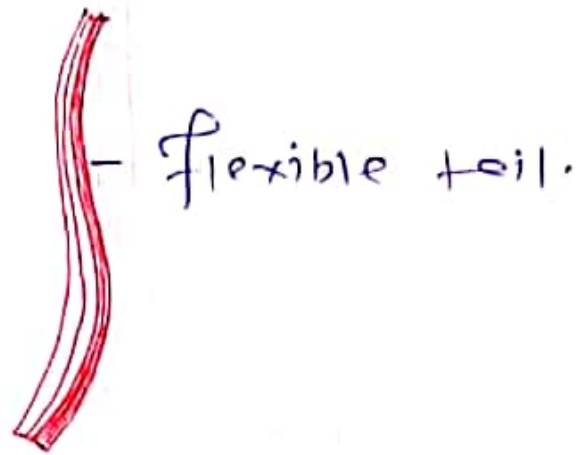
<4> A head with large capsomeres (individual protein sub-units of capsids) at each apex of a hexagon; it has no tail



(5) A simple head without capsomeres ④
and a tail.



(6) A long flexible tail without a head.



Nucleic Acid of bacteriophage

A bacteriophage has nucleic acid (DNA or RNA) and a protein coat. But few phages contain both DNA and RNA. Again some phages contain lipid and ribosome. In most of the DNA phages the nucleic acid of the virion is double stranded, although in a few cases it is single-stranded. The RNA phages have single stranded RNA in their virions. In all kinds of phages the nucleic acid is contained within the head.

Bacteriophages are

are easily isolated and cultivated ⑤
on young, actively growing cultures
of bacteria in broth or on agar pla-
tes. The best and the most usual
source of bacteriophage is col-
phage - phage pathogenic for *Escheré-
chia coli* cultures.

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