

# DESCRIBE THE STRUCTURE & REPRODUCTION OF BACTERIA

## Systematic position :-

Thallophyta  
Schizophyta  
Eubacterials  
Bacteria.

## Occurrence

- (i) Bacteria are cosmopolitan in distribution and ubiquitous (Everywhere).
- (ii) They occur in water, soil, air, animals, plants, in snow (upto  $190^{\circ}\text{C}$ ) and hot water streams (upto  $78^{\circ}\text{C}$ ).

STRUCTURE - (A) WALL LAYERS :- From out to inside following wall layers are present.

(i) Capsule or SLIME LAYER :- (i) It is outer surface compactly arranged is called capsule and loosely arranged components is called slime layer.

(ii) Present or absence of it is genetically fixed.

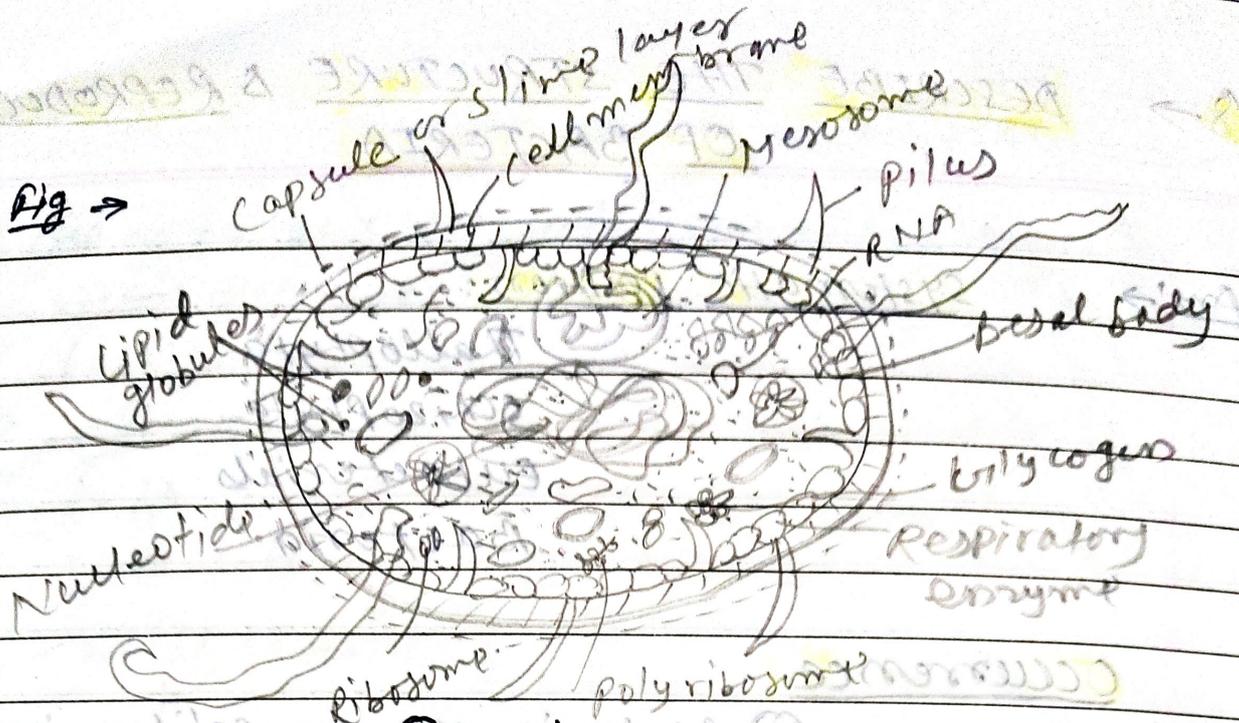
(iii) It is made up of polysaccharides and amino acid.

(iv) Capsulated bacteria form smooth colonies is called S-types which are highly virulent.

(v) Non-capsulated bacteria form rough colonies are called R-type bacteria.

FUNCTION OF CAPSULE :- (i) It acts as osmotic barrier.

(ii) During food scarcity it acts as reserve food material after digestion.



(2) CELL WALL :- (i) It is inner to capsule made up of polysaccharides, protein and lipids.

(ii) The unique components of cell wall is peptidoglycan. The cell wall of gram +ve contains 60-90% & gram -ve bacteria 10% peptidoglycan.

(iii) The outer layer of cell wall of gram -ve bacteria is made up of lipopolysaccharide and gram +ve of teichoic acid.

FUNCTION OF CELL WALL :- → (i) To provide definite shape to the cell.

[3] PLASMA MEMBRANE (or) CELL MEMBRANE :-

(i) It is inner to cell wall 3-layered structure.

(ii) It is selectively permeable.

(iii) At mid point circular coiled bodies is called Mesosomes. It is mitochondria of bacterial cell helps in respiration.

FUNCTION :- It help in equal distribution of nuclear material during binary fission.

[4] FLAGELLA :- → (i) It is motile organ one or more on the bacterial cell.

(ii) Each flagellum is whipper like 4-5  $\mu$  in length arises from basal granule plethamoplast

(iii) It is made up of flagellin proteins.

FUNCTION: - (i) It provides antigens  
(ii) It is a motile organ.

(5) FIMBRIAE OR PILLI! → (i) It is a small hair-like outgrowth present on the bacterial cell surface, called pili.

(ii) It is made up of pilin protein.

(iii) It is the character of Gram-negative bacteria but a few Gram-positive bacteria.

(iv) It is of 8 types - I, II, III, IV, V, VI, VII, VIII & F types. I & F are called sex pili.

FUNCTION: - (i) Form conjugation tube during conjugation.

(ii) Due to clump formation, help in attachment with other cells.

(B) MATRIX! - (i) It is the inner to wall layer.

(ii) In the centre, double helical, circular DNA, without any nuclear membrane present and some extranuclear membrane present and some extra plasmid, episome.

(iii) 70S (50S + 30S) type of ribosome with fatty acid granules, volutin, glycogen and sulphur granules are present.

## REPRODUCTION IN BACTERIA

= 3 types

(1) VEGETATIVE REPRODUCTION = MOST COMMON.

(2) ASEXUAL

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(3) SEXUAL

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} RARE