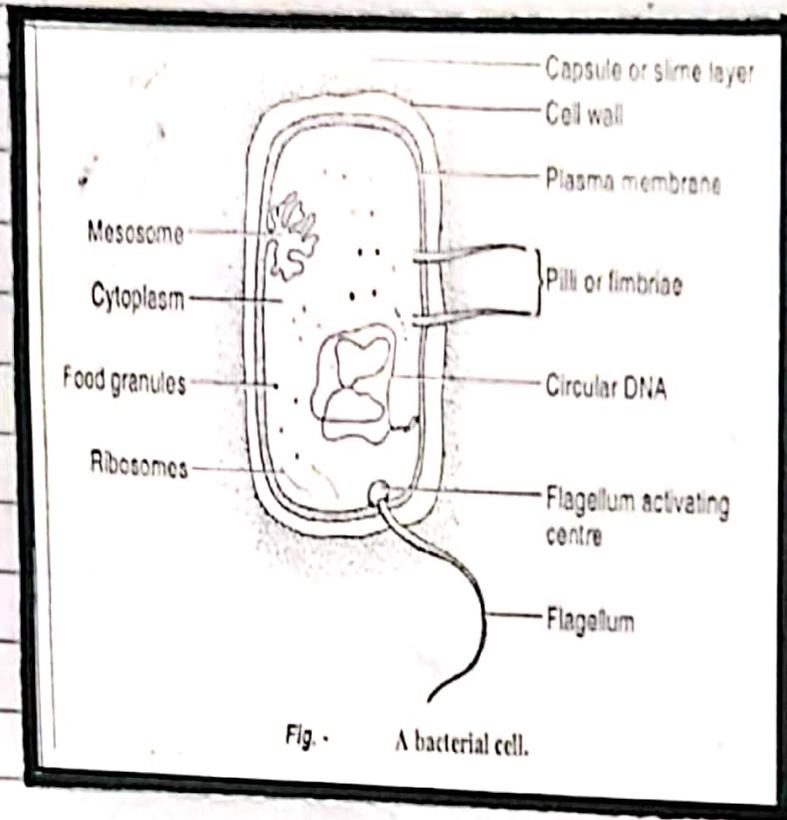


STRUCTURE OF BACTERIA AS A MODEL PROKARYOTE



1. CELL WALL

The prokaryotic cell is surrounded by cell wall. The cell wall of bacteria has murein, it is rigid structure and determines the shape of the bacterium. It also protects the cells from osmotic lysis.

2. CELL MEMBRANE

The cell membrane or plasma membrane lies beneath the cell wall.

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Bacterial cell membrane differs from eukaryotic membrane in lacking sterols such as cholesterol. Plasma membrane contains enzymes for respiratory metabolism.

3. CAPSULE (GLYCOCALYX)

A slimy capsule (glycocalyx), secreted in the cell, envelops a bacterium.

4. FLAGELLA

Many bacteria have fine thread like outgrowth called flagella.

5. PILI

Pili (singular: Pilus) are hollow protein filaments that are anchored in the membrane and project through the cell wall. They can be observed only by electron microscope and are found only on certain species of Gram negative bacteria. Pili are used to transfer genetic material during conjugation. The other function of pili is attachment on the surface of tissues of an infected person. Pili are also known as fimbriae.

6. MESOSOME

In some bacteria there is an infolding of the cell membrane into the cytoplasm, called mesosome.

The functions of mesosome are:

- a) to increase membrane surface area, allowing the cell greater activity in respiration and active transport.
- b) the formation of new ^{cell} cross wall occurs with the help of mesosomes during cell division.
- c) photosynthesis.

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7. CYTOPLASM

The cytoplasm is dense. About 90% of the cell is water.

8. VACUOLES

Small vacuoles and granules of stored food e.g. glycogen, proteins, fats, are present in bacteria.

9. RIBOSOMES

Ribosomes are large in number and occur free in the cytoplasm. Bacterial

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ribosomes are the site of protein synthesis as in eukaryotic cells. There are thousands of ribosomes in each healthy growing cell.

10. NUCLEAR MATERIAL

Bacterial cell unlike eukaryotic organisms lacks discrete chromosome and nuclear membrane. The nuclear material (DNA) in bacterial cells occupies a position near to the centre of cell. This material is a single, circular and double stranded DNA molecule.

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