

* Prokaryotic microbial cell:- Bacteria and Cyanobacteria are the examples of prokaryotic microbial cell.



⇒ prokaryotic cell is very simple as compared to eukaryotic cell.



⇒ It is generally smaller and varies in size in different members.



⇒ In mycoplasma it is about 0.12mm, while in Oscillatoria a filamentous cyanobacteria it is 40x5mm. However, a majority of them are about 1.0mm in size.



(1) Capsule:- many bacterial species like Diplococcus, Pneumococcus etc. are surrounded by a capsule.



⇒ It is a viscous or gelatinous loose aggregates of substance secreted surrounding the cell walls.



⇒ Chemically the capsule are made up of proteins, polysaccharides and lipids, but more particularly polysaccharides.

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⇒ The capsule may also function in the storage of food substances and a site for disposal of waste material.

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⇒ The presence of capsule is important in disease causability, i.e. virulence of some bacteria.

(2) Cell wall: - It is the outermost boundary in a majority of bacteria.

⇒ It is non-living and does not have the property of selective permeability, but it acts as a sieve as it is porous.

⇒ The cell wall is thin about 10-25 nm thick, and provides rigidity to the cell.

⇒ Chemically, cell wall is made up of strong fibres of heteropolymers called peptidoglycans.

⇒ peptidoglycans are also known as murein, etc.

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12) Hook: It is thicker than the filament and it penetrates the cell wall.



13) Filament: It is made up of protein fibers of about 13-14 nm in diameter.



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→ It are present only in Gram-negative bacteria for eg. Campylobacter, Pseudomonas, Enterobacteriaceae etc.

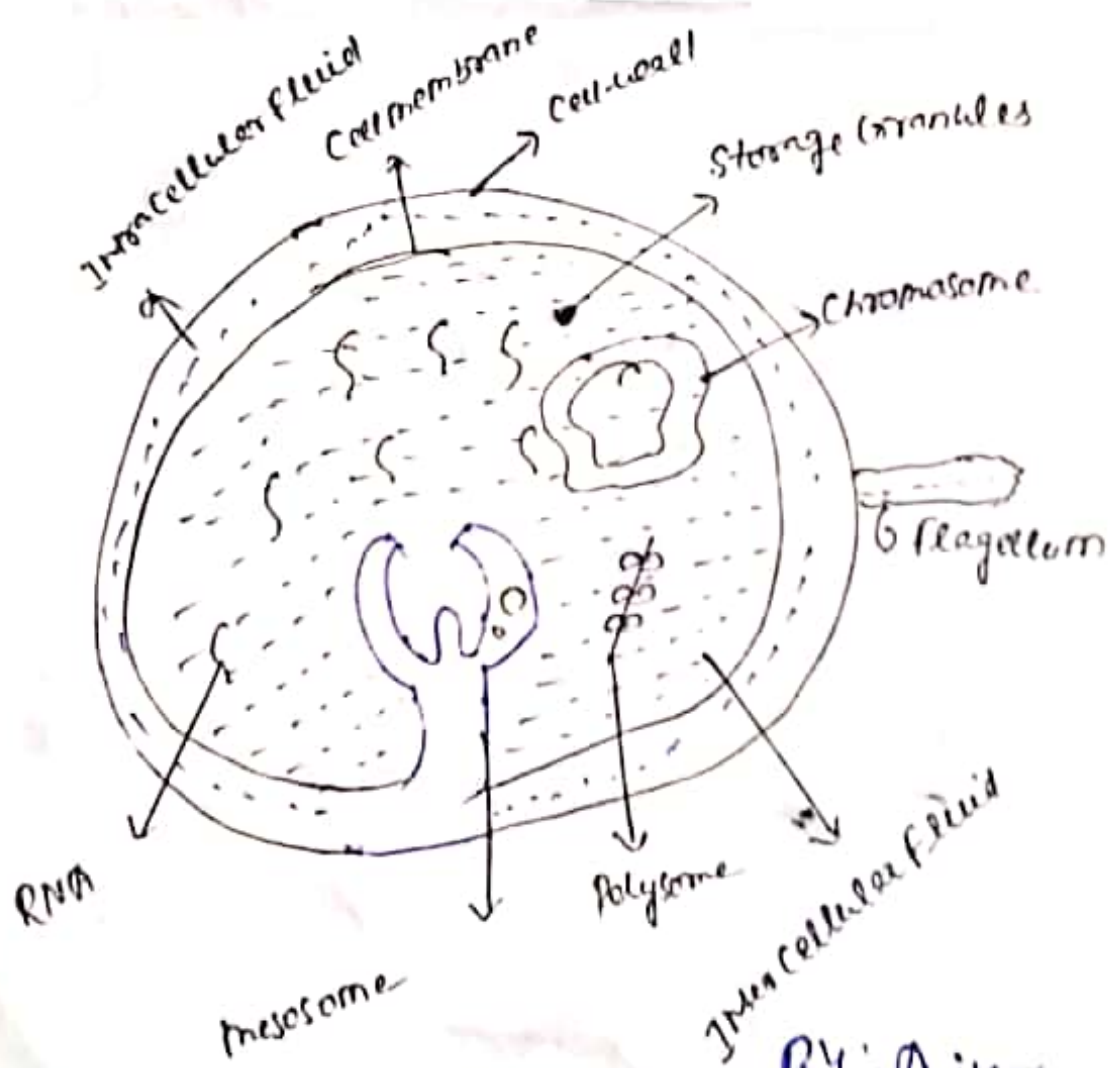


Fig: Prokaryotic microbial cell.

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(4) Ribosomes: - Prokaryotic cell contains 70S ribosome, which is made up of 2 subunits 50S and 30S.



(5) Nuclear material: - The nuclear material is present in cytoplasm without nuclear membrane and nucleolus. It is called nucleoid.



(6) Plasmids: - In many bacteria, the extra chromosomal double strand, circular DNA is present, which are called plasmids.



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(7) Mesosomes: - In some bacteria, the cell membrane forms vesicles or finger like infoldings into cytoplasm at several regions, which are called mesosomes.



(8) Sheaths: - Some species of bacteria, particularly from freshwater and marine water form chains or trichomes that are enclosed by a hollow tube called sheath.



(9) Stalks: - It is certain non-living ribbon like or tubular appendages that are secreted by the cell.



(10) Flagella: - It is thin about 0.02 μm in diameter and 9 to 20 μm long.



(11) Basal body: - It is spindle shaped structure, that joins the hook to the cell-membrane.

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