

Bacterial cell

Bacteria are unicellular free living organisms without chlorophyll having both DNA and RNA. They are capable of performing all essential processes of life ex. growth, metabolism and reproduction.

❖ Structure presents in all bacterial cell:

A:Cell wall: Is the outermost supporting layer which protects the internal structure.

The cell wall of the gram negative bacteria (GNB) is consist mainly from mucopeptides + proteins + lipids. In Gram positive bacteria (GPB) consist of mucopeptides.

B: Cytoplasm membrane: Its thin semi permeable membrane which covers the cell wall from the inside and consist of lipoprotein with small amount of carbohydrate.

C: Cytoplasm: Is suspension of organic and inorganic solutes in viscous watery solution. It contains ribosome and mesosomes , inclusions and vacuoles.

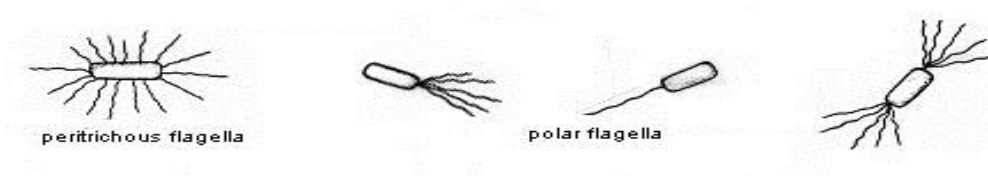
D: Nucleus: It is a long filament of DNA coiled inside the cytoplasm. The bacterial nucleus is not surrounded by nuclear membrane and don't have nucleolus.

E: Ribosome's: These are ribonucleoprotein granules. They are sites of protein synthesis.

F: Mesosomes:- Is the invagination of the cell membrane into the cytoplasm. They are the sites of respiratory enzymes in bacteria and coordinate nuclear and cytoplasm division during binary fission.

❖ Structures present in some bacterial cell:

A-Flagella (Flagellum): These are threadlike structure arises from the cytoplasm and its function is for locomotion.



b- Fimbriae: They are filamentous short , thin , straight hair like appendage also called pilli and project from cell surface .

c- Spore: They are highly resistance dormant state of bacteria found in certain genera ex: *Bacilli and Clostridium* .

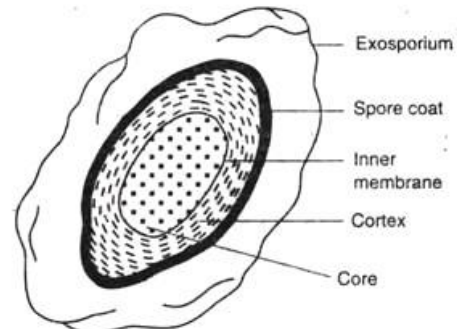
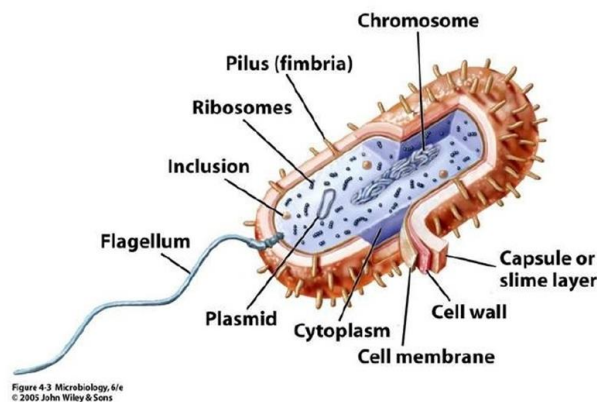


Fig. 2.23 : Bacterial endospore (diagrammatic representation)

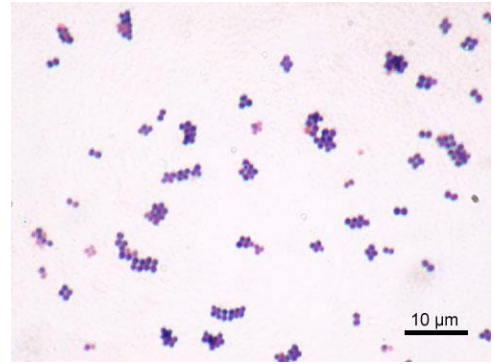
d- Capsule:



On the basis of shape, bacteria are classified as under:-

1-Cocci (meaning berry) : they are spherical ,on the basis of arrangement of individual organisms ,they are described as :-

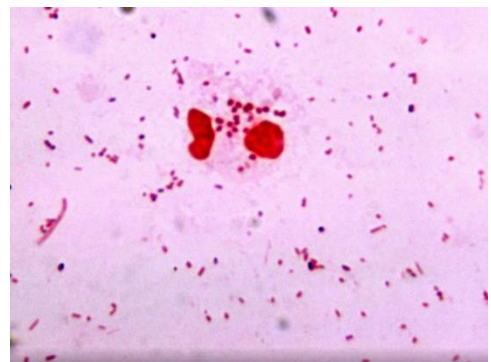
*Cocci in cluster.....*Staphylococcus*.



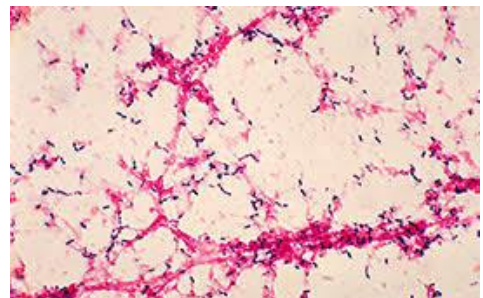
*Cocci in chain.....*Streptococcus* .



*Cocci in pair.....diplococcic.
-kidney shape.....*Neisseria* .



-lancelet*Pneumoniae* .



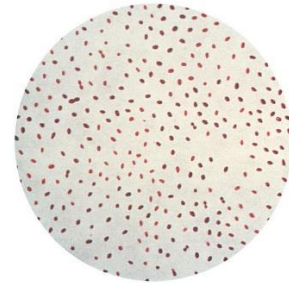
*Cocci in group of four.....tetrad .

*Cocci in group of eight.....sarcina .

2-Bacilli :- they are cylinder or rod shape .

3-Coccobacilli :-length may be approximate the width of the organism.

Brucella



4-Chines letter :-arrangement is seen in Corynebacteria .

5-Vibrio :-they are comma shape .

6-Spirochaetes :- (spiral meaning coil ,cheat meaning hair).they are long ,thin ,flexible having several coils .

7-Actinomycetes :-they are branching filamentous bacteria so called because of resemblance to radiating sun rays .

