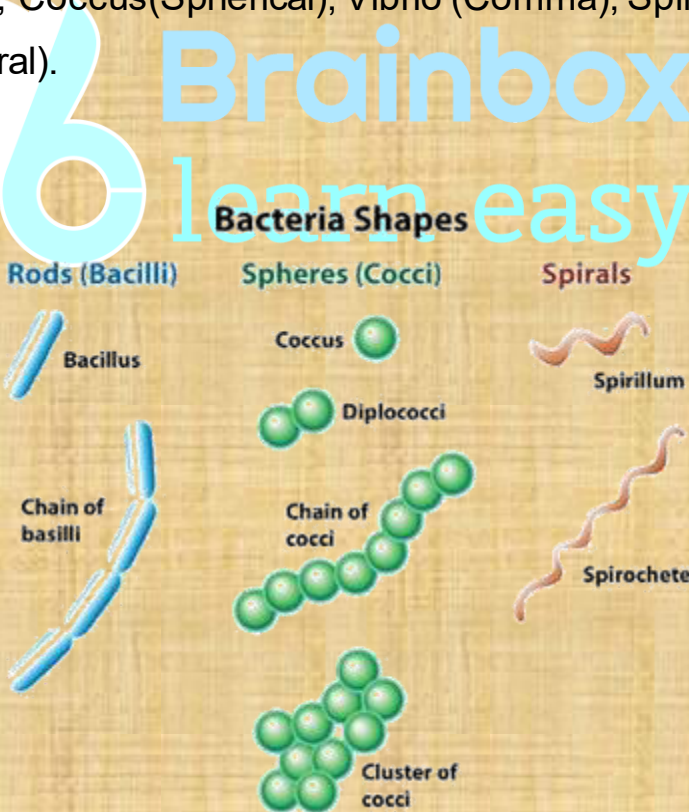


Chapter 8

CELL-THE UNIT OF LIFE

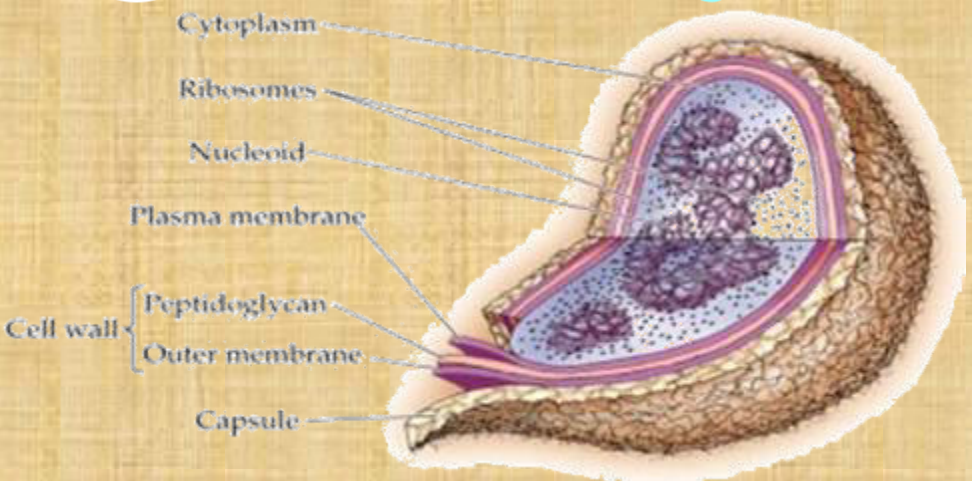
Prokaryotic Cell:

1. They are represented by bacteria, blue-green algae Mycoplasma and PPLO.
2. They are smaller in size and multiply more rapidly.
3. Bacteria cells may be in different shapes bacillus (rod like), Coccus(Spherical), Vibrio (Comma), Spirillum (Spiral).



4. All prokaryotic cells have cell wall surrounding cell membrane.
5. Fluid matrix of the cell is called as Cytoplasm.
6. In the cytoplasm there is no well defined nucleus and genetic material is naked.
7. In many bacteria, in addition to genomic DNA, single circular DNA is present called as plasmid, which provides resistance to antibiotics.
8. Except Ribosomes, all cell organelles are absent.
9. A specialized differentiated cell membrane called as Mesosome is present which is a characteristic feature. They are essentially infoldings of cell membrane.

Cell Envelope and its Modifications:



1. Most prokaryotes particularly the bacterial cell have most complex cell envelope which contains three layers.

2. The outermost layer is glycocalyx, middle layer is cell wall and innermost layer is cell membrane.
3. Although each and every layer has different functions but all together acts as single protective unit.
4. Depending upon the composition & thickness in different bacteria glycocalyx could be as loose sheath called Slime layer, in other it may be thick and tough called Capsule.
5. Cell wall provides shape to the cells and prevent if from bursting.
6. Plasma membrane is semi – permeable in nature having mesosomes in the form of vesicles, tubules and lamellae. They help in cell wall formation, DNA replication and distribution of daughter cells.
7. Bacterial cells may be motile or Non-motile.
8. If motile, they have thin – filamentous extensions from cell wall called flagella, which is composed of filament, hook and basal body.
9. Besides flagella, pili and fimbriae are the other structures that helps the bacteria to attach to host surface.
10. In prokaryotes ribosomes are associated with plasma membrane having two subunits 50 S & 30 S which when represented together to form 70 S. They are mainly useful for protein synthesis.

11. Ribosomes attaches to mRNA to form chains called Polyribosome (or) Polysome which translate RNA to proteins.

12. Based on the difference in cell envelope and response to the strain bacteria can be classified into two different group.

- a) Gram positive (Take up gram strain)
- b) Gram negative (Don't take up gram strain)

