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i- Glycocalyx (Mucilage Sheath)

It is the outermost layer, made up of macromolecules that gives sticky character to the cell. Glycocalyx differs in composition and thickness among different bacteria. It could be in the form of loose mucilaginous sheath called slime layer or thick and tough covering called capsule. Function help in resisting phagocytosis.

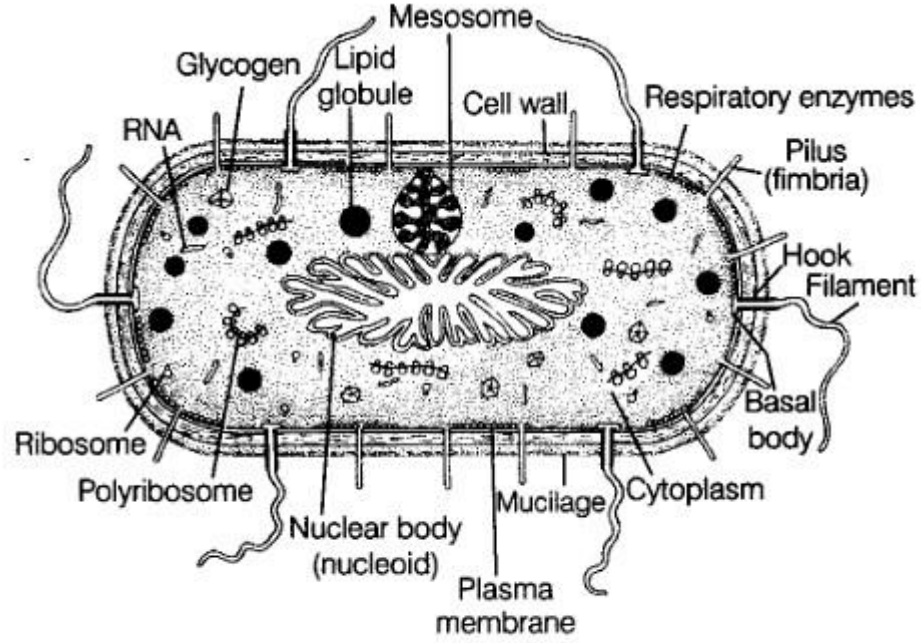

Fig. 8.3 Diagrammatic representation of a typical bacterial cell

Cell Wall

It is present just below the glycocalyx made up of peptidoglycan or murein in all eubacteria and cyanobacteria. It is a rigid and solid covering that gives shape and strong structural support to the cell.

Cell wall performs the following functions

(a) It helps in preventing cell from bursting or collapsing.
(b) It allows the material to pass in and out of the cell.
(c) It wards off the attack of pathogens like viruses, bacteria, fungi, protozoans.
(d) Provides mechanical support to the cell against gravity.

Gram Positive and Gram Negative Bacteria

According to Christian Gram (1884) various types of reactions are shown by the cell walls of

different bacteria. Thus, on the basis of the differences in the cell wall and the |
response to the staining procedure developed by Gram, bacteria are classified into following two types

(i) Gram positive (+ve) bacteria are those that take up the Gram stain and retain blue or purple colour, e.g., Bacillus subtilis, Clostridium, etc.

(ii) Gram negative (-ve) bacteria are those that do not take up Gram stain and loose the blue or purple icolour, e.g., Escherichia coli, (E.coli), Acetobacter, etc.