

For class 9th

Chapter fundamental unit of life

1. All the living organisms are made up of fundamental unit of life called "cell".
2. The cell is a Latin word for "a little room".
3. The scientist Robert Hooke saw a little room in the cork (the bark of a tree) resembled the structure of a honeycomb. The use of the word "Cell" to describe these units is used till this day in Biology as "Cell Biology".
4. The Compound Microscope consist eye piece, objective lens and condenser to observe a cell after putting a drop of Safranin (for plant cell) and methylene blue (for animal cell). (Please refer to Fig. 5.1: Compound Microscope NCERT Book Page-57)
5. The scientist Leeuwenhoek saw free living cells in the pond water for the first time. (father of microbiology)
6. The scientist Robert Brown discovered the nucleus in the cell.
7. The cell theory states that all the plants and animals are composed of cells, it was proposed by Schleiden and Schwann.
8. The cell theory was further expanded by Virchow by suggesting that "all cells arise from the pre-existing cells".
9. The cells differ in size, shape, structure (Please refer to Fig. 5.2/5.3: Onion peel/Various cells in Human body, NCERT Book Page-57/58):Types of cells: Onion cells, Smooth muscle cell, Blood cells, Bone cell, Fat cell, Nerve cell, Ovum, Sperm etc. Each kind of cell performs specific function. 59
10. A single cell may constitute a whole organism as in Amoeba, Chlamydomonas, Paramecium and Bacteria; these are called as unicellular organisms. Whereas in multi-cellular organisms (Human beings) division of labor is seen.
11. The feature in almost every cell is same: Plasma membrane, nucleus and cytoplasm.
12. Plasma membrane: It is the outermost covering of the cell.
 - It is called as selective permeable membrane (because it prevents movement of some materials).
 - It helps in diffusion and osmosis
 - Diffusion: movement of substance from high concentration to low concentration.Eg; exchange of carbon dioxide or oxygen with external environment.

osmosis: it is the passage of water from the region of high water concentration to a region of low water concentration through a selective permeable membrane.

a) The cell gains water, if the medium surrounding the cell has a higher water concentration (Hypotonic solution) than the cell.

b) The cell maintains the same water concentration as the cell (Isotonic solution), water crosses the cell membrane in both directions.

c) The cell loses water, if the medium has lower water concentration (Hypertonic solution) than the cell.

Note - The cell drinking is endosmosis;

- omission of water is called ex-osmosis.