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The Fundamental Unit of Life, are:

Cell

It is the structural and functional unit of life.

- **Cell is termed as the structural unit of life as it** provides structure to our body.
- **Cell is considered as the functional** unit of life as all the functions of the body take place at cell level.

Discovery of cell:

- Discovered by Robert Hooke in 1665.
- Robert Brown in 1831 discovered the nucleus in the cell.

Cell Theory:

Cell theory states that:

- All living organisms are composed of cells.
- Cell is the fundamental unit of life.
- All new cells come from pre-existing cells.

Types of Organisms on the Basis of Number of Cells

There are two kinds of organisms on the basis of cells:

(i) Unicellular Organisms: The organisms that are made up of single cell and may constitute a whole organism, are named as unicellular organisms.

For example: Amoeba, Paramecium, bacteria, etc.

(ii) Multicellular Organisms: The organisms which are composed of a collection of cells that assume function in a coordinated manner, with different cells specialized to perform particular tasks in the body, are named as multicellular organisms.

For example: Plants, human beings, animals, etc.

Shape and Size of Cells

- Cells vary in shape and size. They may be oval, spherical, rectangular, spindle shaped, or totally irregular like the nerve cell.
- The size of cell also varies in different organisms. Most of the cells are microscopic in size like red blood cells (RBC) while some cells are fairly large like nerve cells.

Types of Cells

The cells can be categorized in two types:

1. Prokaryotic Cell 2. Eukaryotic Cell

1. Prokaryotic cell

Prokaryotic cells are cells in which true nucleus is absent. They are primitive and incomplete cells. Prokaryotes are always unicellular organisms. For example, archaebacteria, bacteria, blue green algae are all prokaryotes.

2. Eukaryotic Cell

Eukaryobc cells are the cells in which true nucleus is present. They are advanced and complete cells. Eukaryotes include all living organisms (both unicellular and multicellular organisms) except bactera and blue green algae.

Difference Between Prokaryotic and Eukaryotic Cells:

S. No.	Prokaryotic cell	Eukaryotic cell
1.	Size of cell is generally small (1-10 mm).	Size of cell is generally large (5-100 mm).
2.	Nucleus is absent.	Nucleus is present.
3.	It contains single chromosome.	It contains more than one chromosome.
4.	Nucleolus is absent.	Nucleolus is present.
5.	Memrane bound cell organelles are absent.	Memrane bound cell organelles such as mitochondria, plastids, endoplasmic reticulum, golgi apparatus, lysosomes, etc., are present.

6.	**Cell division takes place by fission or budding.**	**Cell division takes place by mitotic or meiotic cell division.**

Structure of Cell

Cell is generally composed of three basic components:

(i) Cell wall and cell membrane

(ii) Nucleus

(iii) Cytoplasm

(i) Cell membrane or Plasma membrane:

Plasma membrane is the covering of the cell that separates the contents of the cell from its external environment.
It is a living part of the cell and is present in cells of plants, animals and microorganisms.
It is very thin, delicate, elastic and selectively permeable membrane.
It is composed of lipid and protein.

Function:

As it is selectively permeable membrane, it allows the flow of limited substances in and out of the cell.