

BIOLOGY

CLASS NOTES FOR CBSE

Chapter 01. The Fundamental Units Of Life : Cell

01. What is The Living Being Made Up of ?

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

Discovery of Cell :

- (a) Discovered by Robert Hooke in 1665 in cork resembling the structure of honeycomb consisting of many little compartments in self designed microscope. Cork is a substance which is obtained from the bark of a tree.
- (b) Robert Brown in 1831 discovered the nucleus in the cell.

02. Discovery of Cell

- (i) Discovered by Robert Hooke in 1665 in cork resembling the structure of honeycomb consisting of many little compartments in self designed microscope. Cork is a substance which is obtained from the bark of a tree.
- (ii) Robert Brown in 1831 discovered the nucleus in the cell.

Cell Theory : Given by **Jacob Matthias Schleiden** (18-04-1881), a German botanist, first proposed the idea that all plants consist of cells. A year later, in 1839, **Theodor Schwann** (18-10-1882), a German zoologist, independently asserted that all animals and plants are made up of cell. 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:

Different between unicellular and multicellular organisms.

Unicellular Organisms	Multicellular Organisms
<ul style="list-style-type: none">• An unicellular organisms is represented by a single cell.	<ul style="list-style-type: none">• A multicellular organisms consists of large number of cells.
<ul style="list-style-type: none">• All activities of the organisms are performed by a single cell.	<ul style="list-style-type: none">• A single cell performs one or few activities of the organisms.
<ul style="list-style-type: none">• There is no division of labour as the single cell perform all life activities.	<ul style="list-style-type: none">• Cells are specialised to perform different functions of the body so that there is a division of labour within cells.
<ul style="list-style-type: none">• Reproduction consumes a single cell.	<ul style="list-style-type: none">• Only some cells of the body called germ cells take part in reproduction. Other cells (somatic cells) remain intact.
<ul style="list-style-type: none">• The life span of an individual is short.	<ul style="list-style-type: none">• The life span of an individual is long.



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Shape and Size of Cells

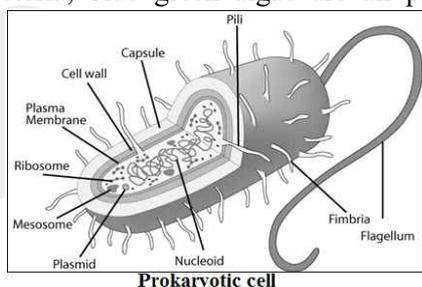
- Cells vary in shape and size. They may be oval, spherical, rectangular, spindle shaped, or totally irregular like the nerve cell.
- The size of cell also varies in different organisms. Most of the cells are microscopic in size like red blood cells (RBC) while some cells are fairly large like nerve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

03. Types of Cells

The cells can be categorized in two types:

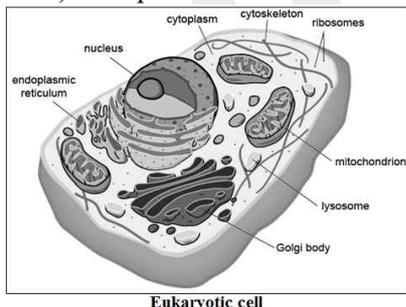
(i) Prokaryotic cell :

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.



(ii) Eukaryotic Cell

Eukaryotic 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 bacteria and blue green algae.



Prokaryotic cell	Eukaryotic cell
<ul style="list-style-type: none"> Size of a cell generally small (1-10mm). 	<ul style="list-style-type: none"> Size of a cell is generally large (5-100mm.)
<ul style="list-style-type: none"> Nucleus is absent (Nuclear region or nucleoid is not surrounded by a nuclear membrane). 	<ul style="list-style-type: none"> Nucleus is present (Nuclear material is surrounded by a nuclear membrane).
<ul style="list-style-type: none"> It contains single chromosome. 	<ul style="list-style-type: none"> It contains more than one chromosome.
<ul style="list-style-type: none"> Nucleolus is absent. 	<ul style="list-style-type: none"> Nucleolus is present.
<ul style="list-style-type: none"> Membrane bound cell organelles are absent. 	<ul style="list-style-type: none"> Membrane bound cell organelles such as mitochondria, plastids, endoplasmic reticulum, Golgi apparatus, lysosomes, peroxisomes, etc., are present.
<ul style="list-style-type: none"> Cell division takes place by fission or budding (no mitosis). 	<ul style="list-style-type: none"> Cell division occurs by mitotic or meiotic cell division.



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