



CELL

The Fundamental Unit Of Life



What is Cell?

Cell is the basic Structural and functional unit of living organisms.

In other words, cells make up living things and carry out activities that keep a living thing alive.

Cell Theory

Cell theory is a collection of ideas and conclusions from many different scientists over time that describes cells and how cells operate.

- 1** All known living things are made up of one or more cells.
- 2** All living cells arise from pre-existing cells by division.
- 3** The cell is the basic unit of structure and function in all living organisms.

Cell Theory Timeline



1665

Robert Hooke
Discovered cell

1674

Anton Van Leeuwenhoek
Observed living cell



1883

Robert Brown
Discovered nucleus



Cell Theory Timeline

1835

Felix Dujardin

Discovered fluid
content of cell



1839

J. E. Purkinje

Named fluid content of
cell as protoplasm



1838

Matthias Schleiden

Proposed all plants are
made up of cells



Cell Theory Timeline



1839

Theodor Schwann

Proposed all animals
are made up of cells

1845

Carl Heinrich Braun

Proposed cell is the basic
unit of life



1855

Rudolf Virchow

Proposed all cells arise
from pre-existing cells



Unicellular Organisms

An organism that is made up of only one cell is called as unicellular organism.



Euglena



Paramecium



Yeast

Multicellular Organisms

An organism that is made up of more than one cell is called as multicellular organism.



Plants



Animals



Fungus

Multicellular Organisms Under Microscope



Leaf cells



Muscle cells

Size of Cells

Cells vary in size.

Most cells are very small (microscopic), some may be very large (macroscopic).

The unit used to measure size of a cell is micrometer.

1 μm = 1/1000 millimeter

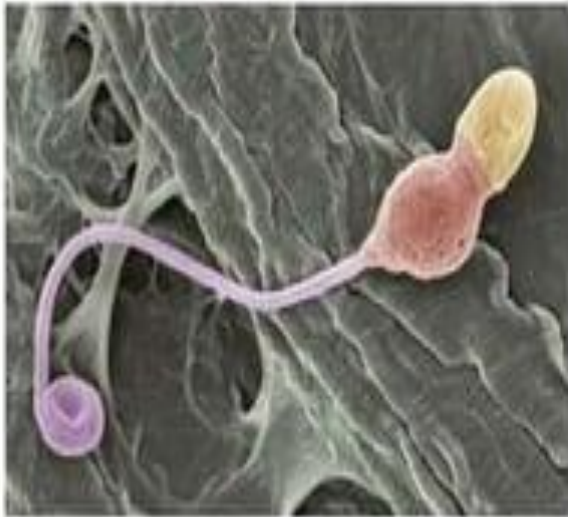
- Smallest cell
- Mycoplasma
- Size: 0.1 μm



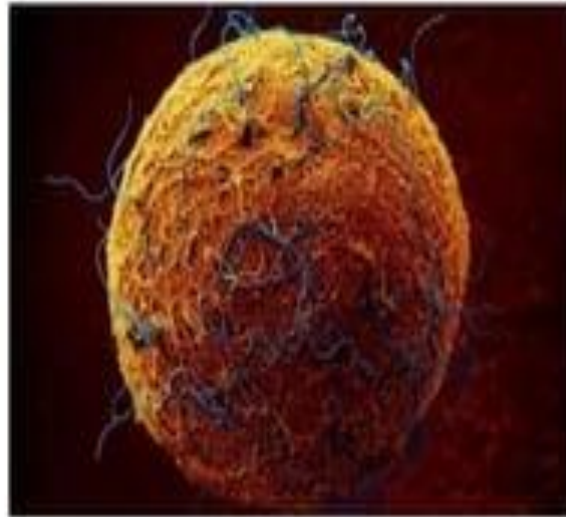
- Largest cell
- Ostrich egg
- Size: 18 cm



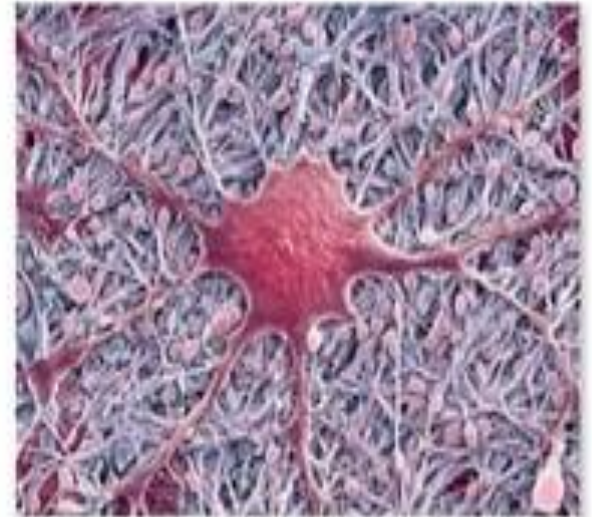
Size of Cells in Humans



Smallest cell
Sperm cell
Size: 5 μm



Largest cell
Ovum cell
Size: 120 μm



Longest cell
Nerve cell
Size: 1 m

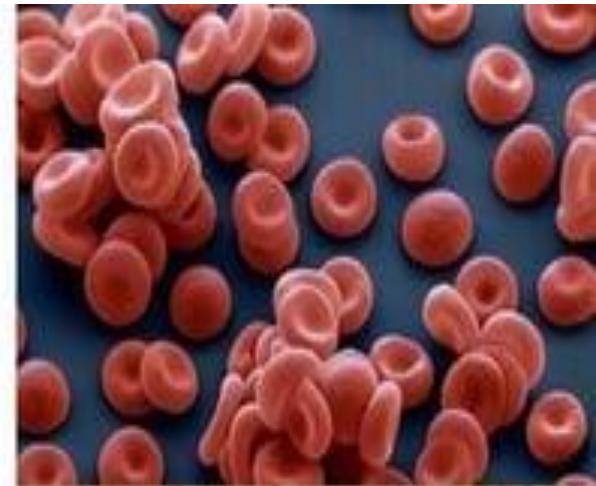
Shape of Cells

Cells vary in shape.

Variation depends mainly upon the function of cells.

Some cells like Euglena and Amoeba can change their shape, but most cells have a fixed shape.

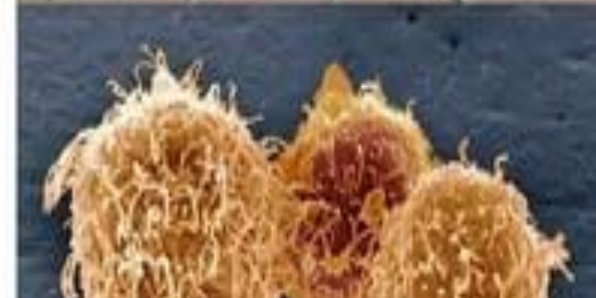
Human RBCs are circular biconcave for easy passage through human capillaries.



Nerve cells are branched to conduct impulses from one point to another.



Human WBCs can change their shape to engulf the microorganisms that enter



Structure Of Cell

The detailed structure of a cell has been studied under compound microscope and electron microscope.

Certain structures can be seen only under an electron microscope.

The structure of a cell as seen under an electron microscope is called ultrastructure.

Compound microscope

Magnification 2000X



Electron microscope

Magnification 500000X

