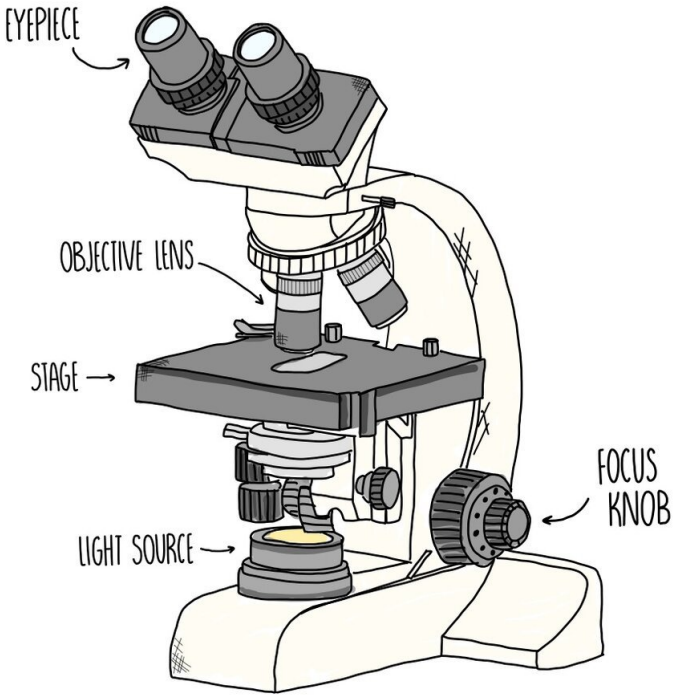
Microscope and Discovering Cells

Cells are the smallest building blocks of living things. They are responsible for important functions that keep living organisms alive.

The microscope played a crucial role in discovering cells. As microscopes improved, like the modern light microscope, scientists could learn more about how cells are structured.

Parts of the modern light microscope:

1. Arm: Holds the microscope.
2. Stage: Where the slide with the sample is placed.
3. Light source: Provides illumination.
4. Eyepiece lens: Helps view the sample on the slide and magnifies it.
5. Objective lenses: These lenses can be rotated and have different magnification powers.
6. Coarse focus knob: Moves the stage up and down for focusing.
7. Fine focus knob: Used for fine-tuning the focus.



There were important stages in the discovery of cells:

1. Robert Hooke: In 1665, he used a simple microscope to observe dead cells from cork surrounded by walls.
2. Anton van Leeuwenhoek: In 1673, he observed tiny living organisms in a drop of pond water using his microscope.
3. Matthias Schleiden: In 1838, he discovered that plants are made up of cells.
4. Theodor Schwann: In 1839, he found that animals are made up of cells.
5. Rudolf Virchow: In 1855, he realized that cells come from other cells through division.

Cell theory

Scientists developed the cell theory, which has three main ideas:

1. Cells are the basic units of living things.
2. All living organisms are made up of one or more cells.
3. Cells come from pre-existing cells.

Cell Components

Living organisms' cells share fundamental components, which are:

1. Plasma membrane.

   Plasma Membrane: A thin membrane that surrounds every cell, its functions are:

   - Protecting the cell from external factors.
   - Contributing to the regulation of material exchange between the cell and its surroundings.

2. Cytoplasm.

Cytoplasm: A semi-transparent gel-like substance composed mostly of water and dissolved substances. It contains various structures and surrounds the plasma membrane.

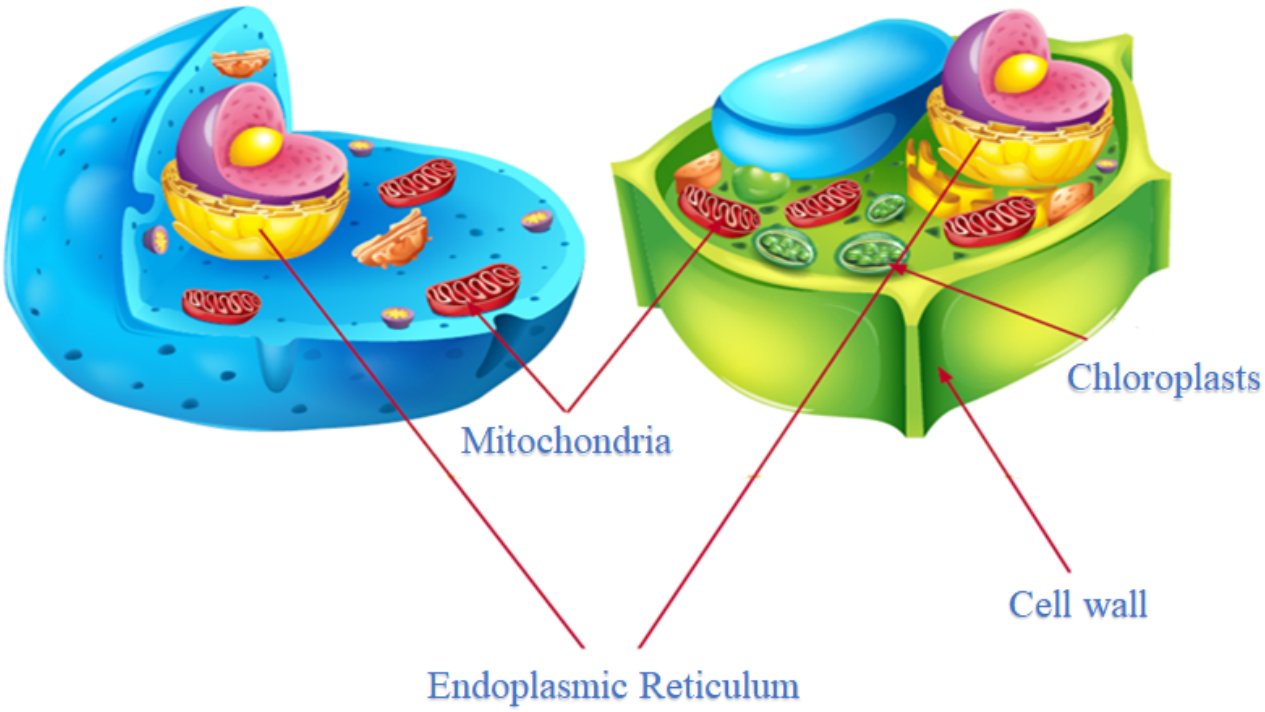
3. Genetic material.

Plant Cells and Animal Cells

Plant cells and animal cells contain specialized structures called organelles.

Examples of Cell Organelles

- Endoplasmic Reticulum: Transports materials within the cell.
- Mitochondria: Produces necessary energy.
- Chloroplasts: Responsible for food production in plants through photosynthesis.
- Ribosomes: Involved in protein synthesis within the cell.
- Cell Wall: Surrounds plant cells, providing shape and support.



Classification of Living Organisms Based on their cells

living organisms are classified into two types:

1. Single-celled organisms: These are organisms that consist of a single cell, such as bacteria.
2. Multicellular organisms: These are organisms that consist of multiple cells, such as animals.