

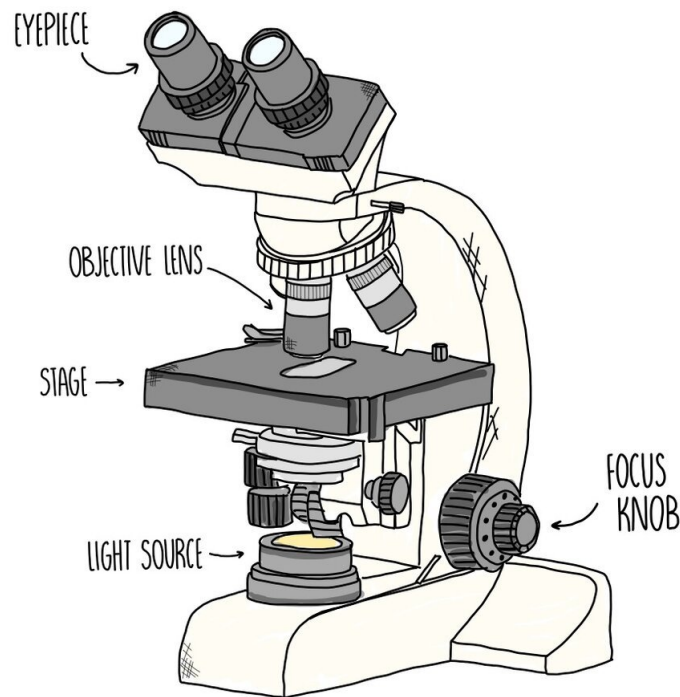
## Microscope and Discovering Cells

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.

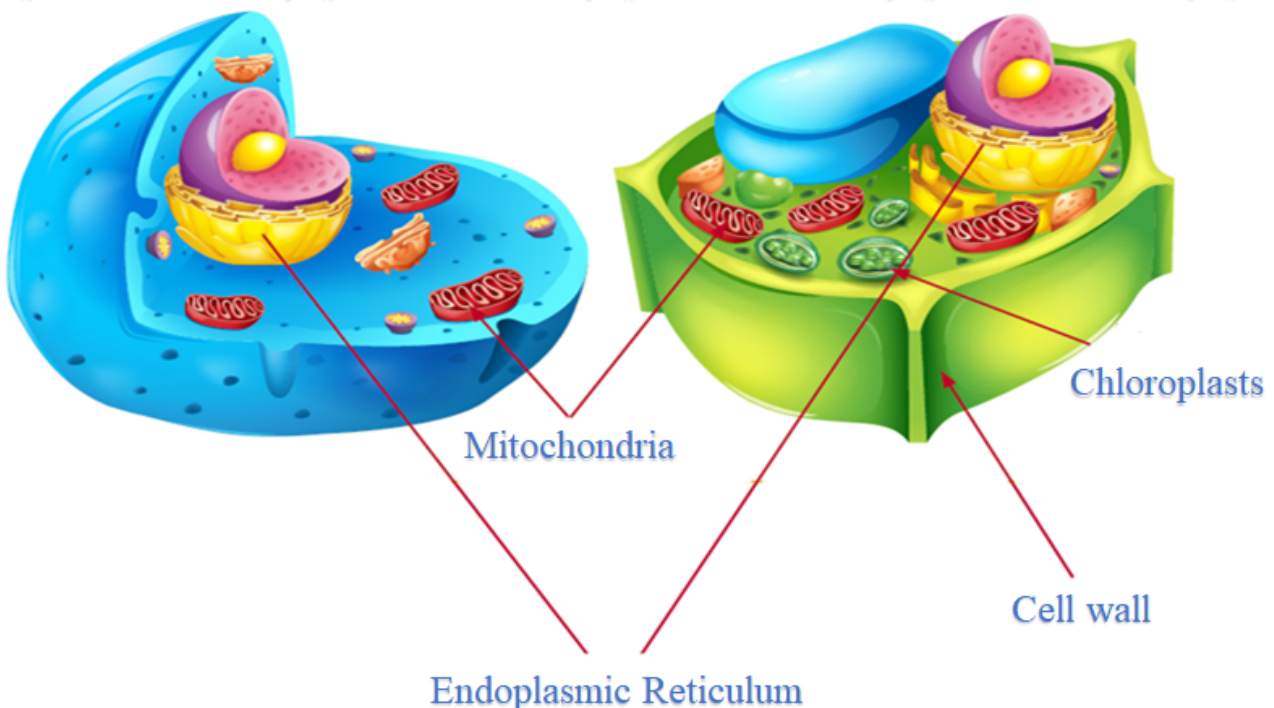
### 3. Genetic material.

## 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.