

Cell Theory

- All living things are made up of one or more cells and their products.
- The cell is the simplest unit that can carry out all life processes.
- All cells come from other cells; they do not come from non-living matter.

- Prokaryote: A cell that does not contain a nucleus or other membrane-bound organelles.
- Eukaryote: A cell that contains a nucleus and other organelles, each surrounded by a thin membrane.

Functions

- Cytoplasm: It is mostly water, it also contains many other substances that the cell stores until they are needed. Chemical reactions take place within the cytoplasm which can change from jelly-like to liquid allowing organelles to be moved around.
- Cell Membrane: The cell is covered by a flexible double-layered cell membrane. It supports the cell and allows some substances to enter while keeping others out. Small molecules like oxygen and water can easily pass through the cell membrane while larger molecules cannot.
- Nucleus: Contains the genetic material and controls the cell's activity. Genetic information is stored on chromosomes. Chromosomes contain DNA (deoxyribonucleic acid), the substance that carries the coded instructions for all cell activity.
- Mitochondria: They make energy available to the cell. Cells store energy as a form of glucose (a sugar). They contain enzymes that help to convert the stored energy into an easily usable form. This process is called "cellular respiration" which requires oxygen.
- Endoplasmic reticulum: A three-dimensional network of branching tubes and pockets. Extends throughout the cytoplasm and is continuous from the nuclear membrane to the cell membrane. They transport materials like protein through the cell. In the brain, it assists with the production and release of hormones.