



CELL STRUCTURE



EUKARYOTIC VS PROKARYOTIC CELLS

- Eukaryotic cells (plant and animal cells) have a cell membrane, cytoplasm, and genetic material enclosed in a nucleus.
- Prokaryotic cells (bacterial cells) are smaller and have a cell membrane, cytoplasm, and a cell wall.
- In prokaryotic cells, genetic material is in a single DNA loop and not enclosed in a nucleus.
- Prokaryotic cells may also contain small rings of DNA called plasmids

STANDARD FORM

Standard form is a way to write very large or very small numbers in a compact format. It is written as a number between 1 and 10 multiplied by a power of 10.

- Example 1: 3,000 in standard form is 3×10^3
- Example 2: 0.005 in standard form is 5×10^{-3}

Standard form is useful for dealing with extreme values, such as the size of cells.

- Example 3: A bacterial cell that is 0.000002 meters long can be written as 2×10^{-6} meters in standard form.

SUB-CELLULAR STRUCTURES

PLANT AND ANIMAL CELLS...

Nucleus: Contains the cell's genetic material (DNA) and controls the cell's activities.

Cell Membrane: Controls what enters and leaves the cell, acting as a protective barrier.

Mitochondria: The powerhouse of the cell, where energy is released through respiration.

Ribosomes: Tiny structures where proteins are made (protein synthesis).



ONLY IN PLANT CELLS...



Chloroplasts: Contain chlorophyll and are where photosynthesis happens, converting sunlight into energy for the plant.

Permanent Vacuole: A large sac filled with cell sap that helps maintain the cell's shape and stores nutrients.

Cell Wall: Made of cellulose, it provides strength and support to the cell.