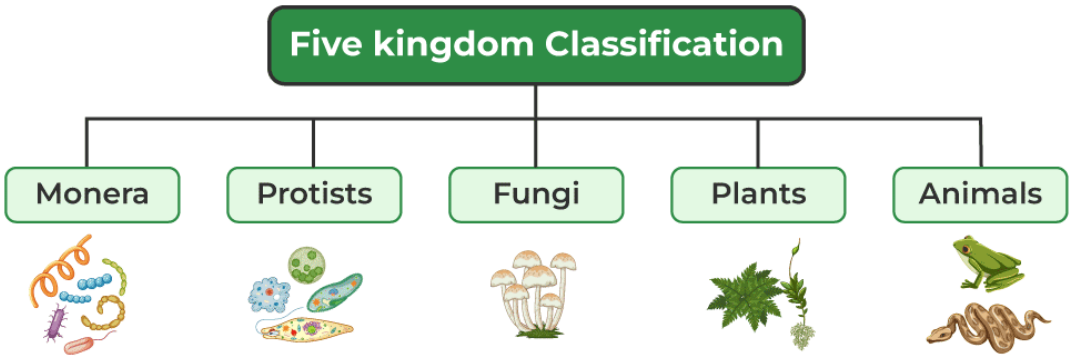
1.4 Classification of Organisms

In the 18th century, a scientist named **Carl Linnaeus** first proposed organizing the known species of organisms into a hierarchical taxonomy. In this system, species that are most similar to each other are put together within a grouping known as a genus. Furthermore, similar genera (the plural of genus) are put together within a family. This grouping continues until all organisms are collected together into groups at the highest-level., from lowest to highest: species, genus, family, order, class, phylum, kingdom, domain. Thus species are grouped within genera, genera are grouped within families, families are grouped within orders.

living things are divided into five kingdoms: **animal**, **plant**, **fungi**, **protist** and **monera**.



here are seven main taxonomic ranks: **kingdom**, **phylum**, **class, order, family, genus**, and **species**.

Cell structure

There are many different types, sizes, and shapes of cells in the body. For descriptive purposes, the concept of a "generalized cell" is introduced. It includes features from all cell types. A cell consists of three parts: the cell membrane, the nucleus, and, between the two, the cytoplasm. Within the cytoplasm lie arrangements of fine fibers and hundreds or even thousands but distinct structures called **organelles**.

1. Cell membrane

Every cell in the body is enclosed by a cell (Plasma) membrane. The cell membrane separates the material outside the cell, extracellular, from the material inside the cell, intracellular. It maintains the integrity of a cell and controls passage of materials into and out of the cell. All materials within a cell must have access to the cell membrane (the cell's boundary) for the needed exchange.

2. Nucleus and Nucleolus

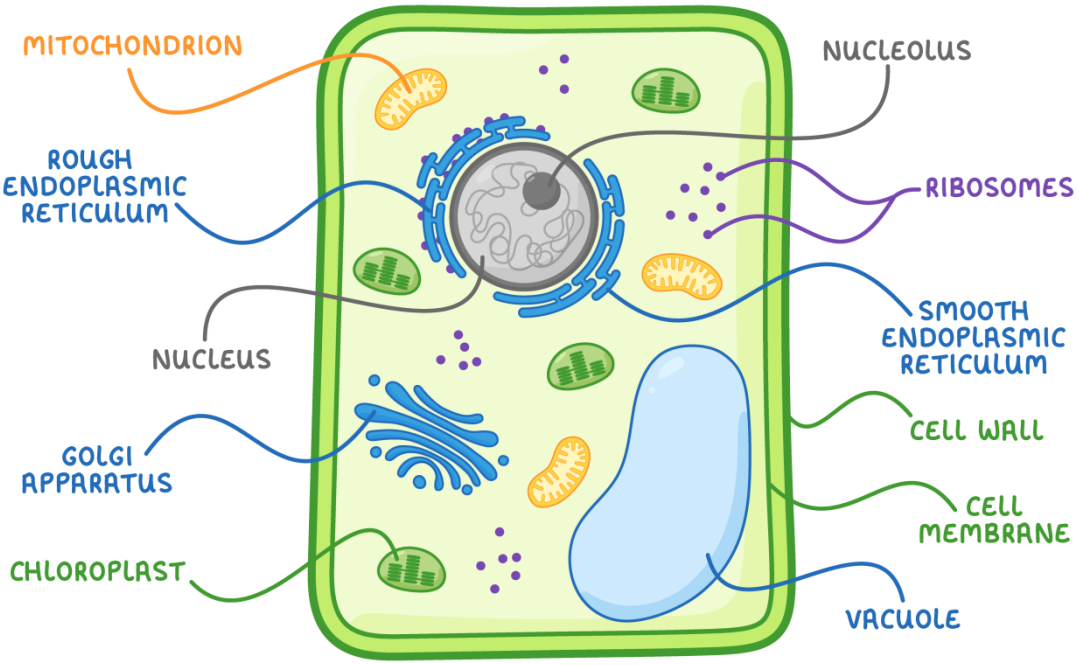
The nucleus, formed by a nuclear membrane around a fluid nucleoplasm, is the control center of the cell. contain deoxyribonucleic acid (DNA), the genetic material of the cell. The nucleolus is a dense region of ribonucleic acid (RNA) in the nucleus and is the site of **ribosome formation**. The nucleus determines how the cell will function, as well as the basic structure of that cell.

3. Cytoplasm

The cytoplasm is the **gel-like fluid** inside the cell. It is the medium for chemical reaction. It provides a platform upon which other organelles can operate within the cell. All of the functions for cell expansion, growth and replication are carried out in the cytoplasm of a cell. Within the cytoplasm, materials move by diffusion, a physical process that can work only for short distances.

4. Cytoplasmic organelles

Cytoplasmic organelles are "little organs" that are suspended in the cytoplasm of the cell. Each type of organelle has a definite structure and a specific role in the function of the cell. Examples of cytoplasmic organelles are **mitochondrion, ribosomes, endoplasmic reticulum, golgi apparatus, and lysosomes**.



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