

8th Standard- Science

Cell Structure and Functions

All organisms are the combination of different parts, i.e., called organs.

Roots, stems, leaves and flowers are the organs of plants.

Hands, feet, legs, heart, kidney etc. are the organs of animals.

All organs are made up of tissues which in turn are made up of cells.

Though organisms differ in shape and size, these are all made up of a basic unit called cells.

Cells present in living organism, differ in numbers, shape and size.

Bacteria (PPL0) has the smallest cell size of 0.1 microns. Ostrich egg has the largest cell size of 170 mm.

The shape of cells varies from spherical, cuboidal, columnar to long and branched types.

Some cells have an irregular shape, i.e., Amoeboid shape, in case of amoeba.

There are unicellular organisms (bacteria) as well as multicellular organisms (plants and animals).

Each cell has smaller components, called organelles. Some of these are common to different cell types. Each organelle has its own specific function.

The single cell of unicellular organisms performs all the basic functions, i.e., performed by a variety of cells in multicellular organisms.

The cell has three main parts:

- the cell membrane
- cytoplasm which contains smaller components called organelles, and
- the nucleus.

Nucleus is separated from the cytoplasm by a nuclear membrane.

Nucleus acts as a control centre for all the activities of the cell.

Nucleus contains some smaller spherical body, i.e., nucleolus and threadlike structure, i.e., chromosomes.

The chromosomes carry genes that help in inheritance or transfer of characters from parents to the offspring.

Nucleoplasm is the liquid material of the nucleus.

Cells without a well-organised nucleus, i.e., lacking a nuclear membrane, are called prokaryotic cells.

Plant cells differ from animal cells in having an additional layer around the cell membrane termed as the cell wall.

Coloured organelle, i.e., called plastids, are found in the plant cells only. Green plastids containing chlorophyll are called chloroplasts.

Plant cell has a big central vacuole unlike a number of small vacuoles in animal cells.

Cell is the basic structural and functional unit of all living organisms.

Cell Membrane: Cell membrane is a membrane around the cell. It is also called the plasma membrane.

Cell wall is a hard and rigid covering of plasma membrane and found in plant cells only.

Chloroplasts are the green coloured plastids having chlorophyll, a which is essential for photosynthesis.

Chromosomes are a thread like structures found in the nucleus. It carries genes.

Protoplasm is the viscous fluid inside the cell which provides living nature to it.

Eukaryotes: The organisms having eukaryotic cells, i.e., contains a well developed nucleus are called eukaryotes.

Gene: Genes are located on chromosomes. Gene is a unit of inheritance in living organisms.

Multicellular is the category of the organism like plants and animals, containing large number of cells.

Nuclear membrane: Nucleus is separated from the cytoplasm by the nuclear membrane.

Nucleolus is a smaller, spherical and dense body inside the nucleus.

Nucleus is the denser region of the cell and may be present at the centre of the cell.

Organ: an Organ is a group of tissues, specialized to perform specific functions.

Organelle is one of the smaller components of a cell.

Plasma membrane is a membrane around the cell, also called cell membrane.

Plastids are the coloured organelles, that are found in plant cells only.

Prokaryotes: The organisms with prokaryotic cells, lack true nucleus; they are called prokaryotes e.g., bacteria and blue green algae.

Pseudopodia are the projections protruding out of the body of amoeba. These appear and disappear as amoeba moves.

Tissue: A tissue is a group of similar cells performing a specific function.

Unicellular is the category or organism like bacteria containing only a single cell.

Vacuoles: Are the empty or blank looking structures in the cytoplasm.

White blood cells (WBC): It is one of the components of blood cells. It is an example of a single cell which can change its shape.

