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Eukaryotic Cell

A cell which has a well organised nucleus with a nuclear envelope and several membrane bound organelles is called eukaryotic cell.

Internal organisation of eukaryotic cells is more advanced and elaborate, than the prokaryotic cells. All eukaryotic cells are not identical. Except monerans, eukaryotic organisation is seen in all the protists, plants, fungi and animals. Eukaryotic cell is larger than the prokaryotic cell (i.e., around 10-100 μ m in size).

Generalised Structure

An extensive compartmentalisation of cytoplasm is seen through the presence of membrane bound organelles. Eukaryotic cells also possess a variety of locomotory and cytoskeletal structures.

All eukaryotic cells are not-identical, instead they differ from each other on the basis of structure and function. Cell wall is a special membrane, being present in plants, fungi and some protists. Plants cells also contain a large vacuole and plastids, which are absent in animal cells, while animal cells possess centrioles, which are absent in plant cells.

Differences between Plant and Animal Cell

Components of a Eukaryotic Cell

An eukaryotic cell is composed of various cell components as cell membrane, cell wall (only in plants), mitochondria, chloroplast, Golgi bodies, ribosomes, centrioles (only in animals), etc. All these are described here under in detail.

Cell Membrane

Every living cell is covered by a thin, elastic, transparent, semi-permeable and regenerative membrane called cell membrane also called plasma membrane or plasmalemma. The plasma membrane separates the internal environment of the cell from external environment. As this membrane helps in regulating the entrance and exit of molecules into and out of the cell.

In 1950s with the advancement of electron microscope the detailed structure of the membrane was studied. Most of the initial studies on cell membrane structure, i.e., especially on the human Red Blood cells (RBCs), which enabled the scientists to deduce the possible structure of plasma membrane.

Human RBCs are considered to be the best material for the study of biochemical composition of the cell membrane because they lack nucleus as well as cytoplasmic organelles.

Structure

Studies on human RBCs concluded that the cell membrane is composed of lipid which forms a bilayer with protein molecules embedded in it at places. Later it was revealed that cell

membranes also possess protein and carbohydrates.