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Commentary

Functional and Regulatory Characteristics of Eukaryotic Cells

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DESCRIPTION

Eukaryotic cells are characterized by their organized nucleus and organelles that are enclosed in membranes. Eukaryotic cells include those found in plants, animals, fungus, and protists. They have chromosomes, which organize their genetic material. Eukaryotic cells have the golgi apparatus, mitochondria, ribosomes, and nucleus. Eukaryotic cells also contain nuclei.

Parts of eukaryotic cells

Cytoplasmic membrane: It is also known as the plasma membrane or the cell membrane. Plasma membrane divides a cell's interior from its exterior.

Cell wall: In fungal and plant cells, the cell wall is a rigid, non-living structure that is located outside of the plasma membrane. It is absent in eukaryotic cells.

Endoplasmic Reticulum (ER): It is an interconnected network of tiny, tubular structures. It separates the interior of eukaryotic cells into luminal (located inside the ER) and extra-luminal spaces (cytoplasm). Cisternae, or flat, disc-shaped buildings, make up the golgi. All eukaryotic cells contain it, with the exception of plant sieve cells and human red blood cells.

Ribosomes: They are the primary location of protein production, ribosomes are frequently referred to as "protein factories."

Mitochondria: The "powerhouse of the cell" are mitochondria, which are membrane-bound organelles.

Lysosomes: The membrane-bound vesicles known as lysosomes are produced in the golgi apparatus. As a result of their abundance in hydrolytic enzymes including lipases, proteases, sugars, etc., lysosomes are sometimes known as "suicidal bags." These enzymes function best at an acidic ph. (less than 7).

Nucleus: The major organelle of a cell is the nucleus. The entire genetic material is contained within a double membrane structure. As a result, it is also referred to as the "brain" of the cell. All eukaryotic cells contain a nucleus, with the exception of plant sieve cells and human RBCs.

Cytoskeleton: The filamentous network that makes up a cell's cytoplasm is known as the cytoskeleton.

Cilia and flagella: The movement of a cell is controlled by both the cilia and the flagella.

Plastids: Plastids are double-membrane organelles that are present in plant cells.

Characteristics of eukaryotic cells

Organelles like the mitochondria, golgi complex, and other membrane-bound organelles are present in eukaryotic cells in addition to nucleus. The cytoplasm contains the cell's organelles and nucleus. They include rod-shaped chromosomes inside a nuclear membrane-sealed nucleus. Proteins are found in the nucleoplasm together with DNA, which serves as their genetic structure. The Endoplasmic Reticulum (ER) and the nuclear membrane is one unit. The powerhouse of the cell, mitochondria are known for producing the energy-dense chemical ATP. In the Endoplasmic Reticulum (ER), proteins are modified and lipids are created. There are two kinds of ER: smooth ER and rough ER. Ribosomes are seen on the membrane of rough ER. Lipids and other substances are sorted, labelled, packaged, and distributed by the golgi apparatus. The oxidation processes that peroxisomes carry out result in the breakdown of fatty acids and amino acids. Storage organelles include vesicles and vacuoles. The animal cell also includes centrosomes and lysosomes in addition to these organelles. Animal cells lack a cell wall and plastids. Chloroplast present in plant cells.

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