

Cell biology

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Abstract

Cell biology (also cellular biology or cytology) may be a branch of biology studying the structure and performance of the cell, also referred to as the essential unit of life. Cell biology encompasses both prokaryotic and eukaryotic cells and may be divided into many sub-topics which can include the study of cell metabolism, cell communication, cell cycle, biochemistry, and cell composition. The study of cells is performed using several techniques like cell culture, various sorts of microscopy, and cell fractionation. Keywords: Biology, Microscopy, Immunology.

Introduction:

These have allowed for and are currently getting used for discoveries and research concerning how cells function, ultimately giving insight into understanding larger organisms. Knowing the components of cells and the way cells work is prime to all or any biological sciences while also being essential for research in biomedical fields like cancer, and other diseases. Research in cell biology is interconnected to other fields like genetics, genetics, biochemistry, biology, medical microbiology, immunology, and cytochemistry.

History

Cells were first seen in 17th century Europe with the invention of the light microscope. In 1665, Hooke termed the building block of all living organisms as "cells" after watching a bit of cork and observing a cell-like structure; however, the cells were dead and gave no indication to the particular overall components of a cell. A couple of years later, in 1674, Anton Van Leeuwenhoek was the primary to research live cells in his examination of algae. All of this preceded the cell doctrine which states that each one living thing is made from cells which cells is the functional and structural unit of organisms. This was ultimately concluded by botanist, Schleiden and zoologist, Schwann in 1838, who viewed live cells in plant and tissue, respectively. 19 years later, Virchow further contributed to the cell doctrine, adding that each one cells come from the division of pre-existing cells. Although widely accepted, there are many studies that question the validity of the cell doctrine. Viruses, for instance, lack common characteristics of a living cell, like membranes, cell organelles, and therefore the ability to breed by themselves. Scientists have struggled to make a decision whether viruses are alive or not and whether or not they are in agreement with the cell doctrine.

Techniques

- Cell culture

- Fluorescence microscopy
- Phase-contrast microscopy
- Confocal microscopy
- Cell fractionation
- Cell classification and composition

There are two fundamental classifications of cells: prokaryotic and eukaryotic.

Prokaryotic cells:

Prokaryotic cells include Bacteria and Archaea, and lack an indoor nucleus. They both reproduce through binary fission. Bacteria, the foremost prominent type, have several different shapes which include mainly spherical, and rod-shaped.

Eukaryotic cells:

Eukaryotic cells can either be unicellular or multicellular or include animal, plant, fungi, and protozoa cells which all contain organelles with various shapes and sizes. These cells are composed of the subsequent organelles:

- Nucleus
- Nucleolus
- Endoplasmic reticulum (ER)
- Mitochondria

Cell metabolism is important for the assembly of energy for the cell and thus its survival and includes many pathways. For respiration, once glucose is out there, glycolysis occurs within the cytosol of the cell to supply pyruvate. Pyruvate undergoes decarboxylation using the multi-enzyme complex to make acetyl coA which may readily be utilized in the TCA cycle to supply NADH and FADH₂.

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