

CELL THE UNIT OF LIFE

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CELL:- Unicellular organisms are capable of (i) Independent existence and (ii) performing the essential functions of life. Anything less than a complete structure of a cell does not ensure independent living. Hence, cell is the fundamental structural and functional unit of all living organisms.

Leeuwenhoek first saw and described a live cell. Robert Brown later discovered the nucleus. The invention of the microscope and its improvement leading to the electron microscope revealed all the structural details of the cell.

CELL THEORY

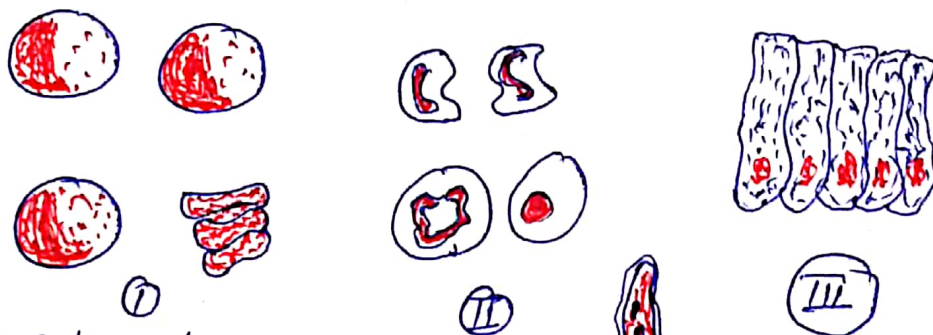
In 1838 Schleiden, a German botanist, examined a large number of plants and observed that all plants are composed of different kinds of cells which form the tissues of the plant. At about the same time, Theodore Schwann (1839), a British zoologist, studied different types of animal cells and reported that cells had a thin outer layer which is today known as the 'plasma membrane'. Also concluded, based on his studies on plant tissues, that the presence of cell wall is a unique character of the plant cells. On the basis of this Schwann proposed

The hypothesis that the bodies of animals and plants are composed of cells and products of cells

Schleiden and Schwann together formulated that the cell theory. This theory however, did not explain as to how new cells were formed.

Rudolf Virchow (1855) first explained that cells divided and new cells are formed from pre-existing cells. He modified the hypothesis of Schleiden and Schwann to give the cell theory a final shape. Cell theory as understood today is:-

- (i) all living organisms are composed of cells and product of cells.
- (ii) all cells arise from pre-existing cells.



(i) Red Blood cells

(ii) White blood cells

(iii) Columnar epithelial cells

(iv) A tracheal (elongated)