

The Fundamental Unit of Life

Cell Organelles (Mitochondria)

- ❖ **Mitochondria:** They are the double membraned bag like structure. Outer membrane is smooth and the inner is folded inwards to form **cristae**. They contain enzymes needed for aerobic oxidation of glucose.



Functions :

- (i) They help in cellular respiration and release of energy in the form of ATP molecules.
- (ii) They popularly known as "power house" of the cell.

Introduction:

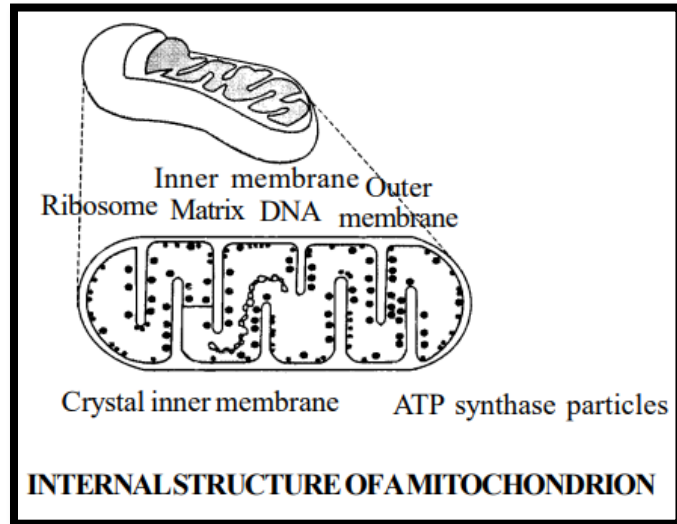
A single mitochondrion is present in unicellular green alga, *Microsterias*. Number of mitochondria varies from **50–50,000** per cell. Mitochondria of a cell are collectively known as **chondriome**.

Historical Account:

- **C. Benda** (1897) gave the name Mitochondria (Mitos, thread + Chondroid, granules).
- Term 'Bioplastic' for mitochondria was used by **Altman**.

Ultrastructure:

- Mitochondria are rod shaped organelles, bounded by a double membrane envelope.
- The outer membrane is smooth, the inner membrane surrounds a central cavity of **matrix**. Central cavity is filled with jel like substances



- Inner membranes folds are called cristae, these folding are tubular and called **microvilli**.
- Mitochondria contain electron transport systems aggregated into compact structure.
F₁ particles or oxysome, tennis racket like bodies on inner membrane involved in oxidation & phosphorylation.
- Kreb's cycle occurs in mitochondria.
- Each particle is made up of base, stalk and head.

q Functions of Mitochondria:

- (i) Mitochondria are called **power plants** or **power houses** or **cellular furnaces**.
- (ii) Synthesis of ATP (**Adenosine Tri-phosphate**) in mitochondria is called **oxidative phosphorylation**.
- (iii) Mitochondria as place of cellular respiration was first observed by **Hogeboom**.