

Why cell form organelle? Discuss mitochondria in a human cell.

Answer:-

1. INTRODUCTION:-

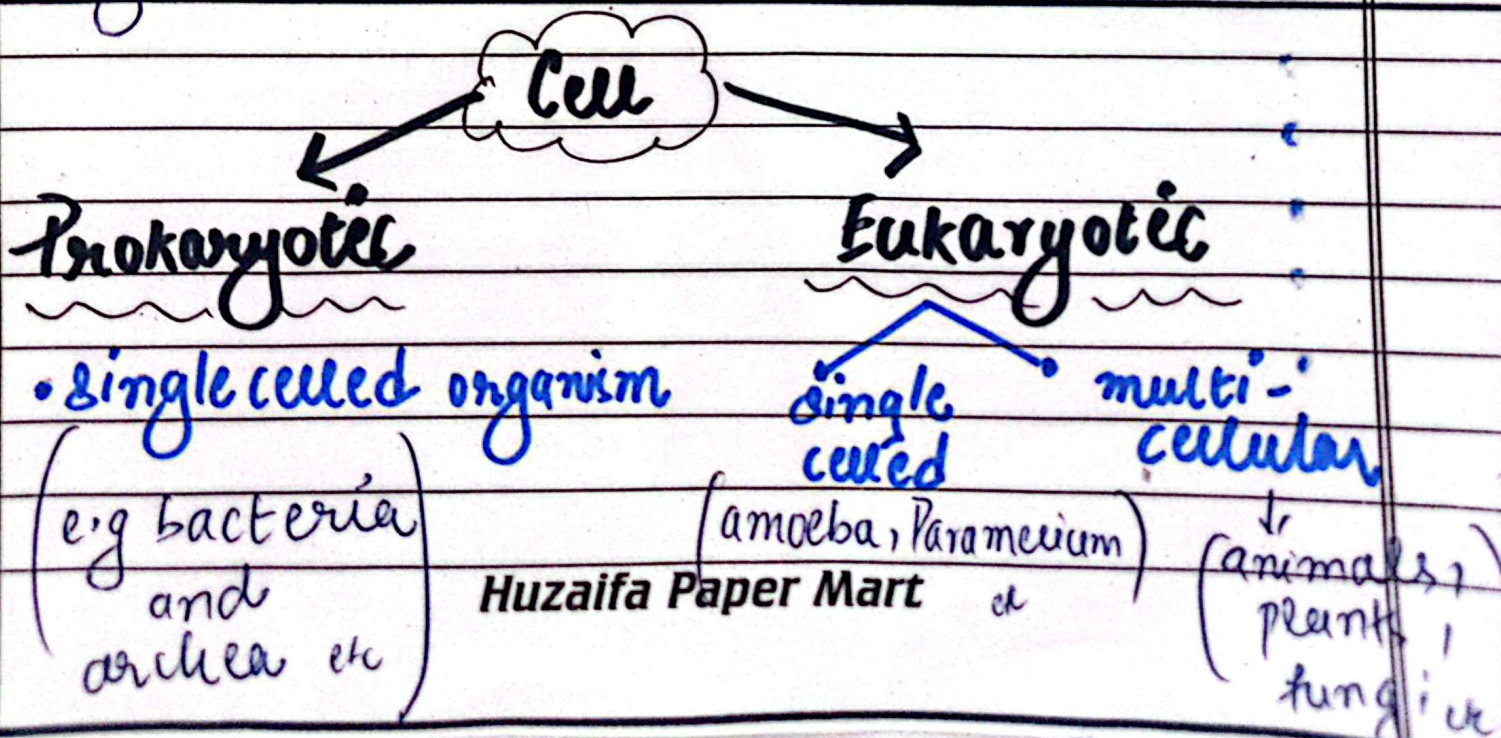
Cell:

definition:

"The basic structural and functional unit of life forms"

Discovered in:

→ Cell was discovered in 1665 by "Robert Hooke"



A typical cell diagram



* Cell structure

- Cell wall
- Cell membrane
- Nucleus
- Cell organelles
- Cytoplasm.

* Functions of cell:-

- Movement
- Reproduction.
- Response to external stimuli
- Nutrition
- Excretion
- Respiration
- Growth

Why cell form Organelle?

* Definition of Organelle:-

pp A tiny structure inside cell for specialized function".

Key Reasons for Organelle formation:-

Compartmentalization

Increased Efficiency

Protection

Specialization

Organization

→ Cells form organelle for compartmentalization and efficiency, creating specialized compartments to perform specific functions like energy production, protein synthesis and waste removal. This allows different biochemical process to occur simultaneously, without interfering in each other, increasing cell's overall functionality and organization.

3) Mitochondria in a Human cell.

"Mitochondria: Powerhouse of a Cell."

→ Discovered in 1857 by 'Albert Von Kolliker'

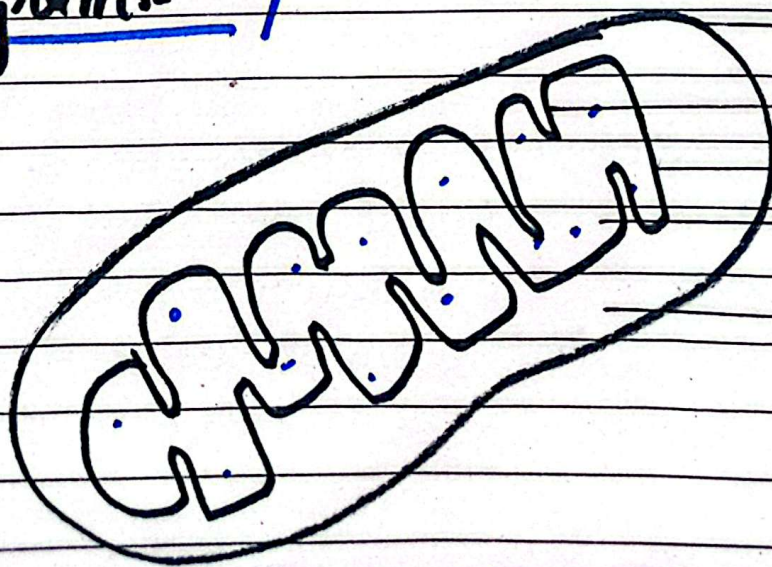
• ATP Formation:

Mitochondria uses aerobic respiration to generate Adenosine Triphosphate (ATP) which is used throughout cell as a source of chemical energy, that's why it is called powerhouse of the cell.

• Other Functions of Mitochondria:

- Signalling
- Cellular Differentiation
- Cell death
- Maintaining control of cell cycle and cell growth

Mitochondria Diagram:-



Outer membrane

Cristae

Inner membrane

matrix

Inter membrane space.

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STRUCTURE OF MITOCHONDRIA

- o Outer membrane
- o Inner membrane space (space between inner and outer membrane)
- o Inner membrane
- o Matrix (space within inner membrane)
- o Cristae (formed by infoldings of inner membrane)

→ Mitochondria have cristae, to increase the surface area which in turn increases ATP formation.