

# Topic 1: Cells and Tissues

Chapter 1: Cells and Tissues · Topic 1

## Key Concept

Cells are the basic structural and functional units of life. They are made up of a cell membrane, cytoplasm, and a nucleus. DNA (Deoxyribonucleic Acid) is the genetic material that controls the activities of the cell.

Energy is required for the cell to perform its functions. This energy is provided by the breakdown of food molecules in the mitochondria, which produces ATP (Adenosine Triphosphate).

Cells are surrounded by a cell wall in plants and a cell membrane in animals. The cell wall provides structural support and protection, while the cell membrane regulates the movement of substances in and out of the cell.

Cells are specialized to perform specific functions. For example, muscle cells are specialized for contraction, while nerve cells are specialized for transmitting signals. This specialization is achieved through the process of differentiation.

## Quick Revision Notes

- **Cells:** Basic structural and functional units of life. DNA is present in the nucleus.
- **Genetic Material:** DNA (Deoxyribonucleic Acid) controls the activities of the cell.
- **Energy:** Required for the cell to perform its functions.
- **Mitochondria:** Organelles where energy is produced from food molecules.
- **ATP:** Adenosine Triphosphate, the energy currency of the cell.
- **Cell Wall:** Present in plant cells, provides structural support.
- **Cell Membrane:** Present in all cells, regulates the movement of substances.
- **Specialization:** Cells are specialized to perform specific functions.
- **Differentiation:** The process by which cells become specialized.

## Practice Questions

1. Define cells and explain their importance in life.
2. What is the difference between a plant cell and an animal cell?
3. Explain the role of the nucleus in a cell.
4. How does the cell membrane regulate the movement of substances?
5. What is the function of the mitochondria?
6. Describe the process of cell differentiation.