

Tissues

Introduction

All living organisms are made up of cells. A group of similar cells that work together to perform a specific function is called a **tissue**. In multicellular organisms, tissues help in the efficient functioning of the body. This chapter explains the different types of plant and animal tissues and their functions.

What is a Tissue?

Definition

A **tissue** is a group of similar cells having a common origin that work together to perform a particular function.

Importance of Tissues:

- Division of labour among cells.
 - Increases efficiency of the body.
 - Helps organisms perform complex functions.
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Plant Tissues

Types of Plant Tissues

Plant tissues are of two main types:

- **Meristematic Tissue**
 - **Permanent Tissue**
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Meristematic Tissue

Characteristics and Types

Meristematic tissues consist of actively dividing cells that help plants grow.

Characteristics:

- Cells divide continuously.
- Thin cell walls.
- Dense cytoplasm.
- No vacuoles or very small vacuoles.

Types:

- **Apical Meristem:** Present at the tips of roots and shoots; increases the length of the plant.
 - **Intercalary Meristem:** Present at the base of leaves or internodes; helps in the growth of stems and leaves.
 - **Lateral Meristem:** Present along the sides of stems and roots; increases the thickness of the plant.
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Permanent Tissue

Simple and Complex Permanent Tissues

Permanent tissues are formed from meristematic tissues after the cells stop dividing.

Simple Permanent Tissues:

- **Parenchyma:** Stores food and water; helps in photosynthesis.
- **Collenchyma:** Provides flexibility and mechanical support.
- **Sclerenchyma:** Gives strength and rigidity to the plant.

Complex Permanent Tissues:

- **Xylem:** Transports water and minerals from roots to other parts of the plant.
 - **Phloem:** Transports food prepared by leaves to all parts of the plant.
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Animal Tissues

Types of Animal Tissues

Animal tissues are classified into four main types:

- Epithelial Tissue
- Connective Tissue
- Muscular Tissue
- Nervous Tissue

Epithelial and Connective Tissues

Functions

Epithelial Tissue:

- Covers and protects body surfaces.
- Forms the lining of organs and cavities.

Connective Tissue:

- Connects different body parts.
- Supports and protects organs.

Examples include **bone, cartilage, blood, tendons, and ligaments**.

Muscular and Nervous Tissues

Functions

Muscular Tissue:

Muscles help in the movement of the body.

Types of Muscles:

- Skeletal Muscle
- Smooth Muscle
- Cardiac Muscle

Nervous Tissue:

Nervous tissue is made up of **neurons**, which receive and transmit messages between different parts of the body.

Differences Between Plant and Animal Tissues

Comparison

- Plant tissues mainly provide support and growth.
 - Animal tissues perform specialized functions like movement, coordination, and protection.
 - Plant growth occurs only in meristematic regions, while animal growth occurs throughout the body.
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Key Points

- A tissue is a group of similar cells performing a specific function.
 - Plant tissues are of two types: Meristematic and Permanent.
 - Xylem transports water, while phloem transports food.
 - Animal tissues are epithelial, connective, muscular, and nervous.
 - Neurons are the functional units of nervous tissue.
 - Tissues help in the efficient functioning of multicellular organisms.
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Chapter Summary

Tissues are groups of similar cells that perform specific functions. Plants have meristematic and permanent tissues, while animals have epithelial, connective, muscular, and nervous tissues. Each tissue performs a unique role that helps the organism grow, survive, and function efficiently.