TISSUES

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A group of cells that are similar in structure and/or work together to achieve a particular function form a tissue

Plant Tissue

Plant Tissue

- Meristematic Tissue
- Permanent Tissue.

Meristematic Tissue

↳ The growth in plants occurs only in certain specific region due to the presence of dividing tissue c/d meristematic tissues

Characteristics

↳ Shape may be oval, spherical, polygen or rectangle.
↳ Very active
↳ Thin cellulose walls
↳ Having few or no Vacuoles
↳ Dense cytoplasm and prominent nuclei

* Found in the growing reasons of the plant.

Meristematic Tissue

- Apical
- Lateral
- Intercalary.

Apical meristem

↳ Present at growing tip of stems & roots

Function:- Elongation of roots & steams
Increase height of plants c/d primary growth

Lateral meristeam

↳ ~~Prem~~ found ~~in~~ beneath the bark and in Vascular dicot roots and steam (Internode)

Fuction :- Increase in diameter and girth of stem and roots c/d Secondary growth.

Intercalary Meristeam

↳ Located at the base of leaves and near node.

Function :- Increase the length of organ such as leaves & node.

Permanent Tissues

The tissues that are Completely grown and have lost the ability to divide are known as permanent tissues.

This permanent shape, size and function is attained by the process called differentiation.

Permanent Tissue

- Simple permanent Tissue
  - Parenchyma
  - Collenchyma
  - Sclerenchyma
- Complex Permanent Tissue
  - Phloem
  - xylem.

Simple Permanent Tissue

A simple permanent tissue is a tissue that is made up of similar permanent cells that carry out the same function

01. PARENCHYMA

Nature :-

→ Most Common Simple permanent tissue
→ They are living cell, round in Shape and having intercellular spaces
→ The cell wall is thin.

Parenchyma
- Chlorenchyma
- aerenchyma

Occurrence

↳ Plant bodies such as Stems, roots, leaves and soft part of plants as cortex of roots.

Function

↳ Store food, waste product.
↳ Trasport of material occurs through cell wall
↳ serves as a packing tissue - to fill the Spaces between other tissue.

02 COLLENCHYMA

Nature :-

→ Cells are elongated in shape
→ Living cell and intercellular space is generally absent (little)
→ ~~Contain chlorophyll and performs photosynthesis.~~

Occurrence :-

↳ Located below the epidermis in leaf stalks and stem.

Functions :-

↳ Provide mechanical support and elasticity
↳ Allow to bend easily to the various part of the plants without breakdown (as climbers stems & tendrils)
↳ Manufacture sugar and starch due to presence of chloroplast.

03. SCLERENCHYMA

Nature :-

↳ They are dead cell
↳ The cell walls of Sclerenchyma are greatly ~~thick~~ long & narrow thickened due to lignin
↳ No intercellular space.

Occurrence :-

↳ They are found in stems, roots, veins of

leaves, hard Covering of seeds and nuts.

* Husk of Coconut is made of Sclerenchyma tissue.

Function :-

↳ It gives strength, rigidity, flexibility and elasticity to plant body.

Protective Tissues :- The tissues which provide protection to the plants from loss of water

There are two types of protective tissues:-

A- Epidermis :-

The entire surface of plants has an outer Covering called epidermis

Function :- Prevent loss of water
Proctect from mechanical injury and infection by parasitic fungi.

* Small pores in epidermis of leaf is called Stomata. Stomata are enclosed by two kindney shaped cell called guard cell. Gaseous exchange & loss of water takes place through Stomata.

B. Cork :-

A protective tissue found in the outer bark of woody plants or plants grow older

↳ Dead and water - resistance.
↳ Contain a waxy substance c/d Suberin that makes them impervious to gases and water and provide protection.

Complex Permanent Tissue

→ Complex permanent tissue are made of more than one type of cells.

→ These cells coordinate to perform a common fuction i.e. to transfer of wates, mineral salts and food material to various parts of plant body.

Complex Tissue
- Xylem (Transport water)
- Phloem (Transport food)

→ Both are conducting tissues
→ They are also called Vascular tissues
→ Together both constitutes Vascular bundle.

XYLEM

↳ It consists of Tracheids, Vessels, xylem parenchyma and xylem fibres.
↳ Tracheids and vessels have tubular structure which allows them to transport water vertically.

↳ xylem Parenchyma stores food.
↳ xylem fibres are mainly supportive in nature.

PHLOEM

↳ Phloem is made up of five type of cells: Sieve cells, Sieve tubes, Companion cells, Phloem fibres and the Phloem Parenchyma.
↳ Sieve tube are tubular cells with perforated walls. (small hole)
↳ Except Phloem fibres, other Phloem cells are living cells.
↳ Phloem transports food from leaves to other parts of the plants.

Animal Tissues

The different types of animal tissue are: Epithelial tissue, Connective tissue, muscular tissue and nervous tissue.

Epithelial Tissue

↳ The covering or protective tissues in the animal body are epithelial tissue
↳ Covers most organs and also form a barrier to keep different body systems separate.
↳ The skin, lining of the mouth & blood vessels, lungs alveoli and kidney tubules.

↳ Tightly packed and form a Continuous sheet
→ Almost no intercellular spaces.
↳ Anything entering or leaving the body must cross at least one layer of epithelium.
↳ The permeability of cells of various epithelia play an important role in regulating the exchange of materials between the body and the external environment
↳ An extracellular fibrous basement membrane.

Epithelial Tissue

- Simple Squamous Epithelium
- Stratified Squamous epithelium
- Cuboidal epithelium
- Columnar (ciliated) epithelium

Simple Squamous epithelium	Stratified Squamous Epithelium
- Cells are arranged in single layer.	- Cell are arranged in multiple layers
- Oesophagus and lining of mouth.	- Skin.
- Form delicate lining	- Prevent wear and tear
- Transportation of substances occurs through a selectively Permeable Surface.	

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Cuboidal Epithelium

↳ Cells are cube - shaped

Location :- In respiratory tract lining of kidney tubules as well as in duct of salivary gland.

Function :- Absorp of useful material from urine before passed out.

* Some times, a portion of the epithelial tissue folds inwards, and a multicellular gland is formed c/d glandular epithelium

Columnar Epithelium

These cells are tall and cylindrical like pillars

Location :- Inner lining of the Stomach and intestine

Fuction :- It absorbs nutrients from digested food.

Ciliated Columnar Epithelium

In this, cell has hair like projection on the outer surface of epithelial tissue which helps in movement of particle.

Location :- In respiratory tract, in fallopian tube.

Function :- It helps in tract, in fallopian

Fuction :- It helps in movement of particle
Eg :- in respiratory tract, the movement of cilia pushes the mucous forward to clear it.

Muscular Tissue

↳ It consists of elongated cells also called muscle fibres.
↳ Responsible for movement in body
↳ Muscles contain special protein called Contractile proteins, which contract and relax to cause movent.

A> Skeletal Muscles | Striated muscles
↳ They are long, cylindrical, unbranched and multinucleate.
Location :- They are found mostly attached to bones.
Fuction :- It helps in Voluntary muscle movement and locomotion.

B. Smooth Muscle
↳ The cells are long with pointed ends and uninucleate
Location :- found in iris of eye, uterus, digestive tract and other internal Organs
Fuction :- Carry out involuntary movement,
Eg :- movement of food in elementary canal.
→ Also known as involuntary muscle

Cardiac Muscle

Muscle cells are Cylindrical, branched and uninucleate

Location :- Found only in the walls of heart

Function :- Rhythmic Contraction and relaxation of cardiac muscle help to pump and distributed the blood to various parts of body.

Connective Tissue

The cells of connective tissue are loosely spaced and embedded in intercellular matrix.

Matrix can be jelly like fluid, dense or rigid.

Blood

Composed of blood cell

Blood cell move in liquid matrix called blood plasma

Blood cells are of three types : RBC, WBC and platelets

Function :-

Blood flows and transport gases, digested food, hormones and waste material to different body parts

Lymph :- Colourless fluid in which WBC is present.

Bone

- Strong & non-flexible tissue
- It is embedded in a hard matrix that is composed of calcium and phosphorus compounds.

Function :- Form frame work that support the body
Also support the main organs of body

Tendons	Ligament
- Connects muscle to bones	- Connects bones to bones
- Fibrous tissue	- Little matrix is present
- Limited flexibility	- Considerable strength
- Great Strength.	

Cartilage

→ Solid matrix composed of protein and sugar.

Location :- Nose tip, Ear, trachea and larynx

Function :- Smoothen bone surfaces at joints and helps in smooth movement of body parts.

* It has wide space b/w the cell.