

Elementary Tissue

→ Tissues are groups of cells that have a similar structure and have specific functions.

→ There are four types of tissues in animals.

- (i) Epithelial tissue
- (ii) Connective tissue
- (iii) Muscular tissue
- (iv) Nervous tissue.

(i) Epithelial tissue :

→ Epithelial tissues are spread throughout the body.

→ They form the covering of all body surfaces, body line cavities and hollow organs.

→ They perform a variety of functions that include protection, secretion, absorption, excretion, filtration,



## diffusion and sensory reception:

→ The cells of epithelial tissue are tightly packed because the cells have one time surface that is not in contact with other cell.

→ Epithelial tissue is made up of carbohydrate and proteins.

★ Epithelial cells are of these types.

(i) Squamous

(ii) Cubodial

(iii) Columnar

(i) Simple Squamous:-

These cells are flat in shape and arranged in a single layer.

→ This is found in the wall of capillaries, linings of pericardium and the lining of alveoli of lungs.



## (ii) Simple cuboidal:-

This epithelium consist of single layer cells that are as tall as they are wide.

The important function is secretion and absorption.

They are found in kidney, Pancreas and salivary glands.

## (iii) Simple Columnar:-

It is a single row tall, closely packed cells aligned in a row.

→ These cells are found in area with high secretory function or absorptive area.

→ They have cellular extension like cilia, and microvilli.



## ★ Pseudostratified :-

- There are simpler columnar epithelium whose ~~not~~ nuclei appear at different heights giving the misleading information.
- It contain cilia and found in nose, bronchi, uterus and fallopian tube.

## ★ Keratinized epithelium :-

- It is the most apical layer of cells which are dead.
- They contain tough, resistant protein called keratin.
- Keratin makes epithelium waterproof.



## \* 2. Muscular Tissue:

It is a special tissue found in animals which function by contractive and apply forces to different parts of the body.

### \* Function of muscular ~~to~~ tissue.

- It helps to contract different body organs by nerve impulse travelling from brain to the different body organ.
- It contain the contracting protein actin and myosin.
- Muscle tissue can be used to move bones, compressed chambers, squeeze various organ.



→ Types of muscle tissue :-

- (i) Skeletal muscle tissue
- (ii) Cardiac muscle tissue
- (iii) Smooth muscle tissue

1. Skeletal Muscle Tissue :

→ These are organized bundle allow muscle to contract quickly and relax quickly.

→ Muscle tissue is attached to bones through tendons.

→ This tissue is composed by somatic nervous <sup>System</sup> tissue (SNS)

2. Cardiac Muscle tissue :

→ Cardiac muscle are even parallel, complex, branching found in cardiac muscles are connected via ~~interna~~ intercalated discs.



→ Intercalated disc help cardiac muscles to contract and move blood.

### 3. Smooth muscle tissue :

→ In smooth muscle, the contraction are not quick and rapid.

→ Smooth muscle can contract to apply a force on organs.

### \*3 Connective tissue :

→ Connective tissue were to support and connect different tissue and organ of the body.

→ They are made by protein fibres secreted by the cells, called as collagen or elastin.



## \* Types of connective tissue :

- (i) Loose connective tissue
- (ii) Dense connective tissue
- (iii) Specialised connective tissue

### (i) Loose connective tissue :

→ These are present all over the body where support and elasticity is required.

→ Blood vessel, nerve and muscle all have a loose connective tissue wrapping.

### \* Types of loose connective tissue :

- (i) Areolar tissue
- (ii) Adipose tissue
- (iii) White adipose tissue
- (iv) Brown adipose tissue
- (v) Reticular tissue



(i) Arcolar :-

It is present under the skin.

(ii) Adipose tissue :- It is present under the skin and store fat.

(iii) White adipose :- It protect kidney and found in the back of eye.

(iv) Brown adipose :- It is found in infant polar bear, penguins and other animals of cold region.

(v) Reticular tissue :- It is made up of reticular fibre.

It supports the internal framework of organs such as liver, lymph nodes, spleen.



## ★ Dense connective tissue:

- In this connective tissue fibroblast cell and fibres are compactly packed.
- The function of dense connective tissue is to support and transmit mechanical forces.

## ★ Specialized connective tissue

- They are supportive connective tissue.
- It help in maintaining correct posture and support internal organs.  
eg. Cartilage and bones.



## \* Cartilage :

\* Cartilage is mostly present in the embryonic stage and work as supporting skeleton.

→ In human, cartilage is present between the bones of vertical vertebral column, in external ear, nose and hands.

## \* Bones :

→ Bone is the hardest connective tissue and helps in maintaining the shape and posture of the body.

## \* Blood :

→ Blood is made up of various cells present in the plasma.

→ The blood contain red blood cell, white blood cell and platelets.



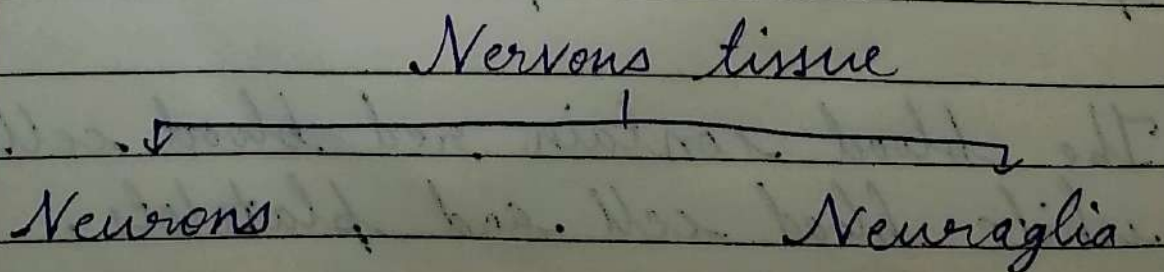
## ★ Lymph:

- Lymph drains into the blood and transport absorbed fat to the blood.
- Lymph has white blood cell in the liquid matrix.

## ★ Nervous tissue

Nervous tissue is the term for groups of organised cells in the nervous system, which is the organ system that controls the body movement, sends and carry signals to and from the different parts of the body..

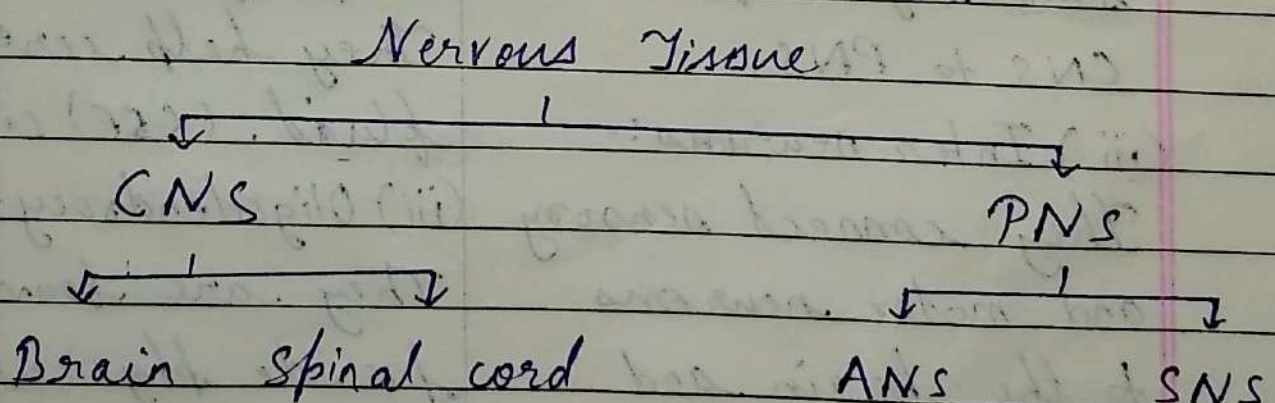
Nervous tissue is grouped into two main categories:





## \* Function of nervous tissue

- Nervous tissues makes up the nervous system.
- The CNS is composed of brain and spinal cord.
- CNS coordinates information from all areas of the body and send nerve impulse that control all body movement.
- PNS consist of pheripheral nerves that branch all throughout the body. It connect CNS to the rest of the body part.





## Types of Nervous System:

### Neurons

→ Neurons are cells that transmit signals called nerve impulse

→ There are three types of neurons

(i) Sensory neurons:- They transmit information from PNS to CNS.

(ii) Motor neurons:- They send signals from CNS to PNS.

(iii) Inter neurons:- They connect sensory and motor neurons to the brain and spinal cord.

### Neuraglia

Neuraglia are cells that support neurons, supply nutrients and get rid of dead cells and pathogens

There are five types of ~~neuraglia~~ neuraglia.

(i) Astroglial cells:- They provide nutrient to neurons and maintain ion balance.

(ii) Ependymal cells:- They help cerebrospinal fluid (CSF) circulation.

(iii) Oligodendrocytes cells:- They are found in CNS provide physical support to neuron.



(iv) Schwann cells :- It forms myelin sheath.

(v) Microglial cell :- They engulf pathogen and protect CNS against disease.