

Subject - Biology Class - VII

Chapter - 1 Plant and Animal Tissues.

Teacher : Ms Nidhi Rana

Date 06.05.2024

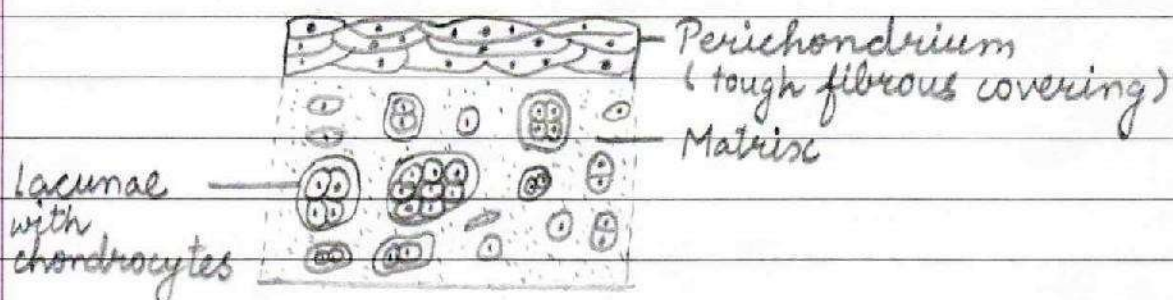
In the previous lecture, you have learnt about complex permanent tissue in plants. Also you have attained knowledge about different types of animal tissues. We have studied about epithelial tissue in detail so far. To continue further, we will discuss remaining three types of animal tissues. i.e. connective tissue, muscular tissue and nervous tissue.

★ Connective tissue - It provides support to different organs to keep them in proper position. This tissue serves to "connect" or bind the cells of other tissues in the body. It is divided into three types.

(a) Supportive connective tissue
 (Skeletal tissue)
 ← bone
 ← cartilage

Cartilage - Cells of the cartilage called chondroblasts are embedded in the intercellular matrix in group of twos, fours or more in fluid-filled spaces called lacunae.

Cartilage is found in nose tip, ear pinna, rings of wind pipe, end of long bones and lower ends of ribs. In shark fish, the whole skeleton is cartilaginous.

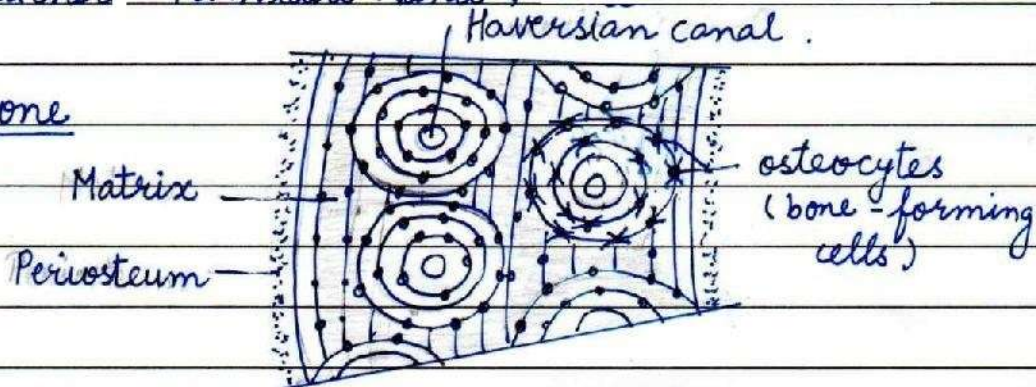


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Bone



Cross section of bone.

Bone is much harder, rigid and non-flexible skeletal tissue. It forms the skeleton of vertebrates. The matrix of bone is very hard because of protein ossein and presence of salts of calcium and phosphorus. The matrix is deposited in the form of concentric layers around a central canal, Haversian canal. The long bones of vertebrates are hollow containing a cavity called marrow cavity. It is full of bone marrow.

(b) Fibrous connective tissue - (The binding and packing tissue). It holds various tissues together in an organ.

1. Areolar tissue - It is the basic and most widely distributive connective tissue. It is found below the skin and surrounds the muscle bundles and blood vessels.

2. Adipose tissue - It is a fat storing connective tissue. Its cells become large and oval due to the storage of fat globules.

Adipose tissue is present below the skin (subcutaneous fat), below the eyeballs and in yellow bone marrow.

★ Adipose tissue forms Hump of camel and Blubber of whale.

★ It forms a shock absorbing cushion around vital organs.

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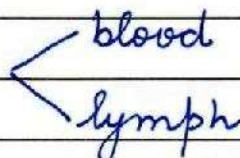
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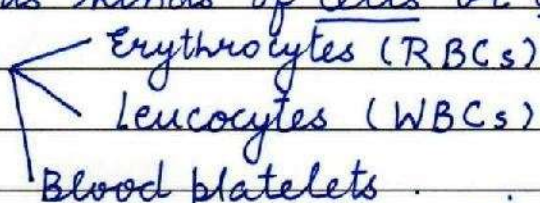
such as heart, kidneys, eyeballs.

3. Tendons - It is dense fibrous connective tissue. It provides great strength but limited flexibility. It attaches muscles to the bones at joints.

4. Ligaments - This tissue is highly elastic. It attaches bones to each other at the joints.

★ Sprain is caused due to overstretching of ligaments.

(c) Fluid connective tissue - 

Blood is a bright-red coloured fluid connective tissue. It consists of a straw-coloured fluid called plasma in which various kinds of cells or corpuscles are present. These are 

Lymph - Lymph is the fluid surrounding the body cells consisting of plasma and mainly white blood cells. RBCs and platelets are absent.

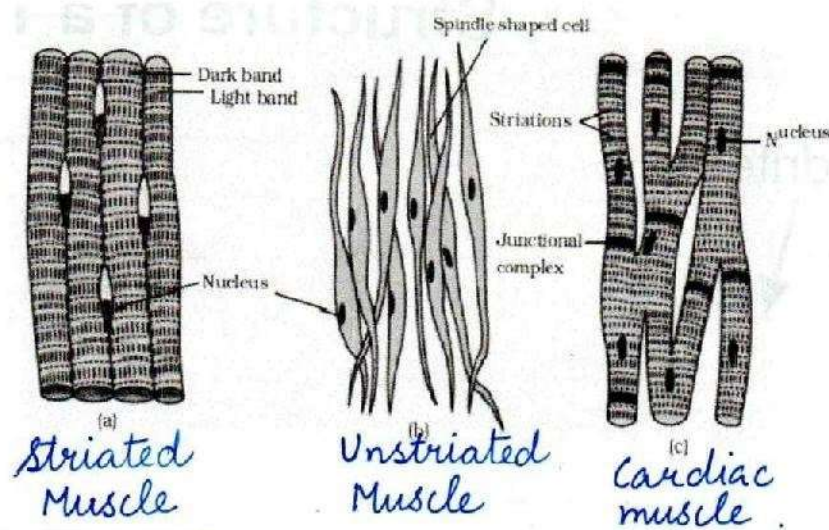
Fluid connective tissue is mainly concerned with the transportation of substances like glucose, respiratory gases, amino acids and excretory products.

★ Muscular Tissue - The cells of muscular tissue are long and fibre like. It forms the muscles of the body. The muscles can contract and relax. 3 kinds of muscles are → Striated (skeletal, striped or voluntary) muscles
→ Unstriated (smooth, unstriped or involuntary) muscles.
→ Cardiac or heart muscles.

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Striated Muscles - They are attached to the bones and are responsible for their movement, hence called skeletal muscles. These muscles are also called voluntary muscles because their contraction is under the control of our will.

Location - found in arms, legs, face and neck. These muscles are attached to bones by tendon.

Functions - They are responsible for locomotion.

→ Breathing movements and blinking of eyes are also due to striated muscles.

Non-striated Muscles - The non-striated muscle fibres are spindle shaped. They are called involuntary muscles because their contraction is not under the control of our will. These muscles are also called visceral muscles because they are found in the wall of visceral organs such as alimentary canal, urinary bladder and blood vessels.

- ★ Involuntary muscles of iris in the eye control amount of light to enter the eye.
- ★ They produce peristaltic contractions in the wall of alimentary canal.

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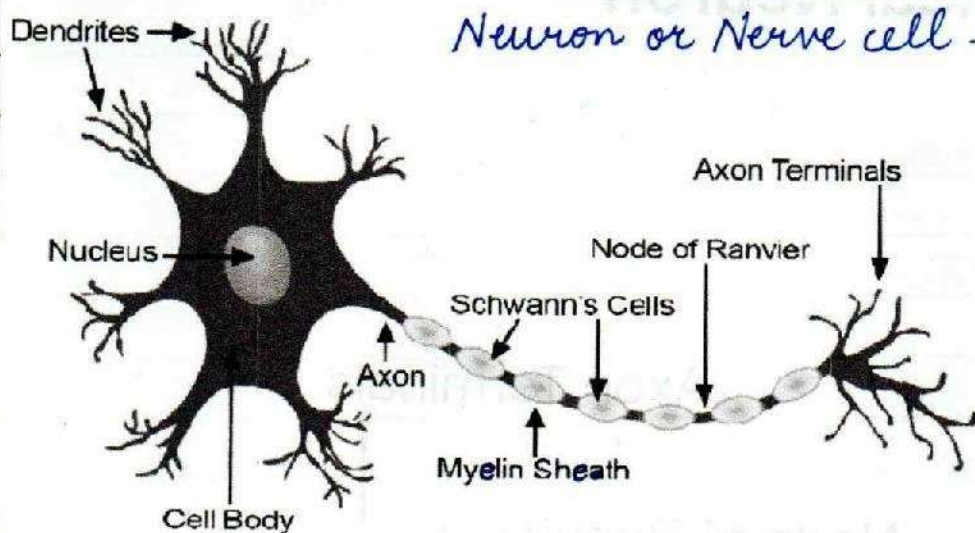
Cardiac muscles - Cardiac muscles are found in the wall of heart only. They are striated yet involuntary. The cardiac muscles are branched and form an interconnecting network. They contract tirelessly throughout life and never get fatigued.

★ Nervous tissue - Nervous tissue is highly specialised tissue for receiving stimuli and transmission of stimuli as nerve impulse. The nervous tissue is formed of neurons or nerve cells.

Neurons are the structural and functional unit of nervous tissue. They may be as long as metre.

Each neuron consists of :

- Cyton or cell body is star shaped. Its cytoplasm is called neuroplasm which contains a large nucleus.
- Dendrons are small highly branched processes arising from cyton.
- Axon is the long cylindrical process arising from the cyton : Its end is divided into several fine branches called nerve endings.



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Dear Parents,
you may kindly assist your child in reading the chapter, as doing before in a well appreciated manner. Also, let the child go through the study material thoroughly so that complete learning outcome can be achieved.

After finishing the chapter let the child try the back exercises whose answer key will be provided later.

Home assignment

- Q1. Name two fluid connective tissue.
- Q2. Difference between three kinds of muscles.
- Q3. Name two supportive connective tissue.
- Q4. Draw three different kinds of muscles.
- Q5. Name the structural and functional unit of nervous tissue. Also, draw its diagram.