TENDER HEART HIGH SCHOOL , SEC - 33B, CHD

CLASS - 8 DATE 16.12.2024

SUBJECT - BIOLOGY TEACHER Nidhi Rana

This Lesson is of Class 8 for the subject of Biology Topic Animal Tissues. which is covered in Chapter 3 Tissues: Plant and animal tissues given on Page No 23 of your text book titled - Concise Biology Selina Publications and is being submitted to you on 16.12.2024

CONNECTIVE TISSUES serves to bind one tissue with another in the body

Connective tissue is composed of -

(i) Matrix - Cells of connective tissues are embedded in non-living intercellular substance called matrix.

(ii) Fewer cellular elements i.e. the cells of connective tissues.

(iii) Fibres - which are thick structures present in the matrix

Fig 1,2 depicts the 3 components of Connective Tissue & its Types

Based on matrix the connective tissue is divided into 3 general types -

(i) Connective tissue proper - where the matrix is relatively less rigid.

(ii) Supportive connective tissue - has rigid matrix

(iii) Fluid Connective tissue - where the matrix is a fluid called Plasma.

Fig 3 shows a Flow chart showing different Types of Connective Tissues

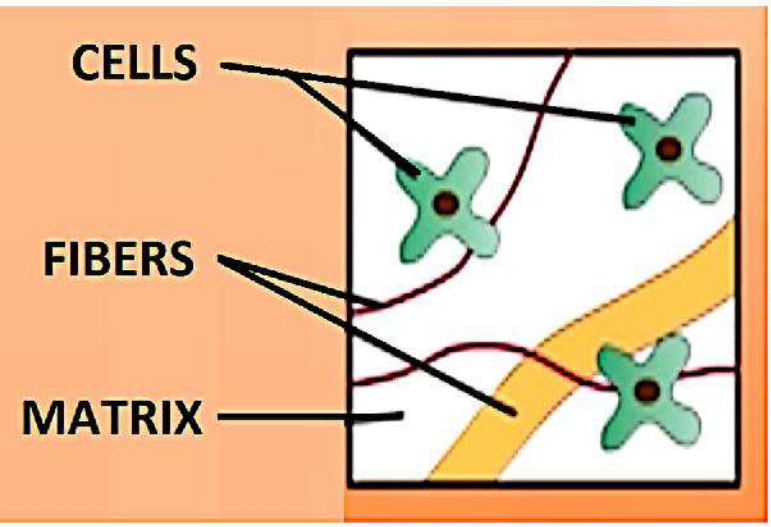
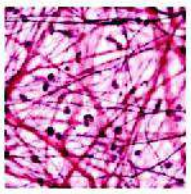
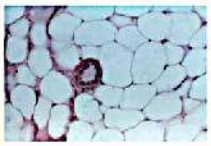


Fig 1

CONNECTIVE TISSUE



This type of tissue is the most abundant, widespread, and varied of all tissue types in the body. It also has the widest variety of functions.



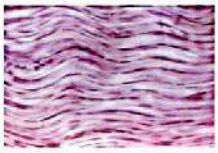
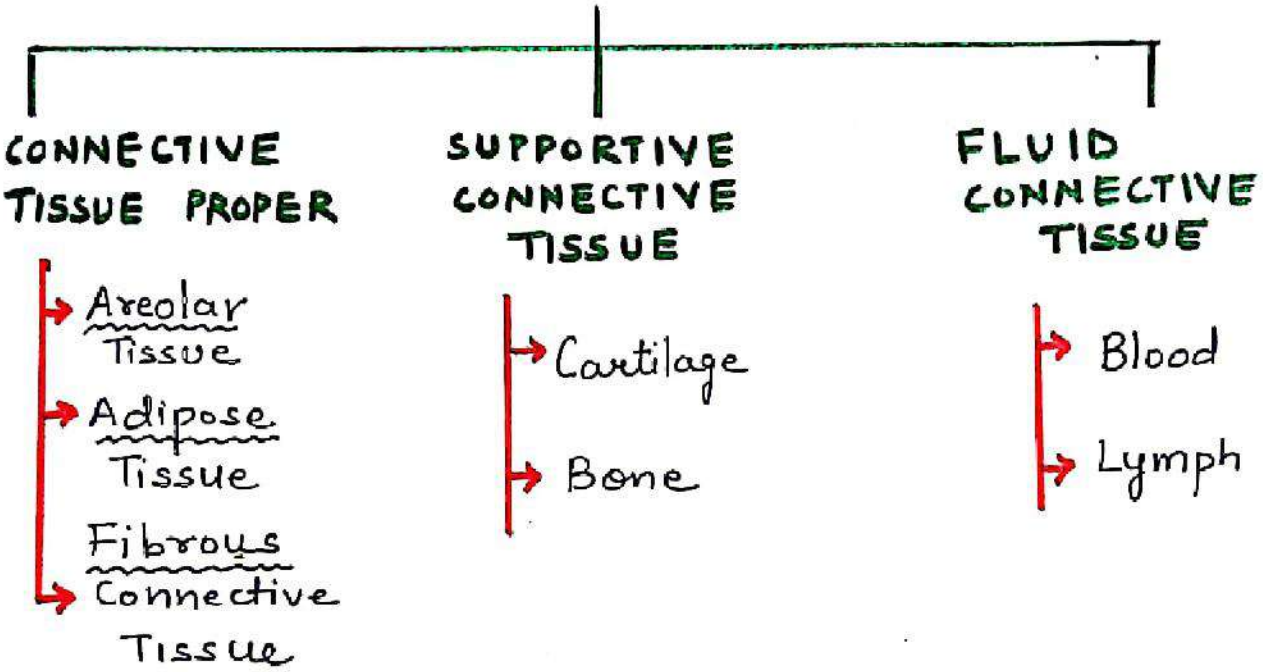


Fig 2

Fig 3 CONNECTIVE TISSUE



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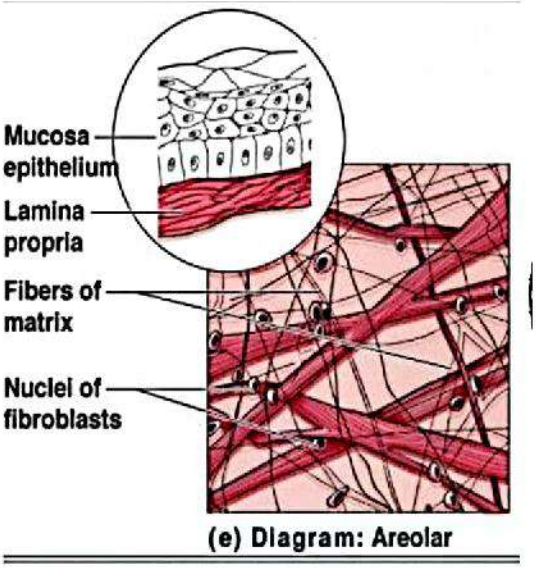
Let us discuss different types of Connective Tissues in detail

1 **Connective Tissue Proper** - serves for packing and binding the organs.
There are 3 subcategories of connective tissue proper -

(i) **Areolar (packing) tissue** - is most widely distributed connective tissue in the body. Its function is to bind the skin with underlying parts of body. It occurs beneath the epidermis of the skin. It makes skin elastic and helps it to withstand pulling strain when we pull the skin.
Fig 4 shows the structure of areolar tissue

(ii) **Adipose (fat) tissue** - It possess cells that are modified to store fat. It occurs below the skin and around internal organs like kidney, eyeball etc. Padding (of fat) under skin acts as an insulation for retaining body heat, thus keeping the body warm. Cells of adipose tissue consist of a large vacuole filled with fat which is surrounded by a small amount of cytoplasm containing a nucleus towards the periphery.
Fig 5 shows the Adipose Connective Tissue

(iii) **Fibrous Connective Tissue** - is made up of elongated cells referred to as 'fibres' Fibres are strong and are bundled together by areolar tissue.
Fig 6 shows the Fibrous Connective Tissue



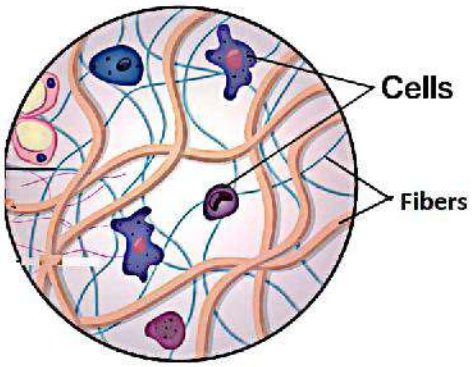
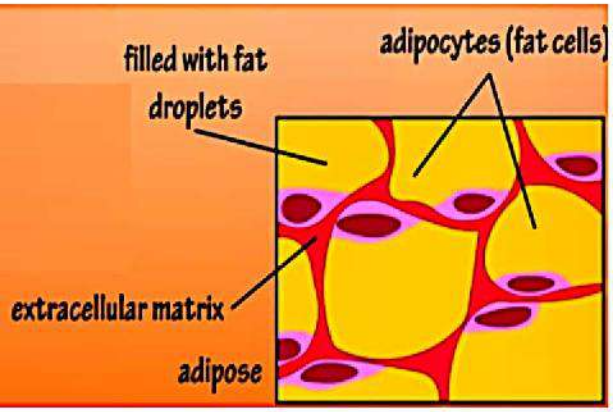


Fig 4
Areolar tissue



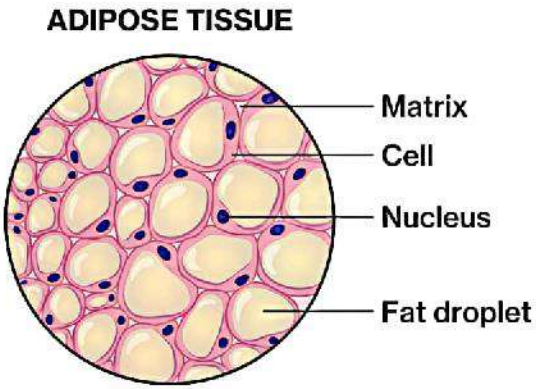
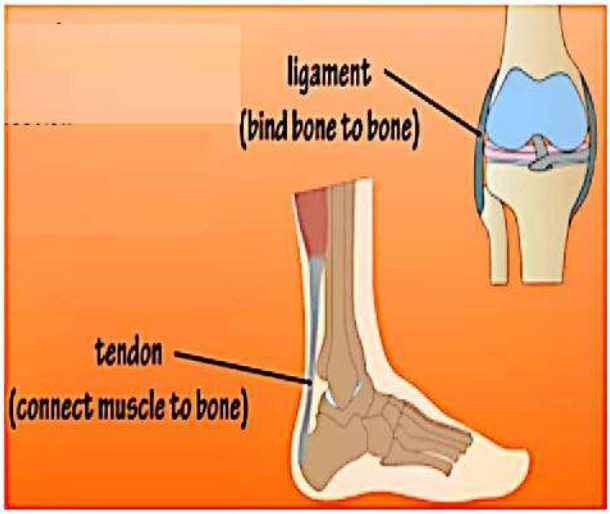


Fig 5
Adipose tissue



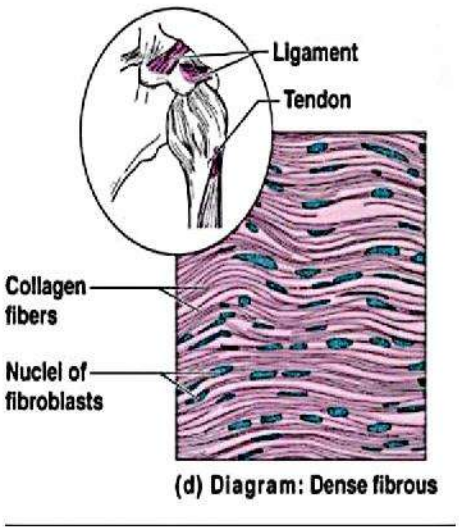


Fig 6
Fibrous
Connective tissue

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TYPES OF FIBROUS CONNECTIVE TISSUES -

(i) Tendons - connect muscles to bones. Tendons are tough and non elastic tissues

ii Ligaments - connect one bone to another bone They are strong but elastic tissues.

Fig 6 shows the Ligaments and Tendons in body.

Now before going further, let us take a short break. Children answer the following questions during the break.

Q1 Name the intercellular substance present between the cells of connective tissue.

Q2 Name the type of 'Connective tissue proper' which has specialised cells that store fat.

Q3 Differentiate between - Tendons and Ligaments

You may now pause the lesson and write the answers to the questions being asked to you.
Break is over. Listen to the correct answers first.

A-1 Matrix is present between the cells of connective tissue.

A-2 Adipose Tissues have specialised cells to store fat

A3 Tendons connect muscles to bone.
Ligaments connect one bone to another bone.

Now let us resume the topic with the discussion of -

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2 **SUPPORTIVE CONNECTIVE TISSUE** provides support to the body parts.

TYPES OF SUPPORTIVE CONNECTIVE TISSUE -

i Cartilage is non porous tissue with thickened intercellular substance or matrix. It has no blood vessels or nerves. It is semi transparent and elastic tissue.

Location - Cartilage is found in nose tip, ear pinna, Trachea, bronchial tubes, between vertebrae and at the end of long bones.

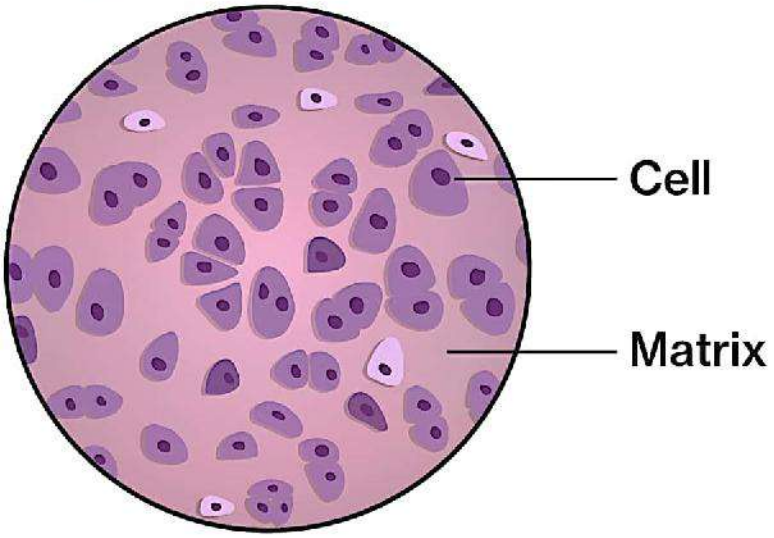
Cells of the cartilage called chondroblasts are embedded in the matrix in groups of twos and fours. or more.

Fig 7 shows the structure of Cartilage

ii Bone is hard porous tissue It has good supply of blood vessels and nerves. It has both living cells called osteoblasts and a rigid mass of inorganic salts. i.e. phosphates and carbonates of Calcium and magnesium Bones cells i.e. Osteoblasts or osteocytes are arranged in concentric rings. Bones support the body, provide protection to the internal organs and help in locomotion Each bone cell is surrounded by a space called lacuna from which projections called canaliculi arise. One bone is connected to another bone cell through these canaliculi

Fig 8 shows the structure of Bone Tissue and Bone Cell.

Fig 7 Cartilage



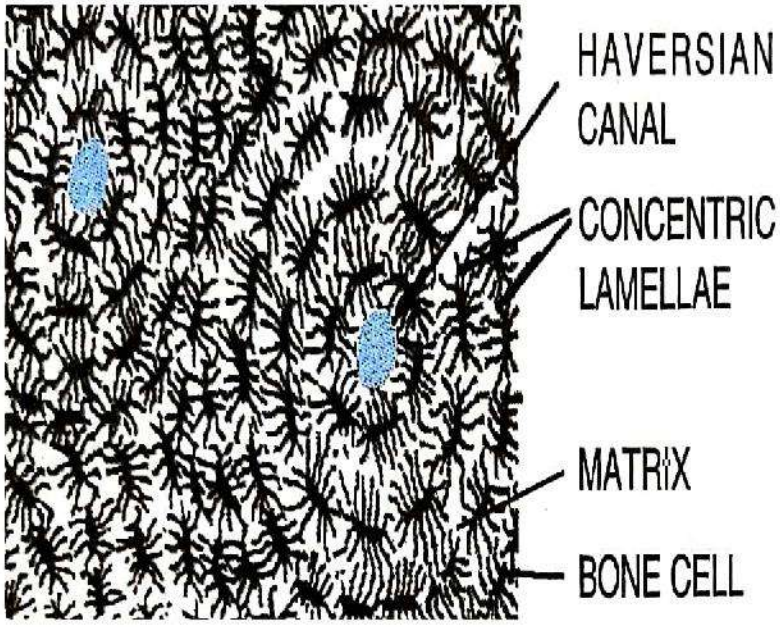
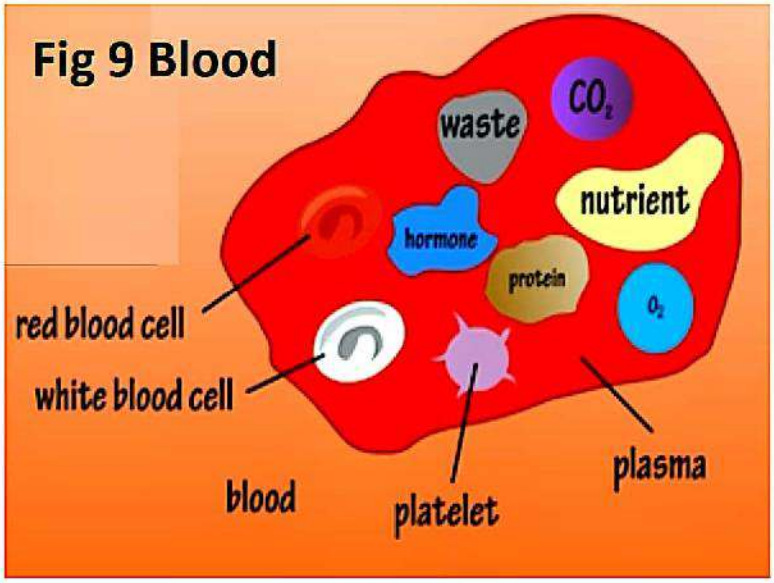


Fig 9 Blood



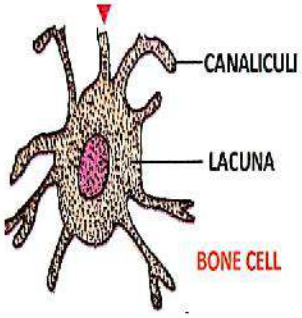


Fig 8 Bone

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3 **FLUID CONNECTIVE TISSUE** consists of cells and matrix without fibres. Matrix is in a fluid state called the plasma. Transport of materials from one place to another within the body, is brought about by this tissue.
Blood and Lymph constitute the fluid connective tissue.

i **BLOOD** - is a bright red coloured fluid connective tissue, contained within closed system of tubes i.e. arteries veins and capillaries Blood consists of a straw-coloured fluid called plasma in which various kinds of cells or corpuscles are present Three types of blood cells are. -

a) Erythrocytes or Red blood Cells
b) Leucocytes or White blood cells
c) Blood Platelets

Blood helps in transportation of food, respiratory gases [i.e. CO_2 and O_2] excretory products etc. and also provide us immunity.
Fig 9 depicts the Fluid Connective Tissue - BLOOD.

ii **LYMPH**. is another fluid connective tissue consisting of plasma and mainly white blood cells. RBCs and platelets are absent. It is the blood plasma that has come out of the blood vessels Lymph is mainly concerned with providing immunity to the body.

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Dear students with this I am ending today's discussion Kindly go through the given explanation thoroughly and with reference to the detailed explanation you are required to answer the following Home assignment questions in your notebooks -

HOME ASSIGNMENT

Q1 Differentiate between the following pairs -
a) Tendons and Ligaments
b) Cartilage and Bone
c) Blood and Lymph.

Q2 Draw well labelled diagrams of -
a) Different types of supportive connective tissue.
b) Different types of Fluid Connective Tissue.

THANK YOU