

# Animal Tissues

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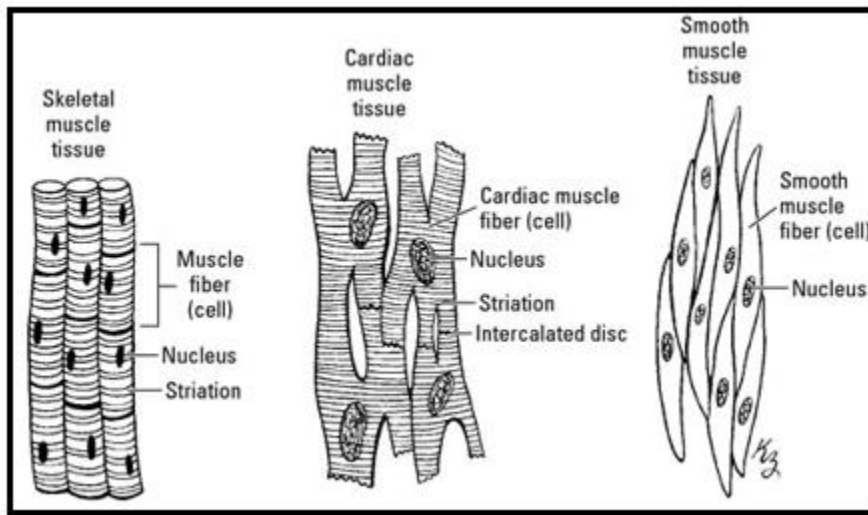
## Improve your learning

**Q. 1. What do you understand by the term tissue? (AS1)**

**Answer :** A group of cells that have a similar structure and perform the same function is termed as tissue.

**Q. 2. Show the difference between the three types of muscle fibers with diagrams. (AS3)**

**Answer :**

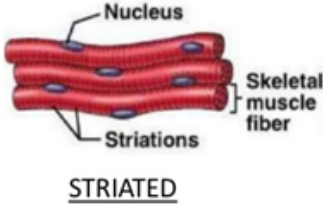
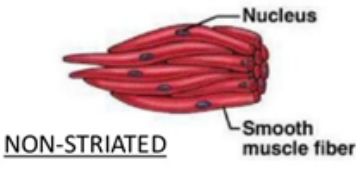
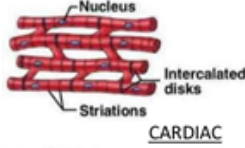


**Q. 3. What is the specific function of the cardiac muscle? (AS1)**

**Answer :** Cardiac muscles are the involuntary muscles present specifically in the heart. They help in pumping the blood of blood by continuous contraction and relaxation that cause the beating of the heart.

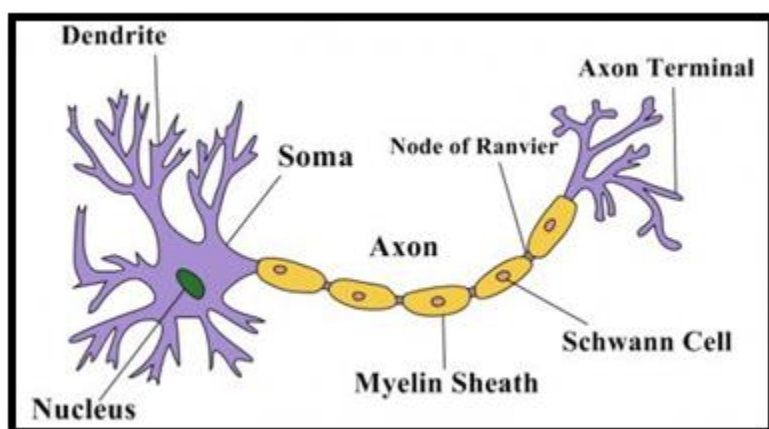
**Q. 4. Differentiate between striated, untreated and cardiac muscles on the basis of their structure and site / location in the body. (AS1)**

**Answer :**

S.no.	Characteristics	Striated muscles	Untreated muscles	Cardiac muscles
1.	Structure	1. Alternate light and dark bands present 2. Cells are long, cylindrical • Unbranched • Multi-nucleated	• No striations present • Cells are long and spindle shaped • Unbranched • Uni-nucleated	• Striations present • Cells are long, cylindrical • Branched • Multi-nucleated.
2.	Diagram	 <p><u>STRIATED</u></p>	 <p><u>NON-STRIATED</u></p>	 <p><u>CARDIAC</u></p>
3.	Location	Mostly present attached to bones, hence called skeletal muscles.	Found in Iris of the eyes, uterus and bronchi of the lungs.	Present exclusively in the heart. Hence called cardiac muscles.

**Q. 5. Draw a labelled diagram of a neuron. (AS3)**

**Answer :**



**Q. 6. A. Name the following. (AS1)**

**Tissue that forms the inner lining of our mouth.**

**Answer :** Epithelial tissue

Explanation: Epithelial tissue, specifically, squamous epithelium is present on the inner linings of the mouth. The thin, delicate cells allow the movement of substances through selectively permeable membrane.

**Q. 6. B. Name the following. (AS1)**

**Tissue that connects muscle to bone in humans.**

**Answer :** Tendons

Explanation: Tendons are a class of connective tissue that combines muscles to the bone. It is made up of protein called collagen which provides elasticity to the cells.

**Q. 6. C. Name the following. (AS1)**

**Tissue that transports food in animals.**

**Answer :** Blood- fluid connective tissue

Explanation: Blood is a fluid connective tissue which is a medium of transportation of various substances through the body of the organism. It transports food in the form of nutrients, oxygen, carbon dioxide and wastes from one part of the body to another.

**Q. 6. D. Name the following. (AS1)**

**Tissue that stores fat in our body.**

**Answer :** Adipose tissue

Explanation: Adipose tissue is majorly found in between the skin and the internal organs and acts as an insulator. The cells of the adipose tissue have fat globules.

**Q. 6. E. Name the following. (AS1)**

**Connective tissue presents in the brain.**

**Answer :** i. Bone

ii. Blood

iii. Fibrous connective tissue.

Explanation: Bony structure called spinal cord surrounds the brain and prevents it from any injury or shock.

A large amount of blood is supplied to the brain so that there is no lack of oxygen and hence no damage to brain activity.

The brain along with the spinal cord is surrounded by three layers of fibrous connective tissue.

**Q. 7. Identify the type of tissue in the following: skin, bone, lining of kidney tubule, vascular bundle. (AS1)**

**Answer :** a. Skin- Stratified epithelial tissue

- b. Bone- Connective tissue
- c. Lining of kidney tubule- cuboidal epithelial cells.
- d. Vascular bundle- Complex permanent tissue.

**Q. 8. If the platelets are not present in the blood what happens? (AS2)**

**Answer :** a) Platelets are a group of cells which do not have a nucleus.

b) Their major role is to prevent excessive blood loss. Whenever there is any injury to the blood vessel or an opening through which blood can leak, platelets accumulate around that opening and block the flow of blood.

c) Hence, they keep a check on blood loss in case of severe injury due to an accident.

d) If the platelets are not present in the blood, whenever injury occurs or there is leakage of blood, the blood would not clot and keep on flowing. Excessive loss of blood can be harmful to the person and in severe cases, even fatal.

**Q. 9. If you touch at elbow, you get a shock like feeling. Why? (AS 7)**

**Answer :** a) Just beneath the elbow joint there is a nerve called Ulnar Nerve present.

b) When we touch the elbow or get hit around it, the nerve gets impacted and the sudden stimulus can cause a shock like feeling.

**Q. 10. The blood is also a fluid connective tissue but in the fluid form. Justify the statement.**

**Answer :** The blood is a fluid connective tissue as

a) All the cells present in the blood are freely floating in extracellular space filled with fluid called plasma. The major component of blood plasma is water.

b) There are no fibers present in the blood. The cells are not bound to one another or with the plasma.

c) The blood is pumped throughout the body which would not have been possible, had it not been in fluid form.

**Q. 11. Identify your blood group with help of kit? (AS 3)**

**Answer :** Aim: To identify our blood group with the help of a kit.

Materials required: blood group test kit, cotton, 70% alcohol, toothpicks.

**Kit components:**

S.no.	Components	Quantity (per 100 tests)
1.	Anti-A sera	5ml
2.	Anti-B sera	5ml
3.	Anti-RhD sera	5ml
4.	Pericline white plate	2
5.	Wax pencil	1
6.	Needle (24G)	100
7.	Instructions manual	1

**Procedure:**

a) Take a perfectly clean porcelaine plate and with a wax pencil, draw 3 circles on the plate. Label each of the circle as Anti-A, anti-B and anti-RhD respectively.



*Addition of anti-sera  
on the glass slide.*

- b) Place one drop of the corresponding antiserum inside, near the edges of the circle.
- c) Clean your ring finger tip with cotton and alcohol and using a needle, quickly prick the fingertip.
- d) Let one drop of blood into each circle without touching and accidentally mixing the serum.
- e) Using a toothpick, gently mix the blood with the antiserum. Use a fresh toothpick for every circle to avoid mixing of the antiserum.
- f) Watch to see if any samples show clumping.

**Observation:**

It will be observed that clumping will start taking place in either of the circles.

**Explanation:**

The Clumping is caused due to agglutination of the RBCs. The RBCs contain the specific protein on the cell surface that determines the blood group of the individual. The

anti-sera will act on the corresponding protein, whether A or B, and cause its agglutination.

Anti-A, B sera cause agglutination in blood group A and b respectively, while blood group AB will show agglutination in both the circles. If the RhD circle shows agglutination, there are Rh factors present, else absent. A/B blood group is independent of Rh factor.

Anti-A	Anti-B	Type
Yes	No	A
No	Yes	B
Yes	Yes	AB
No	No	O

### **Result:**

We can determine the blood group by referring to the circles and observing any grainy clumps.

### **Precautions:**

- a) Do not repeat the same needle for pricking.
- b) Do not use the needle for anything else prior to pricking the finger.
- c) Use sterilized cotton.
- d) Use different toothpicks to mix the contents in different circles.

**Q. 12. Ramu felt weak. Ramu's father took him to hospital. The doctor advised a blood test. The report says that he does not have the required levels of haemoglobin. What are its ill effects? (AS 6)**

**Answer :** Haemoglobin is responsible for the transport of Oxygen and carbon dioxide in the body. Deficiency of haemoglobin can cause:

- a) Anaemia.
- b) Haemoglobin is made up of iron. Low levels of haemoglobin means low levels of iron in the body.
- c) As not enough oxygen is reaching the cells of the body, the body feels weak making the person lethargic, less energetic and pale.

**Q. 13. Blood group of Koushik is  $O^{+ve}$  and Pranavi is  $B^{+ve}$ . Whom can they donate blood and why? (AS 1)**

**Answer :** a) Koushik with blood group  $O^{+ve}$  is a universal donor and can donate the blood to all the blood groups such as  $O^{+ve}$ ,  $A^{+ve}$ ,  $B^{+ve}$ , and  $AB^{+ve}$ .

b) Pranavi with blood group  $B^{+ve}$  can donate blood to people with blood groups  $B^{+ve}$  and  $AB^{+ve}$ . This is so because if  $B^{+ve}$  is added to  $A^{+ve}$ , it may act as antigen and cause agglutination of blood.