

# Animal tissues

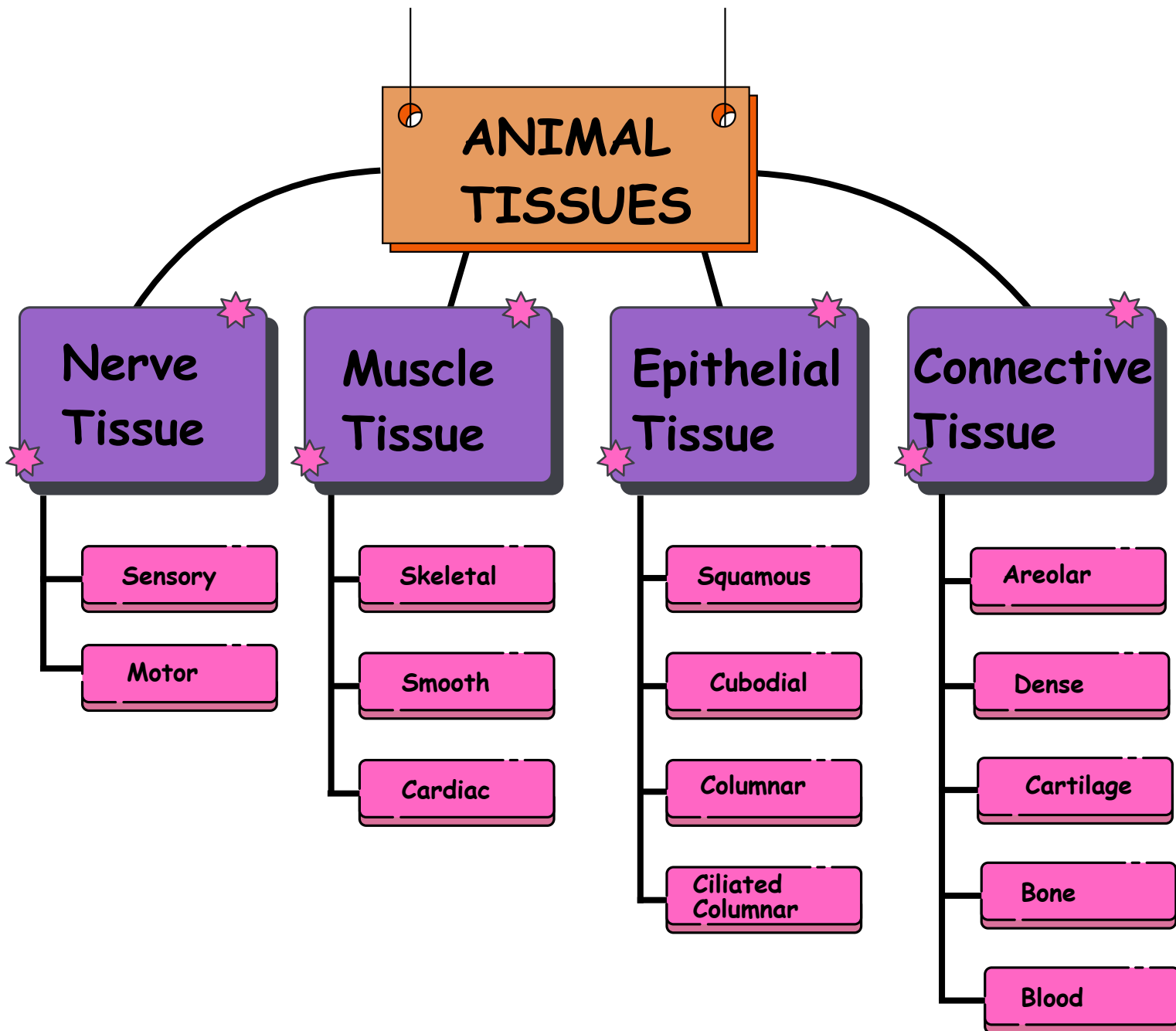
Scope

Topic	Breakdown of topic
Animal tissues	<p><u>Animal tissues:</u> 4 basic types (Structure, location and functions using diagrams)</p> <ul style="list-style-type: none"><li>- epithelial (squamous, cuboidal, columnar and ciliated)</li><li>- connective (areolar connective, dense connective, blood, cartilage, tendons, ligaments, bone)</li><li>- muscle (skeletal, smooth and cardiac referring to voluntary and involuntary action)</li><li>- nerve tissue (sensory-, motor- and interneurons)</li></ul> <p><u>Relationship between structure and function</u></p> <p>[No detail required – some tissues, e.g., blood and nerves in the reflex arc, will be covered in more detail in relevant sections]</p>

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Notes

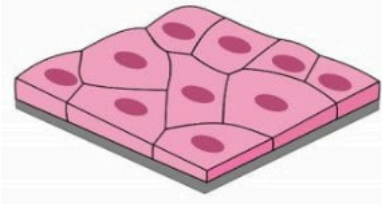
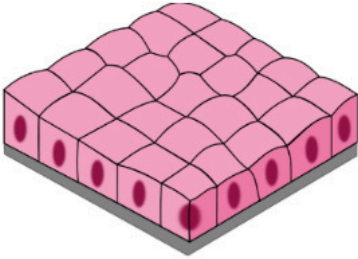
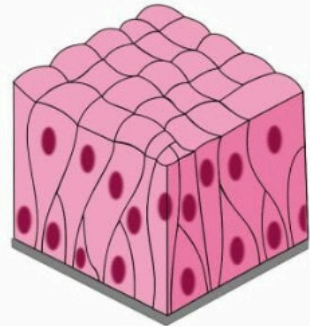
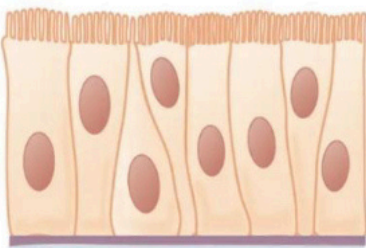
**Tissues:** a group of similarly differentiated cells which are adapted to perform a particular function..



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## Epithelial tissue

**Epithelial tissue** lines the cavities and surfaces of the body. It is usually separated from the underlying tissue by a thin layer of connective tissue, called the basement membrane.

Structure	Location and function	Diagram
<b>Squamous epithelium</b> <ul style="list-style-type: none"> <li>Cells are <b>thin</b> and <b>irregular</b></li> <li>Large flattened nucleus</li> <li>Cells are <b>tightly packed</b> and resemble a pavement</li> </ul>	<u>Location</u> <ul style="list-style-type: none"> <li><b>Skin surfaces</b></li> <li>Lines the mouth, oesophagus, vagina, alveoli and blood vessels.</li> </ul> <u>Function</u> <ul style="list-style-type: none"> <li>Allows materials to pass through by <b>diffusion</b></li> </ul>	
<b>Cuboidal epithelium</b> <ul style="list-style-type: none"> <li>Cells are square-shaped.</li> <li>Round nucleus at the centre of the cell</li> </ul>	<u>Location</u> <ul style="list-style-type: none"> <li>Lines the <b>ducts</b> of <b>glands</b></li> <li>Lines tubules of the kidney</li> </ul> <u>Function</u> <ul style="list-style-type: none"> <li>Secretion</li> <li>Absorption</li> </ul>	
<b>Columnar epithelium</b> <ul style="list-style-type: none"> <li>Cells are <b>elongated</b></li> <li>Oval shaped nucleus found at the base of the cell</li> <li>Contain <b>goblet cells</b> which secrete mucous</li> </ul>	<u>Location</u> <ul style="list-style-type: none"> <li>Lines the intestines and the gallbladder</li> </ul> <u>Function</u> <ul style="list-style-type: none"> <li><b>Absorption</b></li> <li><b>Secretion</b> of mucous and enzymes</li> </ul>	
<b>Ciliated columnar epithelium</b> <ul style="list-style-type: none"> <li>Columnar epithelium that contain <b>cilia</b> (hair-like structures) on the free end of the cell.</li> <li>Contain <b>goblet cells</b> which secrete mucous</li> </ul>	<u>Location</u> <ul style="list-style-type: none"> <li>Lines the trachea and urinary tract and female reproductive system</li> </ul> <u>Function</u> <ul style="list-style-type: none"> <li><b>Cilia</b> in the Fallopian tube help to move the ovum towards the uterus</li> <li>Dust particles are trapped in the mucous and expelled via the lungs</li> </ul>	

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## Connective tissue

a diverse group of tissues that primarily function to support, connect, and bind other tissues and organs in the body

Structure	Location	Function
<b>Areolar connective tissue</b>	<u>Location</u> <ul style="list-style-type: none"> <li>A layer beneath the skin and loosely connects the skin to underlying muscles</li> <li>Packing tissue between organs, blood vessels, nerves and muscles</li> </ul>	<u>Function</u> <ul style="list-style-type: none"> <li>Prevents heat loss by serving as insulating material</li> <li>Protects organs</li> </ul>
<b>Dense connective tissue</b>	<u>Location and function</u> <ul style="list-style-type: none"> <li><b>Tendons</b> joins muscle to bones</li> <li><b>Ligaments</b> joins bone to bone</li> </ul>	
<b>Cartilage</b>	<u>Location and function</u> <ul style="list-style-type: none"> <li>Occurs between bones</li> <li>Lines joints</li> <li>C-shaped rings in the trachea</li> <li>Pinna and tip of nose</li> </ul>	<u>Function</u> <ul style="list-style-type: none"> <li>Connects them together</li> <li>Prevent dislocation</li> <li>Keeps tubes open</li> </ul>
<b>Bone</b>	<u>Location</u> <ul style="list-style-type: none"> <li>Bones of the endoskeleton of vertebrates</li> </ul>	<u>Function</u> <ul style="list-style-type: none"> <li>Give shape and rigidity to the body</li> <li>Protects the brain, spinal cord, heart and lungs</li> <li>Muscle attachment to make movement possible</li> <li>Blood cells are made in bone marrow</li> </ul>
<b>Blood</b>	<u>Location</u> <ul style="list-style-type: none"> <li>Circulates in <b>blood vessels</b></li> </ul>	<u>Function</u> <ul style="list-style-type: none"> <li>Red blood cells (<b>erythrocytes</b>) do not have a nucleus and are round biconcave discs. Contain haemoglobin</li> <li>White blood cells (<b>leucocytes</b>) have one or more nuclei and produce antibodies that fight infection.</li> <li>Platelets are fragments of red blood cells which help blood clotting</li> <li>Plasma is the fluid component of blood and transports substances around the body</li> </ul>

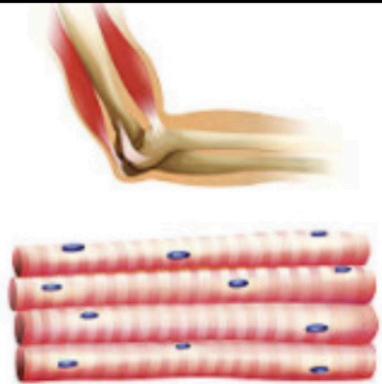
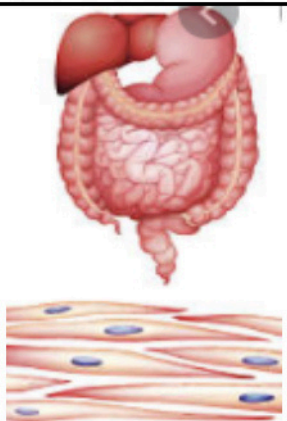
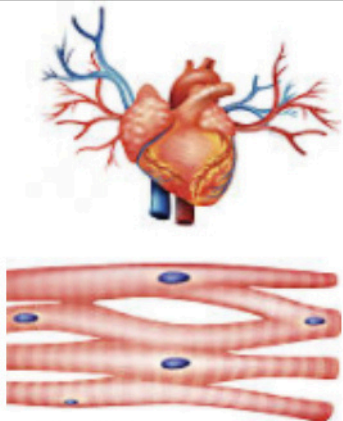


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## Muscle tissue

**Muscle tissue** are capable of contraction to allow for movement

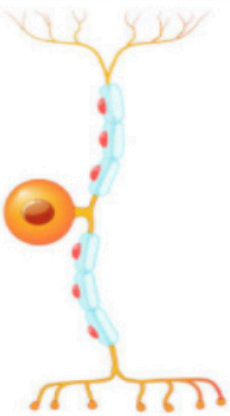
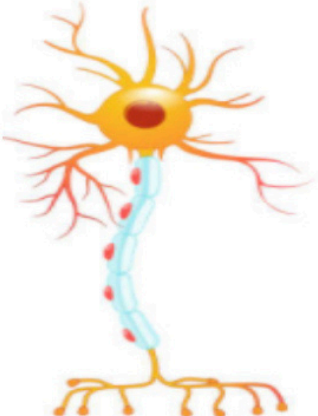

Three types: Skeletal muscle, Smooth muscle and Cardiac muscle

Structure	Location and function	Diagram
<b>Skeletal muscle</b> <ul style="list-style-type: none"> <li>Made up of a large number of muscle fibres which appear as stripes therefore also known as striated muscle</li> <li>Muscle fibres are made up of myofibrils and each one contains more than one nucleus</li> </ul>	<u>Location</u> <ul style="list-style-type: none"> <li>Attached to bone and muscle</li> </ul> <u>Function</u> <ul style="list-style-type: none"> <li>Voluntary movement of the arms and legs for walking</li> </ul>	
<b>Smooth muscle</b> <ul style="list-style-type: none"> <li>Thin spindle-shaped muscle fibres.</li> <li>Each one contains a nucleus</li> </ul>	<u>Location</u> <ul style="list-style-type: none"> <li>Walls of the alimentary canal, bladder, blood vessels</li> </ul> <u>Function</u> <ul style="list-style-type: none"> <li>Involuntary movement such as contraction and relaxation</li> </ul>	
<b>Cardiac muscle</b> <ul style="list-style-type: none"> <li>Network of branched muscle fibres that have a faint striped appearance</li> <li>Each muscle fibre contains a nucleus</li> </ul>	<u>Location</u> <ul style="list-style-type: none"> <li>Walls of the heart</li> </ul> <u>Function</u> <ul style="list-style-type: none"> <li>Coordinate the involuntary contraction and relaxation of the heart.</li> </ul>	

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## Nerve tissue

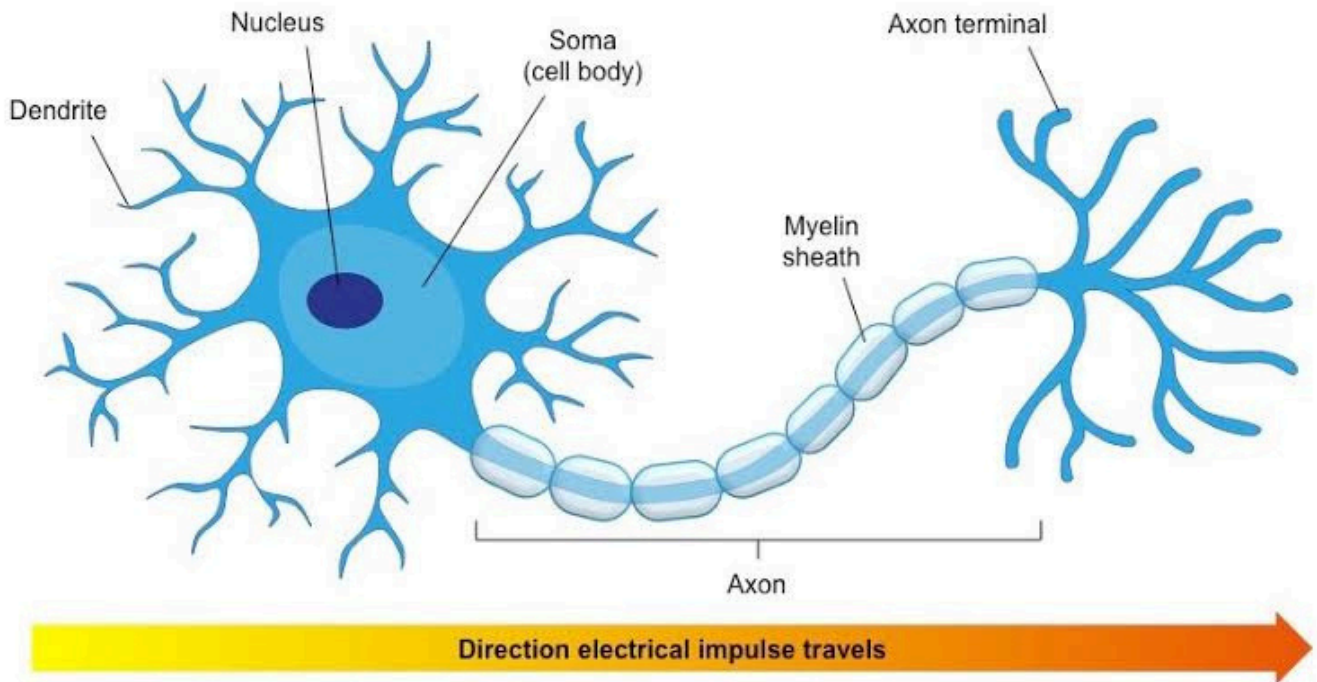
**Nerve tissue** is made up of neurons (specialized cells)

Structure	Function	Diagram
<b>Sensory neuron</b>	Transmits nerve impulses from receptors to the central nervous system.	
<b>Motor neuron</b>	Transmits nerve impulses from the central nervous system to effectors.	
<b>Inter neurons</b>	Connects sensory and motor neuron	

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## *Nerve tissue*

### The motor neuron



You should be able to draw and label