

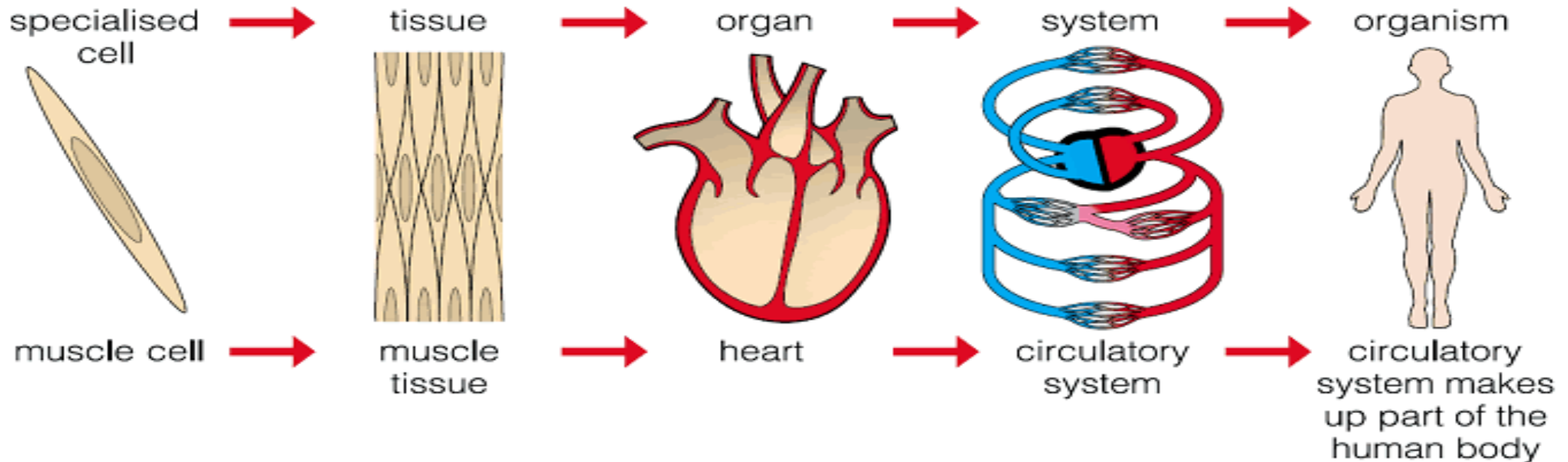
A microscopic cross-section of a plant stem, showing various tissue layers. The image is overlaid with a semi-transparent grey filter. The word "TISSUE" is written in a white, stylized, serif font across the center. Below the text is a white horizontal line. In the bottom right corner, there is a small white icon of a speaker with sound waves, indicating audio content.

TISSUE



WHAT IS A TISSUE?

- **A group of cells that are similar in structure and/or work together to achieve a particular function forms a tissue.**



Animal tissue - Types

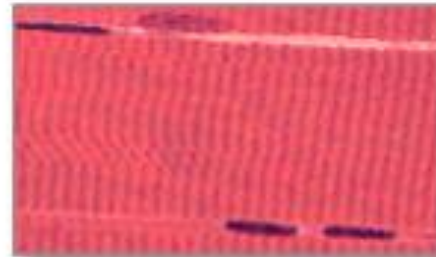
Four types of tissue



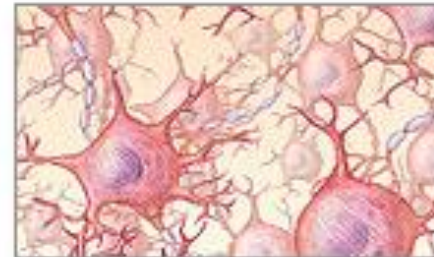
Connective tissue



Epithelial tissue



Muscle tissue



Nervous tissue



EPITHELIAL TISSUE

- **The covering or protective tissues in the animal body are epithelial tissues.**
- **The cells of epithelial tissues are tightly packed and form a continuous sheet.**

- **Examples:**

The skin

The lining of the mouth

The lining of blood vessels, lung alveoli and kidney tubules







Types of Epithelial tissues:

- **Based on the shapes and functions of cells, there are different types of epithelial tissue in human body.**
-

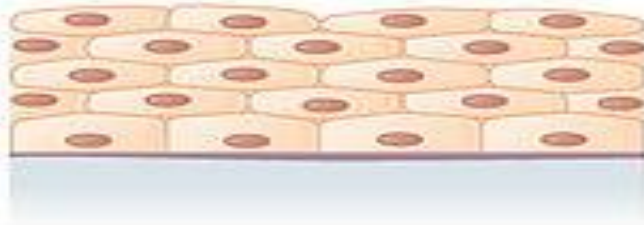
- **Simple squamous**
- **Stratified squamous (non-keratinised)**
- **Stratified squamous (keratinised)**
- **Transitional**
- **Simple columnar**
- **Pseudostratified columnar**
- **Simple cuboidal**



Cells	Location	Function
<p>Simple squamous epithelium</p> 	<p>Air sacs of lungs and the lining of the heart, blood vessels, and lymphatic vessels</p>	<p>Allows materials to pass through by diffusion and filtration, and secretes lubricating substance</p>
<p>Simple cuboidal epithelium</p> 	<p>In ducts and secretory portions of small glands and in kidney tubules</p>	<p>Secretes and absorbs</p>
<p>Simple columnar epithelium</p> 	<p>Ciliated tissues are in bronchi, uterine tubes, and uterus; smooth (nonciliated tissues) are in the digestive tract, bladder</p>	<p>Absorbs; it also secretes mucous and enzymes</p>
<p>Pseudostratified columnar epithelium</p> 	<p>Ciliated tissue lines the trachea and much of the upper respiratory tract</p>	<p>Secretes mucus; ciliated tissue moves mucus</p>



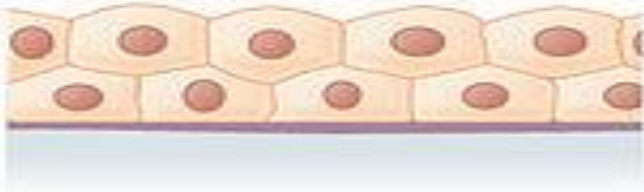
Stratified squamous epithelium



Lines the esophagus, mouth, and vagina

Protects against abrasion

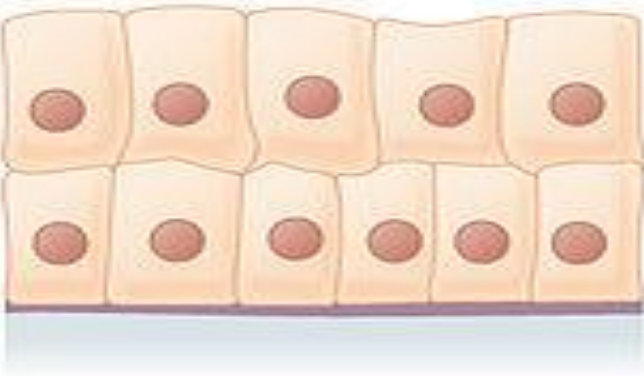
Stratified cuboidal epithelium



Sweat glands, salivary glands, and the mammary glands

Protective tissue

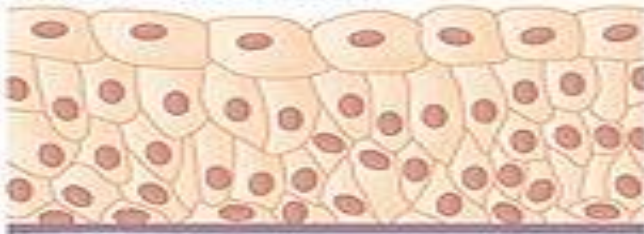
Stratified columnar epithelium



The male urethra and the ducts of some glands

Secretes and protects

Transitional epithelium



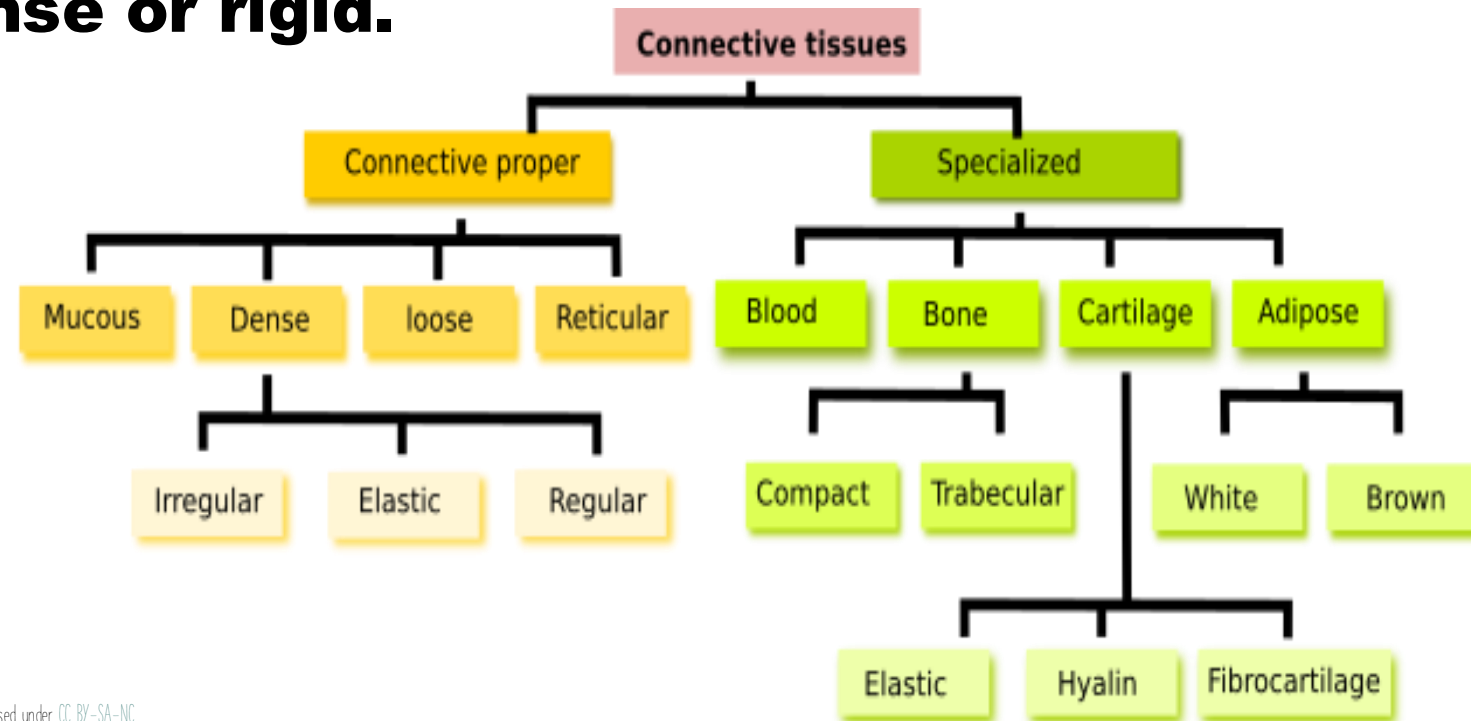
Lines the bladder, urethra, and the ureters

Allows the urinary organs to expand and stretch

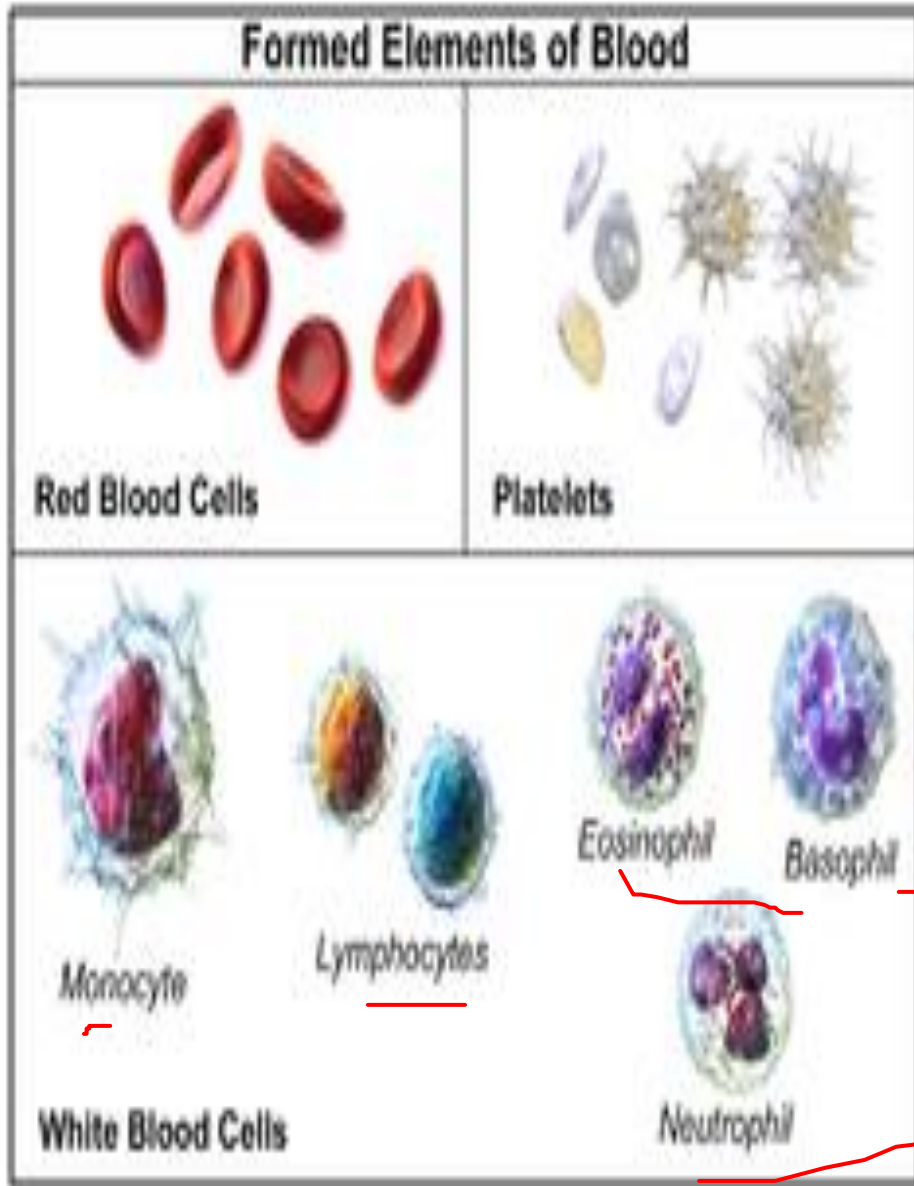


Connective Tissue

- **The cells of connective tissue are loosely packed and embedded in an intercellular matrix. The matrix may be jelly like, fluid, dense or rigid.**



BLOOD



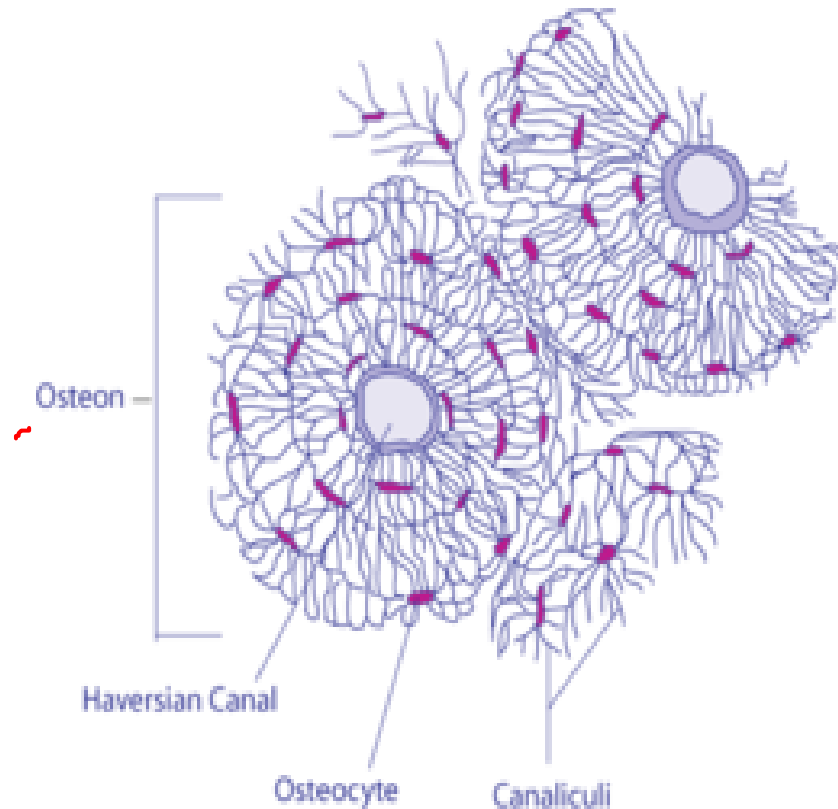
- **Blood has a fluid (liquid) matrix called plasma, in which red blood corpuscles (RBCs), white blood corpuscles (WBCs) and platelets are suspended.**

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- **Blood flows and transports gases, digested food, hormones and waste materials to different parts of the body.**



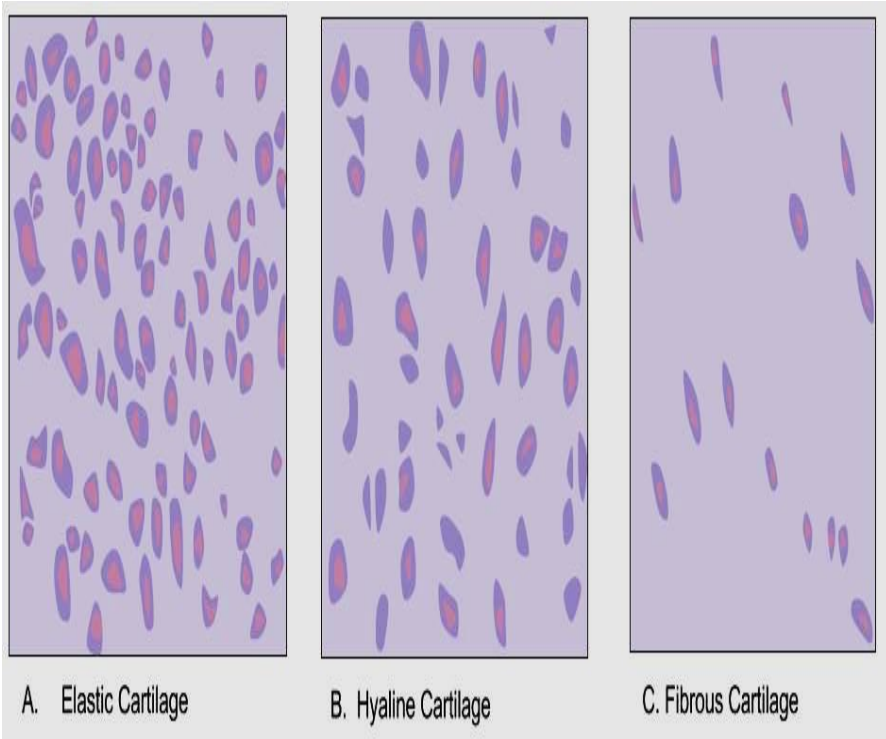
BONE



- **It is a strong and nonflexible tissue. Bone cells are embedded in a hard matrix that is composed of calcium and phosphorus compounds.**
- **It forms the framework that supports the body. It also anchors the muscles and supports the main organs of the body.**
- **LIGAMENT- Two bones are connected via ligament**
- **TENDON – bone to muscle connection.**



Cartilage



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- **Widely spaced cells.**
- **The solid matrix is composed of proteins and sugars**
- **Cartilage smoothens bone surfaces at joints and is also present in the nose, ear, trachea and larynx.**



Areolar connective tissue

- **Present between the skin and muscles, around blood vessels and nerves and in the bone marrow.**
- **It fills the space inside the organs, supports internal organs and helps in repair of tissues.**

Adipose connective tissue

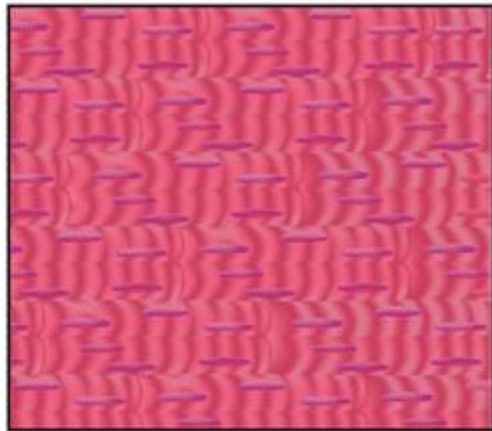
- **Fat storage tissue**
- **Cells are filled with fat globules .**
- **Storage of fat acts like an insulator.**



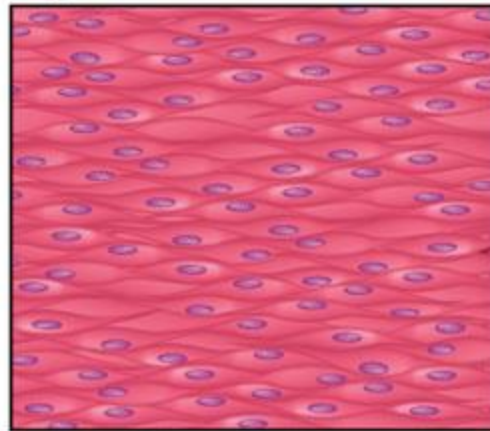
MUSCULAR TISSUE

- **Contain elongated cells called the muscle cells .**
- **This tissue is responsible for movement in our body and the protein responsible for contraction and relaxation is called *contractile proteins*.**

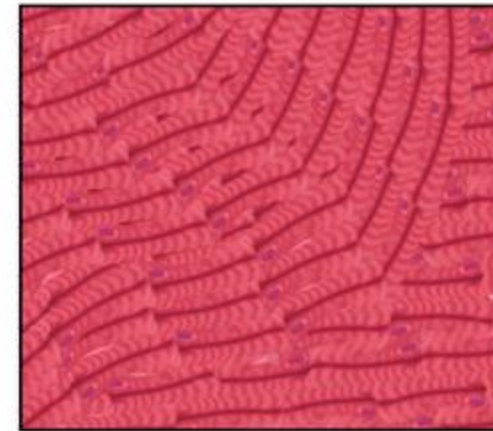
Types of Muscle Tissue



Skeletal Muscle



Smooth Muscle



Cardiac Muscle



SMOOTH**CARDIAC****SKELETAL****Location**

Wall of hollow organs, vessels, respiratory passageways

Wall of heart

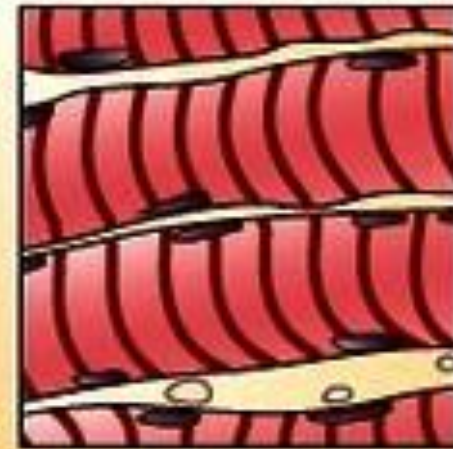
Attached to bones

Cell characteristics

Tapered at each end, branching networks, nonstriated

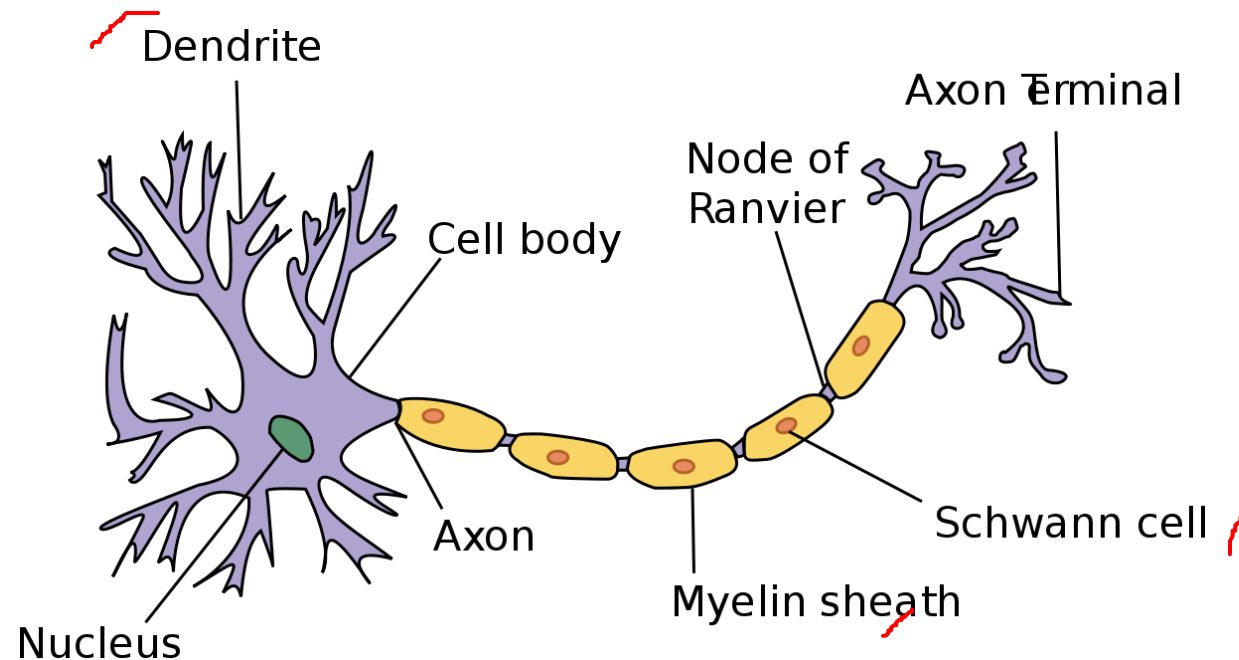
Branching networks; special membranes (intercalated disks) between cells; single nucleus; lightly striated

Long and cylindrical; multinucleated; heavily striated

**Control Action**Involuntary
Produces peristalsis; contracts and relaxes slowly; may sustain contractionInvoluntary
Pumps blood out of heart; self-excitatory but influenced by nervous system and hormonesVoluntary
Produces movement at joints; stimulated by nervous system; contracts and relaxes rapidly

NERVOUS TISSUE

- **The brain, spinal cord and nerves are all composed of the nervous tissue.**
- **The cells of this tissue are called nerve cells or neurons.**



- **An individual nerve cell may be up to a metre long.**
- **Many nerve fibres bound together by connective tissue make up a nerve.**
- **The signal that passes along the nerve fibre is called a nerve impulse. Nerve impulses allow us to move our muscles**





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thank you!

