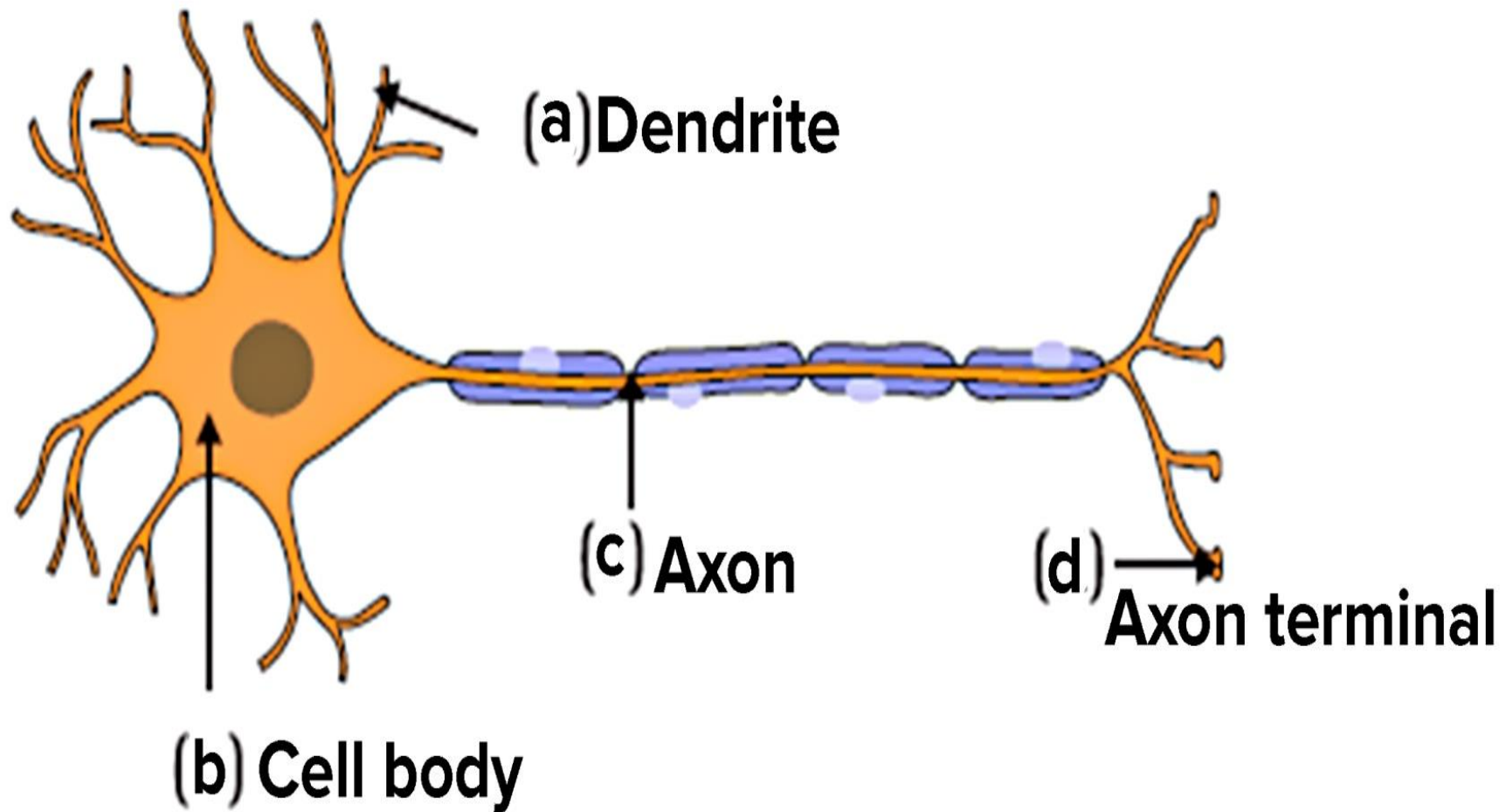


Nervous Tissue

- Nervous tissue is a specialized type of tissue found in the nervous system, consisting of cells called neurons and neuroglial cells.
- Neurons: Neurons are the functional units of the nervous system responsible for transmitting electrical and chemical signals.
- Neuroglial Cells: Neuroglial cells, or glial cells, are non-neuronal cells that support and protect neurons, providing structural and metabolic support.



Neuron Structure and Function:

- **Cell Body (Soma):** The central part of a neuron containing the nucleus and other organelles.
- **Dendrites:** Branch-like extensions that receive signals from other neurons or sensory receptors.
- **Axon:** A long, slender projection that transmits electrical impulses away from the cell body to other neurons or target cells.
- **Myelin Sheath:** A fatty insulating layer around some axons, which increases the speed of nerve impulse transmission.
- **Synapses:** Junctions where neurons communicate with each other or with effector cells (muscles or glands) through neurotransmitters.
- **Nerve Impulse:** The electrochemical signal that travels along the axon and allows neurons to communicate.

Types of Neurons:

- Sensory Neurons: Transmit sensory information from receptors to the central nervous system (CNS).
- Motor Neurons: Relay signals from the CNS to muscles or glands, controlling movement and function.
- Interneurons: Found in the CNS, they facilitate communication between sensory and motor neurons.

Nervous System Components:

- Central Nervous System (CNS): Comprises the brain and spinal cord, where processing and integration of information occur.
- Peripheral Nervous System (PNS): Includes all nerves and ganglia outside the CNS, responsible for transmitting information to and from the CNS.

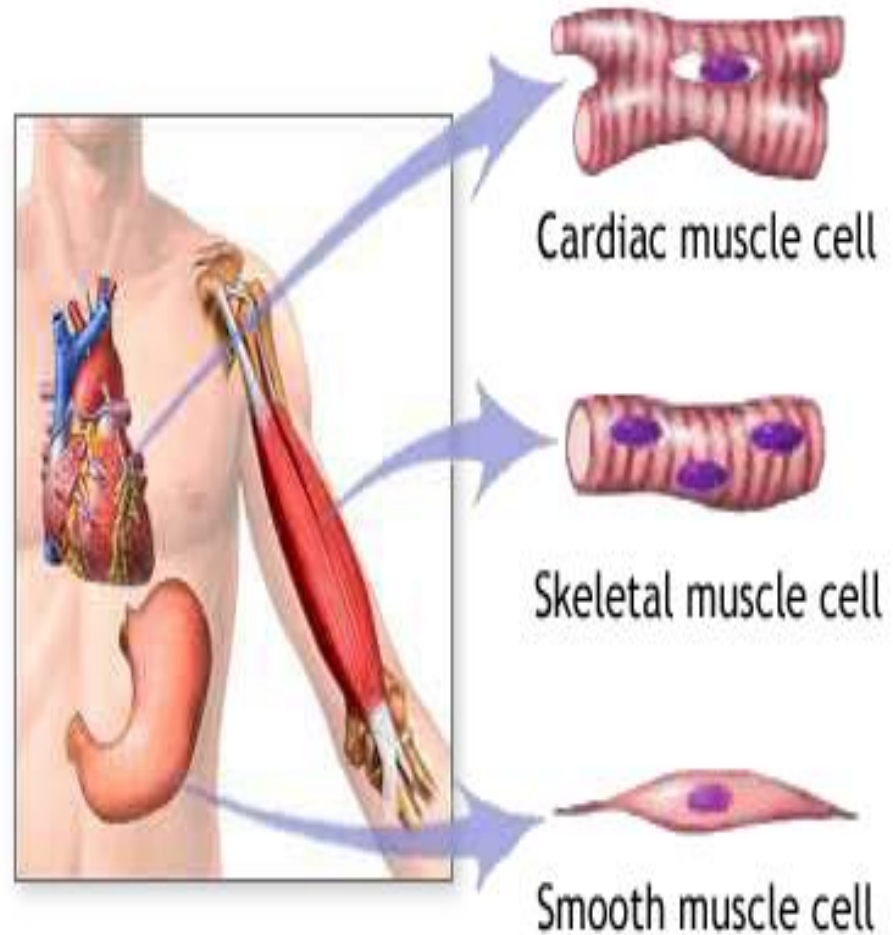
Function of Nervous Tissue:

- **Sensory Input:** Nervous tissue receives and processes sensory information from the environment or within the body.
- **Integration:** Neurons in the CNS process and integrate sensory information, making decisions and generating responses.
- **Motor Output:** The nervous system sends commands to muscles and glands, controlling bodily movements and functions.

Muscular Tissue

Types of Muscles:

- Skeletal muscles: Attached to bones and responsible for voluntary movements
- Multinucleated and striated.
- Smooth muscles: Found in the walls of internal organs and responsible for involuntary movements.
- Uninucleated, spindle shaped.
- Cardiac muscles: Found in the heart and responsible for pumping blood.
- Striated, branched, Involuntary

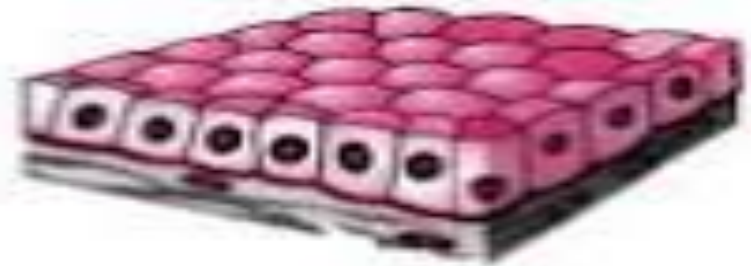


Epithelial Tissue

- It covers the body's external and internal surfaces and lines body cavities and organs.
- Epithelial cells are closely packed and often form sheets of tissue.



(a) Squamous



(b) Cuboidal



(c) Columnar (Ciliated)



(d) Stratified squamous

Functions

- Protection: Epithelia provide a barrier against physical, chemical, and microbial damage.
- Absorption: Certain epithelia (e.g., in the intestines) are involved in nutrient and substance absorption.
- Secretion: Glandular epithelia produce and secrete substances such as hormones, enzymes, and mucus.
- Sensation: Some epithelia contain sensory cells (e.g., taste buds, olfactory cells) for sensory perception.
- Filtration: In structures like the kidney, epithelial cells help filter blood and form urine.

- **Simple squamous epithelium:**
 - Single layer of flat, scale-like cells.
 - Found in sites for diffusion and filtration, such as the alveoli of the lungs and lining of blood vessels.
- **Simple cuboidal epithelium:**
 - Single layer of cube-shaped cells.
 - Found in glands like salivary glands, sweat glands and kidney tubules, where it is involved in secretion and absorption.
- **Simple columnar epithelium:**
 - Single layer of tall, rectangular cells.
 - Found in the digestive tract where it helps with absorption and secretion.
 - Found in small intestine

- **Stratified squamous epithelium:**
 - Multiple layers of flat cells.
 - Forms the outermost layer of the skin (epidermis) and lines the mouth, esophagus, and vagina.
- **Stratified cuboidal and columnar epithelium:**
 - Multiple layers of cube-shaped or rectangular cells.
 - Relatively rare in the body and found in certain ducts and glands.
- **Pseudostratified columnar epithelium:**
 - Single layer of cells with varying heights.
 - Often has cilia on the apical surface and is found in the respiratory tract.
- **Transitional epithelium:**
 - Specialized for stretching.
 - Found in the urinary bladder and allows it to expand and contract.

Adipose Tissue

- Adipose tissue is a specialized connective tissue primarily composed of adipocytes (fat cells).
- It serves as the body's main energy reservoir, insulation, and cushioning.



Functions of Adipose Tissue

- Functions of Adipose Tissue:
- Energy storage: Adipocytes store excess energy in the form of triglycerides for later use.
- Insulation: Adipose tissue acts as an insulating layer, helping to regulate body temperature.
- Cushioning: It provides protection and cushioning for organs, such as the kidneys and eyes.
- Endocrine function: Adipose tissue secretes hormones and adipokines that play a role in metabolism, appetite regulation, and inflammation.

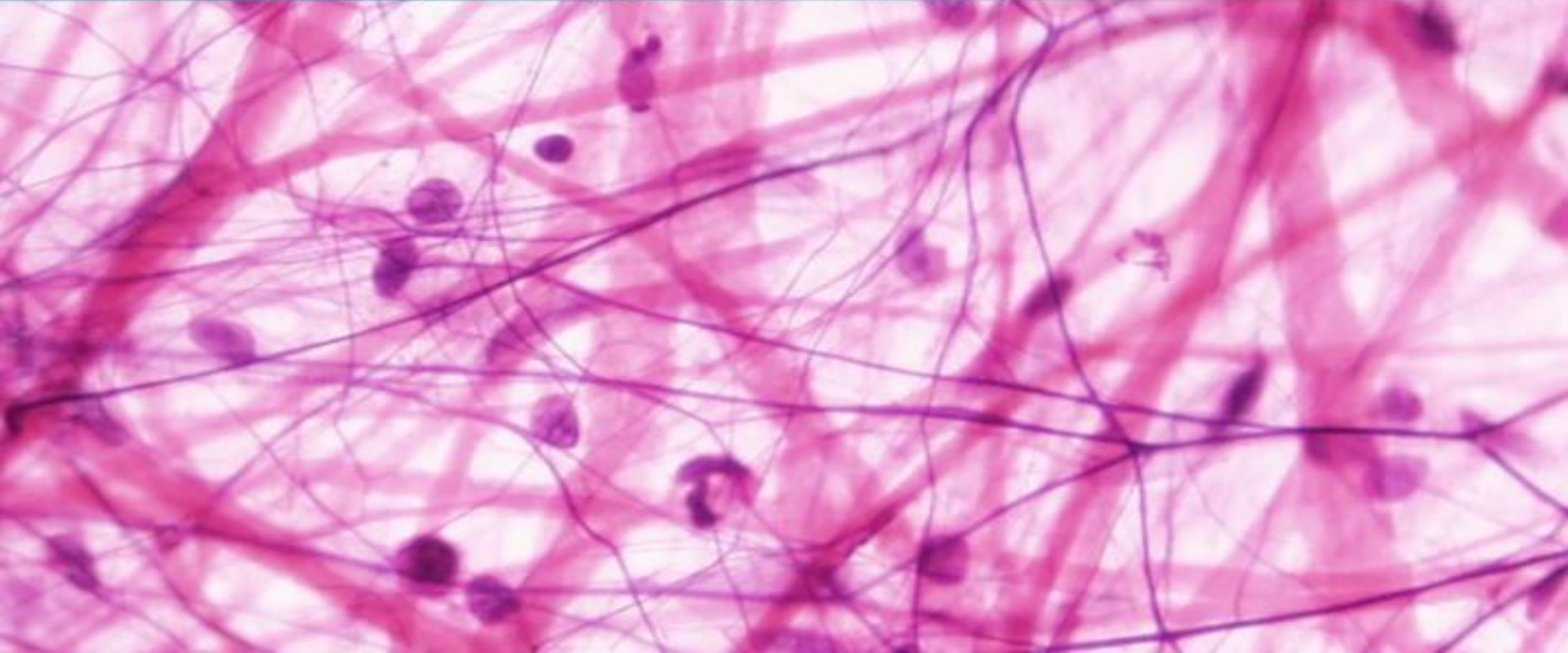
Location of Adipose Tissue:

- Subcutaneous fat: Located beneath the skin, providing a layer of insulation and cushioning.
- Visceral fat: Found around internal organs in the abdominal cavity and can influence metabolic health.
- Brown adipose tissue: Typically located in the neck and upper back regions in adults, though it can vary.

Areolar Tissue

- Areolar tissue is a type of loose connective tissue. That fills the gap between skin and muscles
- It is composed of a variety of cell types (fibroblasts, macrophages, mast cells) and abundant extracellular matrix components.

FUNCTION AND LOCATION OF AREOLAR TISSUE



Location:

- Areolar tissue is widely distributed throughout the body, serving as a universal packing material.
- It forms a layer under the skin (subcutaneous layer or hypodermis) and surrounds blood vessels, nerves, and organs.

Functions of Areolar Tissue:

- Support: Provides support and strength to the surrounding structures.
- Elasticity: The elastic fibers within areolar tissue allow it to stretch and recoil.
- Nourishment: Blood vessels within areolar tissue supply nearby cells with nutrients and oxygen.
- Immune response: Contains immune cells (macrophages) that help defend against pathogens and foreign substances.
- Space-filling: Fills spaces between organs and tissues, providing padding and protection.

Q1) In plants, which of the following tissues are dead? (2006)

Parenchyma , sclerenchyma, collenchyma, phloem.

Q2) which of the following statement about meristematic tissues is correct?
(2018)

These are dead tissues and form wood.

They provide flexibility to the plant due to their thickened walls.

These are present at the bark of the tree only.

Growth occurs in plants due to division of cells of these tissues.

Q3) which of the following is not a component of conducting tissue in plants?(2019) Fibres, pericycle, Tracheids, Sieve Tubes.

Q4) Damage to the apical meristem of a growing young plant will affect the
Length of the plant, colour of the flower, colour of the leaves, taste of the fruits.

Q5) which one of the following is not a part of nerves? (2015)

Axons, connective tissues, Schwann Cells, Smooth Muscles.

Q6) Tendons through which muscle are connected to the bones are tightly compacted bundles of which one of the following long fibrous tissue?

Fibrin, Collagen, Elastin, Cellulose.

Q7) Muscles responsible for movement of food in stomach are Cardiac, Striated, unstriated, none of these.

Q8) Parenchyma : Simple:: Phloem:
Simple, collenchyma, complex, xylem.

Q9) Phloem in the plants perform the function of -
Conduction of food, conduction of water, providing support, photosynthesis.

Q10) Plant length is increased by
Apical meristems, lateral meristems, periblem, parenchyma.

Q11) Tendon is the structure which connects-

A bone with another bone

A muscle with a bone

A nerve with a muscle

A muscle with a muscle

Q12) Among the following statements which is correct?

Plants convert energy from sunlight into food stored as carbohydrates.

Plants have chlorophyll

Plant cells do not have cell walls

Q13) In plant tissues the cell wall of - are coagulated with suberin.

Epidermis, cork, stomata, phloem fibres

Q14) which of the following provides buoyancy to aquatic plants to help them float? Aerenchyma, Tracheid, Guard cells, Sclerenchyma