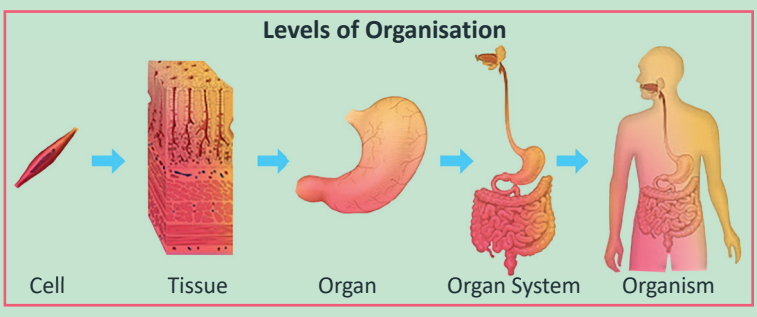
Structural Organisation in Animals

Organ System



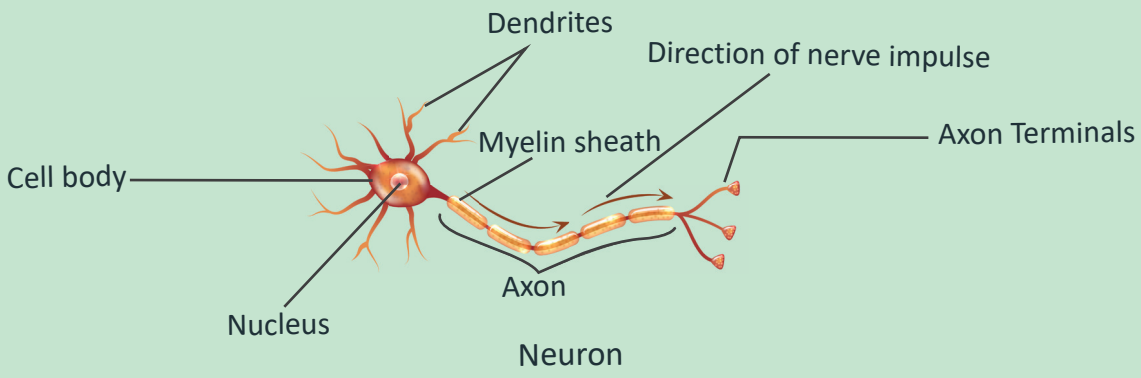
- Characteristic feature of higher order multicellular animals
- Coordinates activities of cell
- Example: digestive system, circulatory system, excretory system, respiratory system, lymphatic system, nervous system, skeletal system, etc.

Types of Tissue

- Epithelial Tissue
- Muscle Tissue
- Connective Tissue
- Neural Tissue

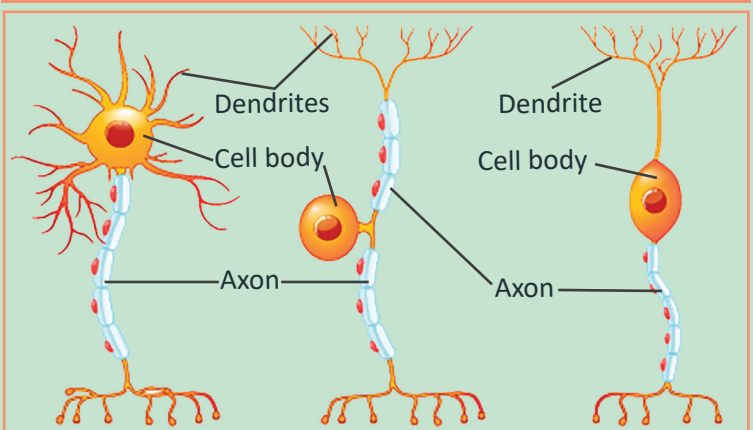
Neural Tissue

- Main component of the nervous system
- Consists of mainly the neurons – generate and conduct nerve impulse and the neuroglia – supporting cells

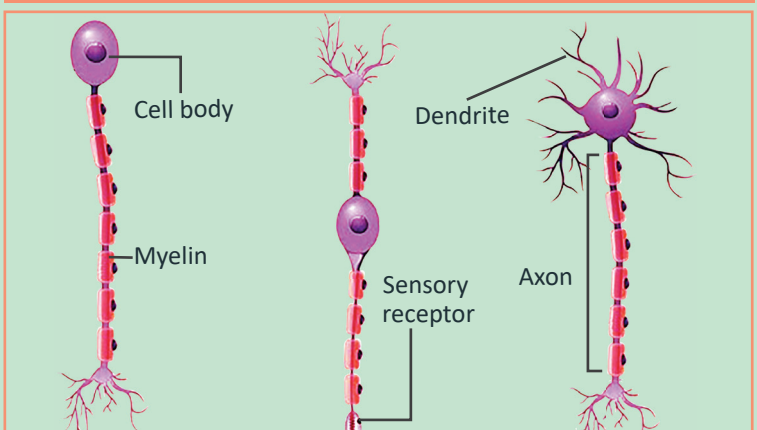


Neuron

Types of Neuron on the Basis of Function

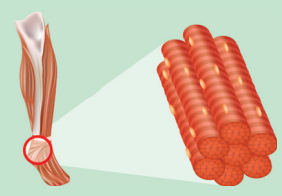


Types of Neuron on the Basis of Structure



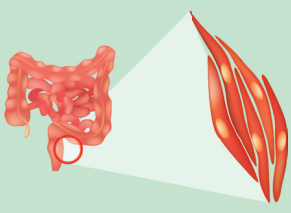
Muscle tissue

- Helps in the contraction of muscles
- Made up of muscle cells that have myofibrils which are composed of actin and myosin myofilaments



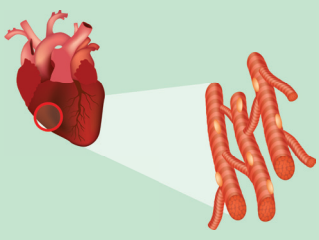
Skeletal Muscle

- Have stripes or striations
- Cells are long and cylindrical with many nuclei
- Help in the locomotion and are attached to the skeleton



Smooth Muscle

- Do not have striations or stripes
- Involuntary muscles
- Single nucleus and the cells are spindle-shaped
- Found in the walls of the hollow organs



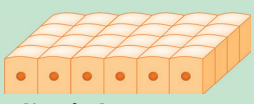
Cardiac Muscle

- Contraction of this muscle helps the heart to pump blood
- Branched and cylindrical with single nucleus and striations present
- Shorter than the skeletal muscle tissue
- Presence of intercalated disc

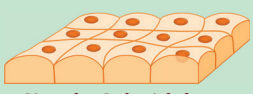
Epithelial Tissue

Simple Epithelium

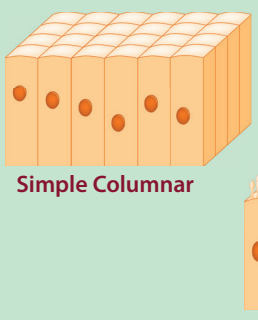
- Single layer of cells
- Generally found in the lining of the body cavities or organs, ducts and tubes



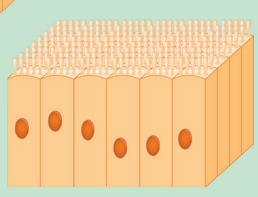
Simple Squamous



Simple Cuboidal



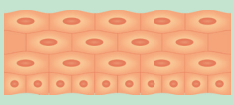
Simple Columnar



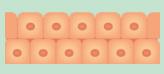
Ciliated Columnar

Compound Epithelium

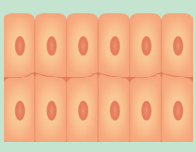
- Two or more layers of cells
- Provide protection against any form of mechanical or chemical stress
- Found on the dry surface of the skin, buccal cavity, pharynx, the lining of the salivary glands ducts and pancreatic ducts



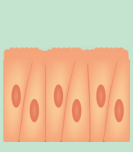
Stratified Squamous



Stratified Cuboidal



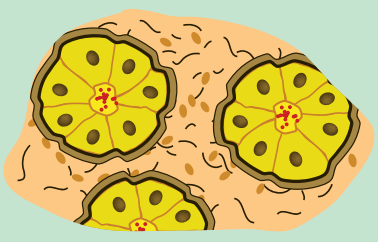
Stratified Columnar Epithelium



Psuedostratified Columnar

Glandular Epithelium

- Modified columnar epithelial tissues
- Main function is secretion
- Form exocrine and endocrine glands



Glandular Epithelium

Connective Tissue

Loose Connective Tissue

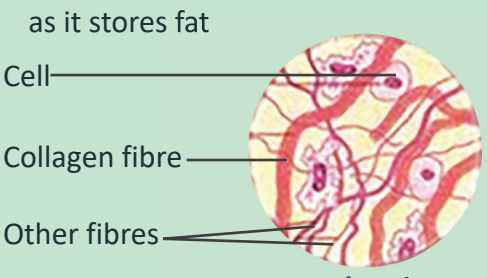
- Areolar Tissue - supports internal organs as well as help in the repair of tissues
- Adipose Tissue - acts as an insulator as it stores fat

Dense Connective Tissue

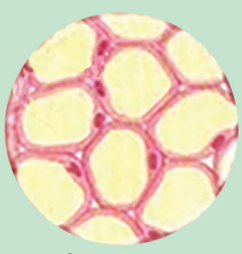
- Fbres and fibroblasts are compactly packed
- Classified into dense regular and dense irregular connective tissue
- Ligaments and Tendons

Specialized Connective Tissue

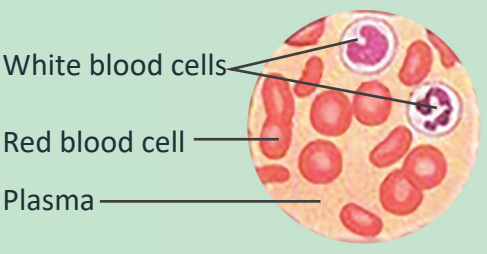
- Blood - fluid connective tissue
- Bone - hard connective tissue
- Cartilage - has a solid matrix



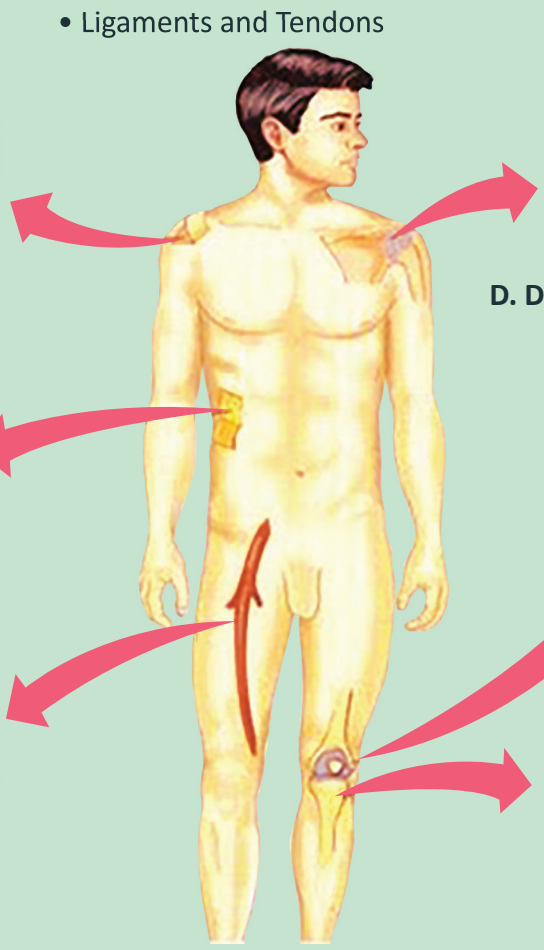
A. Areolar Tissue
(Skin)

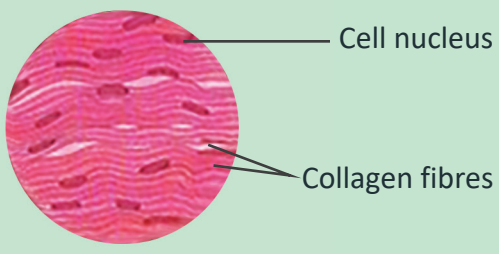


B. Adipose tissue

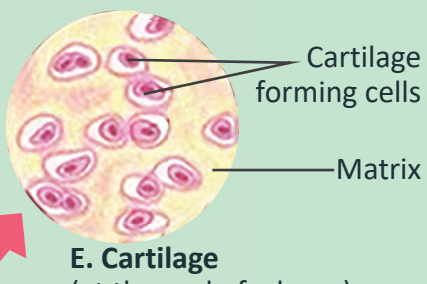


C. Blood

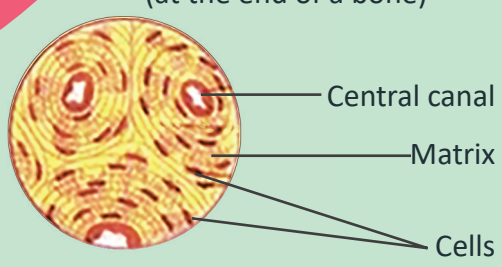




D. Dense Connective Tissue
(forming ligament)



E. Cartilage
(at the end of a bone)



F. Bone