Lec. 4

Human Tissue

BY

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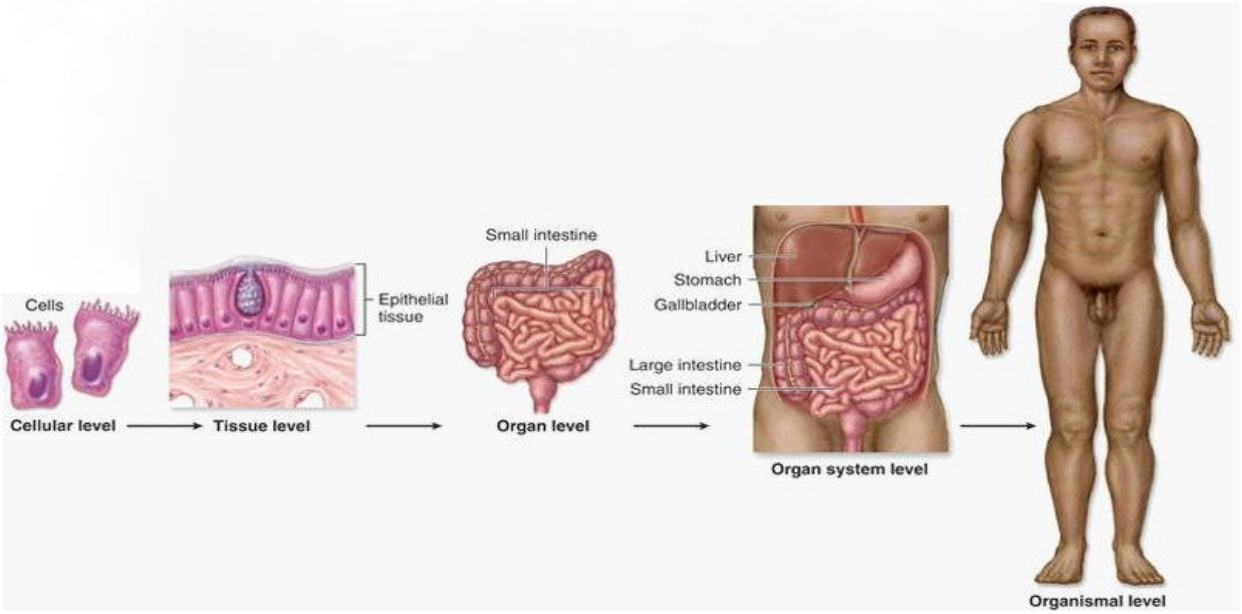
Levels of Organization



HUMAN TISSUES

•There are four types of tissues found in animals:

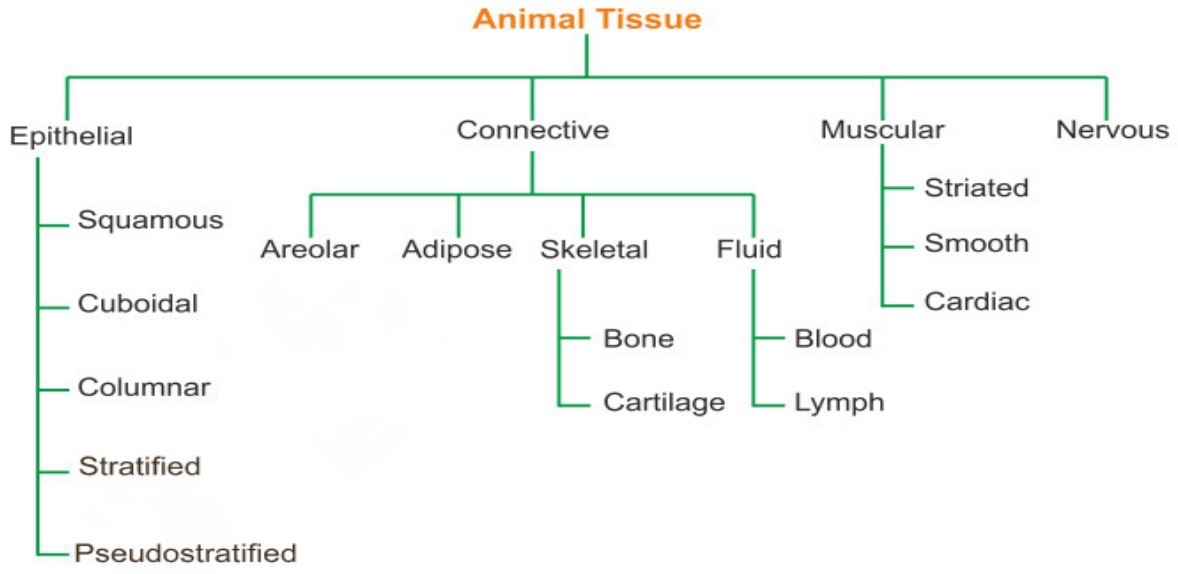
•**Epithelial tissue**

• **Connective tissue**

• **Muscle tissue**

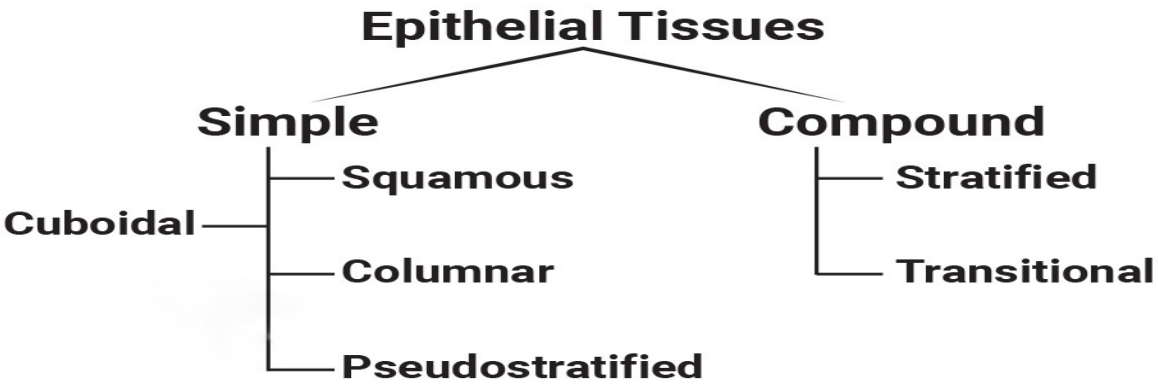
•**Nervous tissue.**

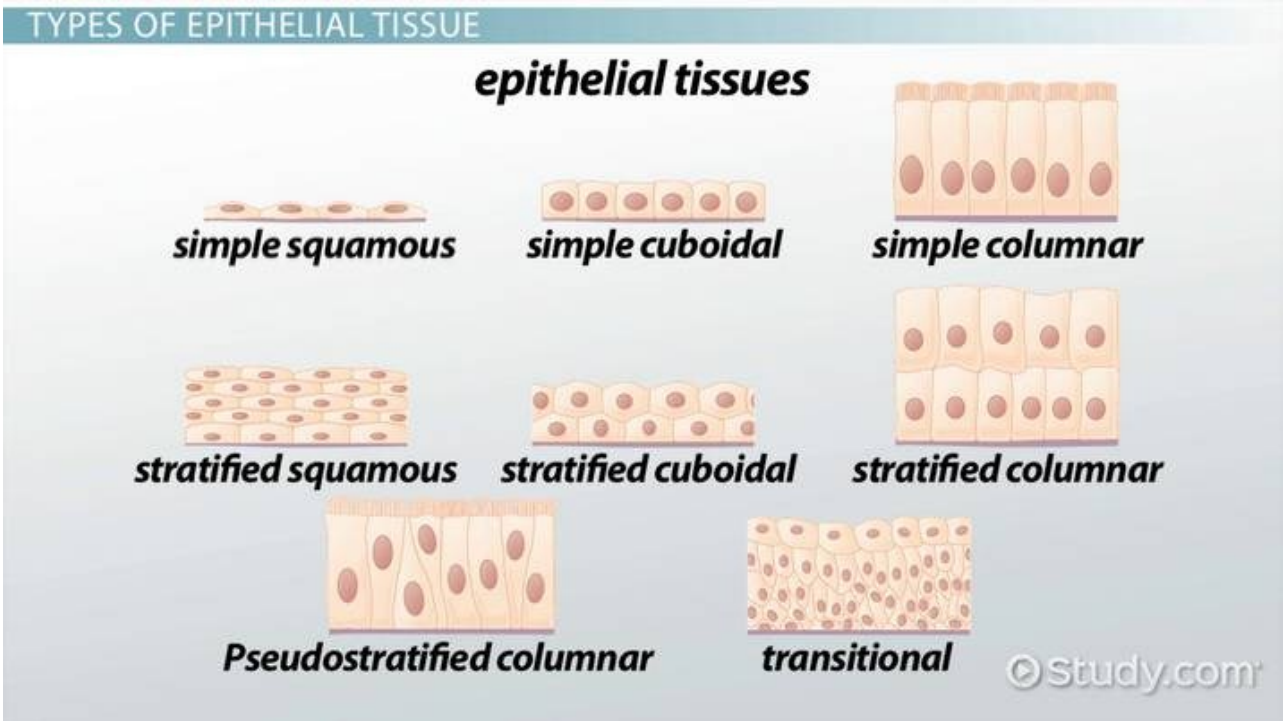
Types of Tissues



Epithelial Tissue

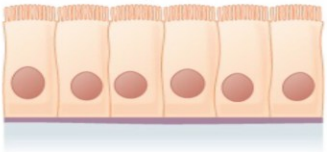
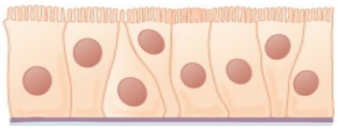
Epithelium : **is one of the four basic types of animal tissue, connective tissue, muscle tissue and nervous tissue. It is a thin, continuous, protective layer of cells**





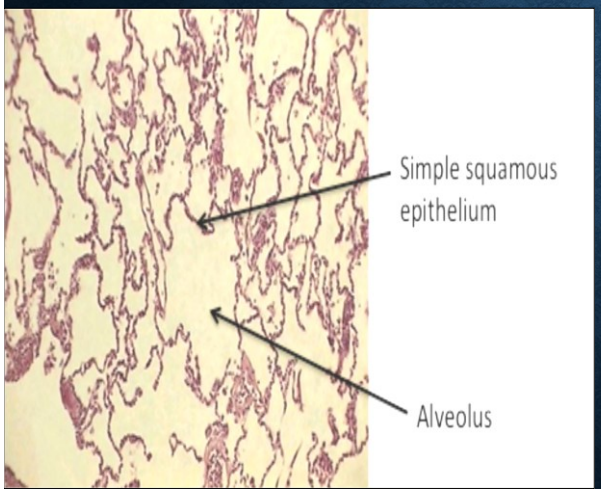
Simple Epithelium

Simple epithelium is made up of a single layer of identical cells, which are usually found on secretory and absorptive surfaces

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

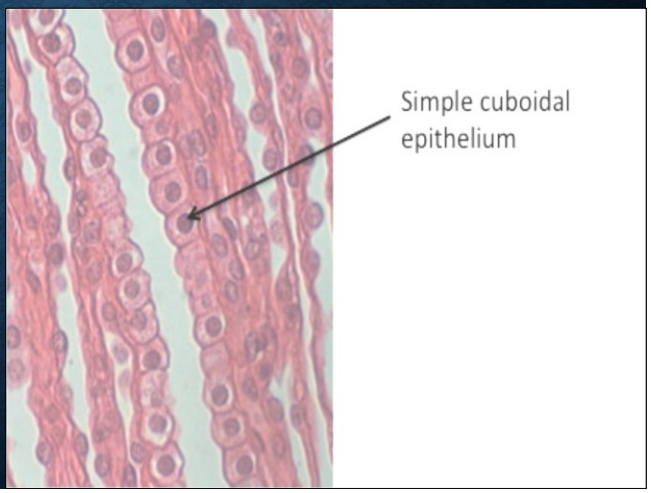
Simple Squamous Epithelium

- Ex\ Lung slide: The walls of lung air sacs (alveoli)



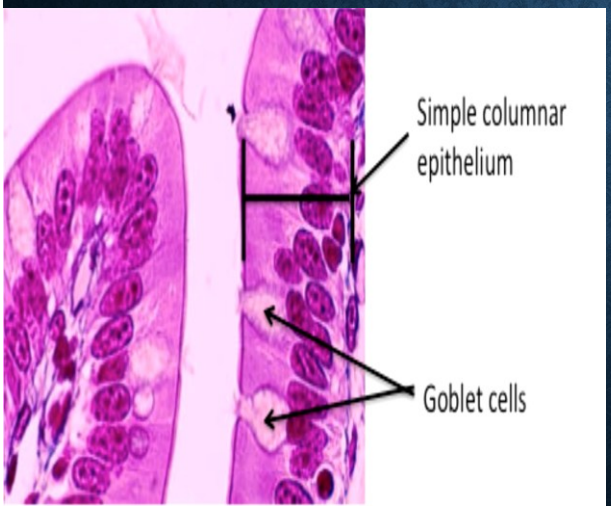
Simple quboidal Epithelium

•Ex\ Kidney slide: the tubules of the kidney



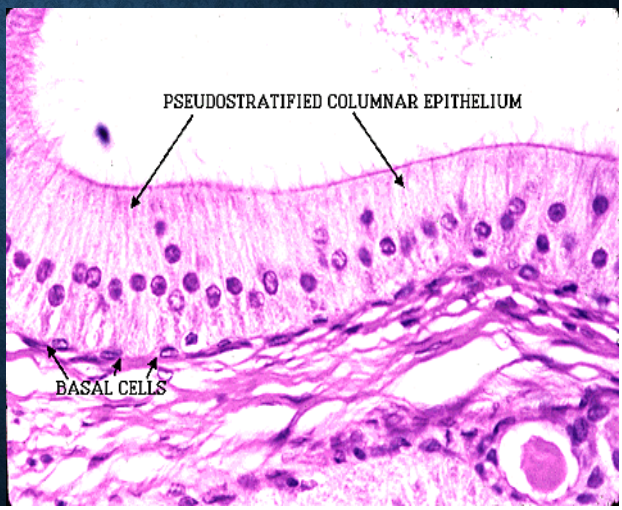
Simple Columnar Epithelium

- Ex\ Duodenum\ Small intestine slide:



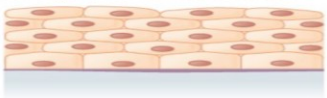
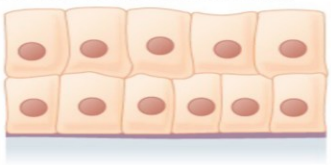
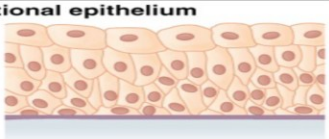
Pseudostratified epitheli

•Ex\ Trachea



Stratified Epithelium

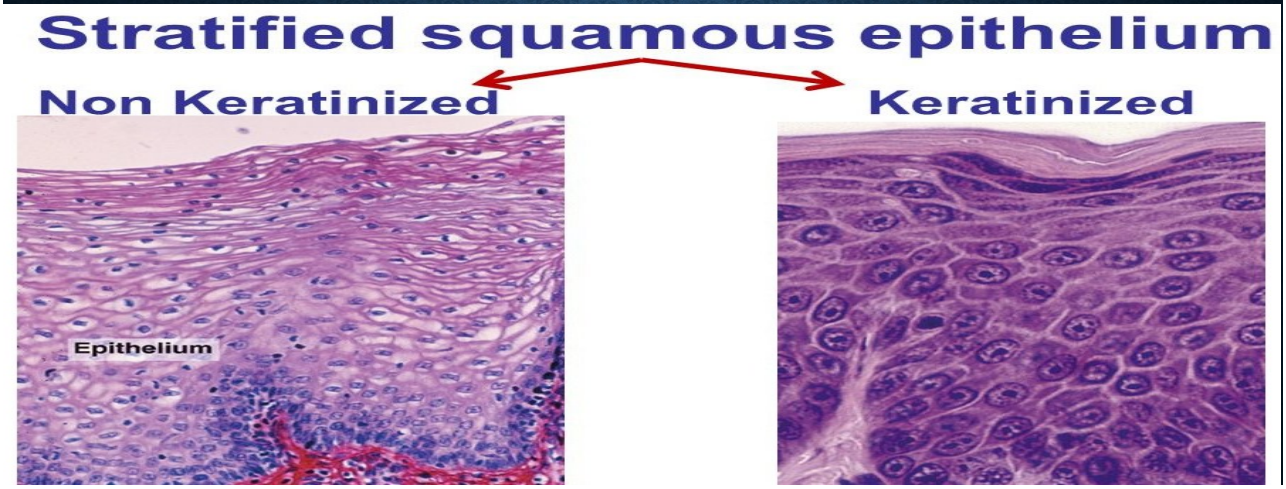
Stratified epithelium consists of several layers of cells of various shapes

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, uretha, and the ureters	Allows the urinary organs to expand and stretch

STRATIFIED SQUAMOUS EPITHELIUM

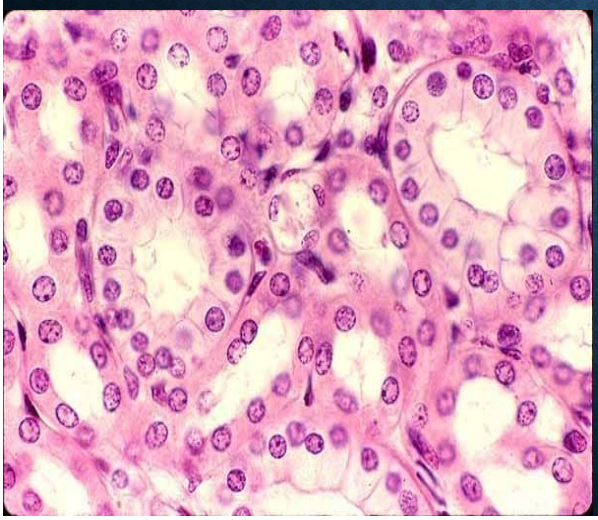
Ex of non Keratinized stratified squamous epithelium \ vagina

- **Ex of Keratinized stratified squamous epithelium ** Palmar Human Skin



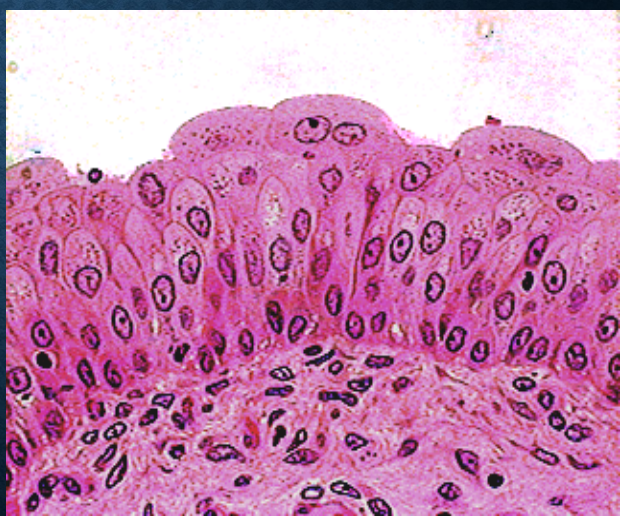
Stratified Cuboidal Epithelium

EX\ Ducts of salivary and sweat glands



Stratified columnar epithelium

Ex\ Male urethra



Transitional Epithelium Tissue

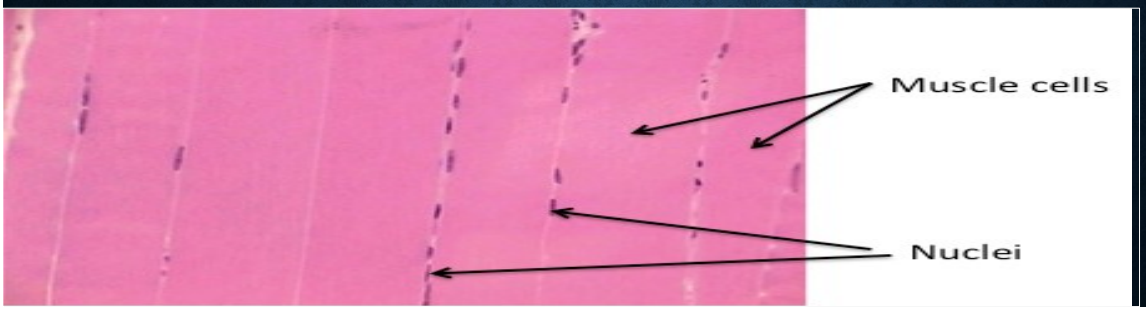
EX\ Bladder

MUSCLE TISSUE

- Muscle tissue is specialized for contraction. The cells are elongated, and are also known as muscle fibers. They contain the contractile proteins actin and myosin, which interact to shorten and elongate the cells. There are three different types of muscle tissue: **skeletal**, **cardiac** and **smooth**.

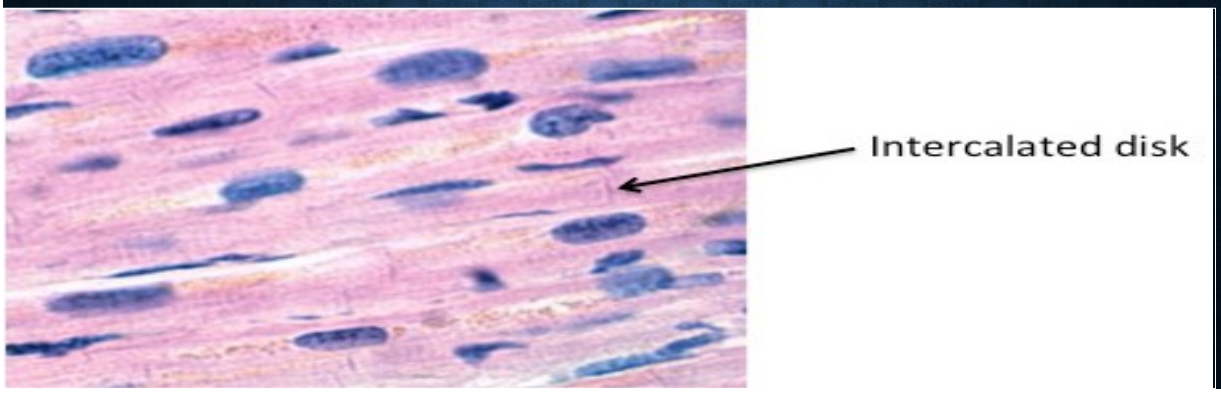
Skeletal Muscles

- Skeletal muscles are attached to bones, and contraction of these muscles generates body movements (legs movement, hands movement, etc.). The skeletal muscle fibers are long and cylindrical, with multiple peripherally located nuclei. The cells have **striations**, alternating light and dark bands that result from the ordered arrangement of actin and myosin fibers within the cell.



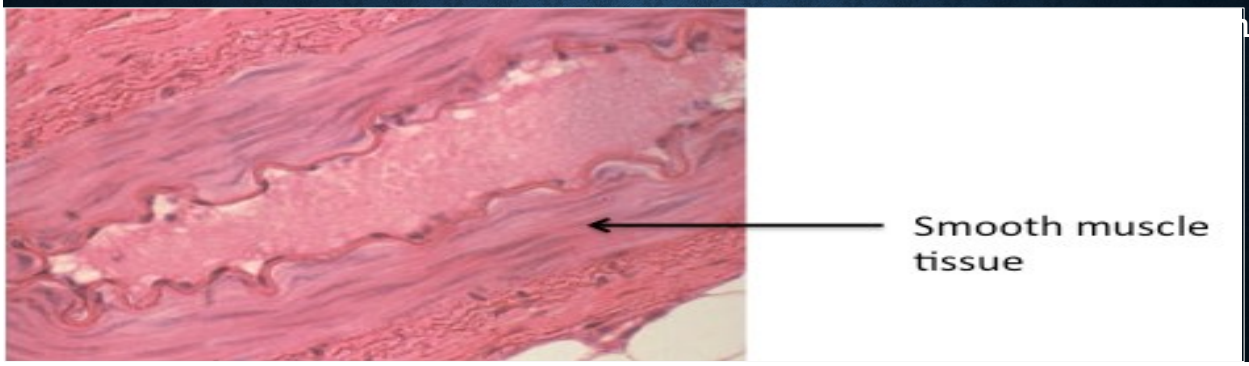
Cardiac muscle

- Cardiac muscle is present in the heart. The cells are shorter, less striated than skeletal muscle with single branched nucleus. Individual cells are connected by **desmosomes**. These cellular connections are visible under the microscope as dark bands called **intercalated disks**. These cellular Communication junctions are necessary for the coordinated beating of the heart.



Smooth muscle

- Smooth muscle tissue is found in the walls of hollow organs, such as the gastrointestinal tract, blood vessels, and the urinary bladder. Contractions of these muscles propel fluid or materials through the organs (i.e. food through the GI tract, Blood through blood vessels, urine pushed out of bladder), smooth muscle cells are not striated and



Nervous Tissue

- Nervous tissue is specialized for communication and composes the brain, spinal cord, and peripheral nerves. The tissue consists of two major cell types: **neurons** and **glial cells.**
- Neurons communicate with each other via electrical and chemical signals. They have nucleated cell bodies and two types of elongated cellular processes: **dendrites** –which Receive signals, and axons – which send signals.