

**Ministry of Higher Education and Scientific Research**

**Al-Mustaqbal University College**

**Intelligence Medical Systems Department**

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**Class: 1<sup>st</sup>**

**Lecture Number: 2**

**Lecture Title: Histology**

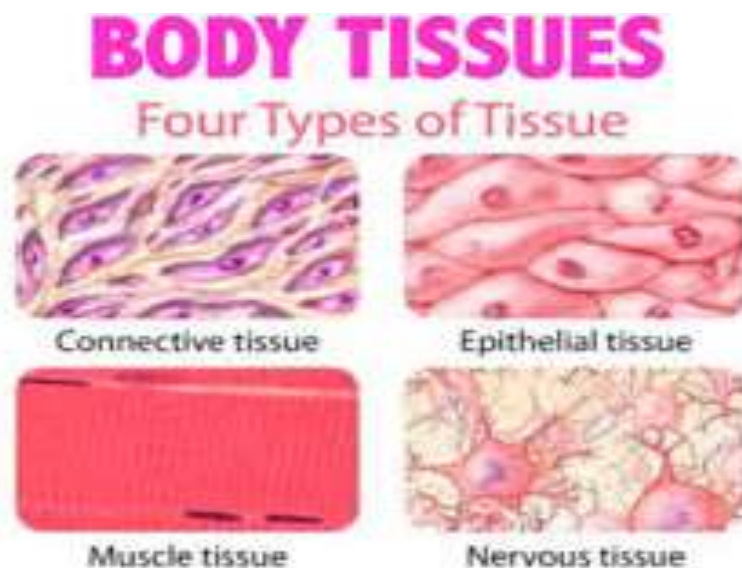
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# Histology

The term **tissue** is used to describe a group of cells that are similar in structure and perform a specific function. **Histology** is the field of study that involves the microscopic examination of tissue appearance, organization, and function.

Tissues are organized into four broad categories based on structural and functional similarities. These categories are epithelial, connective, muscle, and nervous. The primary tissue types work together to contribute to the overall health and maintenance of the human body. Thus, any disruption in the structure of a tissue can lead to injury or disease.



## The Four Tissue Types

- 1- **Epithelial tissue** refers to groups of cells that cover the exterior surfaces of the body, line internal cavities and passageways, and form certain glands.
- 2- **Connective tissue**, as its name implies, binds the cells and organs of the body together.
- 3- **Muscle tissue** contracts forcefully when excited, providing movement.

4- **Nervous tissue** is also excitable, allowing for the generation and propagation of electrochemical signals in the form of nerve impulses that communicate between different regions of the body.

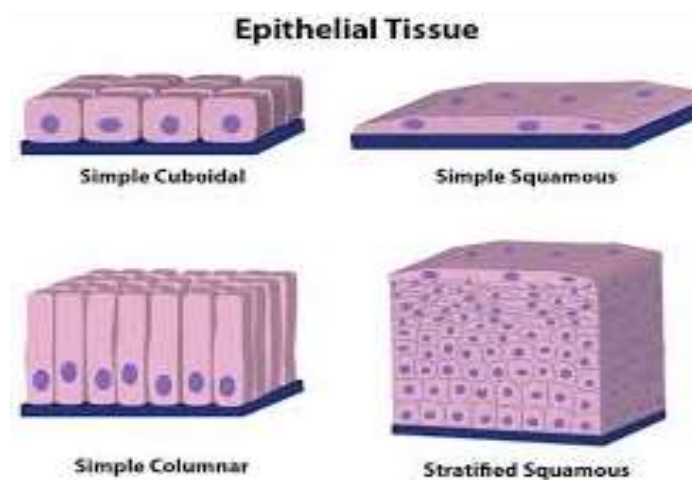
## **Epithelial (Covering) Tissues**

Epithelial tissue covers the external and internal surfaces, including cavities and tubes of the body. Three different shapes of cells are encountered in the epithelium. These are:

1. Squamous (Flat) cells
2. Cuboidal cells and
3. Columnar cells.

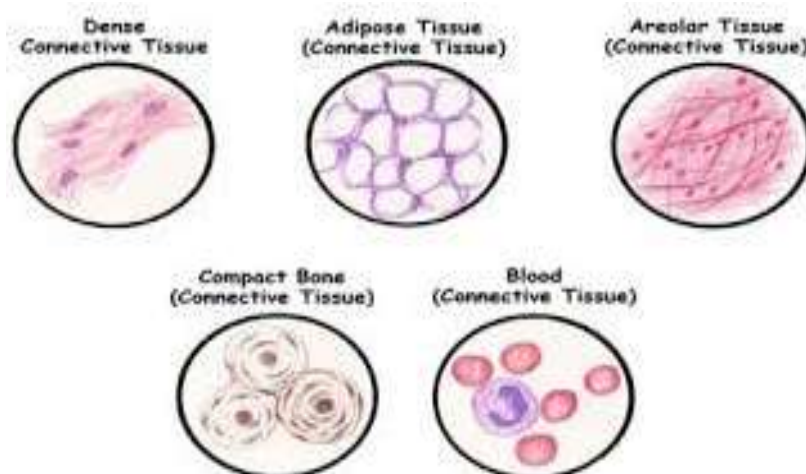
These three cell types could be arranged in:

- A single layer to form Simple epithelium e.g. the lining of the stomach or in
- Several layers to form a Compound (Stratified) epithelium e.g. the epidermis of the skin.



## Connective tissues

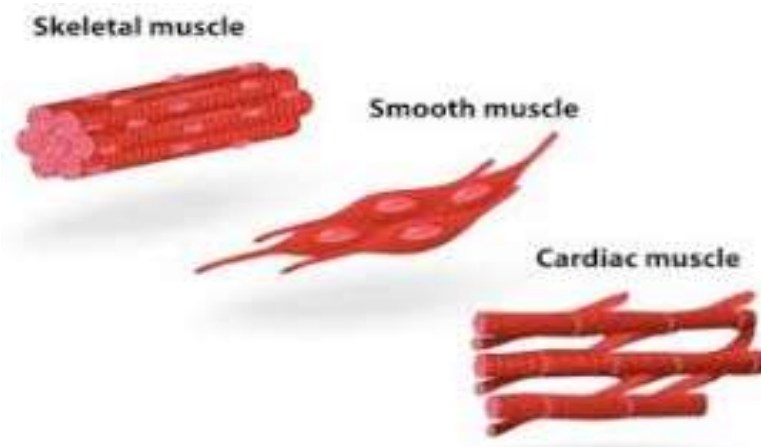
Connective tissues are fibrous tissues. They are made up of cells separated by non-living material, which is called an **extracellular matrix**. This matrix can be liquid or rigid. For example, blood contains plasma as its matrix and bone's matrix is rigid. Connective tissue gives shape to organs and holds them in place. Blood, bone, tendon, ligament, adipose, and areolar tissues are examples of connective tissues. One method of classifying connective tissues is to divide them into three types: fibrous connective tissue, skeletal connective tissue, and fluid connective tissue.



## Muscle tissues

Muscle cells form the active contractile tissue of the human body known as muscle tissue or muscular tissue. Muscle tissue functions to produce force and cause motion (physics), either animal locomotion or movement within internal organs. Muscle tissue is separated into three distinct categories: visceral or **smooth muscle**, found in the inner linings of organ anatomy; **skeletal muscle**, typically attached to bones, which generate gross movement; and **cardiac**

**muscle**, found in the heart, where it contracts to pump blood throughout an organism.



## Nervous tissues

The nervous system is composed of two types of cells :

- neurons: the cells that make up the nervous tissue.
- glial cell: accessory cells that function to support and protect the neurons.

Nervous system can be anatomically divided into two types:

- 1- the central nervous system: composed of brain and spinal cord.
- 2- peripheral nervous system: lies outside of central nervous system and include cranial nerves and spinal nerves, inclusive of the motor neurons.

