

## Human Anatomy and Body Systems



### ➤ Levels of Organization

Remember, the human body is organized in several levels, from the simplest to the most complex:

*Cells*: the basic unit of life

*Tissues*: clusters of cells performing a similar function

*Organs*: made of tissues that perform one specific function

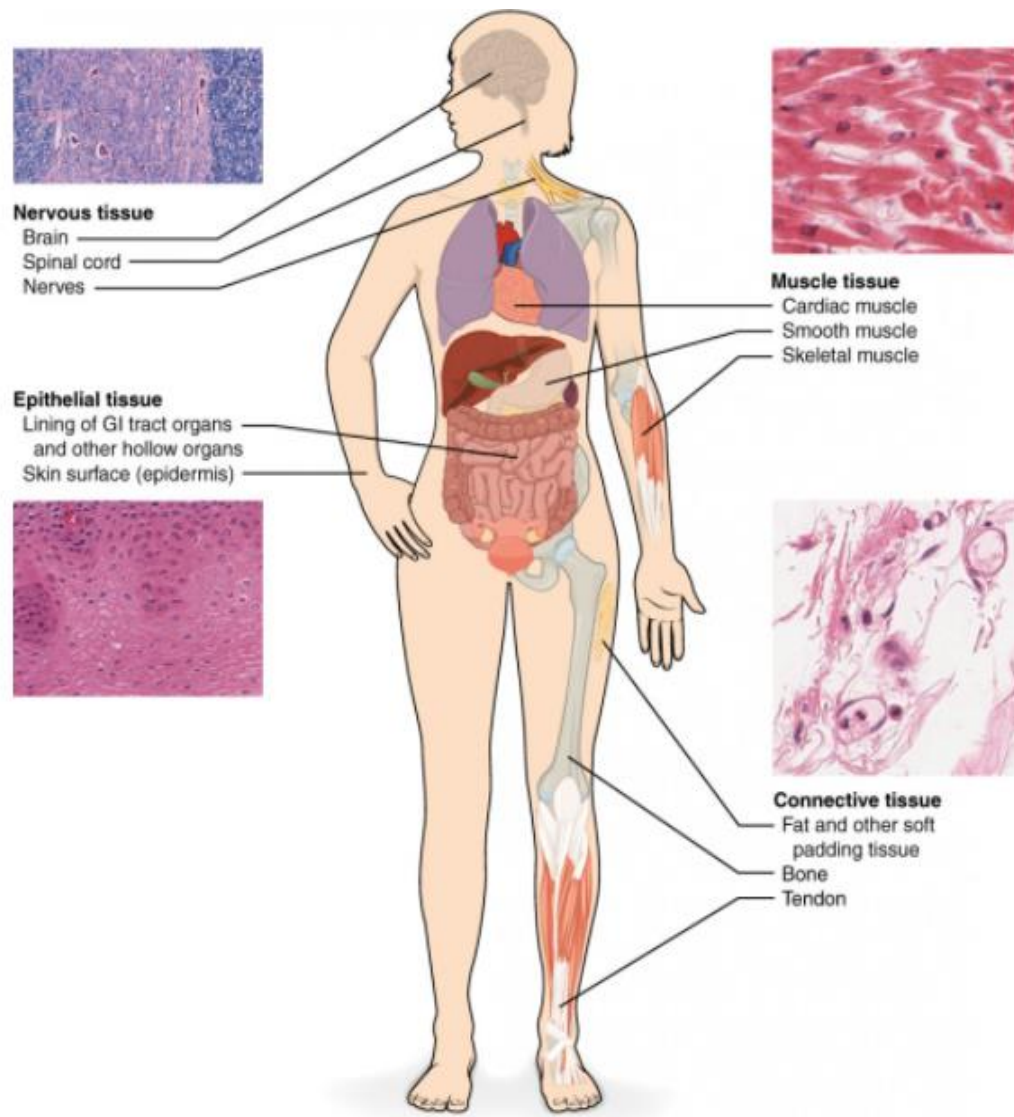
*Organ Systems*: groups of organs that perform a specific purpose in the human body

### ➤ The 11 Human Body Systems are as follows:

1. Nervous system
2. Integumentary system
3. Respiratory system
4. Digestive system
5. Excretory system
6. Skeletal system
7. Muscular system
8. Circulatory system
9. Endocrine system
10. Reproductive system
11. Lymphatic (immune) system

## ➤ Types of tissues

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**.



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

An understanding of the various primary tissue types present in the human body is essential for understanding the structure and function of organs which are composed of two or more primary tissue types.

This diagram shows the silhouette of a female surrounded by four micrographs of tissue. Each micrograph has arrows pointing to the organs where that tissue is found.

The upper left micrograph shows **nervous tissue** that is whitish with several large, purple, irregularly-shaped neurons embedded throughout. **Nervous tissue is found in the brain, spinal cord and nerves.**

The upper right micrograph shows **muscle tissue** that is red with elongated cells and prominent, purple nuclei. **Cardiac muscle** is found in the heart. **Smooth muscle** is found in muscular internal organs, such as the stomach. **Skeletal muscle** is found in parts that are moved voluntarily, such as the arms.

The lower left micrograph shows epithelial tissue. This tissue is purple with many round, purple cells with dark purple nuclei. **Epithelial tissue** is found in the lining of gastro-intestinal tract organs and other hollow organs such as the small intestine. **Epithelial tissue** also composes the outer layer of the **skin**, known as the **epidermis**.

Finally, the lower right micrograph shows **connective tissue**, which is composed of very loosely packed purple cells and fibers. There are large open spaces between clumps of cells and fibers. **Connective tissue** is found in the leg within fat and other soft padding tissue as well as bones and tendons.