

The Human Body

What is a tissue?

- ☑ Collection of cells
- ☑ similar in structure
- ☑ work together to perform a function

The human body has four main types of tissues:

- ➔ Muscle
- ➔ Nervous
- ➔ Epithelial
- ➔ Connective

Muscle Tissue

Cells contract in a coordinated manner

3 types:

- Skeletal – moves the bones
- Smooth – handles *involuntary* body functions
- Cardiac – pumps blood through your body

Nervous Tissue

Cells (neurons) that receive/transmit messages (electrical impulses)

- Send/receive messages from muscles, glands, and other neurons
- Makes up brain, spinal cord, nerves, retina
- Provides sensation of internal/external environment
- Integrates sensory information
- Coordinates voluntary/involuntary activities
- Regulates body processes

Epithelial Tissue

Layers of cells that line/cover all internal & external body surfaces

- Each layer formed from cells tightly bound together
- Provides protective barrier
- Varies in thickness and arrangement

Connective Tissue

Binds, supports, protects structures in the body

- Most abundant/diverse type of tissue
- Includes bone, cartilage, tendons, fat, blood, and lymph
- Characterized by cells that are embedded in large amounts of *matrix* – an intercellular substance
 - solid (bone cells)
 - semisolid and fibrous (cartilage, tendons, fat cells)
 - liquid (blood, lymph cells)

What is an organ?

- ☑ Various tissues that work together
- ☑ Carry out a specific function

What is a system?

- ☑ A group of organs that work together
- ☑ Perform a set of related tasks
- ☑ Systems interact to carry out the processes of life

The human body has eleven organ systems:

- | | |
|-----------------|---------------|
| → Skeletal | → Muscular |
| → Integumentary | → Circulatory |
| → Respiratory | → Immune |
| → Digestive | → Excretory |
| → Nervous | → Endocrine |
| → Reproductive | |

Skeletal

- Provides structure
- supports/protects internal organs
- consists of 206 bones

Muscular

- provides structure
- supports/moves trunk and limbs
- moves substances through body
- consists of skeletal, cardiac, and smooth muscle

Integumentary

- acts as a barrier from the outside world
- protects against pathogens
- helps regulate body temperature
- eliminates waste products (sweat)
- consists of skin, hair, and nails

Circulatory

- transports nutrients/wastes to and from all body tissues
 - *cardiovascular system*
 - consists of heart, blood vessels, and blood
 - *lymphatic system*
 - consists of lymph, lymph nodes, and lymph vessels

Respiratory

- carries air into/out of lungs
- gas exchange (oxygen and carbon dioxide)
- consists of air passages and lungs

Immune

- provides protection against infection/disease
- consists of lymph nodes and vessels, white blood cells, bone marrow, thymus, adenoids, spleen, and tonsils

Digestive

- stores and digests food
- absorbs nutrients
- eliminates waste
- consists of mouth, esophagus, stomach, liver, pancreas, small and large intestines

Excretory

- eliminates waste
- maintains water and chemical balance
- consists of kidneys, ureters, bladder, urethra, skin, lungs

Nervous

- controls/coordinates body movement and senses
- controls consciousness and creativity
- helps monitor and maintain other body systems
- consists of brain, spinal cord, nerves, sense organs, receptors

Endocrine

- maintains homeostasis; secretes hormones
- regulates metabolism, water and mineral balance
- regulates growth, sexual development, and reproduction
- consists of various glands (adrenal, thyroid, pituitary, thymus, pineal, parathyroid), pancreas, hypothalamus

Reproductive

- produces offspring
- consists of ovaries, uterus, mammary glands in females
- consists of testes in males