

Cells – Tissues – Organs – Organ systems – Organism

Each level builds on, and increases the complexity from the previous level.

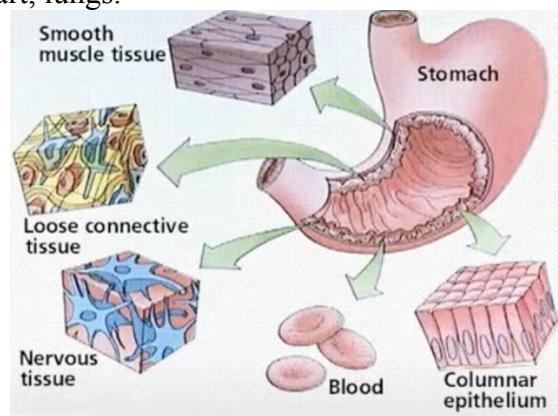
Cells: Basic unit of structure and function in the human body.

Cells carry out life processes.

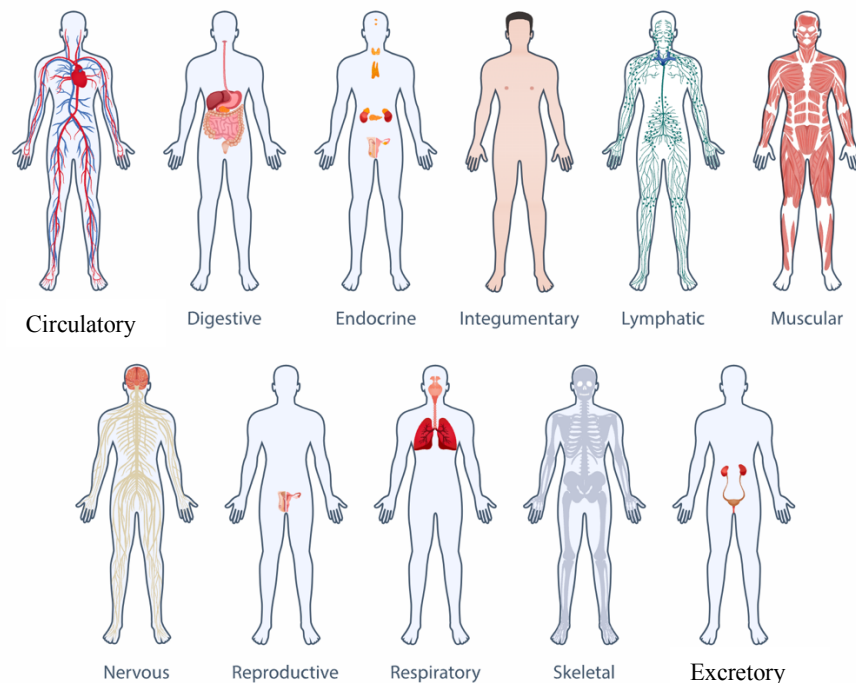
Many cells have specialized structures to perform specific functions. Different structures of different tissue dictate different functions.

Tissue: a group of connected cells that have a similar function.

Organ: a structure composed of different types of tissue working together to perform a specific body function, such as heart, lungs.



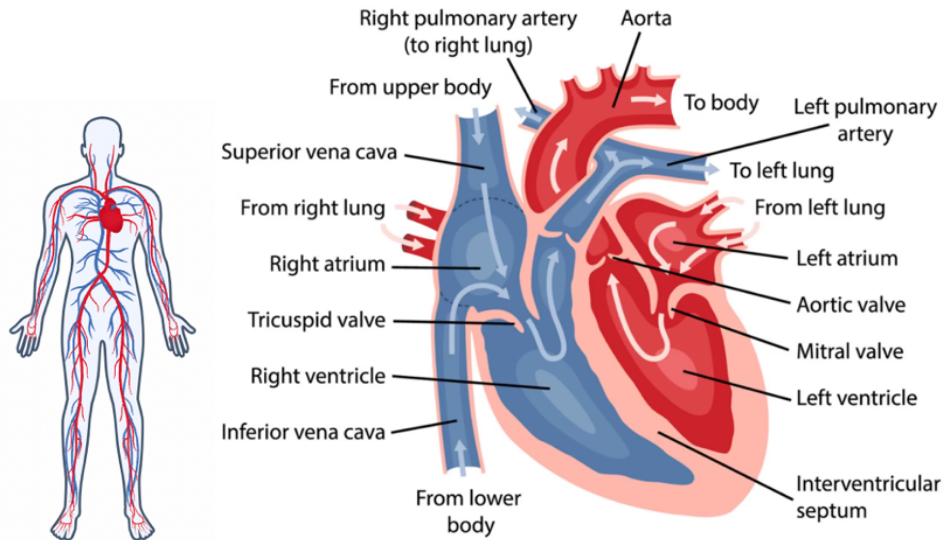
Organ system: a system of one or more organs and structures that work together to perform a major body function, such as digestive system, circulatory system, respiratory system.



Circulatory system:

Functions: Transport nutrients, gases, and wastes in the body.

Main organs: **Heart**, blood vessels (**arteries** – red – oxygenated blood, **veins** – blue – deoxygenated blood, capillaries)

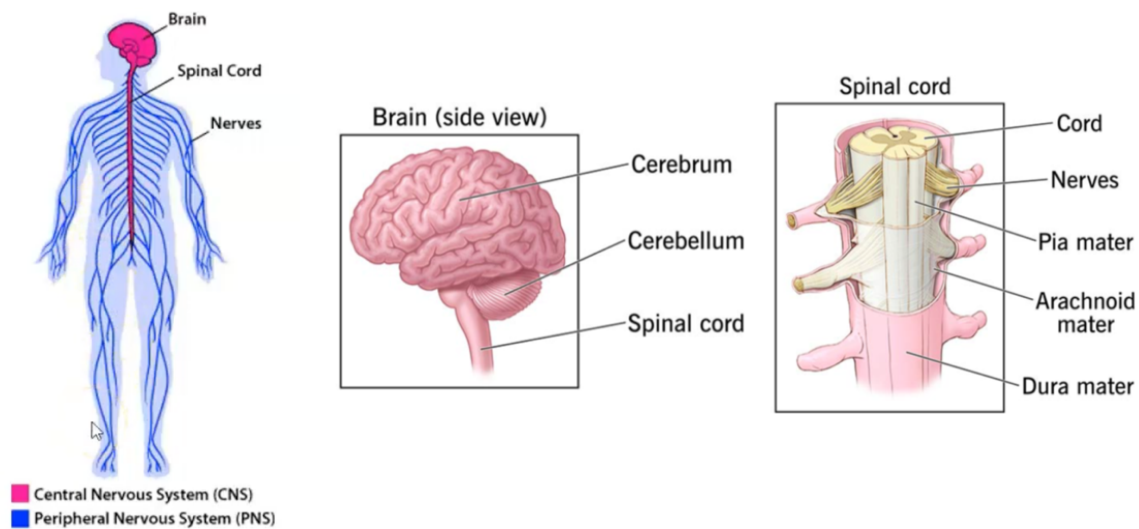


Nervous system:

Functions: Detect and responds to changes in the environment

Main organs: Brain, spinal cord, nerves.

Brain contains central nervous system, attach to spinal cord, connect to nerve cells all over the body, take messages from brain to peripheral nervous system, such as fingers and toes.

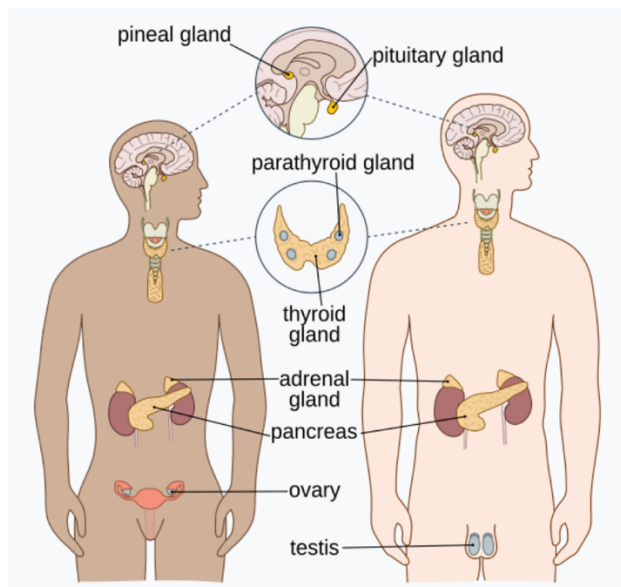
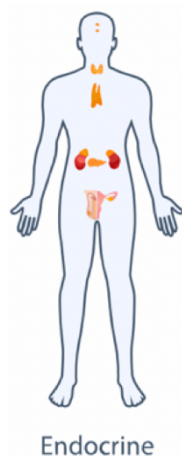


Endocrine system:

Function: It is a messaging system but slower than brain (which send quick messages). Creates and releases hormones to send signals to cells in the body, such as insulin to decrease glucose level in blood after meal, estrogen to controls female development and reproductive cycle. ADH hormone to help kidneys control water balance in the body.

Main organ:

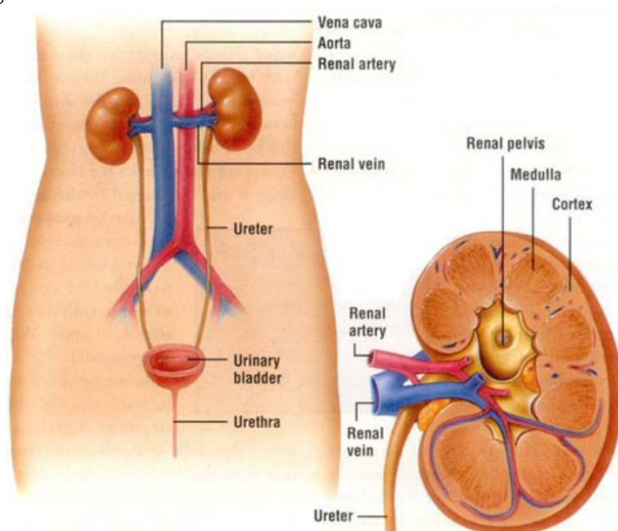
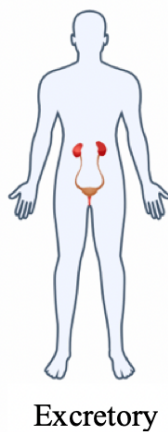
- **Thyroid:** in the neck to produce thyroxine (T₄) – control metabolism (how fast your body uses energy)
- **Adrenal glands:** near kidney to produce adrenaline – speed up heart rate and breathing
- **Pancreas:** to produce **insulin** to lower blood sugar after meal



Excretory system:

Function: Removes waste from the body as urine

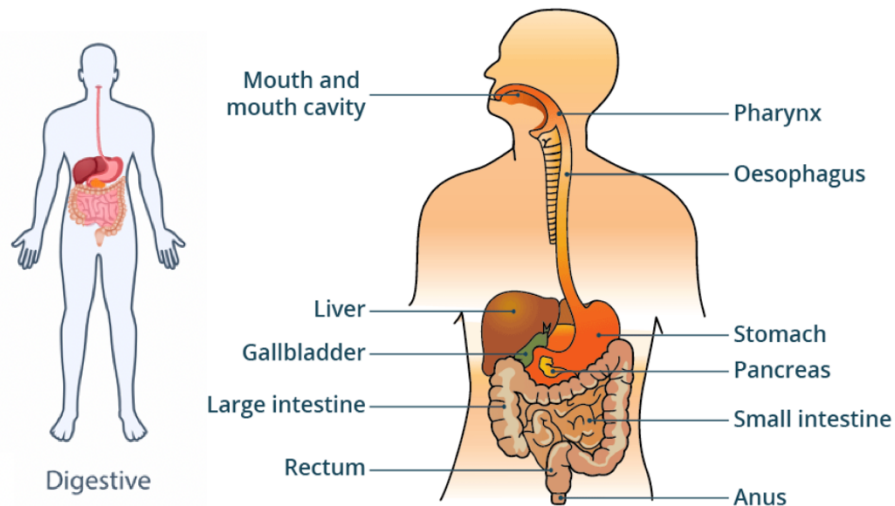
Main organs: Kidney – filter urine, Bladder – store urine



Digestive system:

Functions: Breaks down food to supply energy and nutrients to the body

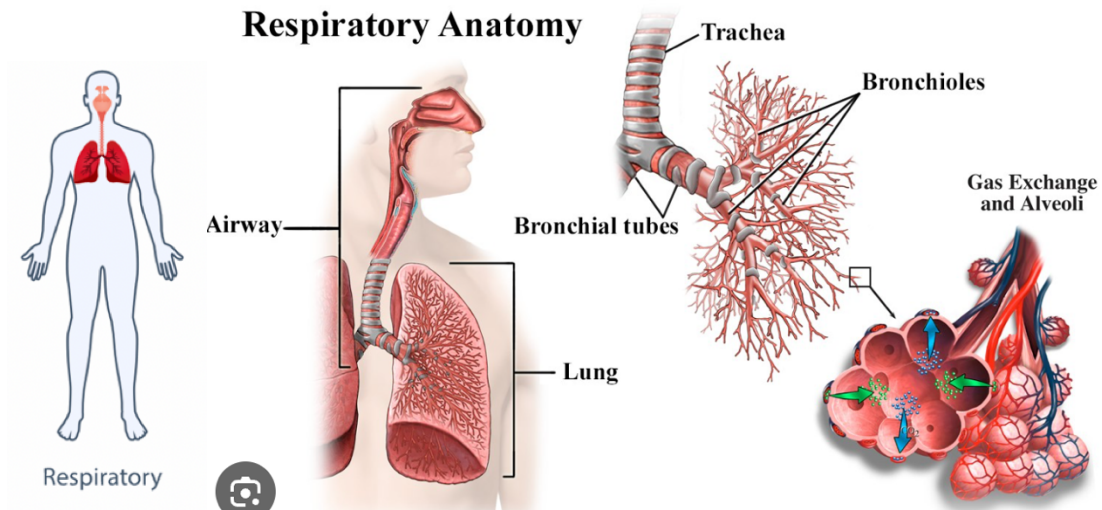
Main Function: Esophagus, Stomach, small and large intestines, pancreas, gall bladder, liver.



Respiratory system:

Functions: Exchanges gases between the blood and atmosphere

Main organs: Lungs, diaphragm, trachea, bronchi, bronchiole, alveoli

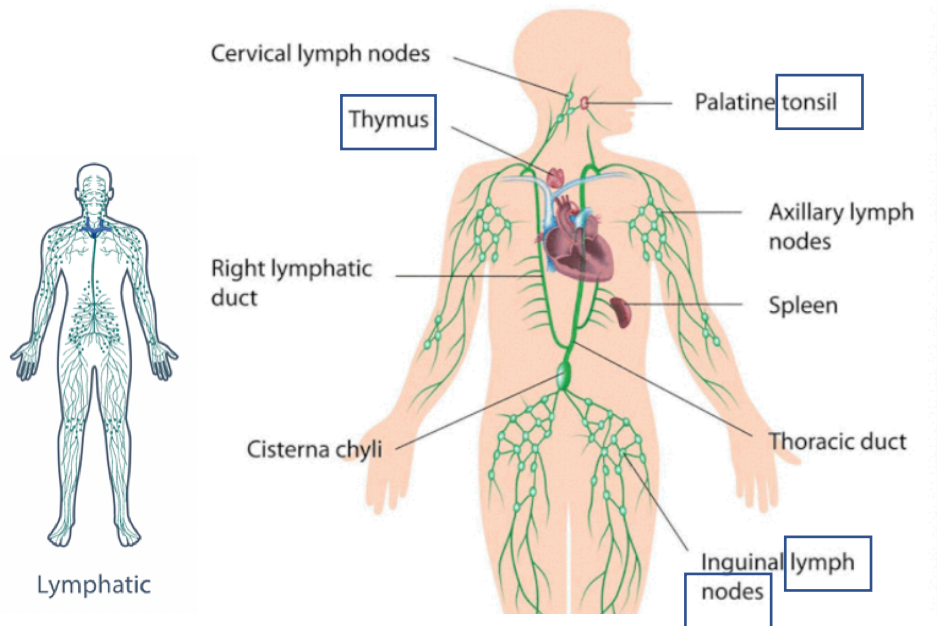


Lymphatic system:

Functions: Defends the body against infection (immune system)

Main organs:

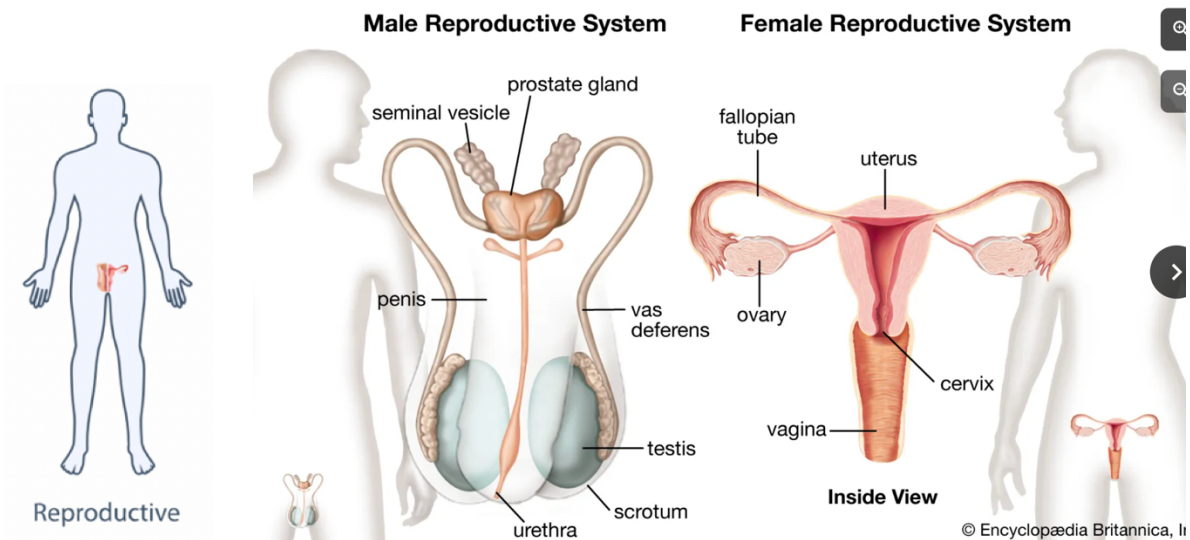
- Spleen (recycle red blood cell – 120 days)
- Lymph nodes: anything bad found in the body store here and be killed by white blood cell



Reproductive system:

Functions: Ensures the survival of the species by producing offspring

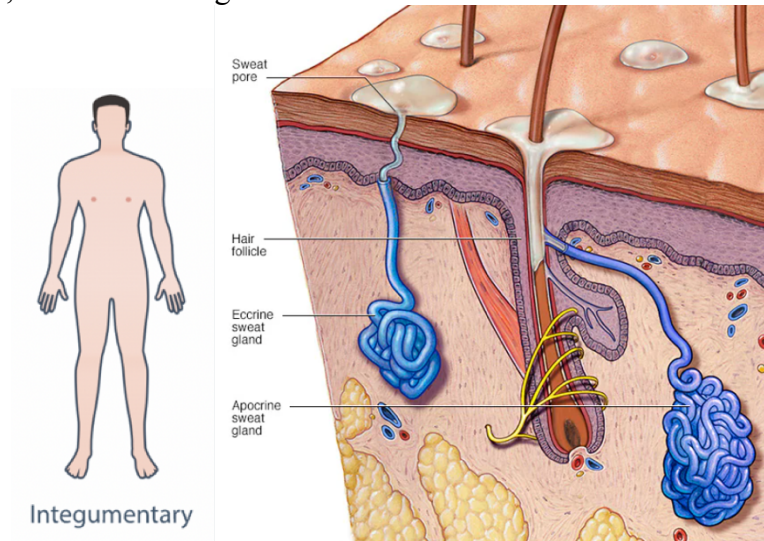
Main organs: Testes, penis, ovaries, uterus and vagina



Integumentary system:

Functions: Protects the body from damage

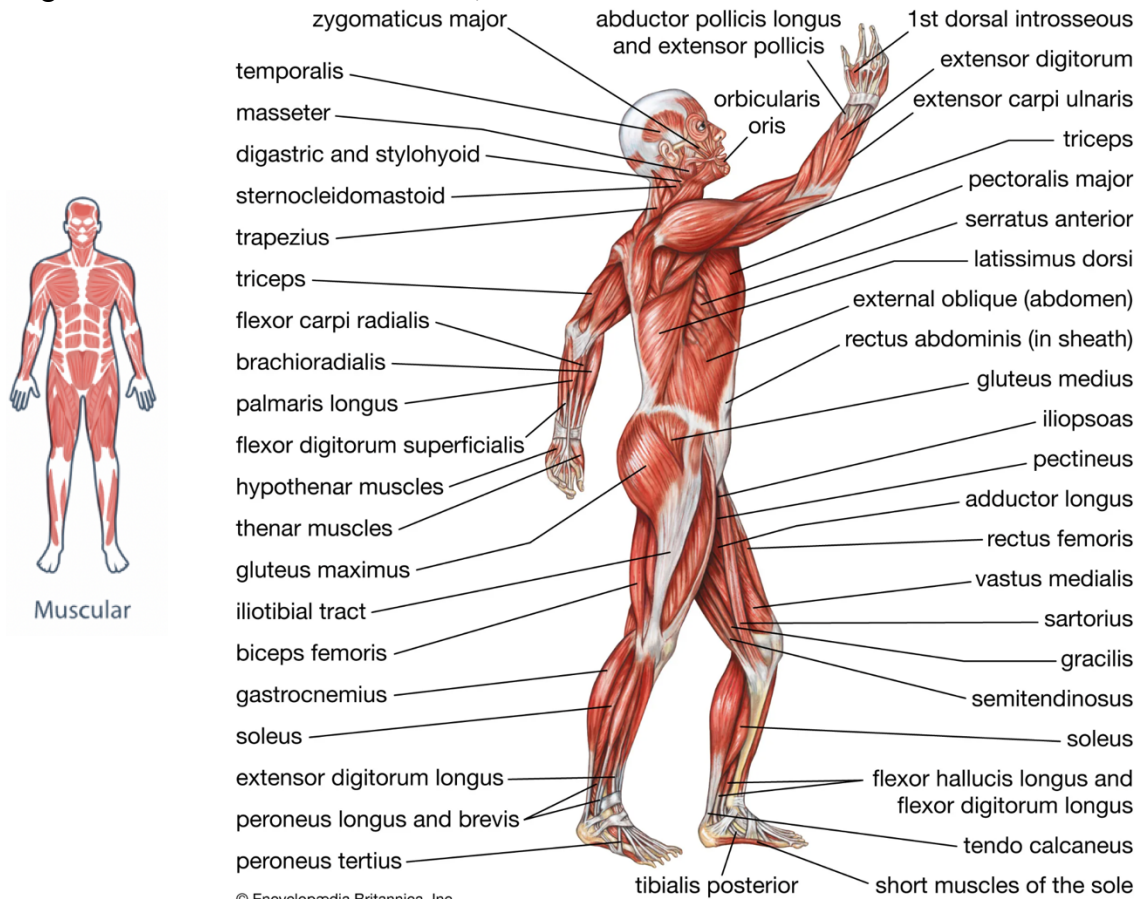
Main organs: Skin, sweat and hair gland

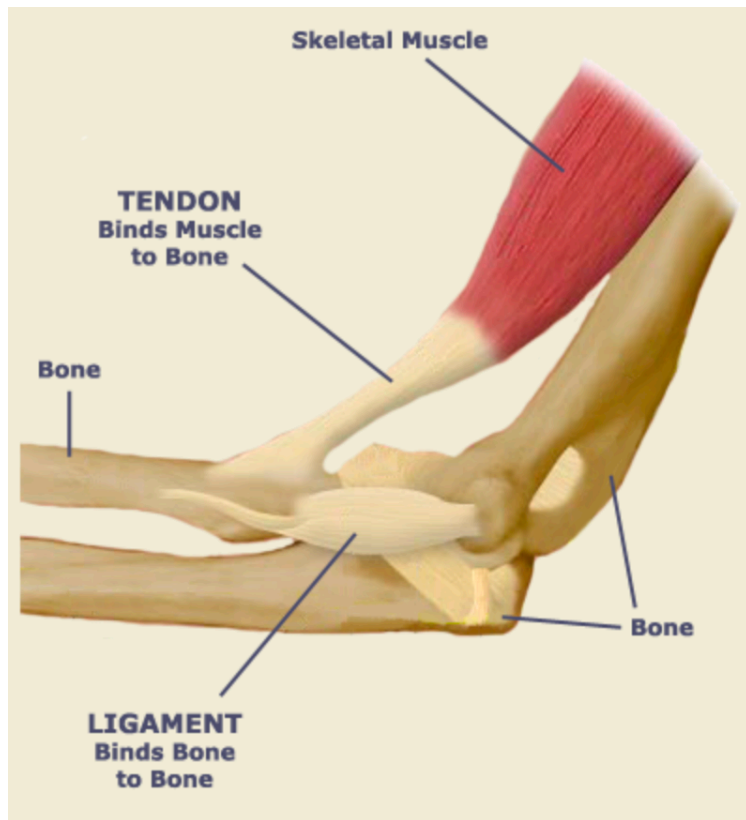


Muscular system:

Functions: Provide movement, including voluntary and involuntary movement

Main organs: Skeletal and smooth muscle, tendons





Skeletal system:

Functions: Provide support, to protect internal organs and to provide attachment sites for the organs

Main organs: **Bone and ligaments** that attach the bones.

