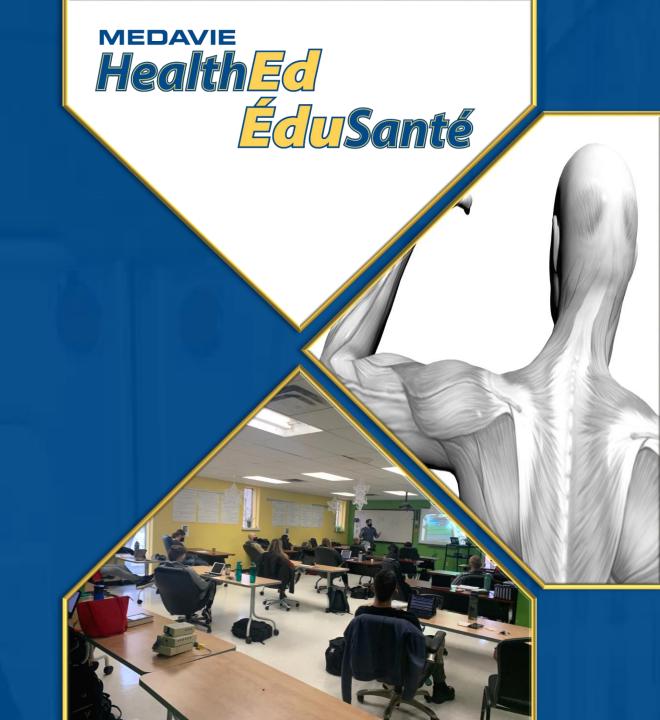
BODY SYSTEMS Primary Care Paramedicine

Module: 04

Section: 06





Overview of systems

- Musculoskeletal
- Endocrine
- Nervous
- Immune
- Cardiovascular
- Respiratory

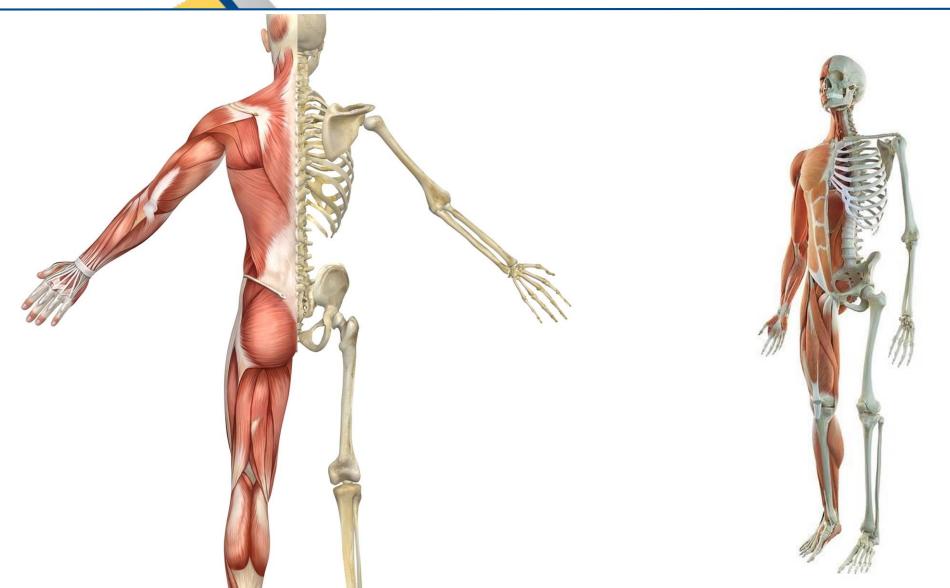
- Gastrointestinal
- Genitourinary
- Reproductive
- Integumentary
- Lymphatic



THE MUSCULOSKELETAL SYSTEM

Health Edusanté

Musculoskeletal System





- Gives the body structural form
- Protects vital organs
- Allows for efficient movement
- Stores salts and other materials for metabolism
- Produces red blood cells

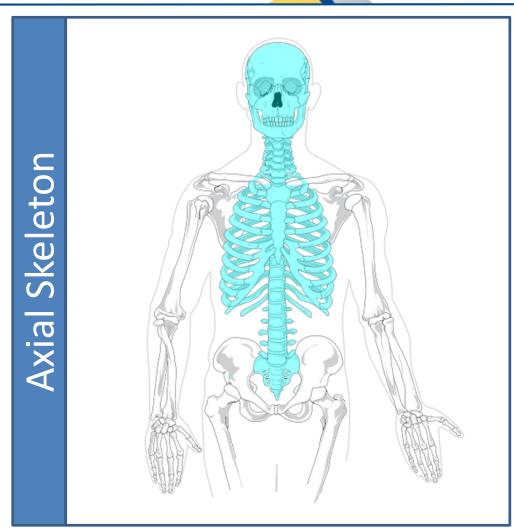
Cranium Spinal Column Cervical Vertebrae (I-VII) Mandible Thoracic Vertebrae (TI-TXII Clavicle Manubrium Scapula Sternum Ribs Lumbar Humerus Vertebrae (LI-LV Ulna Radius Pelvic girdle Sacrum Coccyx Carpals Metacarpals Phalanges Femur Patella Tibia Fibula Tarsals Metatarsals Phalanges

The Human Skeleton

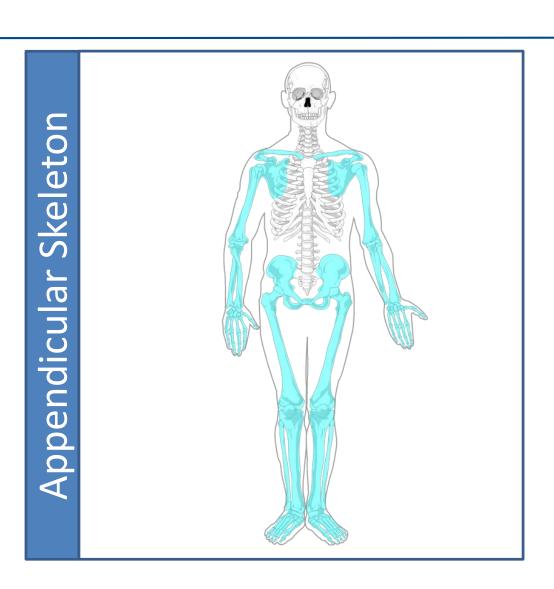




Skeletal System



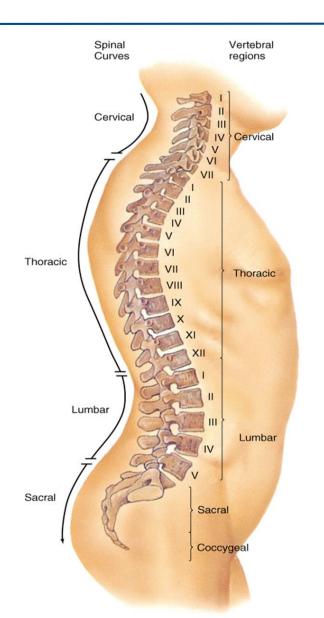
Total skeleton is made up of approximately 206 bones





Vertebral Column

- A hollow skeletal tube made up of 33 irregular bones (vertebrae).
- Divisions
 - Cervical spine
 - Thoracic spine
 - Lumbar spine
 - Sacral spine
 - Coccygeal spine



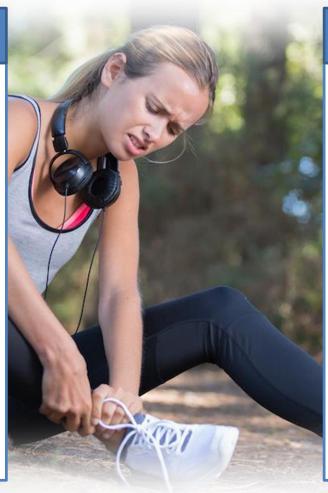


Ligaments / Tendons

Tendons



Strong bands of connective tissue that connect muscle to bone (strains)



Ligaments

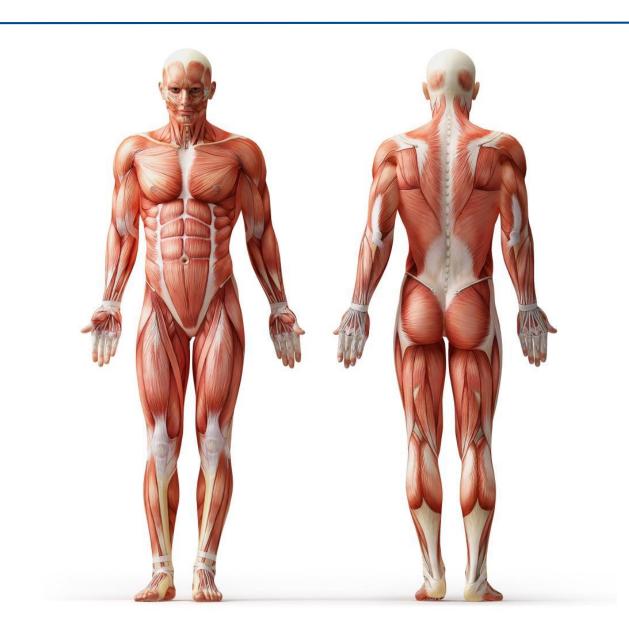


Strong bands of connective tissue that connect bones to bones (sprains)

Health Edusanté

Muscular System

- Movement
- Posture
- Joint stability
- Heat Production



Frontalis Flexor digitorum Obicularis oculi superficialis Palmaris longus Temporoparietalis Flexor carpi Zygomaticus radialis Deltoid Masseter Extensor carpi Sternocleidomastoid radialis longus - Trapezius Biceps brachii Triceps brachii Serratus anterior Pectoralis major Latissimus dorsi Brachioradialis Pronator teres External abdominal oblique Extensor carpi Rectus abdominis radialis longus Gluteus medius Extensor digitorum Abductor pollicis Iliopsoas longus Pectineus Tensor fasciae latae Adductor longus Gracilis Vastus lateralis Rectus femoris Sartorius Vastus medialis Quadriceps group Gastrocnemius Peroneus longus Soleus Extensor digitorum longus Tibialis anterior @DaveCarlson

The Muscular System (Anterior View)



Occipitalis Flexor carpi ulnaris Temporoparietalis Extensor carpi ulnaris Masseter -Extensor Sternocleidomastoid digitorum Trapezius Deltoid Extensor carpi radialis longus Triceps brachii -Brachioradialis Biceps brachii Latissimus dorsi Flexor carpi radialis External abdominal Flexor carpi oblique ulnaris -Flexor digitorum Gluteus medius superficialis Gluteus maximus Palmaris longus Adductor magnus Biceps femoris Semitendinosus Semimembranosus Gracilis Hamstring muscles Gastrocnemius Proneus longus Soleus @DaveCarlson Calcanean tendon (Achilles tendon)

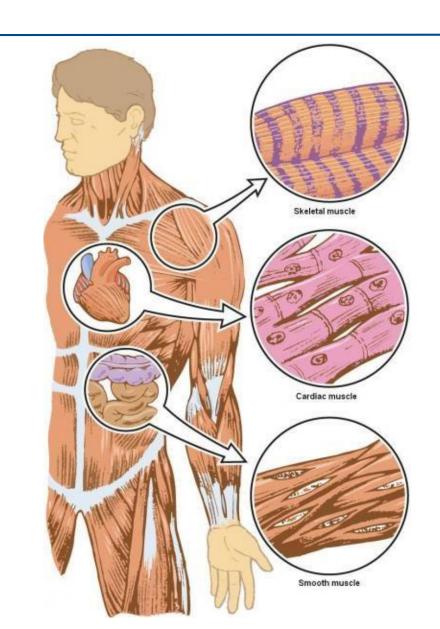
The Muscular System (Posterior View)





Types of Muscle

- Skeletal muscle
 - Also called voluntary muscle
 - Found throughout the body.
- Cardiac muscle
 - Limited to the heart.
- Smooth muscle
 - Occasionally called involuntary muscle
 - Found within the intestines and surrounding blood vessels.

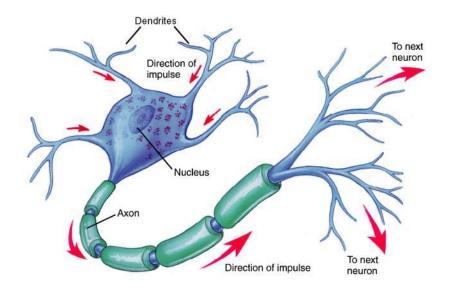




THE NERVOUS SYSTEM



- Is the major controlling, regulatory and communicating system
- Works with the endocrine system to regulate and maintain homeostasis
- Maintains any internal and external check of the environment

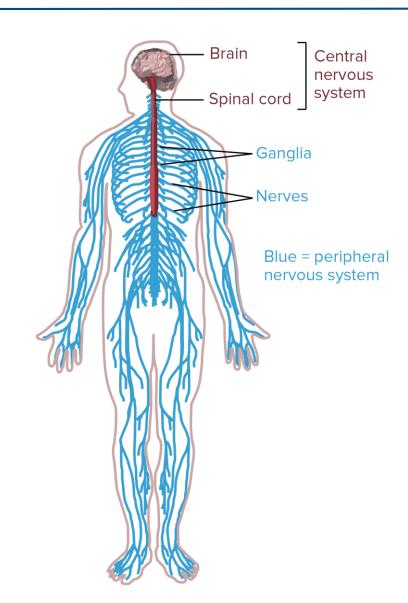




Nervous System

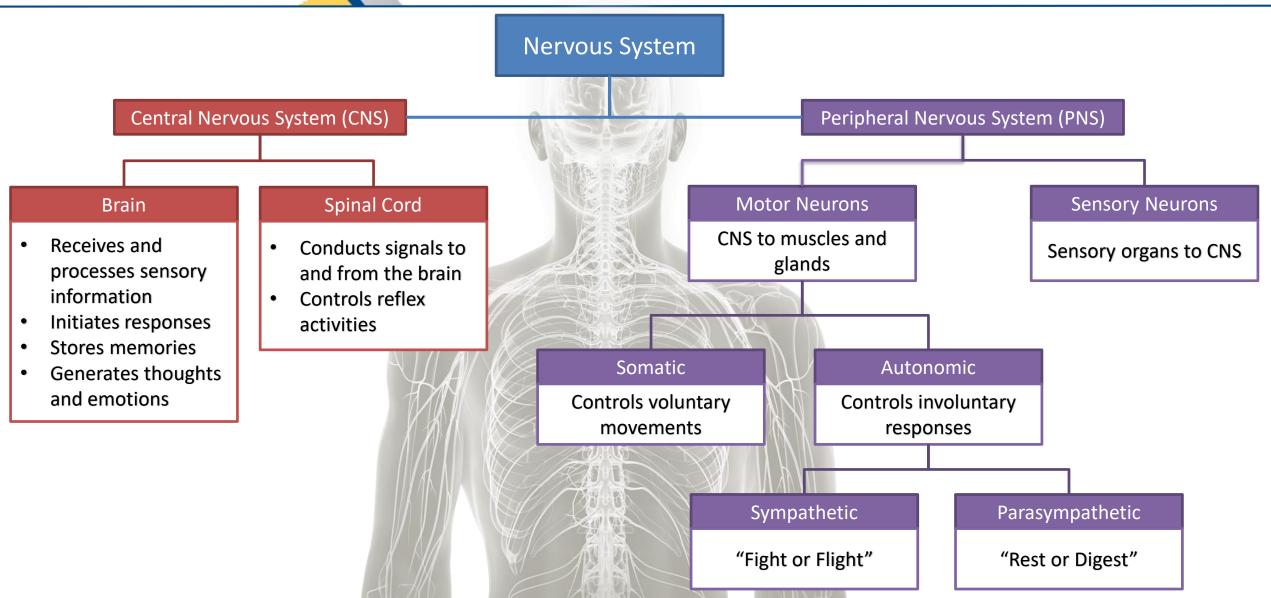
• Consists of:

- The brain
- The spinal cord
- The nerves
- The ganglia



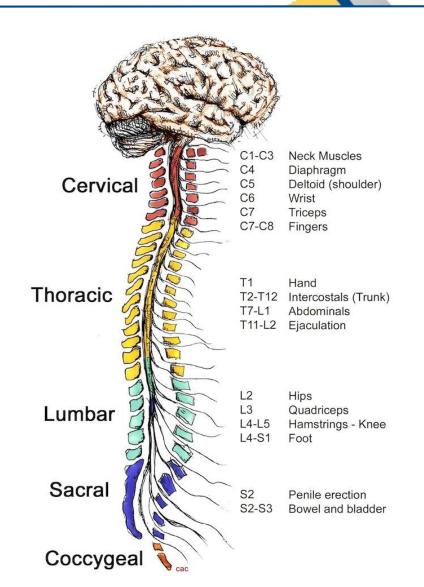


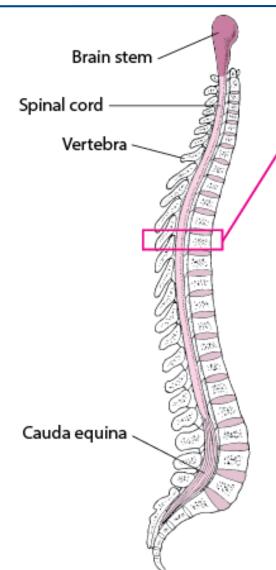
Nervous System

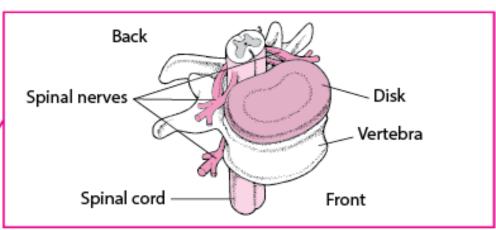


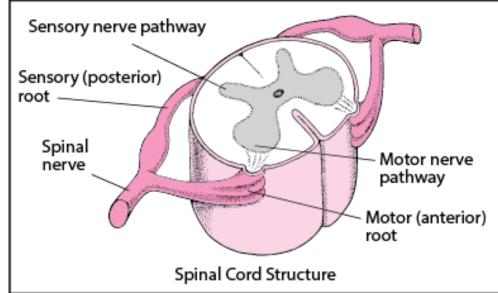


Spinal Cord and Spinal Nerves



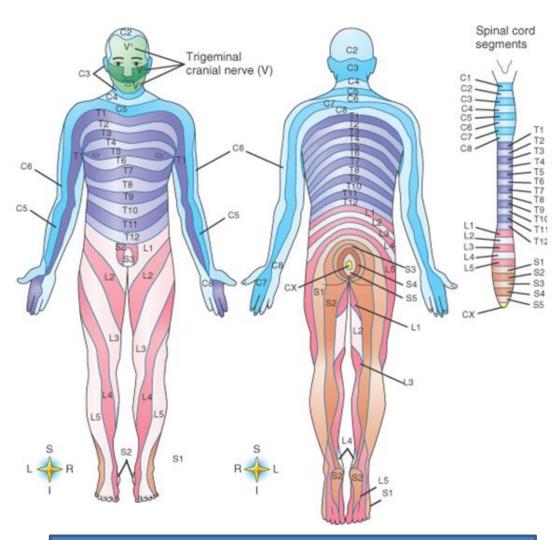


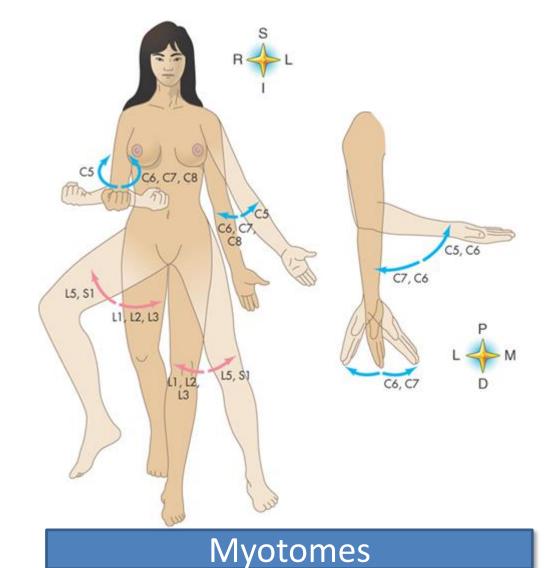






Spinal Nerves





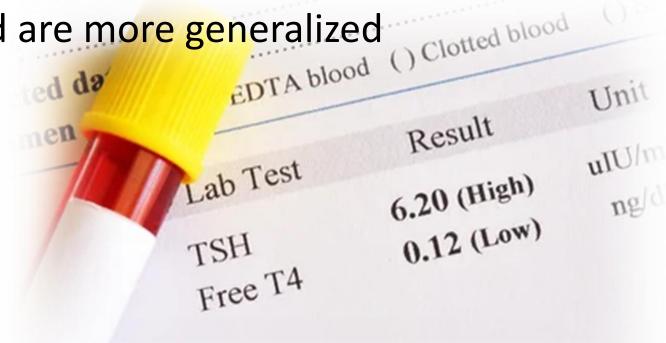
Dermatomes



THE ENDOCRINE SYSTEM

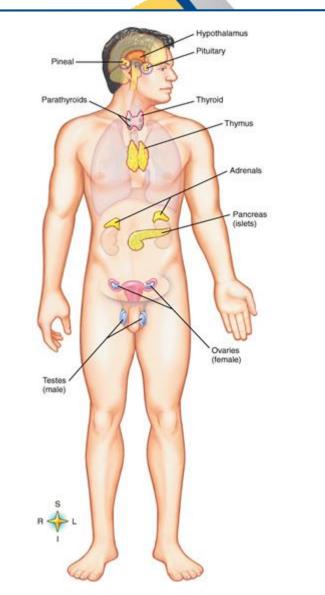


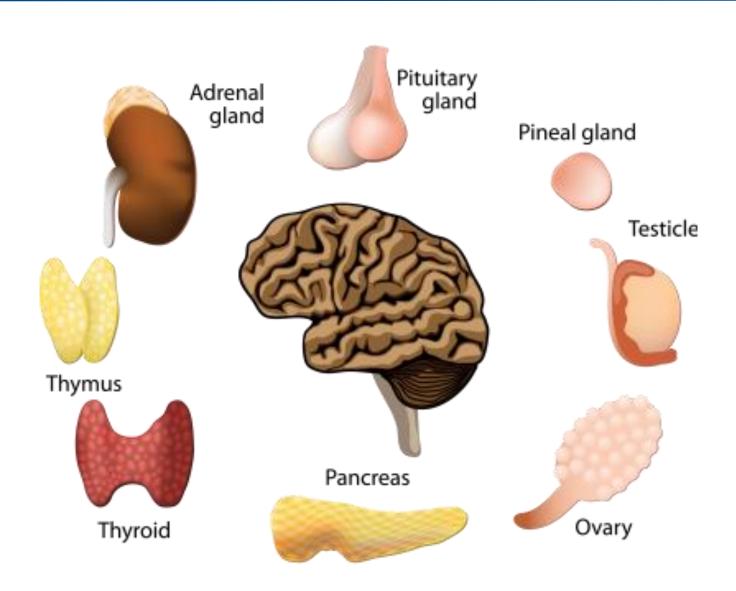
- Functions to regulate the bodies activities through hormones and their glands
- Works in conjunction with the nervous system
- Effects are longer acting and are more generalized



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Endocrine System







THE GENITOURINARY SYSTEM

Health Ed EduSanté

Genitourinary System

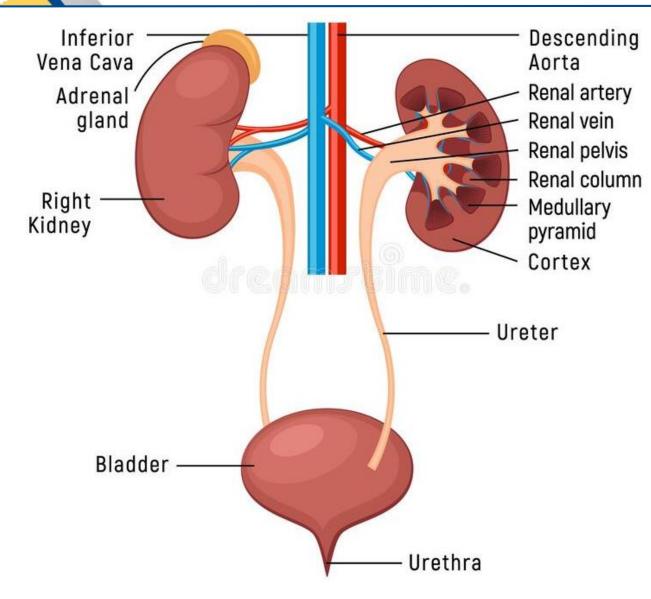
- Maintains homeostasis by:
 - Regulation of blood volume, pressure, pH, Osmolarity
 - Reabsorbing glucose and excreting wastes

Releasing certain hormones like renin and EPO





Genitourinary System





THE IMMUNE SYSTEM



A system of organs that uses many mechanisms to ensure the

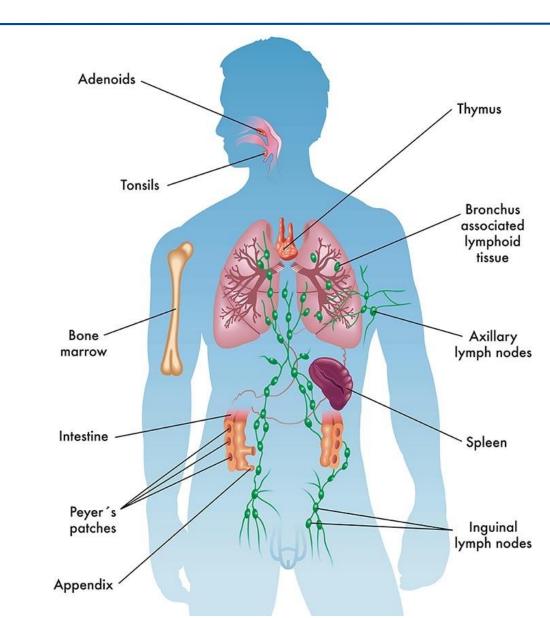
integrity and survival of the internal environment





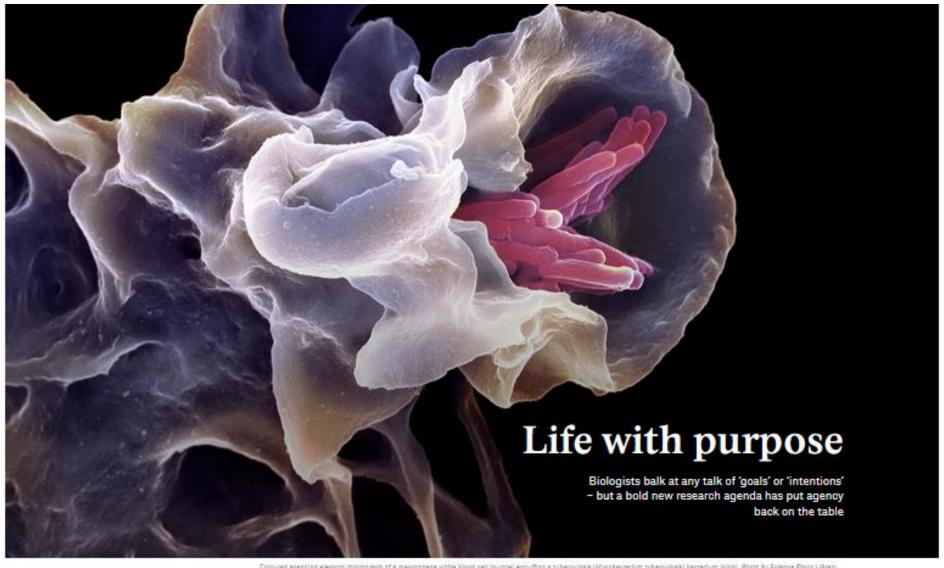
Immune System

- Two major categories:
 - Non-specific "innate" immunity
 - Specific "adaptive" immunity





White Blood cell eating tuberculosis



Coloured exerting electron micrograph of a macrophage white blood cell (jurgle) enguifing a tuberculosia (Mycobecterium tuberculosia) bacterium (gink). Photo by Science Photo Library



THE LYMPHATIC SYSTEM

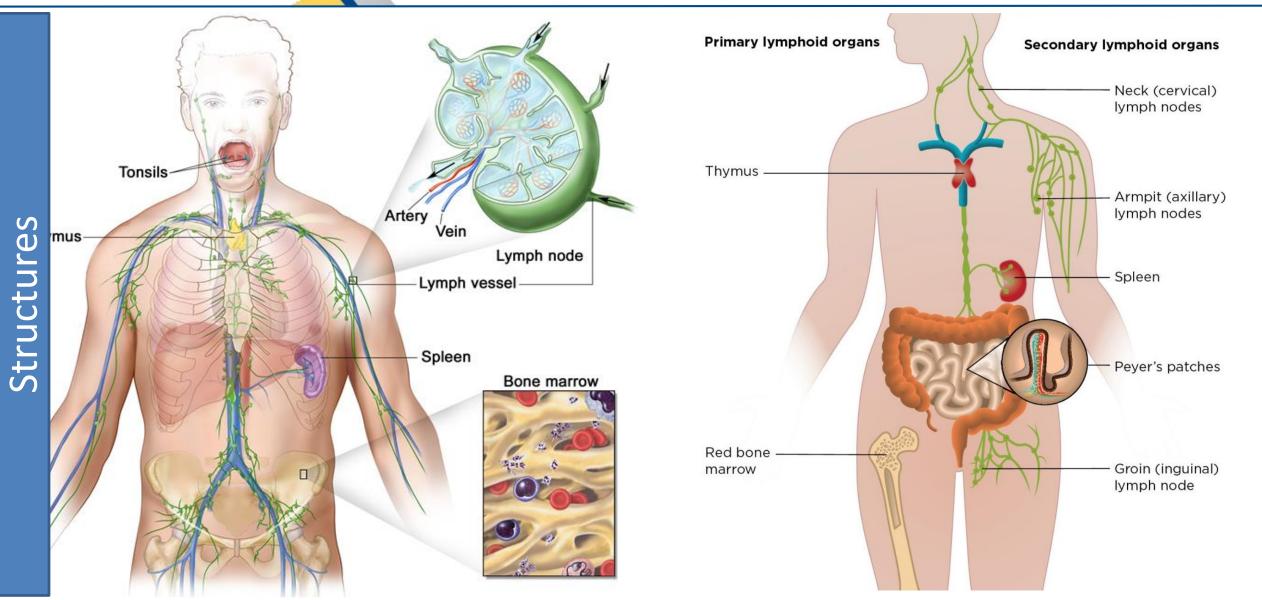




- Maintains fluid balance
- Immunity
- Contains
 - Lymph (moving fluid)
 - Lymphatics (group of vessels)



Lymphatic System





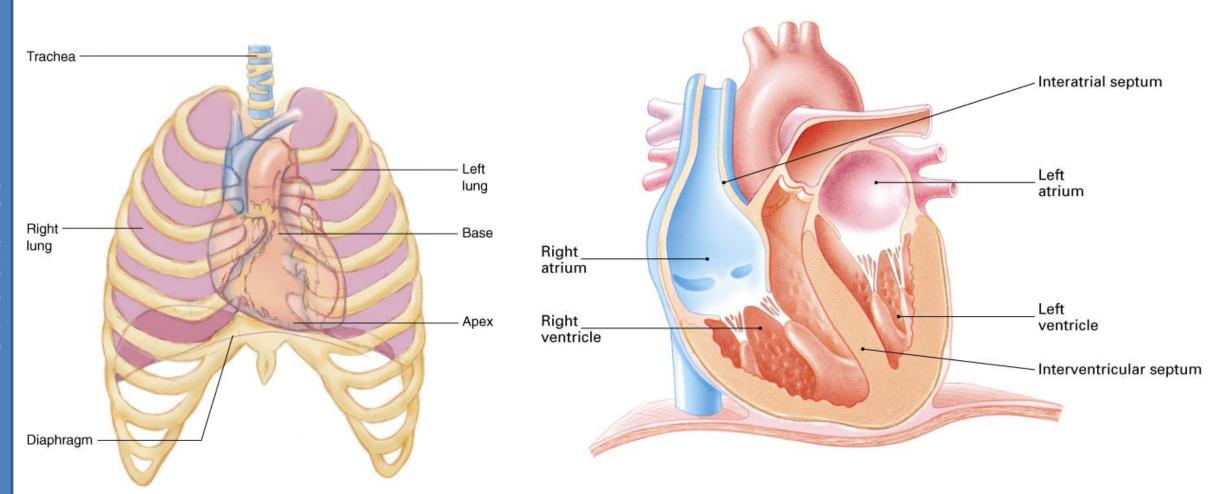
THE CARDIOVASCULAR SYSTEM



 Its primary function is to transport nutrients and oxygen-rich blood to all parts of the body and to carry deoxygenated blood back to the lungs.

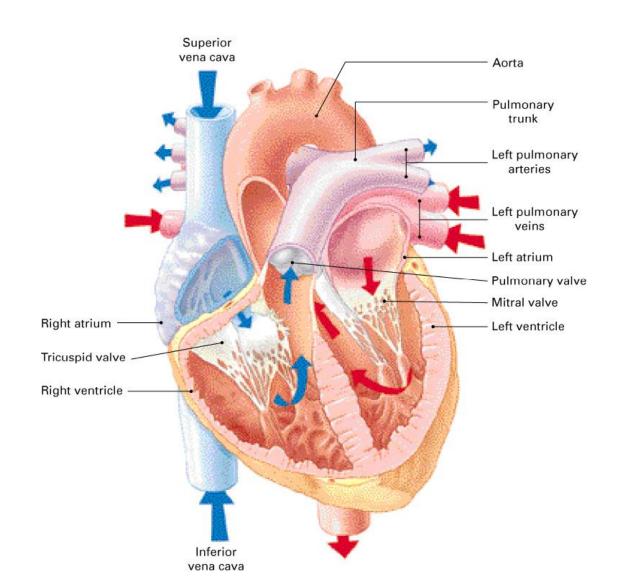


Cardiovascular System





Blood Flow Through the Heart





Peripheral Circulation

Arterial

 Carries oxygenated blood from the heart

Functions under high pressure

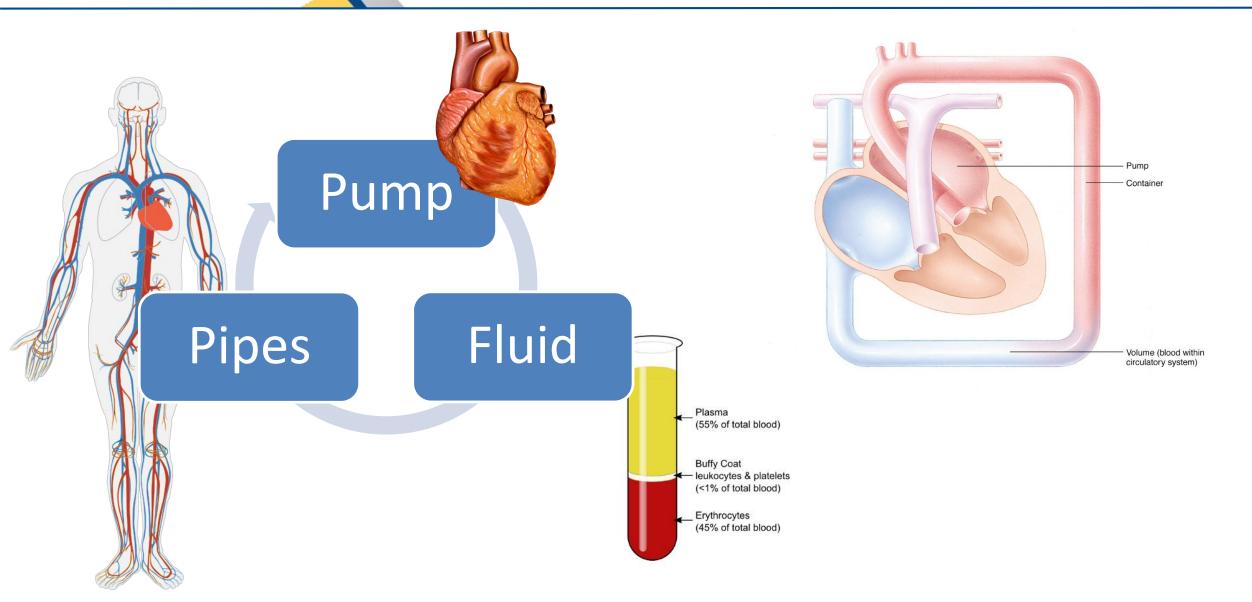
Venous

 Transports blood from the peripheral tissues back to the heart.

 Functions under low pressure with the aid of surrounding muscles and one-way valves within the veins.



Circulatory System





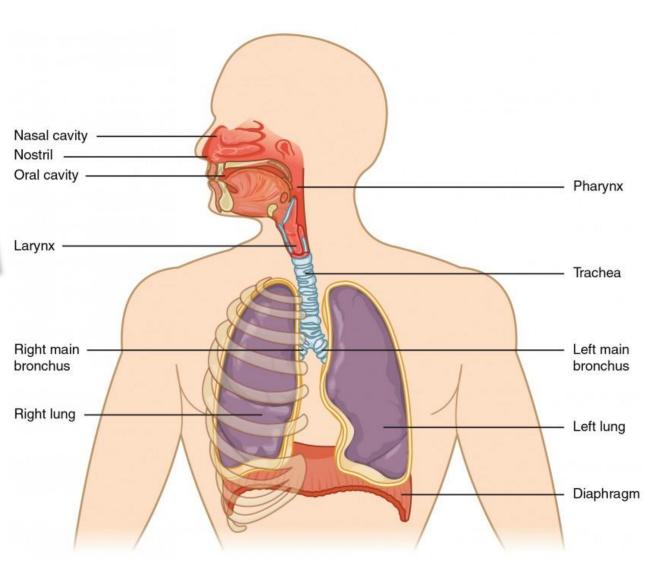
RESPIRATORY SYSTEM



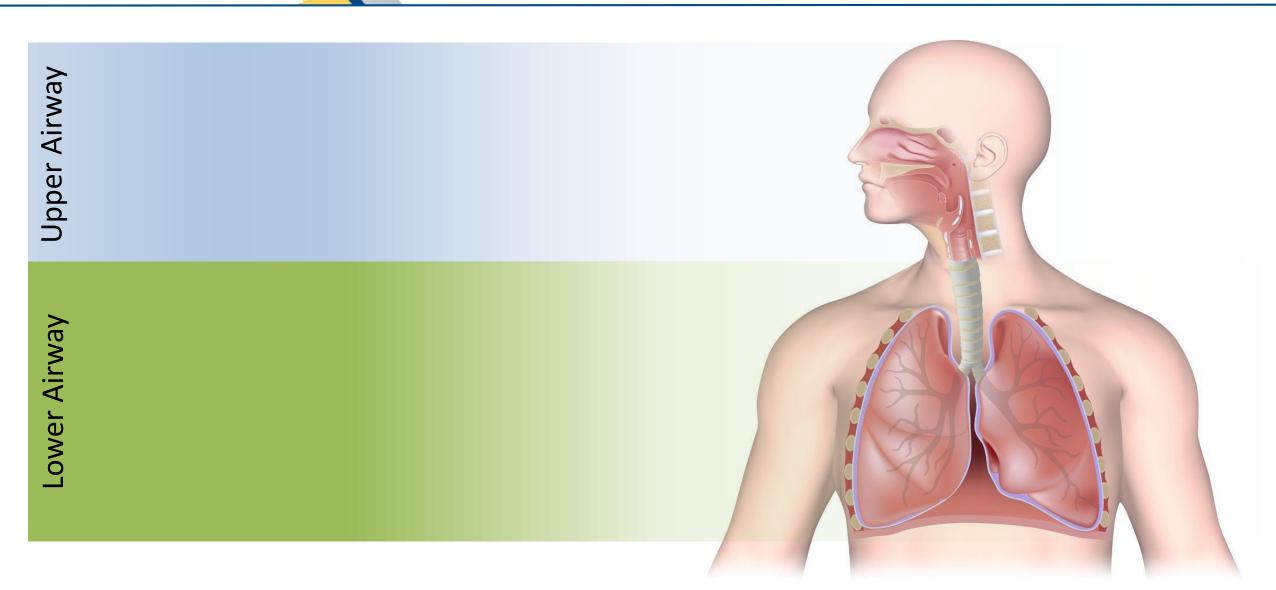
 Provides a passage for oxygen to enter the body and for carbon dioxide to exit the body.

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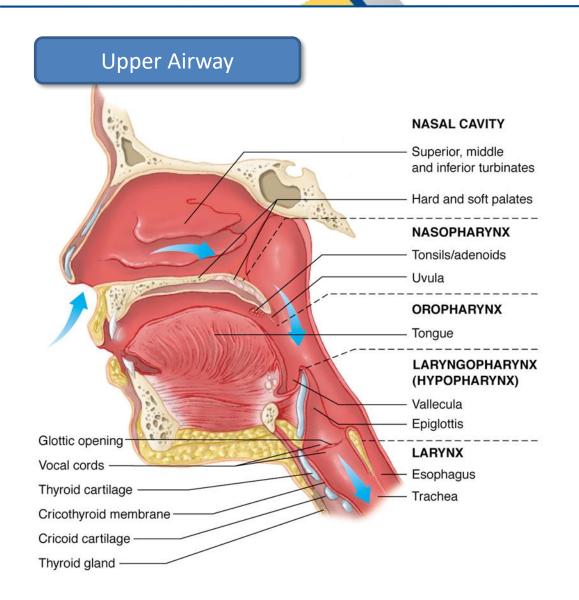


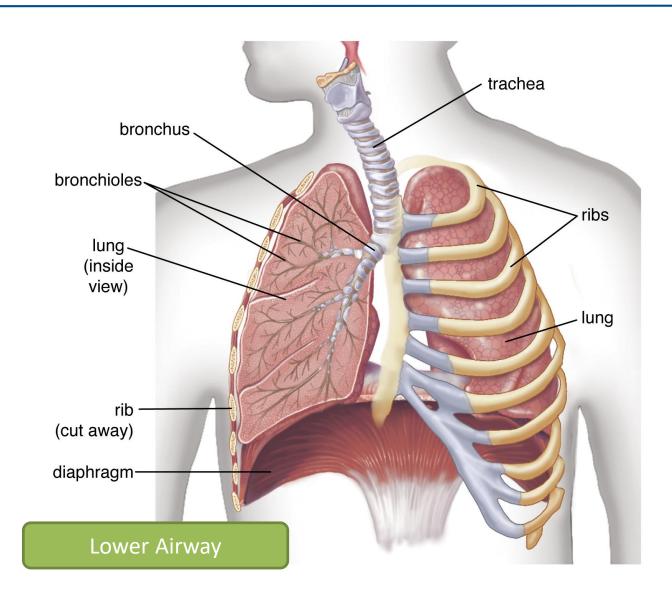




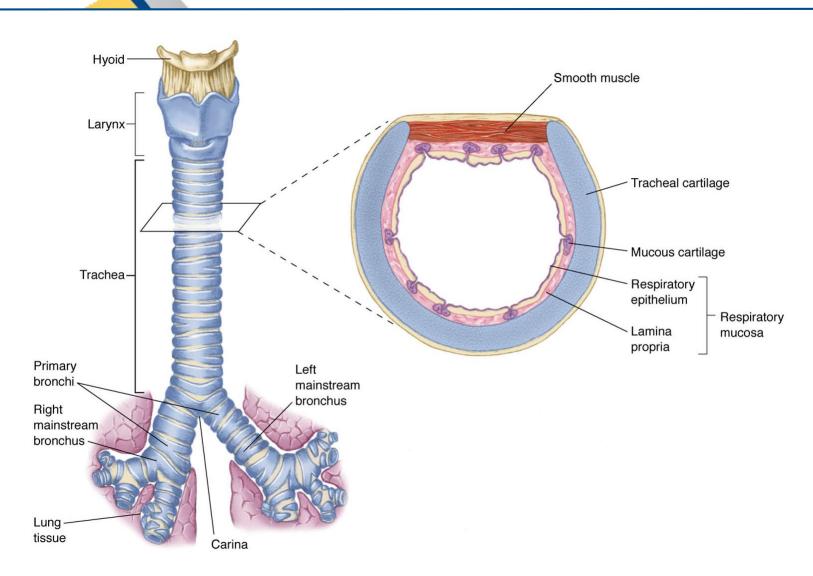














GASTROINTESTINAL SYSTEM

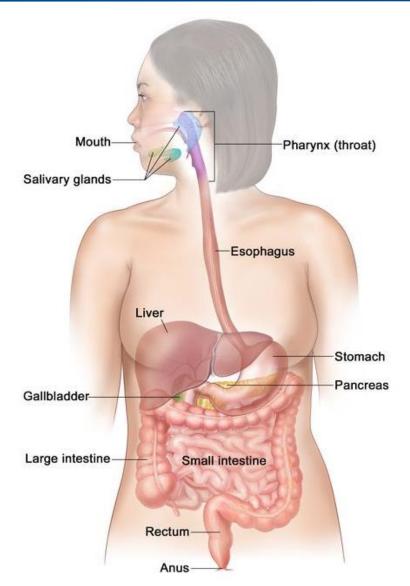


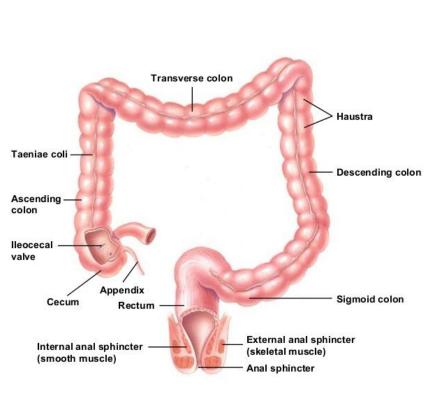
Gastrointestinal System

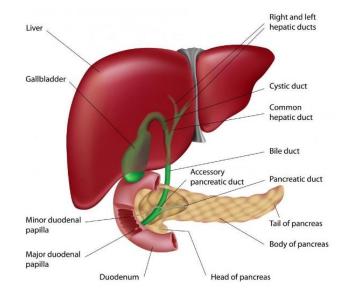
- Prepares nutrients for absorption
- Metabolism

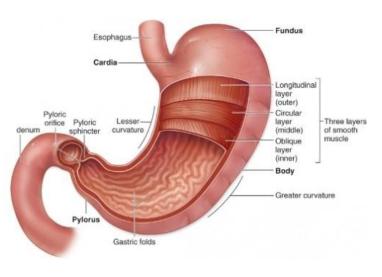


Gastrointestinal System











INTEGUMENTARY SYSTEM



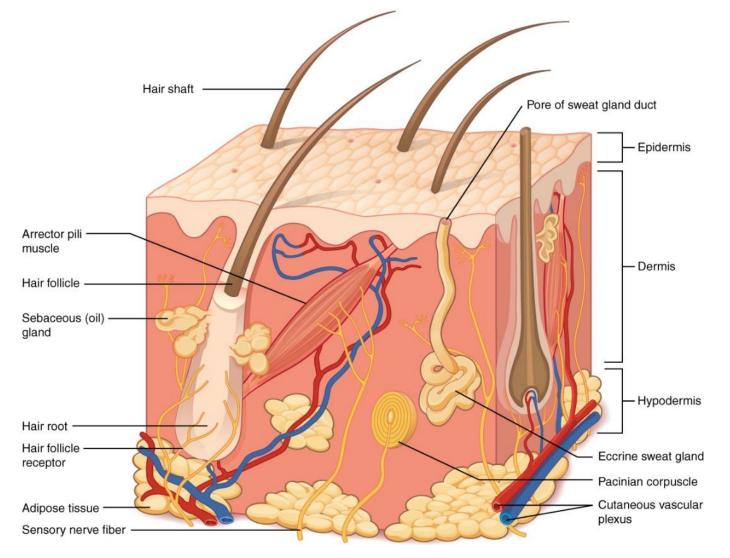


- The largest system of the human body
- Acts as a barrier to protect
- Helps to regulate body temperature
- Gathers sensory information
- Assists the immune system



Integumentary System

- Contains the skin and its appendages:
 - Glands
 - Hair
 - Nails





REPRODUCTIVE SYSTEM

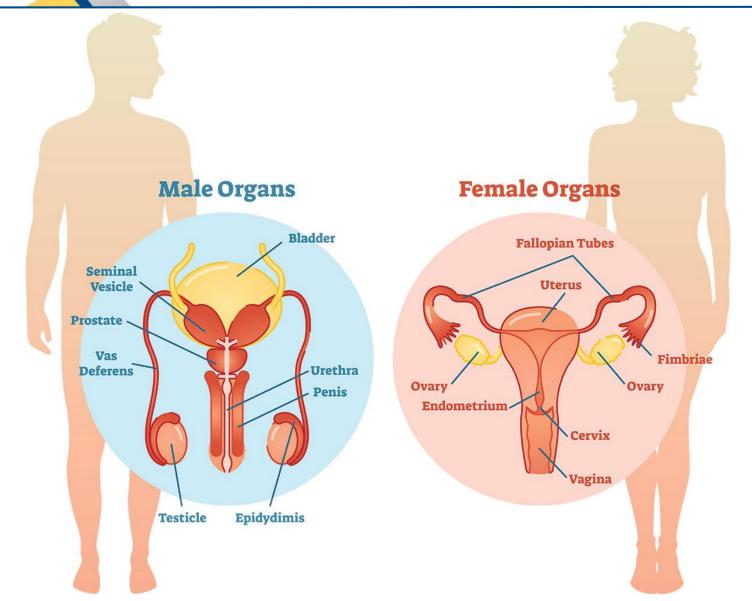




- Produce eggs and sperm cells
- Transport and sustain them
- Nurture the developing offspring
- Hormone production



Reproductive System







- Musculoskeletal
- Endocrine
- Nervous
- Immune
- Cardiovascular
- Respiratory

- Gastrointestinal
- Genitourinary
- Reproductive
- Integumentary
- Lymphatic