**Human Body Systems Notes**

**Respiratory System**

* **Function:**  Take in oxygen from the environment and expels carbon dioxide and water from the body.
* **Major Organs:** nose, pharynx, larynx (voice box), trachea, lungs, bronchi, alveoli
* **Interactions:**Works with circulatory system to provide oxygen that is carried by red blood cells.

**Circulatory & Cardiovascular System**

* **Function:**  Transport blood throughout the body
* **Major Organs:**  Heart, blood vessels such as arteries, capillaries, platelets and veins
* **Interactions:**  Works with the respiratory system to move oxygen and glucose through the body and get rid of waste. Works with the muscular system as the muscles use oxygen during an activity such as running
* Heart – pumps blood throughout the body.
* Arteries – carry blood away from and into capillaries.
* Capillaries – tiny blood vessels where substances are exchanged blood and blood cells.
* Veins – carry blood back to the heart.

**Muscular System**

* **Function:**  Allows movement of the body and flexibility
* **Major Organs:**  Biceps -flexor and Triceps –extensor
* **Interactions:**  Digestive Tract– Smooth muscle found in esophagus, stomach, small and large intestines and rectum.  Skeletal muscles move bone and *tendons* connect muscle to bone.  Ligaments connect bone to bone.  Heart – cardiac muscle. Works with the nervous system to coordinate movement

**Skeletal System**

* **Function:** Protect organs, store minerals, movement and blood cell formation both red and white.
* **Major Organs:** skull, ribs, humerus, radius, tibia and fibula, joints and vertebrae.  206 bones in the human body.
* **Interactions:** Works with muscular system to support the body and for movement. Works with circulatory system to protect heart and the *bone marrow* produces red and white blood cells. Protects all the organs in each organ system.

 **Digestive System**

* **Function:**  Break down food and nutrients so that they can be used by the body.
* **Major Organs/ Digestive Tract:** Mouth, teeth, salivary glands, esophagus, stomach, liver, pancreas, small and large intestines, rectum.
* **Interactions:** Provides nutrients for all other systems to maintain energy and function properly.  Works with muscular system to move food through the body. Works with the circulatory/cardiovascular system to get nutrients to other parts of the body

**Nervous System**

* **Function:** collects information and responds to it by sending electrical messages.
* **Central Nervous system**- controls the brain and spinal cord
* **Peripheral Nervous System**- network of nerves that branch out from the central nervous system and connect to the rest of the body.
* **Major Organs:** Brain, spinal cord, neurons
* Brain- main control center of the nervous system.
* **Interactions:** works with the muscular system and is responsible for reflex actions such as blinking or jumping when startled**.** Controls all other systems and parts of the body
* **Cerebrum**- think and memory
* **Medulla**- controls involuntary processes such as blood pressure. Heartbeat, temperature and involuntary breathing.

**Urinary/Excretory System**

* **Function:**  System of organs that produce, store and eliminate urine.  Remove waste products such as carbon dioxide and ammonia from the blood.
* **Major Organs:**  kidneys, urinary bladder, urethra
* Nephrons- microscopic filters in the kidney that remove waste from the blood.
* **Interactions:** Cleans the blood and waste products produced by each system.Works with the muscular system to send urine out of the body**.** Works with integumentary system to get rid of wastes through the skin such as sweat

**Integumentary System**

* **Function:**  Forms a protective covering on the outside of the body.
* Includes skin, hair, & nails
* Part of the immune system and is the first barrier against infection
* Layers:
* Epidermis- the surface layer of cells
* Dermis- the layer of skin     below the epidermis.
* Melanin – a pigment or color substance that give skin its color.

**Endocrine System**

* **Function:** Produces and releases chemical products/messages (hormones) that control many of the body’s daily activities as well as long term changes such as development.
* Glands – a group of cells that make special chemicals for your body.
* Hormone- a chemical messenger, carried by the blood, made in one cell or tissue that causes a change in other cells or tissue in another part of the body.
* **Major Glands:** Pituitary, thyroid, adrenal, pancreas, testes, and ovaries.
* A person who’s body does not produce enough insulin has a condition called *diabetes mellitus*

**Lymphatic/Immune System**

* **Function:** Cells and tissue that recognize and attack foreign substances such as pathogens (germs) in the body.
* Cells of the Immune System
* Macrophages – cell that engulfs pathogens and other materials.
* T cell – cell that coordinates the immune system and attacks many infected cells.
* B cell – a white blood cell that makes antibodies.
* Antibody – protein made by B cells that binds to a specific antigen.
* **Interactions:** Works with the integumentary system to fight off diseases. Works with circulatory/cardiovascular system to transport materials throughout the body to help fight off diseases