**Human Anatomy and Physiology Guided Notes: Introduction**

1. What is Anatomy and Physiology?

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_– the study of the structures and relationships between the parts
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – the study of the function of body parts and the body as a whole
* Anatomy will name a bone and its position while physiology will describe its function, growth, repair, and importance to rest of body

2. Characteristics of Life

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - self initiated change in position, motion of internal parts
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (irritability) - Ability to sense changes within, or around the organism and react to them
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- increase in body size
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - Parents produce offspring / producing new individuals
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - Obtaining oxygen (O2), using it to release energy from food substances, and getting rid of wastes
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - Chemically changing (breaking down) food substances, and getting rid of wastes
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - Passage of Digested products (food substances) through membranes and into body fluids
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - Movement of substances throughout the body
* Assimilation - Changing absorbed substances into chemically different substances
* Excretion - Removal of wastes

3. Levels of Organization

* Chemical – atoms and molecules provide framework for all living activities
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ – smallest unit of life; structural unit
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – group of cells with common function
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – different tissues working together to perform activity
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system – two or more organs working together to accomplish a task
* Organism – obtain and process energy, respond to stimuli, and ability to reproduce

4. Organ Systems

* 11 organ systems make up the organism:
* The organ systems work together, not in isolation

5. Integumentary

* Forms the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ body covering
* Protects deeper tissue from injury
* Synthesizes Vitamin D
* Location of cutaneous (pain, pressure, etc.) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_ and oil glands

6. Skeletal System

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and supports body organs
* Provides a framework the muscles use to cause movement
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells formed within bones
* Stores minerals

7. Muscular System

* Allows manipulation of the environment, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and facial expression
* Maintains posture
* Produces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. Nervous System

* Fast-acting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system of the body
* Responds to internal and external changes by activating appropriate muscles and glands

9. Endocrine System

* Glands secrete hormones that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ processes such as growth, reproduction, and nutrient use (metabolism) by body cells

10. Cardiovascular System

* Blood vessels transport blood, which carries \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, carbon dioxide, nutrients, waste, etc.
* The heart pumps blood

11. Lymphatic System

* Picks up fluid leaked from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ vessels and returns it to blood
* Disposes of debris in the lymphatic stream
* Houses white blood cells involved in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. Respiratory System

* Keeps blood constantly supplied with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and removes carbon dioxide
* The gaseous \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_occurs through the walls of air sacs in the lungs

13. Digestive System

* Breaks \_\_\_\_\_\_\_\_\_ down into absorbable units that enter the blood for distribution to body cells
* Indigestible food stuffs are eliminated as feces

14. Urinary System

* Eliminates nitrogenous \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the body
* Regulates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, electrolyte, and acid-base balance of the blood

15. Reproductive System

* Overall function of the reproductive system is production of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Male:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ produce sperm and male sex hormone
  + Ducts and glands aid in delivery of viable sperm to the female reproductive tract
* Female:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ produce eggs and female sex hormones
  + Remaining structures serve as sites for fertilization and development of fetus.
  + Mammary glands of female breast produce milk to nourish the newborn

16. Anatomical Terminology

* Anatomical Position – standing erect, facing forward, arms down at side with palms forward
* Directional terms used to describe relative position of one part to another

17. Directional Terms

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Ventral) – front
* Posterior (Dorsal) – back
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – near
* Distal – far
* Lateral – to the side
* Medial - toward middle
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – above
* Inferior – below

18. Anterior Body Landmarks

* Abdominal – anterior body trunk inferior to ribs
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – point of shoulder
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – forearm
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – anterior surface of elbow
* Axillary – armpit
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – arm
* Buccal – cheek area
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – wrist
* Cervical – neck region
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ –hip
* Crural –leg
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – curve of shoulder formed by large deltoid muscle
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – fingers, toes
* Femoral – thigh
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – lateral part of leg
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – area where thigh meets body trunk; groin
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – nose area
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – mouth
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_– eye area
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – anterior knee
* Pelvic – area overlying the pelvis anteriorly
* Pubic – genital region
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_– breastbone area
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – ankle region
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – chest
* Umbilical – navel

19. Posterior Body Landmarks

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – heel of foot
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – head
* Femoral – thigh
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – buttock
* Lumbar – area of back between ribs and hips
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – posterior surface of head
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – posterior surface of elbow
* Popliteal – posterior knee area
* Sacral – area between hips
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – shoulder blade region
* Sural – posterior surface of lower leg; calf
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – area of spine
* Plantar (interior body) – sole of the foot

Body Planes and Sections

* To look at the internal structures of the body, physicians make a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, or cut.
* When a section goes through an organ, it is along an imaginary line called a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

Sagittal Section

* **Sagittal section** – cut along lenthwise (logitudinal) plane of the body, diving into \_\_\_ and \_\_\_\_
* If L and R are equal and cut is down the median plane of the body, it is called a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ section**

Frontal Section

* **Frontal section** – cut along the lengthwise plane that divides the body into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and posterior parts. Also called a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ section**.

Transverse Section

* **Transverse section** – cut along a horizontal plane, dividing the body into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and inferior parts.
* Also called a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ section**

Body Cavities

* Body **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** provide different degrees of protection to the organs within them.
* There are two: dorsal and ventral.
* Dorsal body cavity–two divisions:
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** cavity– space inside skull
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** cavity– extends from cranial cavity to end of vertebral column.
  + Vertebrae surround spinal cavity

Body Cavities

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**\_body cavity is much larger than the dorsal cavity.
* Contains all structures within the chest and abdomen
* Subdivisions:
  + Superior \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cavity– separated by diaphragm
    - Protected by rib cage
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - separates lungs, houses heart, trachea
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cavity
    - Abdominal cavity –contains stomach, liver, intestines
    - Pelvic cavity– reproductive organs, bladder, rectum

Homeostasis

* Conditions remaining relatively stable
* Response of an organism to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ maintains homeostasis of the organism
* Operates on a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_feedback cycle.

Negative Feedback

* Control center in brain, set point at 37°C.
* When body temp climbs above 37.2°C, heat loss is increased through blood flow to skin.
* Similar to thermostat, with set point and effector response to return to normal temp.
* What is an example of positive feedback?
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Oxytocin is a hormone that stimulates uterine contractions. As contractions occur more oxytocin is released and so on.

Homeostasis

* All homeostatic control mechanisms have:
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ –** sensor that monitor and responds to changes in environment (stimuli)
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** pathway from receptor to control center
* **Control Center –** determines the level at which a variable is to be maintained and determines appropriate response
* **Effector –** controls means for response
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** pathway from control center to effector

Homeostasis

* Body temperature is an example of something that the human body maintains through homeostasis = human thermoregulation
* Example: Heat
* Receptor?
  + Skin cells
* Control Center?
  + Hypothalamus
* Effector?
  + Sweat glands secrete sweat; causing heat loss by evaporative cooling