Human Anatomy and Physiology BODY WORLDS

Driving Question: How does structure match function in the human body?

Artifact: Construct a model that explains the patterns seen in a human body system. Present the model with information about how it represents structure and function in that system.

Learning Goals	Advanced	Proficient	Partially Proficient	Not yet Proficient
Research the structure (anatomy) and function (physiology) of a human body system. **<u>Create a presentation</u>** that describes the human body system. Link cellular functions to physiological effects in the body. Connect the functions of body systems to other body systems. **<u>Make a physical model of</u>** an aspect of the human body system that demonstrates the structure and function Discuss a case study of the human body system.	In addition to the Proficient category. Model is creative and shows a unique way to demonstrate structure and function. Presentation is creative and engages the audience. Case study is engaging and captivates the audience in an interesting discussion.	Model accurately represents the structure (anatomy) of the body system. Model accurately and functionally models the physiology of the system. Presentation includes all requirements (see next page).	Model alludes to structures and functions, but is missing some aspects, or has minor errors in accuracy. Presentations includes most requirements. Presentation has all requirements, but some information is inaccurate.	Model does not demonstrate structure or function. Presentation is missing MOST requirements or is incomplete. Presentation is messy and disorganized.

Requirements

1. Describe which organs and structures (**anatomy**) are involved in this human body system.
2. Describe how this system functions (**physiology**).
3. Describe how this system works with other systems (**interdependence**) to maintain **homeostasis**. Define homeostasis in your description. Use AT LEAST 3 other systems in your discussion (integumentary system, skeletal system, muscular system, lymphatic system, respiratory system, digestive system, nervous system, endocrine system, circulatory system, urinary system, and reproductive systems).
4. Facts people may not know about **your** ASSIGNED human body system. **Make sure these are from accurate sources!
5. 6 pictures (minimum) (*all pictures must have a caption to describe what they are.*)
6. Describe (*at least*) **TWO** disorders/diseases that specifically affect **your** ASSIGNED human body system.
7. Describe the current treatments for these diseases/disorders.
8. List ways to keep **your** ASSIGNED human body system healthy.
9. Case Study: Explore one special interest topic within the scope of **your** ASSIGNED body system. THIS CAN BE ANYTHING OF INTEREST.
    - EXAMPLES: Integumentary system- How do tattoos affect the skin? Respiratory system- Is there a difference between vaping and smoking for lung health? Digestive system- What are the benefits of fecal transplant? Reproductive- Are there male contraceptives available?
10. In addition to the information above, find your body system below and make sure to include the specific guiding information.

SPECIFIC GUIDING INFORMATION

Circulatory System

Diagram that includes the major parts - heart, artery, vein, capillary - and list the function(s) of each.
Describe each of the components of blood- red blood cells, white blood cells, platelets, & plasma
Describe the path blood travels through your body.
Describe the anatomy of the heart (atrium, ventricles and their specific function.)

Digestive System

Diagram that includes the major parts - mouth, esophagus, stomach, small intestine, liver, pancreas, and large intestine - and list the function(s) of each.
Describe the structure and function of microvilli.

Endocrine System

Describe what hormones are and what they do.
Diagram that includes the major parts - hypothalamus, pituitary, thymus, thyroid, parathyroid, adrenals, pancreas, ovaries, and testes - and list the function(s) of each.

Excretory/Urinary System

Diagram that includes the major parts - kidneys, urinary bladder, ureter, urethra, liver, and skin - and list the function(s) of each.
Describe the structure and function of a nephron.
Trace the flow of urine through the filtration process.

Muscular System

Describe the function and locations of each type of muscle - skeletal muscle, smooth muscle, and cardiac muscle
Describe how muscles work in pairs to make parts of the body move using the biceps and triceps as an example.

Nervous System

Description and major functions of the central nervous system and peripheral nervous system.
Diagram that includes the major parts - brain, spinal cord, nerves, and neurons - and list the function(s) of each.
Describe the path a nerve impulse travels throughout your body from stimulus to response.

Respiratory System
Diagram that includes the major parts - trachea, lungs, diaphragm, epiglottis, larynx, vocal cords - and list the function(s) of each.
Describe the "breathing" process and negative pressure created by the diaphragm.

Skeletal System
Diagram that includes the major parts -bones, ligaments, and tendon - and list the function(s) of each.
Describe each of the following joints and where they are located: hinge, pivot, and ball-and-socket.
Describe the cellular structure of bones and how they are perforated with blood.

Integumentary System
Diagram illustrating the main physical features of this system - skin, nails, hair
Describe the layers of the skin.

"Anatomical Model" Guidelines:

Anatomical models don't have to be high tech to be effective. You can create models of various parts of human anatomy by using items found around the house. While these models might not always completely resemble the body part they're based on, the mechanical processes can still be readily displayed.

Examples:

- Human Eye model with bowls and modeling clay
- Rube Goldberg type machine to model transmitting nerve impulses
- Blood vessel model using rubber tubing and a bike pump
- Spinal Cord using rope and tape