AP BIOLOGY HUMAN BODY SYSTEMS PROJECT- PART 1

DESCRIPTION

- You will design a product using a technology tool (PowerPoint, PREZI, Wikispace, pamphlet, movie, etc.) on the human body systems.
- Draw means **DRAW**. Drawing the pictures helps you LEARN the structures so much better!!! Be creative and use color!
- A reference page for each system is required.
- Each section will have a specific **CHECKPOINT DUE DATE. The project will not be graded at this time, but the checkpoints are to help you manage your time. It is very important you stick to the timeline of this project.**

OVERVIEW

The purpose of the project is to help you process through the structure and function of the major systems of the human body. For some systems, you will also compare and contrast different types of animals.

COMPONENTS

- Title page and table of contents
- System name clearly and prominently displayed on each page
- Draw means draw (I know I already said this, but want to make sure you understand) :)
  You can include other pictures, diagrams, or graphics in addition to YOUR drawings.
- Neatly done.... logical order, legible, correct spelling, easy to follow, NEAT and ORGANIZED.
- Use color to emphasize content.
- **Use graphic organizers** (Venn diagrams, charts, tables, etc.) to organize your information

BODY SYSTEMS

Digestive System

1. State the function of the system.
2. Outline the functions of the organs in the digestive system, including: mouth, pharynx, esophagus, stomach, small intestine (3 parts), large intestine (5 parts), rectum, anus, salivary glands, liver, pancreas and gallbladder, and sphincters. Distinguish between the organs that food passes and the accessory organs,
3. Explain why digestion of large food molecules is essential.
4. Explain the need for enzymes in digestion.
5. Compare and contrast physical digestion and chemical digestion.
6. Describe where carbohydrate, protein, and lipid digestion takes place and enzymes that assist in the process
7. *Draw and label* a picture of the digestive system.
8. Explain at least 2 major disorders that occur within this system. Include:
   a. a brief description
   b. signs and symptoms
   c. prevalence (statistics of occurrence)
   d. treatment options.

Circulatory System ~ Cardiovascular

1. State the function of the system.
2. Explain the relationship between the structure and function of arteries, capillaries and veins.
3. Draw and label a diagram of the heart showing the four chambers, associated blood vessels and valves.
4. Explain the route of blood through the heart (including the operation of the valves).
5. Describe the composition of blood, including plasma, erythrocytes, leukocytes and platelets.
6. Describe how erythrocytes demonstrate the relationship of structure to function.
7. Compare an open and closed circulatory systems (include examples)
8. Describe the four variations on the circulatory system that are shown by fish, amphibians, reptiles, mammals (and birds). Include diagrams of the different types of circulatory systems.
9. Explain at least 2 major disorders that occur within this system, include:
    a. a brief description
    b. signs and symptoms
    c. prevalence (statistics of occurrence)
    d. treatment options

Respiratory System

1. State the function of the system.
2. Describe the features of alveoli that adapt them to gas exchange (include information on surface area, the type of tissue and capillaries).
3. Discuss how carbon dioxide and oxygen are transported in the blood.
4. Trace the path a molecule of oxygen takes from the air until it is picked up by the hemoglobin of a red blood cell.
5. Draw and label a diagram of the ventilation system, including trachea, lungs,bronchi, bronchioles and alveoli (the alveoli should be drawn as an in set diagram at a higher magnification).
6. Describe how the respiratory system accomplishes inhalation and exhalation. In you discussion, include the role of the diaphragm and the volume and pressure differences that influence the flow of air.
7. Explain at least 2 major disorders that occur within this system, include:
    a. a brief description
    b. signs and symptoms
    c. prevalence (statistics of occurrence)
    d. treatment options

Immune System

1. State the function of the system.
2. List the major organs involved in immunity.
3. Describe how the body recognizes pathogens. Include the role of antigens and antibodies in your discussion.
4. Compare and contrast innate and acquired immunity. Include examples.
5. Compare and contrast active immunity and passive immunity. Include examples.
6. Compare and contrast humoral and cell-mediated immunity.
7. Describe the differences between B and T lymphocytes relative to their activation and action.
8. Explain why antibiotics are effective against bacteria but not against viruses.
9. Explain at least 1 major disorder that occurs within this system and *HIV/AIDS*, include:
    a. a brief description
    b. signs and symptoms
    c. prevalence (statistics of occurrence)
    d. treatment options

Excretory System

1. State the function of the system.
2. Draw and label a diagram of the kidney (include the cortex, medulla, renal pelvis, ureter and renal artery and renal vein).
3. Discuss the three categories of nitrogenous wastes, which animal groups produce each type of waste, and why.
4. Draw the functional unit of the kidney, a nephron. Label the major parts of the structure and describe its purpose in the nephron.
5. Describe these processes in terms of a nephron: filtration, reabsorption, secretion, and excretion
6. Explain at least 2 major disorders that occur within this system, include:
    a. a brief description
    b. signs and symptoms
    c. prevalence (statistics of occurrence)
    d. treatment options