

AP BIOLOGY HUMAN SYSTEMS PROJECT- PART 2

Endocrine System

1. State the function of the system.
2. Define homeostasis and explain its role in the endocrine system.
3. Explain a negative feedback mechanism and provide an example (in the body other than blood sugar regulation).
4. Draw a human body outline and identify the endocrine glands of the human body and at least one hormone the gland secretes and the action of that hormone.
5. Compare and contrast Type I Diabetes and Type II Diabetes and explain 1 disorder, include:
 - a. a brief description
 - b. signs and symptoms
 - c. prevalence (statistics of occurrence)
 - d. treatment options

Reproductive System and Development

1. State the function of the system.
2. Compare and contrast sexual reproduction and asexual reproduction in animals.
Include at least 3 examples asexual reproduction.
3. Describe the process of spermatogenesis. Include a drawing
4. Describe the processes involved in oogenesis. Why is there an unequal division of cytoplasm?
Include a drawing.
5. Contrast menstrual cycles and estrous cycle.
6. Describe the menstrual cycle in humans and primates. Include ovarian cycle and uterine (menstrual) cycle.
Make sure to include the hormonal control and how feedback mechanisms are involved.
7. Describe what occurs during development. Include the process of cleavage, gastrulation, and organogenesis.
Also include these key words: morula, blastula, and gastrula
8. What are germ layers? What are the three main germ layers and what structures develop from these layers?
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

Nervous System

1. State the function of the system.
2. Define central nervous system and peripheral nervous system and list the major parts of each.
3. Draw and label a diagram of the structure of a neuron.
4. Draw and label a diagram of a simple reflex arc, explain its elements and how it works.
5. Draw, label and describe the functions of the major parts of the cerebral hemispheres, diencephalon, brain stem and cerebellum.
6. Outline how a nerve impulse travels through a neuron and passes the "message" from one neuron to another neuron, muscle, or gland. Include these key concepts: membrane potential, resting potential, Na^+ , K^+ , action potential, depolarization, threshold, refractory period. Include a series of diagrams to help with your description of events.
7. Describe the role of neurotransmitters and how influences the next neuron at the synapse.
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

Senses

1. State the location and function of the types of sensory receptors:
mechanoreceptors, thermoreceptors, chemoreceptors, photoreceptors, and pain receptors.
2. Draw an eye and label these key parts:
cornea, aqueous humor, pupil, iris, lens, vitreous humor, sclera, retina, optic nerve.
3. What is rhodopsin? What does it have to do with cell signaling?

Muscular System

1. State the function of the system.
2. Draw and describe the 3 types of muscle tissue.
3. Draw and label a diagram to show the structure of a sarcomere, including Z lines, actin filaments, myosin filaments with heads, and the light and dark bands.
4. Explain how skeletal muscle contracts by the sliding filament model, including acetylcholine, the release of calcium ions from the sarcoplasmic reticulum, the formation of cross-bridges, the sliding of actin and myosin filaments and the use of ATP.
5. 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

Skeletal System

1. State the function of the system.
2. State the roles of bones, ligaments, muscles, tendons in human movement.
3. Compare and contrast animal skeletal systems and include examples of organisms that have that particular type of skeleton: hydrostatic skeleton, exoskeleton, and endoskeleton.
4. Draw and label a picture of the long bone.
5. 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