Review: Communication

AP Biology

*SIGNAL TRANSDUCTION*

1. Name and describe the structures involved when one cell signals another. Where is each component found? What forms might the signal take? Use the vocabulary to distinguish between signaling between cells that are near versus far.
2. What changes might a received signal cause? What energy molecule might facilitate these changes? How?
3. Name the part of the signal pathway that relays the message intracellularly. What term describes when the message is moved between different molecules? Discuss the role of cAMP, kinases, and amplification in this stage.
4. Relate the effector to the response. Provide an example.

*FEEDBACK*

1. Compare and contrast positive and negative feedback. Explain an example of each.

*NERVOUS SYSTEM*

1. What type of cell is found in the nervous system? Identify the cell parts. In which direction does a stimulus move through these cells? What speeds the transmission of an impulse along these cells? What slows the message?
2. Differentiate between these cells based on location, function, and direction of impulse movement.
3. Explain the role of the action potential, Ca2+, vesicles, neurotransmitters, diffusion, and transmembrane receptors in moving the message from one nerve cell to another.
4. Differentiate between resting potential and action potential. How does the voltage across the neuron membrane change when an action potential is initiated? Why does it change? How is a resting potential reestablished?
5. Differentiate between leak channels, gated channels, and pumps. What is the role of each in the process of conducting a nerve impulse?

*IMMUNE SYSTEM*

1. What is a pathogen? Differentiate between viruses and bacteria. What are a body’s innate lines of defense against pathogens? How does each work to fight infection?
2. List the sequence of general steps taken to yield an adaptive response to a pathogen.
3. Which immune cell acts in both innate and adaptive immunity? Explain. Which cell type directs the adaptive response? Explain. Which cell types present antigens? Which cell type produces antibodies? Which cell types produce memory cells?
4. Compare and contrast the humoral and cell-mediated responses to infection.
5. Correct the misconception that one can never get an infection from the same pathogen twice. What leads people to believe this? Explain how the response to a second exposure to a pathogen is different from the first.