

shape specific interactions 2 star

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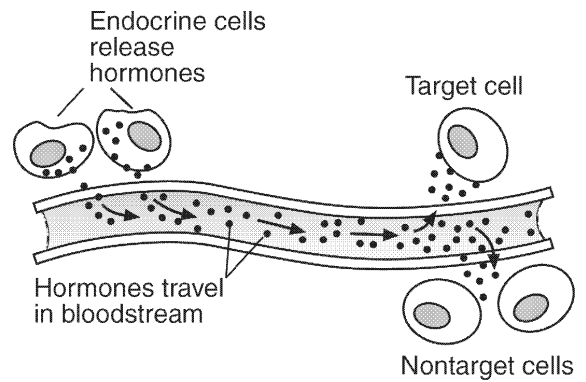
1. A characteristic shared by all enzymes, hormones, and antibodies is that their function is determined by the

- A. shape of their molecules
- B. DNA they contain
- C. inorganic molecules they contain
- D. organelles present in their structure

2. A characteristic of hormones and enzymes that allows them to work effectively with other organic molecules is their

- A. specific shape
- B. small size
- C. concentration of carbon and hydrogen atoms
- D. high-energy bonds

3. The accompanying diagram shows a biological process.



Explain why the hormones attach to the target cell and not to other cells in the diagram.

4. Antibody molecules and receptor molecules are similar in that they both

- A. control transport through the cell membrane
- B. have a specific shape related to their specific function
- C. remove wastes from the body
- D. speed up chemical reactions in cells

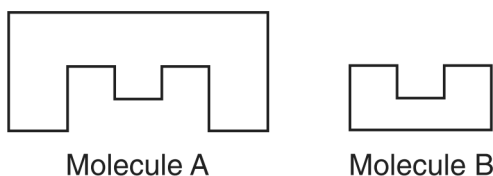
5. Base your answer(s) to the following question(s) on the information below and on your knowledge of biology.

It has been discovered that plants utilize chemical signals for communication. Some of these chemicals are released from leaves, fruits, and flowers and play various roles in plant development, survival, and gene expression. For example, bean plant leaves infested with spider mites release chemicals that result in an increase in the resistance to spider mites in uninfested leaves on the same plant and the expression of self-defense genes in uninfested bean plants nearby.

Plants can also communicate with insects. For example, corn, cotton, and tobacco under attack by caterpillars release chemical signals that simultaneously attract parasitic wasps to destroy the caterpillars and discourage moths from laying their eggs on the plants.

Identify the specialized structures in the cell membrane that are involved in communication.

6. The diagram below represents two molecules that can interact with each other to cause a biochemical process to occur in a cell.



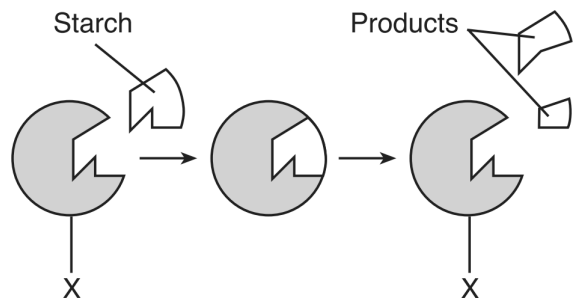
Molecules A and B most likely represent

- A. a protein and a chromosome
- B. a receptor and a hormone
- C. a carbohydrate and an amino acid
- D. an antibody and a hormone

7. Enzyme molecules normally interact with substrate molecules. Some medicines work by blocking enzyme activity in pathogens. These medicines are effective because they

- A. are the same size as the enzyme
- B. are the same size as the substrate molecules
- C. have a shape that fits into the enzyme
- D. have a shape that fits into all cell receptors

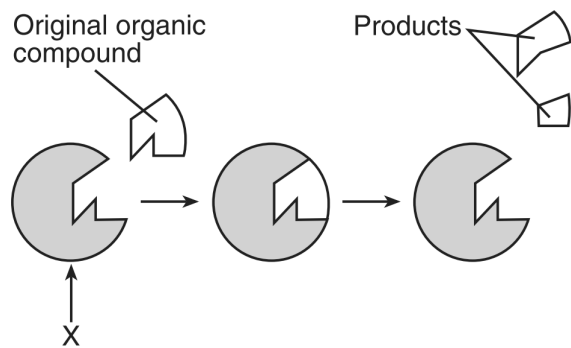
8. Base your answer(s) to the following question(s) on the diagram below, which represents stages in the digestion of a starch, and on your knowledge of biology.



The products would most likely contain

- A. simple sugars
- B. fats
- C. amino acids
- D. minerals

9. The diagram below represents stages in the digestion of an organic compound.



Explain why substance *X* would *not* be likely to digest a different organic compound.

10. Many biological catalysts, hormones, and receptor molecules are similar in that, in order to function properly, they must

- A. interact with each other at a high pH
- B. interact with molecules that can alter their specific bonding patterns
- C. contain amino acid chains that fold into a specific shape
- D. contain identical DNA base sequences

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1.
Answer: A
2.
Answer: A
3.
Answer: Target cells have receptors that are specific for that hormone.
4.
Answer: B
5.
Answer: receptors or receptor molecules
6.
Answer: B
7.
Answer: C
8.
Answer: A
9.
Answer: A different organic compound would have a different shape. OR A different organic compound would not fit with substance X. OR The active site of X does not fit a different substrate. OR Substance X is specific to only certain materials.
10.
Answer: C