

Introduction to Cell and Molecular Biology

BMS-UY 1003

Summer 2023

Good Luck

Feel free to use any resources (PPT slides, PubMed, google) for this quiz.
This is due on (or before) August 16

Questions

1. The image below (which comes from a Biochemistry textbook) shows a simplified depiction of enzyme kinetics. What crucial detail is missing from this representation that would make it more accurate? (Hint: Consider the enzyme's structure and its interaction with the substrate.)
2. Glucose moves from high to low concentration, across the plasma membrane, through a protein channel that is facilitated by a specific carrier protein. Which statement is true about this process?
 - A. It requires ATP
 - B. It is a form of passive transport
 - C. Movement is against the concentration gradient of glucose
 - D. The carrier protein is likely specific to glucose and a few closely related molecules.
3. Which statement is true about competitive inhibition?
 - A. Binding of the inhibitor occurs away from the active site of the enzyme
 - B. Inhibition is always irreversible
 - C. Increasing the amount of substrate can reverse the inhibition
 - D. It is not relevant to the function of many pharmaceuticals.
4. The primary function of chaperone proteins within the proteasome is to:
 - A. Catalyze peptide bond formation

- B. Unfold misfolded proteins to allow for degradation
 - C. Transport proteins to the Golgi apparatus
 - D. Synthesize new proteins from amino acids
5. During oxidative phosphorylation, the energy released from the electron transport chain is used to:
- A. Pump H^+ ions into the mitochondrial matrix
 - B. Pump Na^+ ions across the plasma membrane
 - C. Pump H^+ ions into the mitochondrial intermembrane space
 - D. Directly phosphorylate ADP to ATP
6. How many ATP molecules (net) are produced during glycolysis per molecule of glucose?
- A. 36
 - B. 38
 - C. 2
 - D. 0
7. The process of beta-oxidation occurs in the:
- A. Cytosol
 - B. Mitochondrial matrix
 - C. Inner membrane of the mitochondria
 - D. Nucleus
8. Rotenone, a potent insecticide, inhibits an enzymatic complex located in the:
- A. Cytosol
 - B. Inner mitochondrial membrane
 - C. Outer mitochondrial membrane
 - D. Nucleus
9. The enzyme that catalyzes the conversion of glucose-6-phosphate to fructose-6-phosphate is:
- A. Phosphofructokinase
 - B. Phosphohexoisomerase
 - C. Hexokinase
 - D. Pyruvate kinase
10. Which statement about the electron transport chain is false?

- A. It is located in the inner mitochondrial membrane
- B. Electrons are passed from one complex to another in a linear fashion
- C. It generates a proton gradient across the inner mitochondrial membrane.
- D. Oxygen is the final electron acceptor in aerobic respiration.