

## BIO 201

**Which statement about cyclic AMP (cAMP) is NOT true?**

- A. cAMP is formed from ATP.
- B. The enzyme that catalyzes the formation of cAMP is adenylate cyclase.
- C. The enzyme that catalyzes cAMP formation is generally located in the cytoplasm.
- D. Membrane receptors are capable of activating the enzyme that forms cAMP.
- E. cAMP is regarded as a second messenger, since it can trigger a cascade of intracellular reactions after a hormone binds to the cell membrane.

**All of the following about the Krebs cycle are true EXCEPT**

- A. the Krebs cycle occurs in the matrix of the mitochondrion.
- B. the Krebs cycle is linked to glycolysis by pyruvate.
- C. the Krebs cycle is the single greatest direct source of ATP in the cell.
- D. citrate is an intermediate in the Krebs cycle.
- E. the Krebs cycle produces nucleotides such as NADH and FADH<sub>2</sub>.

**Which statement about glycolysis is NOT true?**

- A. Glycolysis converts a single molecule of glucose into two molecules of pyruvate.
- B. Glycolysis can produce a net total of two ATPs.
- C. The end-product of glycolysis can form ethanol, CO<sub>2</sub> lactate, and pyruvic acid.
- D. During glycolysis FADH<sub>2</sub> is produced.
- E. During glycolysis NADH is produced.

**Which of the following statements about oxidative phosphorylation is NOT correct?**

- A. It occurs on the inner membrane of the mitochondrion.
- B. It involves O<sub>2</sub> as the final electron acceptor.
- C. It produces two ATPs for the FADH<sub>2</sub>.
- D. It can occur under anaerobic conditions.
- E. It involves a cytochrome electron transport chain

**Which of the following statements about enzymes is NOT true?**

- A. Their activity is unaffected by genetic mutation.
- B. Enzymes may interact with non-protein molecules in order to have biological activity.
- C. Enzymes optimally operate at a particular pH.
- D. Enzymes optimally operate at a particular temperature.
- E. Enzymes are almost always proteins.

**Which of the following is not characteristic of fermentation?**

- A. Anaerobic
- B. Glucose requiring
- C. Energy producing
- D. Oxygen requiring
- E. Produces pyruvic acid

**If <sup>18</sup>O-labeled glucose is given to a rat, where will the label first appear?**

- A. Exhaled O<sub>2</sub>

- B. Exhaled CO<sub>2</sub>
- C. Exhaled H<sub>2</sub>O
- D. Plasma H<sub>2</sub>O
- E. Intracellular H<sub>2</sub>O

**Cells that are involved in active transport, such as cells of the intestinal epithelium, utilize large quantities of ATP. In such cells there are**

- A. high levels of adenylate cyclase activity.
- B. many polyribosomes.
- C. many mitochondria.
- D. high levels of DNA synthesis.
- E. many lysosomes.

Glycolysis takes place in the cytoplasm of an animal cell. Which of the following is NOT a product or reactant in glycolysis?

- A. glucose
- B. pyruvate
- C. ATP
- D. O<sub>2</sub>

What is the net ATP production from fermentation?

- A. 0 ATP
- B. 2 ATP
- C. 4 ATP
- D. 8 ATP

Heart and liver cells can produce more ATP for each molecule of glucose than other cells in the body. This is most likely results of:

- A. a more efficient ATP synthase on the outer mitochondrial membrane.
- B. an additional turn of the Krebs's cycle for each glucose molecule.
- C. a more efficient mechanism for moving NADH produced in glycolysis into the mitochondrial matrix.
- D. production of additional NADH by the citric acid cycle.

In aerobic respiration, the energy from the oxidation of NADH:

- A. directly synthesizes ATP.
- B. passively diffuses protons from the intermembrane space into the matrix.
- C. establishes a proton gradient between the intermembrane space and the mitochondrial matrix.
- D. pumps protons through ATP synthase.

Which of the following processes occurs under both aerobic and anaerobic conditions?

- A. Fermentation
- B. Krebs cycle
- C. Glycolysis
- D. Oxidative phosphorylation

In a human renal cortical cell, the Krebs cycle occurs in the:

- A.** cytosol.
- B.** mitochondrial matrix.
- C.** inner mitochondrial membrane.
- D.** intermembrane space.