

CHAPTER 7.6: Respiration Regulation

1. What was the evolutionary advantage of the proto-eukaryotes that engulfed aerobic bacteria but did not digest them?

2. Identify examples of each of the following feedback mechanisms in aerobic respiration:

a. negative feedback _____

b. positive feedback _____

3. If the body has enough ATP, what is the fate of acetyl-CoA?

END OF CHAPTER 7 MULTIPLE CHOICE

1. The role of oxygen gas in our cells is to
 - A) catalyze reactions in glycolysis.
 - B) produce CO₂.
 - C) form ATP.
 - D) accept electrons from the electron transport chain.
 - E) react with glucose to split water.

2. Oxidation and reduction
 - A) entail the gain or loss of proteins.
 - B) are defined as the loss of electrons.
 - C) are both endergonic reactions.
 - D) always occur together.
 - E) proceed only under aerobic conditions.

3. NAD⁺ is
 - A) a type of organelle.
 - B) a protein.
 - C) present only in mitochondria.
 - D) a part of ATP.
 - E) formed in the reaction that produces ethanol.

4. Glycolysis
 - A) takes place in the mitochondrion.
 - B) produces no ATP.
 - C) has no connection with the electron transport chain.
 - D) is the same thing as fermentation.
 - E) reduces two molecules of NAD^+ for every glucose molecule processed.

5. Fermentation
 - A) takes place in the mitochondrion.
 - B) takes place in all animal cells.
 - C) does not require O_2 .
 - D) requires lactic acid.
 - E) prevents glycolysis.

6. Which statement about pyruvate is not true?
 - A) It is the end product of glycolysis.
 - B) It becomes reduced during fermentation.
 - C) It is a precursor of acetyl CoA.
 - D) It is a protein.
 - E) It contains three carbon atoms.

7. The citric acid cycle
 - A) takes place in the mitochondrion.
 - B) produces no ATP.
 - C) has no connection with the electron transport chain.
 - D) is the same thing as fermentation.
 - E) reduces two NAD^+ for every glucose processed.

8. The electron transport chain
 - A) is located in the mitochondrial matrix.
 - B) includes integral membrane proteins.
 - C) always produces ATP.
 - D) reoxidizes reduced coenzymes.
 - E) operates simultaneously with fermentation.

9. Compared with fermentation, the aerobic pathways of glucose metabolism produce
 - A) more ATP.
 - B) pyruvate.
 - C) fewer protons for pumping in mitochondria.
 - D) less CO_2 .
 - E) more oxidized coenzymes.

10. Which statement about oxidative phosphorylation is not true?
 - A) It is the formation of ATP by the electron transport chain.
 - B) It is brought about by chemiosmosis.
 - C) It requires aerobic conditions.
 - D) It takes place in mitochondria.
 - E) Its functions can be served equally well by fermentation.