

## Krebs Cycle Quiz Answer Key PDF

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**What role does the Krebs Cycle play in the metabolism of fats and proteins?**

The Krebs Cycle plays a key role in the metabolism of fats and proteins by converting fatty acids and amino acids into acetyl-CoA, which is then utilized to generate ATP and other metabolic compounds.

**Describe how the Krebs Cycle is linked to the electron transport chain.**

The Krebs Cycle is linked to the electron transport chain through the production of NADH and FADH<sub>2</sub>, which transfer electrons to the chain, ultimately leading to ATP synthesis.

**Discuss the evolutionary importance of the Krebs Cycle in aerobic organisms.**

The Krebs Cycle, also known as the citric acid cycle, is essential for aerobic organisms as it generates ATP through the oxidation of acetyl-CoA, providing the energy necessary for various biological processes.

**Identify and explain the role of one key enzyme in the Krebs Cycle.**

**Citrate synthase**

**Which enzyme is responsible for the conversion of succinate to fumarate?**

- A. Succinate dehydrogenase ✓**
- B. Malate dehydrogenase
- C. Fumarase
- D.  $\alpha$ -Ketoglutarate dehydrogenase

**Which of the following are products of one turn of the Krebs Cycle?**

- A. 3 NADH ✓**
- B. 1 FADH<sub>2</sub> ✓**
- C. 2 ATP
- D. 2 CO<sub>2</sub> ✓**

**Which of the following molecules is regenerated at the end of the Krebs Cycle?**

- A. Citrate
- B. Acetyl-CoA
- C. Oxaloacetate ✓**
- D. Fumarate

**Which enzyme catalyzes the conversion of citrate to isocitrate?**

- A. Citrate synthase
- B. Aconitase ✓**
- C. Isocitrate dehydrogenase
- D. Fumarase

**Which of the following are regulatory enzymes of the Krebs Cycle?**

- A. Citrate synthase ✓**
- B. Isocitrate dehydrogenase ✓**
- C. Pyruvate kinase
- D. α-Ketoglutarate dehydrogenase ✓**

**Where does the Krebs Cycle occur within the cell?**

- A. Cytoplasm
- B. Nucleus
- C. mitochondria ✓**
- D. Endoplasmic Reticulum

**Which molecule initiates the Krebs Cycle by combining with oxaloacetate?**

- A. Pyruvate
- B. Acetyl-CoA ✓**

- C. Citrate
- D. Glucose

**How many molecules of CO<sub>2</sub> are released per turn of the Krebs Cycle?**

- A. One
- B. Two ✓**
- C. Three
- D. Four

**Explain the significance of the Krebs Cycle in cellular respiration.**

**The Krebs Cycle is significant in cellular respiration because it produces electron carriers (NADH and FADH<sub>2</sub>) and ATP, which are vital for the subsequent stages of energy production in the cell.**

**The Krebs Cycle is involved in which of the following processes?**

- A. Fatty acid synthesis ✓**
- B. Gluconeogenesis ✓**
- C. Amino acid synthesis ✓**
- D. DNA replication

**Which of the following intermediates are part of the Krebs Cycle?**

- A. Citrate ✓**
- B. Isocitrate ✓**
- C. Pyruvate
- D. Malate ✓**

**How is the Krebs Cycle regulated, and why is this regulation important?**

**The Krebs Cycle is regulated by the levels of ATP, ADP, NADH, and Ca<sup>2+</sup>, which influence key enzymes like citrate synthase and isocitrate dehydrogenase, ensuring that the cycle operates efficiently according to the cell's energy needs.**

**Which of the following is a direct product of the Krebs Cycle?**

- A. Glucose
- B. NADH ✓**
- C. Pyruvate
- D. Oxygen

**Which molecules are electron carriers produced in the Krebs Cycle?**

- A. NADH ✓**
- B. FADH<sub>2</sub> ✓**
- C. ATP
- D. GTP

**What are the main control mechanisms of the Krebs Cycle?**

- A. Allosteric inhibition ✓**
- B. Feedback inhibition ✓**
- C. Competitive inhibition
- D. Substrate availability ✓**

**What is the primary purpose of the Krebs Cycle?**

- A. To synthesize glucose
- B. To generate ATP and electron carriers ✓**
- C. To produce oxygen
- D. To break down proteins