

Photosynthesis and Cellular Respiration Quiz Answer Key PDF

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What is the main pigment involved in capturing light energy for photosynthesis?

- A. Carotene
- B. Chlorophyll ✓**
- C. Xanthophyll
- D. Anthocyanin

Which organelle is primarily responsible for photosynthesis in plant cells?

- A. Mitochondria
- B. Ribosome
- C. Chloroplast ✓**
- D. Nucleus

Describe the relationship between photosynthesis and cellular respiration in the carbon cycle.

Photosynthesis converts carbon dioxide into glucose, while cellular respiration breaks down glucose back into carbon dioxide, maintaining the balance of carbon in the ecosystem.

What happens during glycolysis, and why is it important for cellular respiration?

Glycolysis breaks down glucose into pyruvate, producing ATP and NADH, which are essential for the subsequent stages of cellular respiration.

How does the structure of the mitochondria facilitate its role in cellular respiration?

The mitochondria's inner membrane provides a large surface area for the electron transport chain, and its matrix contains enzymes for the Krebs Cycle, both crucial for ATP production.

Discuss the significance of the electron transport chain in energy production.

The electron transport chain generates a proton gradient that drives ATP synthesis, producing the majority of ATP during cellular respiration.

How do photosynthesis and cellular respiration complement each other in maintaining ecological balance?

Photosynthesis produces oxygen and organic compounds used in cellular respiration, which in turn releases carbon dioxide needed for photosynthesis, creating a balanced cycle of energy and matter.

What are the products of cellular respiration? (Select all that apply)

- A. Oxygen
- B. Water ✓**
- C. Carbon dioxide ✓**
- D. ATP ✓**

In which part of the chloroplast do the light-dependent reactions occur?

- A. Stroma
- B. Thylakoid membranes ✓**
- C. Outer membrane
- D. Inner membrane

Which of the following are reactants in the process of photosynthesis? (Select all that apply)

- A. Oxygen
- B. Carbon dioxide ✓**
- C. Water ✓**
- D. Glucose

During which stage of cellular respiration is the majority of ATP produced?

- A. Glycolysis
- B. Krebs Cycle
- C. Electron Transport Chain ✓**

D. Fermentation

What is the primary purpose of cellular respiration?

- A. To produce glucose
- B. To convert light energy into chemical energy
- C. To produce ATP ✓**
- D. To release oxygen

Which processes occur in the mitochondria? (Select all that apply)

- A. Glycolysis
- B. Krebs Cycle ✓**
- C. Light-dependent reactions
- D. Electron Transport Chain ✓**

Which stages are part of cellular respiration? (Select all that apply)

- A. Glycolysis ✓**
- B. Calvin Cycle
- C. Krebs Cycle ✓**
- D. Electron Transport Chain ✓**

Explain the role of chlorophyll in photosynthesis.

Chlorophyll absorbs light energy, which is then used to convert carbon dioxide and water into glucose and oxygen during photosynthesis.

Which of the following are involved in the light-dependent reactions of photosynthesis? (Select all that apply)

- A. ATP production ✓**
- B. Oxygen release ✓**
- C. Glucose synthesis
- D. NADPH formation ✓**

Which gas is a byproduct of photosynthesis?

- A. Nitrogen
- B. Oxygen ✓**
- C. Methane
- D. Carbon dioxide

Which of the following is a product of photosynthesis?

- A. Carbon dioxide
- B. Water
- C. Glucose ✓**
- D. Nitrogen

Which of the following are true about the Calvin Cycle? (Select all that apply)

- A. It occurs in the stroma ✓**
- B. It produces glucose ✓**
- C. It requires light
- D. It uses ATP and NADPH ✓**

Which molecule is the final electron acceptor in the electron transport chain during aerobic respiration?

- A. Carbon dioxide
- B. Water
- C. Oxygen ✓**
- D. Glucose