

1. Which of the following is the correct equation for aerobic cellular respiration?

(B3.2)

- A) $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
- B) $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{ATP}$
- C) $\text{C}_6\text{H}_{12}\text{O}_6 \rightarrow \text{Lactic acid} + \text{ATP}$
- D) $6\text{O}_2 + 6\text{H}_2\text{O} \rightarrow \text{Glucose} + \text{Energy}$

2. Which organelle is the site of most of the reactions in aerobic respiration?

(B3.3)

- A) Nucleus
- B) Cytoplasm
- C) Mitochondrion
- D) Endoplasmic reticulum

3. Which stage of aerobic respiration produces the most ATP?

(B3.2)

- A) Glycolysis
- B) Krebs cycle
- C) Electron transport chain
- D) Fermentation

4. Which molecule is produced during glycolysis?

(B3.2)

- A) Lactic acid
- B) Pyruvate
- C) Oxygen
- D) Acetyl-CoA

5. What happens when oxygen is not available in cells?

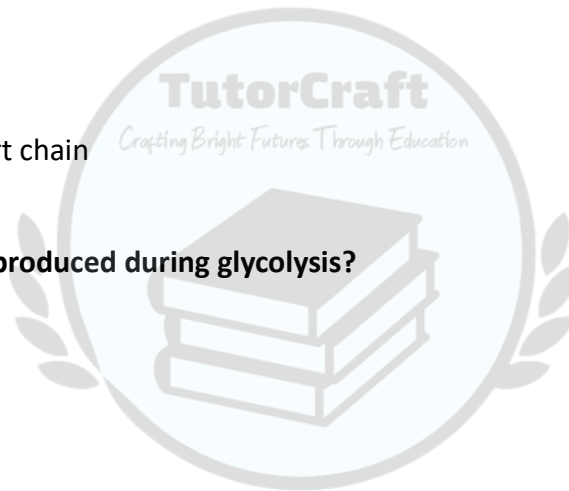
(B3.2)

- A) Aerobic respiration speeds up
- B) The cell stops producing ATP
- C) Anaerobic respiration (fermentation) occurs
- D) The mitochondria release glucose

6. Which of the following is not a product of aerobic respiration?

(B3.2)

- A) Carbon dioxide
- B) Oxygen



- C) Water
- D) ATP

7. **The role of NADH in cellular respiration is to:**

(B3.1, B3.2)

- A) Break down glucose
- B) Transfer high-energy electrons
- C) Store oxygen
- D) Produce lactic acid

8. **Which process occurs in the cytoplasm of the cell?**

(B3.2, B3.3)

- A) Krebs cycle
- B) Electron transport chain
- C) Glycolysis
- D) Pyruvate oxidation

9. **Fermentation in muscle cells produces:**

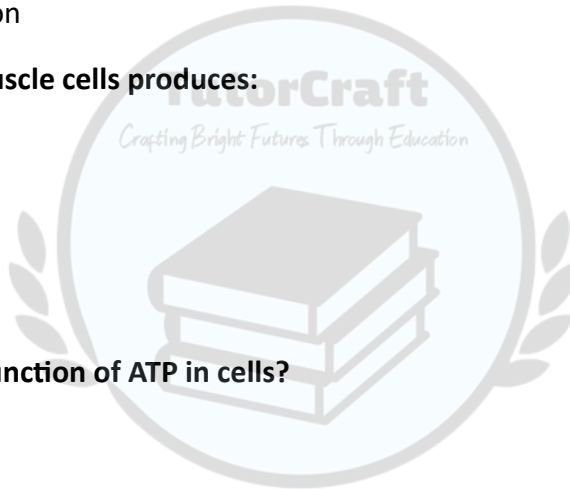
(B3.2)

- A) Ethanol
- B) Lactic acid
- C) Pyruvate
- D) Carbon dioxide

10. **What is the main function of ATP in cells?**

(B3.1)

- A) Transport oxygen
- B) Store genetic information
- C) Provide energy for cellular processes
- D) Break down fats and oils



11. **Define cellular respiration and identify its main purpose in cells.**

(B2.1, B3.2)

12. **Explain why mitochondria are often called the “powerhouses” of the cell.**

(B3.3)

13. **List the three main stages of aerobic respiration and describe where each occurs in the cell.**

(B3.2, B3.3)

14. Differentiate between aerobic and anaerobic respiration, providing one example of each.

(B3.2)

15. How does the structure of ATP relate to its function in the cell?

(B3.1)

16. You are investigating how different sugar sources affect the rate of cellular respiration in yeast. Design a simple experiment to test this. Include a hypothesis.

(B2.2, B2.1)

17. A person is sprinting and runs out of breath. Explain how their cells continue producing energy without oxygen, and the byproduct that builds up.

(B3.2)

18. Compare the ATP yield from one glucose molecule in aerobic versus anaerobic respiration. Why is one more efficient?

(B3.2, B3.1)

19. During intense exercise, lactic acid builds up in muscles. What impact does this have on performance and recovery? Suggest a biological explanation.

(B3.2, B3.3)

