

**Chapter 9 Cellular Respiration**

**Section 9-1 Chemical Pathways (pages 221-225)**



**Key Concepts**

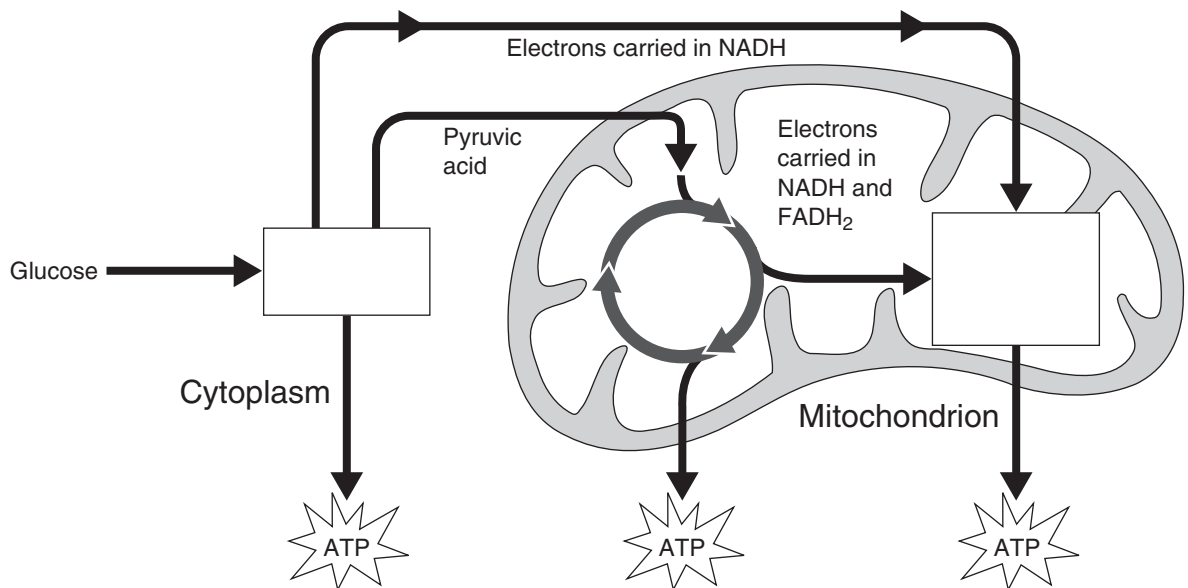
- What is cellular respiration?
- What happens during the process of glycolysis?
- What are the two main types of fermentation?

**Chemical Energy and Food (page 221)**

1. What is a calorie? \_\_\_\_\_  
\_\_\_\_\_
2. How many calories make up 1 Calorie? \_\_\_\_\_
3. Cellular respiration begins with a pathway called \_\_\_\_\_.
4. Is the following sentence true or false? Glycolysis releases a great amount of energy.  
\_\_\_\_\_

**Overview of Cellular Respiration (page 222)**

5. What is cellular respiration? \_\_\_\_\_  
\_\_\_\_\_
6. What is the equation for cellular respiration, using chemical formulas?  
\_\_\_\_\_
7. Label the three main stages of cellular respiration on the illustration of the complete process.



8. What would be the problem if cellular respiration took place in just one step?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

9. Where does glycolysis take place? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

10. Where do the Krebs cycle and electron transport take place? \_\_\_\_\_

\_\_\_\_\_

**Glycolysis (page 223)**

11. What is glycolysis? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

12. How does the cell get glycolysis going? \_\_\_\_\_

\_\_\_\_\_

13. If the cell uses 2 ATP molecules at the beginning of glycolysis, how does it end up with a net gain of 2 ATP molecules? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

14. What is NAD<sup>+</sup>? \_\_\_\_\_

\_\_\_\_\_

15. What is the function of NAD<sup>+</sup> in glycolysis? \_\_\_\_\_

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

16. Why can glycolysis supply energy to cells when oxygen is not available? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

17. What problem does a cell have when it generates large amounts of ATP from glycolysis? \_\_\_\_\_

\_\_\_\_\_

## **Fermentation (pages 224–225)**

18. What is fermentation? \_\_\_\_\_  
\_\_\_\_\_
19. How does fermentation allow glycolysis to continue? \_\_\_\_\_  
\_\_\_\_\_
20. Because fermentation does not require oxygen, it is said to be \_\_\_\_\_.
21. What are the two main types of fermentation?  
a. \_\_\_\_\_  
b. \_\_\_\_\_
22. What organisms use alcoholic fermentation? \_\_\_\_\_  
\_\_\_\_\_
23. What is the equation for alcoholic fermentation after glycolysis?  
\_\_\_\_\_
24. What happens to the small amount of alcohol produced in alcoholic fermentation during the baking of bread? \_\_\_\_\_
25. What does lactic acid fermentation convert into lactic acid? \_\_\_\_\_  
\_\_\_\_\_
26. What is the equation for lactic acid fermentation after glycolysis?  
\_\_\_\_\_
27. During rapid exercise, how do your muscle cells produce ATP? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### **Reading Skill Practice**

When you read about complex topics, writing an outline can help you organize and understand the material. Outline Section 9–1 by using the headings and subheadings as topics and subtopics and then writing the most important details under each topic. Do your work on a separate sheet of paper.