Name Period Date

SECTION 4.6 | FERMENTATION
Study Guide

KEY CONCEPT

Fermentation allows the production of a small amount of ATP without oxygen.

VOCABULARY
fermentation
lactic acid

MAIN IDEA: Fermentation allows glycolysis to continue.

1. What is the importance of fermentation?

2. What is the function of fermentation?

3. When does fermentation take place in your muscle cells?

4. Why is fermentation an anaerobic process?

5. How is fermentation involved in the production of ATP?

In the space below, show and label the process of lactic acid fermentation.

Lactic Acid Fermentation

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MAIN IDEA: Fermentation and its products are important in several ways.
In the space below, show and label the process of alcoholic fermentation.

Alcoholic Fermentation

6. How are lactic acid fermentation and alcoholic fermentation similar? different?

7. Name one commercial use of lactic acid fermentation.

8. Name one commercial use of alcoholic fermentation.

Vocabulary Check

9. The term *fermentation* is based on a word that means "to bubble." How is this meaning related to your understanding of the fermentation process?

10. What is lactic acid?

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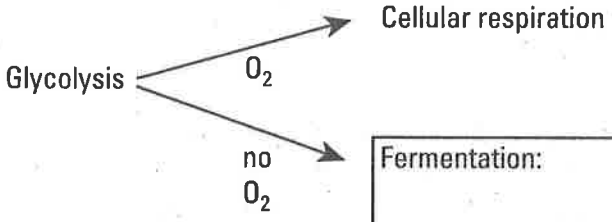
SECTION 4.6

FERMENTATION
Power Notes



Lactic Acid Fermentation

Process:

Alcoholic Fermentation

Process:

Uses of Fermentation

1.

2.

3.

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Name Period Date

SECTION 4.6

FERMENTATION
Reinforcement

KEY CONCEPT Fermentation allows the production of a small amount of ATP without oxygen.

When oxygen is not available in cells, fermentation takes place instead. **Fermentation** is an anaerobic process that allows glycolysis to continue, but does not produce ATP on its own. The main function of fermentation is to remove electrons from molecules of NADH, the energy-carrier produced by glycolysis, to form NAD^+. The molecules of NAD^+ are recycled to glycolysis, which can continue to produce a small amount of ATP without oxygen. There are two main types of fermentation.

- Lactic acid fermentation: Pyruvate and NADH from glycolysis enter the fermentation process. Energy from the NADH molecules is used to convert pyruvate into lactic acid. NADH molecules are converted into NAD^+ molecules that are recycled to glycolysis to pick up more electrons. This type of fermentation occurs in many types of cells, including human muscle cells.
- Alcoholic fermentation: Like lactic acid fermentation, pyruvate and NADH from glycolysis enter fermentation. Energy from NADH is used to break down pyruvate into an alcohol and carbon dioxide. NADH molecules are converted into NAD^+ molecules that are recycled to glycolysis. Alcoholic fermentation is used by many types of yeast.

Both types of fermentation are used in various commercial processes. Lactic acid fermentation is used to make yogurt. Alcoholic fermentation is used to make dough rise.

1. What is the function of fermentation?

2. How are lactic acid fermentation and alcoholic fermentation similar? different?

3. How is fermentation used in commercial processes?

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