ANAEROBIC RESPIRATION

Lesson objectives

- **To compare the synthesis of ATP in aerobic and anaerobic respiration.**

How bacteria survive in human intestine without oxygen?

Types of cellular respiration

- 1) aerobic respiration (requires O_2)
- 2) anaerobic respiration (doesn't require O_2)

Anaerobic respiration

- Oxygen is NOT used.
- Some organisms use this type of respiration (anaerobic bacteria, yeast).
- Food molecule is NOT oxidized by O_2 .
- Glucose is NOT totally oxidized

Types of anaerobic respiration:

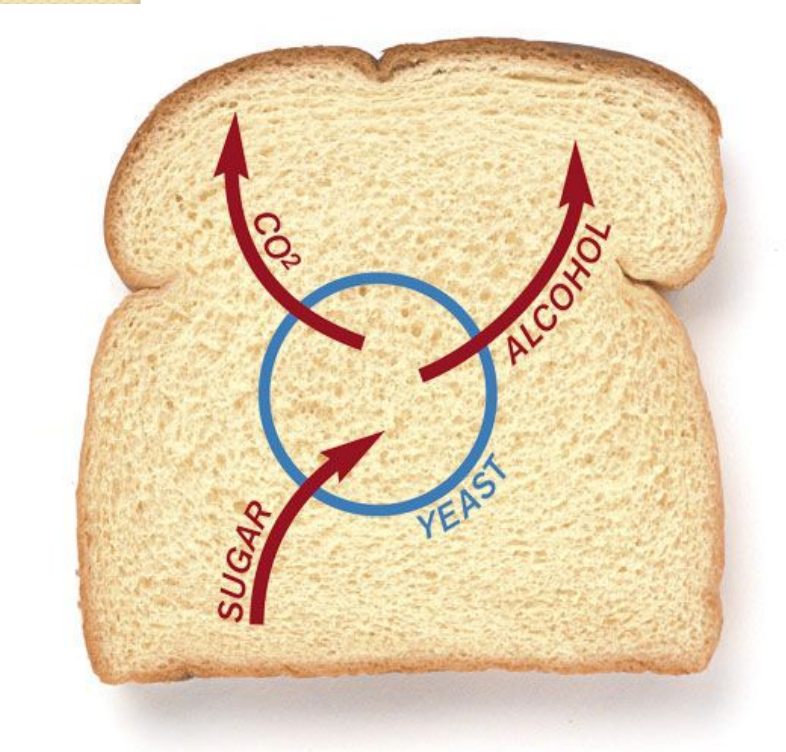
- 1) alcoholic fermentation
- 2) lactic acid fermentation

Alcoholic fermentation

- Starts with glycolysis as aerobic respiration.
- End products are: alcohol and carbon dioxide.
- Only 2 ATP are produced
- Summary:
- $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2 + 2ATP$
- Occurs in: yeast, other unicellular organisms

Use of alcoholic fermentation

- Wine, beer production, baking

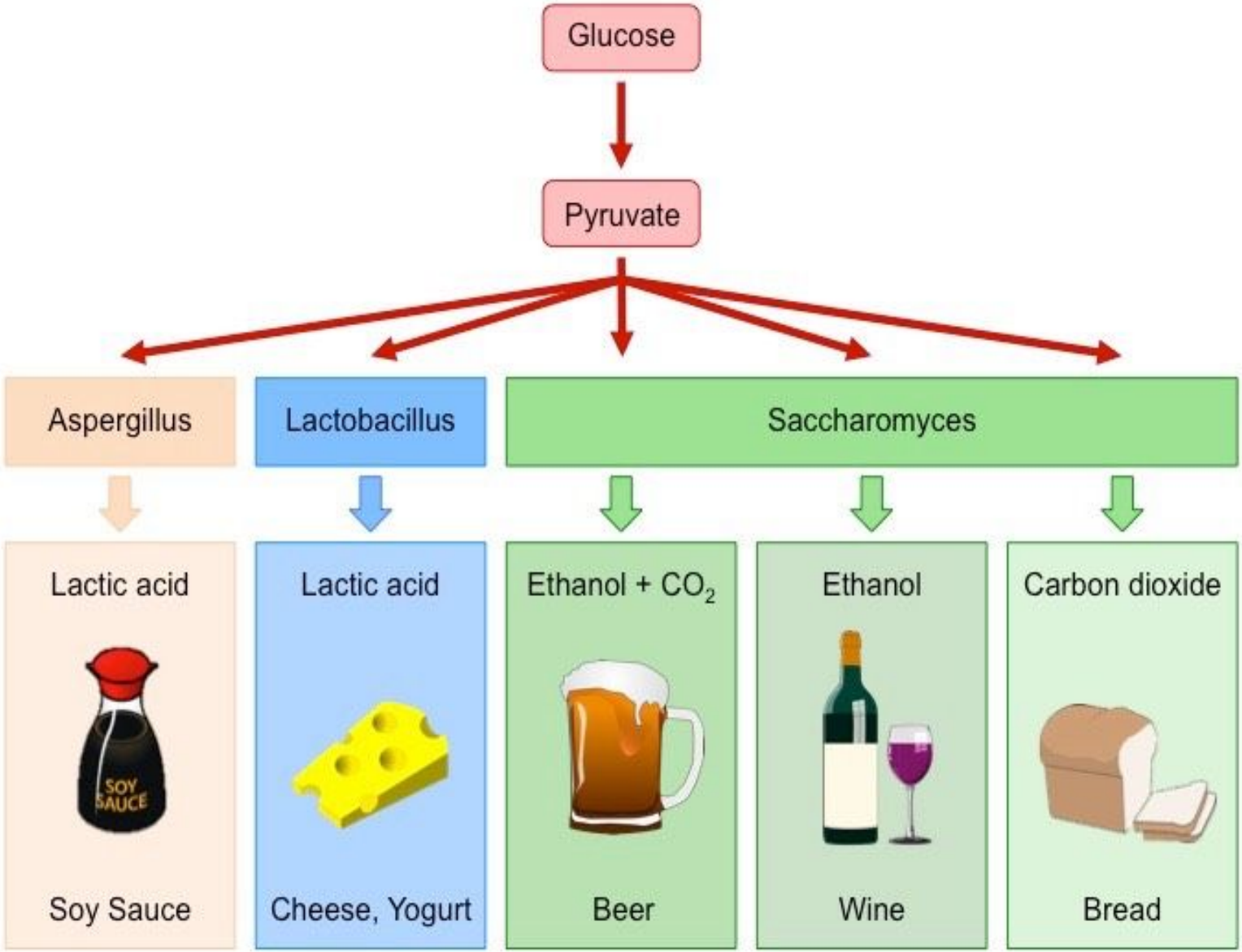


Lactic acid fermentation

- Starts with glycolysis as in aerobic respiration.
- End products is: lactic acid
- Only 2 ATP are produced
- Summary:
- $C_6H_{12}O_6 \rightarrow 2C_3H_6O_3 + 2ATP$
- Occurs in: fungi, other unicellular organisms, muscle cells during active exercises.
- Produce soreness when build up in muscles.

Use of lactic acid fermentation

- Cheese, yogurt, soy sauce production


Glucose
Pyruvate
Aspergillus
Lactobacillus
Saccharomyces
Lactic acid
Lactic acid
Ethanol + CO_2
Ethanol
Carbon dioxide
SOY SAUCE
Soy Sauce
Cheese, Yogurt
Beer
Wine
Bread

Comparison of aerobic and anaerobic respirationч

	Anaerobic respiration	Aerobic respiration
Energy yield	2 ATP	30-32 ATP
End products	Lactic acid ($C_3H_6O_3$) or Ethanol and carbon dioxide (C_2H_5OH and CO_2)	Carbon dioxide and water (CO_2 H_2O)
Oxygen usage	NOT used	Used

Let's do the activity on p. 71

Homework

- Read p.70-71
- Answer to literacy questions on p 71.
- New words