

Do Now

How do people in jail get booze
(alcohol)?

Find something w/ sugar
(pop, cake, fruit)
Leave it in the open air

What happens when your cells do not
get enough oxygen?

9/24/10

Two Types of Reactions

1. **Aerobic Reactions:** (chemical reactions that require oxygen)

ex:

- cellular respiration (remember...Oxygen is a necessary input)

1. **Anaerobic Reactions:** (chemical reactions that do not require oxygen)

ex:

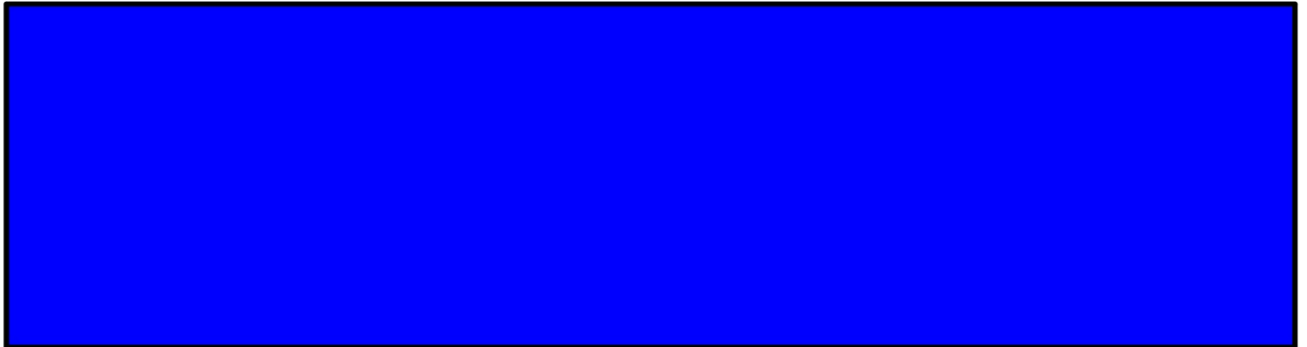
- Lactic Acid Fermentation (done by humans)

- Alcoholic Fermentation (done by yeast)

Why Would Your Cells Not Have Enough Oxygen?

-if you are **not in good shape** your blood cannot get enough oxygen to your cells

-if you **work out too hard**, your blood cannot get enough oxygen to your cells



Can Cells Break Down Glucose into ATP w/out Oxygen?

So...if your muscle cells temporarily do not have oxygen...do you think they can still make ATP?

The answer is "yes, they do make ATP, but instead of cellular respiration which requires oxygen, they do lactic acid fermentation which does not require fermentation."

oxygen

Lactic Acid Fermentation

Lactic Acid Fermentation: (when animal cells breakdown glucose into ATP without using oxygen)

- inputs = glucose (sugar)
- the outputs of lactic acid fermentation is lactic acid and ATP
- the lactic acid forms in your muscles
- the lactic acid makes you "feel the burn"
aerobic or anerobic?

So if you are out of shape and you work out, what will your muscles form?

So if you work out too hard and get "winded" (can't get enough oxygen to your muscles) what will your muscles form?



Alcoholic Fermentation

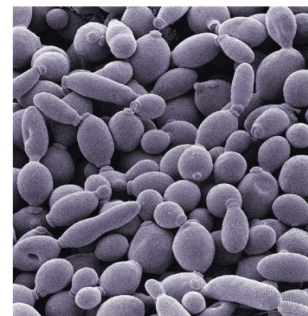
Alcoholic Fermentation: (when yeast cells breakdown glucose into ATP without using oxygen)

- inputs = glucose (sugar)
- the outputs of ~~lactic acid~~ fermentation is ethyl alcohol (the type people drink) and CO₂, and ATP

-only yeast does this type of fermentation

aerobic or anerobic?

What would happen if humans bodies could do Alcoholic Fermentation?



What must be missing for Lactic Acid Fermentation to occur?

What must be missing for Alcoholic Fermentation to occur?

In what type of organisms does Lactic Acid Fermentation occur?

In what type of organisms does Alcoholic Fermentation occur?

Which process of breaking down glucose is the most beneficial to an organism?

Table 9.1 Comparison of lactic acid and alcoholic fermentation		
Lactic acid	Alcoholic	Cellular respiration
glucose ↓ glycolysis (pyruvic acid) ↓ lactic acid + 2 ATP	glucose ↓ glycolysis (pyruvic acid) ↓ carbon dioxide + alcohol + 2 ATP	glucose ↓ glycolysis (pyruvic acid) ↓ carbon dioxide + water + 38 ATP