

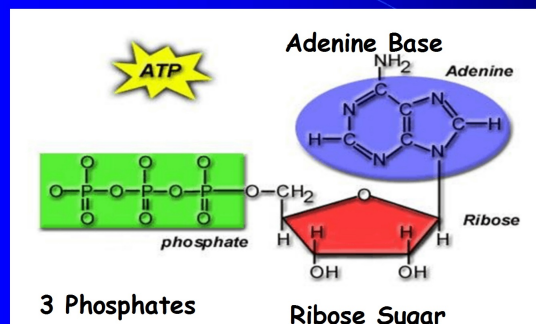
ADP, ATP and Cellular Respiration

What Is ATP?

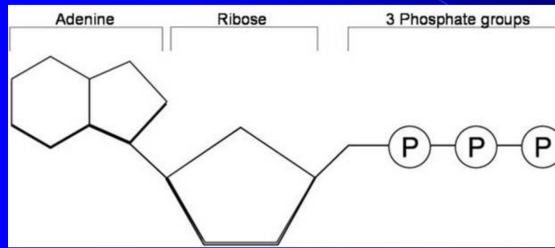
Adenosine Triphosphate

It is an energy molecule. All living organisms need energy for their life processes.

Chemical Structure of ATP



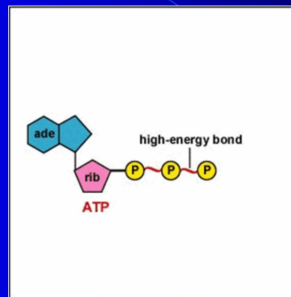
Structure of ATP



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How Do We Get Energy From ATP?

By breaking the high-energy bonds between the last two phosphates in ATP.
(ATP - P → ADP)



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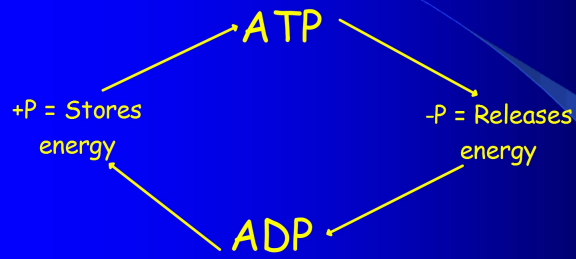
How is ATP Re-Made?

The reverse of the previous process occurs.



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The ADP-ATP Cycle



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When is ATP Made in the Body?

During a process called Cellular Respiration that takes place in **ALL** living organisms.



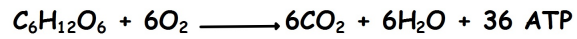
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Cellular Respiration

- A metabolic pathway that takes place in the presence of oxygen (aerobic).
- Breakdown of one glucose molecule produces 36-38 ATP molecules

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Equation for Cellular Respiration

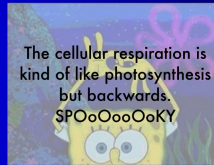


Reactants= Glucose + Oxygen

Products= Carbon Dioxide + Water + Energy

waste

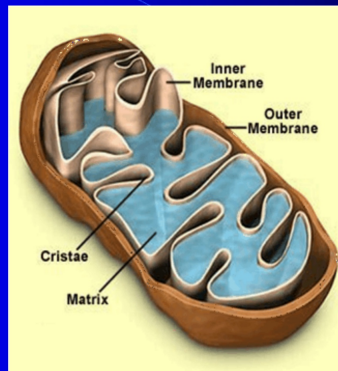
The cellular respiration is kind of like photosynthesis but backwards.
SPOoOooOoKY



Where Does Cellular Respiration Take Place?

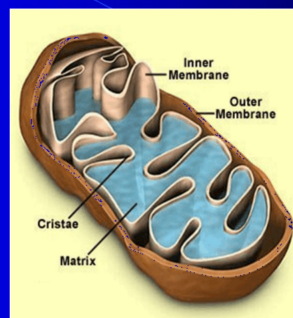
It actually takes place in two parts of the cell:

- Starts in the Cytoplasm
- Moves to the Mitochondria if oxygen is present.



Mitochondria Structure

- Smooth outer Membrane
- Folded inner membrane
- Folds increase surface area and allow for more ATP production.



Fermentation

- Occurs when O_2 NOT present (anaerobic)
- Makes only 2 ATP molecules.
- Happens only in the cytoplasm.
- Two types:
 - Lactic Acid Fermentation
 - Alcoholic Fermentation

Lactic Acid Fermentation

- Occurs in the muscles of animals when oxygen runs out.
- Responsible for the burning feeling after exercising.
- Also, occurs in bacteria. Used in the production of yogurt and cheese.

Alcoholic Fermentation

- Occurs in bacteria and yeast.
- Used for the production of alcoholic beverages and making bread rise.