



AEROBIC RESPIRATION

- The overall reaction is:

$$\text{Glucose} + \text{Oxygen} \longrightarrow \text{Carbon Dioxide} + \text{Water} + \text{Energy}$$

$$\text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 \longrightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{Energy}$$
- Respiration is an exergonic reaction. It gives out _____.
- There are 4 steps in the reaction:
 1. Glycolysis
 This occurs in the cytoplasm, where glucose breaks down to pyruvate (also called pyruvic acid), which then enters the mitochondrion. This occurs in both aerobic and _____ respiration.
 2. First Part of Krebs Citric Acid Cycle
 This occurs in the mitochondrion, where pyruvate is broken down to carbon dioxide in a process that does not use oxygen. A co-enzyme called NAD⁺ becomes NADH.
 3. Second Part of Krebs Citric Acid Cycle
 This occurs on the inner membranes of the mitochondrion. NADH is converted to NAD⁺ in a process that uses oxygen.

4. ATP Synthesis

This occurs in the mitochondrion. Hydrogen ions are pumped across the inner membrane of the mitochondrion. Then both the hydrogen ions and an enzyme called ATP Synthetase convert ADP plus a phosphate group to ATP.

ANAEROBIC RESPIRATION

- Anaerobic Respiration is the breakdown of glucose (Glycolysis) to form energy-rich ATP and does _____ require oxygen.
- It is _____ efficient than aerobic respiration.
- It occurs in 2 different ways in different organisms.

