

Vocabulary: Cell Energy Cycle



Vocabulary

- Aerobic respiration – a chemical process in which oxygen is used to produce energy from carbohydrates.
 - Aerobic respiration produces much more energy than anaerobic respiration. Aerobic respiration results in the formation of 30 to 38 ATP molecules per molecule of glucose.
- Anaerobic respiration – a chemical process in which carbohydrates are partially broken down without using oxygen. A small amount of energy is produced in this manner.
 - Anaerobic respiration produces much less energy than aerobic respiration, resulting in the formation of 2 ATP molecules per molecule of glucose.
- ATP – adenosine triphosphate, a molecule that provides energy for cellular processes.
 - Energy is released when an ATP molecule is converted to an *ADP* (adenosine diphosphate) molecule.
- Cellular respiration – a process by which energy is released from food.
 - When oxygen is present, oxygen and glucose combine to produce energy in the form of ATP molecules. The by-products of cellular respiration in the presence of oxygen are carbon dioxide and water.
 - When oxygen is not present, a smaller amount of energy is produced from the breakdown of glucose. Possible by-products include lactic acid and alcohol.
- Chemical energy – energy that is released or absorbed in chemical reactions.
 - In the cell, chemical energy is stored in glucose molecules and ATP molecules.
 - Chemical energy is released when glucose molecules are broken down and when ATP molecules are converted to ADP.
- Chlorophyll – a green pigment inside chloroplasts that converts light energy into a chemical form the plant can use.
- Chloroplast – an organelle found in the cells of plants and algae that contains chlorophyll and is the site of photosynthesis.
- Cytoplasm – a jelly-like substance composed mainly of water and found between the cell membrane and the nucleus.
- Glucose – a simple sugar that serves as the major energy source for all cellular processes. The chemical formula of glucose is $C_6H_{12}O_6$.



- Glycolysis – a process by which glucose is partially broken down into pyruvic acid without the use of oxygen.
 - Glycolysis occurs in the cytoplasm of the cell.
- Mitochondria – organelles found in eukaryotic cells that are the site of aerobic respiration.
- Photosynthesis – the process by which light energy is used to combine water and carbon dioxide into glucose and oxygen.
- Radiant energy – energy in the form of *electromagnetic radiation*.
 - Light and heat are examples of radiant energy.

