

## New Terms - Cellular Respiration

**cellular respiration** - known as an energy releasing pathway where glucose is broken down and carbon dioxide is released to produce ATP for the cells use.

**anaerobic pathways** - energy releasing pathway that does not require oxygen to release energy and occurs in the cytoplasm. Energy releasing mechanism where oxygen is absent.

**aerobic respiration** - energy releasing pathway that requires oxygen to be completed, part of the pathway occurs in the cytoplasm and the major part takes place in the mitochondrion.

**glycolysis** - literally means sugar splitting. Is the portion of aerobic respiration that occurs in the cytoplasm and takes a molecule of glucose and splits it into two molecules of pyruvate. The process yields a net gain of two molecules of ATP.

**Krebs cycle** - the process which takes the pyruvic acid (pyruvate) and breaks it down into molecules of carbon dioxide and water. The process also yields two molecules of ATP.

**electron transport system** - series of coenzymes that help in phosphorylation in draining energy from electrons that pass through it to produce ATP. This is the highest energy producing step in aerobic respiration yielding thirty-two molecules of ATP.

**chemiosmosis** - involves the pumping of protons through channels in the membranes of the mitochondria from the inner to the outer compartment - energy derived from this process helps the electron transport system to produce ATP.

**NAD** - nicotinamide adenine dinucleotide, a coenzyme that readily accepts hydrogen

**NADH** - nicotinamide adenine dinucleotide with attached hydrogen - a coenzyme found in cellular respiration that delivers hydrogen to the electron transport system.

**FAD** - flavin adenine dinucleotide, an electron carrier that picks up hydrogen in the Krebs cycle.

**FADH<sub>2</sub>** - flavin adenine dinucleotide with hydrogen attached. Is the molecule that delivers the hydrogen to the electron transport system.

**cristae** - the folds of membrane within the mitochondrion, similar to the thylakoid in plants.

**pyruvate** - also called pyruvic acid, is a three carbon substance that is produced by glycolysis.

**acetyl-CoA** - acetyl-coenzyme A; further breakdown of pyruvate yields these

- molecules which enter the Krebs cycle.
- fermentation** - anaerobic process where energy can be released from glucose even though oxygen is not available. Occurs in yeast cells. Takes place primarily in bacteria and muscle cells of animals. Fermentation does not break down glucose molecules completely.
- alcoholic fermentation** - process that yeasts use to release energy. The product is carbon dioxide and when placed in dough, cause it to expand or rise.
- lactate fermentation** - quick ATP fix for muscle cells during a race
- lactic acid** - the product of lactate fermentation, when produced by bacteria in milk it turns sour.
- energy releasing pathway** - series of events that unleashes stored energy to be used by the cell
- phosphorylation** - process by which one or more phosphate groups are added to a molecule.