Cellular Metabolism Chapter

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Overview

The complete set of biochemical reactions that occur in cells is known as metabolism. The term, metabolism, is also used to refer to collection of reactions occurring in the whole organism when it consumes energy and the raw building blocks to synthesize molecules and structures needed for life.

The common method used to determine the metabolic rate of an organism is the measurement of oxygen consumption by the organism. An oxygen sensor can measure the change in the concentration of oxygen in the environment habitated by the organism, or the difference in the concentration of oxygen in the air that is inhaled and exhaled by the organism. The rate of oxygen consumption is used as an expression of the metabolic rate of the organism.

Some oxygen sensors, like Clark-type dissolved oxygen probes, can be used to measure consumption in isolated cellular organelles, like the mitochondria, in addition to measurements from whole organisms. In both cases, the rate of oxygen consumption is depenent on the size of the organism, or the amount of organelles used in the reaction. the same probe can also be used to measure oxygen production by plants, or plant cell organelles like chloroplasts.