SCI – CONSUMERS AND ENERGY

Consumers need energy to move about and to perform such internal functions as pumping blood. In addition, consumers need energy to synthesize all the molecules required for growth, maintenance and repair of their bodies. This energy comes from the breakdown of organic molecules in food. Between 60 and 90% of the food that we and other consumers eat and digest acts as "fuel" to provide energy.

Digestion

First, the foods that we eat are digested—broken down into simpler molecules: glucose, amino-acids, and fatty acids— in the stomach or intestine these simpler molecules are then absorbed from the intestine into the bloodstream and transported to the body's individual cells.

Respiration

Inside each cell, organic molecules may be broken down through a process called cell respiration to release the energy required for the work done by that cell. Most commonly, cell respiration involves the breakdown of glucose, and the overall chemical equation is basically the reverse of that for photosynthesis.

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + \text{Energy}$

The purpose of cell respiration is to release the potential energy contained in organic molecules to perform the activities of the organism. Oxygen is released in photosynthesis, but consumed in cell respiration to breakdown glucose to carbon dioxide and water. Oxygen absorbed through the lungs with every inhalation and is transported to all the body's cells via the circulatory system. Carbon dioxide which is formed as a waste product, moves from the cells into the circulatory system and is eliminated through the lungs with every exhalation.