

Cell Metabolism

There is a normal process of building up and breaking down of cells within the body known as metabolism, which can refer to all chemical reactions that occur within all living organisms to include digestion and transportation of substances into and between different cells. These enzyme-catalyzed reactions, called intermediate metabolism “*allow organisms to grow and reproduce, maintain their structures, and respond to their environment.*”ⁱ Two classifications of metabolism are *catabolism* which breaks down organic matter and harvests the energy via cellular respiration needed by anabolic reactions, and *anabolism* which uses the energy to build proteins and nucleic acids which are components of cells. Chemical reactions are organized into metabolic pathways whereby one chemical is altered or transformed into another chemical by a sequence of enzymes that are crucial to metabolism. The sequence of enzymes allows organisms to motivate necessary reactions; that need energy that would not occur on their own otherwise; by way of linking them to spontaneous reactions causing energy to be released. This catalyst caused by these enzymes allows reactions to ensue more quickly and allow for the regulation of metabolic pathways in response to changes within the cell’s environment or to signals from other cells. Cell signaling is part of a multifaceted system of communication governing cell activities and the coordination of cell actions.

“The cell has the ability perceive and correctly respond to their microenvironment for the purposes of development, tissue repair, and immunity as well as normal tissue homeostasis. Errors in cellular information processing are responsible for diseases such as cancer, autoimmunity and diabetes. By understanding cell signaling, diseases may be treated effectively

and, theoretically, artificial tissues may be created...Changes in the networks may affect transmission and flow of information. ” ii

12 Wikipedia, the free Encyclopedia; Metabolism

12 Wikipedia, the free Encyclopedia; Cell signaling