

Overview of Organic Compounds and Anabolism Reactions

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Description

The cell constantly reacts to its environment. Metabolism all the reactions going on in cells. Metabolism can be categorized into two main types. Anabolism reactions in which smaller molecules are combined into larger ones. The joining of amino acids to form proteins serves as an example. Catabolism, the opposite, occurs when large molecules are broken down into smaller ones. A liquid called Extra Cellular Fluid surrounds living cells. The Extra Cellular Fluid supplies cells with all the products necessary for their functions. Extra Cellular Fluid is derived from blood. The outermost skin cells are not covered in liquid; however, they are no longer living.

Other cells exposed to the surface, such as those of the eye, need moisture. In the eye, tears produced by glands act as the source of moisture and nutrients. The eyelids help to sweep the tears across the surface of the eye. Certain breeds of dogs, such as the pug, have eyes that bulge from the eye socket. This can be so severe that the eyelids cannot keep the surface of the eye moist with tears. This results in a disease condition on the surface of the eye. Artificial tears are often used to keep the surface moist. Water is the major component of Extra Cellular Fluid. Conversely, carbon dioxide passes from the cells through it. And there are many inorganic ions in the Extra Cellular Fluid. Some ions, macro minerals, are present in large amounts. Trace minerals are present in much smaller amounts. Both macro minerals and trace minerals are essential for cellular function. Many of the trace minerals are needed for enzymes to function. Organic compounds, the lipids, proteins, and carbohydrates, are also delivered by the Extra Cellular Fluid.

Metabolism produces waste products, which must be removed from the cells. These waste products are eliminated by the Extra Cellular Fluid. Without elimination, the waste products actually become toxic to the cell. Many of the products in Extra Cellular Fluid must be maintained at constant normal concentrations. Cells will be unable to function properly if there is too much or too little of certain products. Glucose provides an excellent example. Small puppies can become low in blood sugar if they have too many parasites robbing them of nutrients. When the sugar in Extra Cellular Fluid becomes too low, the cells do not have adequate energy. The puppy can become weak or, in severe cases, develop a seizure. Homeostasis is the maintenance of Extra Cellular Fluid. Homeostasis allows maintenance of normal concentrations of molecules in spite of a wide variety of external conditions. Cells must be able to obtain products from the Extra Cellular Fluid (ECF). It is not enough that the chemicals just exist in the Extra Cellular Fluid there must be means for their exchange with the cell.

The cell membrane does not allow totally free diffusion. Diffusion is influenced by the size of the molecule, its charge, and its ability to dissolve in lipid. In general, the smaller the molecule, the more easily the diffusion occurs. Some large molecules such as proteins are unable to diffuse through the membrane and must be transported in other ways. As previously learned, the property of allowing only certain molecules to diffuse through the membrane is called semi-permeability. This characteristic sets the stage for a special type of diffusion, called osmosis. A solvent moves across the membrane to equalize the concentration however, the molecules dissolved in the water (called solutes) cannot pass through the membrane.