Top of Form

Organic Compounds

A carbohydrate is an energy-rich ……………………….. compound made of the elements………………………………….. hydrogen, and oxygen. Sugars and starches are examples of………………………… Sugars are produced during the food-making process that takes place in plants. Foods such as fruits and some vegetables have a high sugar content. Sugar molecules can combine, forming large molecules called starches, or complex carbohydrates. Plant cells store excess energy in molecules of starch. Many foods that come from……………………….. contain starch. These foods include potatoes,…………………… rice, and bread. When you eat these foods, your body breaks down the starch into glucose, a sugar that your cells can use to produce energy. Carbohydrates are important components of some cell parts. For example, the…………………………..found in the cell walls of plants is a type of carbohydrate. Carbohydrates are also found in cell membranes.

Fats, oils, and waxes are all lipids. Like carbohydrates, lipids are ………………………organic compounds made of carbon, hydrogen, and oxygen. Lipids contain even more energy than carbohydrates. Cells store energy in  for later use. For example, during winter, a dormant bear lives on the energy stored in fat within its cells. In addition,  are made mainly of lipids.

**Proteins**

Proteins are large organic molecules made of carbon, hydrogen, oxygen, nitrogen, and in some cases, sulfur. Foods that are high in protein include meat, , fish, nuts, and beans.

**Structure of Proteins**

Protein molecules are made up of smaller molecules called . Although there are only 20 common amino acids, cells can combine them in different ways to form  of different proteins. The kinds of amino acids and the order in which they link together determine the type of  that forms. You can think of the 20 amino acids as being like the 26 letters of the alphabet. Those 26 letters can form thousands of words. The letters you use and their order determine the words you form. Even a change in one letter, for example, from rice to mice, creates a new word.

Much of the structure of cells is made up of proteins. Proteins form parts of cell membranes. Proteins also make up many of the organelles within the cell. The proteins known as  perform important functions in the chemical reactions that take place in cells. An enzyme is a type of protein that speeds up a chemical reaction in a living thing. Enzymes in your saliva speed up the  of food by breaking down starches into sugars in your mouth.

**Nucleic Acids**

Nucleic acids are very long organic molecules made up of carbon, oxygen, hydrogen, nitrogen, and phosphorus. Nucleic acids contain the instructions that cells need to carry out all the functions of life. There are  kinds of nucleic acids. Deoxyribonucleic acid, or DNA, is the material that carries information about an organism and is passed from  to offspring. The information in DNA also directs all of the cell's functions. Most of the DNA in a cell is found in the  in the nucleus. Ribonucleic acid, or RNA, plays an important role in the production of proteins. RNA is found in the cytoplasm as well as in the nucleus.

**Water and Living Things**

Did you know that water makes up about  of your body? Water plays many important roles in cells. For example, most chemical reactions in cells involve substances that are dissolved in . Also, water molecules themselves take part in many chemical reactions in cells. Most chemical reactions within cells could not take place without water. Water also helps cells keep their size and shape. In addition, water changes temperature slowly, it helps keep the  of cells from changing rapidly.

Bottom of Form