periódica de alguna manera. ¿Cómo? Las recomendaciones concretas son las siguientes:

- actualizar el logotipo de la edición;
- el tamaño de la cabecera debe coincidir con el tamaño del material, es decir, para grandes materiales es necesario usar grandes títulos, para los pequeños letra de carderilla;
- publicar las fotos de las personas reales que hacen el trabajo real;
- en cada página debe encontrarse la ilustración principal.

LITERATURA

1 Своробь, А. К. Дизайн газеты : учеб.-метод. Комплекс / А. К. Своробь, С. В. Харитонова. –Минск : БГУ, 2015. – 118 с.

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THE CHEMICAL BASIS OF LIFE

In order to understand how any biological system works, from your body to something as complex as a forest, you need to have a basic understanding of chemistry. Basically, biology is the study of how living organisms process matter and energy.

All objects, whether living or nonliving, are made of matter. Matter is anything that has mass and occupies space. In the past, the structure and transformation of matter was mainly of interest to chemists, not biologists.

However, the boundary between chemistry and biology has been blurred over the past few decades, as advances in biology have come about through careful study of the molecular and atomic nature of life and living systems. In other words, we have to understand some basic chemistry in order to fully understand important ideas in biology.

The most common elements in living things are carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur. Living things also contain smaller amounts of other elements, including calcium, iron, magnesium, potassium, and sodium.

Water is the simplest chemical compound of importance to living things. Most organisms consist of 50 to 95 per cent water. Many properties of water make it essential to life processes. Its ability to dissolve a great variety of substances is vital because most chemical reactions within organisms can occur only in water solution. In addition, water itself enters into many chemical reactions in living cells. Water also transports nutrients within organisms.

Except for water, all the principal compounds in living things contain carbon. Each carbon atom can form four chemical bonds of great stability with other atoms. Carbon atoms can also bond with one another and form chains of various lengths and shapes. These properties appear to be unique to carbon, so it is hard to imagine life as we know it based on anything except carbon chemistry.

What makes Carbon special to call it the chemical basis of life?

Carbon has very interesting chemical properties, which explain its position of privilege:

1.Carbon has four valences. Valences are the number of joints that are able to form an atom with any other, and carbon can form with four others, one of the highest values in the possible (at least for small atoms).

2. Because the carbon atom has four electrons in the outer shell, it is able to bind itself to form long chains, or even three dimensional networks, also those carbon chains or networks may join other atoms such as hydrogen, oxygen and nitrogen, forming many complex compounds, just the kind of complexity that makes life possible.

3.Carbon is an element unique in chemistry because it forms a number of compounds greater than the sum total of all other components combined. The largest group of these compounds is composed of carbon and hydrogen.

4. Carbon is an abundant element on earth. There are about 16 million carbon compounds.

5.Carbon like water follows a cycle. The earth contains a quantity of carbon that does not vary over time only transformed from one phase to another, and other living beings.

Carbon can form thousands of kinds of small molecules. However, almost all living material consists of about 50 kinds of carbon molecules and of the macromolecules (large, complex molecules) formed from them. There are four main types of these macromolecules. They are carbohydrates; lipids; proteins; and nucleic acids.

Carbohydrates consist of carbon, hydrogen, and oxygen. Carbohydrates contain these elements in the proportion of roughly 1 atom each of carbon and oxygen to every 2 atoms of hydrogen. The basic carbohydrate molecules are simple sugars called monosaccharides. The principal monosaccharides include glucose, fructose, and galactose. Sugars provide energy to power all cellular processes.

Living things combine simple sugars into long chains called polysaccharides.Polysaccharides include starch, cellulose, and glycogen. Some polysaccharides serve as a means of food storage. Starches are the main carbohydrate storage material in plants, and glycogen serves the same function in animals. Other polysaccharides provide structural support. The polysaccharides cellulose is the chief supporting material in green plants. Wood, for example, consists almost entirely of cellulose.

Lipids consist primarily of carbon and hydrogen, but they also contain a small proportion of oxygen. Some lipids contain nitrogen and phosphorus as well. The best known lipids are animal fats and vegetable oils, which are rich sources of energy.

Importance of lipids. Lipids are vital to animals and plants in many ways. They are a concentrated source of food energy and yield about twice as many calories as equal weight of protein or carbohydrate. Many kinds of organisms store food in the form of lipids. Certain lipids form an essential part of the membranes that enclose and protect every living cell, so that each cell body can do its job without unwanted interference from other cell bodies. Lipids repel water, but they are valuable solvents (dissolving substances) for vitamins A, D, E, and K, which do not dissolve in water.

Other important lipids, such as phospholipids and steroids, have more complicated structures than do fats and oils. Phospholipids contain phosphorus, and some also contain nitrogen. Layers of phospholipids form the basic structure of cell membranes. Steroids make up an important part of living things. Steroids consist of four connected rings of carbon atoms with other atoms and molecules attached. Steroids include such substances as sex hormones, adrenal hormones, and cholesterol.

Proteins are more complex molecules than carbohydrates or lipids. A protein is made up of one or more long chains called polypeptides. A few polypeptides are straight, but most are bent into complex three-dimensional shapes. A protein consists of one or more polypeptide chains. Polypeptides, in turn, consist of many small molecules called amino acids. All amino acids contain carbon, hydrogen, nitrogen, and oxygen. Some also contain sulfur. There are 20 kinds of amino acids commonly found in proteins. Each protein molecule may have from about 50 to more than 1,000 amino acid molecules.

Proteins are the most abundant macromolecules in living cells. The many kinds of amino acids and the large number of them in each protein molecule make possible an enormous variety of proteins. Each arrangement of amino acids has different chemical properties and different functions. Proteins can thus carry out a vast range of tasks. Some proteins, such as keratin in hair and myosin in muscle, form the major structural material in living things. Other proteins have chemical functions.

Most such proteins are enzymes, such speed up chemical reactions within cells. Enzymes control cellular activity by determining which chemical reactions will take place in cell. Without enzymes, these reactions would occur too slowly or not at all, and no life would be possible.

All living cells make enzymes, but enzymes are not alive. Enzyme molecules function by altering other molecules. Enzymes combine with the altered molecules to form a complex molecular structure in which chemical reactions take place. The enzyme, which remains unchanged, then separates from the product of the reaction. Enzymes thus serve as catalysts. A single enzyme molecule can perform its entire function a million times a minute. The chemical reactions occur thousands or even millions of times faster with enzymes than without them.

Nucleic acids store and transmit the information necessary for producing proteins. Nucleic acids consist of long chains of smaller molecules called nucleotides. They are made of carbon, hydrogen, nitrogen, oxygen, and phosphorus. There are various types of nucleotides, which together compose a sort of code for expressing genetic messages. These messages completely control a cell's structure and activities by determining which proteins will be produced.

There are two main types of nucleic acids, DNA (deoxyribonucleic acid) and RNA (ribonucleic acid). DNA is the genetic substance in the chromosomes. DNA is found mainly in the nucleus of cells. RNA may be found throughout the cell. Even bacterial cells, which do not have a nucleus, contain both DNA and RNA. Viruses, however, have only RNA or only DNA.

DNA carries the hereditary information that an organism passes on to its offspring. DNA also determines the kinds of proteins a cell produces.

RNA transmits DNA's instructions to the cytoplasm, where it serves as a pattern for building proteins.

We study the chemical basis of life to better understand how organisms live, grow, develop, respond to their environment and reproduce.