

Elements & Macromolecules in Organisms

Class Set

Part One:

Most common elements in living things are **carbon, hydrogen, nitrogen, and oxygen**. These four elements constitute about **95% of your body weight**.

Each small organic molecule can be a unit of a large organic molecule called a **macromolecule**. There are **four classes of macromolecules** (polysaccharides or **carbohydrates**, triglycerides or **lipids**, polypeptides or **proteins**, and **nucleic acids** such as DNA & RNA). **Carbohydrates and lipids** are made of only carbon, hydrogen, and oxygen (**CHO**). **Proteins** are made of carbon, hydrogen, oxygen, and nitrogen (**CHON**). **Nucleic acids** such as DNA and RNA contain carbon, hydrogen, oxygen, nitrogen, and phosphorus (**CHON P**).

The body also needs trace amounts of other elements such as calcium, potassium, and sulfur for proper functioning of muscles, nerves, etc. **Color** each of the **elements on the next page** according to the color listed next to the element's symbol. Then **Color code** the **squirrel** with the correct proportion of each element's color. Now **color code** the carrot with the same colors as you used on the squirrel.

Part Two:

The **four main classes of organic compounds** (carbohydrates, lipids, proteins, and nucleic acids) that are essential to the proper functioning of all living things are known as **polymers or macromolecules**. All of these compounds are built primarily of **carbon, hydrogen, and oxygen** but in different ratios. This gives each compound different **properties**.

Carbohydrates are used by the body for energy and structural support in cell walls of plants and exoskeletons of insects and crustaceans. They are made of smaller subunits called monosaccharides. Monosaccharides have carbon, hydrogen, and oxygen in a 1:2:1 ratio. Monosaccharides or simple sugars include glucose, galactose, and fructose. Although their chemical formulas are the same, they have different structural formulas. These simple sugars combine to make disaccharides (double sugars like sucrose) and polysaccharides (long chains like cellulose, chitin, and glycogen). Color code the glucose molecule on the student worksheet (carbon-black, hydrogen-yellow, and oxygen-red).