

## Organic Compounds Found in Living Things

	<b>Carbohydrates</b>	<b>Lipids</b>	<b>Proteins</b>	<b>Nucleic Acids</b>
Elements	Carbon, hydrogen and oxygen	Carbon, oxygen, hydrogen and phosphorus	Carbon, oxygen, hydrogen, nitrogen and sulfur	Carbon, oxygen, hydrogen, nitrogen and phosphorus
Examples	Sugars, starch, cellulose	Fats, oils, waxes, phospholipids and cholesterol	Enzymes, skin and hair	DNA and RNA
Function	Supply energy for cell processes; form plant structures; short-term energy storage	Store large amounts of energy long term; form boundaries around cells	Regulate cell processes and build cell structures	Carry hereditary information; used to make proteins

### Organic Compounds

You and all living things are made up of compounds that are classified as organic or inorganic. Rocks and other nonliving things contain inorganic compounds, but most do not contain large amounts of organic compounds. Organic compounds always contain carbon and hydrogen and usually are associated with living things. One exception would be nonliving things that are products of living things. For example, coal contains organic compounds because it was formed from dead and decaying plants. Organic molecules can contain hundreds or even thousands of atoms that can be arranged in many ways. The table above compares the four groups of organic compounds that make up all living things – carbohydrates, lipids, proteins, and nucleic acids.

**Carbohydrates** Carbohydrates are organic molecules that supply energy for cell processes. Sugars and starches are carbohydrates that cells use for energy. Some carbohydrates also are important parts of cell structures. For example, a carbohydrate called cellulose is an important part of plant cells.

**Lipids** Another type of organic compound found in living things is a lipid. Lipids do not mix with water. Lipids such as fats and oils store and release even larger amounts of energy than carbohydrates do. One type of lipid, the phospholipid, is a major part of cell membranes.

**Proteins** Organic compounds called proteins have many important functions in living organisms. They are made of smaller molecules called amino acids. Proteins are the building blocks of many structures in organisms. Your muscles contain large amount of protein. Proteins are scattered throughout cell membranes. Certain proteins called enzymes regulate nearly all chemical reactions in cells.

**Nucleic Acids** Large organic molecules that store important coded information in cells are called nucleic acids. One nucleic acid, deoxyribonucleic acid, or DNA – genetic material – is found in all cells. It carries information that directs each cell's activities. Another nucleic acid, ribonucleic acid, or RNA is needed to make enzymes and other proteins.