

Concept 5.1

Carbon is the main ingredient of organic molecules.

Carbon Skeletons and Functional Groups:

-carbon has only 4 electrons in its highest occupied energy level.

-It can hold 8 electrons thus it can form up to 4 bonds.

Carbon can form bonds with one or more other carbon atoms, producing an endless variety of carbon skeletons.

Organic molecules: most carbon-based molecules

Inorganic molecules: non-carbon-based molecules

Hydrocarbons: organic molecules that are composed of only carbon and hydrogen

In addition to hydrogen, two other atoms frequently found in organic molecules are oxygen and nitrogen.

Polymers are long chains of monomers linked together.

All polymers are built from a collection of fewer than 50 kinds of monomers.

Life's large molecules are classified into four main categories:

- carbohydrates
- lipids
- proteins
- nucleic acids

Building and Breaking Polymers:

Each time a monomer is added to a chain, a water molecule is released. This is called a **dehydration reaction**.

Cells break bonds between monomers by adding water to them. This process is called a **Hydrolysis** reaction.