

Chemical Compounds

Chapter 15 – 4

Organic Compounds



Essential Questions

- Why are there so many organic compounds?
- Identify and describe saturated hydrocarbons.
- Identify and describe unsaturated hydrocarbons.
- Identify and describe aromatic hydrocarbons.



EQ 2

- What are the characteristics of carbohydrates and what is their function in the body?
- What are the characteristics of lipids and what is their function in the body?
- What are the characteristics of proteins and what is their function in the body?
- What are the characteristics of nucleic acids and what is their



Definitions

- Organic compounds – covalent compounds made of carbon-based molecules
- Hydrocarbons – organic compound made of only carbon and hydrogen atoms
- Carbohydrates – energy-giving nutrients composed of sugars, starches and fiber



Definitions, cont.

- Lipids – biochemical that does not dissolve in water: fats & steroids
- Protein – molecule made of amino acids and needed to build and repair body structures and regulate body processes
- Nucleic acids – molecule made up subunits called nucleotides



Organic Compounds

- All organic compounds include carbon
- Each carbon atom has four valence electrons; can make four bonds
- Structural formulas – show how atoms make a molecule
- Organic compounds may contain hydrogen, oxygen, sulfur, nitrogen, and phosphorous



Hydrocarbons & other Organic Compounds

- Hydrocarbons contain only carbon and hydrogen
 - Saturated hydrocarbons – each carbon atom shares a single bond w/ 4 other atoms
 - Unsaturated hydrocarbons – at least one pair of carbon atoms shares a double or triple bond
 - Aromatic hydrocarbons – based on a ring of 6 carbons w/ alternating double and single bonds; strong scent



Biochemicals: The Compounds of Life

- Carbohydrates (1+ sugar molecules)
 - Simple carbohydrates – simple sugars (Ex: glucose)
 - Complex carbohydrates – LOTS of sugars bonded together (Ex: cellulose from plants & glycogen for muscle energy)
- Lipids (fats, oils & waxes)
 - Store excess energy or vitamins in the body



Biochemicals, cont.

- Proteins – made of amino acids; most common molecules in your cells
 - Amino acids are made of carbon, hydrogen, oxygen & nitrogen; shape proteins
 - Shape of proteins determines function
 - Functions include: regulating chemical activities, structural support, & transporting & storing materials



Biochemicals, cont.

- Examples: enzymes (catalyst); hormones; hemoglobin
- Nucleic acids – made of one of five types of nucleotides; order of nucleotides determines differences in living things
 - Functions: store genetic info; build proteins & other nucleic acids



DNA and RNA

- Deoxyribonucleic acid (DNA) – genetic material of cell
- Ribonucleic acid (RNA) – involved in building proteins

