

## Section 2.3- Carbon Compounds

Standards

1h. Most macromolecules (polysaccharides, nucleic acids, proteins, lipids) in cells and organisms are made from simpler molecules

4e. Proteins can differ from one another in the number and sequence of amino acids.

\*4f. Why proteins having different amino acid sequences typically have different shapes and chemical properties

At the end of this lecture you should know:

Review Questions

1. All living things contain the element
- \_\_\_\_\_

2. List the 4 major macromolecules.

Fill In Notes

## I. The Chemistry of Carbon

- A. Organic chemistry is the study of
- \_\_\_\_\_

## B. Carbon Atoms

1. Carbon atoms have \_\_\_\_\_ valence electrons.
2. Carbon atoms form strong \_\_\_\_\_ bonds
3. Carbon atoms can bond to other carbon atoms.
  - a. List the 3 types of carbon-carbon covalent bonds
    - 1.
    - 2.
    - 3.
  4. List the structures carbon-carbon bonding can form.

- C. All living things are made of \_\_\_\_\_.

List the 4 other elements that living things are also made of.

- 1.
- 2.
- 3.
- 4.

## II. Macromolecules

"Giant molecules" are also known as

\_\_\_\_\_

- A. The process in which large compounds are built by joining smaller compounds is called \_\_\_\_\_.

1. smaller compounds are called \_\_\_\_\_
2. the large compound that is built is called a \_\_\_\_\_

## B. 4 Major Macromolecules

## 1. Carbohydrates

- a. List the elements a carbohydrate is made of.

- b. List 2 ways carbohydrates are used.

- c. The monomer of a carbohydrate is called a \_\_\_\_\_

1. List 2 names of monomers of carbohydrates

- d. The polymer of a carbohydrate is called a \_\_\_\_\_

1. List 2 names of polymers of carbohydrates

Lecture Notes

## Lecture Notes

3. List the monomers for each of the following macromolecules.

Carbohydrate:

Lipids:

Nucleic Acid:

Protein:

4. The polymerization of the following monomers results in the creation of what polymers?

Amino acids →

Glycerol + Fatty Acids →

Nucleotides →

Monosaccharides →

5. Explain why having 20 different amino acids makes proteins one of the most diverse macromolecules.

### 2. Lipids

- List the elements a lipid is made of.
- List 3 ways lipids are used.
- How are lipids formed?
- List 4 names of polymers of lipids.
- The term \_\_\_\_\_ is used when a fatty acid contains the maximum number of hydrogen atoms and all carbon bonds are single bonds.
- The term \_\_\_\_\_ is used when a fatty acid contains at least one carbon bond that is a double bond.

### 3. Nucleic Acids

- List the elements a nucleic acid is made of.
- What is the function of a nucleic acid?
- The monomer of a nucleic acid is called a \_\_\_\_\_

1. Draw and label the parts of a nucleotide

- List the 2 names of polymers of nucleic acids.

### 3. Proteins

- List the elements proteins are made of.
- The monomer of a protein is called an \_\_\_\_\_
- The polymer of a protein is called a \_\_\_\_\_
- Chains of amino acids are linked together by a \_\_\_\_\_ bond.
- List the 3 ways proteins are used.

**Summary/Thinking Map**

Finish constructing the tree map of the 4 major macromolecules. Include the name of the macromolecule, its polymer, and its monomer.

Macromolecule
---------------

**Key Vocabulary**

**Define the Key Vocabulary for this section. Be sure to number and underline your Key Vocabulary word.**