



2.3 Carbon Compounds

Lesson Objectives

-  Describe the unique qualities of carbon.
-  Describe the structures and functions of each of the four groups of macromolecules.



BUILD Vocabulary

- A. The chart below shows key terms from the lesson with their definitions. Complete the chart by writing a strategy to help you remember the meaning of each term. One has been done for you.

Term	Definition	How I'm Going to Remember the Meaning
Amino Acid	Compound with an amino group on one end and a carboxyl group on the other end; building block of proteins	
Carbohydrate	Compound containing carbon, hydrogen, and oxygen in a 1:2:1 ratio that is used by living things for energy	Runners eat lots of "carbs" before a big race: a carbohydrate is a high energy compound.
Lipid	A polymer, such as fats and oils, composed of mostly carbon and hydrogen atoms, with less oxygen than other organic compounds	
Monomer	A small unit that joins with other small units to form polymers	
Nucleic Acid	A polymer, such as DNA, that contains carbon, hydrogen, oxygen, nitrogen, and phosphorus and that stores cellular information	
Polymer	Large compound that is made from monomers linked together	

Continued on next page ►

Term	Definition	How I'm Going to Remember the Meaning
Protein	A polymer that contains nitrogen as well as carbon, hydrogen, and oxygen, and that acts as a building material for cells and makes up enzymes.	

B. As you work through this lesson, you may find these terms in the activities. When you need to write a key term or a definition, **highlight** the term or the definition.



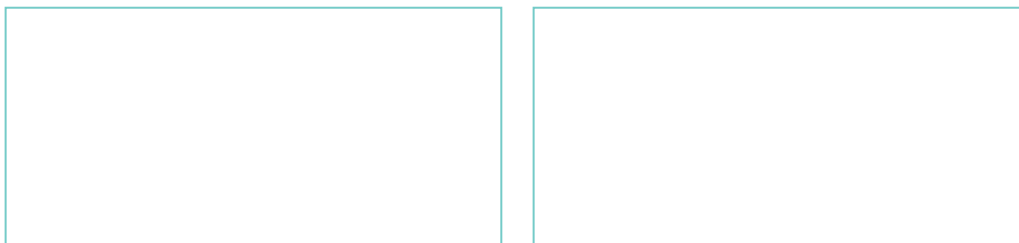
BUILD Understanding

Compare/Contrast Table Use a compare/contrast table when you want to see the similarities and differences between two or more objects or processes. Complete the table below comparing and contrasting carbohydrates, lipids, nucleic acids, and proteins.

	Carbohydrates	Lipids	Nucleic Acids	Proteins
Elements that compose the macromolecule	<i>carbon, hydrogen, and oxygen (1:2:1 ratio)</i>			
Use of the macromolecule	<i>used in living things as the main source of energy and some organisms use it for structural purposes</i>		<i>store and transmit hereditary information</i>	
Examples of the macromolecule	<i>polysaccharides such as glycogen, starch, cellulose</i>		<i>DNA, RNA</i>	

CHAPTER MYSTERY

Ghostly Fish You have been hired to prepare drawings for a children's science book. Divide the box into two halves. On the left, draw and color an ice fish. On the right, write a short description of the characteristics of an ice fish.

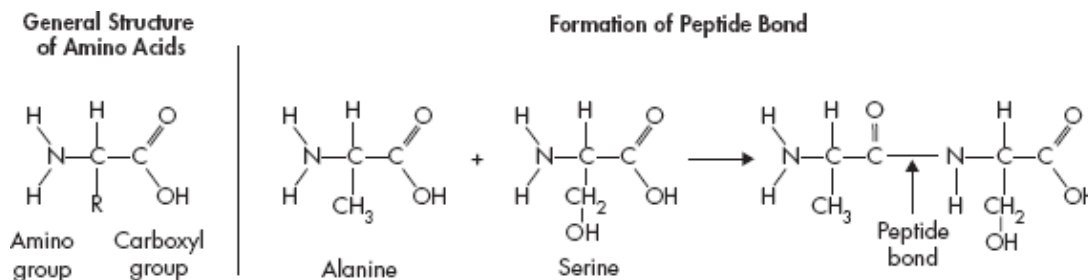


Macromolecules

Amino acids are the monomers of proteins. Each amino acid has three distinct parts: an amino group, an R group, and a carboxyl group. An amino group has the formula -NH_2 , a carboxyl group is -COOH , and the R group varies from one amino acid to another. Two amino acids are joined in a chemical reaction that links them by a peptide bond.

Follow the directions. Then answer the questions.

1. Look at the diagram of the general structure of an amino acid. Color the amino group green.
2. Color the carboxyl group blue.
3. Color the R group red.
4. Color the same groups in the amino acids alanine and serine.



5. How many oxygen atoms are found in the carboxyl group?

A. 1	C. 3
B. 2	D. 4
6. What is the R group found in alanine?

A. CH_3	C. H_2O
B. CH_2OH	D. COOH