18.1: An Introduction to Biochemistry

Learning Objectives

- Explain what a biomolecule is and list the four main types.

Biochemistry is the study of the molecules of life, (**biomolecules**); those that structurally make up living organisms and function to keep them alive. Although the complexity of biomolecules ranges from individual small molecules, such as glycine, to very large complexes made up of multiple molecules linked together, like ATP synthase, most biomolecules can be categorized into for main groups based on their structural similarities: *carbohydrates*, *proteins*, *lipids*, or *nucleic acids*. There are also many other small molecules and ions that play a wide variety of roles in the cell, ranging chemical messengers (or signals), to toxins produced as a means of defense against invaders, to coordination complexes that play important rolls in protein function.

Now that you have learned the basics of general and organic chemistry, you are ready to apply your knowledge to understanding the chemistry of these biomolecules. You will recognize some of the organic functional groups in these biomolecules, which will help you predict the physical and chemical properties of these new molecules. Living cells are very complex, however, the same principles that govern chemistry apply to all of biochemistry.