# Unit 01A: Structure and Function- Organic Chemistry

Content Area: **Science**
Course(s): **Generic Course**
Time Period: **Semester 1**
Length: **6 weeks**
Status: **Published**

## Standards

LS1.A

- Systems of specialized cells within organisms help them perform the essential functions of life. (HS-LS1-1)
- All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells. (HS-LS1-1) *(Note: This Disciplinary Core Idea is also addressed by HS-LS3-1.)*
- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)
- Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

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| SCI.9-12.HS-LS1-1 | Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells. |
| SCI.9-12.HS-LS1-3 | Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. |
| SCI.9-12.HS-LS1-2 | Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. |

## Essential Questions

- How does life depend on Chemistry?
- Why are some molecules more important to living organisms than others?

## Content / Skills

### Content

- The essential macromolecules of living organisms.
- The functions of carbohydrates, lipids and proteins.

- The importance of enzymes in biological functions.
- The relationship between monomers and polymers.
- The structure and function of biological macromolecules.

**Skills**

- Analyze data related to the changes in pH, temperatures, enzyme and substrate concentration.
- Analyze data to compare energy in a reaction.
- Compare monomers and polymers of macromolecules.
- Describe the function of each group of organic compounds.
- Explain why macromolecules are needed in your diet.