

## Unit 3: Cellular Systems

**Suggested Pacing: 9–10 weeks**

### Unit Overview

Students are introduced to cellular structure and function in middle school life science. Therefore, this unit will deepen and expand students' knowledge as they explore how cellular structures function together to support a cellular system that grows and develops, responds to a changing environment, and obtains and uses energy. Through concepts of homeostasis, students will gain an appreciation for how interdependent cellular structures are on one another to maintain proper cellular functions. Students will then build on their knowledge of cellular systems as they examine how specific structures participate in the process of energy production for the cell. They will connect their understanding of ecological roles of organisms, from Unit 1: Ecological Systems, to the various types of energy production processes—photosynthesis, cellular respiration, and fermentation.

### Unit 3 Enduring Understandings

*Students will understand that ...*

- Four classes of macromolecules serve as the primary building blocks of biological systems. **(CELLS-A)**
- Biological systems have specialized structures that enable specific functions necessary to sustain life. **(CELLS-B)**
- Biological systems must respond to changes in internal and external environments in order to maintain dynamic homeostasis. **(CELLS-C)**
- In order to sustain complex processes, biological systems must have mechanisms for growth and repair. **(CELLS-D)**

### Unit 3 Key Concepts

- Chemistry of Life
- Cell Structure and Function
- Cell Transport and Homeostasis
- Organisms Maintaining Homeostasis
- Cell Growth and Division
- Photosynthesis
- Cellular Respiration and Fermentation