# OpenSciEd Massachusetts Standards Guidance
# 6th Grade: Cells & Systems

This document is to provide guidance to Massachusetts 6th grade teachers who are implementing OpenSciEd. This guidance assumes the OpenSciEd curriculum is being implemented across grades 6-8, following the MA coherent sequence by grade level *(download)*. The following guidance identifies the MA standards addressed in the *Cells & Systems* unit, and the most effective use of the OpenSciEd materials for 6th grade teachers.

## Scope and Sequence Recommendation

**Implement the *Cells & Systems* unit in 6th grade, after the *Plate Tectonics & Rock Cycling* unit**. *Cells & Systems* sets a foundation for future units, including *Metabolic Reactions* (recommended for 8th grade in MA). *Cells & Systems* addresses three 6th grade life science standards. Refer to the MA coherent sequence by grade level *(download)* for the complete scope and sequence recommendation.

## 6th Grade Standards in *Cells & Systems*

| Standards in unit | Lessons building towards standards |
|---|---|
| **6.MS-LS1-1.** Provide evidence that all organisms (unicellular and multicellular) are made of cells. | Lessons 4-7 |
| **6.MS-LS1-2.** Develop and use a model to describe how parts of cells contribute to the cellular functions of obtaining food, water, and other nutrients from its environment, disposing of wastes, and providing energy for cellular processes.<br><br>Clarification Statement: Parts of plant and animal cells include (a) the **nucleus**, which contains a cell's genetic material and regulates its activities; (b) **chloroplasts**, which produce necessary food (sugar) and oxygen through photosynthesis (in plants); (c) **mitochondria**, which release energy from food through cellular respiration; (d) **vacuoles**, which store materials, including water, nutrients, and waste; (e) the **cell membrane**, which is a selective barrier that enables nutrients to enter the cell and wastes to be expelled; and (f) the **cell wall**, which provides structural support (in plants).<br><br>State Assessment Boundary: Specific biochemical steps or chemical processes, the role of ATP, active transport processes involving the cell membrane, or **identifying or comparing different types of cells are not expected in state assessment**. | Lessons 9-11 |
| **6.MS-LS1-3.** Construct an argument supported by evidence that the body systems interact to carry out essential functions of life. | Lessons 3-5, 12-13 |

## Implementation Notes

Note that the Massachusetts standards emphasize specific parts of the cell and do not require students to identify specific cell types. You should streamline/emphasize components of lessons 4-6 as needed.

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