THE STANDARD

Cell Parts & Functions

Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.

DCI
DISCIPLINARY CORE IDEA

LS1.A · Structure and Function

> *Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell.*

A cell is the smallest thing that's alive. Inside it, tiny parts called organelles each do a specific job: the nucleus stores DNA, the mitochondria release energy from food, the cell membrane controls what gets in and out. No single part is the cell. **The cell is what all the parts do together.**

SEP
SCIENCE & ENGINEERING PRACTICE

Developing and Using Models

> *Develop and use a model to describe phenomena.*

Students aren't memorizing organelle definitions off a diagram. They're building a model of a cell and using it to explain how the cell stays alive. The model has to show what each part does, not just label what each part is. **If the model can describe how the cell functions, the student is doing the science.**

CCC
CROSSCUTTING CONCEPT

Structure and Function

> *Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the relationships among its parts, therefore complex natural structures/systems can be analyzed to determine how they function.*

Cells are microscopic. Students will never see a mitochondrion with their own eyes. The whole standard runs on the idea that structure tells you function. **The shape of a part, where it sits in the cell, what surrounds it, all of that is a clue to what the part does for the cell as a whole.**