

THE STANDARD

Cells as the Unit of Life

Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.



LS1.A • Structure and Function

All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).

Every living thing is built from cells. Some organisms are one cell and that one cell does everything. Others, like a human, are roughly 37 trillion cells doing different jobs. The cell is the smallest unit that's actually alive. Below that you have molecules. Above that you have tissues and organs. **The cell is where life starts.**



Planning and Carrying Out Investigations

Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation.

Students aren't reading about cells. They're putting something living under a microscope and producing their own evidence. The investigation is the point. **They plan it, run it, record what they see, and use what they see to argue that a thing they thought was a single object is actually made of smaller units.**



Scale, Proportion, and Quantity

Phenomena that can be observed at one scale may not be observable at another scale.

Cells are too small to see with the naked eye. A typical cell is 10 to 100 micrometers across. The whole standard depends on students recognizing that a phenomenon hidden at one scale (a leaf, a pond, the inside of their cheek) becomes obvious at another (under 100x magnification). **Different scale, different evidence.**