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.

⚓ ANCHORING PHENOMENON

The Red Onion Skin Under a Microscope

A thin layer of red onion skin under the lens. The cells line up like bricks, perfectly rectangular, with a clear boundary around each one and a bright purple blob filling most of the middle. The purple is the central vacuole. The brick-like shape is the cell wall. Students will keep coming back to this image because nothing about it looks like the round, blobby cells in their textbook.

> DRIVING QUESTION
>
> *"Why are plant cells shaped like bricks, and what's the giant purple thing inside?"*

🔬 INVESTIGATIVE 1

Cheek Cells vs. Elodea Leaf Cells Side by Side

Two slides on two microscopes. On one, a cheek cell scrape: round-ish, soft-edged, a single dark dot (the nucleus) in the middle of a mostly empty-looking space. On the other, an elodea leaf cell: rectangular, sharp-edged, packed with green chloroplasts moving in a slow circle (a real effect called cytoplasmic streaming). Same building block, totally different look. Use this one to sharpen the structure-tells-function lens the anchor is pushing on.

> DRIVING QUESTION
>
> *"If both are cells, why do they look so different, and what does that tell us about what each one does?"*

🔬 INVESTIGATIVE 2

A Plant Cell Shrinking in Salt Water

A drop of saltwater added to the edge of an elodea slide. Over a few minutes, the green chloroplasts and cytoplasm pull inward, away from the cell wall, leaving a visible gap. The cell wall stays put. The membrane and everything inside shrinks. This is plasmolysis, and it makes the membrane-vs-wall distinction impossible to ignore. Use this one to sharpen the boundary-control lens the anchor exposes.

> DRIVING QUESTION
>
> *"What's pulling away from the cell wall, and why does the wall stay where it is?"*