

THE STANDARD

Evidence of Living Things

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

 ANCHORING PHENOMENON

A Drop of Pond Water Under the Microscope

One drop of pond water from a stagnant puddle, on a slide, at 100x. What looked like clear water is suddenly full of moving things. Some shaped like slippers, some like rotating green spheres, some shape-shifting blobs. Each one is a complete living thing in a single cell. The water wasn't empty. It was teeming, just at a scale you couldn't reach with your eyes. Students will keep circling back to this all week.

DRIVING QUESTION

"If a drop of pond water is full of living things you can't see, what else is alive at a scale we can't see?"

 INVESTIGATIVE 1

Onion Skin Looks Solid. It Isn't.

A thin layer peeled off the inside of an onion, mounted on a slide, stained with a drop of iodine. To the eye, it's a smooth film. Under the microscope it's a brick wall of identical units, every one a cell. Use this one to sharpen the scale lens the anchor is pushing on: what looks like one continuous piece of tissue is actually a grid of repeating building blocks.

DRIVING QUESTION

"If a flat sheet of onion is really made of thousands of tiny boxes, what does that say about every other 'solid' piece of a living thing?"

 INVESTIGATIVE 2

Cheek Cells Don't Look Like Onion Cells

A toothpick gently scraped on the inside of a cheek, smeared on a slide, stained with methylene blue. Round, soft-edged blobs with a dark dot in the middle. Nothing like the brick wall of the onion. Same kind of building block, completely different shape. Use this one to sharpen the same-building-block-different-shape idea the anchor is pushing on: a cell's shape follows its job.

DRIVING QUESTION

"If plant cells and animal cells are both cells, why don't they look anything alike?"