Cells Under Investigation

Plan observations and use them as evidence.

MS-LS1-1 "Plan and carry out an investigation to provide evidence that living things are made of cells; either one cell or many different types and numbers of cells. (SEP: 3; DCI: LS1.A; CCC: Scale/Prop)"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline an observation that supports the claim that a paramecium is one cell, circle an observation of many connected cells, and put a box around the step that makes the slide views comparable.

Three Slides, One Question

1. A science club wanted to test a claim: a living thing may be one cell or may contain many cells. Their materials were a culture of paramecia, a clear layer peeled from an onion, and a thin peel from the underside of a leaf. They placed a drop of each sample on a separate slide, added a cover slip, and began at the microscope's lowest power. To make their observations comparable, they used the same magnification for each slide and recorded what they saw in three labeled sketches.

2. On the paramecia slide, the club saw separate oval shapes moving through the water. Each oval had one outer boundary. The club watched one oval move away from the others without breaking into smaller pieces. On the onion slide, they saw a sheet of boxlike units. Lines separated neighboring units, but the units stayed joined in the sheet. Their sketches showed several units across even a tiny section of the peel. A paramecium is one cell that lives on its own; the onion peel is part of a plant made of many connected cells.

3. On the leaf slide, the club found many cells joined in a layer, but they did not all look alike. Most had uneven outlines. Some came in pairs shaped like curved beans, with a tiny gap between them. These paired cells help control openings that let gases move in and out of the leaf. The students noted that shape and arrangement can help distinguish cell types. They did not count the cells in the whole leaf: a microscope view shows only a small part. Their evidence supported many cells of different types in this plant.

2 ANSWER WITH EVIDENCE

Use the passage

1. Why did the club use the same magnification for all three slides?

2. What did the club observe that supports the claim that a paramecium is one cell living on its own?

3. How did the onion and leaf observations provide different evidence about plants and cells?

4. Why could the club not use one microscope view to report the total number of cells in the whole leaf?

3 YOUR TURN

Your own words

Plan an investigation using a yeast suspension and a prepared slide of a plant root tip. In four sentences, explain how you would compare the samples, what you would look for as evidence of one cell versus many cells, and how you would record your observations.

ANSWER KEY

Cells Under Investigation

GRADES 6-8 · MS-LS1-1

PART 1 · READ AND MARK

Underline an observation that supports the claim that a paramecium is one cell, circle an observation of many connected cells, and put a box around the step that makes the slide views comparable. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Why did the club use the same magnification for all three slides?	**It made the views comparable, so the club could compare the cells it observed in each sample.**
2	What did the club observe that supports the claim that a paramecium is one cell living on its own?	**They saw separate moving ovals, each with one outer boundary, and watched one move away without breaking into smaller pieces.**
3	How did the onion and leaf observations provide different evidence about plants and cells?	**The onion peel showed many connected cells. The leaf peel showed many connected cells with different shapes and arrangements, providing evidence of different cell types.**
4	Why could the club not use one microscope view to report the total number of cells in the whole leaf?	**The microscope view showed only a small part of the leaf, not every cell in it.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would place a drop of yeast suspension on a slide with a cover slip and view it alongside the prepared root-tip slide at the same magnification. I would look for separate yeast cells and watch for a new cell budding from one and separating. In the root tip, I would look for many cells joined in a section of tissue. I would make labeled sketches of both views and note which observations support each claim.

Accept plans that compare the two samples with a microscope and specify observable evidence for separate yeast cells and many connected root-tip cells. Students should record observations rather than claim they can count every cell in the plant.