Cells Under Scrutiny

Use observations to test the claims of cell theory.

7.1.a "Engage in argument from evidence to support claims of cell theory."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each claim about cells, then number the observations that support it with the same number. Look for evidence from more than one kind of living thing.

What Can a Microscope Show?

1. A drop of pond water can look empty until you place it under a microscope. Then you may spot green algae made of single cells. A thin piece of onion skin looks different: it shows many cells packed like tiles. A sliver of mushroom also contains cells, though their shapes differ from onion cells. These observations support a major claim of cell theory: living things are made of one or more cells. Looking at different kinds of organisms matters because a claim about all living things needs more than one example.

2. Cells are not just tiny pieces that fill space. In pond water, a single-celled paramecium swims toward bits of food and takes them inside its cell. It also releases waste into the water. That one cell carries out several activities needed for life. An onion plant has many cells instead of one, and its root cells take in water while leaf cells capture light. These observations support another claim of cell theory: the cell is the basic unit that carries out life processes. Different cells may do different jobs.

3. A class adds a small scoop of yeast cells to one jar of sugar water but adds no yeast to a second jar. Later, the first jar has more yeast cells, while the second has none. Under a microscope, students watch a small bud grow from a yeast cell and separate as a new cell. Sugar helps yeast grow, but it does not turn into yeast cells on its own. The budding observation supports a third claim of cell theory: new cells come from cells that already exist.

2 ANSWER WITH EVIDENCE

Use the passage

1. How do the onion skin and mushroom observations support a claim of cell theory?

2. How does the paramecium provide evidence that a cell can carry out life processes?

3. What did the students observe that supports the claim that new cells come from existing cells?

4. How does the jar with no yeast help test the idea that sugar water turns into yeast cells?

3 YOUR TURN

Your own words

A student says, "Cell theory fits plants, but it does not fit microscopic organisms." Write a 4 to 5 sentence argument against this claim. Use evidence about both paramecium and yeast, and explain how each supports a different claim of cell theory.

ANSWER KEY

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GRADE 7 · 7.1.a

PART 1 · READ AND MARK

Underline each claim about cells, then number the observations that support it with the same number. Look for evidence from more than one kind of living thing. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How do the onion skin and mushroom observations support a claim of cell theory?	**Both contain cells, supporting the claim that living things are made of one or more cells.**
2	How does the paramecium provide evidence that a cell can carry out life processes?	**Its single cell moves toward food, takes food in, and releases waste.**
3	What did the students observe that supports the claim that new cells come from existing cells?	**They watched a bud grow from a yeast cell and separate as a new cell.**
4	How does the jar with no yeast help test the idea that sugar water turns into yeast cells?	**No yeast cells appeared in that jar, so sugar water alone did not produce yeast cells in the class experiment.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Cell theory applies to microscopic organisms as well as plants. A paramecium is one cell that moves, takes in food, and releases waste, so one cell can carry out life processes. Students watched a yeast cell form a bud that separated into a new cell, showing that a new cell can come from an existing cell. Both observations support claims of cell theory using evidence from microscopic organisms.

Accept answers that connect a specific observation to the relevant claim, even if students use different wording. For the open task, look for separate explanations of the paramecium and yeast evidence.