Cell Case Files

Use cell clues to identify living things

L.6.1.4 "Compare and contrast different cells in order to classify them as a protist, fungus, plant, or animal."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline clues about cell walls, chloroplasts, and how each sample gets food. Circle clues that tell whether a sample came from a one-celled or many-celled organism.

Five Samples by the Pond

1. At a pond-side field station, five unlabeled cell samples wait under microscopes. A cell's outer layer, food source, and place in a larger body can help identify its group. Plant cells often have stiff walls made of cellulose and chloroplasts that capture light. Fungal cells have walls made of chitin and absorb food from their surroundings. Animal cells lack cell walls and chloroplasts. Protists are a varied group, usually single-celled; some have chloroplasts, while others swallow food. All four groups have cells with nuclei.

2. Sample A came from the leaf of a many-celled organism rooted beside the pond. Each green cell has a nucleus, chloroplasts, and a stiff cellulose wall. The organism uses light to make sugar. Sample B came from a fuzzy growth on a fallen log. Its many-celled body is made of branching threads. Each thread cell has a nucleus and a chitin wall but no chloroplasts. The growth releases substances that break down wood, then absorbs the resulting nutrients through its cells.

3. Sample C came from the leg muscle of a squirrel. Its cells have nuclei but no cell walls or chloroplasts, and the squirrel eats plants and nuts. Sample D came from a single, free-swimming pond organism. Its one cell has a nucleus and chloroplasts, but no stiff cellulose wall; it moves using a whip-like tail. Sample E also came from a single pond organism. Its cell has a nucleus, lacks a cell wall and chloroplasts, and surrounds tiny food particles to swallow them. The pond samples show why one clue alone can mislead.

2 ANSWER WITH EVIDENCE

Use the passage

1. Samples A and D both have chloroplasts. Classify each one, and explain which other clues separate them.

2. Classify samples B and C. How do their outer layers and ways of getting food differ?

3. Samples C and E both lack cell walls and chloroplasts. Classify each one, and explain what other clues help you decide.

4. Classify samples D and E. What do they have in common, and how do their food-related cell features differ?

3 YOUR TURN

Your own words

Invent two new cell samples from different groups: protist, fungus, plant, or animal. Give at least two clues for each sample, classify them, and explain one way they are alike and one way they differ.

ANSWER KEY

Cell Case Files

GRADE 6 · L.6.1.4

PART 1 · READ AND MARK

Underline clues about cell walls, chloroplasts, and how each sample gets food. Circle clues that tell whether a sample came from a one-celled or many-celled organism. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Samples A and D both have chloroplasts. Classify each one, and explain which other clues separate them.	**A is a plant cell: it comes from a many-celled, rooted organism and has a cellulose wall. D is a protist cell: it is the whole, free-swimming organism and lacks a stiff cellulose wall.**
2	Classify samples B and C. How do their outer layers and ways of getting food differ?	**B is a fungus cell with a chitin wall; the growth breaks down wood and absorbs nutrients. C is an animal cell with no wall; the squirrel eats food.**
3	Samples C and E both lack cell walls and chloroplasts. Classify each one, and explain what other clues help you decide.	**C is an animal cell from a many-celled squirrel. E is a protist cell that is a whole, single-celled pond organism and swallows food particles.**
4	Classify samples D and E. What do they have in common, and how do their food-related cell features differ?	**Both are protists, and each is a single cell with a nucleus. D has chloroplasts that can capture light; E lacks chloroplasts and swallows food particles.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Sample F is a yeast cell from bread dough. It has a nucleus and a chitin wall, and it absorbs dissolved sugars, so I classify it as a fungus. Sample G is a cell from a jellyfish tentacle. It has a nucleus but no cell wall or chloroplasts, so I classify it as an animal cell. Both cells have nuclei, but only the yeast cell has a wall.

Accept classifications supported by accurate cell and organism clues. A single-celled sample is not automatically a protist, since some fungi, including yeast, are single-celled.