

## SECTION

## 1

# The Early Cell Explorers

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It's hard to believe, but there was a time when we didn't know anything about cell structure. In fact, the word *cell* (from the Latin word for chamber, *cello*) wasn't used as a biological term until 1665. That's when Robert Hooke, an English-born scientist, looked at a thin slice of a cork plant under a compound microscope he had built himself. Hooke noticed small holes surrounded by walls and named these tiny pores *cells*. After that, scientists believed cells were found only in plants. But in 1839, Matthias Schleiden and Theodor Schwann, both German scientists, shared their scientific findings with one another. Schleiden had been studying plant cells and Schwann had been studying animal structures. Together, they compared plant and animal structures and found that the structures were very similar—too similar to be accidental. They concluded that cells are the basic building blocks for both plants and animals. In 1858, Rudolf Virchow took Schleiden's and Schwann's theory and stated it simply: all cells come from other cells. This remains known as the cell theory.

Throughout the mid-1800s and into the 1900s, scientists continued to discover more and more about cells thanks in part to Gregor Mendel's study of genetics, Friedrich Miescher's discovery of nuclein (which later became known as DNA), and James Watson's findings about DNA's structure. Although many amazing discoveries have happened in recent years, including genetic engineering and gene therapy, all of it is because of the work of those early cell explorers.

1. How important was Hooke's homemade microscope to the discovery of the plant cell? Explain.

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2. Restate the cell theory in your own words.

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3. Why do you think it took almost 200 years for scientists to formulate the cell theory?

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## Reinforcement

## Viewing Cells

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**Directions:** In numbers 1–4 below, a code letter has been substituted for each letter of the alphabet. To find out what the sentence says, use the following key to decode it. In the key, the code letters are shown directly below the alphabet letter each stands for. Write the correct letter above each code letter, then read the sentence aloud.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A

1.                                                                                
 ZOO LITZMRHNNH ZIV NZWV LU XVOOH

2.                                                                                                                          
 Z XVOO RH GSV YZHRX FMRG LU HGIFXGFIV

                                                                                          
 ZMW UFMXGRLM RM ZM LITZMRHN

3.                                                                                                                                
 VEVIB XVOO XLNVH UILN ZMLGSVI XVOO

4.                                                                                                                
 GSRH RH XZOOVW GSV XVOO GSVLIB

**Directions:** Answer the following questions on the lines provided.

5. Who was the first person to look at cells with a microscope?

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6. In what material did he see cells?

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7. What did Schleiden and Schwann conclude about cells?

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8. What instrument uses light and one or more lenses to view cells?

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9. What instrument uses a magnetic field to magnify images up to 1,000,000 times?

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