

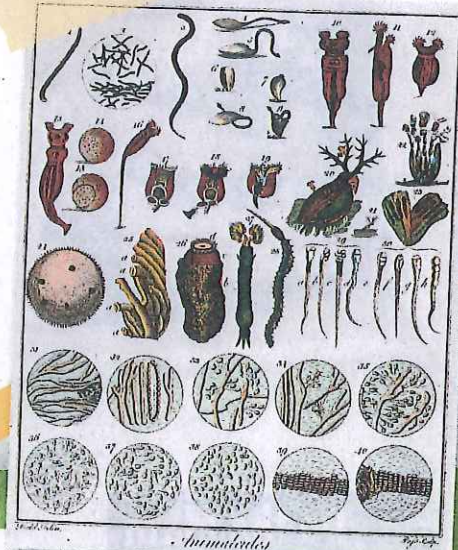
Cell Hall of Fame

What is the cell theory?

Scientific knowledge often results from combining the work of several scientists. For example, the discoveries of Matthias Schleiden (muh•THY•uhs SHLY•duhn), Theodor Schwann (THEE•oh•dohr SHVAHN), and Rudolf Virchow (ROO•dawlf VIR•koh) led to one very important theory called the *cell theory*. The cell theory lists three basic characteristics of all cells and organisms:

- All organisms are made up of one or more cells.
- The cell is the basic unit of all organisms.
- All cells come from existing cells.

The cell theory is fundamental to the study of organisms, medicine, heredity, evolution, and all other aspects of life science.



Visualize It!

8 Provide As you read, fill in the missing events on the timeline.

Model of Hooke's microscope



1673
Anton van Leeuwenhoek made careful drawings of the organisms he observed.

1665
Robert Hooke sees tiny, box-like spaces when using a microscope like this to observe thin slices of cork. He calls these spaces cells.

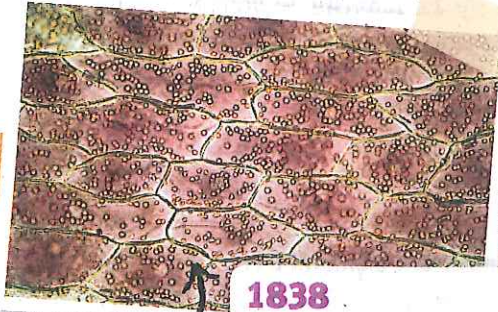
1858
Rudolf Virchow _____



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Think Outside the Book **Inquiry**

9 Explain How can microscopes help you see cells? First, think of a good place to collect a sample of cells. Then, in a paragraph, describe how to prepare a microscope slide to observe those cells.



Cells of an iris petal

1838
Matthias Schleiden

1839
Theodor Schwann



Butterfly wing cells

This iris and butterfly are multicellular organisms made up of many cells.

All Organisms Are Made Up of One or More Cells

Anton van Leeuwenhoek (AN•tahn VAN LAY•vuhn•huk) was the first person to describe actual living cells when he looked at a drop of pond water under a microscope. These studies made other scientists wonder if all living things were made up of cells. In 1838, Matthias Schleiden concluded that plants are made of cells. Then in 1839, Theodor Schwann determined that all animal tissues are made of cells. He concluded that all organisms are made up of one or more cells.

Organisms that are made up of just one cell are called *unicellular organisms*. The single cell of a unicellular organism must carry out all of the functions for life. Organisms that are made up of more than one cell are called *multicellular organisms*. The cells of multicellular organism often have specialized functions.

The Cell Is the Basic Unit of All Organisms

Based on his observations about the cellular make up of organisms, Schwann made another conclusion. He determined that the cell is the basic unit of all living things. Thus, Schwann wrote the first two parts of the cell theory.

All Cells Come from Existing Cells

In 1858, Rudolf Virchow, a doctor, proposed that cells could form only from the division of other cells. Virchow then added the third part of the cell theory that all cells come from existing cells.

Active Reading

10 Summarize What is the cell theory?
