

# History of the cell: Discovering the cell

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Image 1. An illustrative diagram of DNA's components. Photo by: Unknown/Wikimedia

An elephant, a sunflower, and an amoeba are very different on the outside. On the inside, they are all made of the same building blocks. From the single cells that make up the simplest organisms to the trillions of cells that make up the human body, each and every living being on Earth is made of cells. This

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is part of cell theory, which has become one of the central ideas of biology. Cell theory also states that cells are the basic building blocks of living organisms and all cells come from other cells. This knowledge is foundational today. Scientists did not always know about cells, though.

#### It All Started With A Microscope

The discovery of the cell would not have been possible if not for advancements to the microscope. Scientist Robert Hooke improved the design of the existing compound microscope in 1665. His compound microscope used three lenses and stage light. It lit up and enlarged the specimens. Hooke placed a piece of cork under the new microscope. It allowed him to see something amazing. To him, the cork looked as if it was made of tiny pores. He came to call them "cells" because they reminded him of the cells in a monastery, where monks live.

Not long after Hooke's discovery, Dutch scientist Antonie van Leeuwenhoek discovered other hidden, tiny organisms. They are called bacteria and protozoa. It was unsurprising that van Leeuwenhoek would make such a discovery. He was a master microscope maker. He perfected the design of the simple microscope, which only had a single lens. The single lens allowed it to magnify an object by around 200 to 300 times its original size. What van Leeuwenhoek saw with these microscopes were bacteria and protozoa. He called these tiny creatures "animalcules."

Van Leeuwenhoek became very interested in these creatures. He even took a look at the plaque between his teeth under the microscope. He saw "little living animalcules" on his teeth, he wrote in a letter.

### Cells Make Up Plants And Animals

In the 1800s, biologists began taking a closer look at both animal and plant tissues. What they learned advanced cell theory. Scientists could easily tell that plants were completely made up of cells. That's because plant cells have a layer on the outside called a cell wall. However, this was not so obvious for animal cells, which lack a cell wall. Many scientists believed that animals were made of "globules."

German scientists Theodore Schwann and Mattias Schleiden studied cells. Schwann studied animal cells, and Schleiden studied plant cells. These scientists found key differences between the two cell types. They had the idea that cells were the simplest units of both plants and animals.

## Scientists Make New Cell Discoveries

A scientist named Rudolf Virchow made an important discovery in 1855. He found that all new cells are made by existing cells. They copy themselves.

Later, scientists began to focus on genes. Genes tell the body how to grow and work. Chromosomes are like threads that carry genes and sit inside cells. In the 1880s, Walter Sutton and Theodor Boveri discovered the purpose of chromosomes. They are responsible for passing down genes from one generation to the next. This is why children look like their parents.





The discovery of the cell continued to be important for science in the 1900s. Scientists discovered stem cells. Stem cells are simple cells. They still have to develop into cells with more specific jobs. This means they can grow into many different parts of the body. They could become part of your skin or your heart, for example. Stem cells are now used to treat many conditions such as heart disease.

#### Could Stem Cells Help Us Understand Diseases?

The discovery of the cell has been far more important for science than Hooke could have ever dreamed in 1665. It gave us an understanding of the building blocks of all living organisms. It has also led to advances in medical technology and treatment. Today, scientists are working on ways for each of us to grow stem cells from our very own cells. We could use them to understand how diseases work. All of this and more came from simply looking at a cork under a microscope.

