

## Early studies led to the development of the cell theory.

Cells are the very smallest parts of life. All living things are made of cells. However, most cells cannot be seen without a microscope. How did scientists find out about cells when they couldn't see them?

### Discovery of Cells

Over many years, many scientists observed and studied cells under the microscope. As early scientists improved both microscopes and lenses, they could learn more and more about cells. Some of these findings are listed in the table below.

SCIENTIST (YEAR)	FINDING
Hooke (1665)	identified and named cells
Leeuwenhoek (1674)	observed living cells; could see greater detail due to better lenses
Schleiden (1838)	noted that plants are made of cells
Schwann (1839)	concluded that all living things are made of cells
Virchow (1855)	proposed that all cells come from other cells

### Cell Theory

The discoveries of these early scientists came together into the **cell theory**. Today's scientists agree with this cell theory. It says three things:

- All living things are made of cells.
- All cells come from other living cells.
- The cell is the most basic unit of life. There is nothing living that is smaller than a cell.



Underline the part of the cell theory that says where cells come from.

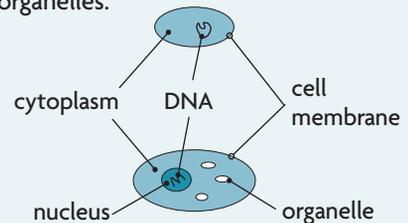
## Prokaryotic cells lack a nucleus and most internal structures of eukaryotic cells.

Cells come in different shapes and carry out different jobs. However, they all share some features. Cells are very small. They are surrounded by a membrane that controls what enters and leaves the cell. They have **cytoplasm**, a jellylike material that contains the building blocks needed for life. And they are made of similar molecules. One of these molecules is DNA, the genetic information.

There are two main types of cells, prokaryotic cells and eukaryotic cells. **Prokaryotic cells** are extremely small. Their DNA floats in the cytoplasm, and they have no distinct\* internal parts. Prokaryotes, such as bacteria, are made of only one cell. **Eukaryotic cells** have a nucleus, which is a membrane that separates DNA from the cytoplasm. The nucleus is a type of **organelle**, a small part that carries out a specific job in a cell. Eukaryotic cells have many types of organelles. Like the nucleus, most organelles are covered by a membrane. Eukaryotes, such as plants and animals, are made of one cell or many cells.

### VISUAL VOCAB

**Prokaryotic cells** do not have a nucleus or other membrane-bound organelles.



**Eukaryotic cells** have a nucleus and other membrane-bound organelles.



In the text above, circle two things that eukaryotic cells have inside them that prokaryotic cells do not have.

### \* ACADEMIC VOCABULARY

**distinct** distinguishable as a separate entity

### 3.1 Vocabulary Check

cell theory            eukaryotic cells  
cytoplasm            organelle  
prokaryotic cells

### Mark It Up

Go back and highlight each sentence that has a vocabulary word in **bold**.



1. Name two types of cells. \_\_\_\_\_, \_\_\_\_\_
2. In both types of cells, the jellylike substance is \_\_\_\_\_.
3. Parts that carry out specific jobs within a cell are \_\_\_\_\_.

### 3.1 The Big Picture

4. List the three parts of the cell theory. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_