

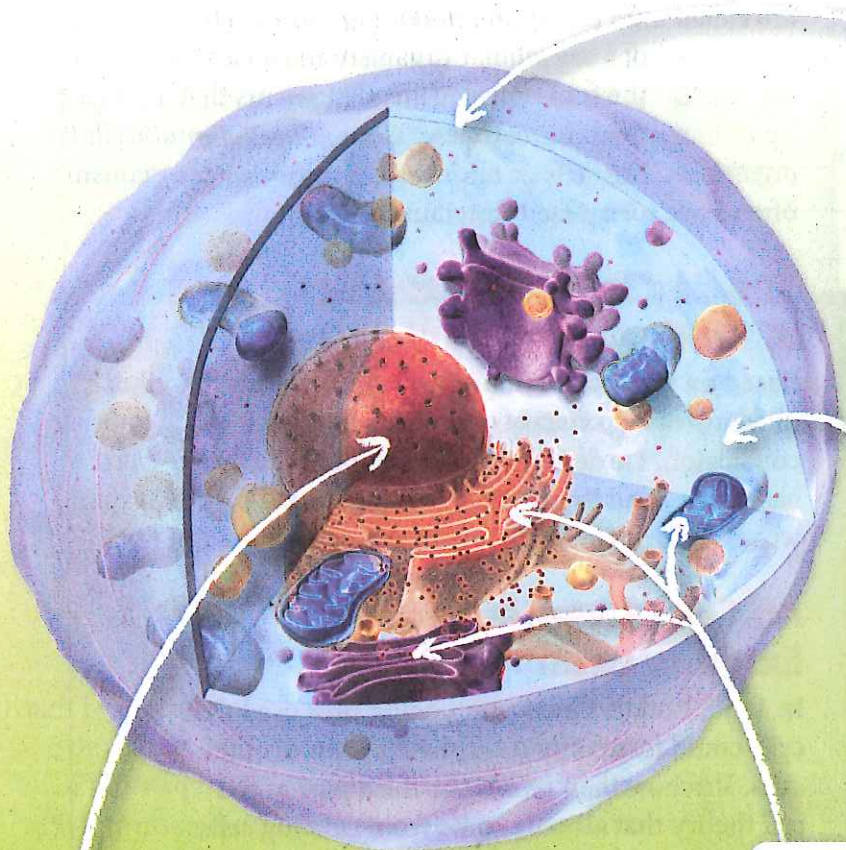
# On the Cellular

## What structures do cells have in common?

Cells come in many different shapes and sizes. Cells vary in structure depending on their function. However, all cells have some structures in common, including cell membranes, cytoplasm, organelles, and DNA.

### Active Reading

**11 Identify** As you read, underline the function of cell membranes, organelles, and DNA.



### Cell Membrane

A **cell membrane** is a protective layer that covers a cell's surface and acts as a barrier between the inside of a cell and the cell's environment. It also controls materials, such as water and oxygen, that move into and out of a cell.

### Cytoplasm

The region inside the cell membrane that includes the fluid and all of the *organelles* except the *nucleus* is called the **cytoplasm** (SY•tuh•plaz•uhm).

### Organelles

An **organelle** is a small body in a cell's cytoplasm that is specialized to perform a specific function. Cells can have one or more types of organelles. Most, but not all, organelles have a membrane.

### DNA

Deoxyribonucleic acid, or DNA, is genetic material that provides instructions for all cell processes. Organisms inherit DNA from their parent or parents. In some cells, the DNA is contained in a membrane-bound organelle called the **nucleus**. In other types of cells, the DNA is not contained in a nucleus.

# What are the two types of cells?

Although cells have some basic structures in common, there are some important differences. The way that cells store their DNA is the main difference between the two cell types.

## Active Reading

**12 Define** As you read, underline the differences between prokaryotes and eukaryotes.

## Prokaryotes

A **prokaryote** (proh•KAIR•ee•oht) is a single-celled organism that does not have a nucleus or membrane-bound organelles. Its DNA is located in the cytoplasm. Prokaryotes also contain organelles called *ribosomes* that do not have a membrane. Some prokaryotes have organelles called *flagella*, hairlike structures that help them move. Prokaryotic cells are the smallest cells, including all bacteria and archaea.

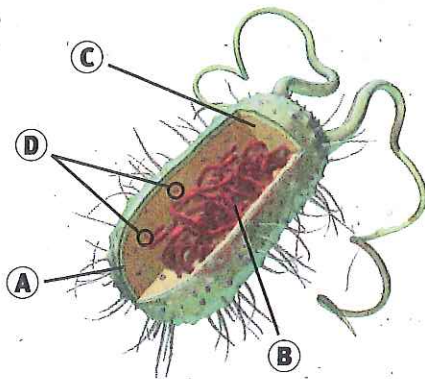
## Eukaryotes

A **eukaryote** (yoo•KAIR•ee•oht) is an organism made up of cells that contain their DNA in a nucleus. Eukaryotic cells contain membrane-bound organelles, as well as ribosomes. Not all eukaryotic cells are the same. Animals, plants, protists, and fungi are eukaryotes. All multicellular organisms are eukaryotes. Most eukaryotes are multicellular. Some eukaryotes, such as amoebas and yeasts, are unicellular.

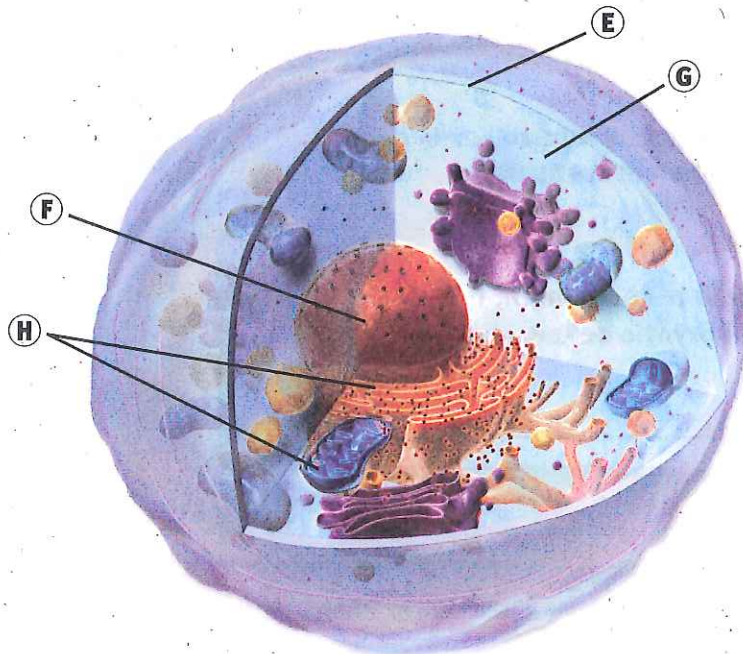
## Visualize It!

**13 Identify** Use the list of terms below to fill in the blanks with the matching cell parts in each cell. Some terms are used twice.

DNA in cytoplasm  
 DNA in nucleus  
 Cytoplasm  
 Cell membrane  
 Organelles



Prokaryote



Eukaryote

- A \_\_\_\_\_
- B \_\_\_\_\_
- C \_\_\_\_\_
- D \_\_\_\_\_

- E \_\_\_\_\_
- F DNA in nucleus
- G \_\_\_\_\_
- H \_\_\_\_\_