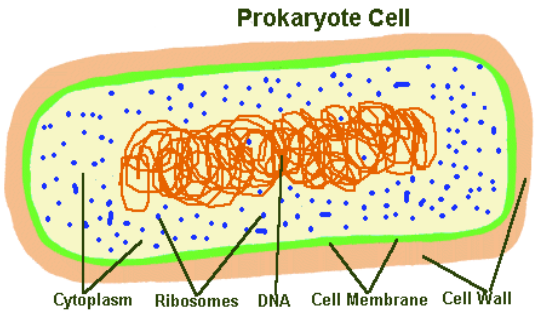
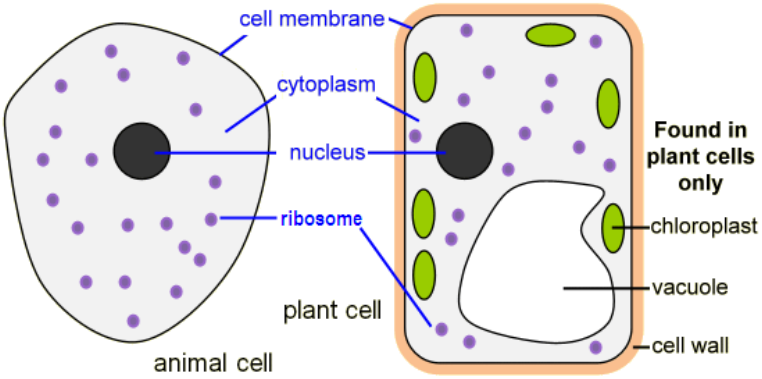
Prokaryotes & Eukaryotes

All living things are made of cells. Cells can be divided into two categories, prokaryotes and eukaryotes. Prokaryotes and eukaryotes share four common features. The first of these, a **plasma membrane**, encloses the contents of the cell and separates the interior of the cell from the outside environment. Within the plasma membrane, the cell is filled with a gel-like fluid called **cytoplasm**. All the chemical reactions within the cell take place within this medium. Also within the cytoplasm, **ribosomes** produce the proteins needed for the cell to survive. Both types of cells contain **DNA**, genetic material. In prokaryotes, DNA is found in a single ring, free-floating in the cytoplasm. In eukaryotes, DNA is housed within the **nucleus**, a membrane that separates the DNA from the rest of the cell.



Although the cells share common features, they also have unique characteristics used by scientists to identify them. Prokaryotic cells are much smaller and simpler than eukaryotic cells. Organisms that are prokaryotes, like bacteria, are primarily unicellular, made of one cell. One of the most important distinguishing characteristics of prokaryotes is the lack of a nucleus and membrane-bound organelles. Prokaryotes also have a **cell wall** surrounding the plasma membrane made of peptidoglycan.

Eukaryotic cells, on the other hand, are complex cells that contain a **nucleus** and membrane-bound organelles that carry out special functions. The nucleus, sometimes referred to as the "control center of the cell" is responsible for directing the cellular activities that occur within the organelles of the cell. The barrier around the cell, the plasma membrane, contains lipids, proteins, and carbohydrates and allows substances to flow into and out of the cell. Some eukaryotes, like plant and fungi cells, are also surrounded by a cell wall that provides structure and support. Scientists often use this characteristic to distinguish between plant and animal cells. Organisms that contain eukaryotic cells are primarily multi-cellular, made of many cells, but there are always exceptions to the rule. For example, many protists and some fungi are unicellular.



Eukaryotic Cells

Directions: After reading the passage above, create a T-chart in your notebook to organize the similarities and differences between prokaryotes and eukaryotes. Draw and label the cells pictured under the appropriate column of the T-chart.

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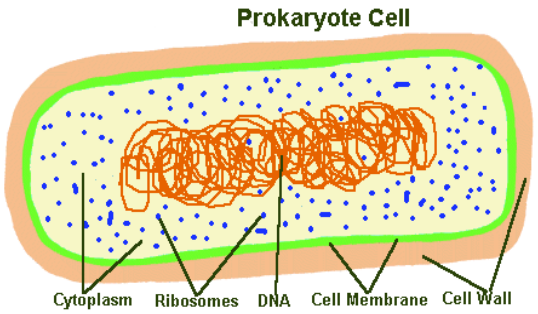

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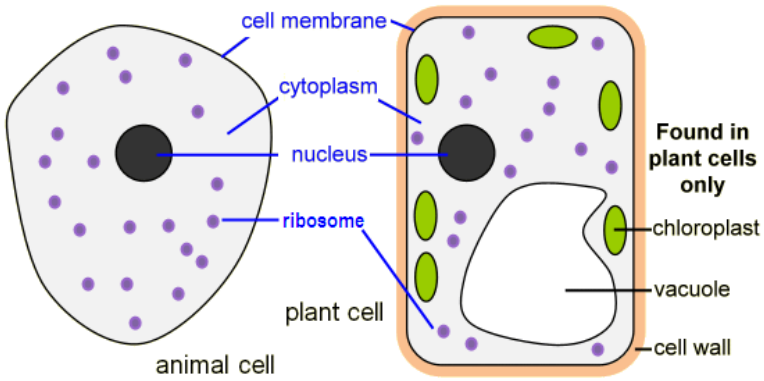

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