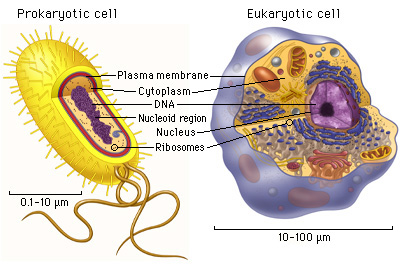
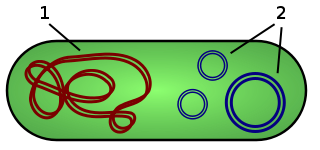
**SC.912.L.14.3**

**Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells.**

There are two categories of cells called prokaryotic and eukaryotic.

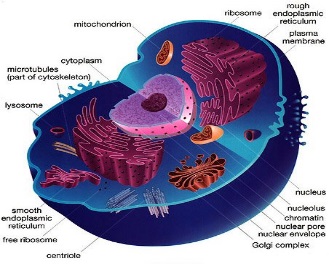
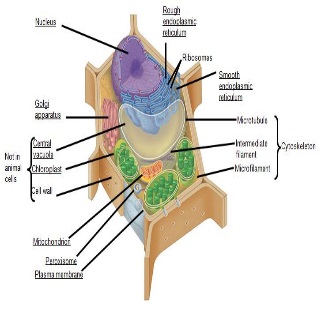
Despite the many differences between cells, all cells have a cell membrane, cytoplasm, and DNA.

Prokaryotes – The first cells

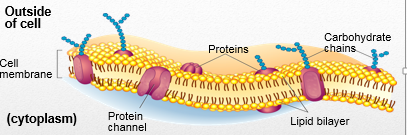
* They do not have a membrane-bound nucleus.
* They have a single, circular chromosome (1) and plasmid DNA (2).
* Are structurally simpler than eukaryotic cells.
* They are small and lack complex organelles.
* Common example – bacteria

Eukaryotic Cells

* These cells are distinguished by the presence of a nucleus.
* The two main types of eukaryotic cells are -
* ANIMAL PLANT

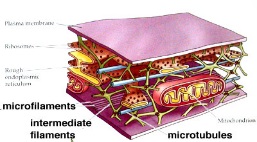


* Eukaryotic cells are divided into functional compartments called organelles for better efficiency.

**Organelles** are found throughout both types of cells. They perform various functions within each of these cells. Higher forms of life are composed of more complex, larger eukaryotic cells. These cells include protists, fungi, plants, and animals.

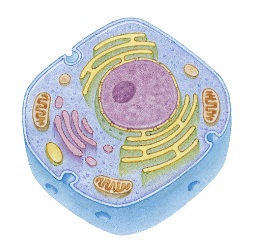
**Cell Membrane**

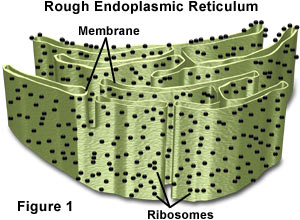
* Surrounds outside of ALL cells
* Composed of double layer of phospholipids and proteins
* Controls what enters or leaves the cell

**Cytoskeleton**

* Helps cell maintain cell shape

**Nucleus**

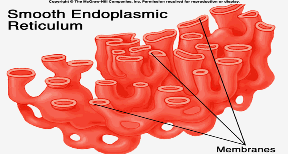
* Controls the normal activities of the cell
* Contains the DNA
* Surrounded by a nuclear envelope with pores

**Ribosomes**

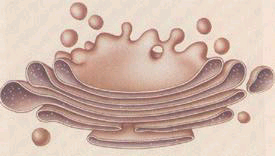
* Can be attached to Rough ER or can be free (unattached) in the cytoplasm

**Rough Endoplasmic Reticulum (ER**)

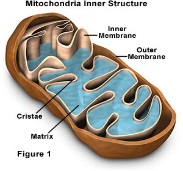
* Synthesis of membrane proteins and transport vesicles

**Smooth ER**

* Synthesis of lipids and responsible for detoxification

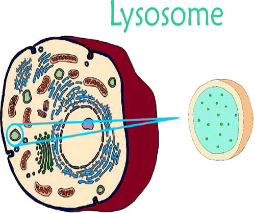
**Golgi Apparatus**

* Modify, sort, & package molecules from the ER for storage or transport out of the cell

**Mitochondria**

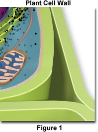
* “Powerhouse” of the cell
* Make cellular energy (ATP) through Cell Respiration

**Lysosome**

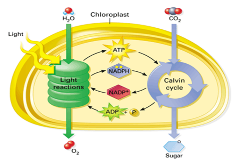
* Contain digestive enzymes
* Break down food, bacteria, and worn out cell parts for the cell

**Differences between plant and animal cells**

Plants have the same organelles as animals plus the three “C’s”

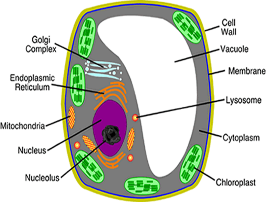
* Cell Wall
* Chloroplast
* Central Vacuole (large)

**Cell Wall**

* Supports and protects the cell

**Chloroplast**

* Found only in producers
* Filled with chlorophyll
* Use energy from sunlight to make own food (glucose)

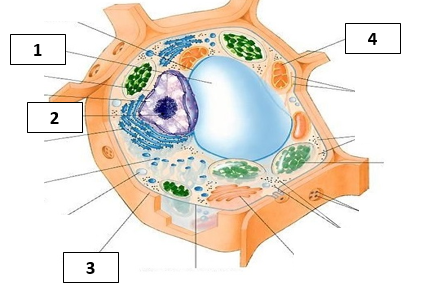
**Vacuole**

* Fluid filled sacks for storage
* Small or absent in animal cells
* Plant cells have a large Central Vacuole

|  |  |  |
| --- | --- | --- |
| Organelles only found in Prokaryotic Cells (include function of organelle) | Organelles found in Prokaryotic and Eukaryotic Cells (include function of organelle) | Organelles only found in Eukaryotic Cells (include function of organelle) |
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|  |  |  |
| http://biology.unm.edu/ccouncil/Biology_124/Images/cellwall.jpeg |  |  |
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Looking at the chart above what do you notice about the number of organelles in each type of cell? What does that tell you about the complexity of the two types of cells? Develop a mnemonic device (clean and appropriate for school) to remember the organelles that are found in both prokaryotic and eukaryotic cells.

1. Which of the following structures in the diagram below enables the observer to identify that it is a plant cell?



a. 1 and 3

b. 1 and 2

c. 2 and 3

d. 2 and 4

1. When a runner sprints, their muscles require a large amount of cellular energy. Based on this information, which organelle would be more abundant in a muscle cell than a skin cell?

A. Chloroplast B. Ribosome

C. Mitochondrion D. Nucleus

1. Plant cells contain structures that carry out specialized energy-transfer functions that animal cells do not carry out. Which of the following structures carries out this specialized function in plant cells?
2. Lysosome
3. Chloroplasts
4. Mitochondria
5. Central vacuole