Section 1.1 Structure of the Cell

SNC2D

MRS. FRANKLIN

The Cell Theory

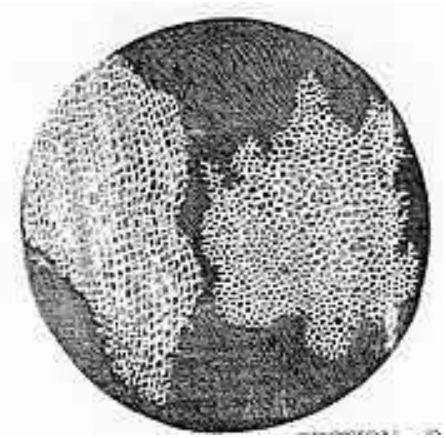
Robert Hooke made a microscope and examined a piece of cork. He noticed that it was very porous and resembled monastery 'cells'.

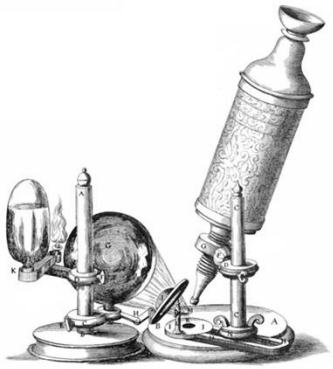
Early microscopists studied cells in the mid 1800's and developed the ***'Cell Theory':***

1) All living organisms are made of _____

2) The cell is the basic organizational unit of life

3) All cells come from _____

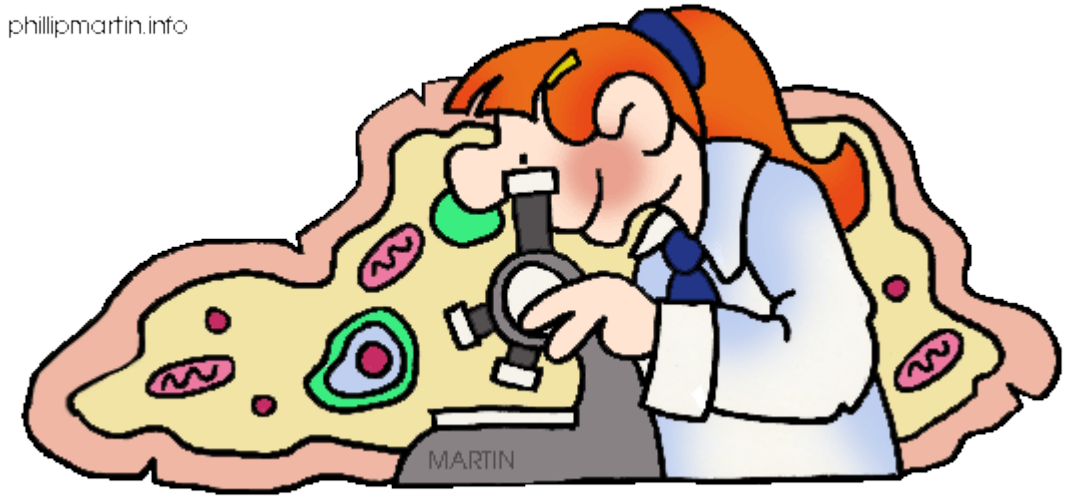




The Cell Structure

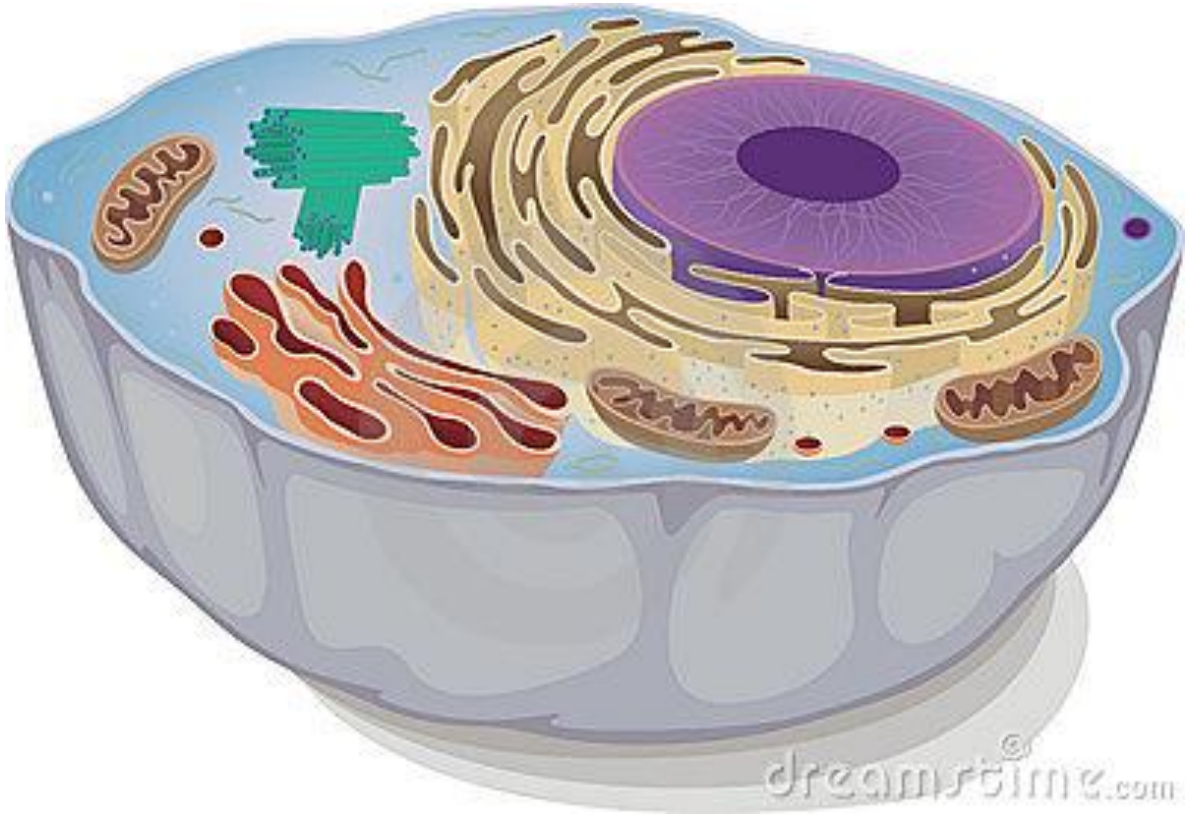
Most organisms are made up of millions of cells and all of the cells must work together to ensure the proper functioning of the organism.

By using microscopes, scientists were able to determine the function and location of all of the organelles within a plant cell and animal cell.



Animal Cell Structure

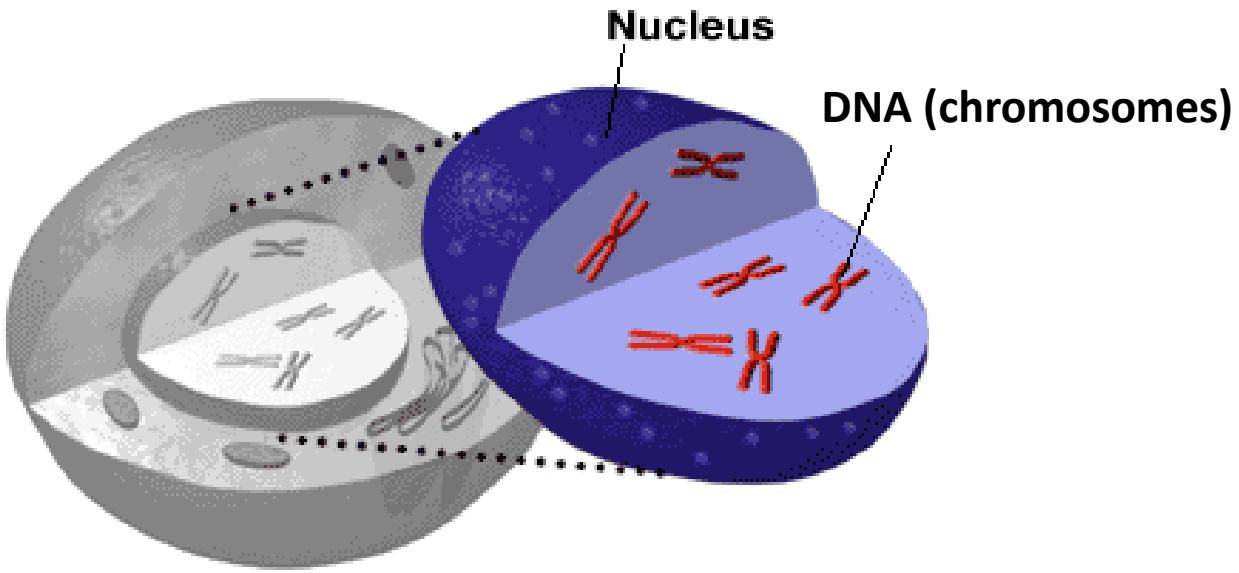
The **animal cell** contains various organelles that are similar to the plant.



Organelle: *a specialized structure in the cell*

Cell nucleus

The nucleus is known to be the ***'control center' of the cell***. It contains important genetic information (DNA) that is able to control the cell's activities.

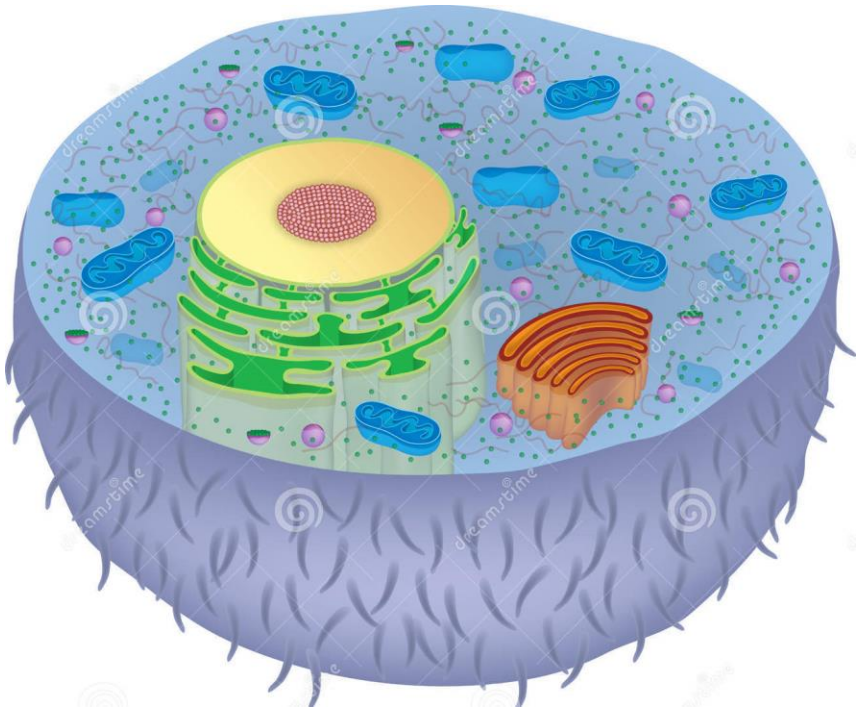


DNA is the genetic information that can be inherited from generation to generation. DNA can code for important traits in the human body.

Cytoplasm

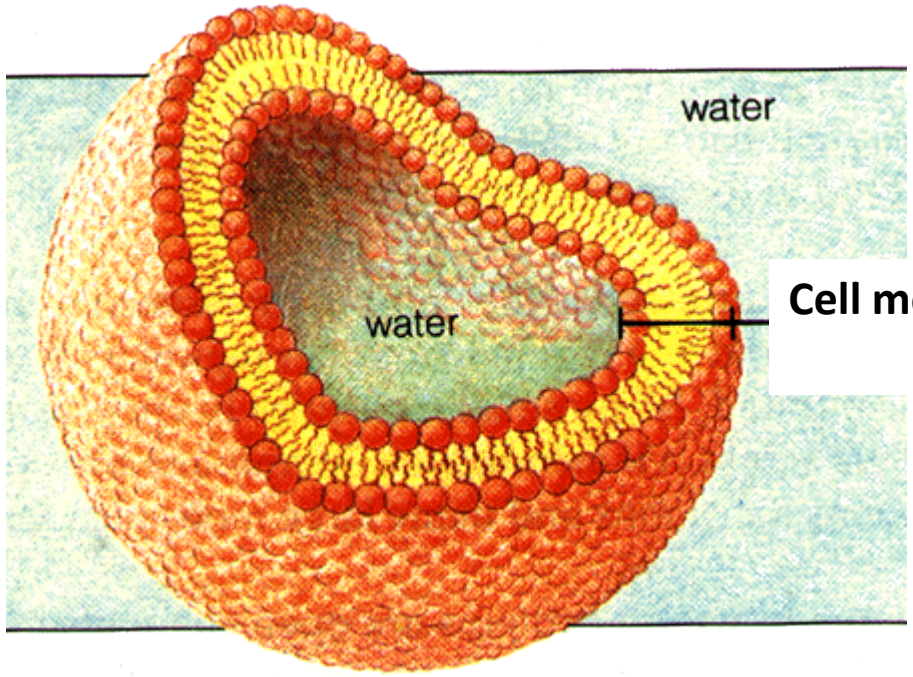
Cytosol:

Cytoplasm:



Cell Membrane

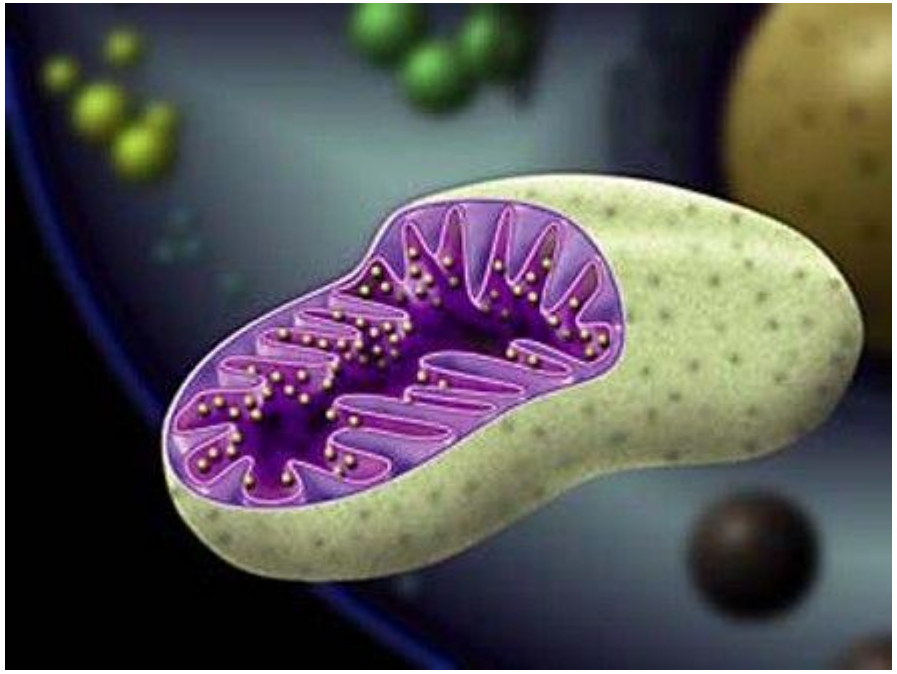
The ***cell membrane*** separates the inside of the cell from the external environment.



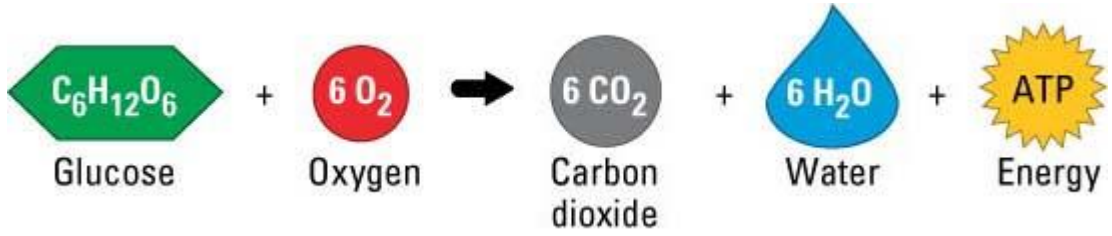
*The cell membrane is **semi-permeable** and only allows certain molecules to enter and leave the cell.*

Mitochondria

The mitochondria is known as the ***'power house'*** of the cell and helps to produce energy for the cell by using glucose that is consumed in our diet.

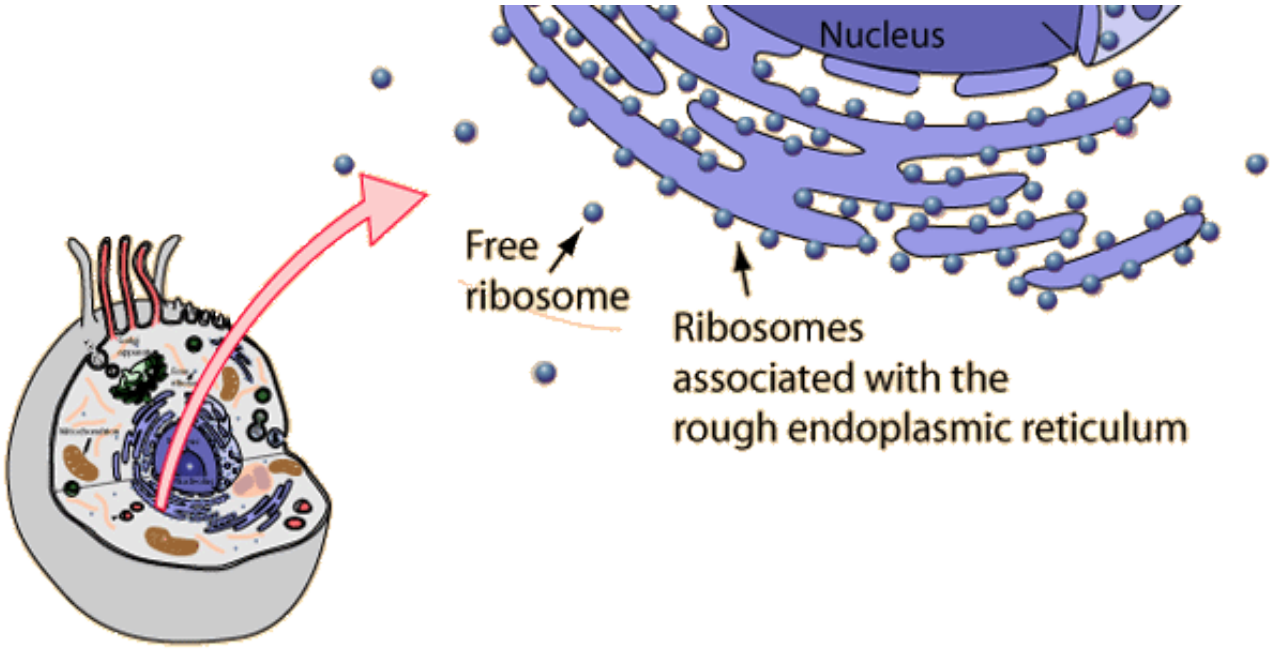


Cellular Respiration *is the process used by the mitochondria to produce energy.*



Ribosomes

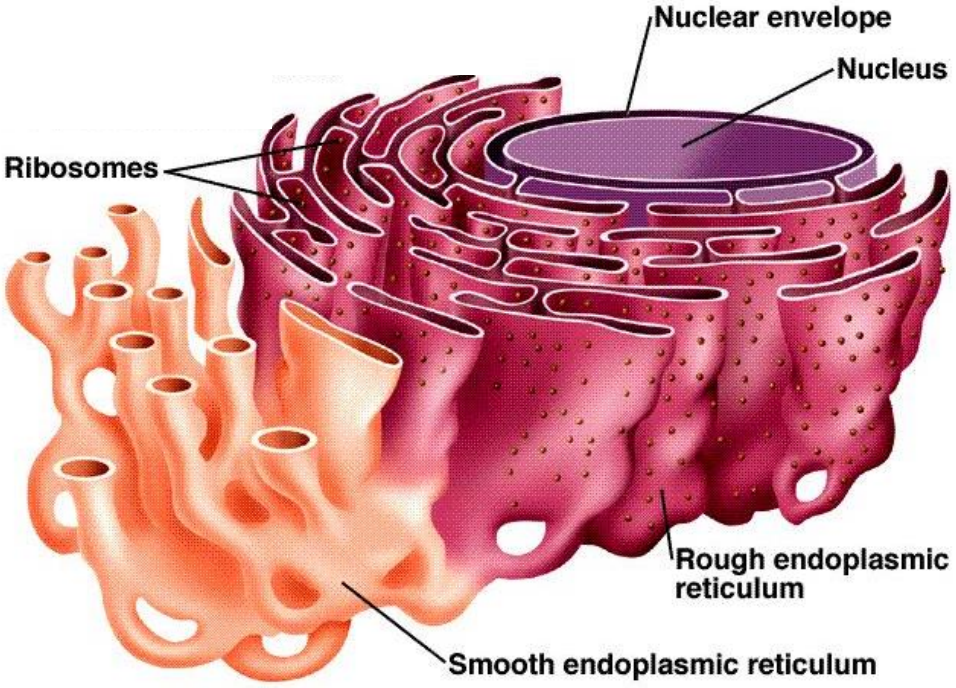
Ribosomes help produce proteins necessary for the proper functioning of the cell. They can be attached to the ***Endoplasmic Reticulum*** or free floating in the cytoplasm.



Proteins are essential in maintaining the structure of the cell and for important activities.

Endoplasmic Reticulum

The endoplasmic reticulum (ER) is a network of channels that help transport proteins or DNA products from the nucleus.

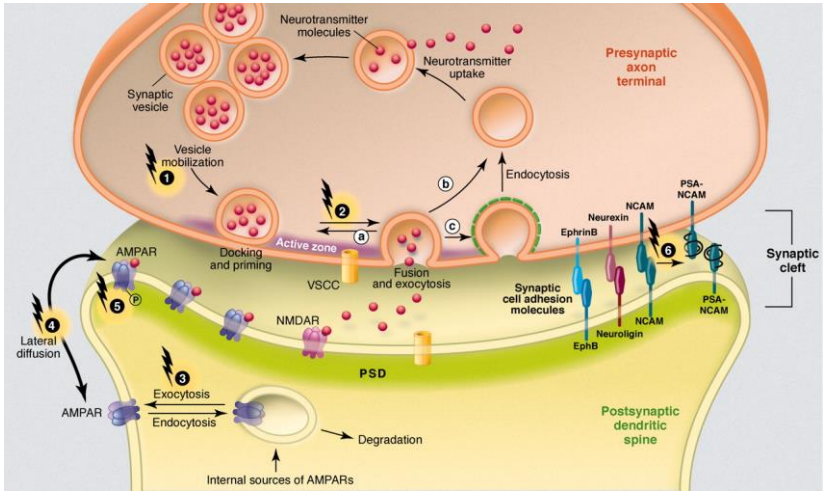


Smooth ER:

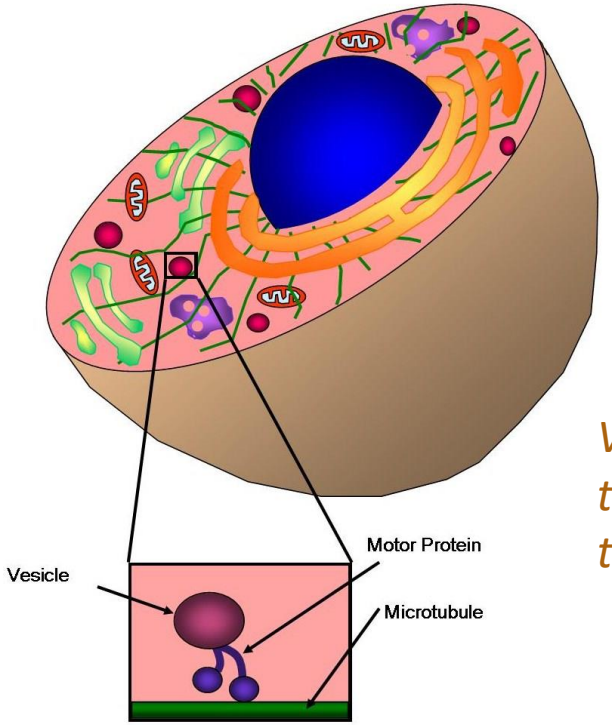
Rough ER:

Vesicles

Vesicles are membranous sacs that can transport/store materials. They can help certain material enter or leave the cell.



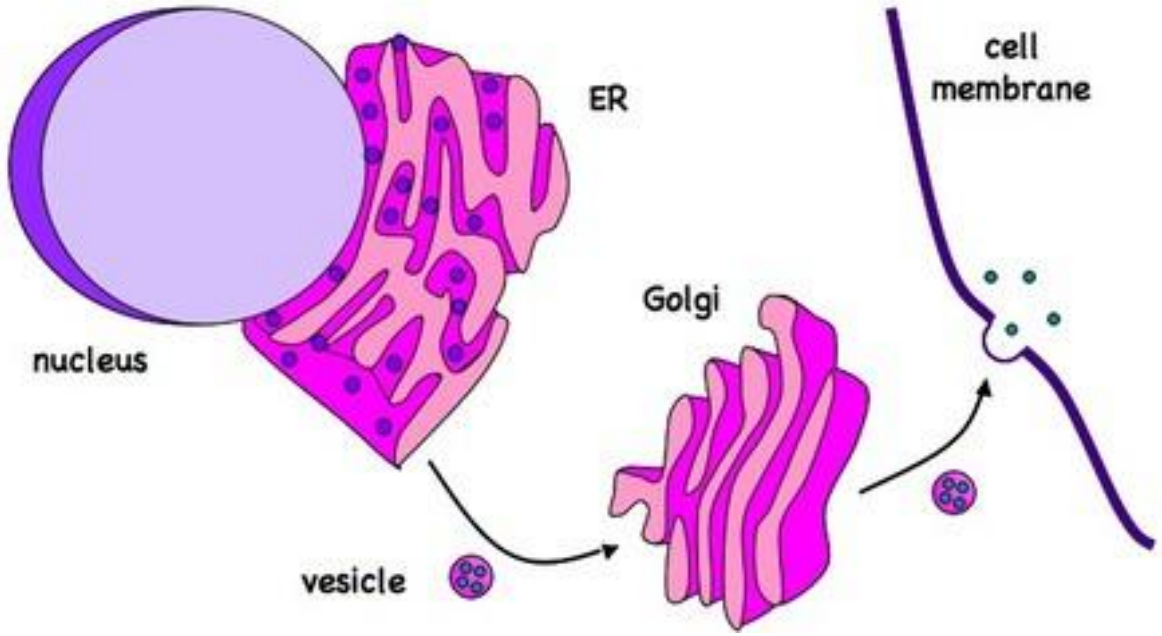
Vesicles are often used to transport hormones or neurotransmitters when sending signals from the brain.



Vesicles can be transported in the cell through motor proteins.

Golgi Body

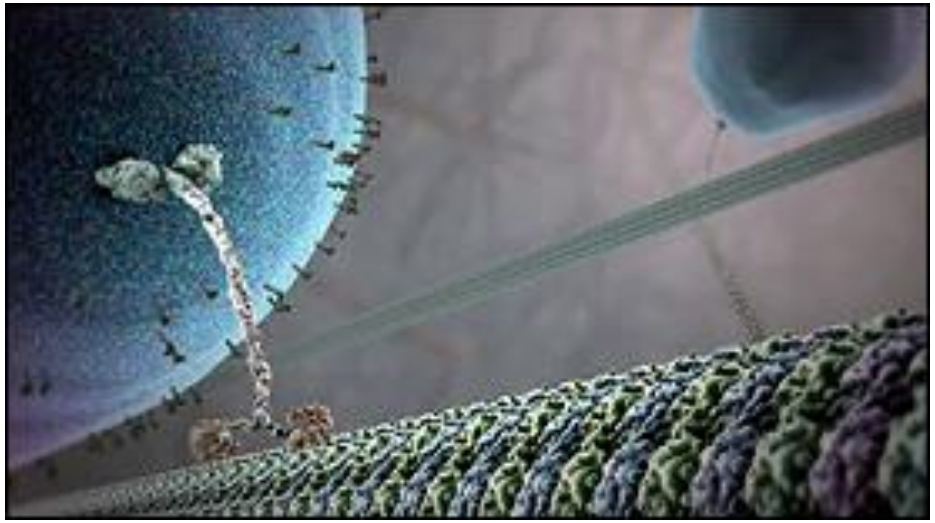
The Golgi Body helps to sort and package proteins and other molecules for transport outside of the cell.



Vesicles can be used to transport materials to and from the golgi body.

Cytoskeleton

The cytoskeleton is made up of filaments and tubules that help to maintain the structure of the cell.

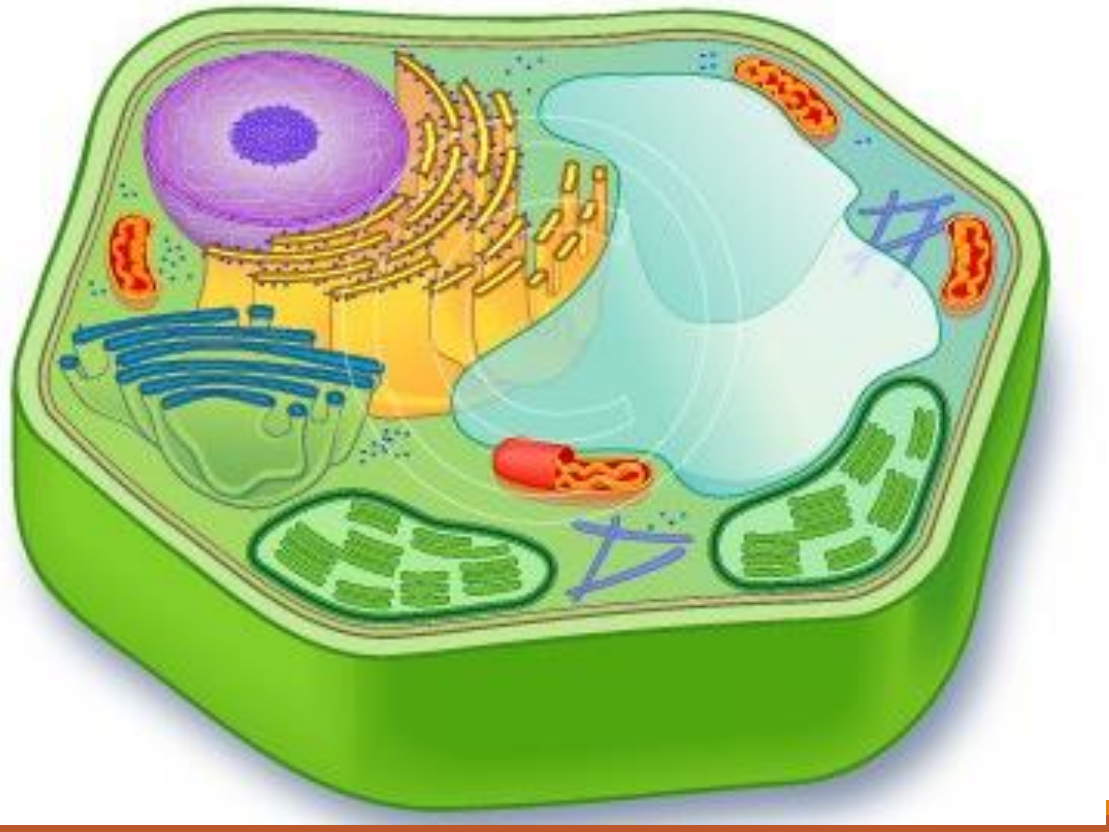


The cytoskeleton could also be used as a 'track' to help motor proteins carry the vesicle.

Plant Cell Structure

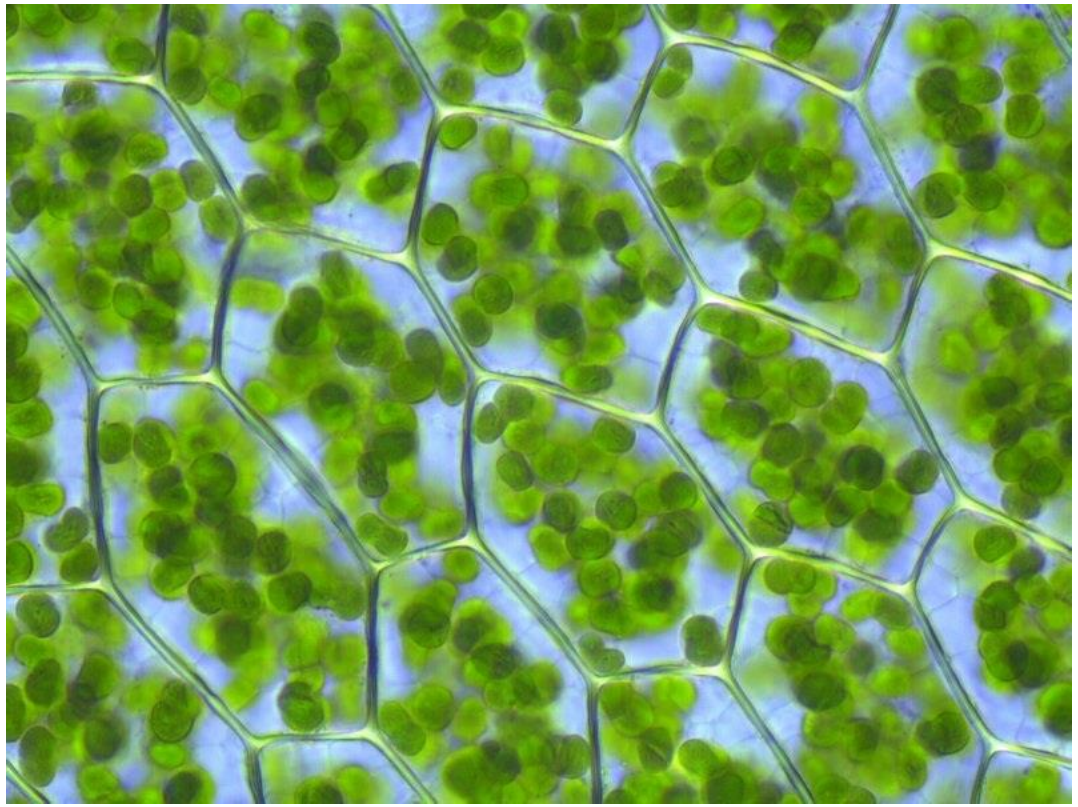
Along with the organelles found in animal cells, the plant cells contain an additional 3 organelles:

What are the three other organelles found in plant cells but not in animal cells?



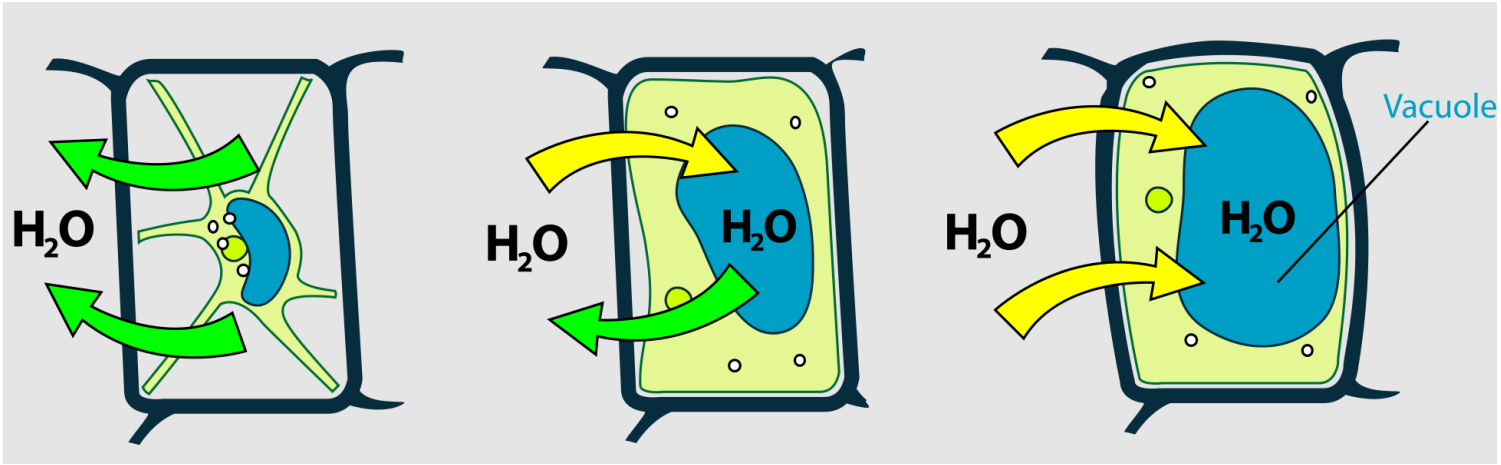
Cell Wall

The cell wall is a rigid structure that surround the cell membrane and helps to provide support.



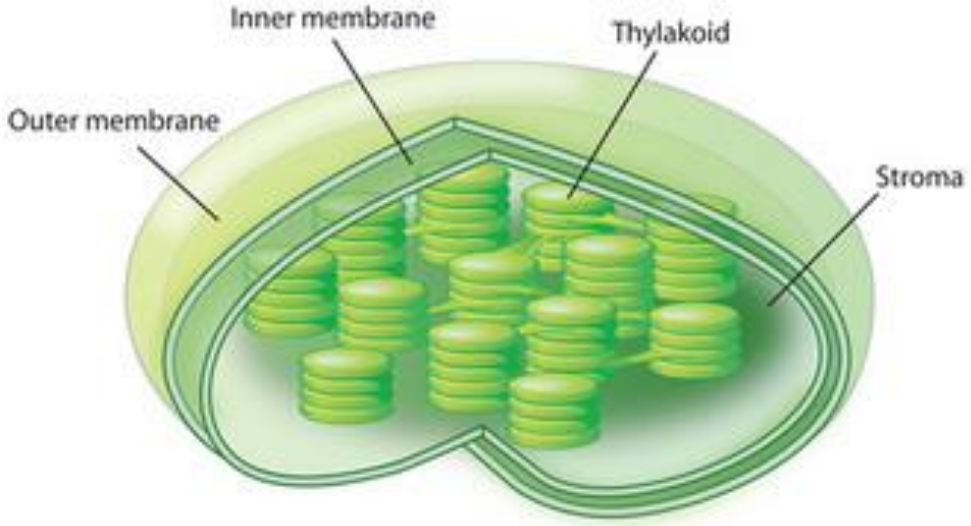
Large Vacuole

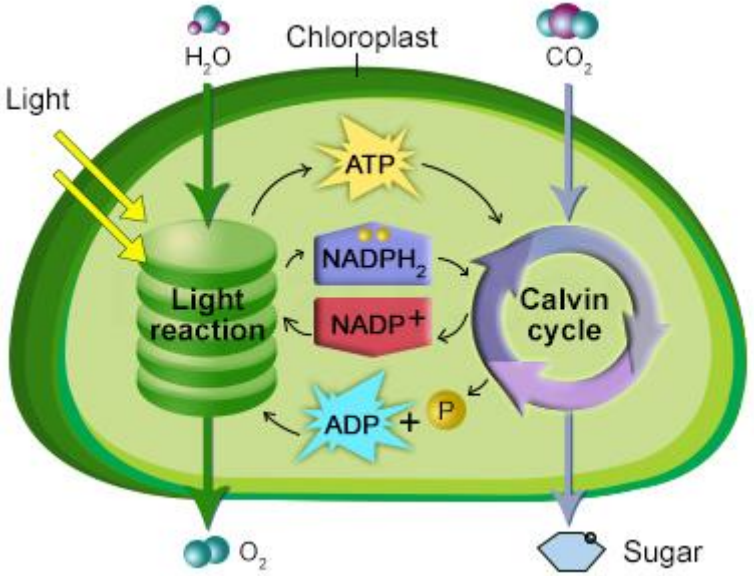
The large vacuole stores water and other materials. When filled with water the vacuole can help support the plant.



Chloroplasts

Chloroplasts take energy from the sun to make glucose. The glucose can then be used by the mitochondria for cellular respiration (to provide energy for the cell).





Homework

- Textbook: complete pg. 15 # 2, 3, 7 & 8

- Complete the worksheet given in class