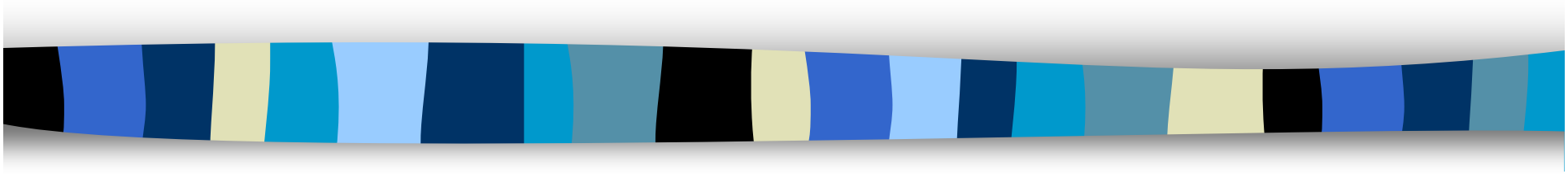
Cells



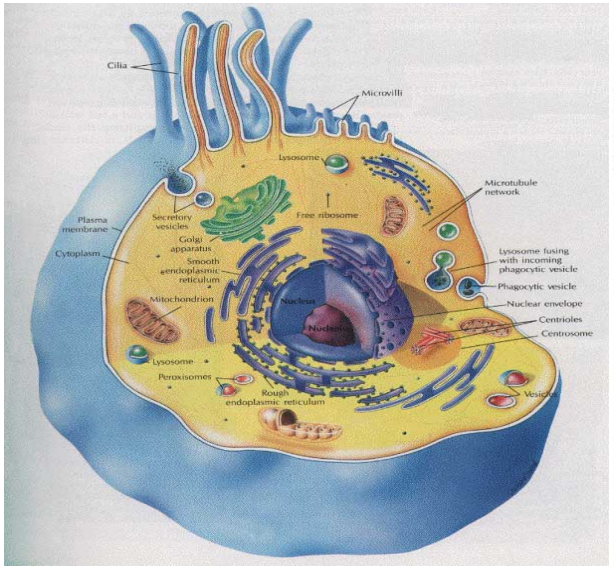
Chapter 7

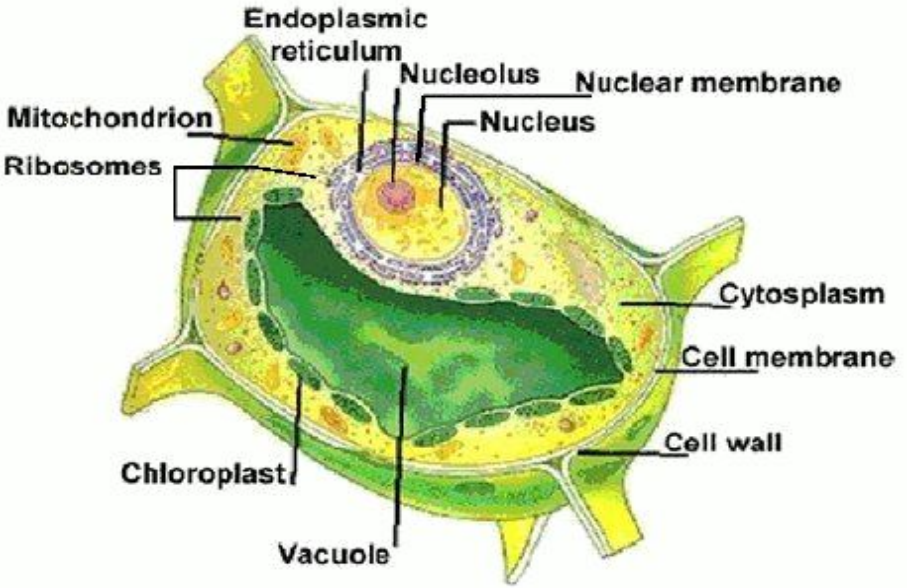
Cell Structure and Function

Cell Organelles

- **<u>Organelle</u>:** a tiny structure that performs a specialized function in the cell.
  - Found in the cytoplasm of cells.

Eukaryotic Cells have Organelles



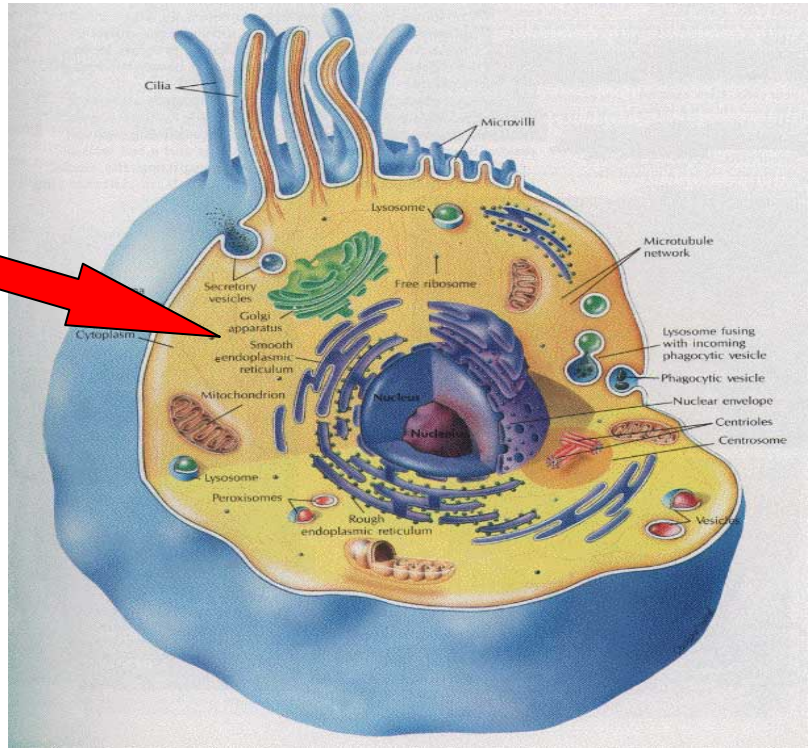


7-2 Cell Structure

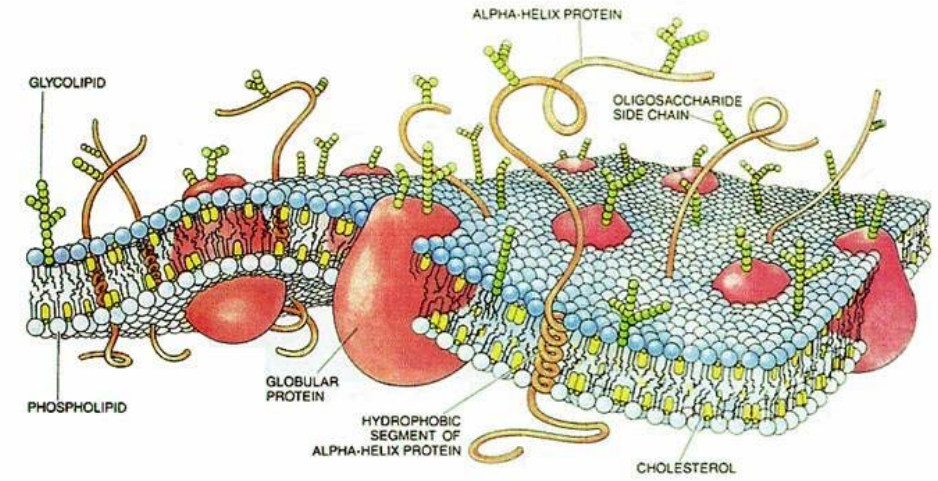
- There are three basic structures that are common to both plant and animal cells:
  - **Cell membrane**
  - **Nucleus**
  - **Cytoplasm**

Cytoplasm

- Area between the nucleus and cell membrane
- Gel-like substance
- Where many cellular activities (metabolism) occur

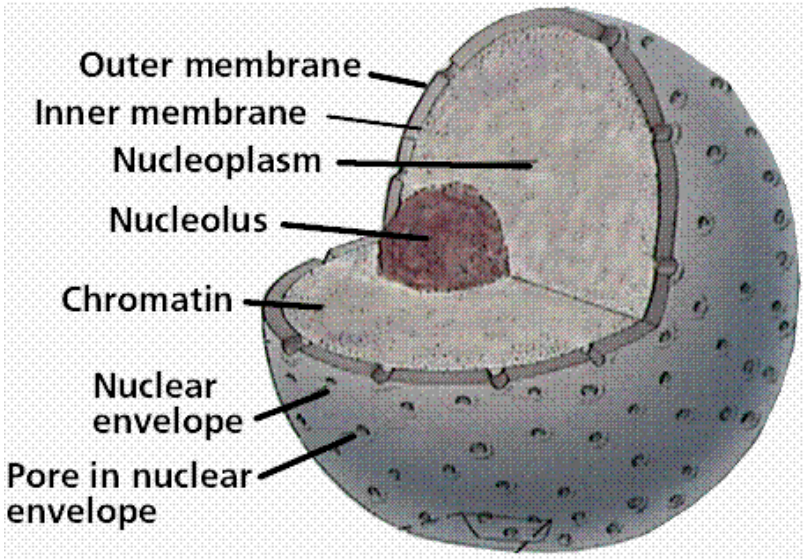


Cell Membrane



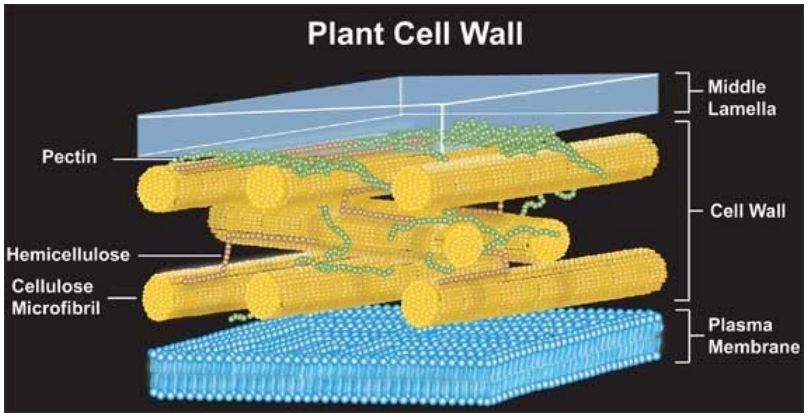
- The cell membrane regulates what enters and exits the cell and also aids in the protection and support of the cell.
- The cell membrane is composed of a lipid bilayer.
- Takes in food and water, removes wastes, and communicates with other cells

Nucleus



- Information center of the cell
- Contains the DNA of the cell
- Eukaryotes: Organisms with a nucleus
- Prokaryotes: Organisms without a nucleus

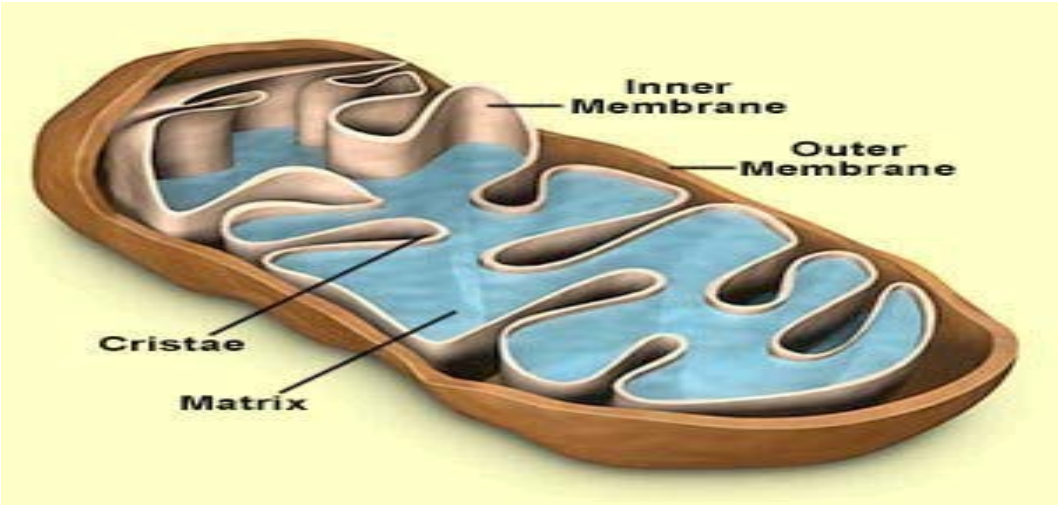
Cell Wall



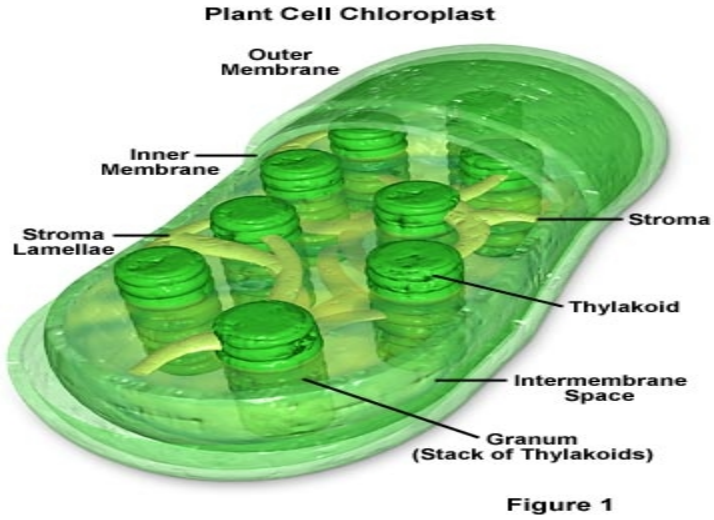
- Appears in plants, algae and some bacteria
- Lies outside the cell membrane
- Protects and supports the cell

Mitochondria

- Mitochondria change the chemical energy in food to a more convenient form of energy for the cell: ATP
- Energy factory of the cell



Chloroplast



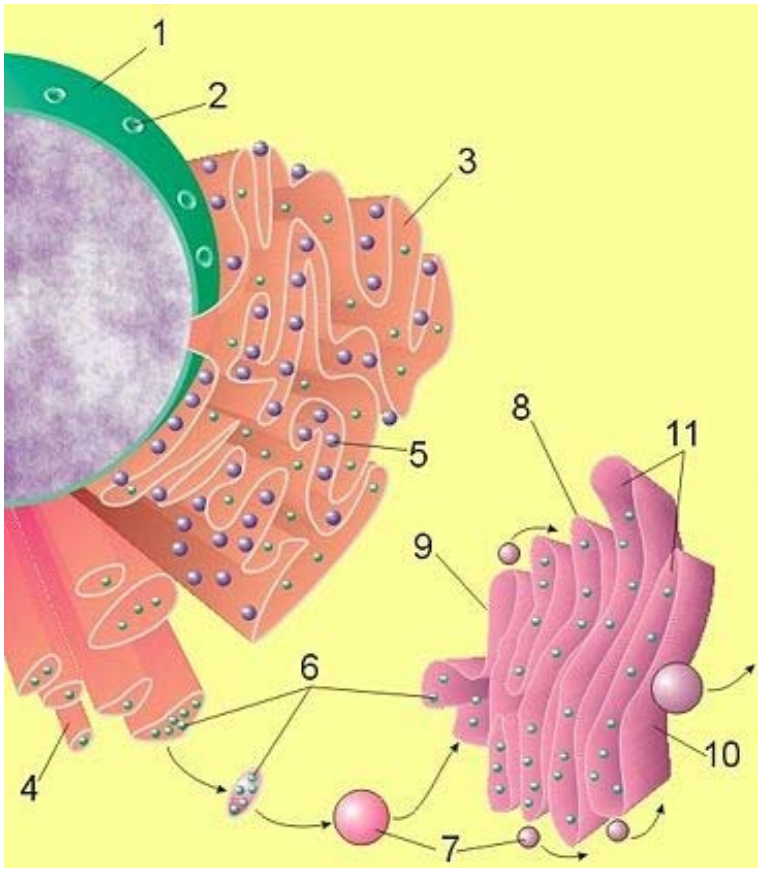
- Only found in plant cells and algae
- Chloroplasts trap sunlight and convert it into chemical energy or sugars (photosynthesis)
- Makes food for the cell

Ribosomes

- Small round structures where proteins are made.
- Ribosomes are composed of RNA and proteins
- Some ribosomes are attached to ER or some are free

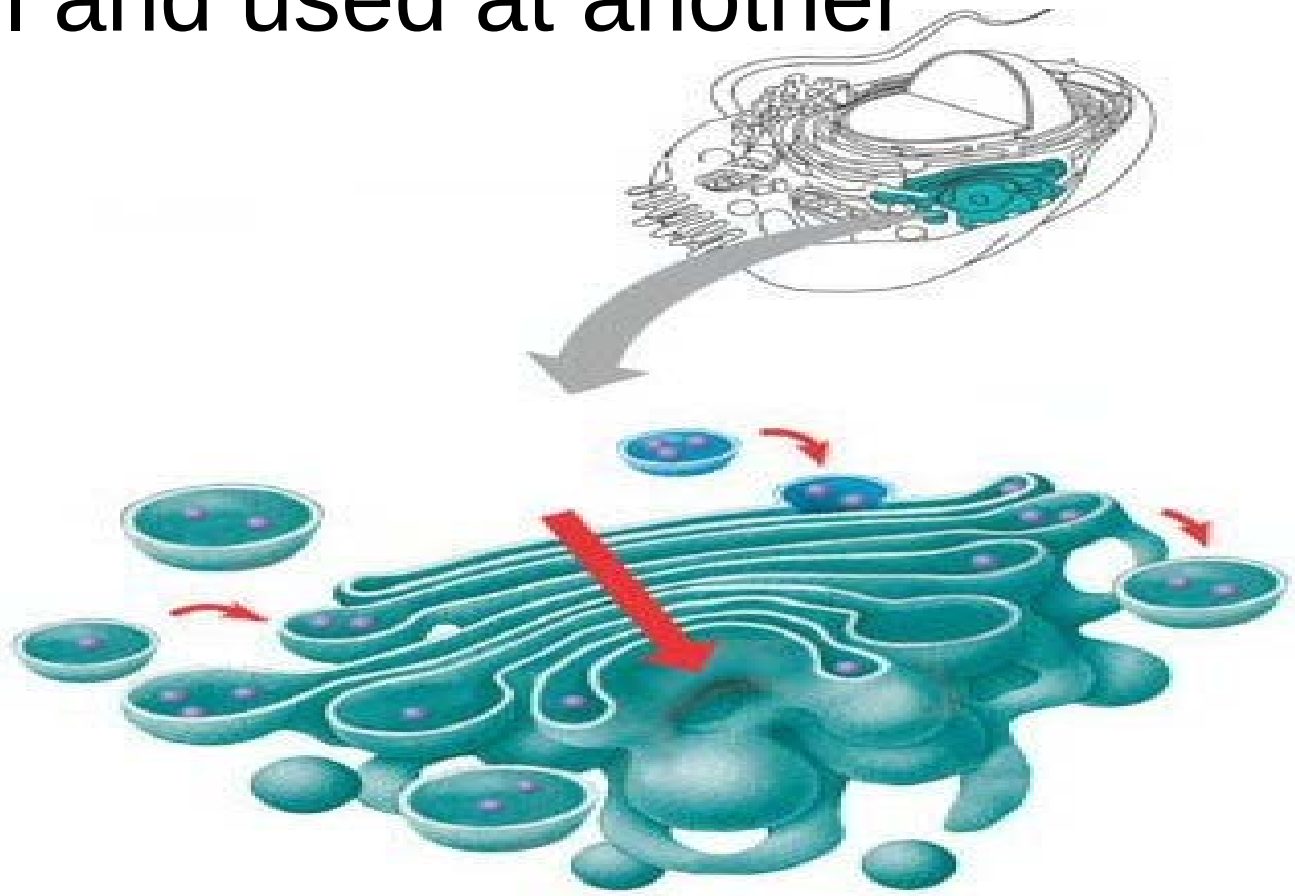
Endoplasmic Reticulum (ER)

- **Highway** of the cell
- **Transports** materials through the inside of the cell.
- Rough ER has ribosomes attached to it and therefore moves proteins around the cell.
- Smooth ER moves lipids and fats.

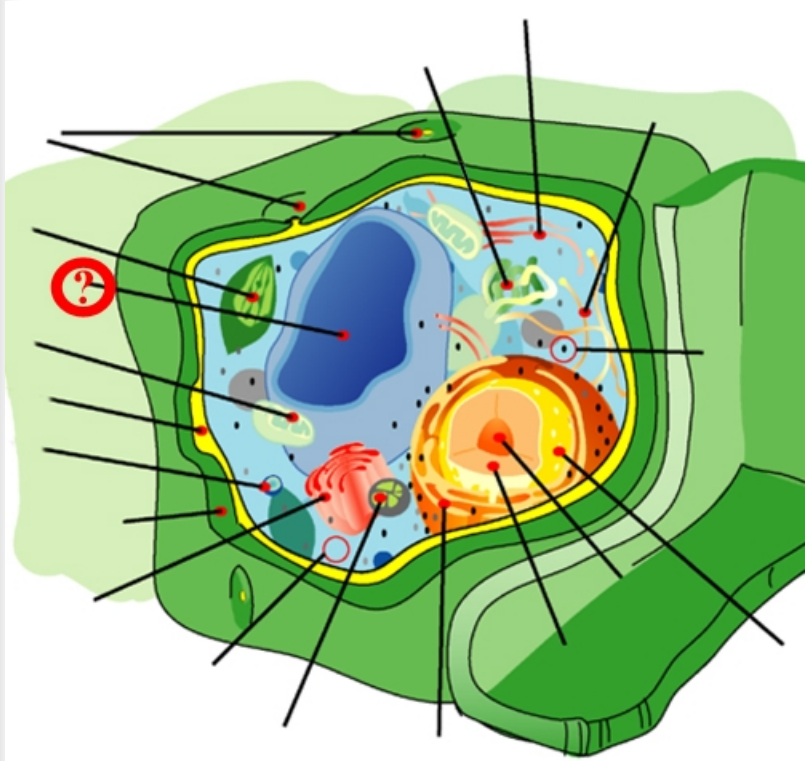


Golgi Apparatus

- Modifies, packages and distributes molecules made at one location of the cell and used at another

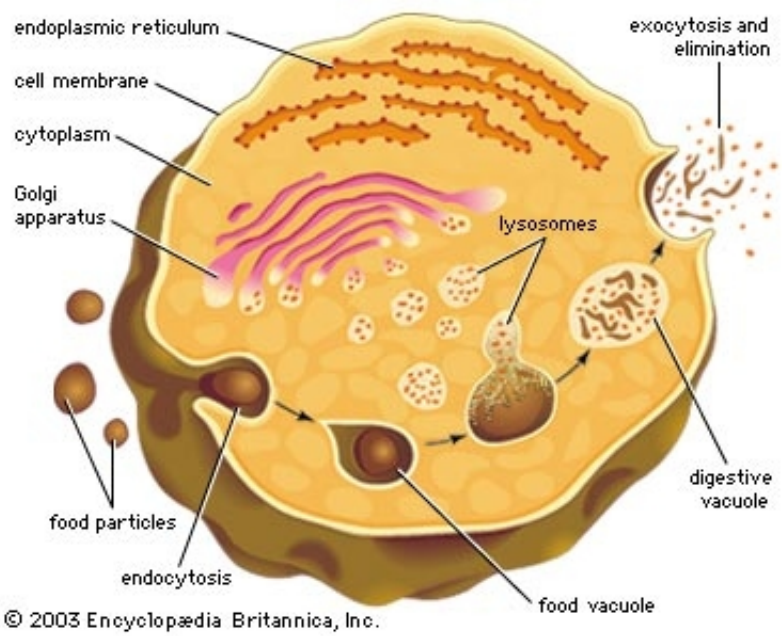


Vacuoles



- Storage for the cell
- Plant cells have one big vacuole
- Animal cells have different smaller vacuoles

Lysosomes

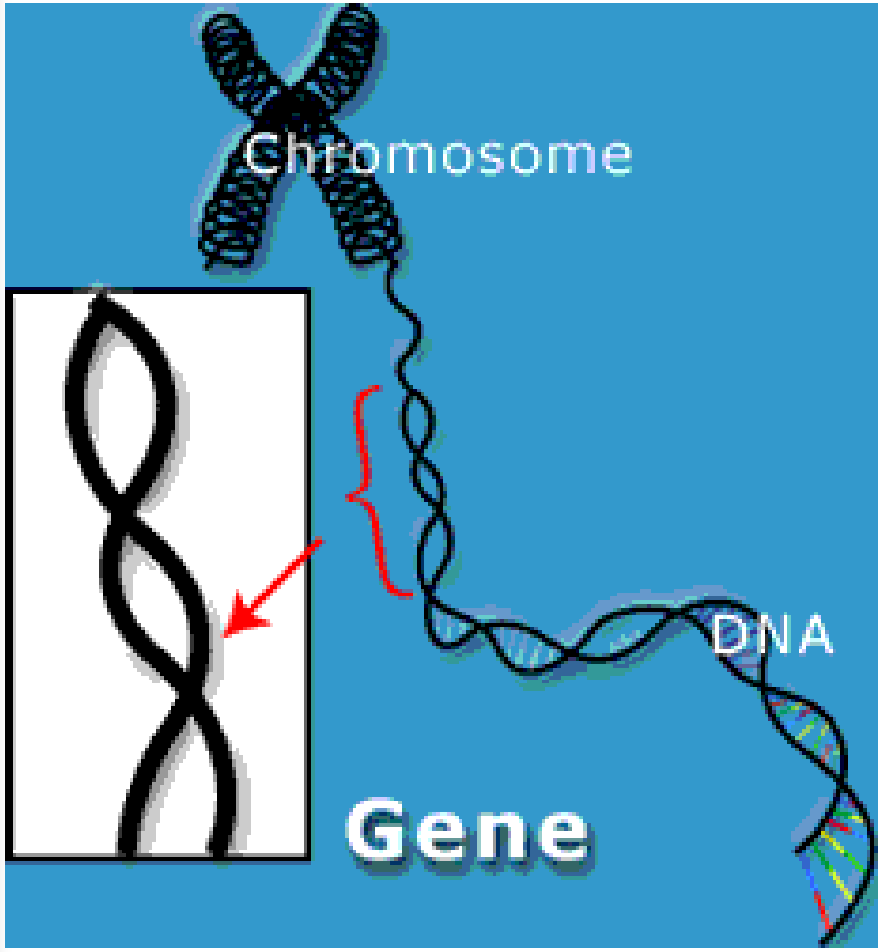


- Small membrane bordered structures that contain chemicals and enzymes needed for digesting certain materials in the cell
- The clean up crew of the cell

Chromosomes

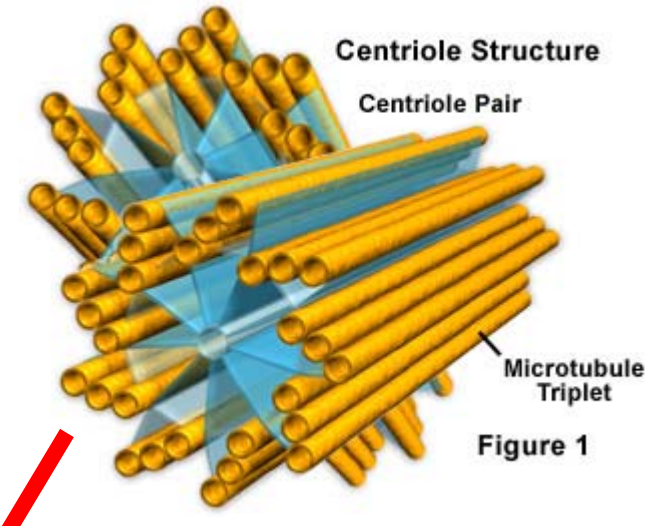
- A strand of DNA that can encode (make) hundreds of different proteins.
- Humans have 46 chromosomes in every nucleus in every cell!
- Found in the nucleus

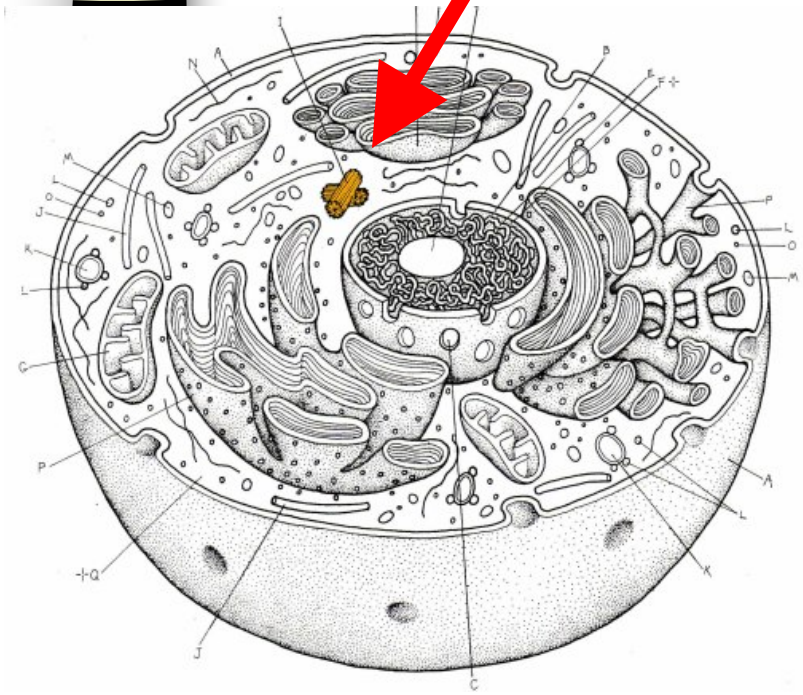
Gene



- A piece of a chromosome that encodes (makes) only one specific protein.
- A chromosome can have hundreds of genes on it.

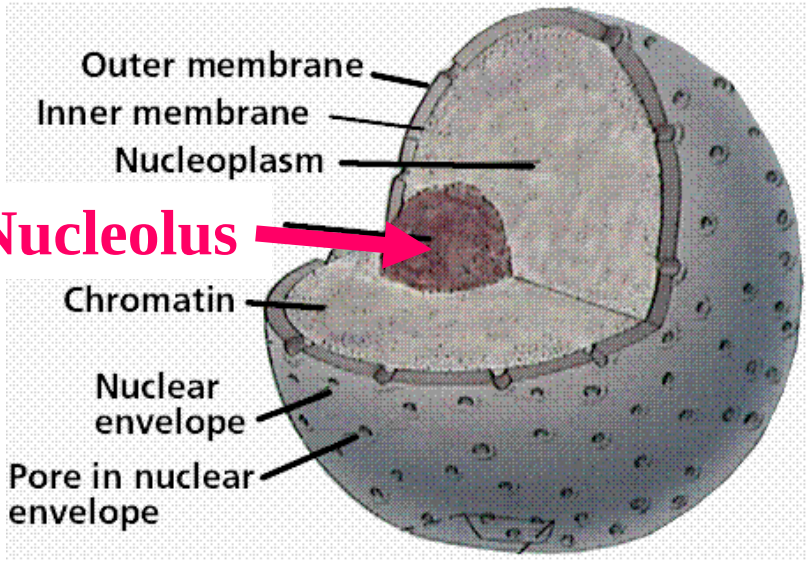
Centrioles





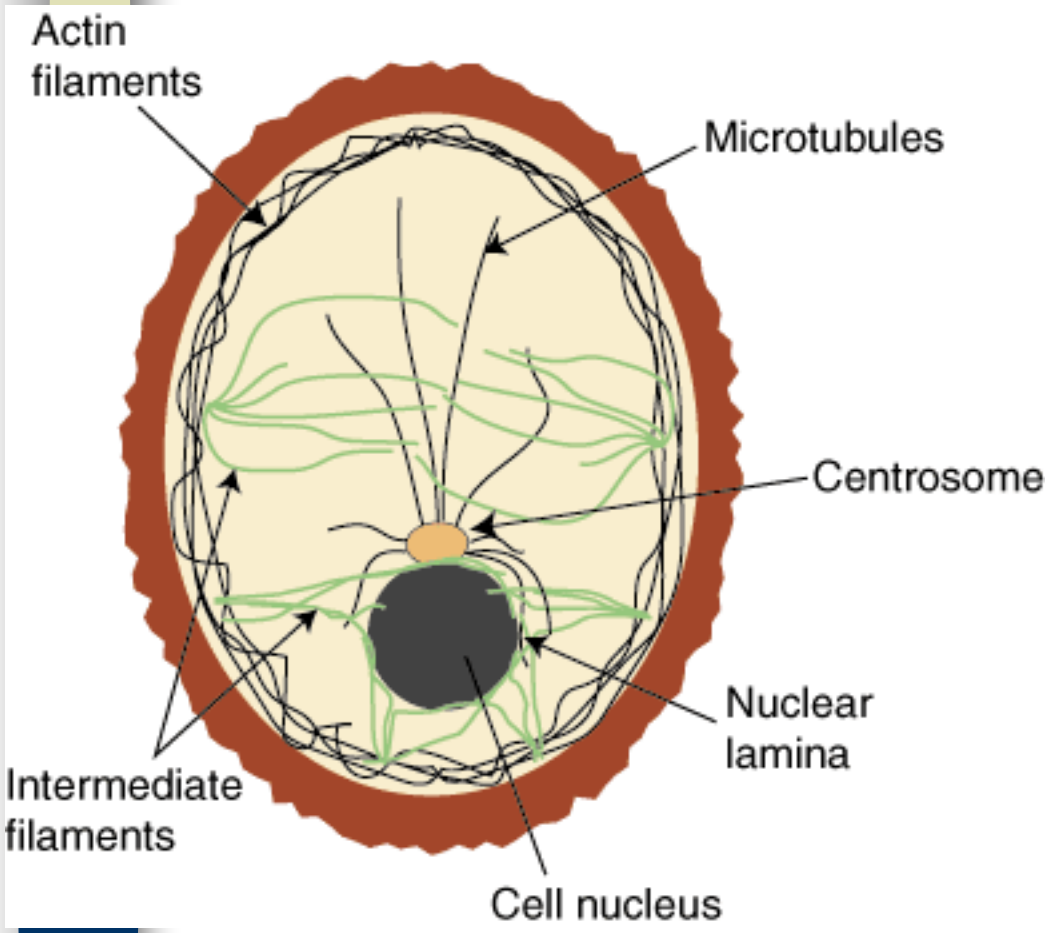
- Help the chromosomes separate during cell division.
- Located near the nucleus
- Found only in animal cells

Nucleolus



- Makes the ribosomes for protein synthesis.
- High concentration of RNA found in the nucleolus.
- Found in the nucleus

Cytoskeleton



- Gives shape to the cell.
- Holds organelles in place inside the cell.
- Made out of <u>microtubules</u> and <u>microfilaments</u> (proteins and carbohydrates)