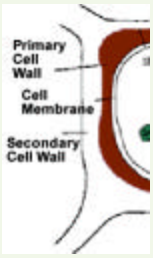
## Cell Wall



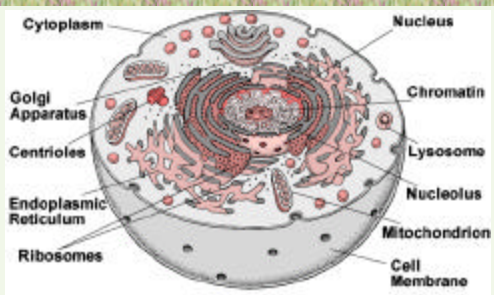

## Cell Organelles:

- Membrane-bound structures that reside within a cell.
- Components of cells with specific functions.
- *organon*- tool, implement
- *ella*- small
- Or: Small organ

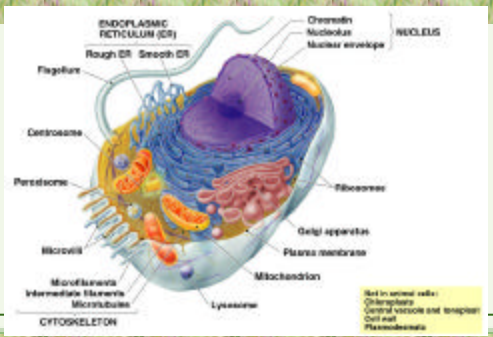
## Cell Organelles:

- Chloroplasts
- Mitochondria
- Endoplasmic Reticulum (ER)
- Golgi Apparatus
- Vacuole
- Vesicle
- Ribosomes
- Lysosome
- Centrioles
- Plastid
- Cytoskeleton:
  - Microtubules
  - Microfiliments

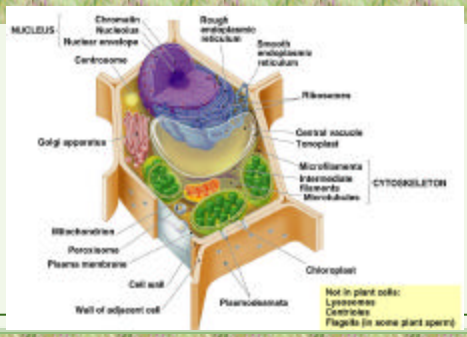
## Cell

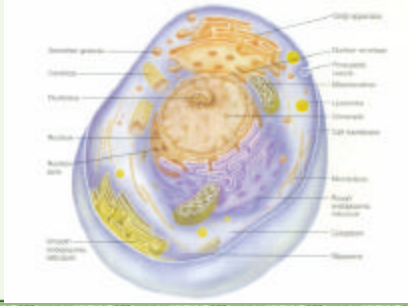



## Animal Cell:




## Plant Cell:





## *Plastid:*

- Plant organelle used for storage.
- Some store starches and lipids and pigments.
- Named according to the color or pigment that they contain.
  - Chloroplasts:contain light absorbing pigments
    - green pigment- chlorophyll
    - yellow and orange pigments- carotenoids
  - Chromoplasts:contain pigments that give flowers and fruits their characteristic colors (attract animals for polinations and seed dispersal.)
  - Leukoplasts: unpigmented plastids that store starches.

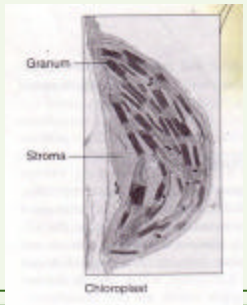
## *Chloroplast:*

- Unique to photosynthetic organisms.
- A Double-membraned plastid.
- Responsible for capturing the sun's energy and converting it into usable chemical energy.

## *Chloroplast:*

- The interior is made up of:
  - Grana stacks: disk-like structures piled on top of one another inside the chloroplast.
    - Thylakoid disks: disk-like sacs that when stacked form the grana stacks. Whose membrane contains chlorophyll (green pigment that traps light energy in photosynthesis.)
  - Stroma: fluid material inside the chloroplast surrounding the grana; holds the enzymes for the Calvin cycle.

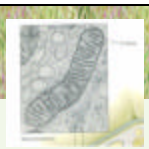
## *Chloroplast*



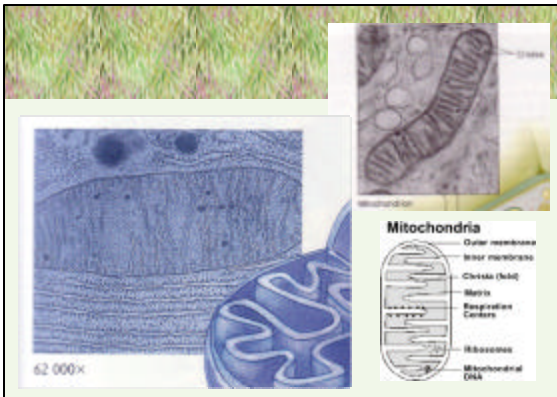

## *Mitochondrion:*

- Nicknames: Powerhouse or energy store
- Rod shaped organelle where cellular respiration occurs.
- Most numerous in cells that use the most energy (ie liver and muscle cells.)
- Turns food and stored chemical energy into usable energy (ATP.)
- Have their own DNA.

## *Mitochondrion:*



- Has an inner membrane
  - Inner membrane: called the Cristae- Folds
    - folds provide a large surface area in a small space
    - energy storing molecules are produced on the cristae
    - more cristae = more active
  - Matrix: remainder of the interior of the mitochondrion, houses the enzymes for Krebs cycle.



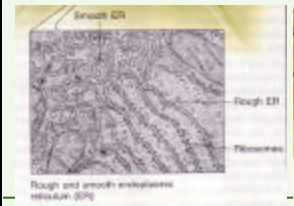

## *Endoplasmic Reticulum (ER) :*

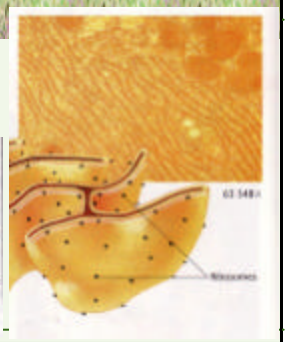
- Network of folded internal membranes and folded sacs/tunnels in the cytoplasm that is attached to the outer membrane of the nuclear envelope.
- Site of lipid synthesis in the cell.
- Involved in transport of materials throughout the cell.
  - Allows proteins etc. to get from one end of the cell to the other.
  - Nicknamed the Highway system

## *Endoplasmic Reticulum (ER) :*

- Two types:
- Rough:
  - Has ribosomes attached to the outside.
  - Common in cells that export proteins.
  - Proteins are synthesized on rough ER.
- Smooth:
  - Has no ribosomes.
  - Site of Lipid synthesis
  - In Liver cells smooth ER is involved in detoxification of drugs and poisons.

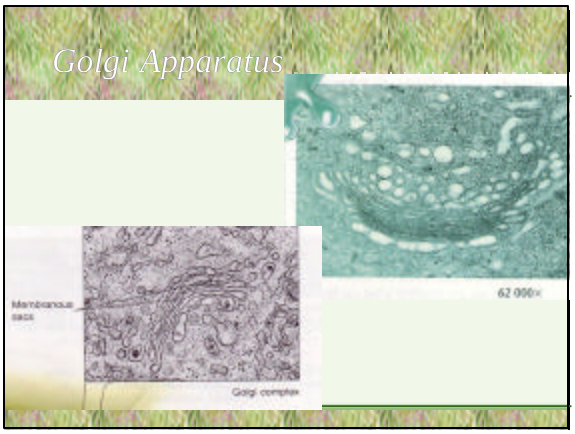
## *ER:*

## *Golgi Apparatus :*

- AKA: Golgi Body and Golgi Complex
- Nickname: Transport System; Packaging and Distribution Center
- Named after discoverer: Camillo Golgi
- Series of closely stacked flattened membrane sacs and vesicles that receive, chemically modifies, stores,and delivers proteins, lipids etc.
- Prepares substances for export from the cell and manufactures lysosomes.


Golgi Apparatus
62 000×
Membranous sacs
Golgi complex