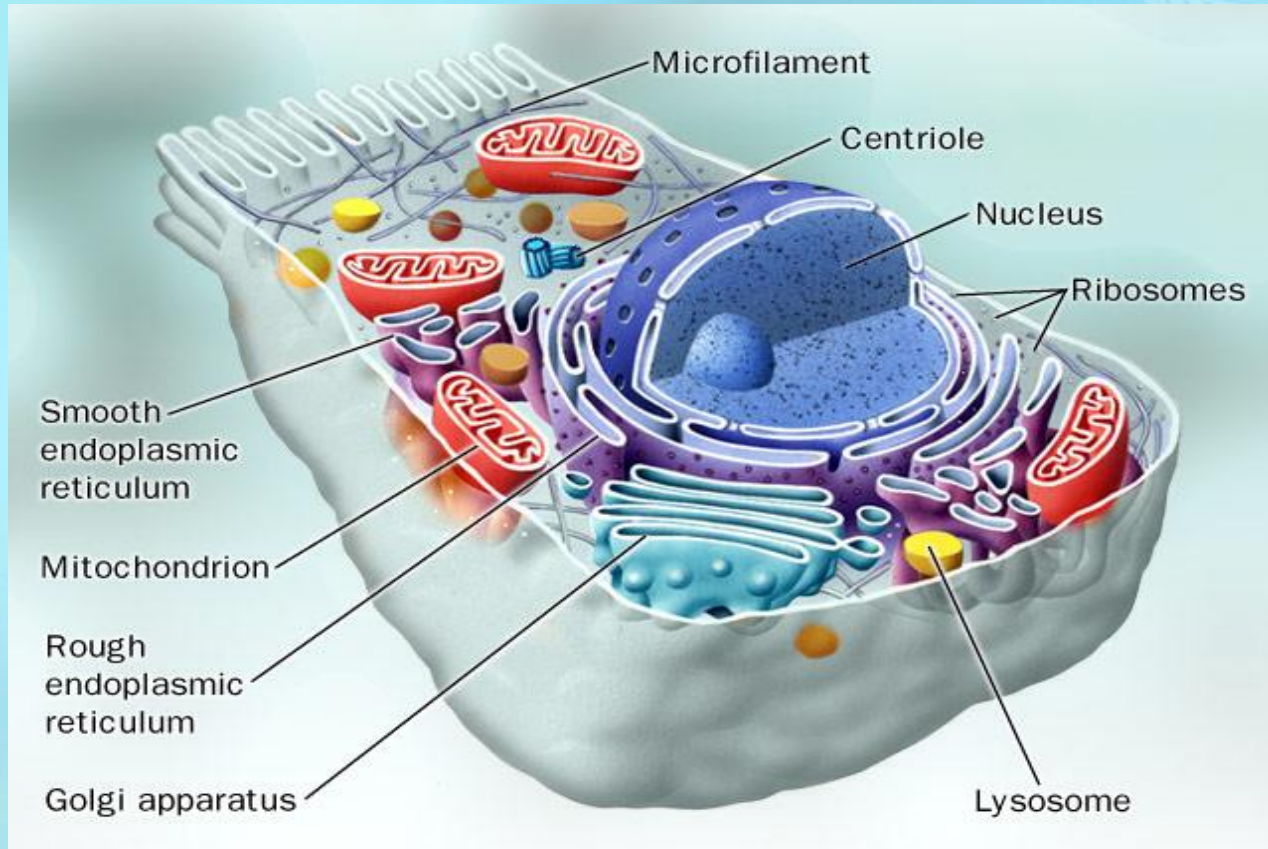


Cells or Cells or Cells?



Cell Intro

MODERN CELL THEORY



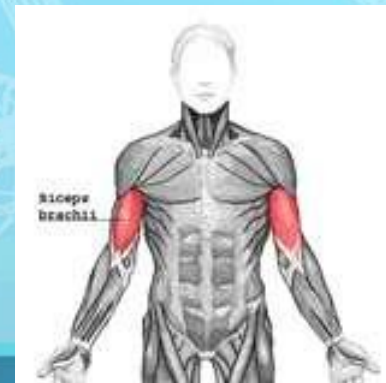
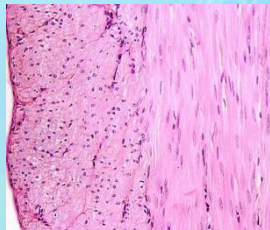
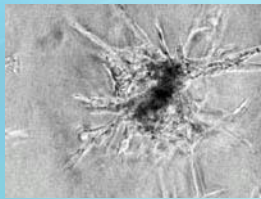
1. The cell is the smallest unit of structure and function in living things.
2. All cells arise from pre-existing cells.
3. The cells of all living organisms carry on similar metabolic activities.

Levels of Organization for Multicellular Organism:

Cells → **Tissue** → **Organs** → **Organ Systems** → **Organism**
(Simple) *(Most Complex)*

Example:

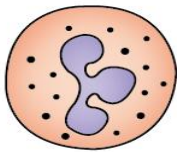
Muscle cell → Muscle Tissue → Muscle → Muscular System → Human



Cells

- The cell is the Basic Unit of Life
- Cell is the smallest unit of living organisms
- Unicellular organisms are made of one cell only
- The cells of multicellular organisms are specialized to perform different functions

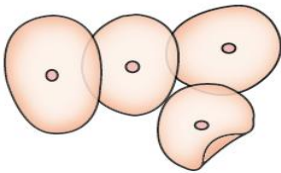
Different kinds of animal cells



white blood cell



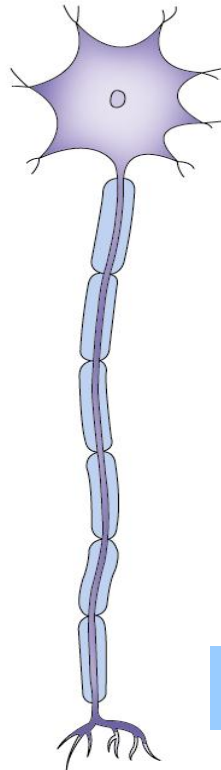
red blood cell



cheek cells



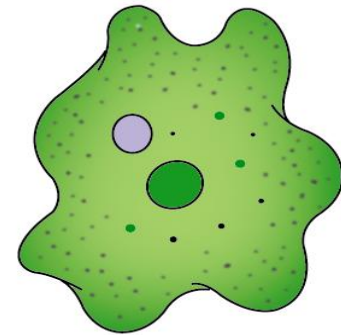
sperm



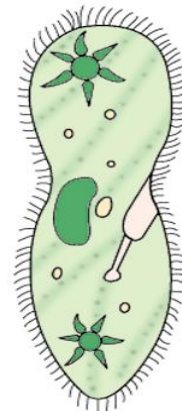
nerve cell



muscle cell

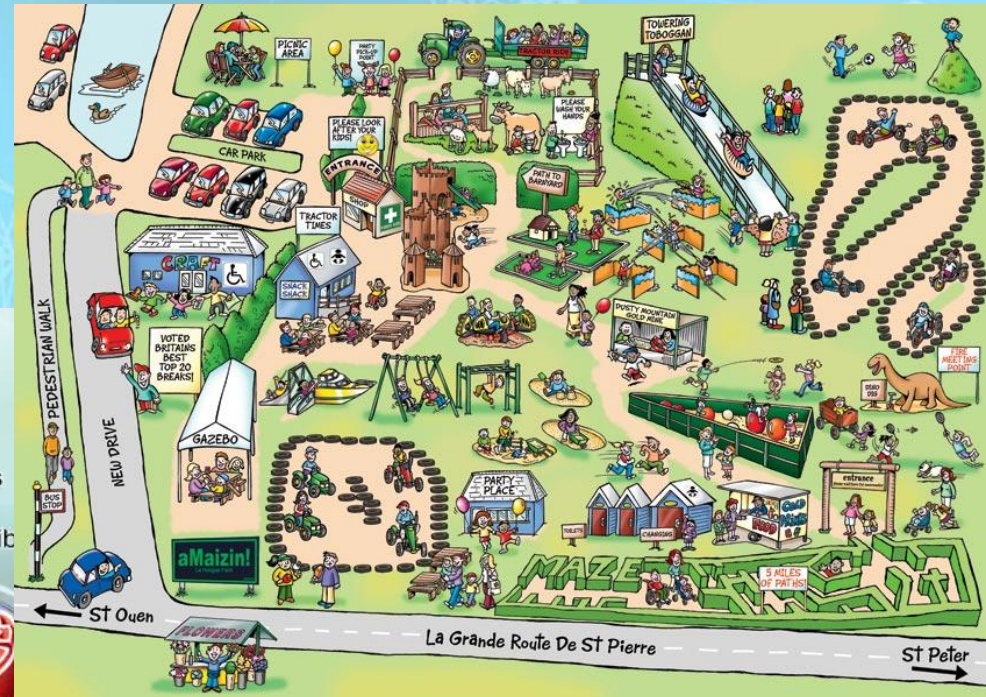
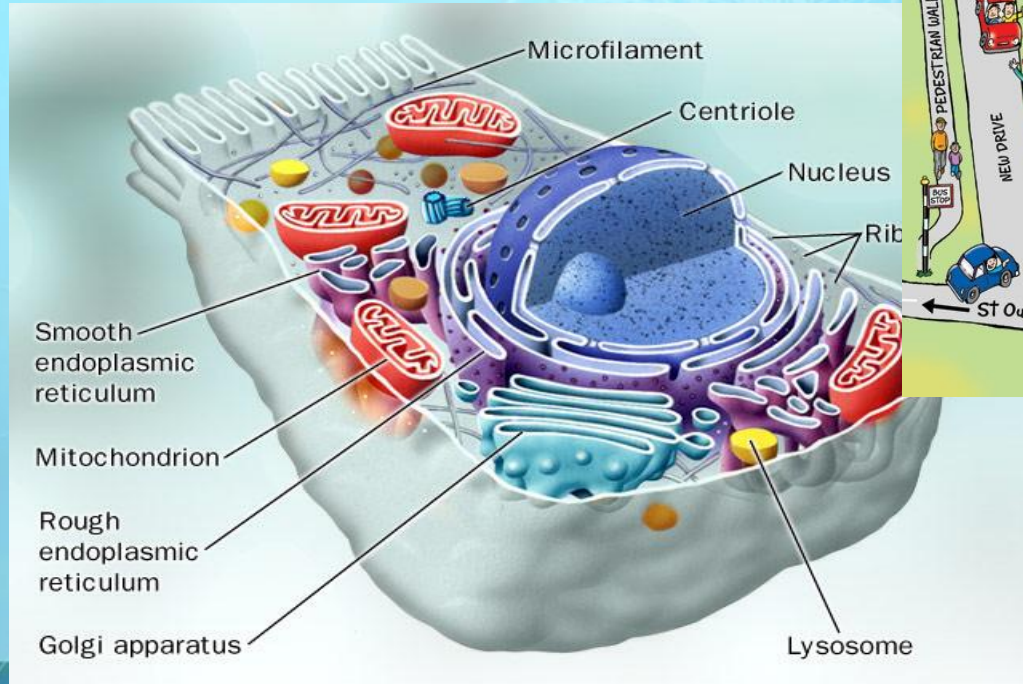


Amoeba



Paramecium

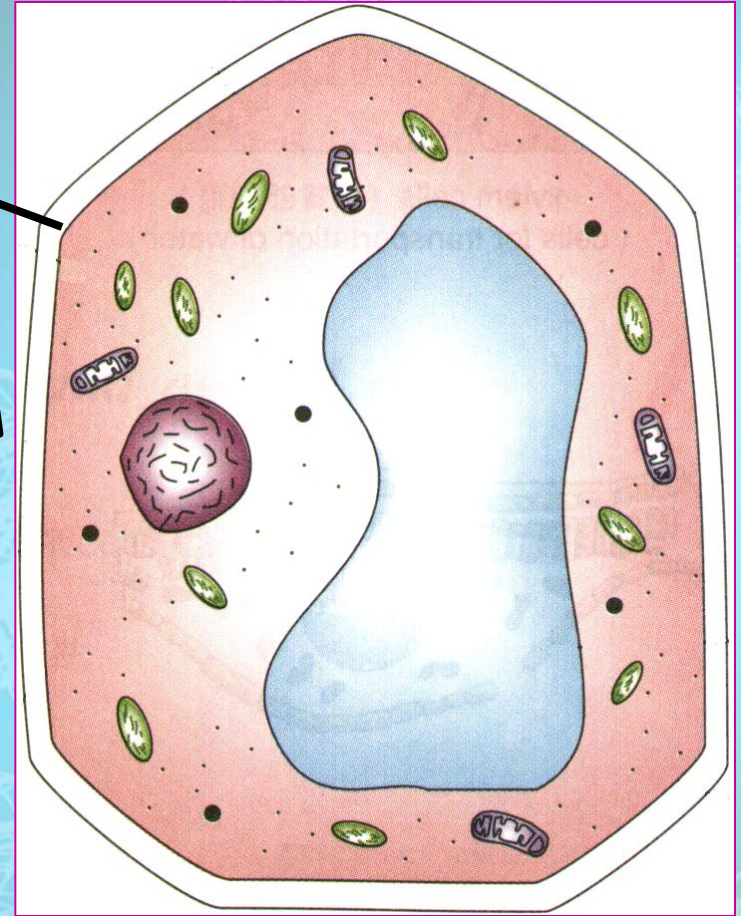
Basic Structure of a Cell



[Cell Video](#)

Cell membrane

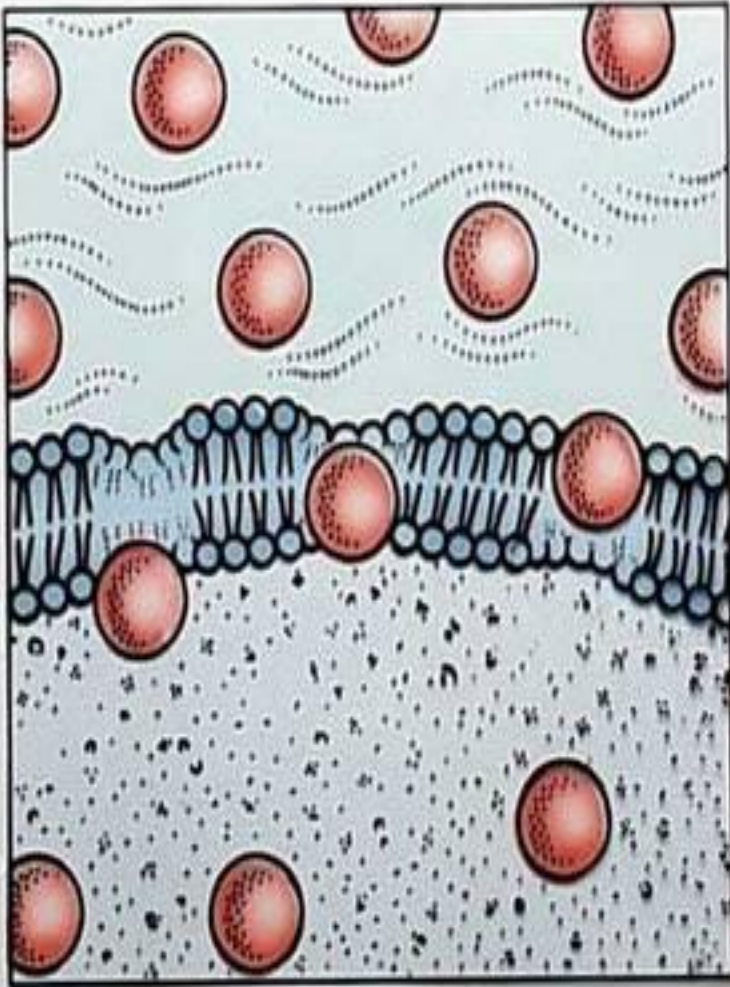
- surrounds the cell
- separates the cell contents from the environment
- disposes of waste products
- exchanges materials



*** Fence with Gates ***



Cell Membrane



- The cell membrane is SEMI-PERMEABLE.

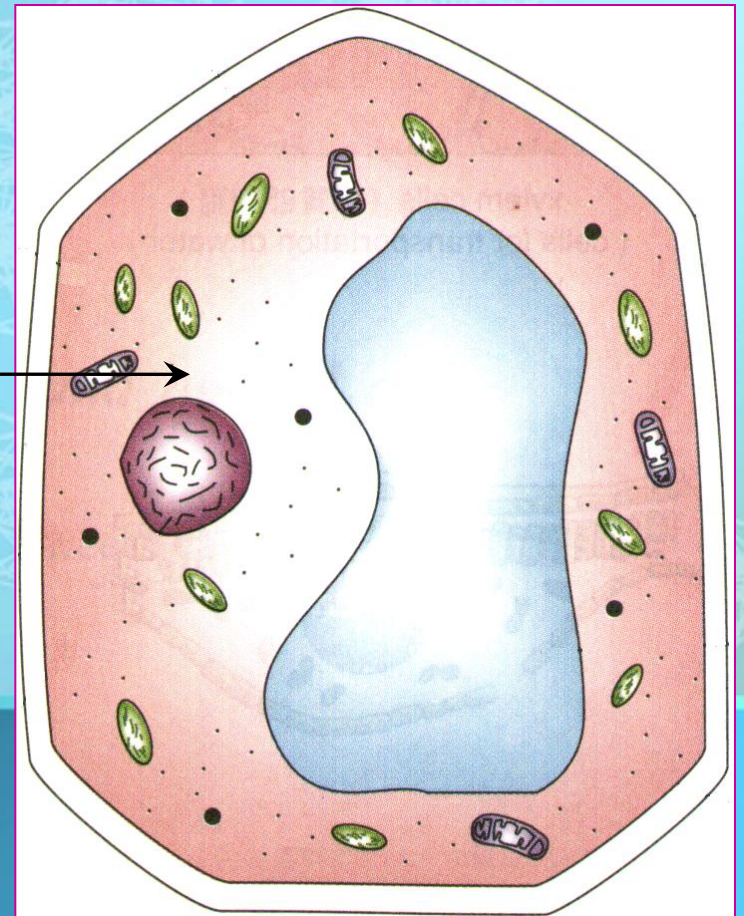
- Some substances can pass through it, while others can not.

- The membrane regulates the passage of materials into and out of the cell.

CYTOPLASM

•the fluid-like material that fills the space between the cell membrane and the organelles.

cytoplasm



* Lawn *



The organelles are suspended in the cytoplasm.

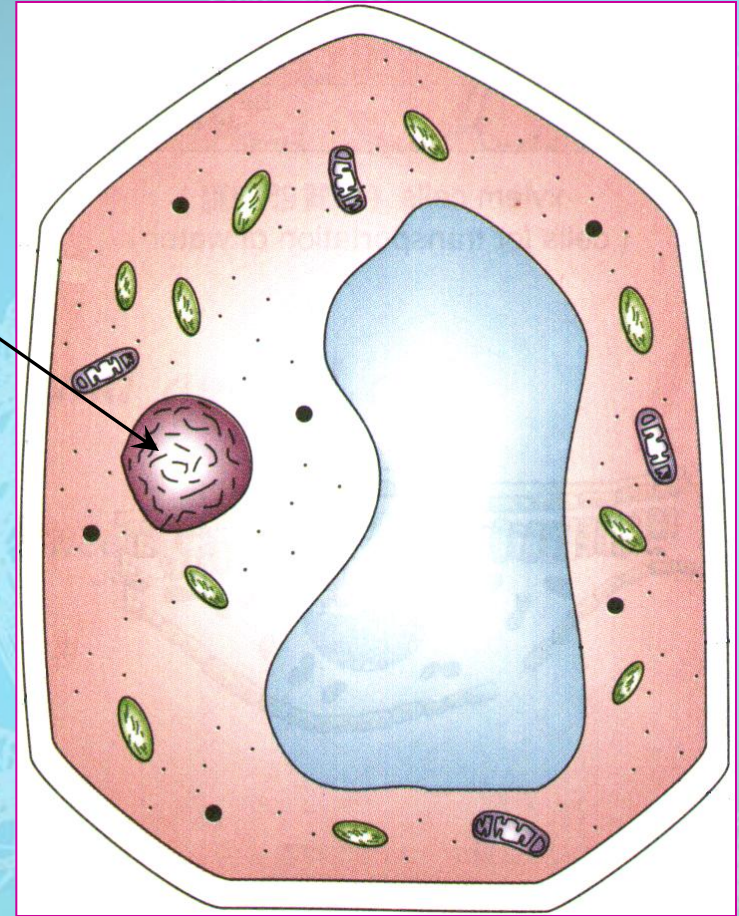
The cytoplasm transports materials within the cell.



Nucleus

Nucleus

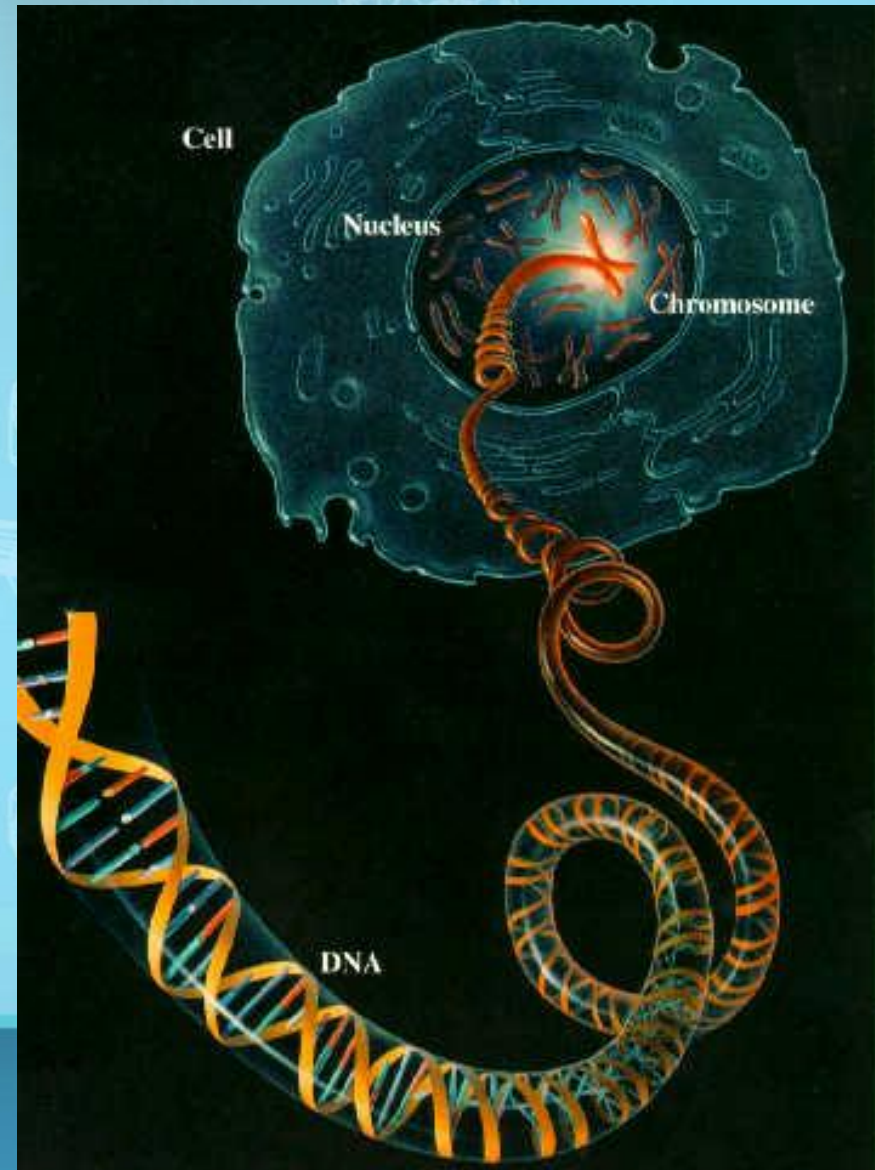
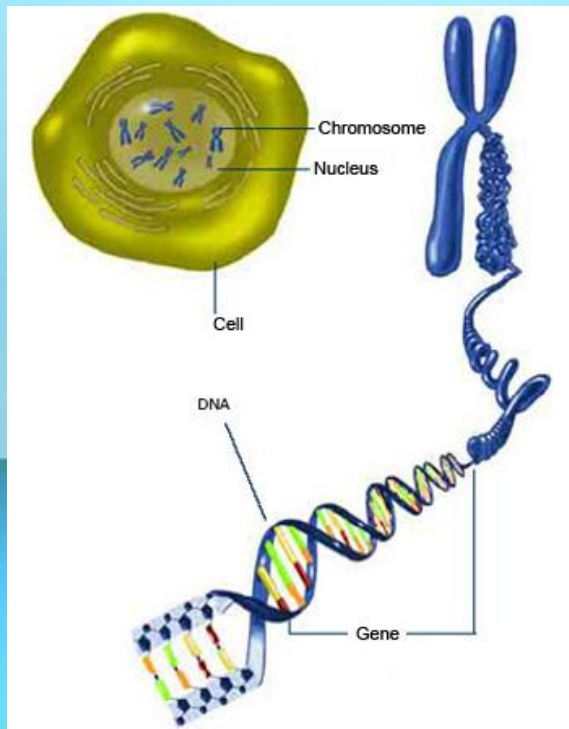
- Controls the normal activities of the cell
- Contains the DNA and Chromosomes
- Enclosed by a nuclear membrane (like the cell membrane)
- The nucleus controls cell metabolism and reproduction.



*** City Hall ***

The chromosomes are made of DNA (deoxyribonucleic acid).

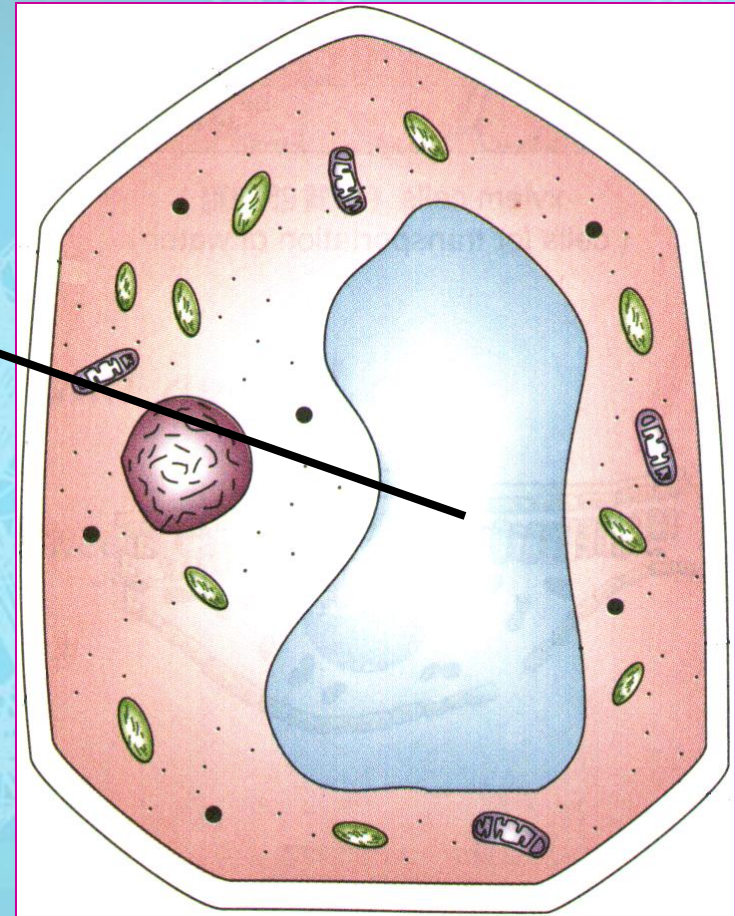
Gene < DNA < Chromosome < Nucleus



Vacuole

Vacuole

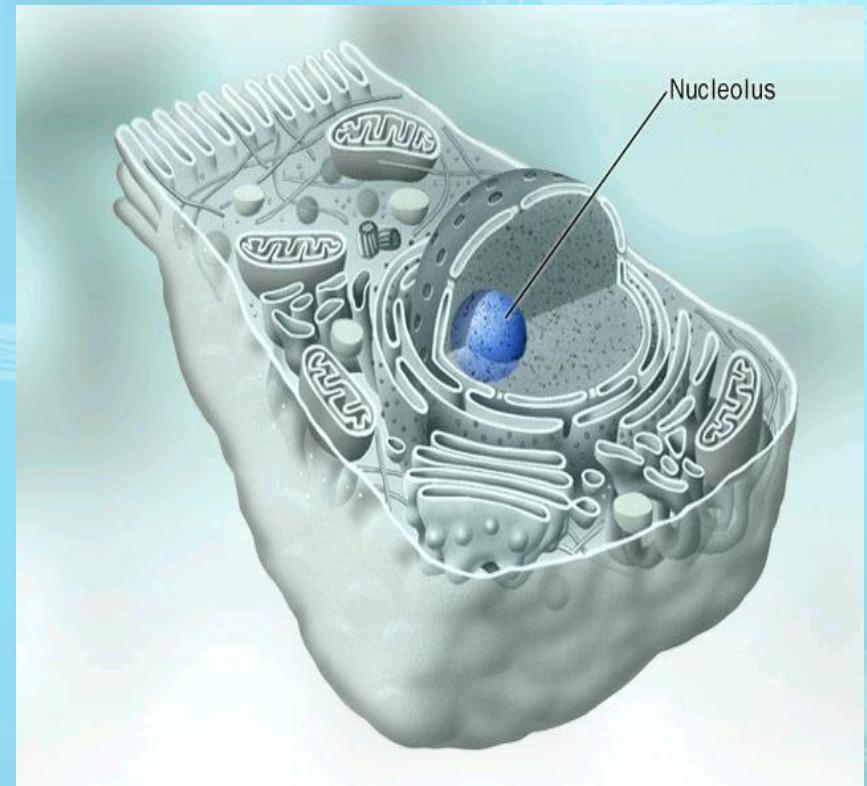
- Stores food, waste, water.



*** Storage Unit ***

Nucleolus

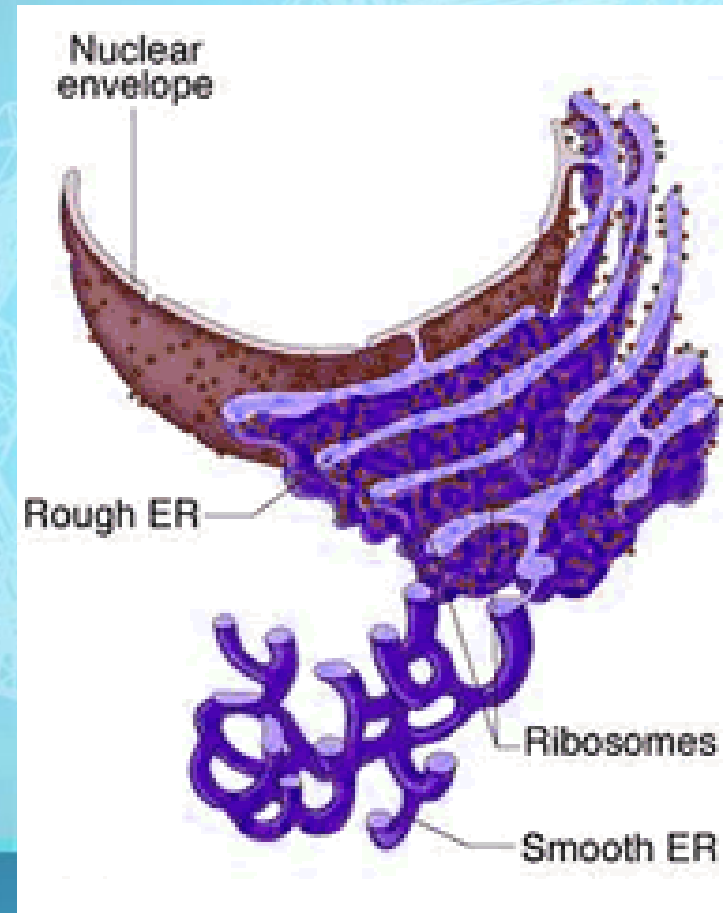
- Inside nucleus
- Makes ribosomes that make proteins



*** Mayors Office ***

Smooth & Rough Endoplasmic Reticulum

- The ER is a bunch of tunnels that transport materials throughout the cell.
- Smooth ER* does not have ribosomes
- Rough ER* has ribosomes on its surface

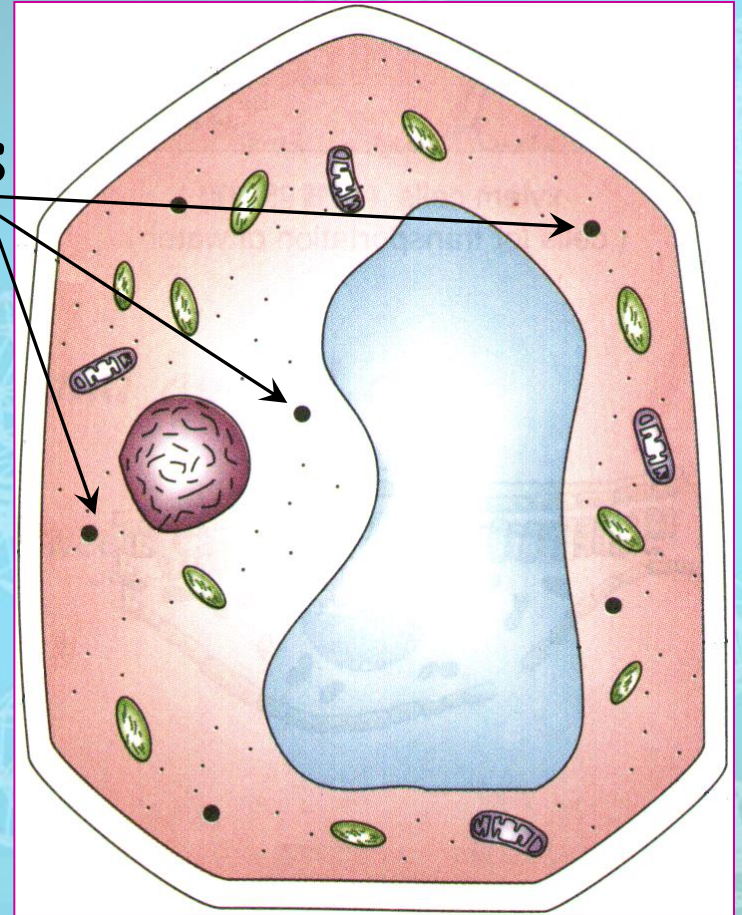


* Subway System*

Ribosomes

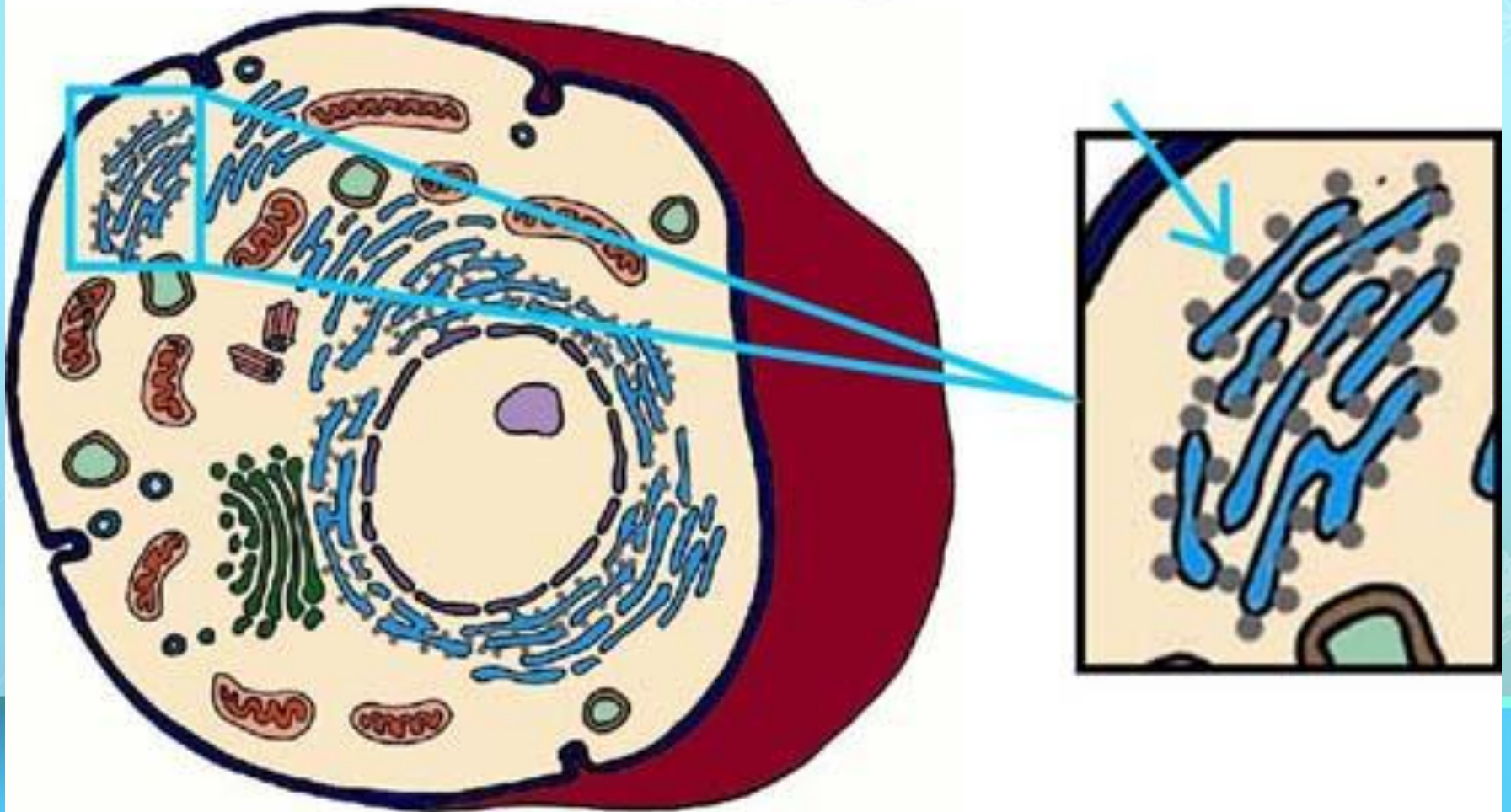
- site of protein synthesis
- Can be floating in the cytoplasm
or
- attached to the endoplasmic reticulum

Ribosomes



*** Towns Factories ***

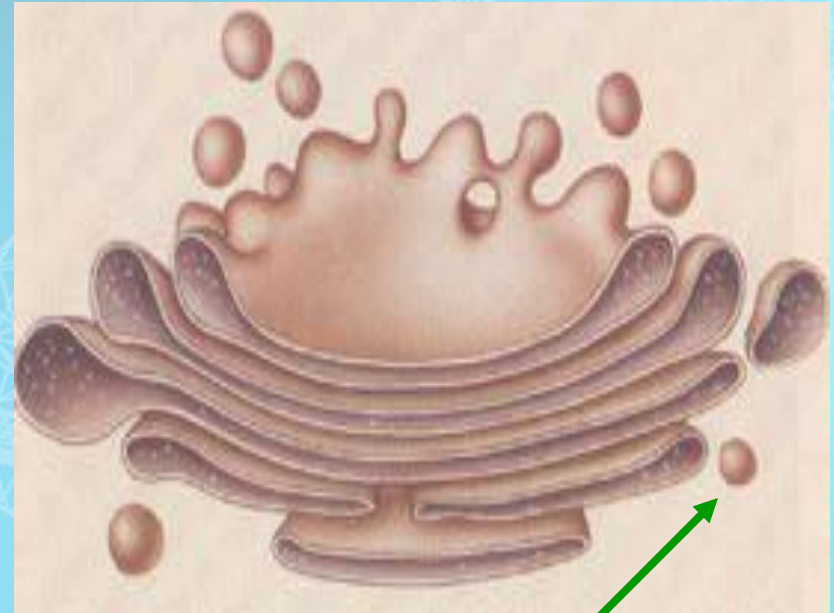
Ribosome





Golgi Bodies

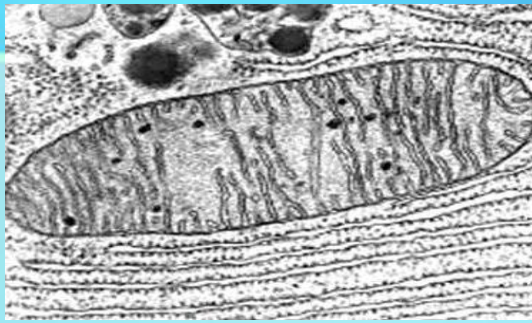
- The Golgi bodies package and send out cell products.
- Stacks of flattened sacs
- Have a shipping side & a receiving side
- Receive & modify proteins made by ER
- Transport vesicles with modified proteins pinch off the ends



Transport vesicle

* UPS Store *

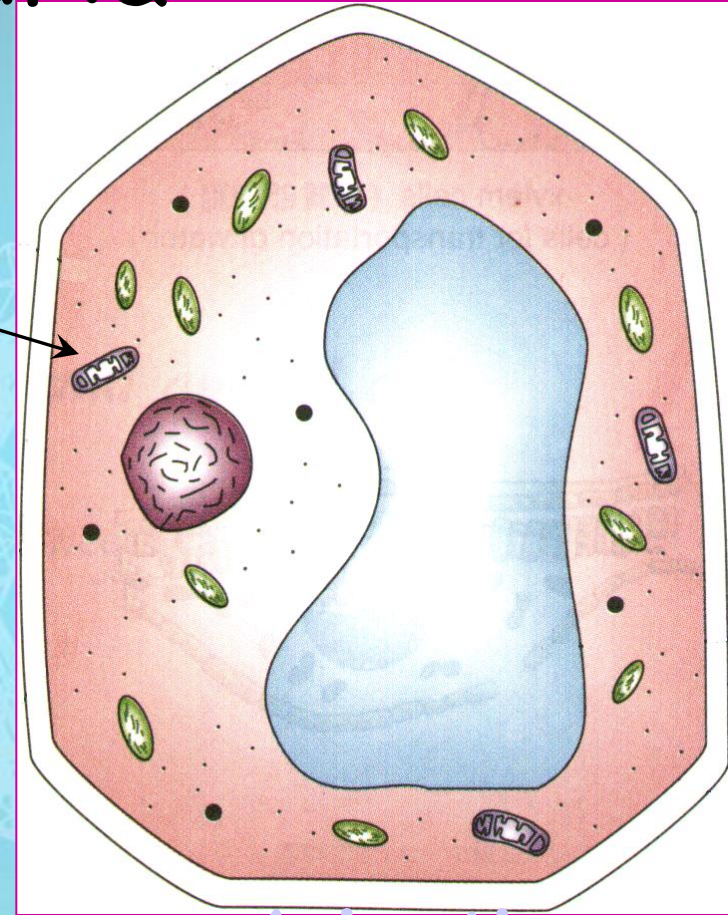




Mitochondria

- releases the energy from nutrients through aerobic cellular respiration.

Mitochondria



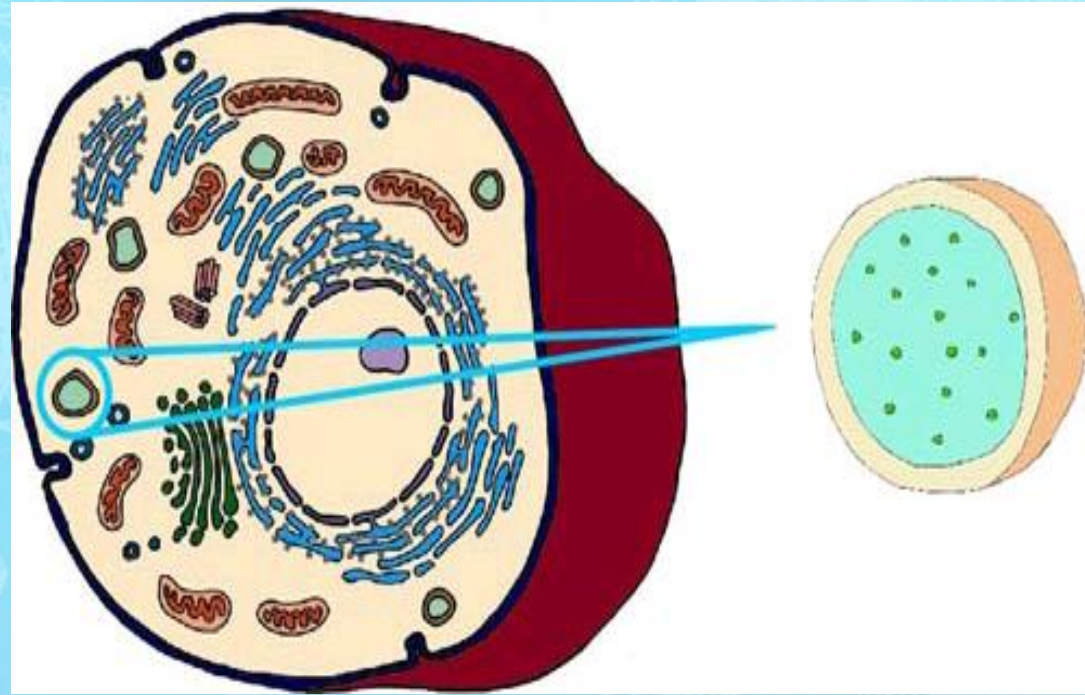
Animation



*** Power Plant ***

Lysosome

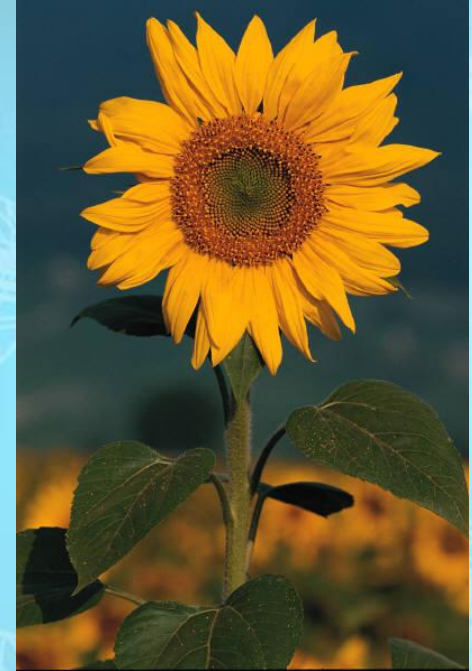
- Contain digestive enzymes
- Break down food and worn out cell parts for cells
- Programmed for cell death (releases an enzymes to break down & recycle cell parts)
- [Lysosome animation](#)



* Sanitation
Department *

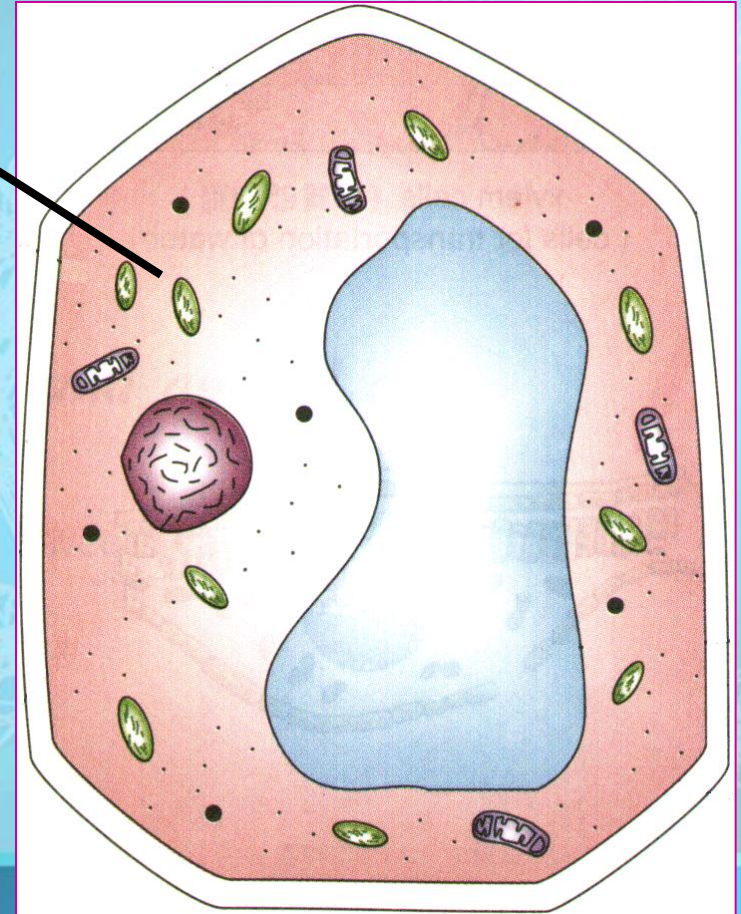


Plant Cell Organelles



Chloroplast

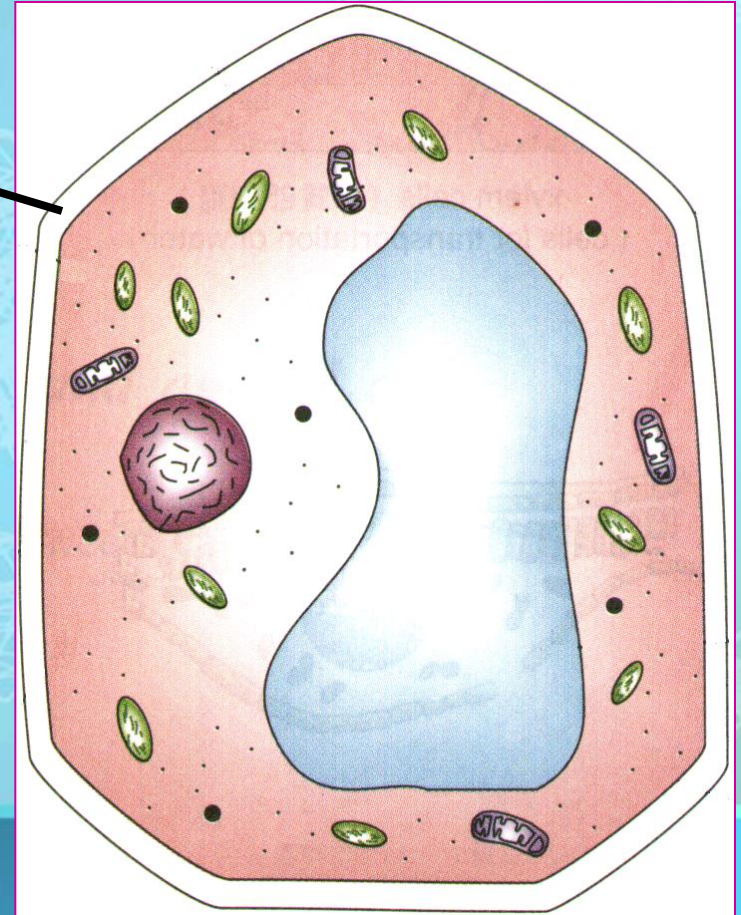
- Contain the green pigment chlorophyll
- Traps sunlight to make sugars (food)
- Process is called photosynthesis



Plant Cells

Cell wall

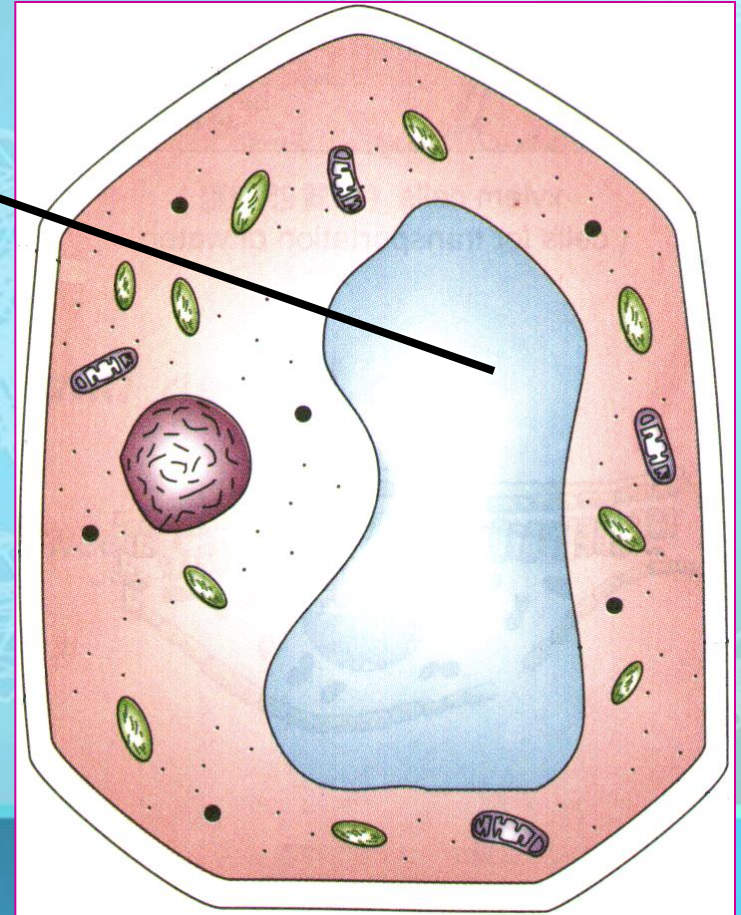
- Dead layer
 - Large empty spaces present between cellulose fibers
 - Freely permeable
-
- Nonliving layer
 - Gives structure and shape to plant and bacterial cells



Plant Cells

Vacuole

- Have a large central vacuole
- Contains sap, sugars, proteins, minerals, wastes, & water.



Similarities between plant cells and animal cells

Both have a cell membrane surrounding the cytoplasm

Both have a nucleus

Both contain mitochondria

Differences between plant cells and animal cells

Animal cells

Smaller in size
Irregular shape
No cell wall
Small Vacuole
No Chloroplast

Plant cells

Larger in size
Regular shape
Cell wall
Large central vacuole
Has Chloroplast