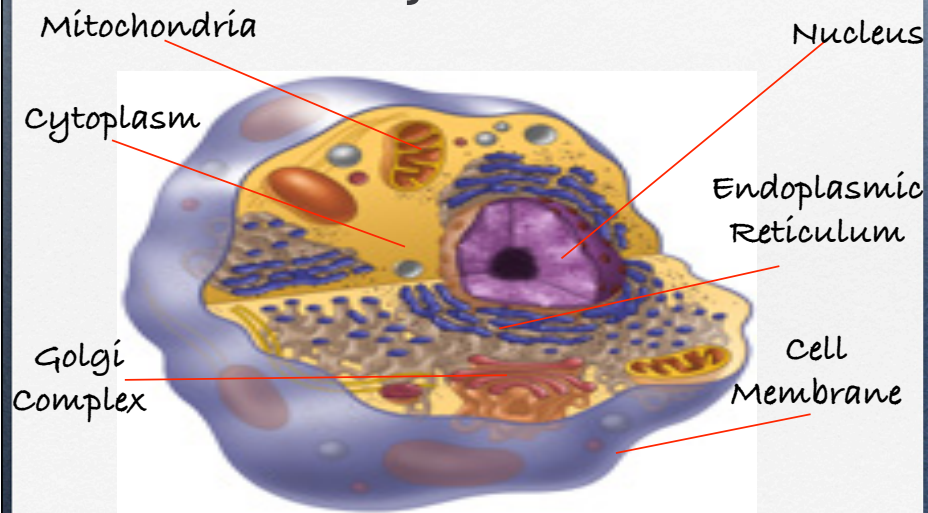


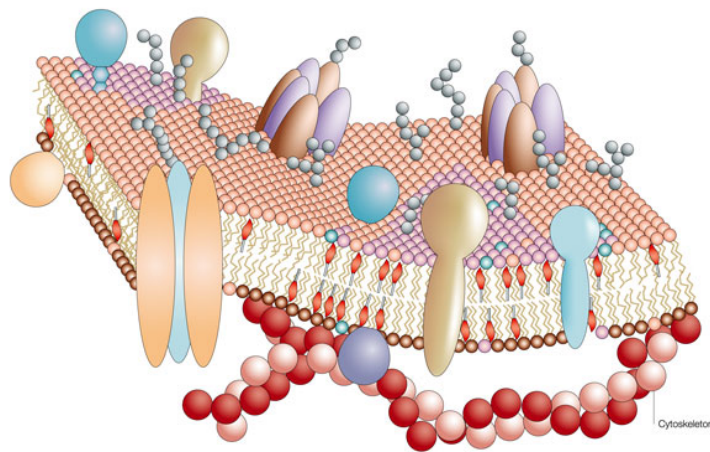
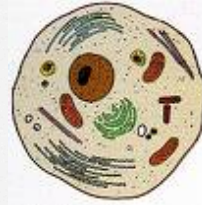
Cells: Organelles

What do eukaryotic cells look like?



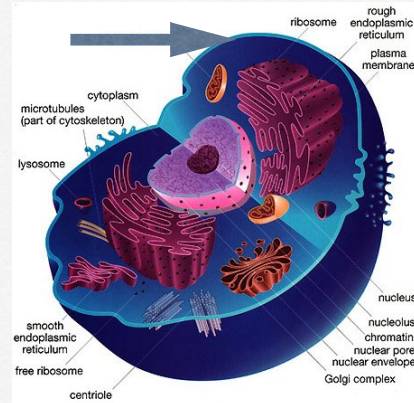
Organelles are membrane-bound cell parts

- Mini "organs" that have unique structures and functions
- Located in cytoplasm



Cell Structures

- Cell membrane
- delicate lipid and protein skin around cytoplasm
- found in all cells



The Cell Nucleus

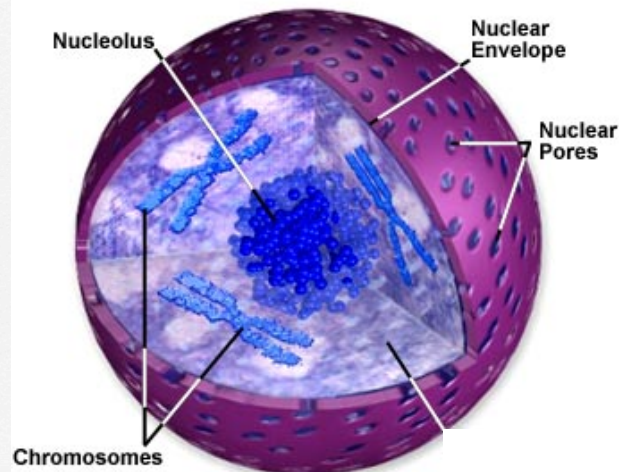


Figure 1

□ **Nucleus**

- a membrane-bound sac evolved to store the cell's chromosomes (DNA)
- has pores: holes

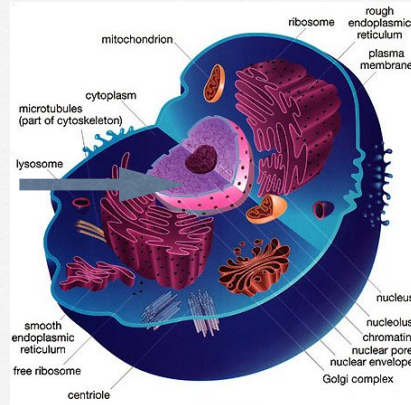
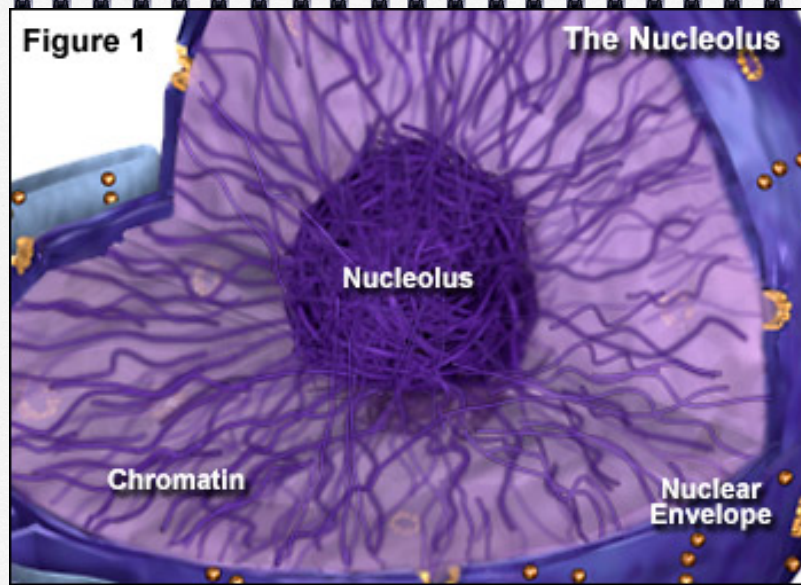


Figure 1

The Nucleolus

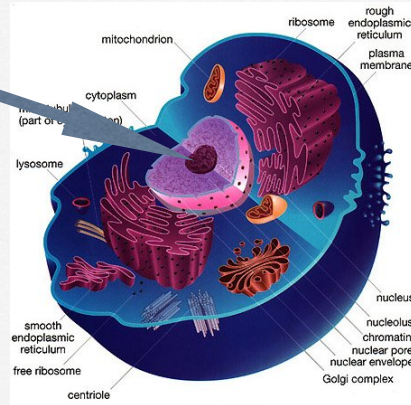


Nucleolus

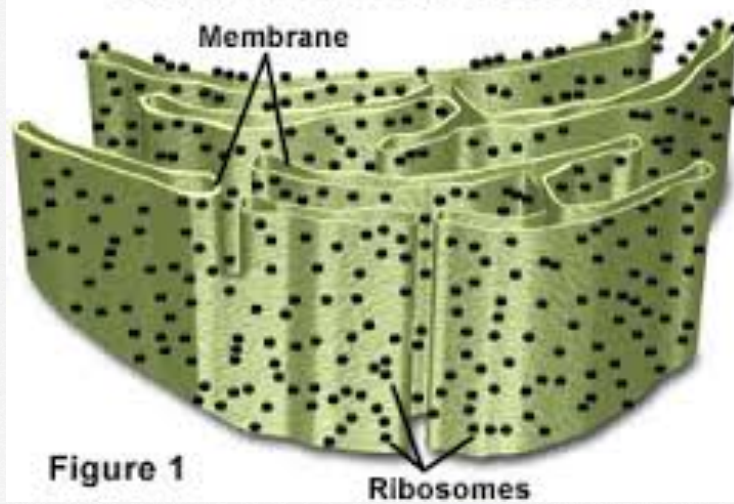
Chromatin

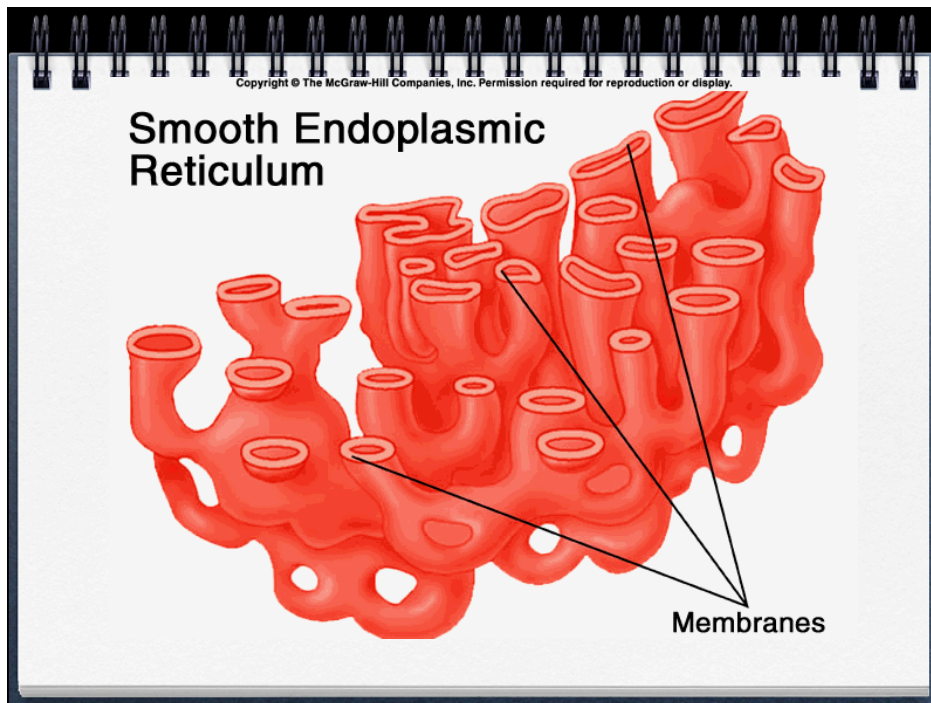
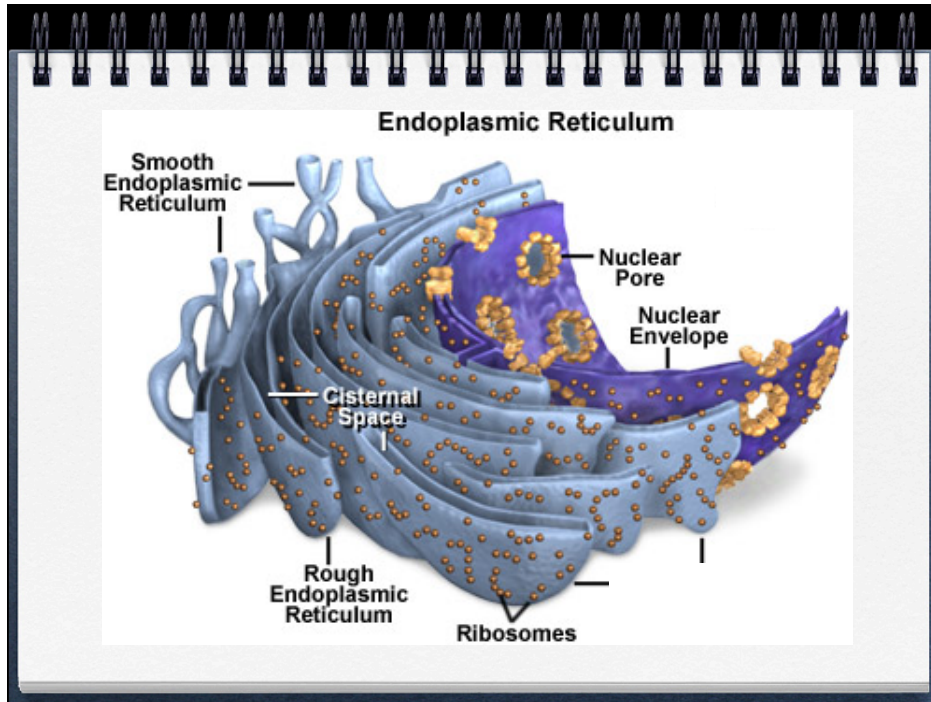
Nuclear Envelope

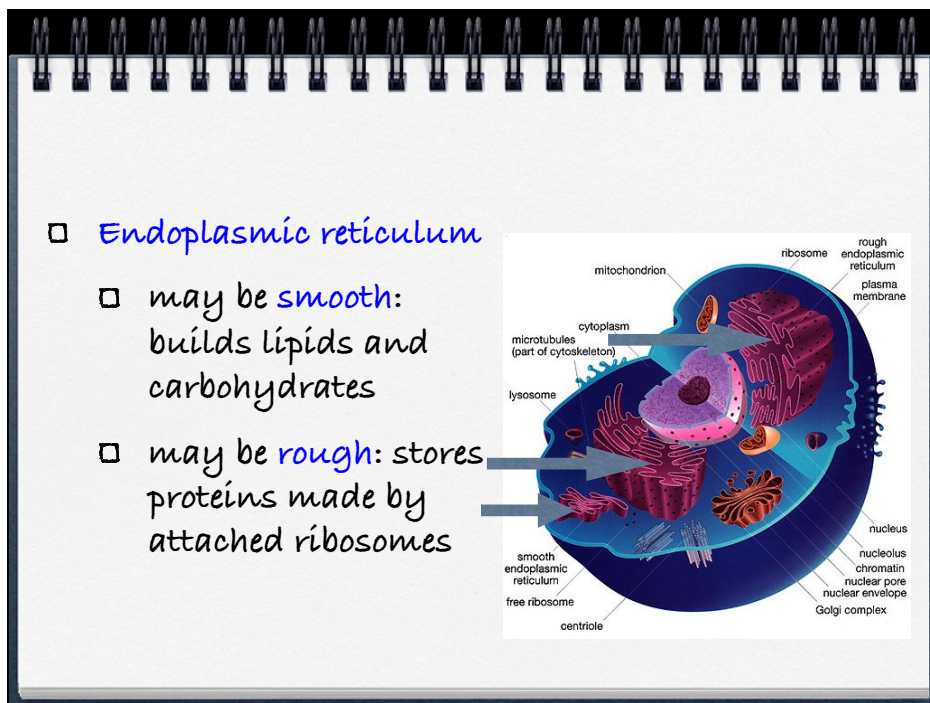
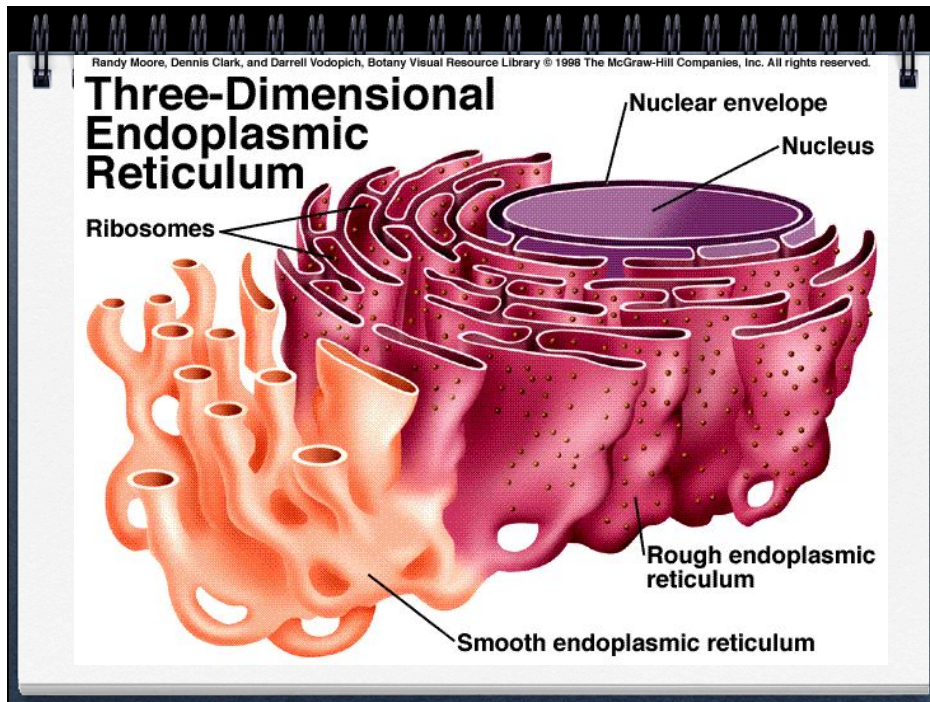
- **Nucleolus**
- inside nucleus
- location of ribosome factory
- made of RNA

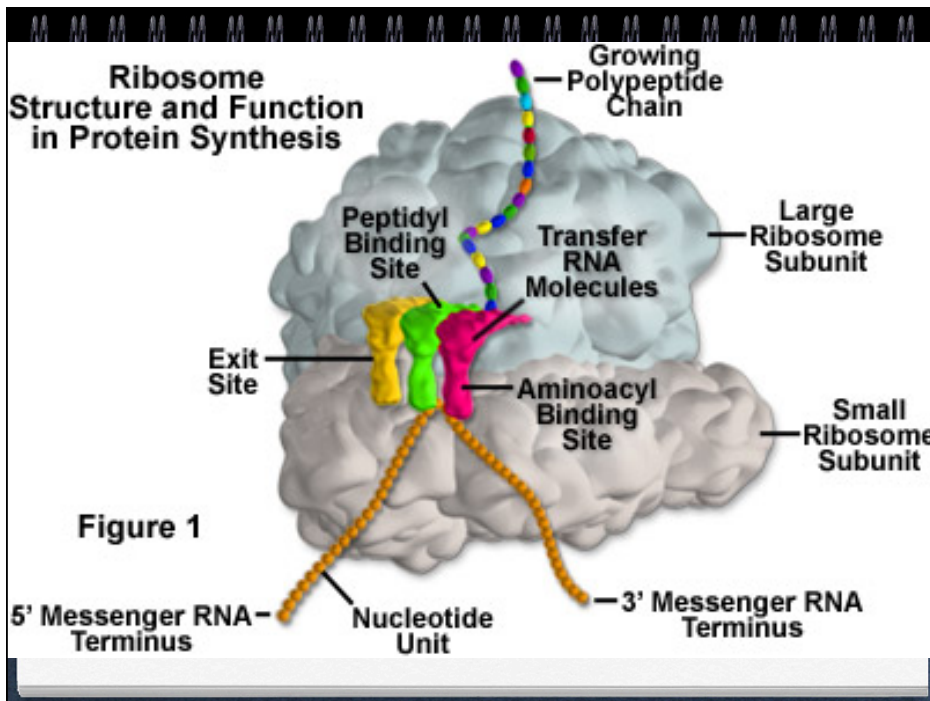


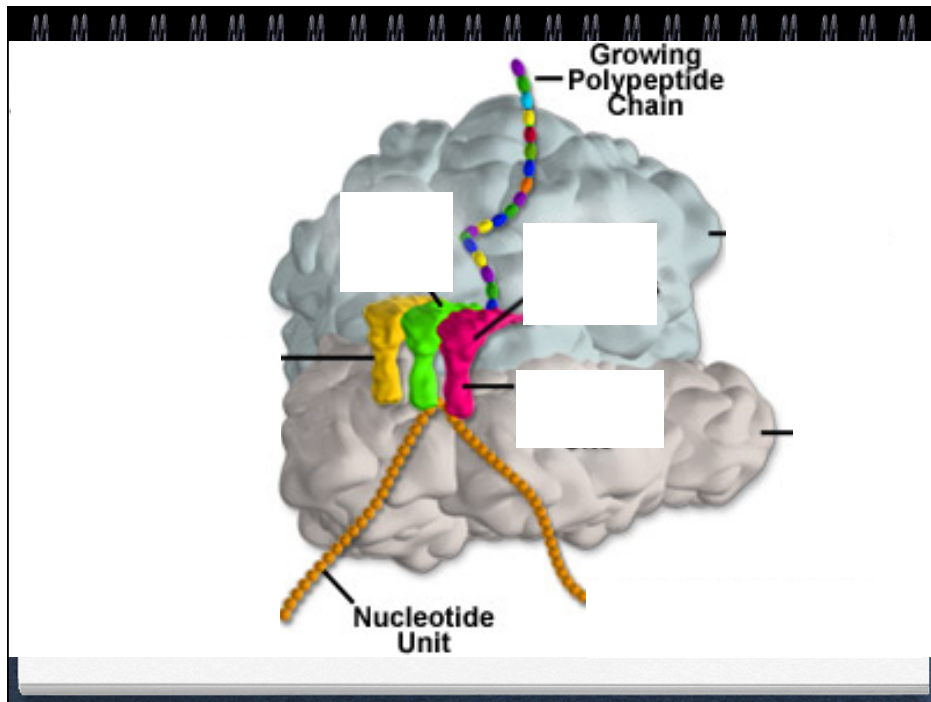
Rough Endoplasmic Reticulum





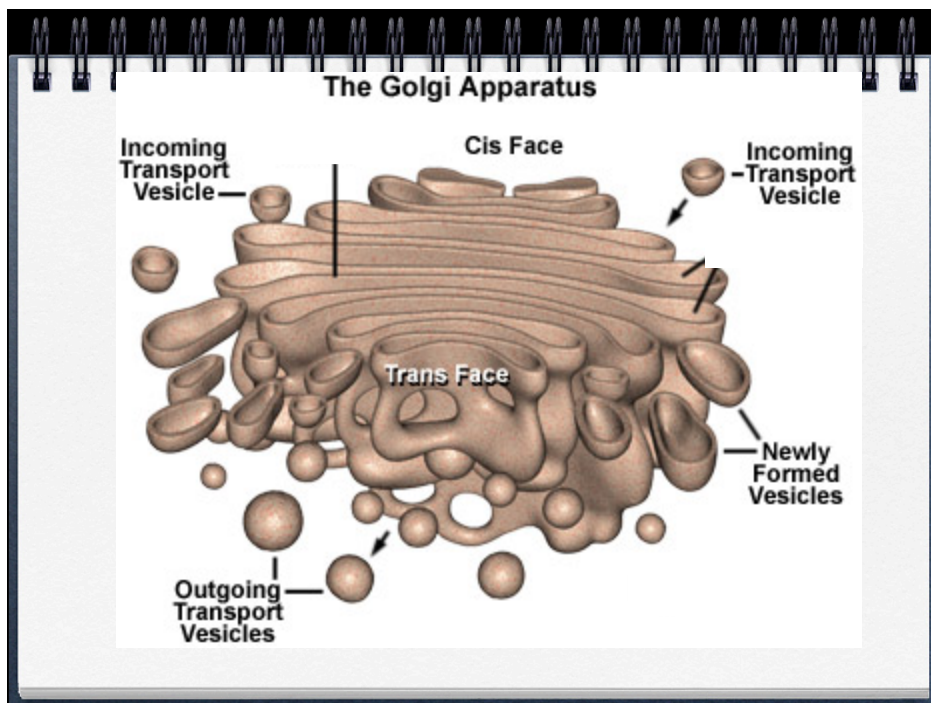
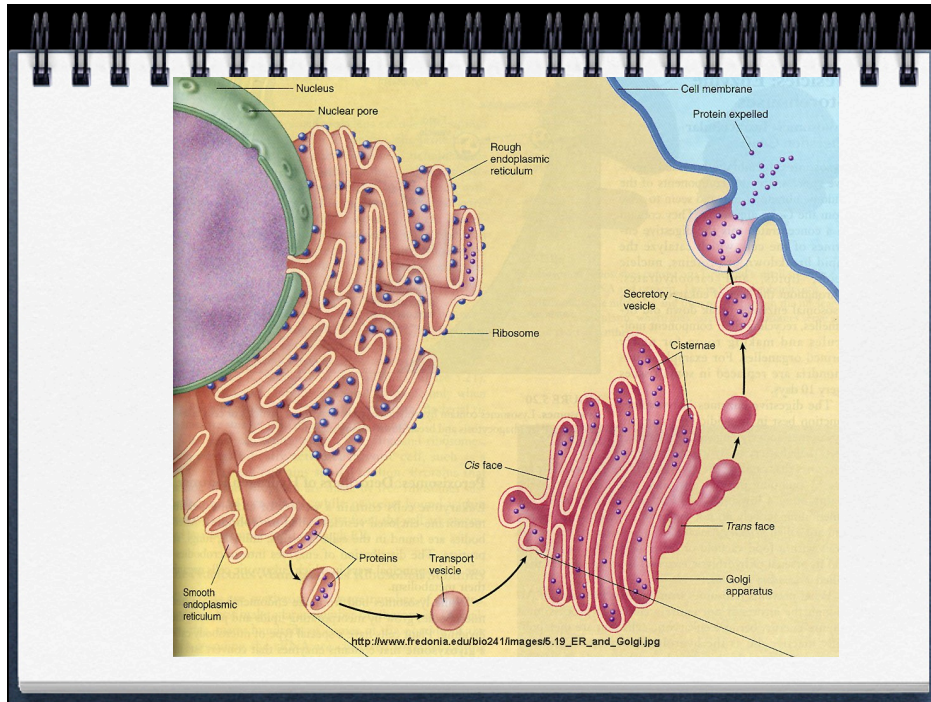






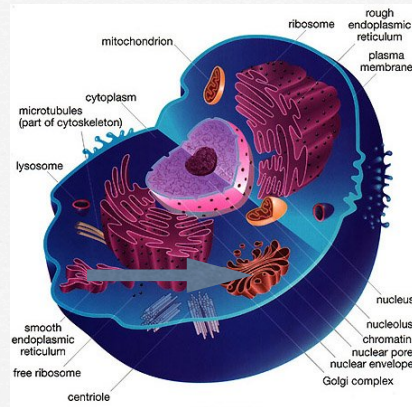
- Ribosomes
 - build proteins from amino acids in cytoplasm
 - may be free-floating, or
 - may be attached to ER
 - made of RNA

A detailed cross-section diagram of a cell. The cell is shown in a blue, semi-transparent view. Various organelles are labeled with lines pointing to them: mitochondrion, cytoplasm, microtubules (part of cytoskeleton), lysosome, free ribosome, centriole, rough endoplasmic reticulum, plasma membrane, nucleus, nucleolus, chromatin, nuclear pore, nuclear envelope, Golgi complex, and smooth endoplasmic reticulum.

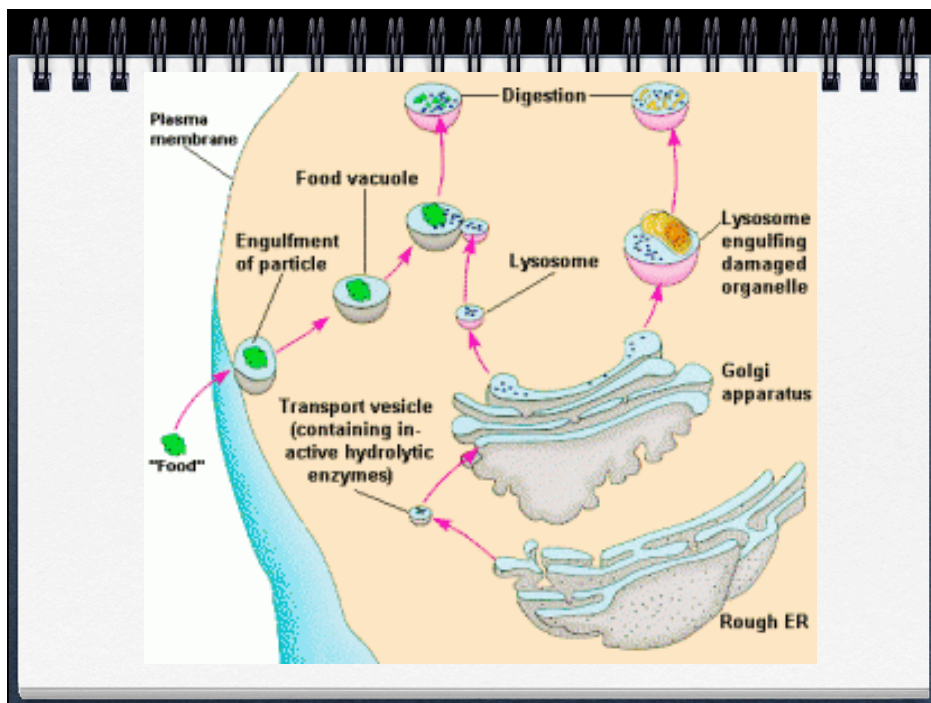
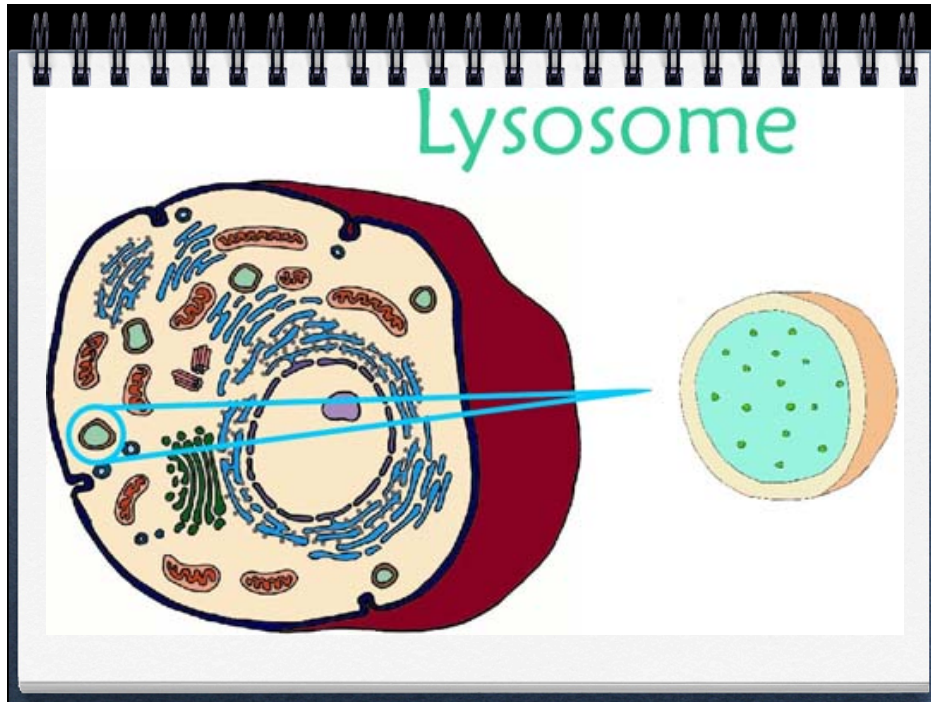


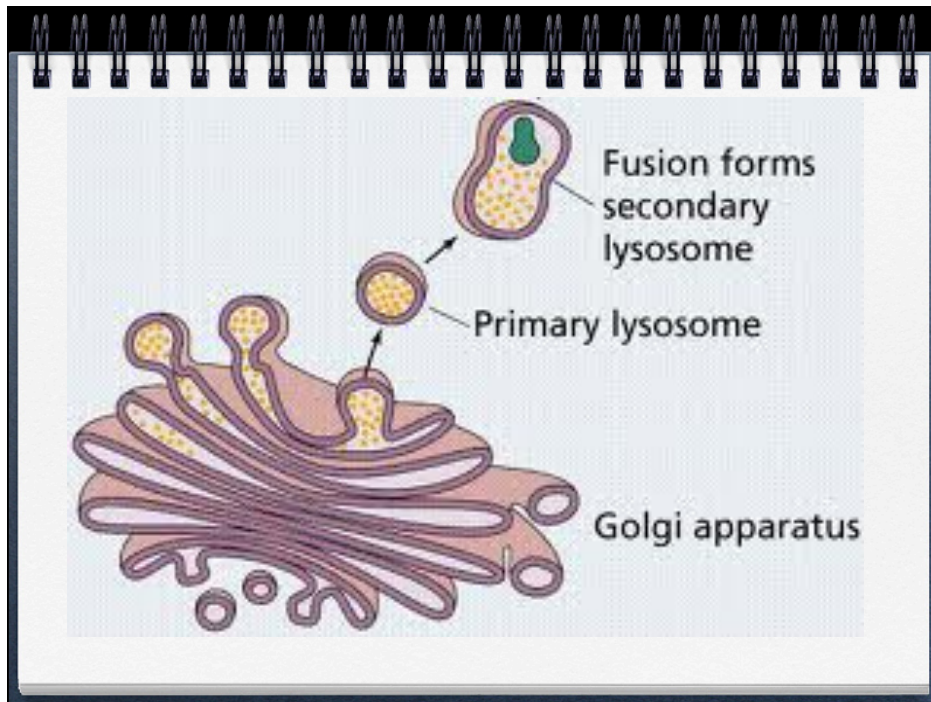
□ Golgi Complex

- takes in sacs of raw material from ER
- sends out sacs containing finished cell products



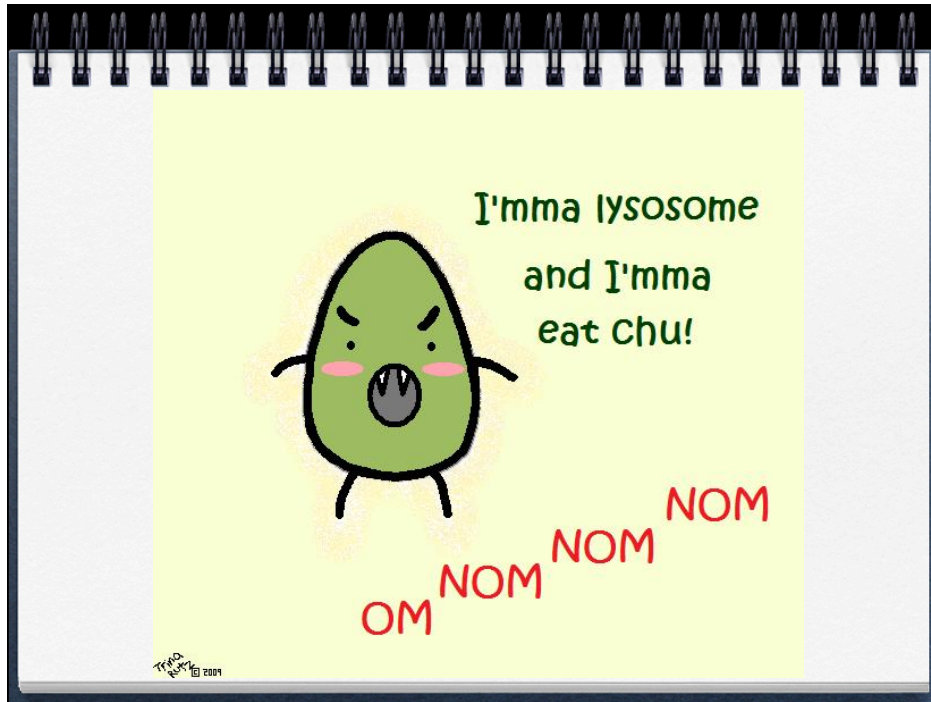
- <http://www.youtube.com/watch?v=03yQZp5RS-0>





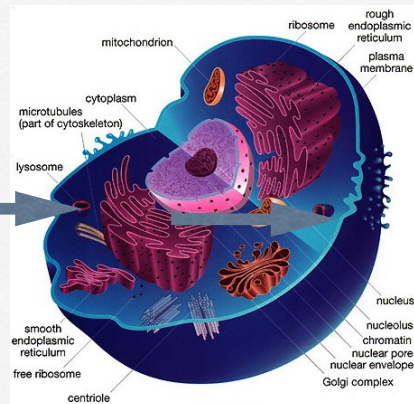
So what does the lysosomes do?

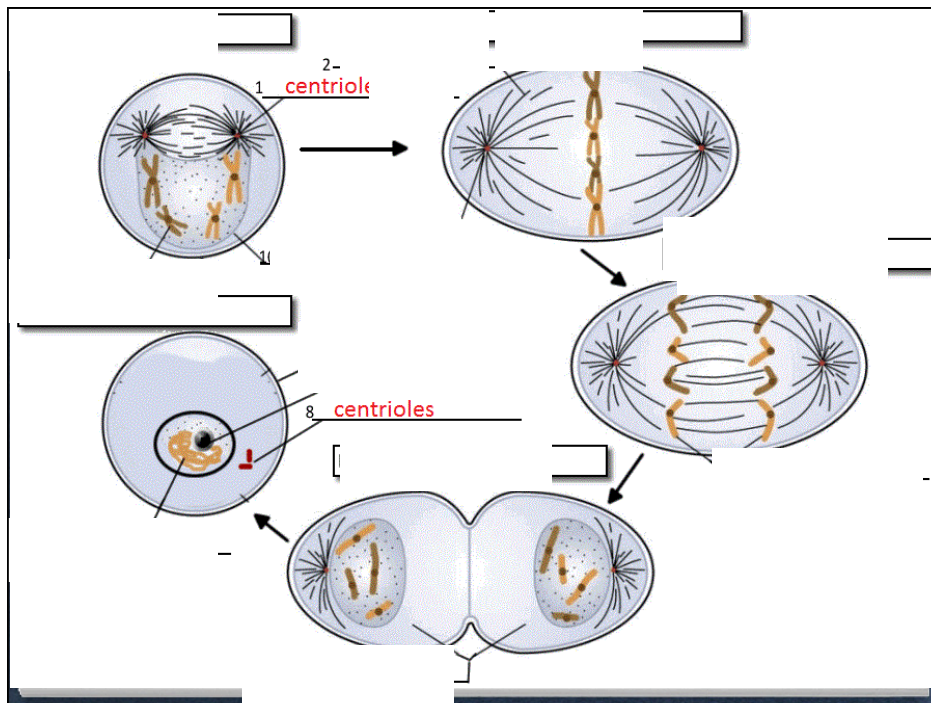
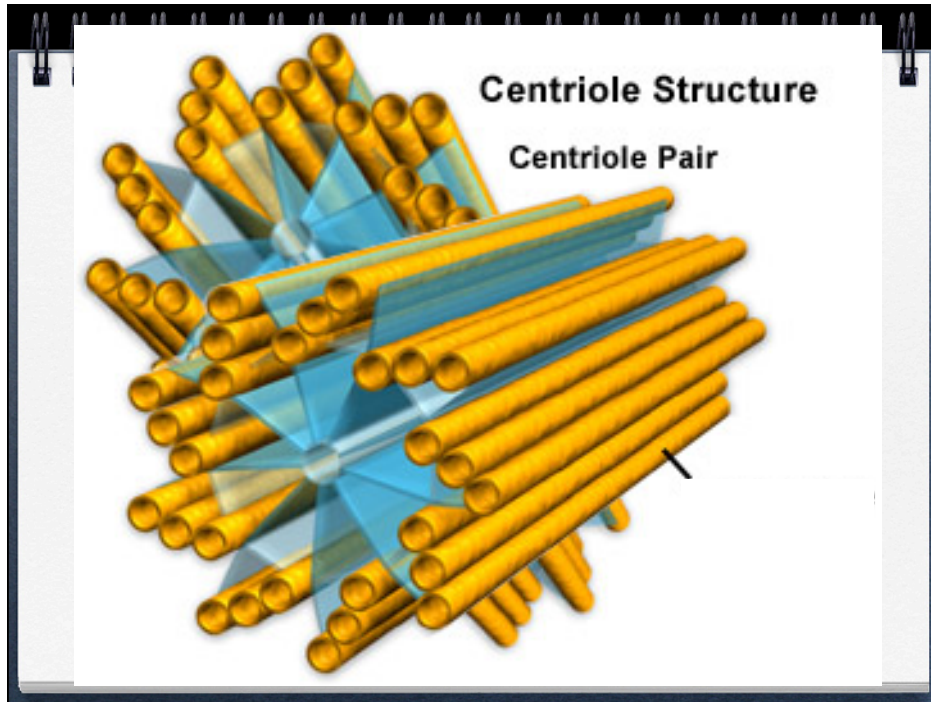
- They are vesicles that help break down larger items so the cell can use them



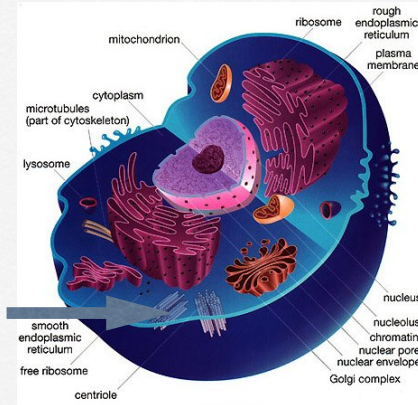
□ **Lysosomes**

- sacs filled with **digestive enzymes**
- digest worn out cell parts
- digests food absorbed by cell

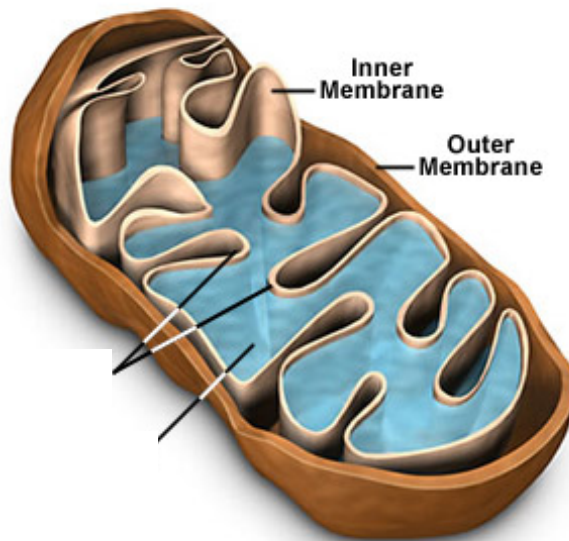




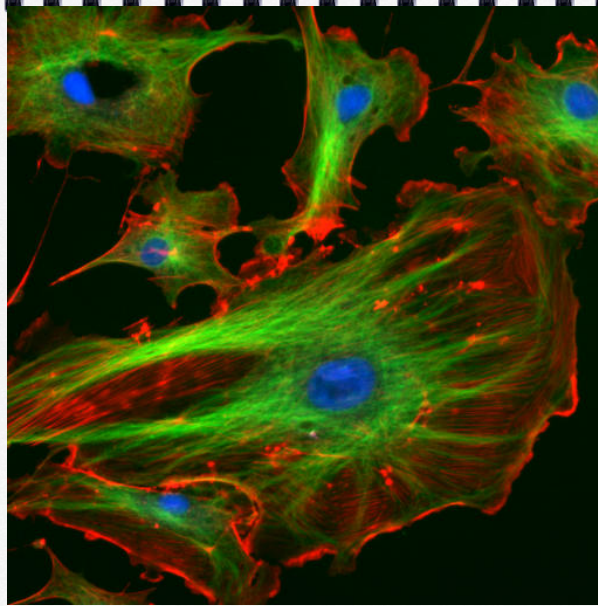
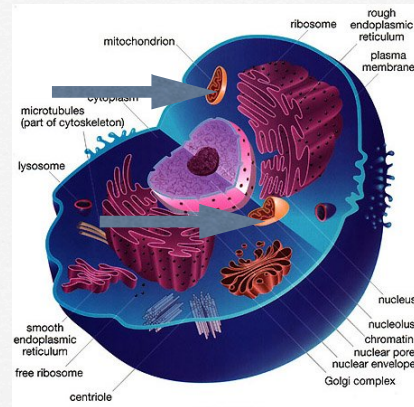
- Centrioles
- pair of bundled tubes
- organizes cell division

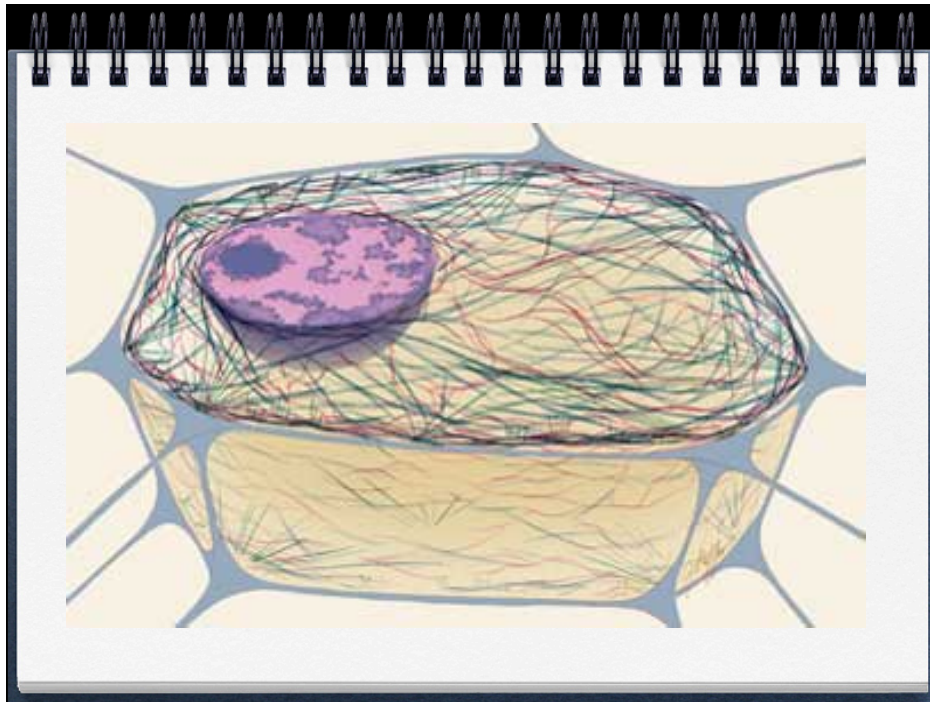


Mitochondria



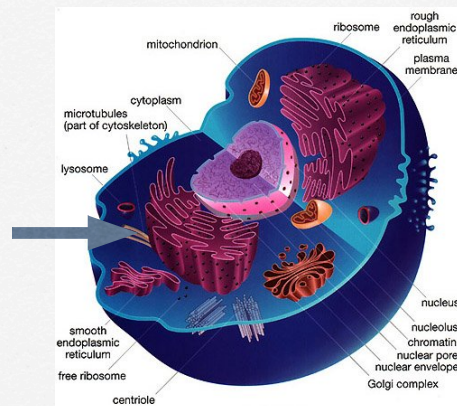
- mitochondrion
 - makes the cell's energy
 - the more energy the cell needs, the more mitochondria it has
 - The "Powerhouse" of the cell

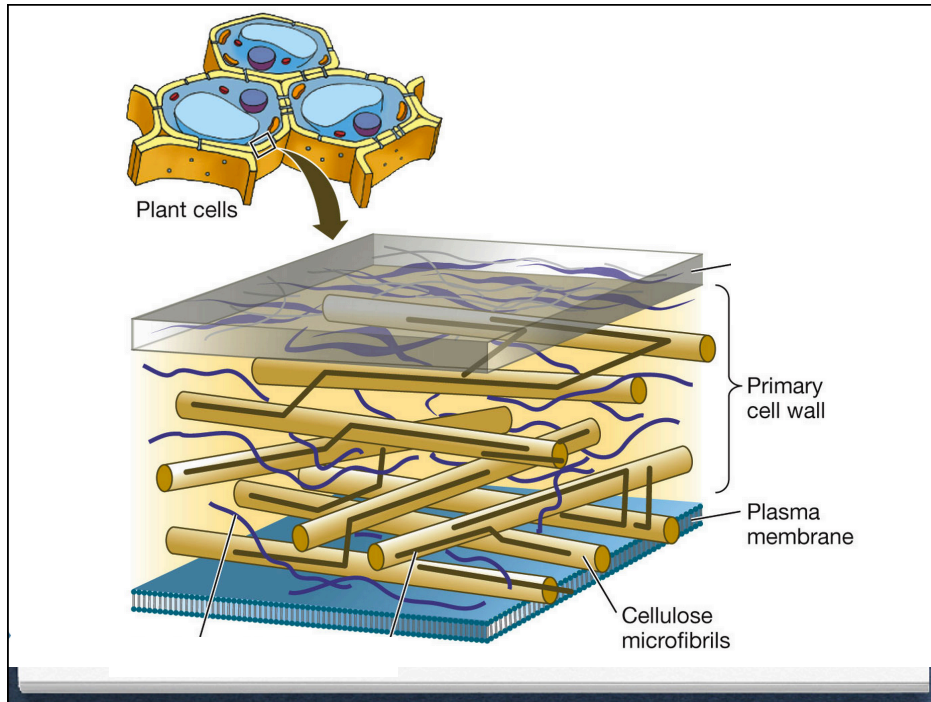




Cytoskeleton

- made of microtubules
- found throughout cytoplasm????
- gives shape to cell & moves organelles around inside.

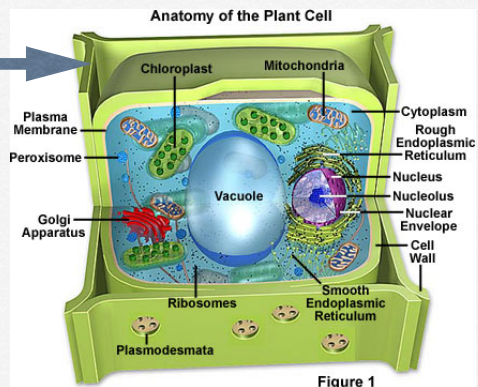


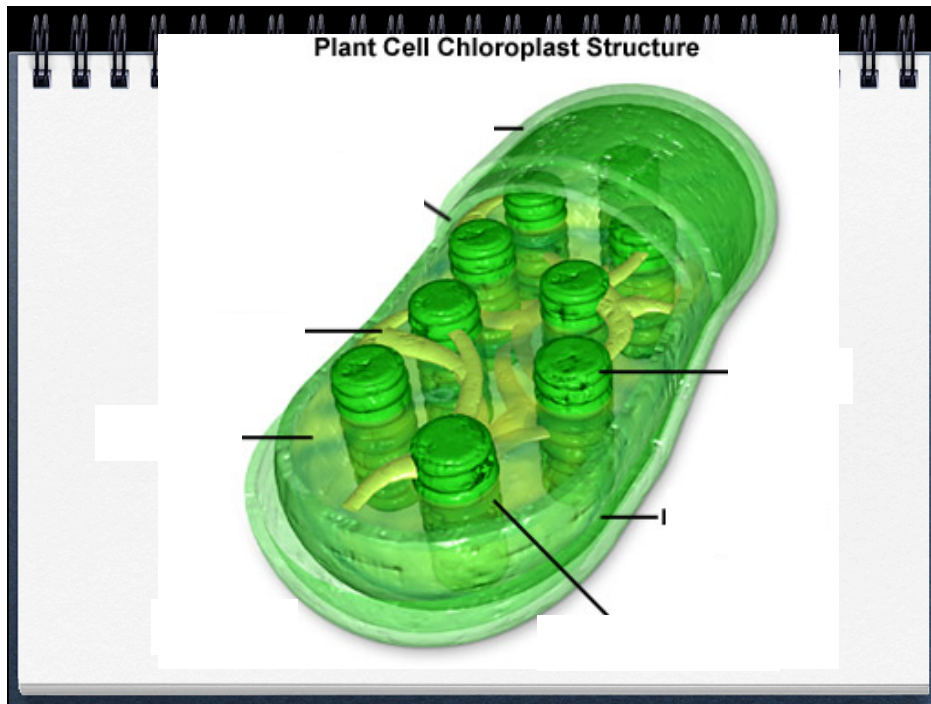


Structures found in plant cells

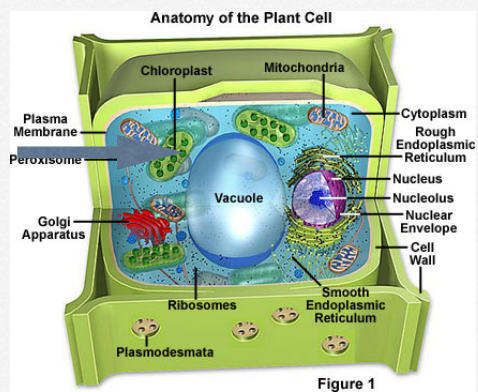
□ cell wall

- very strong
- made of cellulose (vs. peptidoglycan in prokaryotes)
- protects cell from rupturing
- glued to other cells next door



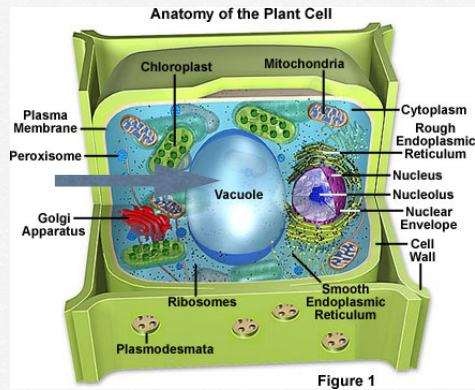


- Chloroplasts
- filled with chlorophyll
- turns solar energy into food energy

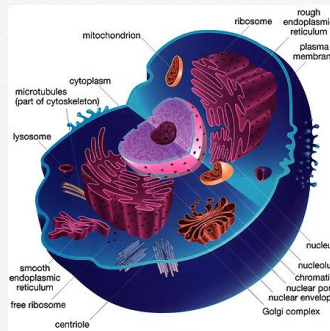
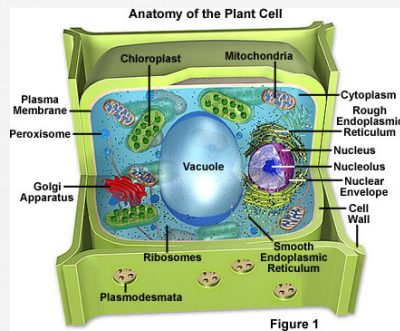


□ vacuole

- huge water-filled sac
- keeps cell pressurized???
- stores starch



How are plant and animal cells different?



Structure	Animal cells	Plant cells
cell membrane	Yes	yes
nucleus	Yes	yes
nucleolus	yes	yes
ribosomes	yes	yes
ER	yes	yes
Golgi	yes	yes
centrioles	yes	no
cell wall	no	yes
mitochondria	yes	yes
chloroplasts	no	yes
One big vacuole	no	yes
cytoskeleton	yes	Yes

Eukaryote cells can be multicellular

- The **whole cell** can be specialized for one job
- cells can work together as **tissues**
- Tissues can work together as **organs**

Advantages of each kind of cell architecture

Prokaryotes	Eukaryotes
simple and easy to grow	can specialize
fast reproduction	multicellularity
unicellular	can build large bodies