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Unit 5: Cellular Biology

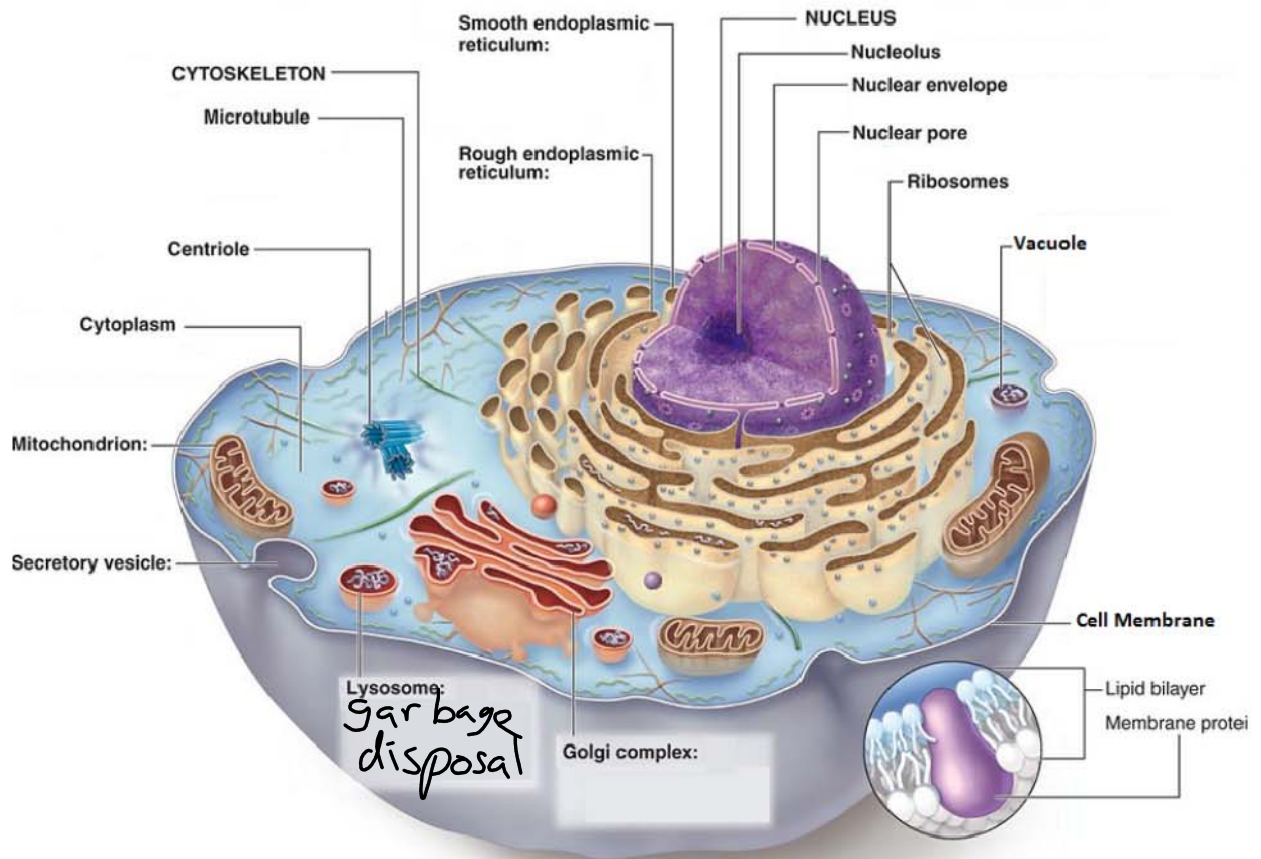
NOTES 5.02

FOCUS: Cell Organelles

EQ: Can you describe the structure and function of each organelle within a cell? Can you compare and contrast a plant cell and an animal cell?

The cells of plants and the cells of animals have many similarities and a few differences.

The Animal Cell:



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The Animal Cell:

1) Cell Membrane:

- Function – The cell membrane

holds the cell together

and controls the movement of materials in and out of the cell.

- Description – Made of a

- The lipid "heads" are

phospholipid bilayer
hydrophilic → attracted to water
hydrophobic → repels water

- The lipid "tails" are

2) Cytoplasm:

- Function –

Supports and protects

cell organelles.

- Description –

- clear, thick jelly-like material

- Located inside all cells

3) Nucleus:

- Function –

controls and directs

activities. (Tells the cell what to do)

- Description – Stores the cell's

DNA.

- DNA stands for

Deoxyribonucleic Acid

- DNA are like

instructions

that tell the cell what to do

- In plant and animal cells, DNA is

always found in the nucleus.

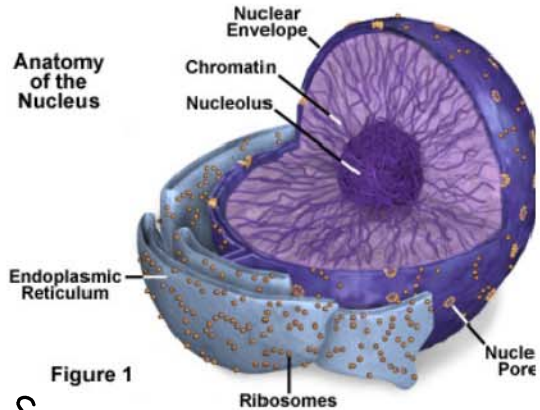
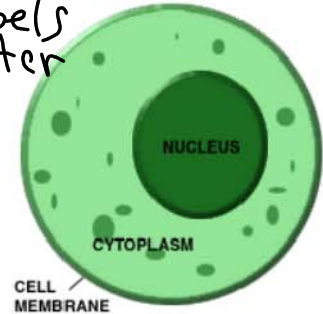
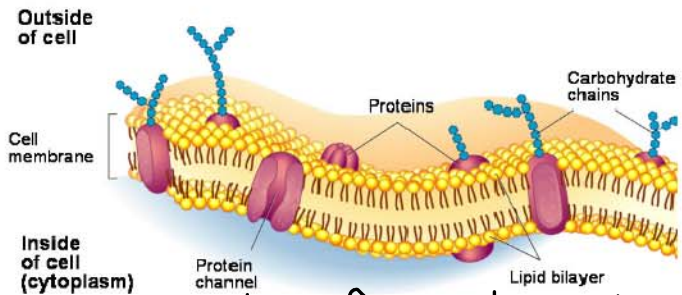


Figure 1

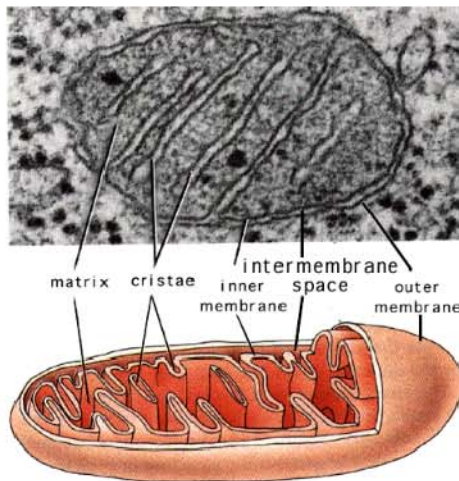
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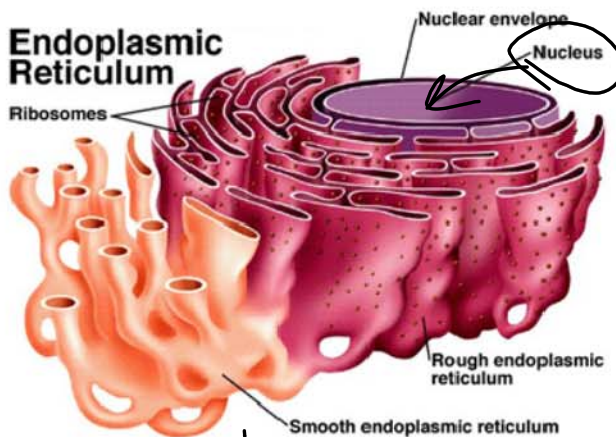
4) Mitochondria:

- Function –
 - Mitochondria are the “power plants” of the cell.
 - Convert the food an organism eats into energy the cell can use.
- Description –
 - Shaped like a bean or rod.
 - Filled with many interior folds called cristae that increase the surface area inside the mitochondria.



5) Endoplasmic Reticulum (ER):

- Function –
 - Transports proteins made by ribosomes to the Golgi body.
- Description –
 - A maze of tunnels surrounding the nucleus.
 - Often covered with many ribosomes. In this case, it is called Rough E.R.



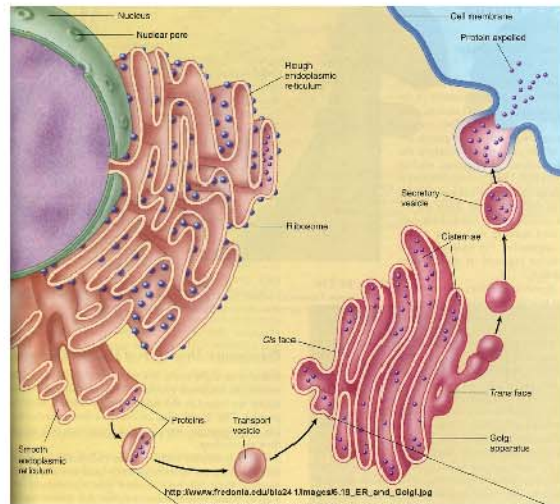
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Golgi Body: Golgi apparatus

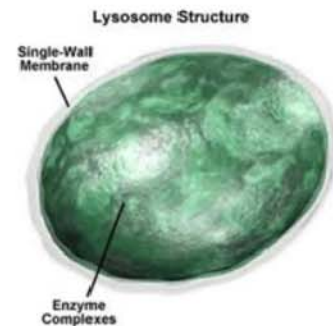
- Function –
 - Packages the proteins made by ribosomes on the E.R. and sends them off to different parts of the cell.
 - Sends materials through the cell membrane to the outside of the cell.



- Description –
 - Looks like flattened sacs and tubes.

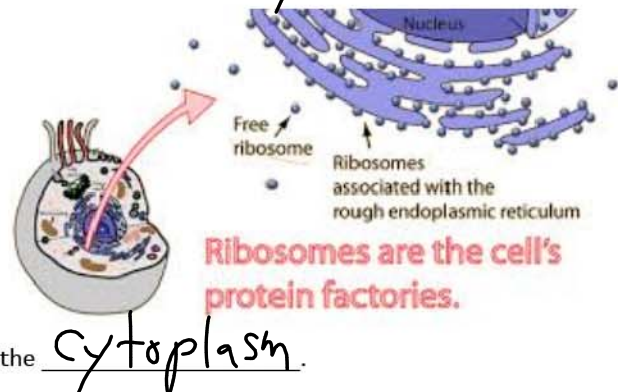
6) Lysosomes:

- Function –
 - The "garbage disposals" of the cell.
 - Break down large particles of food, as well as destroy old cell parts.
- Description –
 - Small round structures containing enzymes.



7) Ribosomes:

- Function – Ribosomes are like "factories" that make proteins.
- Description –
 - Located on the Rough F.R. and are also found floating in the cytoplasm.



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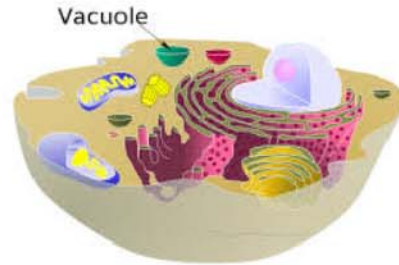
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8) Small Distributed Vacuoles:

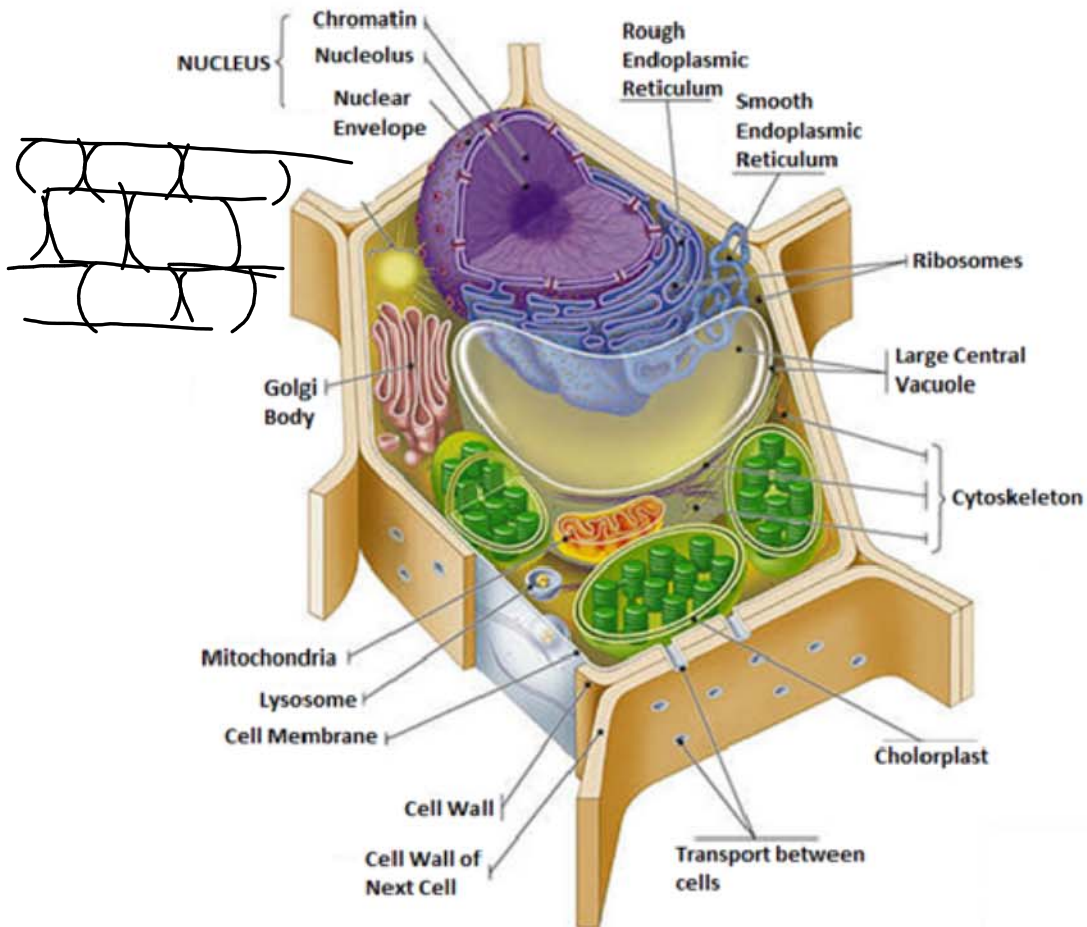
• Function –

- Stores water and other nutrients (food) that the cell needs to survive.
- Acts like a pantry or storage closet.

- Description – Small and spread throughout the cell in animal cells.



The Plant Cell:



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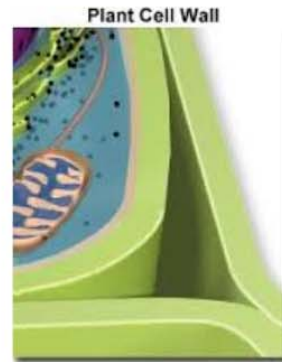
1) Cell Wall:

• Function –

- Makes plant cells strong and rigid.
- Allows water (H₂O), oxygen (O₂), and carbon dioxide (CO₂) to pass into and out of the cell.

• Description –

- Gives plant cells their box-like shape.
- Made of a strong, sturdy material called cellulose.



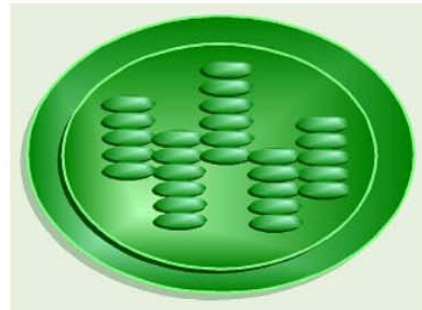
2) Chloroplast:

• Function –

- Use energy from the Sun to make food for the plant
- The process of turning energy into food is called photosynthesis.

• Description –

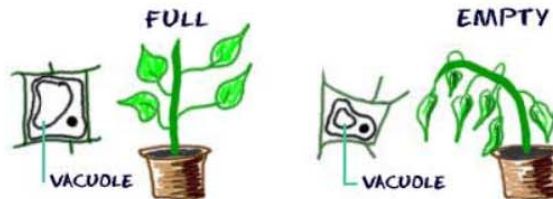
- Chloroplasts are green because they contain a pigment called chlorophyll.



3) Large Central Vacuole:

• Function –

- Stores water and other nutrients



(food) that the cell needs to survive.

- Provides turgor pressure to keep the plant from wilting

- Description – largest organelle in a plant cell.