The cell Organelles

María Paula Vélez R.

-nucleus

-nucleolus

-cell membrane

-mitochondria

-Golgi Apparatus

-lysosomes

-endoplasmic reticulum(ER)

*Rough ER & Smooth ER

-cytoplasm

-cytoskeleton

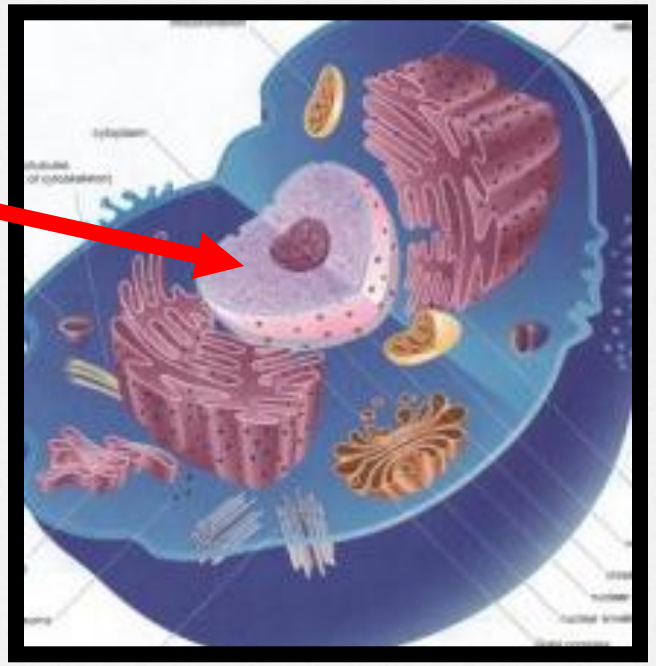
-vacuole

-chloroplast

-centrioles

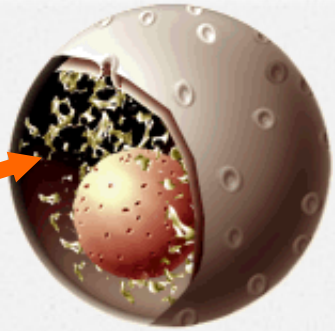
-ribosomes

Nucleus



- The "brain" of the cell
- Controls all of the cellular activities
- DNA is inside the nucleus

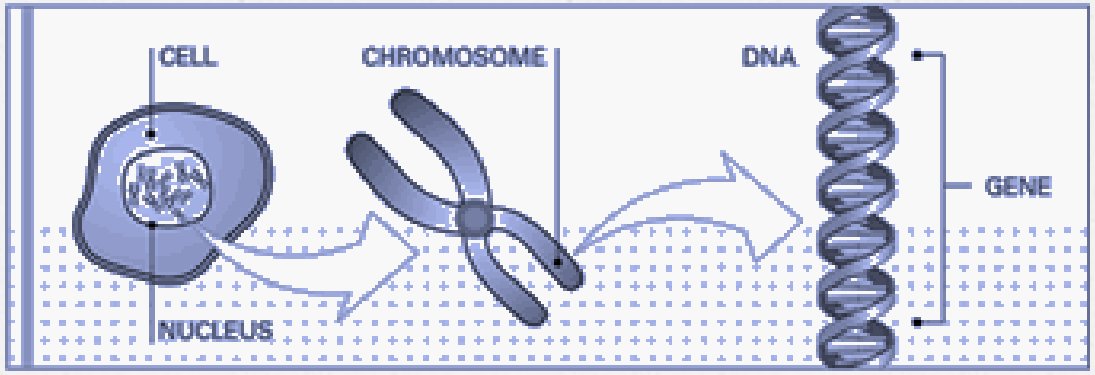
Nucleus



CHROMOSOMES-

- Are found inside the nucleus.

- Carry the information that determines what traits a living thing will have.



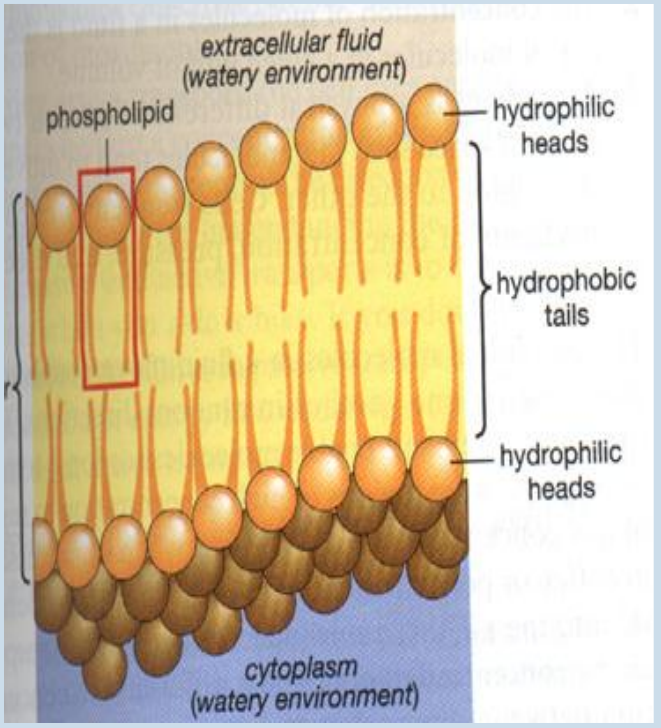
CELL MEMBRANE

- Holds the cell together.
- Keeps all of the pieces (like the organelles and the cytoplasm) inside the cell.
- Controls what goes in and out of the cell.

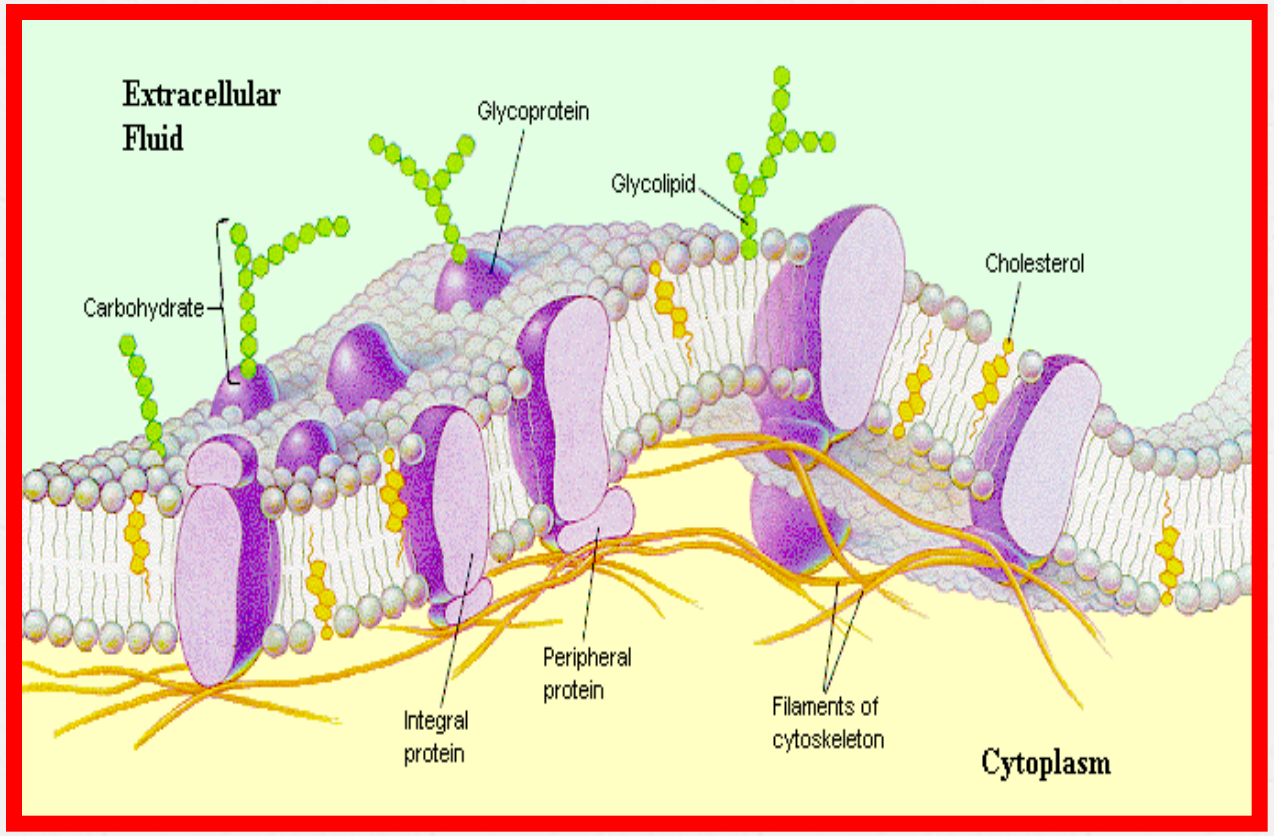
Cell membrane structure

- Has 2 layers of MOLECULES = BILAYER (Bi means two).
- The layers are made up of molecules called **phospholipids**

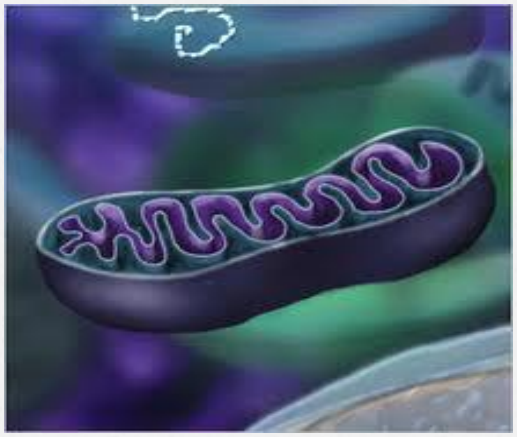
**THINK OF a sandwich with two pieces of bread and some stuffing on the inside



Cell membrane



Mitochondria



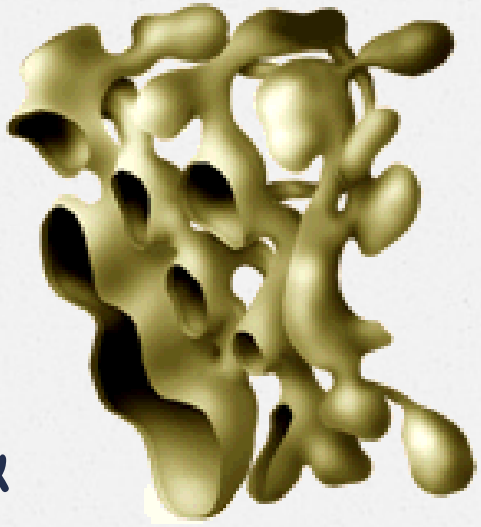
Mito = Mighty / Power

- The Power-House of the cell.
- They break down food molecules so the cell has the energy to live.
- If a cell needs a lot of energy…it will have more mitochondria

Endoplasmic Reticulum

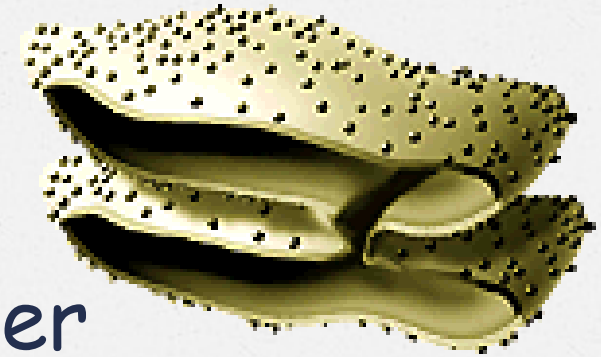
- Also known as the "ER"
- It is an organelle inside the cell that is made up of membranes that are in the CYTOPLASM of the cell.
- There are two different
  - ✓Smooth ER
  - ✓Rough ER

1. Smooth ER

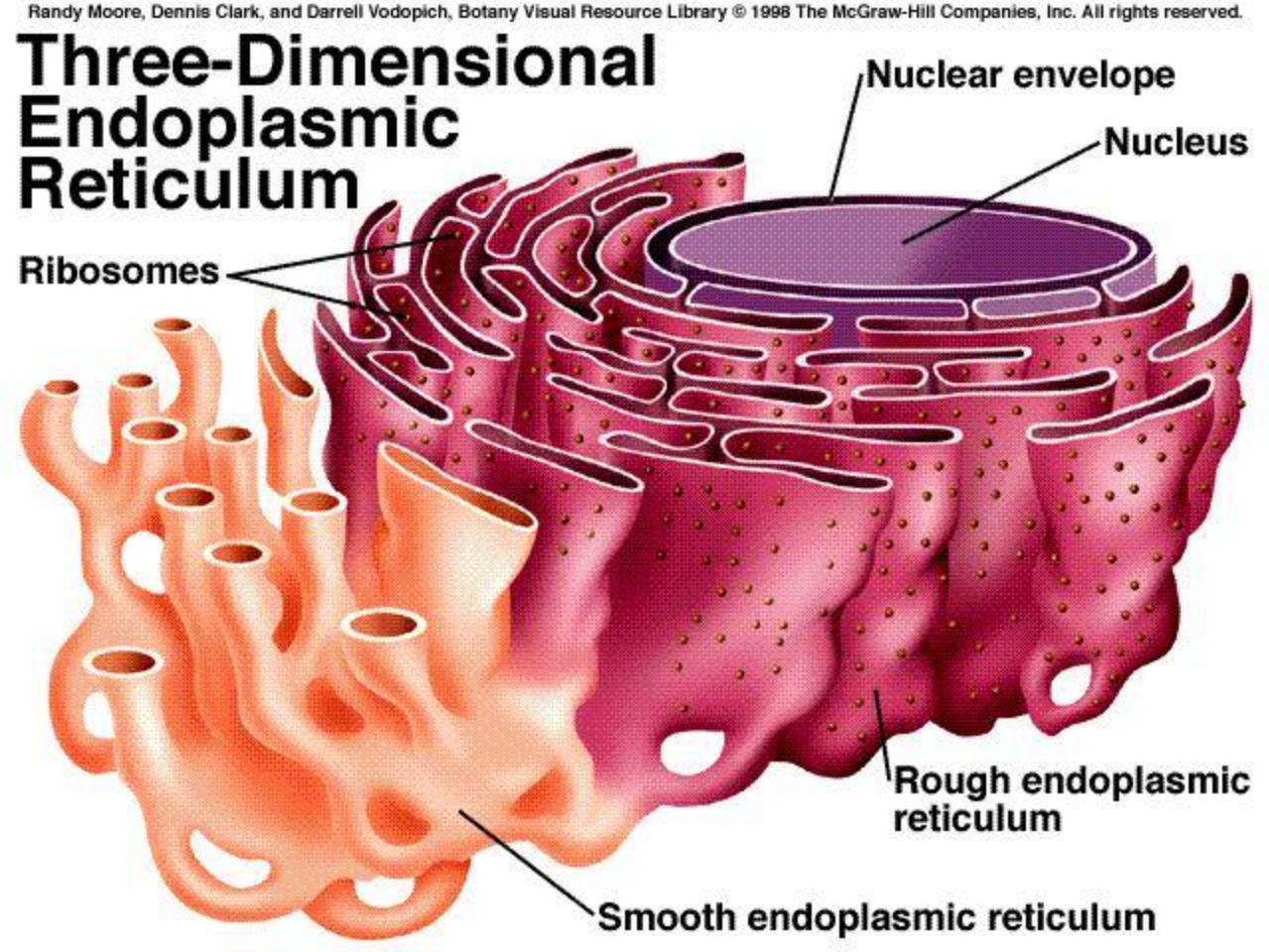


- Its main function is to collect, maintain & transport things
- Stores Ions for the cell to keep nutrients balanced

2. Rough ER



- It has bumps all over it giving it a "rough" appearance.
- Has RIBOSOMES attached.
- ER collects the proteins (built by the ribosomes) .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Three-Dimensional Endoplasmic Reticulum
Nuclear envelope
Nucleus
Ribosomes
Rough endoplasmic reticulum
Smooth endoplasmic reticulum

GOLGI APPARATUS

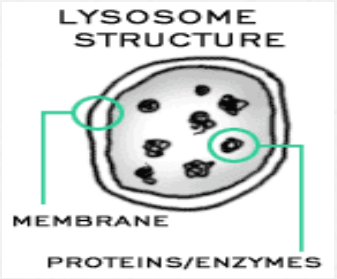
It is made up of a stack of flattened out sacs …like a loose stack of pancakes

WHAT DOES IT DO?

- it takes simple molecules and combines them to make larger molecules.
- takes those larger molecules and puts them into packs called GOLGI VESICLES. (Transport).

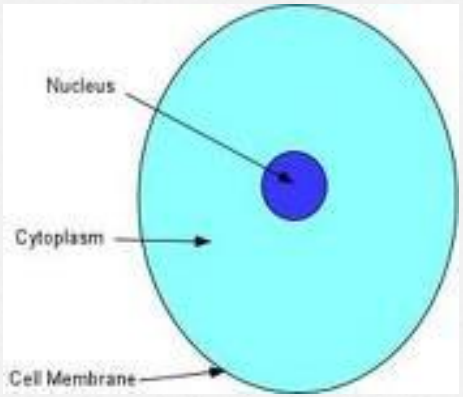
LYSOSOMES (primarily animal)

- They combine with the food taken in by the cell
- The enzymes in the lysosome bond to food & digest it (acidic interior)
- Next…smaller molecules are released which are absorbed by the mitochondria.



CYTOPLASM

Everything inside the cell membrane & outside of the nucleus except the cell's nucleus

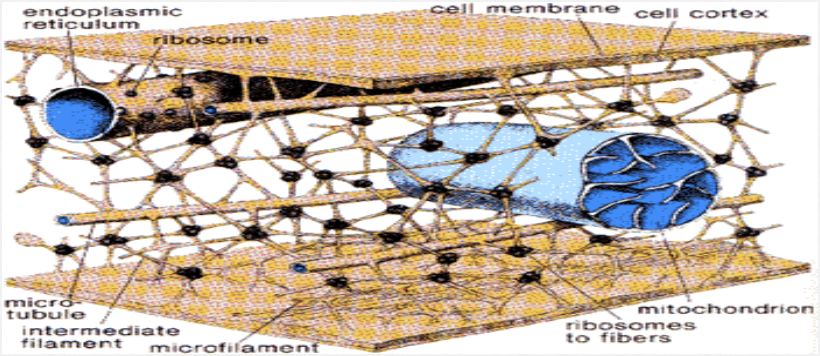


Cytosol:

- Mostly H_2O
- Contains organelles
- Contains salts, dissolved gasses & nutrients

CYTOSKELETON

- Movement of material through the cell for stuff.



- Keeps the shape of the cell.
- Protects the cell from getting smashed.

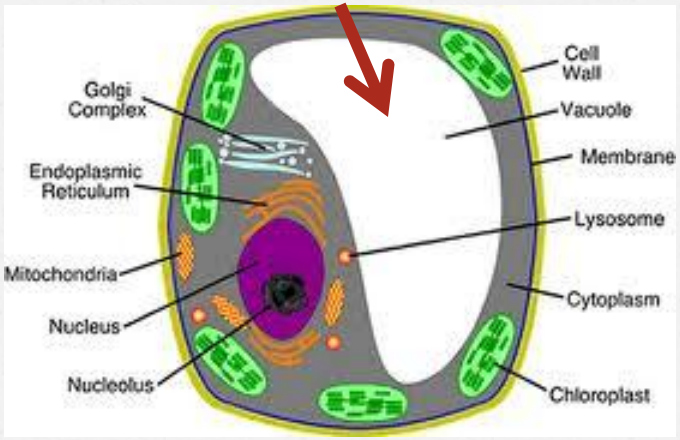
VACUOLE

- Vacuoles are "bubbles" that float in the cell.
- In animals they store and transport.

- Vacuoles are more important to the survival of plant cells than they are to animal cells.

VACUOLE: STORAGE IN PLANT CELLS

- Vacuoles in plants support structure.
- Vacuoles hold onto things that the cell might need…like a backpack.



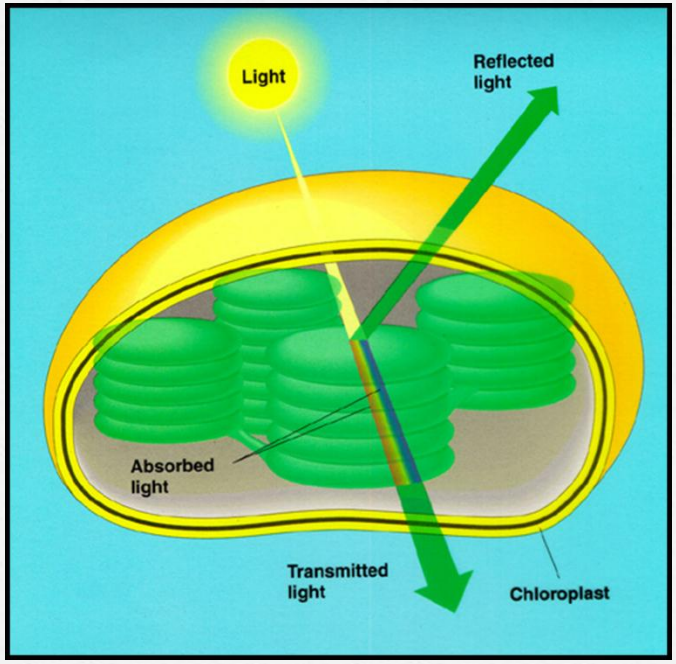
- There are some vacuoles that hold onto waste products. Storing waste products protects the cell from contamination.

Chloroplast

- Is the site of photosynthesis in eukaryotic cells.
- Is found only in plant cells.

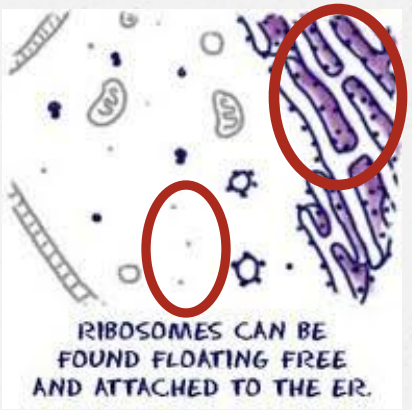
photosynthesis

The process in which plant use water, carbon dioxide, and energy from the sun to make food.



Ribosomes

- Small dot-like structures in cells.
- Ribosomes are the site of protein synthesis in cells.
- Ribosomes are made up of proteins and ribonucleic acid(RNA).
- There are two kinds of ribosomes
    1) Attached to the rough ER
    2) floating in the cell cytoplasm



CELL WALL

A stiff covering that protects plant cells

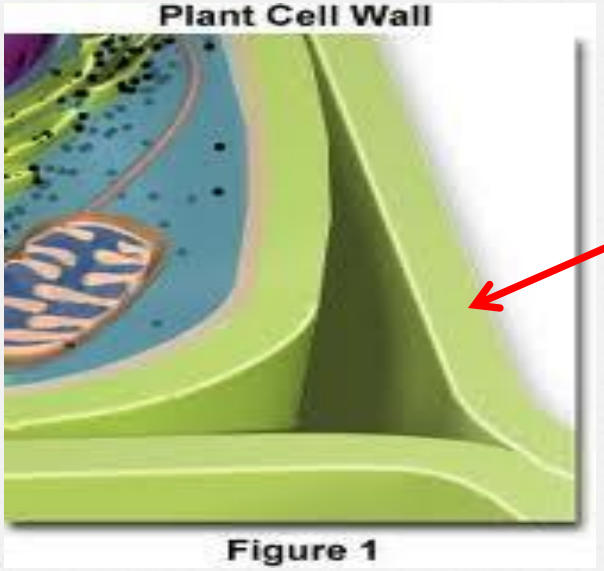
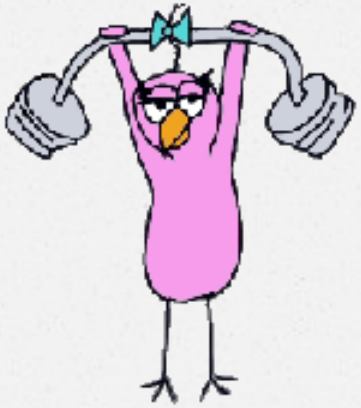


Figure 1

Exercize your brain w/



Homework Questions

Maria Paula Vélez R.

Assignment Part A (slides 1-11)

Directions: Write-out and highlight the following questions. Then use your notes to answer them.

1. Which organelle is known as the "Brain" of the cell?
2. If you look at a picture of a cell, how would you recognize the nucleous?
3. List the 3 main jobs of the cell membrane
4. Explain why the cell membrane has tiny holes made of protein in it.

Assignment Part B (slides 11-23)

Directions: Write-out and highlight the following questions. Then use your notes to answer them.

1. Which organelle is known as the Power House" of the cell?
2. The mitochondria of a cell share the same job as the _____ (hint- an organ) in the human body.
3. Explain how you could distinguish the rough ER from the smooth ER.
4. What is the main job of the smooth ER?
5. What type of reactions occur on the inner membrane of the mitochondria? (produces energy)
6. The process of H_2O moving across the cell membrane is called?

Assignment Part C (slides 23-)

Directions: Write-out and highlight the following questions. Then use your notes to answer them.

1. What is the main function of a lysosome?

2. What happens if a lysosome breaks open?

3. Explain the difference between cytoplasm and protoplasm. (draw a diagram if it will help you)

4. Why are vacuoles important to PLANTS?

5. Which organelle is the site of photosynthesis?

6. What are the three main ingredients for photosynthesis?

Assignment Part D (slides 23-)

Directions: Write-out and highlight the following questions. Then use your notes to answer them.

1. Centrioles are usually found in _____ cells.

2. What is the main function of a centriole?

3. List the two places you can find a ribosome in an animal cell.

4. What do ribosomes make?

See also wksht to go with questions parts B-D