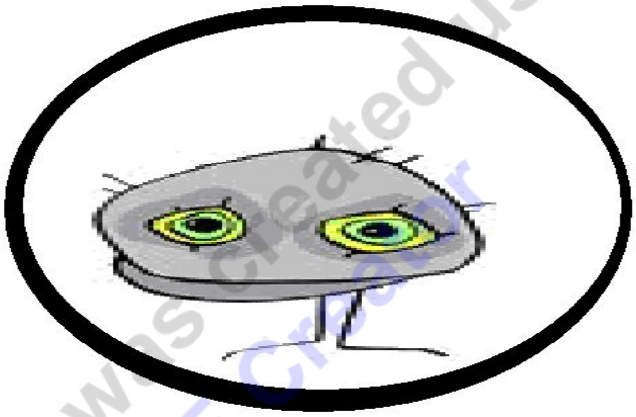
Cells Unit

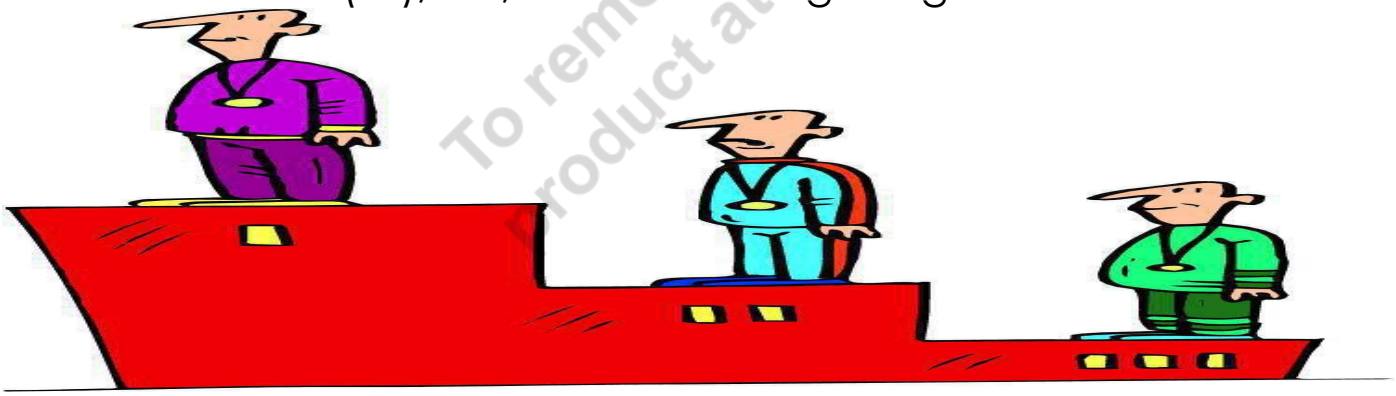
Name:
Due:

While looking under the microscope, you observe the object below. How can you determine if this is a living creature? What will it need to survive if it is living?



These are the Biologically Important Elements
(These letters deserve to look cool, please put their names below)

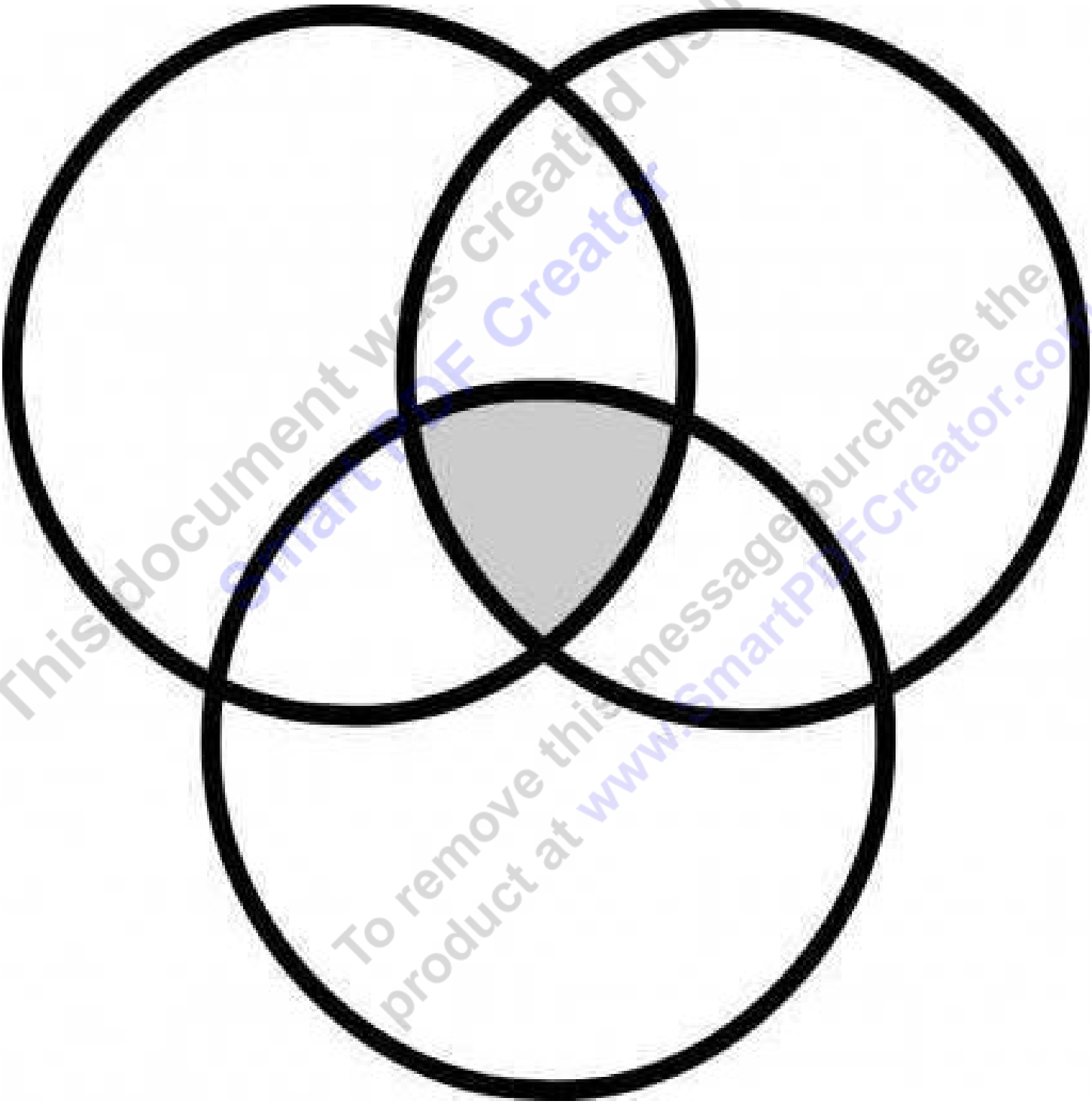
If these athletes were biologically important Elements, which element is used the most (1st), 2nd, and 3rd in living things.



What are some similarities and differences between an animal cell, plant cell, and prokaryotic bacteria cell? Prokarya will be addressed later in the unit if you want to hold off for a bit.

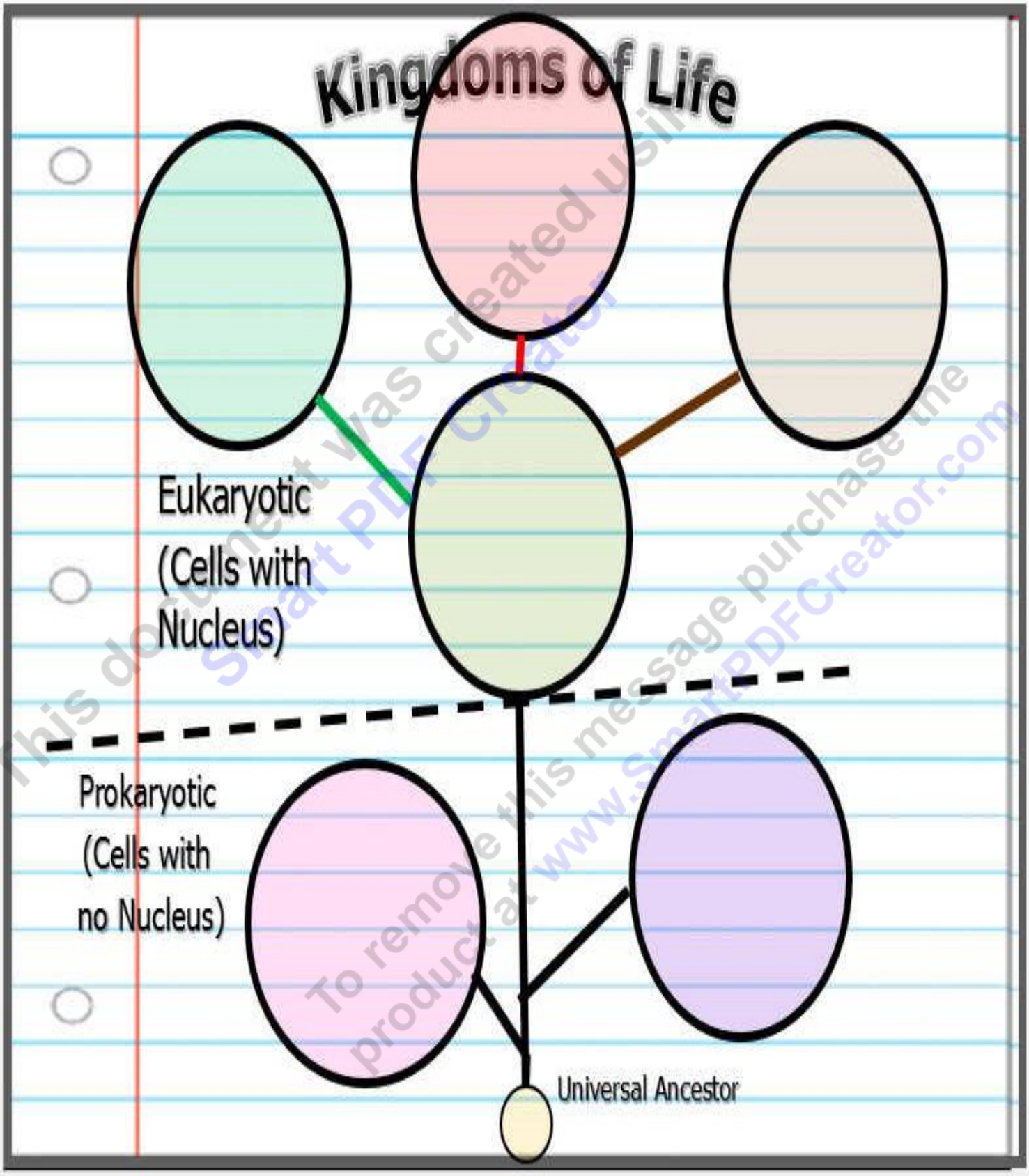
Animal Cell

Plant Cell



Bacteria Cell (Prokaryotic)

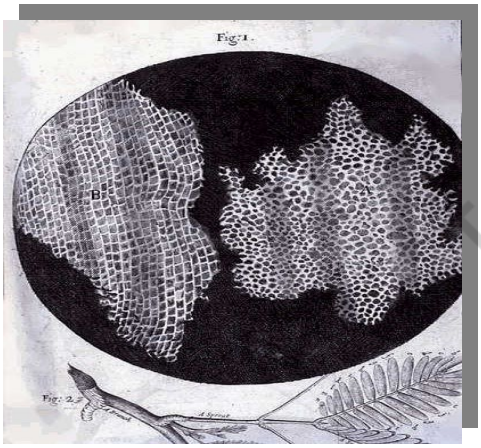
Please record the Kingdoms / Domains of Life in the empty template below. The more specific / detailed the better.



Briefly describe the findings of Francesco Redi's experiment in 1668.

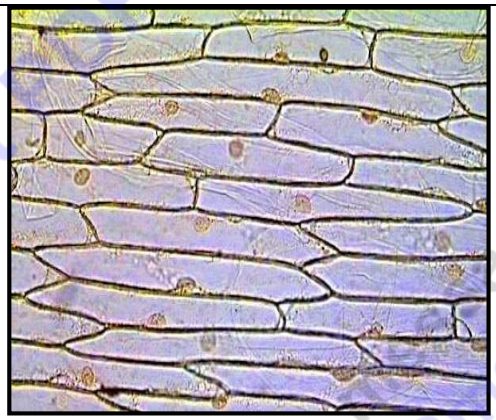
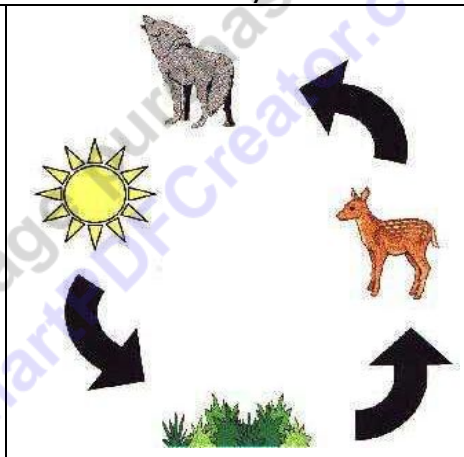
Make sure to discuss the control group!

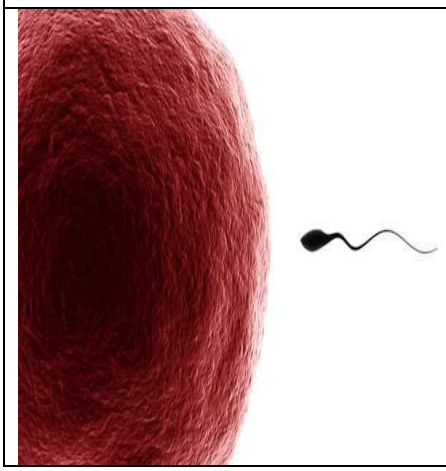
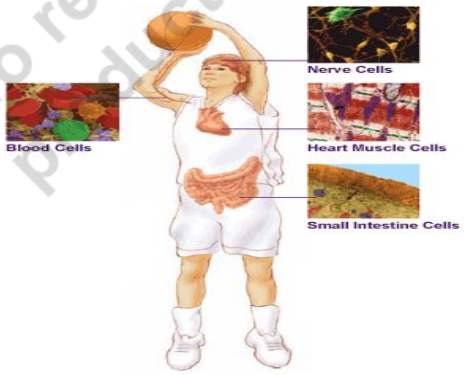
Please use the pictures below to record some history associated with cells and early microscopes.

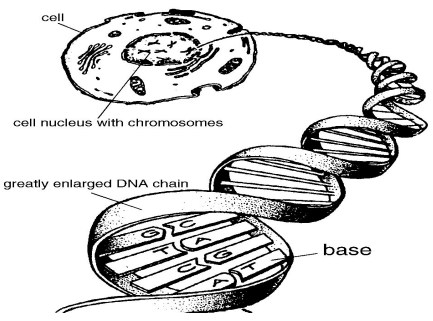
Robert _____ 	Anton _____ _____ 



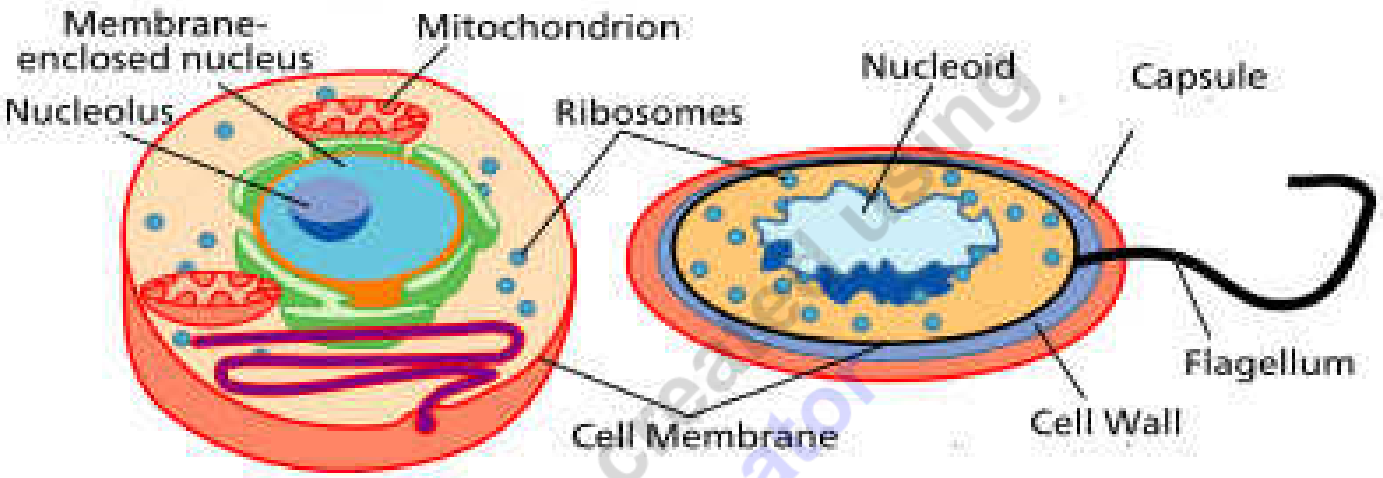
Describe how each picture relates to the modern cell theory?



Which one is Prokaryotic and which one is Eukaryotic?



_____ _____

How do you know? _____

_____

_____

_____

_____

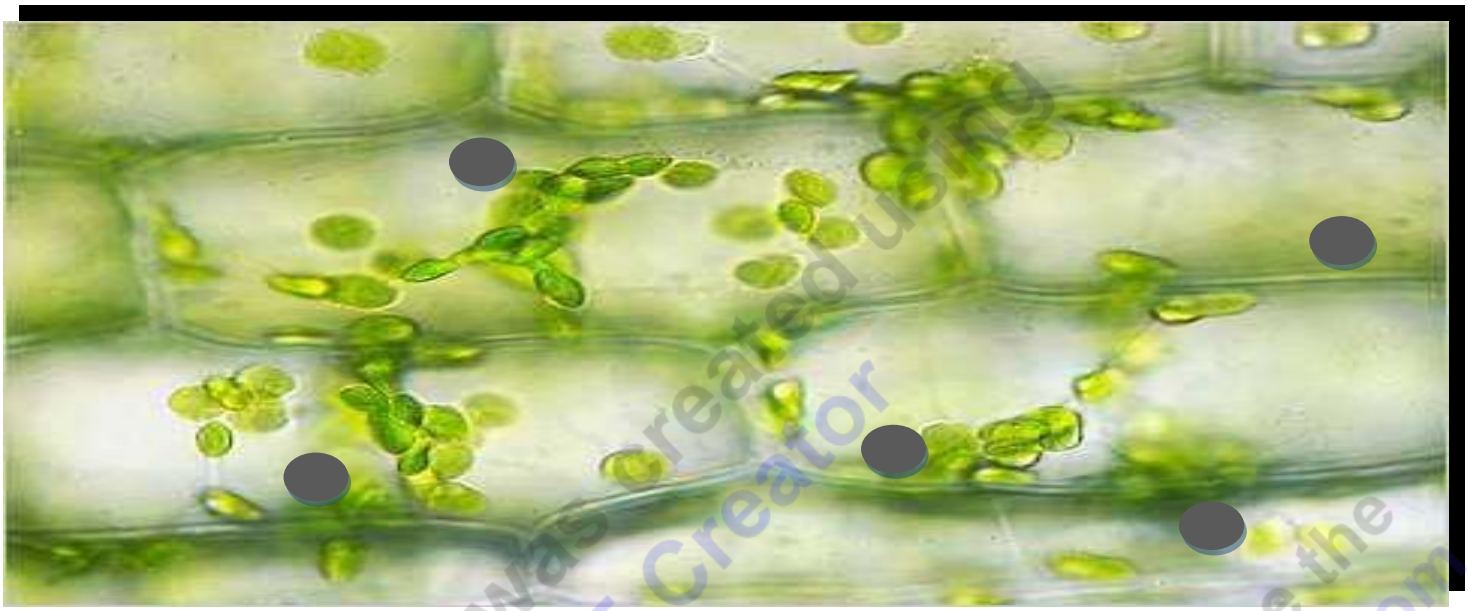
Which one evolved first? Can you give a time scale of their evolution?

_____

_____

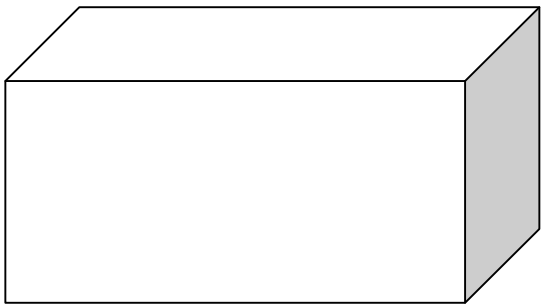
_____

Please label at least three organelles that can be seen in this microscopic image of a plant cell?

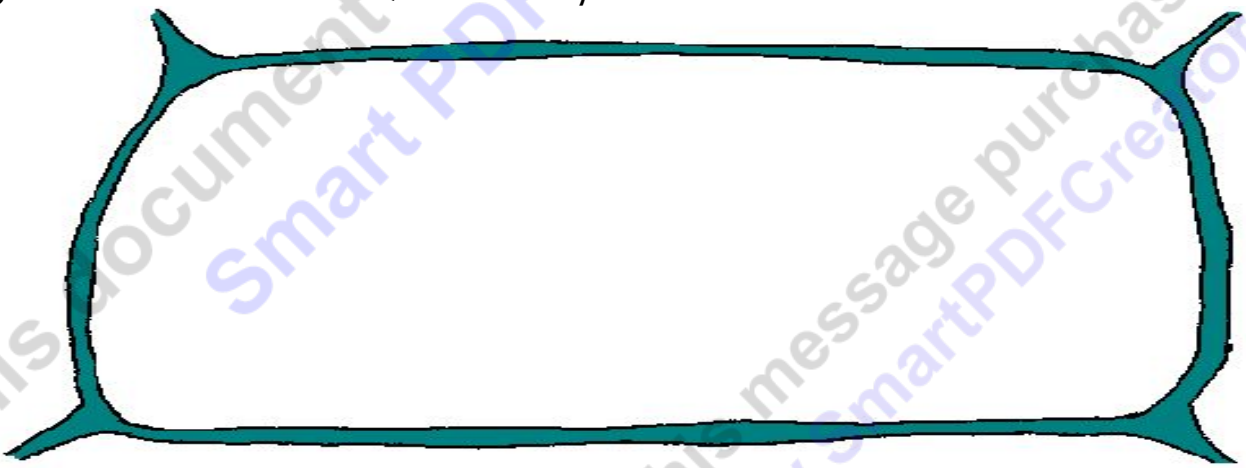


Pretend this city is a cell. Name a few cell city buildings and how their job / function relates to that of a cell.

Circle the shape that best represents a cell? **Why?**



Please sketch and label the plant cell below. (Cell Wall, Chloroplasts, Large Central Vacuole, Nucleus).

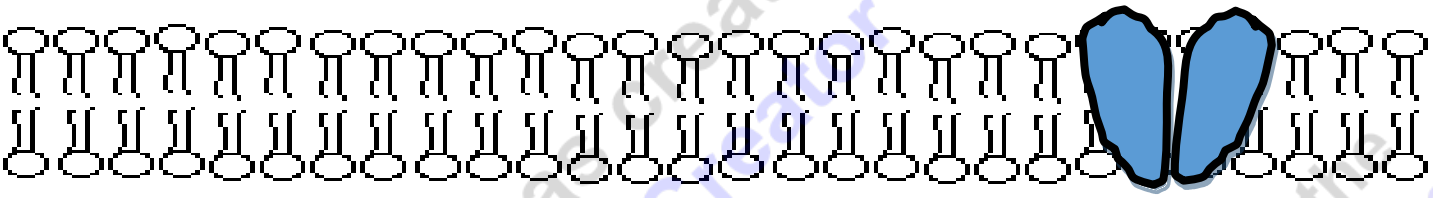


Why is the plasma membrane made up of a phosolipid bilayer? Think Polarity!

Please create water molecules to show osmosis through the following plasma membrane.

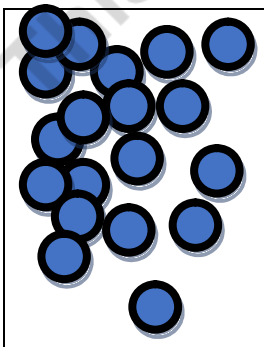
Please describe the phospholipid bilayer (Hydrophilic / hydrophobic)?

High Concentration



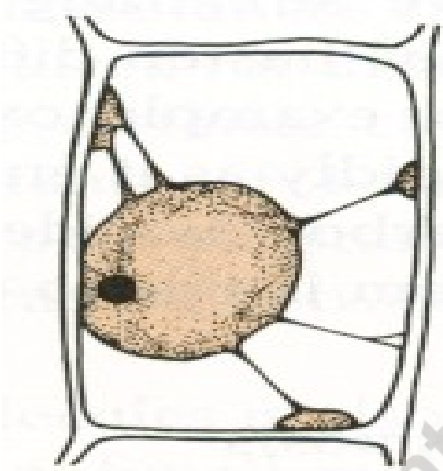
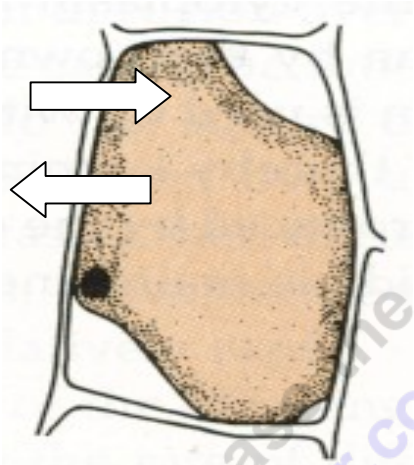
Low Concentration

Please animate diffusion in the boxes below with 20 molecules.

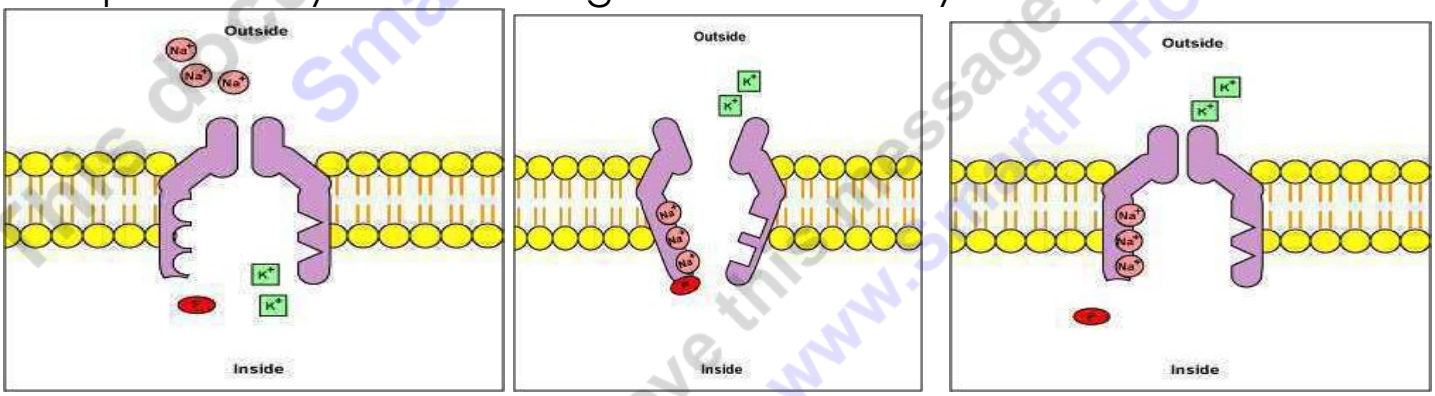


Is this active or passive transport?_____

Please name the following cells and solutions. Word Bank: Hypotonic, Hypertonic, Isotonic. –Can you spot plasmolysis and turgor pressure?

_____Cell _____ Solution	_____ Cell _____ Solution	_____Cell _____Solution
		 Equal Concentrations

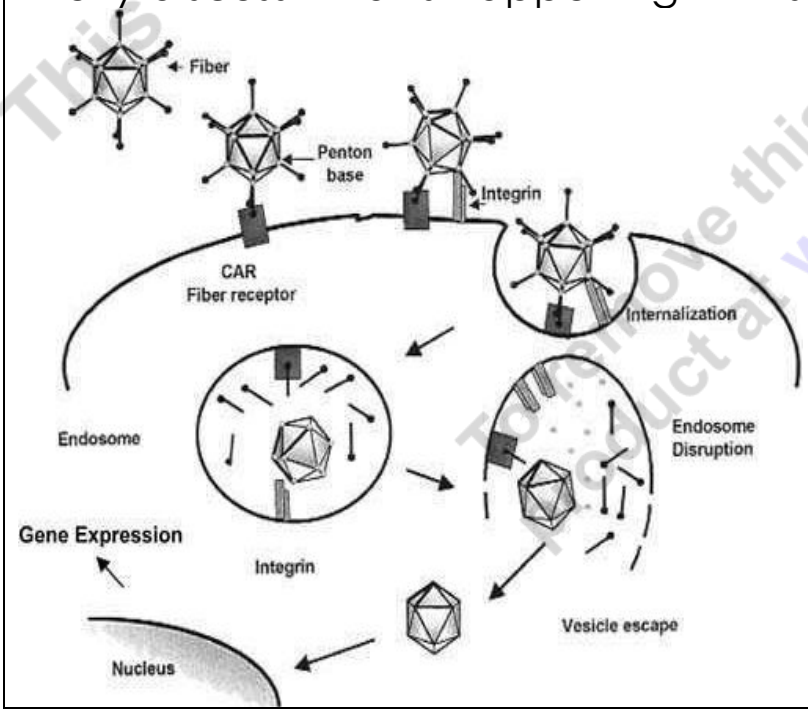
Does the sodium potassium pump below use active or passive transport? Use your knowledge of diffusion in your answer?



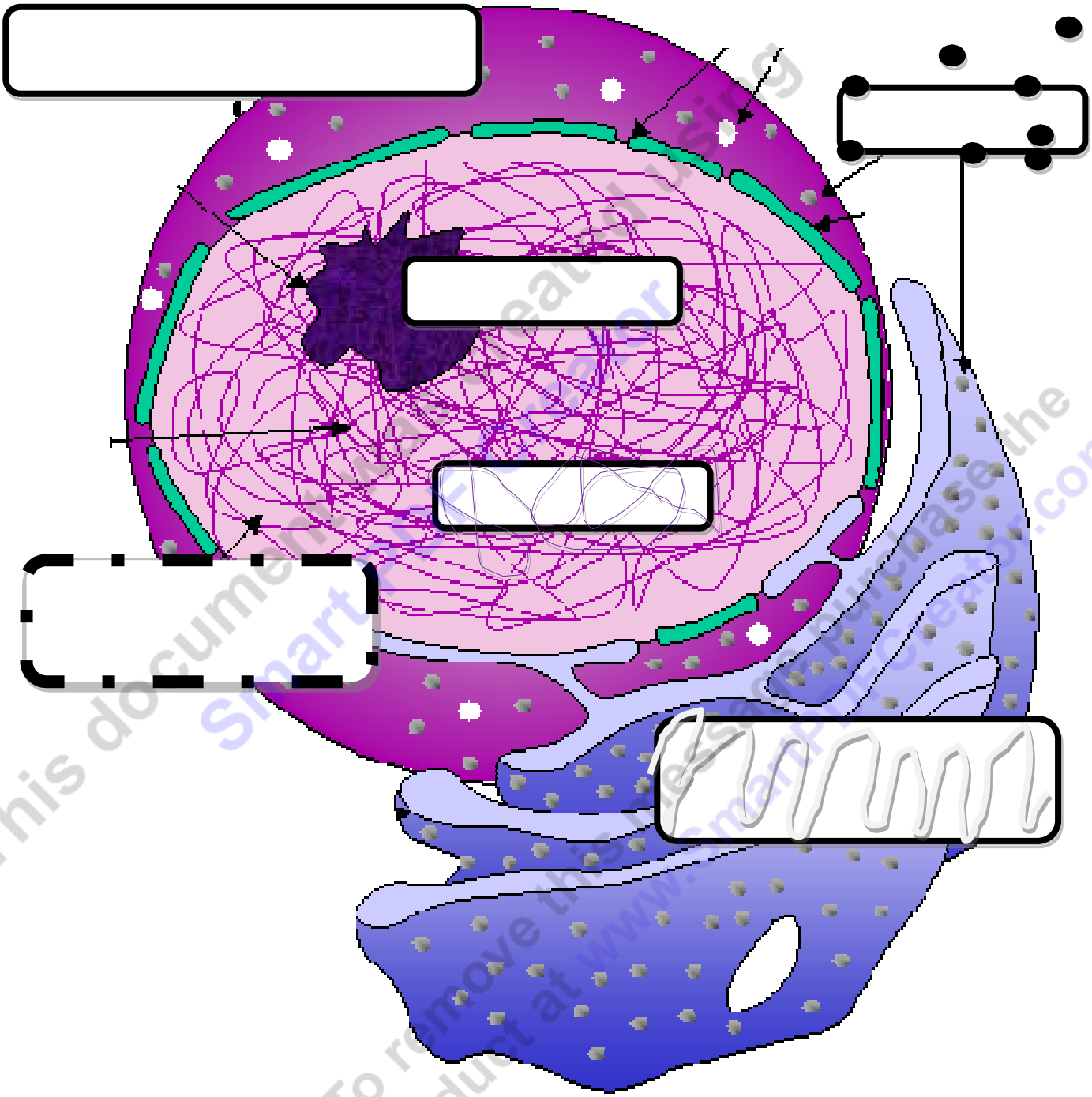
Please create a step by step process of both endo and exocytosis in a cell. Is it active or passive transport? Make the endocytosis phagocytosis, and exocytosis pinocytosis?

Endo				
Exo				

Briefly discuss what's happening in this picture. Think TMPRME!



Please label the sketch of the nucleus, nucleolus, chromatin, nuclear membrane, endoplasmic reticulum, and ribosomes below.



Tell me about the nucleus_____

_____

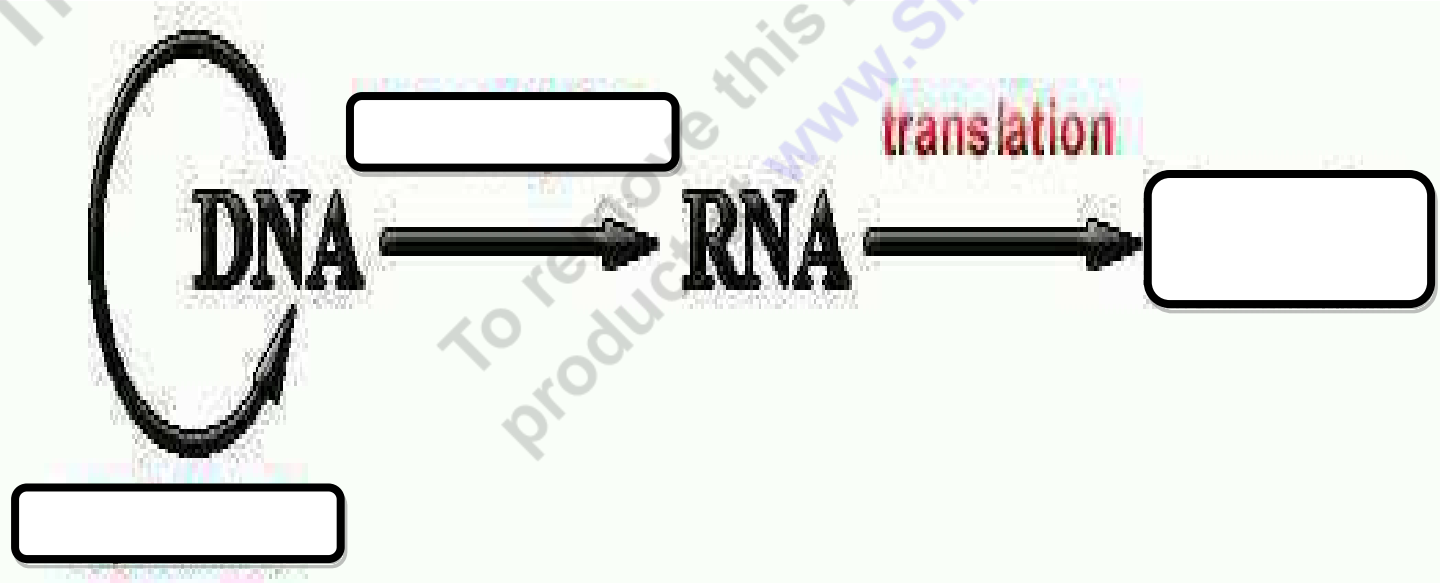
_____

_____

Hint! – Next page.

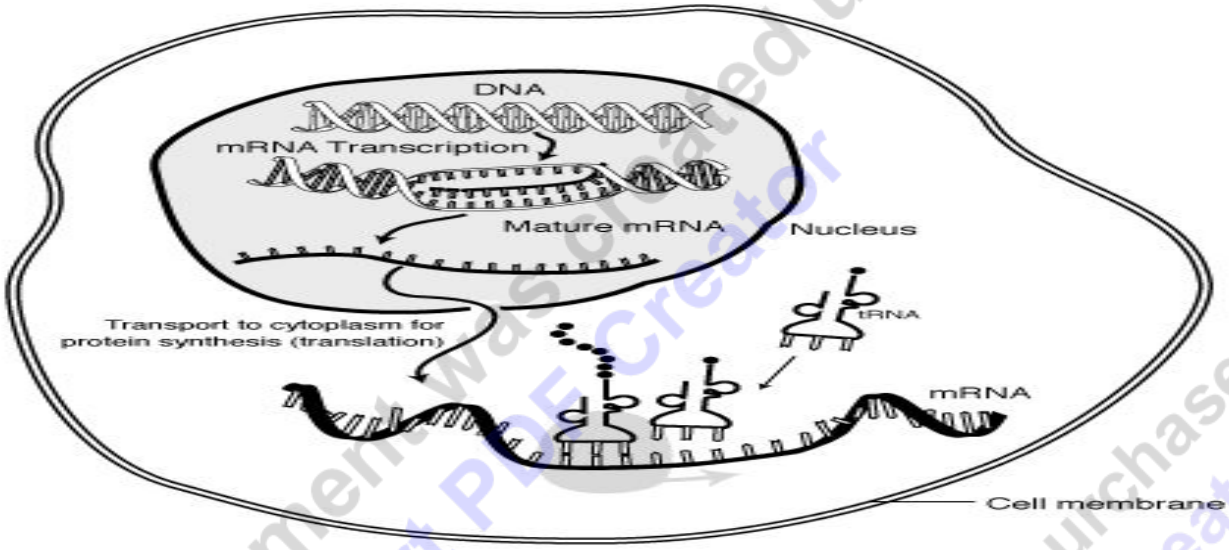
The Nucleus

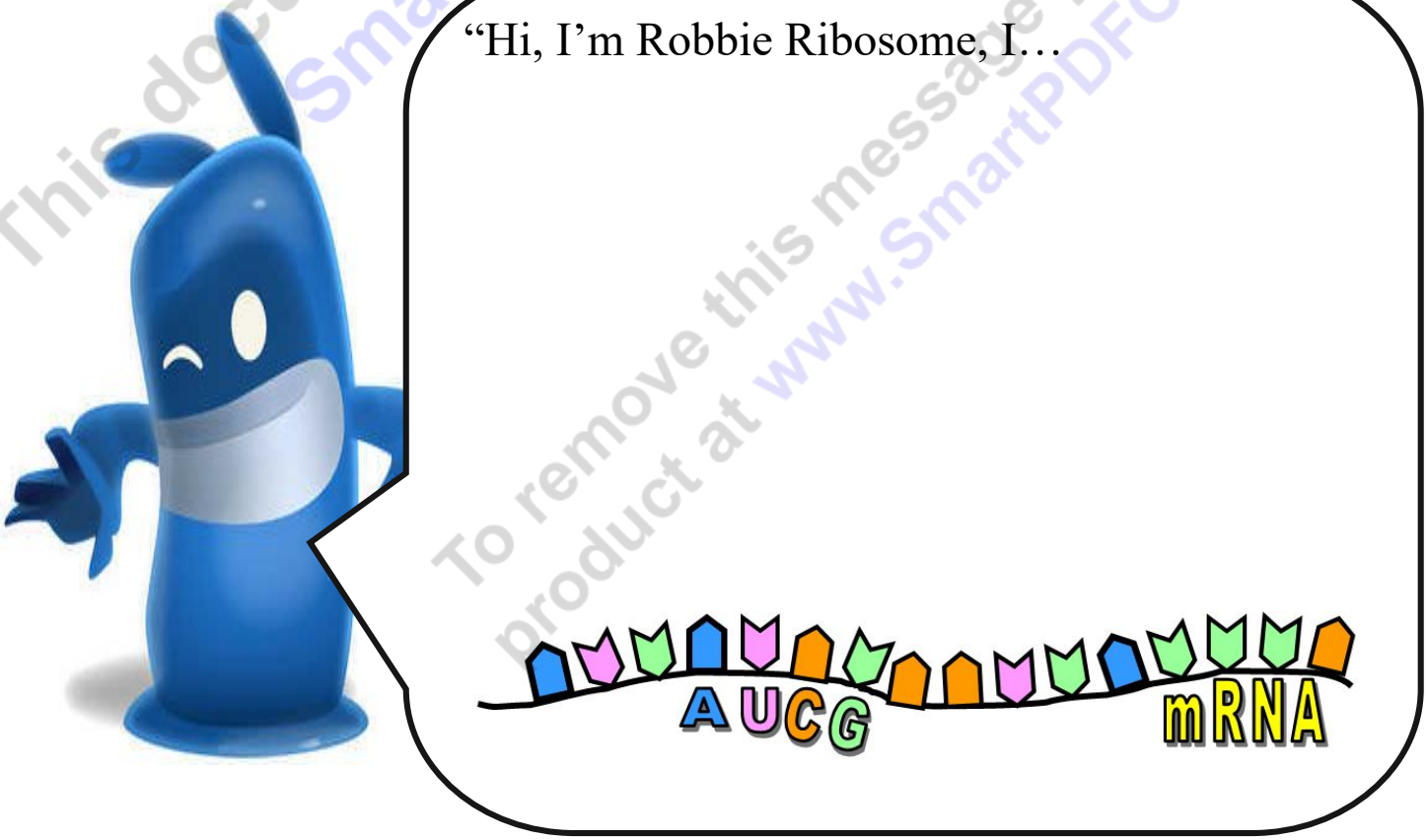
- Largest [ ] in the cell (dark spot)
- Contains [ ] formation (DNA)
- DNA transcription to RNA Translation to [ ]
  - Chromosomes / Chromatin
    - Composed of [ ]
    - Thicken for cellular [ ]
    - Set number per species.
      - » Humans have [ ] chromosomes ([ ] pairs).
  - Nucleolus
    - Round dark spot shape in [ ]
    - Only visible when cell is not [ ]
    - Contains [ ] for protein manufacturing.
    - Makes [ ] that travel out of nucleus.
  - Nuclear Membrane
    - Surrounds [ ].
    - Composed of [ ] layers.
    - Numerous [ ] for nuclear traffic.



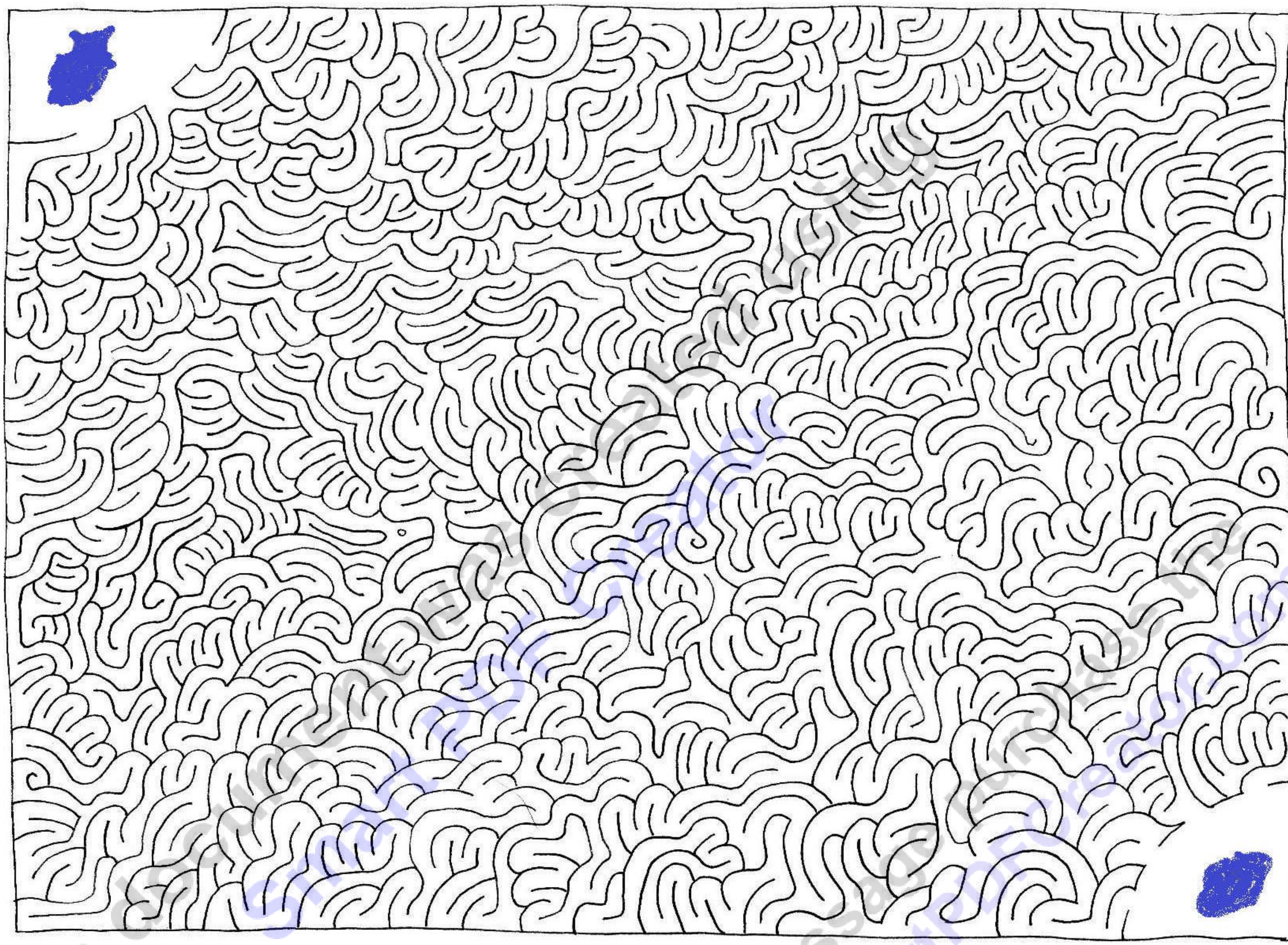
Please use the illustration below to describe Protein synthesis on the right and answer these important questions. Remember, DNA -> RNA-> Protein

Where is the RNA transcribed?
Where does it travel?
Which organelle translates the RNA?





Help Robbie Ribosome make it through the ________________ ________________



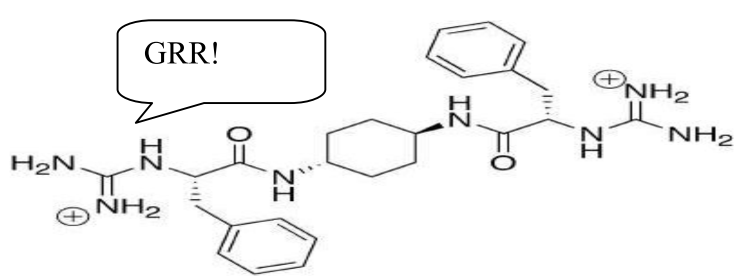
Why is it a mazelike passageway and what happens here?____________________

____

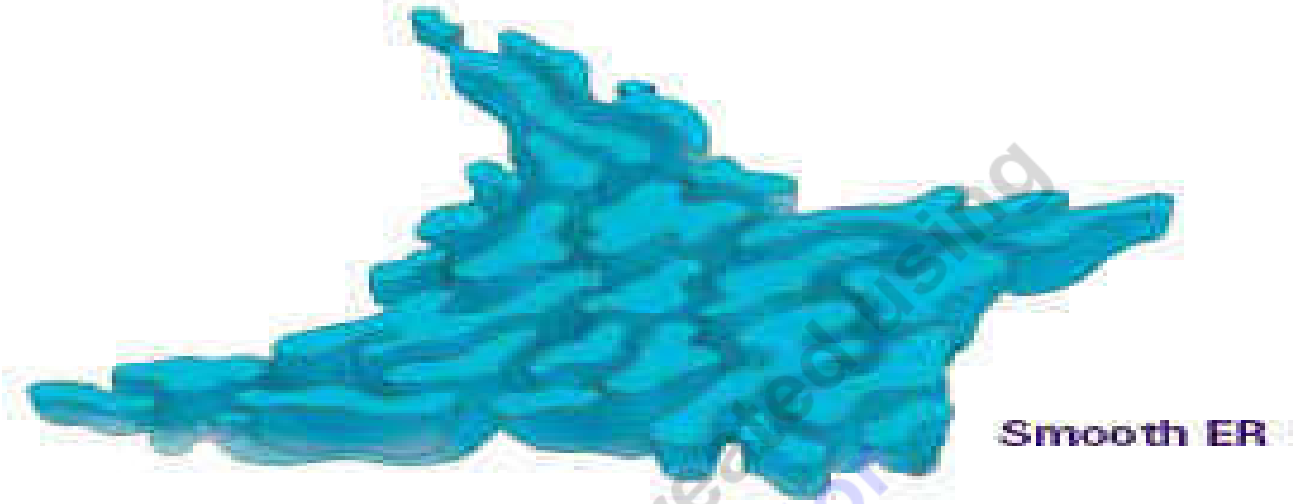
____

____

What's so important about proteins?

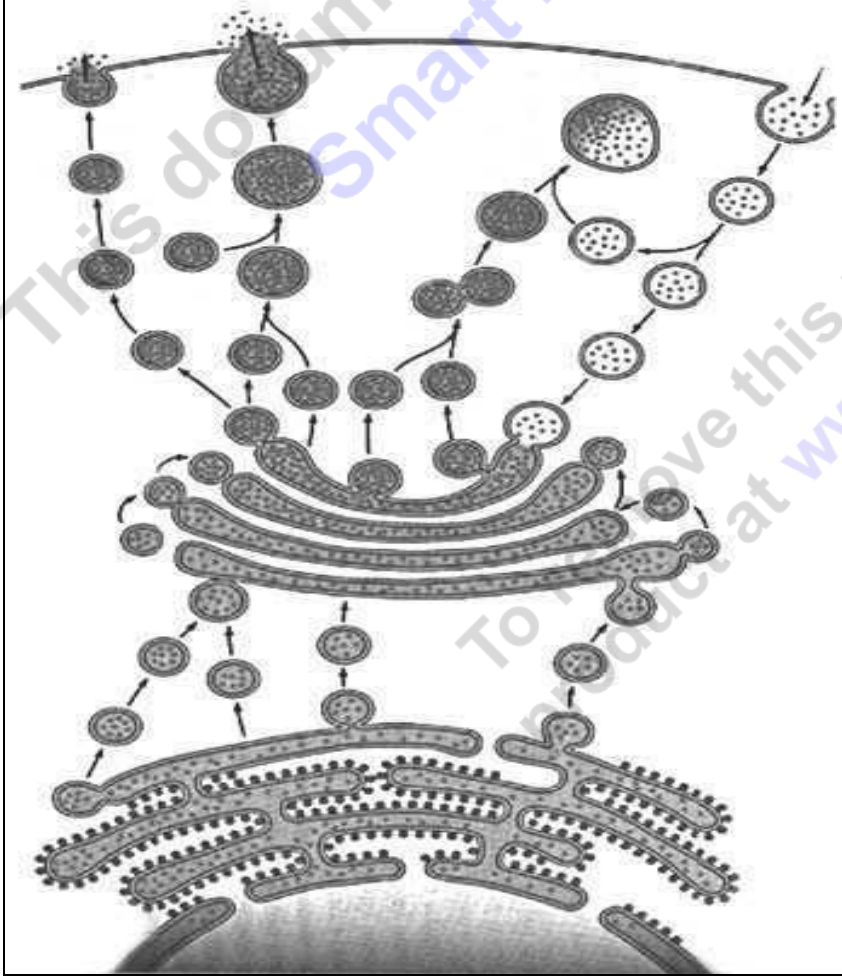


What does this organelle do?

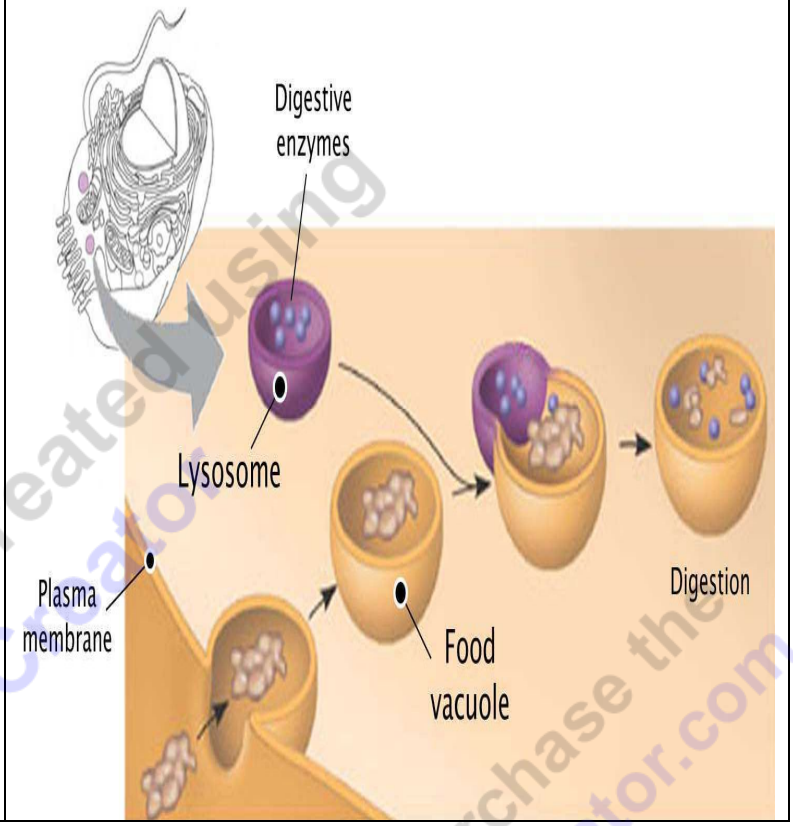


Warning! 3 Part Question.

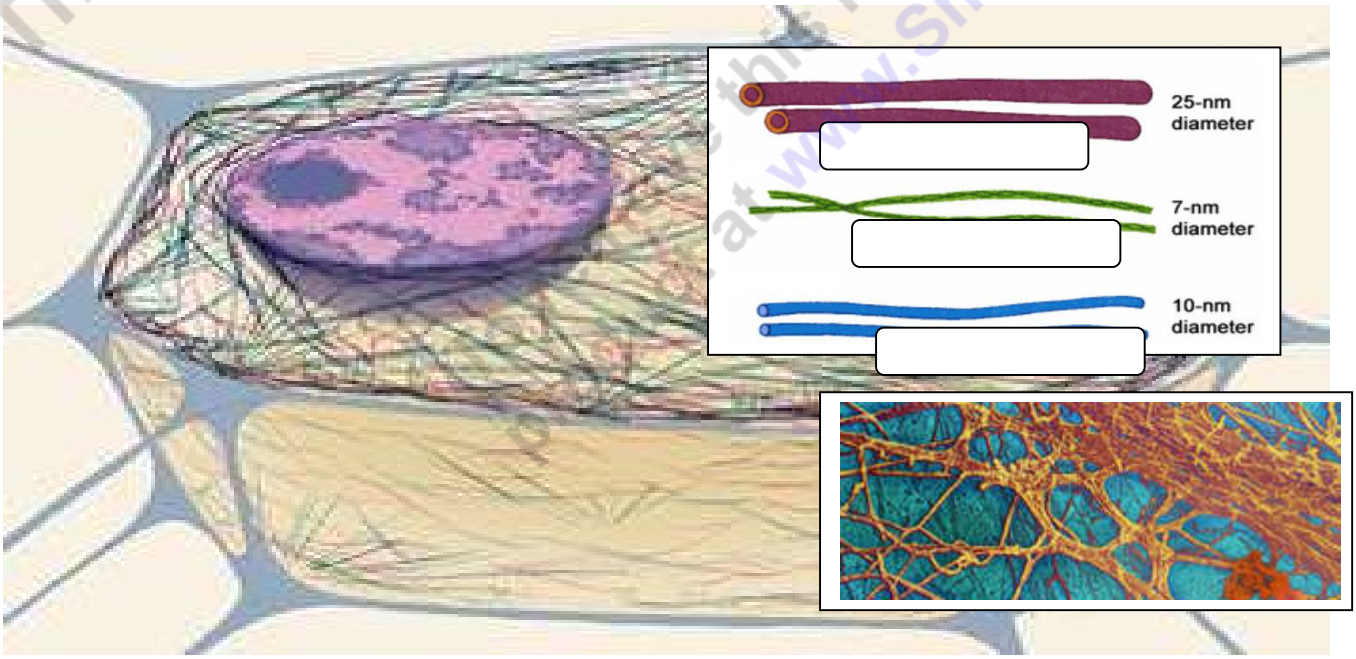
◊Describe the flow of materials (molecules) in the following pictures.
◊Please name the three organelles present and their job.
◊What process is seen at the top?



What does the Lysosome do? Explain using the picture to assist you.

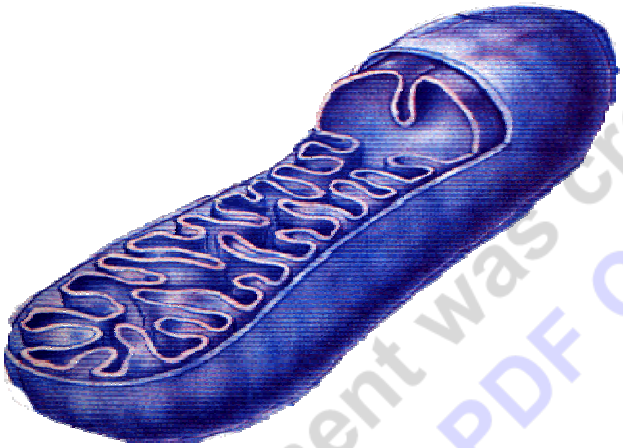


What is this very important organelle? What does it do? Name that filament.



Please describe the following two organelles below and answer the questions

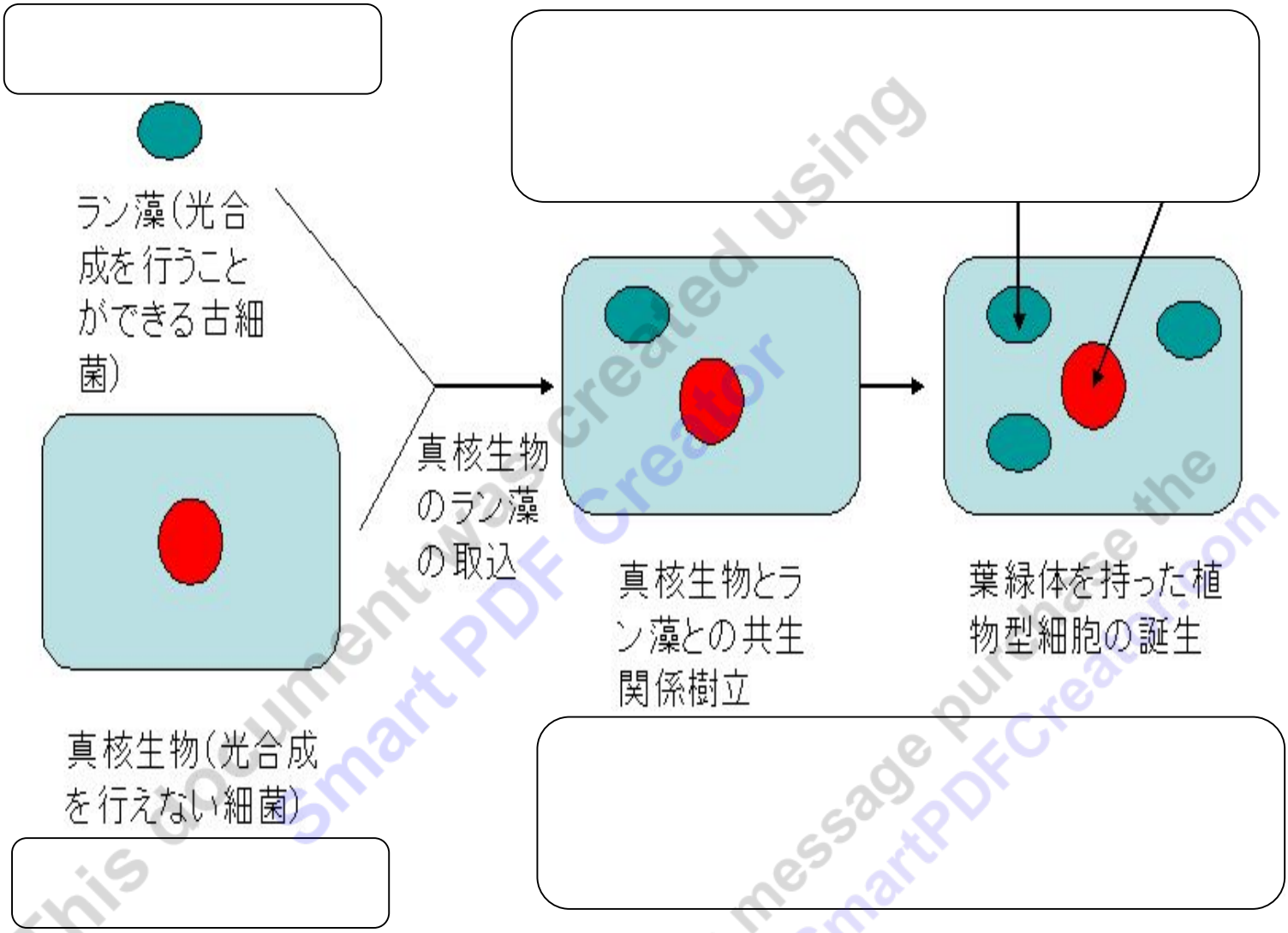
1) Name each organelle? Can you name more…
2) Which organelle is only in plants?
3) Which organelle is found more in animal cells?
4) How is number 1 connected to number 2 in plant cells?
5) Why do both 1 and 2 have folds and membranes?



1

2

Please translate the Mandrian Chinese below. Think Endosymbiotic Theory if your confused.

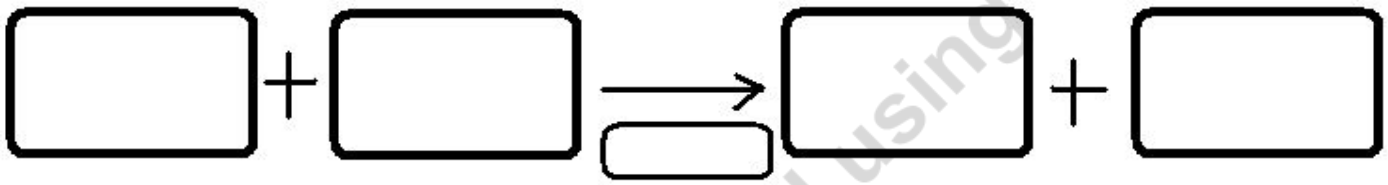


Please write out the equation for **photosynthesis** in the boxes below.

Which of the following is the correct equation for photosynthesis?

1. **A) 6O2 + 6H2O + light energy = C12H6O6 + 6O2**
2. **B) 6CO2 + 6H2O + sugar = C6H12O6 + 6O2**
3. **C) 6CO2 + 6O2 + light energy = C6H12O6 + 6H2O**
4. **D) 6CO2 + 6H2O + light energy = C6H12O6 + 6H2O**
5. **E) 6CO2 + 6H2O + light energy = C6H12O6 + 6O2**

Please write out the equation for **<u>cellular respiration</u>** in the boxes below.



Which of the following is the correct equation for cellular respiration?

1. **A) $C_6H_{12}O_6 + 6H_2O$ = Released energy + $6CO_2 + 6H_2O$.**
2. **B) $C_6H_{12}O_6 + 6O_2$ = Released energy + $6CO_2 + 6H_2O$.**
3. **C) $C_6H_{12}O_6 + 6O_2$ = Released energy + $6O_2 + 6H_2O$.**
4. **D) $C_{12}H_6O_6 + 6O_2$ = Released energy + $6CO_2 + 6H_2O$.**
5. **E) $C_6H_{12}O_6 + 6CO_2$ = Released energy + $6O_2 + 6H_2O$.**

Which is aerobic respiration and which is anaerobic respiration?

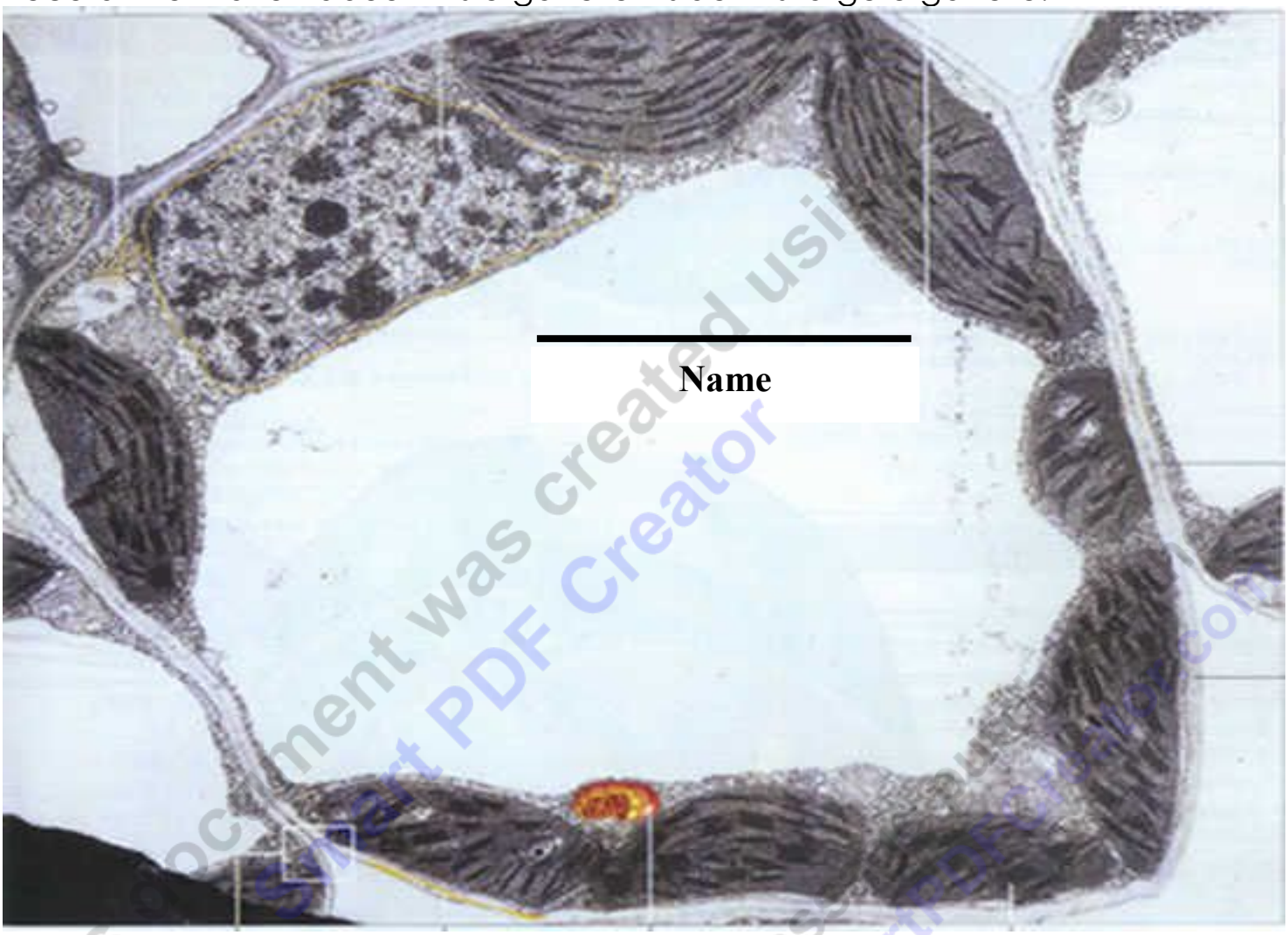
This is a form of cellular respiration that occurs when oxygen is absent or scarce. Microscopic organisms use such as yeast. Humans carry out anaerobic respiration, especially when muscles perform strenuous exercise resulting in oxygen debt (example -sprint).	**This is a form of cellular respiration that requires oxygen in order to generate energy. We use this form of respiration.**

Fill in the missing parts for the fermentation equation

$$\boxed{} \rightarrow 2\,C_2H_5OH + \boxed{}$$

(glucose) ( ) (carbon dioxide)

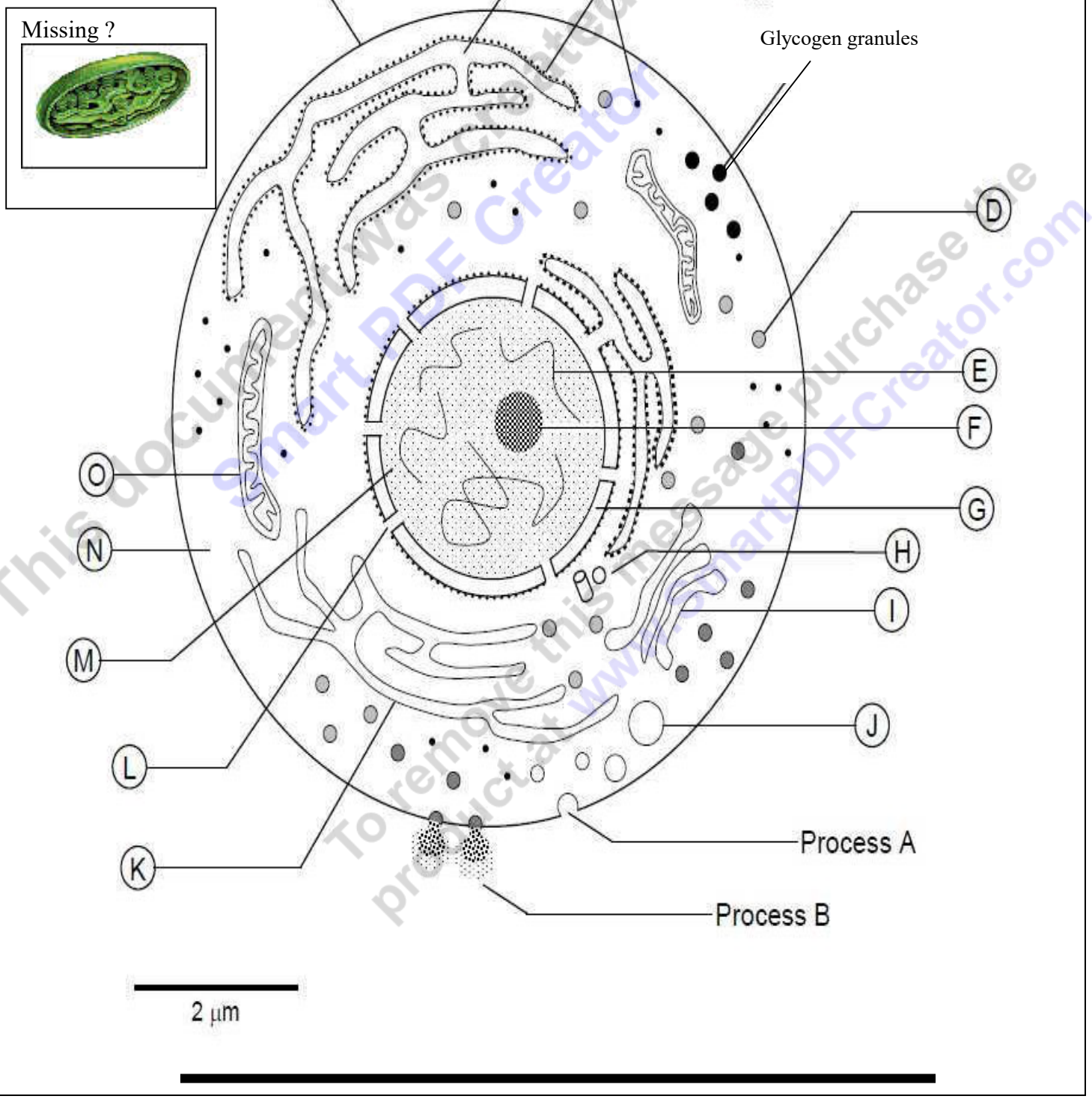
Record information about this organelle inside this large organelle.

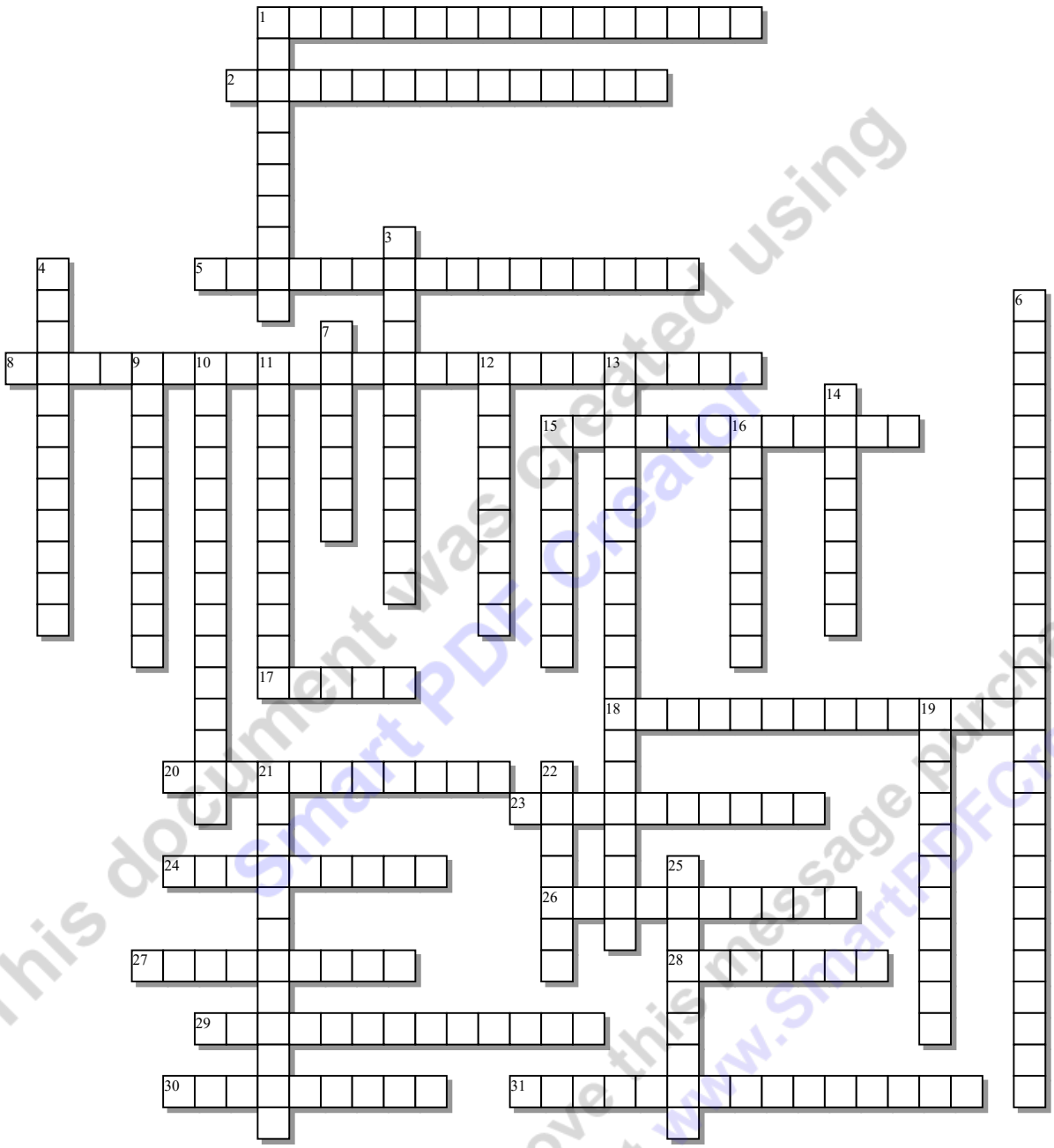


Please fill in the blank with the correct organelle.

1) This organelle is the powerhouse of the cell _____
2) Packages proteins and sends them throughout the cell_____
3) This organelle would be the clean-up crew of a town_____
4) Recycles waste _____
5) This organelle stores food and waste_____
6) Protein making factories for the cell_____
7) Serves as cells transport system and allows ribosomes to attach_____
8) Composed of microtubules that support the cell_____
9) Photosynthesis occurs here_____
10. Composed of DNA and found in the chromatin_____
11.) Inside nucleus and makes RNA to make proteins_____
12.) Allows certain materials into and out of the nucleus_____
13.) This the control center of the cell_____.
14.) This is the fluid inside the cell that contains a chemical soup_____

Please label the organelles of the following cell. Is it a plant cell or an animal cell, explain after you title it?





Across:

1 - The process in which the genetic code carried by messenger RNA directs cellular organelles called ribosomes to produce proteins from amino acids.

2 - Protein packaging plant -Sends vesicles of macromolecules to destination in cell.

5 - This is the movement of molecules from a more crowded to a less crowded area without the use of energy

8 - Maze-like network fused to the nuclear membrane that stores, separates, and serves as

Down:

1 - This is the name all of the contents of the cell

3 - This controls the movement (cellular traffic) in and out the cell

4 - Large organelle that makes energy for the cell. (ATP) -Has folds (surface area) called cristae -Two membranes

6 - Makes lipids (fats) and steriods. - Regulates Calcium production. - Synthesizes sugars "Gluconeogenesis"

7 - Membrane-bound sacs for storage,

cell's transport system
15 - Organelle in plants -Contain the green pigment chlorophyll -Has stacks called Thylakoids
17 - These are the structural and functional units of all living organisms
18 - Process where plants make sugar from sunlight.
20 - Made of one cell
23 - These type of cells have membrane bound organelles
24 - Composed of DNA
26 - (Exo - means to take out) Cell releases particle. Uses energy.
27 - Round dark spot in center of nucleus, makes ribosomes
28 - This is the movement of water through a semi-permeable membrane.
29 - All cells come from _____ cells
30 - These cells contain a low concentration of solute relative to another solution (cell swells)
31 - This is the movement of molecules from a less crowded to a more crowded area

digestion, and waste removal -Very large in plant cell -Create turgid pressure in plants - Contains food and water solution
9 - These cells contain a high concentration of solute relative to the outside solution (cell shrinks).
10 - This surrounds the nucleus and lets materials in and out
11 - These type of cells do not have a nucleus
12 - Site for protein synthesis
13 - Processes whereby certain organisms obtain energy from organic molecules.
14 - The cell is _____ when the same amount of solute can be found in and out of the cell
15 - This is found in plants and bacteria and is made of cellulose
16 - Another name for Chloroplast
19 - (Endo - means to bring in) Energy requiring process where cell engulfs particle.
21 - Composed of microtubules -Supports cell and provides shape
22 - Largest organelle in cell (dark spot)
25 - Has Digestive acids / enzymes in a sac - Digestive organelle, recycles old cell parts.

Possible Answers:
ActiveTransport, CellMembrane, Cells, CellularRespiration, Cellwall, Chloroplasts, Chromatin, Cytoskeleton, Endocytosis, Eukaryotic, Exocytosis, GogliApparatus, Hypertonic, Hypotonic, Isotonic, Lysosomes, Mitochondria, Nuclear Membrane, Nucleolus, Nucleus, Osmosis, PassiveTransport, Photosynthesis, Plastids, Pre-exisiting, Prokaryotic, ProteinSynthesis, Protoplasm, Ribosomes, RoughEndplasmicreticulum, SmoothEndoplasmicreticulum, Unicellular, Vacuole

Optional Maze below