1 First Floor

Cell Theory

2 Second Floor

Prokaryotes - Characteristics

3 Third Floor

Eukaryotes - Characteristics

4 Fourth Floor

The Control Center

5 Fifth Floor

All About Proteins

6 Sixth Floor

Recycling - The Lysosome

7 Seventh Floor

Cellular Swimming Pool

8 Eighth Floor

The Mighty Mitochondria

9 Ninth Floor

Why are Plants Green?

10 Tenth Floor

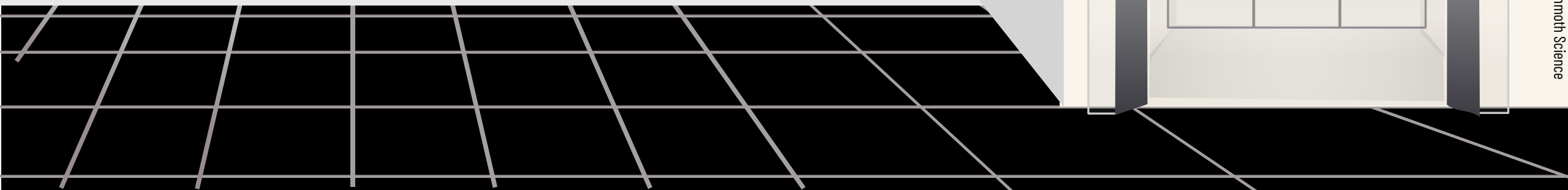
The Membrane of Transport

MAMMOTH SCIENCE

Unit 3: The Cell Stations

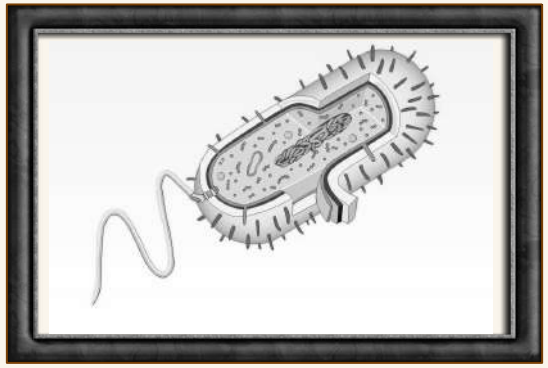
Proceed through each floor by answering the questions pertaining to that particular topic found on that floor. A menu has been provided in the elevator controls. Good Luck and happy learning!

There are three parts of Modern Atomic Theory.
List them and summarize the discoveries that made this theory possible



Prokaryotes

1. Explain how the formation of an adult human follows the cell theory.
2. Antibiotics are medicines that are used to fight bacterial infections. These medicines kill prokaryotic cells without harming human cells. What part or parts of the bacterial cell do you think antibiotics target? Why?
3. Explain why not all microbes are harmful.
4. Pathogenic *E. coli* have recently been shown to degrade tight junction proteins during infection. How would this provide an advantage to the bacteria?

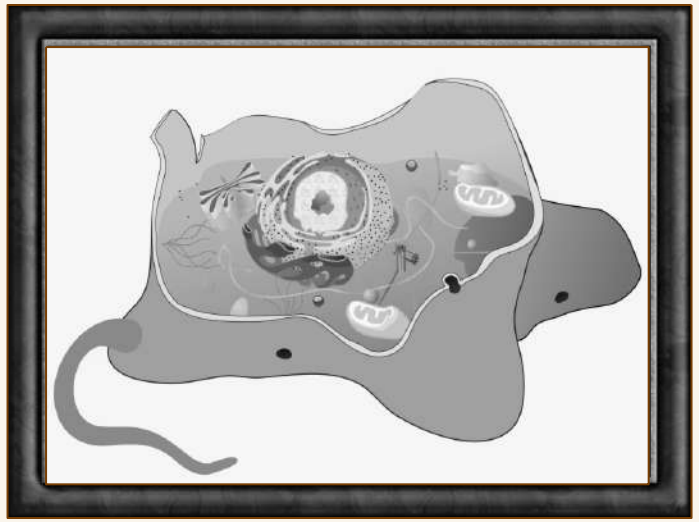


Plants

1. ____ uses the energy of sunlight to produce glucose during photosynthesis
2. ____ provides strength and shape to the cell; network of protein fibers
3. ____ control center of the cell; contains DNA
4. ____ surrounds the internal cell parts; controls the passage of materials in and out
5. ____ vesicle that contains substances that break down materials
6. ____ produces energy
7. ____ provides rigid structure and protection; made of cellulose
8. ____ vesicle that provides storage of water and other materials; if full, provide support
9. ____ packages and transports proteins from the ER to other parts of the cell
10. ____ ER; passageways that transport proteins within the cell
11. ____ everything inside of the cell membrane except for the nucleus
12. ____ composed of protein and RNA; involved in ribosome production
13. ____ where proteins are made in the cells; the dots

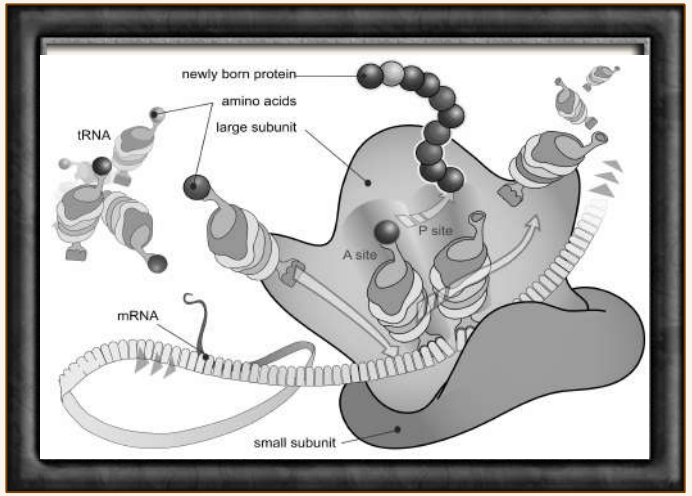
Animal Cells

1. How are animal cells different than plant cells?
2. How could you tell when looking at an image, diagram, or microscope slide, you are looking at a plant or bacterial, vs an animal cell?
3. Can animal cells have flagella? Why or why not?



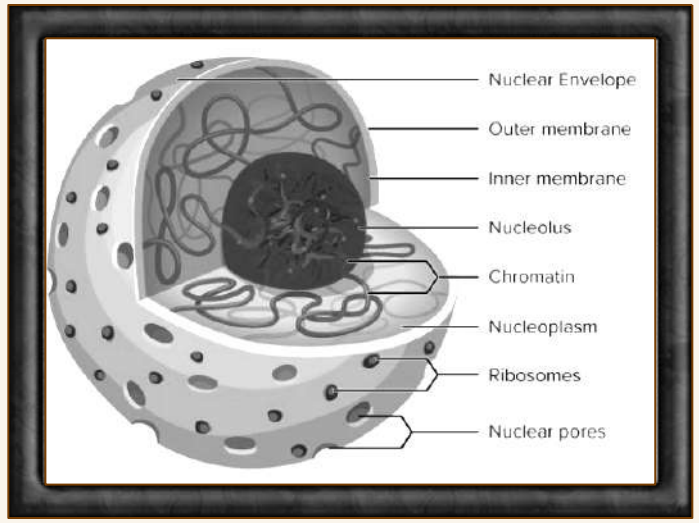
Ribosomes

1. What is the function of the ribosome?
2. Where are ribosomes located?
3. What types of cells have ribosomes?
4. If a cell were deficient in ribosome production, would the cell function correctly? Why or why not?
5. Where are ribosomes manufactured? - be specific.

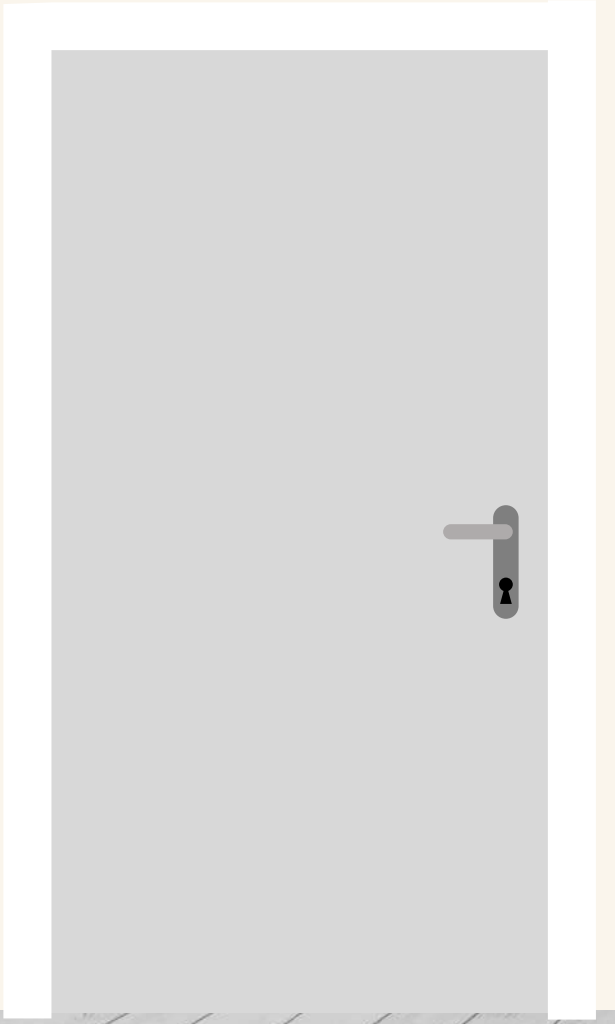


The Nucleus

1. What is the nucleus?
2. Explain the main difference between Prokaryotic Cells and Eukaryotic cells in terms of a nucleus.
3. What components are continued inside the nucleus of a cell?
4. Why is having a nucleus important (base your answer on scientific practice and research)?



Genetic Material



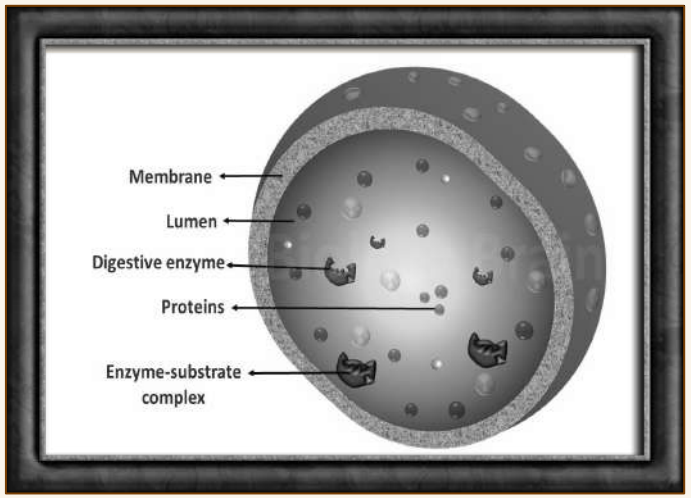
1. What is the genetic material contained inside the nucleus?
2. What is the monomer of a Nucleic Acid?
3. Who is DNA and RNA different?
4. What is the function of DNA / RNA?
5. How is DNA passed from one organism to another

Endoplasmic Reticulum

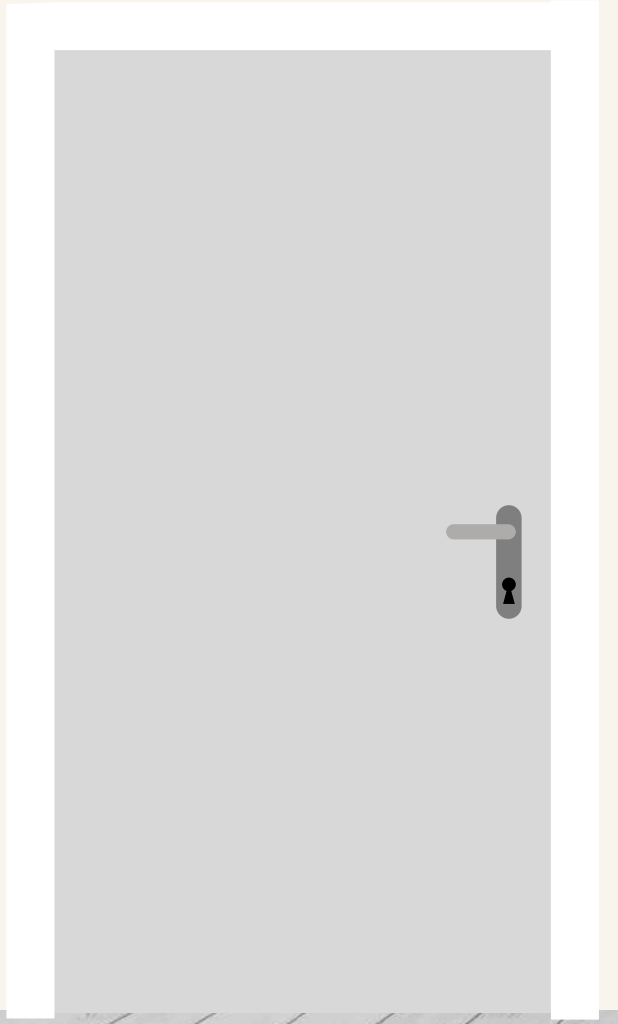
1. What are the two types of Endoplasmic Reticulum?
2. Which one is involved with Protein Synthesis?
3. How did the Rough ER receive its moniker?
4. What is the function of each type of Endoplasmic Reticulum?
5. What cells would have an abundance of Rough ER? Smooth ER?
6. Where in the cell is the ER located?

Lysosomes

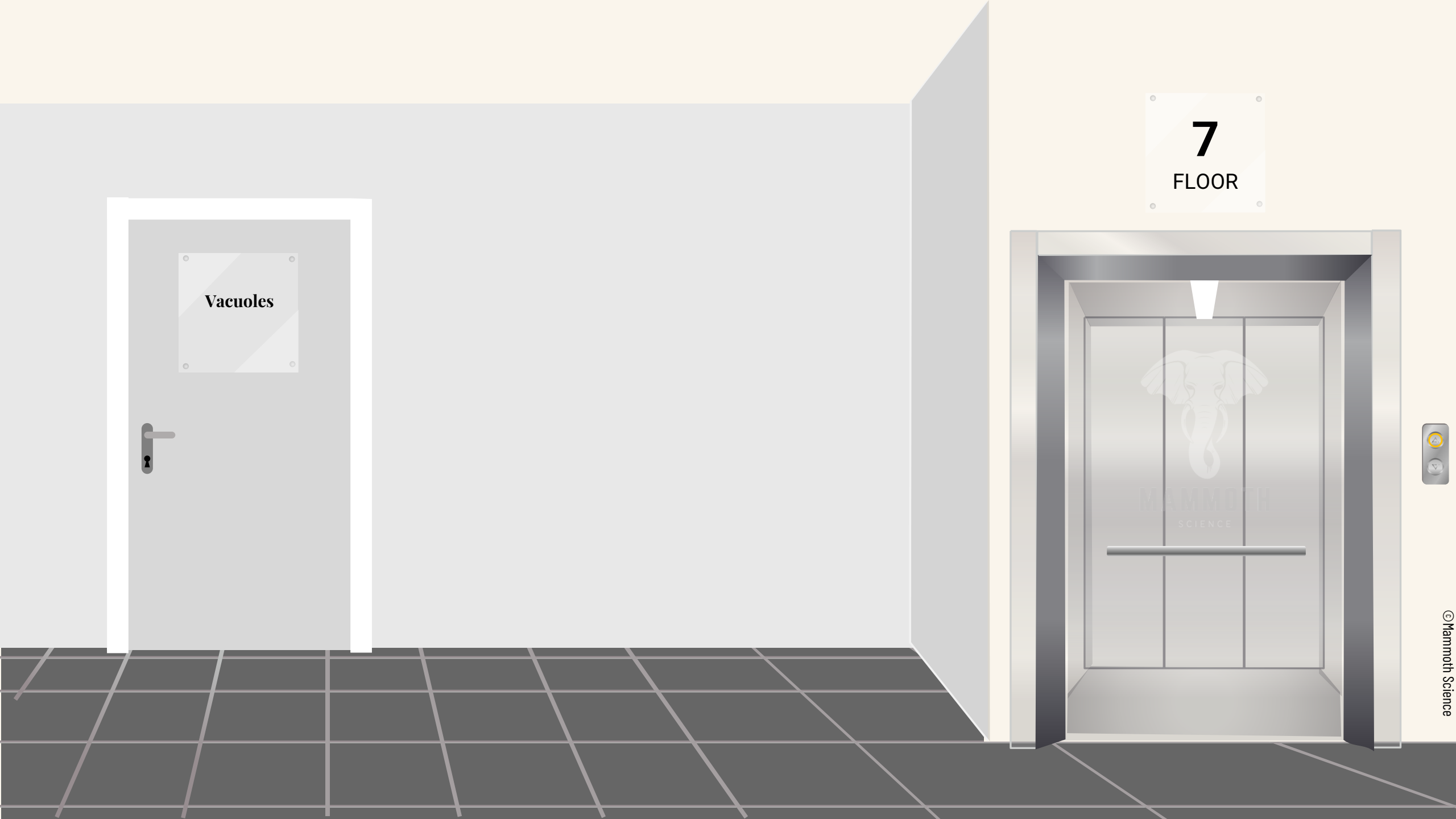
1. What is the function of a lysosome?
2. What types of cells have lysosomes?
3. Are there different types of lysosomes? Functions?
4. Define Apoptosis and why would a cell undergo this process?



Endo and Exocytosis

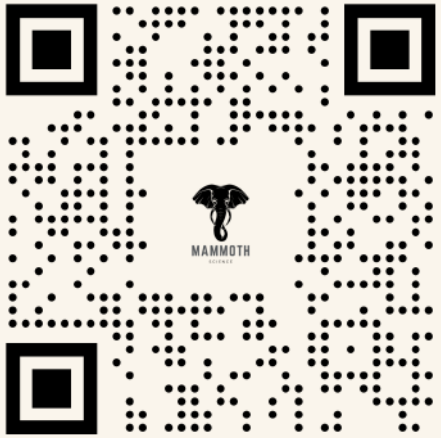


1. Determine the definition for Endocytosis and Exocytosis.
2. Explain how the Lysosome is involved in each process.
3. What is a vesicle?
4. Where do vesicles go from the lysosome?
5. Do other organelles create vesicles?



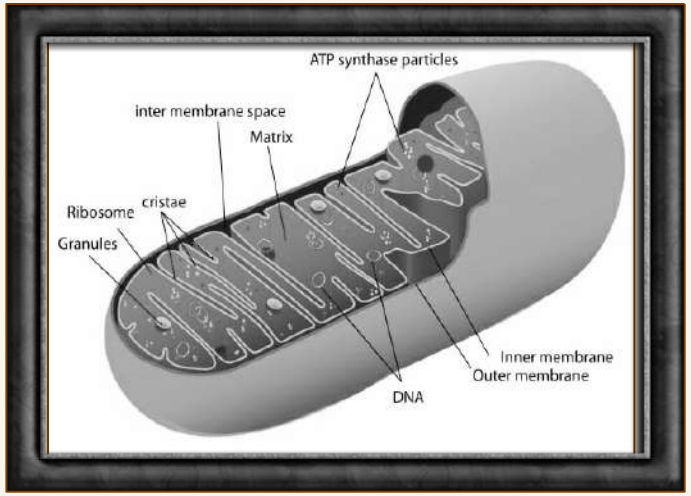
Vacuole Types

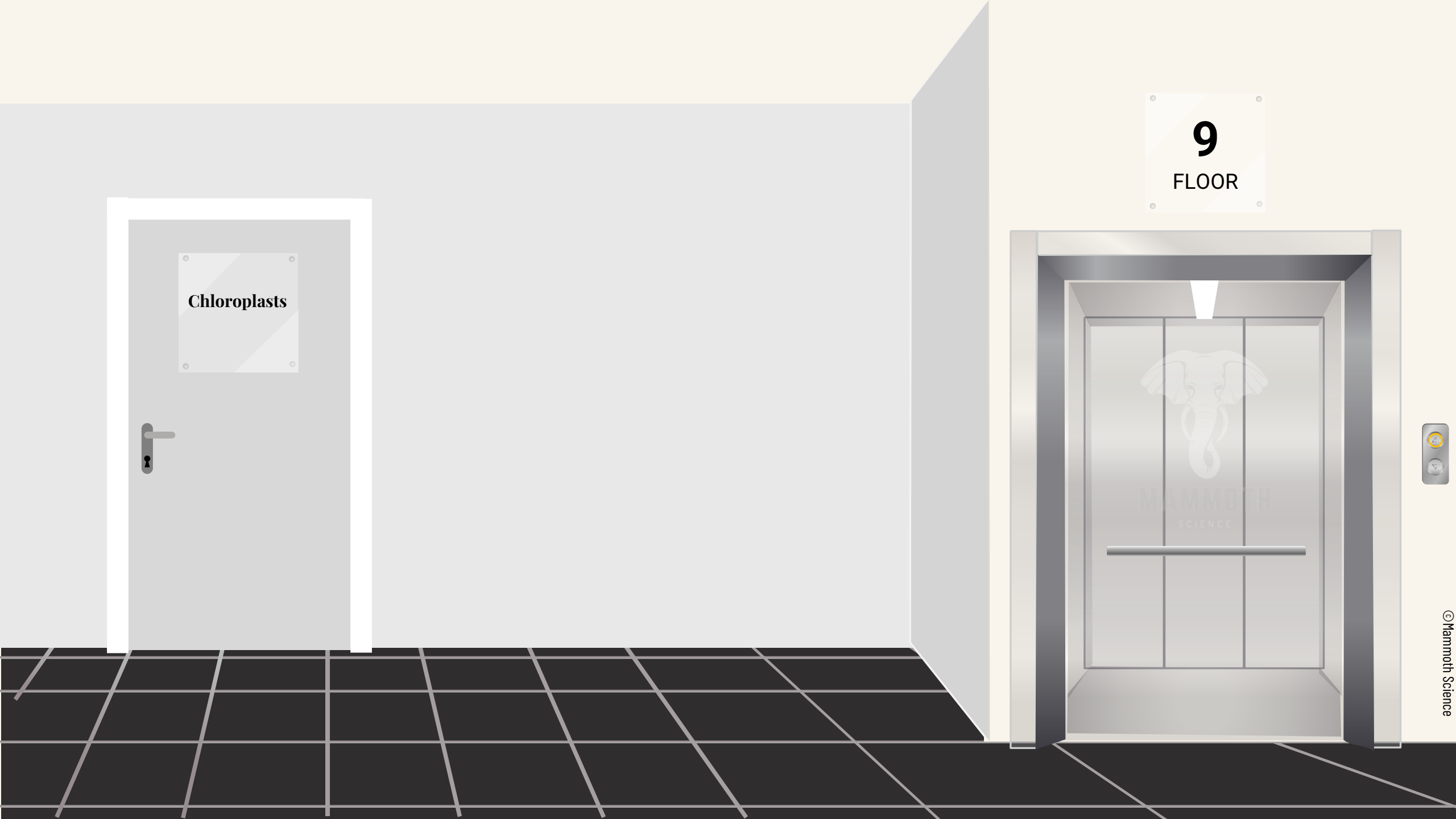
1. List and define the three types of vacuoles in different cell types and organisms.
2. What are each type of vacuoles used for inside different cells?
3. Why do plants and animals have different sized vacuoles?
4. What would the water vacuole of a plant look like if the plant is “wilted” or “shriveled”
5. What percentage of a plant, animal, or protist is water?



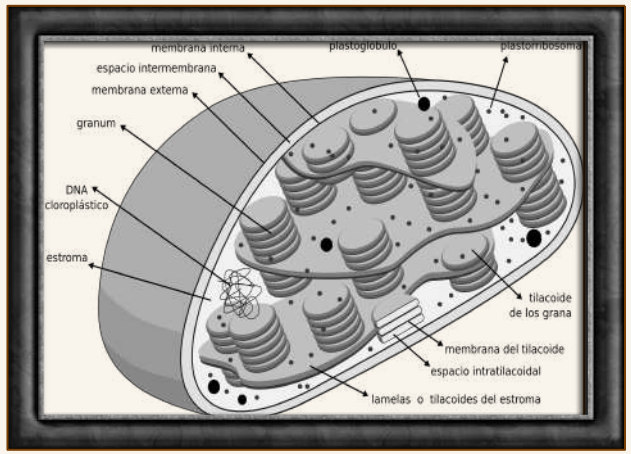
Mitochondria

1. What is the function of a mitochondria?
2. What is the chemical reaction that occurs inside the mitochondria?
3. What energy is made from glucose?
4. What type of DNA is found inside the mitochondria?
5. Why is the mitochondria described as the “powerhouse of the cell”?
6. What cells in your body would you expect to find the most mitochondria? - remember what it does!



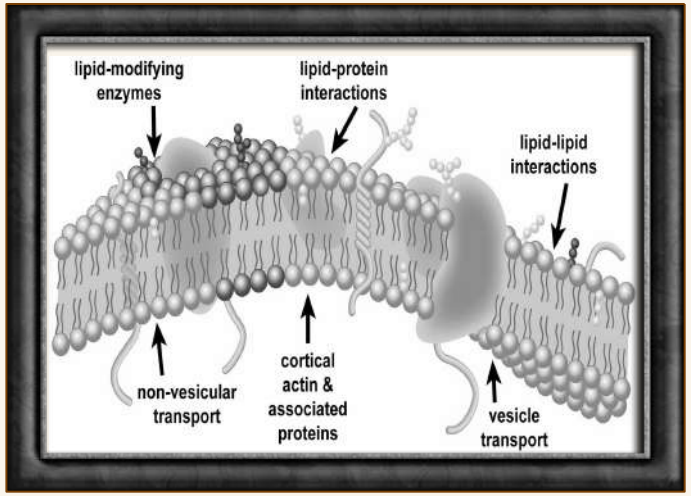


Chloroplasts



1. What type of cells contain chloroplasts?
2. What is the energy conversion necessary to make their own food?
3. Explain the chemical equation for this process.
4. What are cells that contain chloroplast found in plants?
5. What is the green pigment responsible for photosynthesis? Where in the chloroplast is it found?
6. What are the major components of the chloroplasts?

Cell Membrane



1. What is the function of the cell membrane?
2. Which types of cells have a cell membrane?
3. Explain the structure of the cell membrane.
4. What is a phospholipid?
5. Why does a cell need a membrane?

Thank you!

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