

Comparing Prokaryotes & Eukaryotes

Prokaryotic Cells (Prokaryotes)

Eukaryotic Cells (Eukaryotes)

Types: Bacteria and Archaea

- ___ Nucleus
- **t** ___ cells
- No ___ organelles
- DNA: ___ & ___

• Use ___
(tail) to move
Most prokaryotes are ___

- Unicellular means ___
cell ___
- Examples:

- DNA
- Ribosomes
- Cell Membrane
- Cell Wall
- Cytoplasm

Types: Plant, Animal, and Human

- ___ DNA is held here)
- **I** ___ cells
- Contains ___ membrane bound organelles
- Most eukaryotes are ___ - ___
- Multi-cellular means “ ___ ”
- Examples:

Comparing Prokaryotes & Eukaryotes

Prokaryotic Cells (Prokaryotes)

Eukaryotic Cells (Eukaryotes)

Types: Bacteria and Archaea

- No Nucleus
- Smallest cells
- No Membrane
Bound organelles
- DNA: long &
circular
- Use Flagellum
(tail) to move

Most prokaryotes are
unicellular

- Unicellular means one
cell
- Examples:
 - **Bacteria in your mouth**
 - **Bacteria living in the soil**
 - **extremophiles**

- DNA
- Ribosomes
- Cell Membrane
- Cytoplasm

Types: Plant, Animal, and Human

- nucleus (DNA is held here)
- largest cells
- Contains all membrane
bound organelles
- Most eukaryotes are multi-
cellular
- Multi-cellular means "many
cells"
- Examples:
 - **Humans**
 - **animals**
 - **yeasts**

Cell Structures & Functions

What am I learning today?

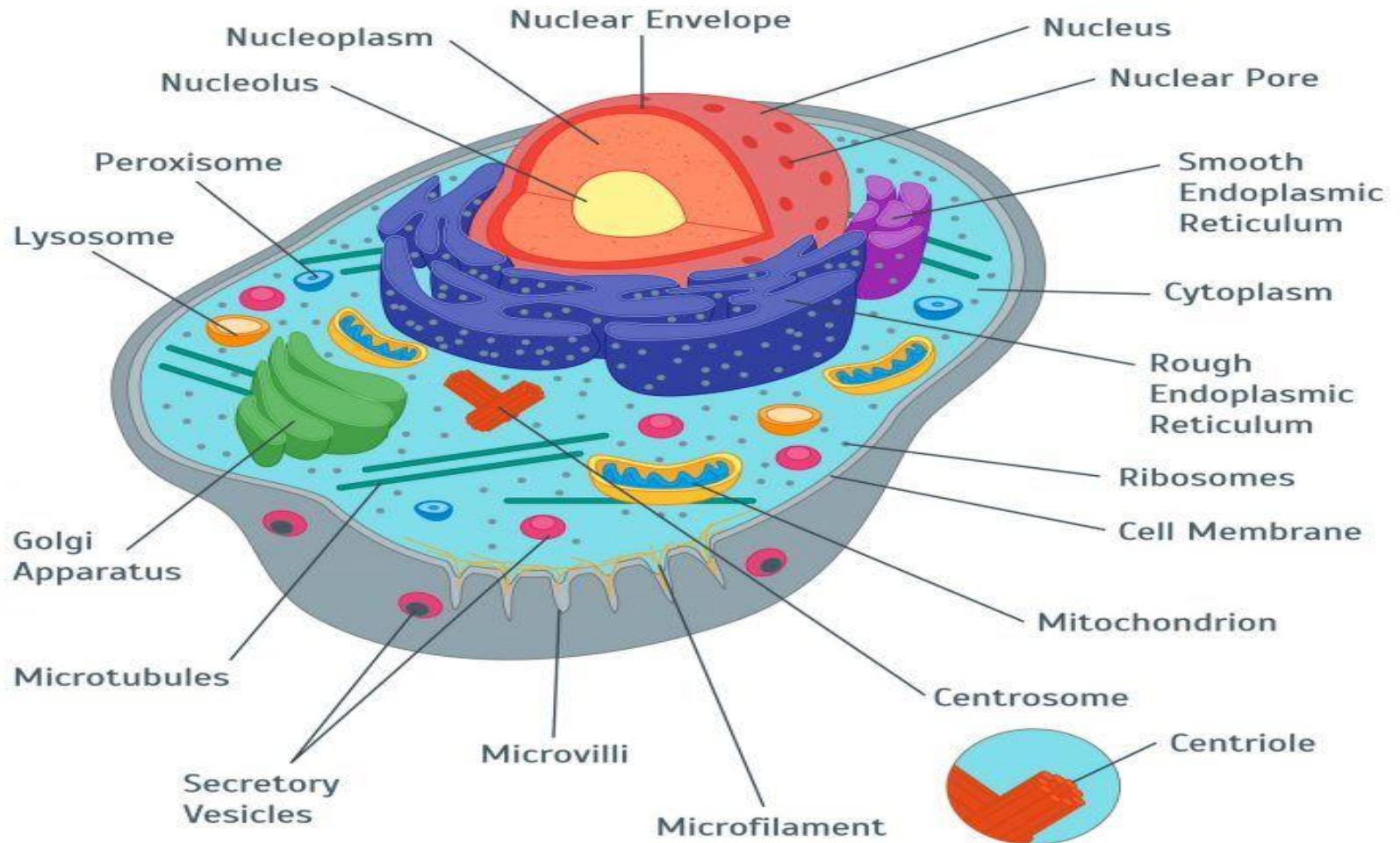
Today I am learning about the different cell parts found in cells and their functions.

Let's Take a Closer Look at Eukaryotes

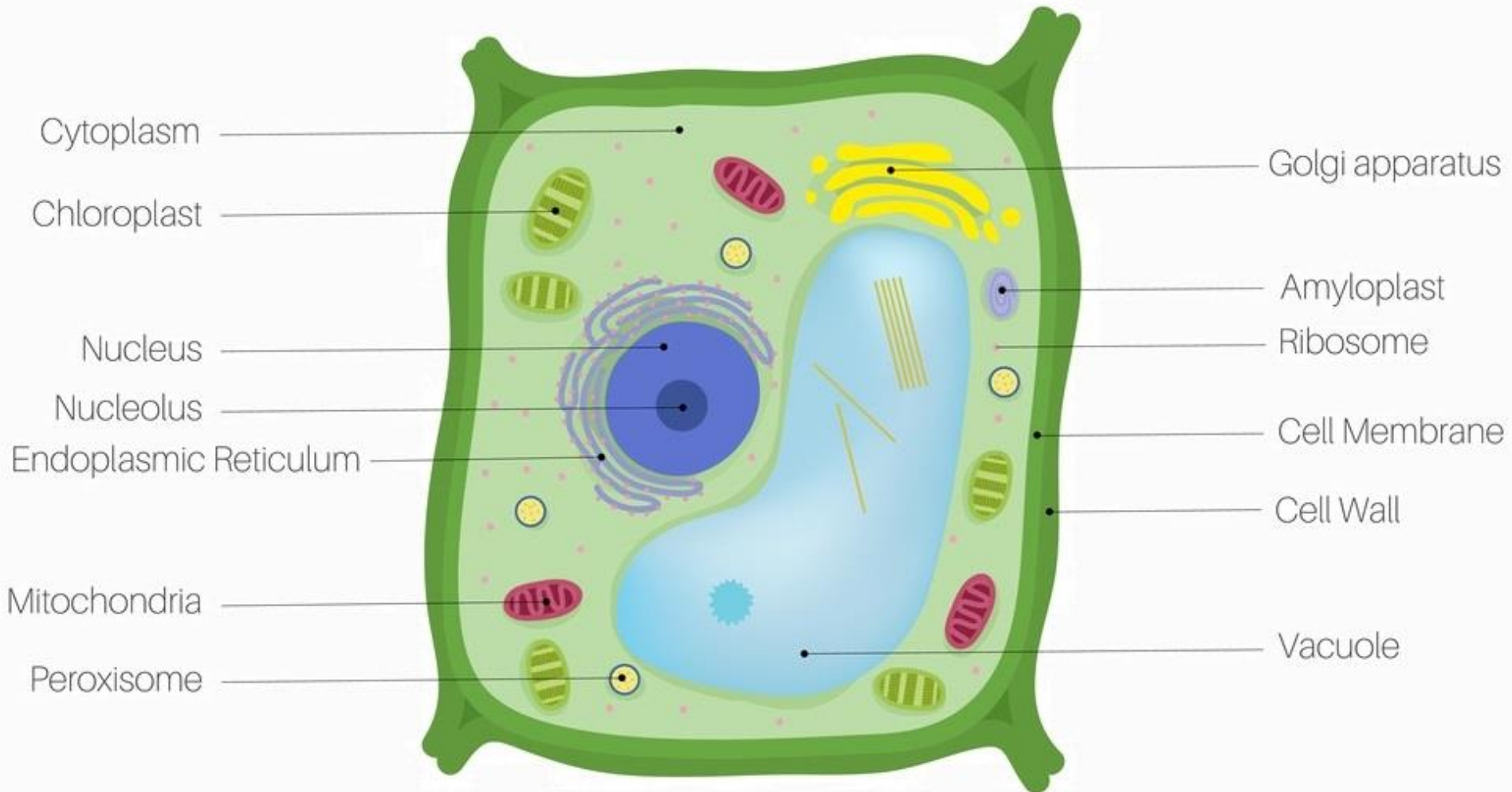
What am I going to DO
today?

Complete graphic organizers
on cell parts and their
functions

ANIMAL CELL



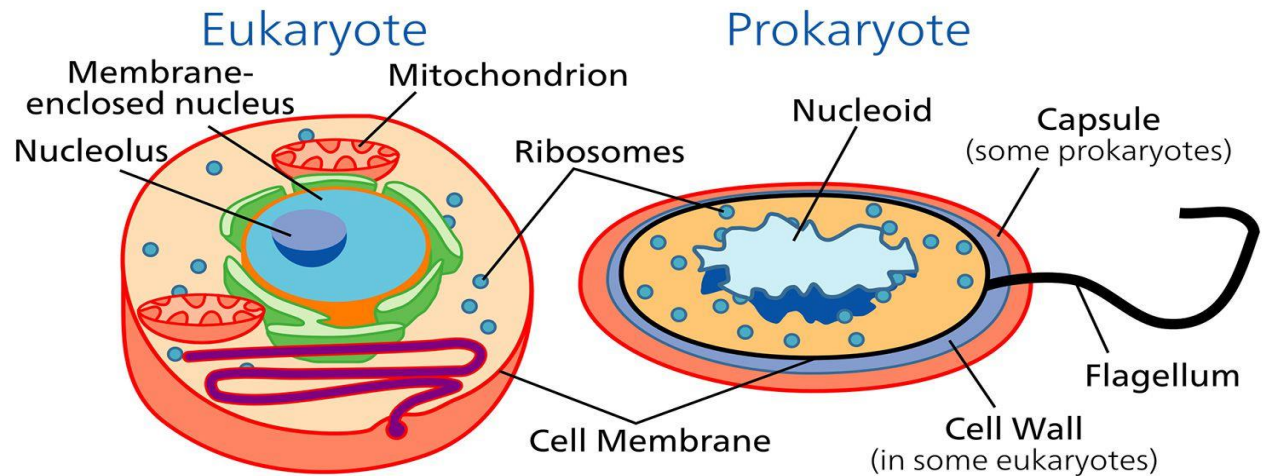
Plant Cell



Eukaryotic Cell Organelles and Function

Cell Membrane

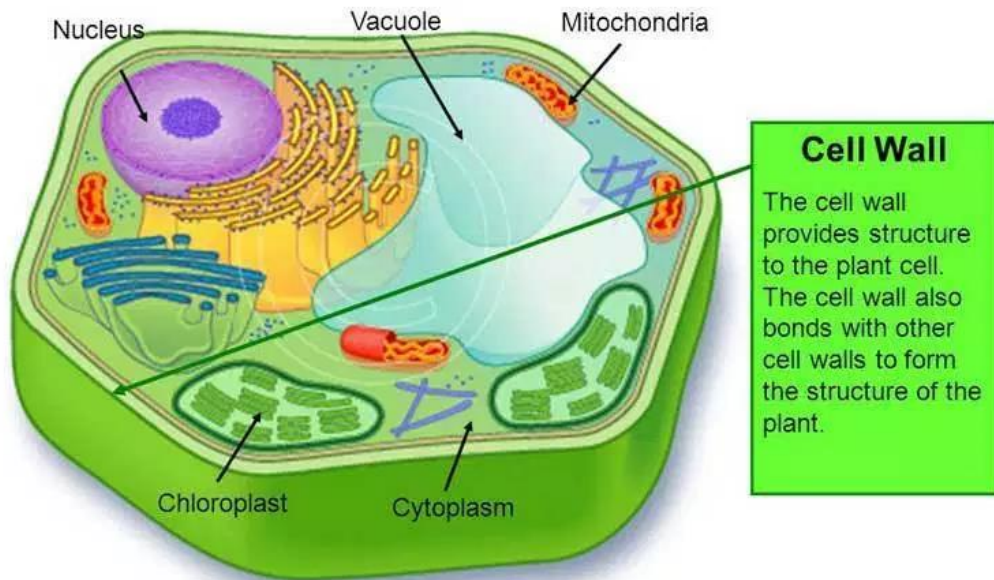
- ▶ Nickname: “Security Guard”
- ▶ Function: the protective barrier that encloses all cells (holds the cell together)
- ▶ Found in both prokaryote and eukaryote cells



Eukaryotic Cell Organelles and Function

Cell Wall

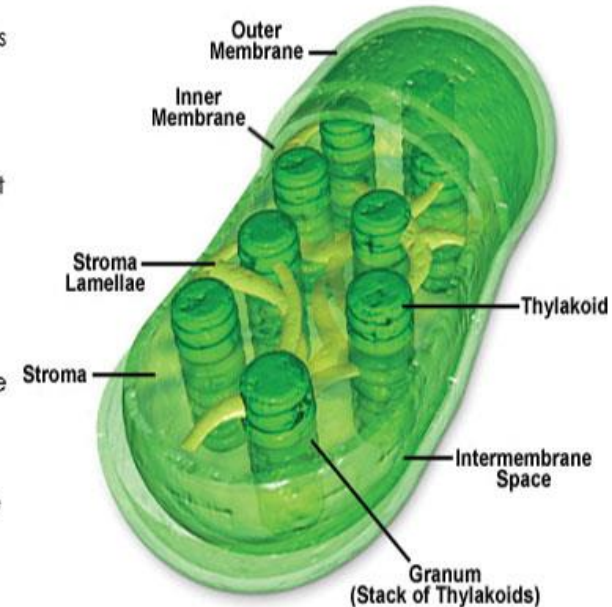
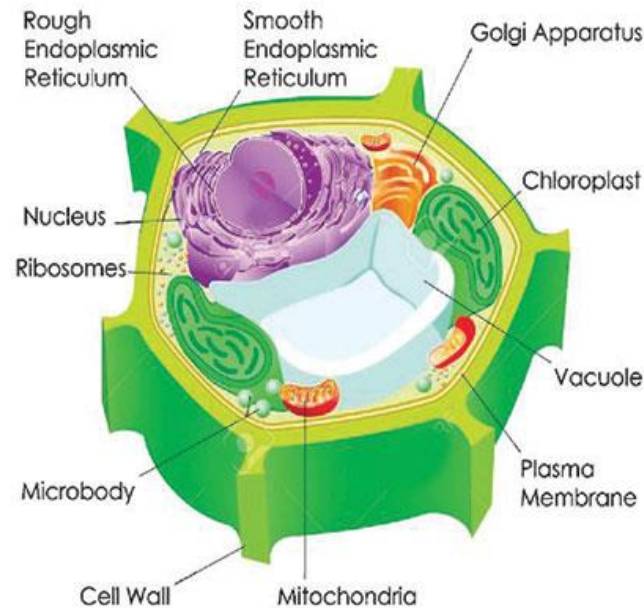
- ▶ Nickname: you try to come up with nickname
- ▶ Function: provides support and protection to the cell membrane; rigid outer layer of plant cells that provides support
- ▶ Found outside the cell membrane in plant cells



Eukaryotic Cell Organelles and Function

Chloroplasts

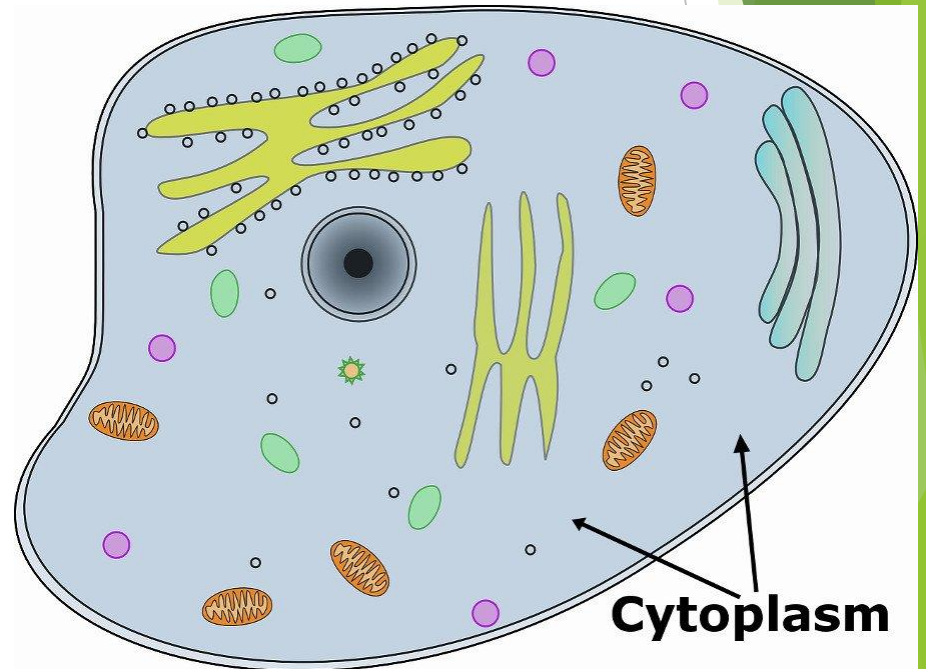
- ▶ Nickname: “The Chef”
- ▶ Function: traps energy from the sun to produce food for the plant cell; the site of photosynthesis
- ▶ Only found in plant cells
- ▶ Green in color because of chlorophyll, which is a green pigment



Eukaryotic Cell Organelles and Function

Cytoplasm

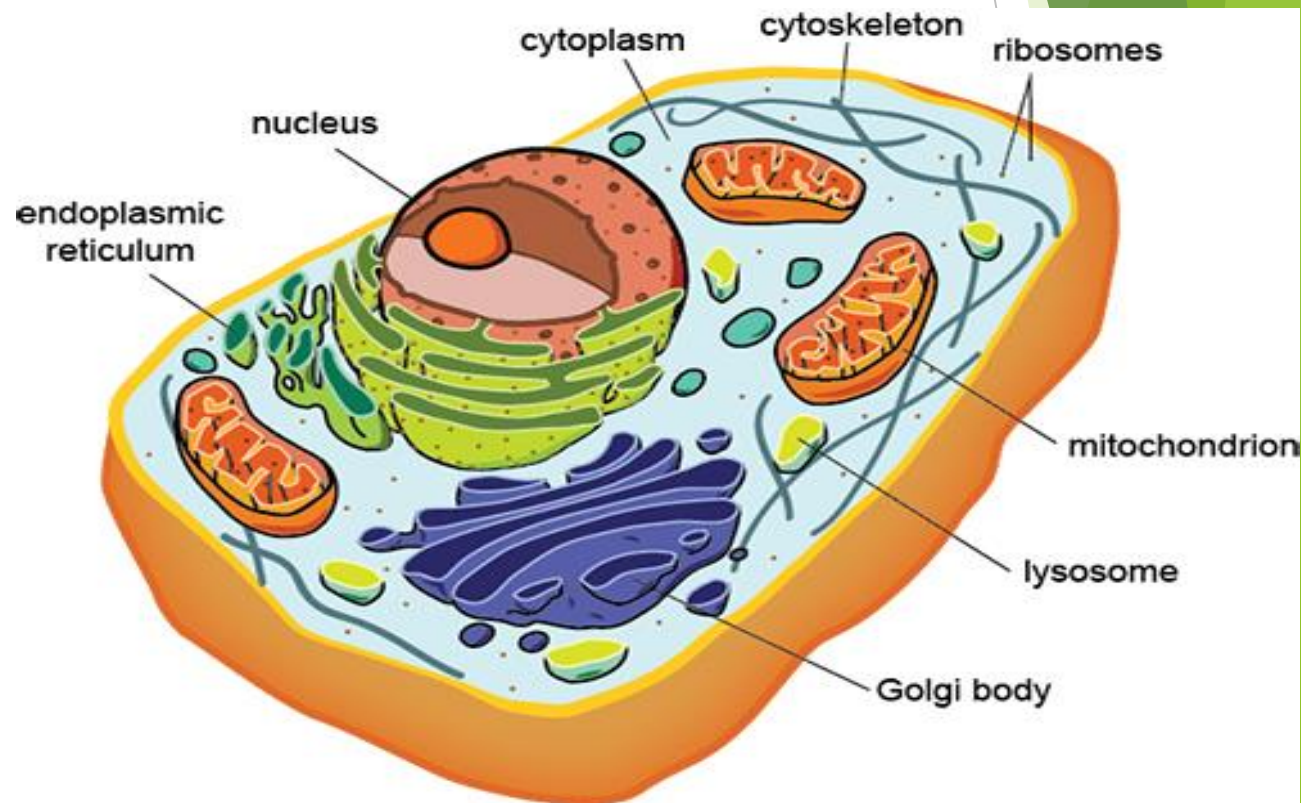
- ▶ Nickname: you try to come up with a nickname
- ▶ Function: the syrup like liquid that surrounds and protects the organelles inside the cell
- ▶ Found in both prokaryotes and eukaryotes



Eukaryotic Cell Organelles and Function

Cytoskeleton

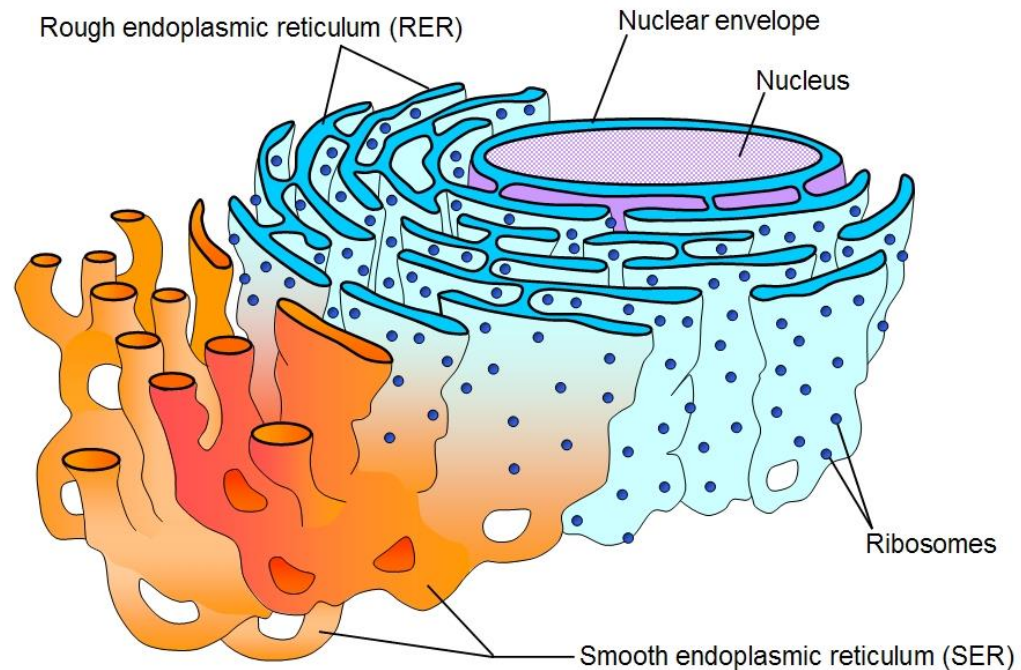
- ▶ Nickname: “The Backbone”
- ▶ Function: the web of proteins in the cytoplasm that provides support, shape, and helps with movement



Eukaryotic Cell Organelles and Function

Endoplasmic Reticulum (ER)

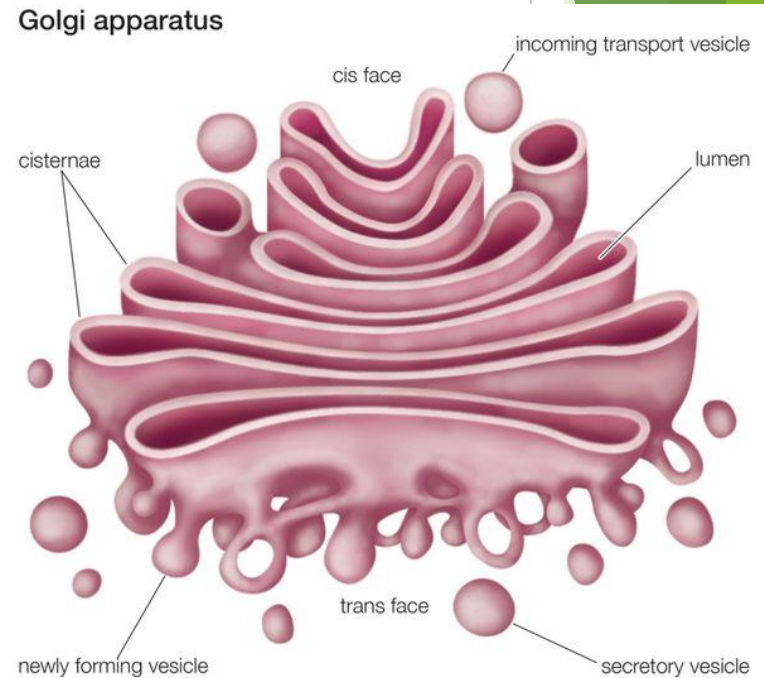
- ▶ Nickname: “Roads or Highways”
- ▶ Function: The internal delivery and transportation system of the cell; transports proteins to the golgi complex
- ▶ Rough ER: has ribosomes; produces proteins
- ▶ Smooth ER: no ribosomes; produces lipids



Eukaryotic Cell Organelles and Function

Golgi Complex

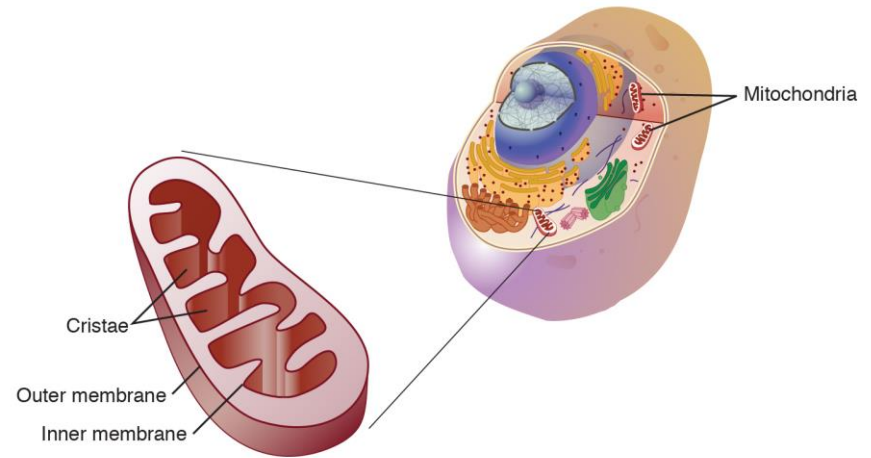
- ▶ Nickname: “The Shippers or Postal Service”
- ▶ Function: receives protein transports from the ER; packages, modifies, and distributes materials to different locations both inside and outside of the cell
- ▶ Appearance: stack of pancakes



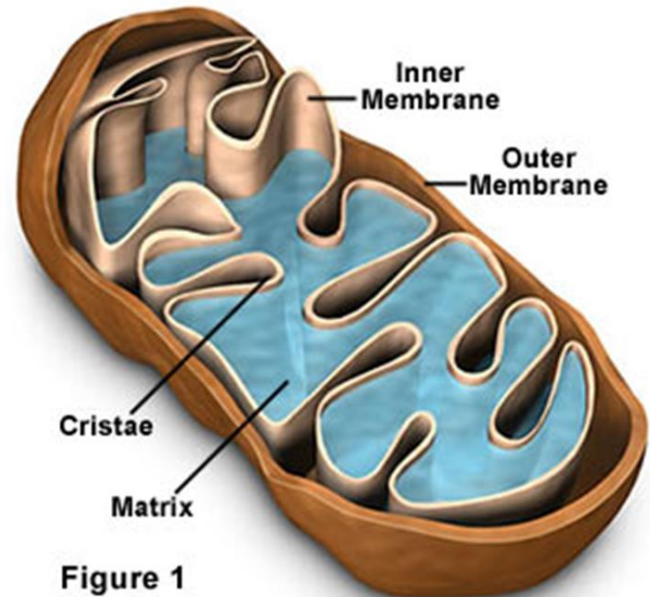
Eukaryotic Cell Organelles and Function

Mitochondria

- ▶ Nickname: “The Powerhouse”
- ▶ Function: Energy formation; the main power source of the cell; site where cellular respiration occurs
- ▶ Breaks down food to make ATP
- ▶ ATP: is the major fuel for all cell activities that require energy



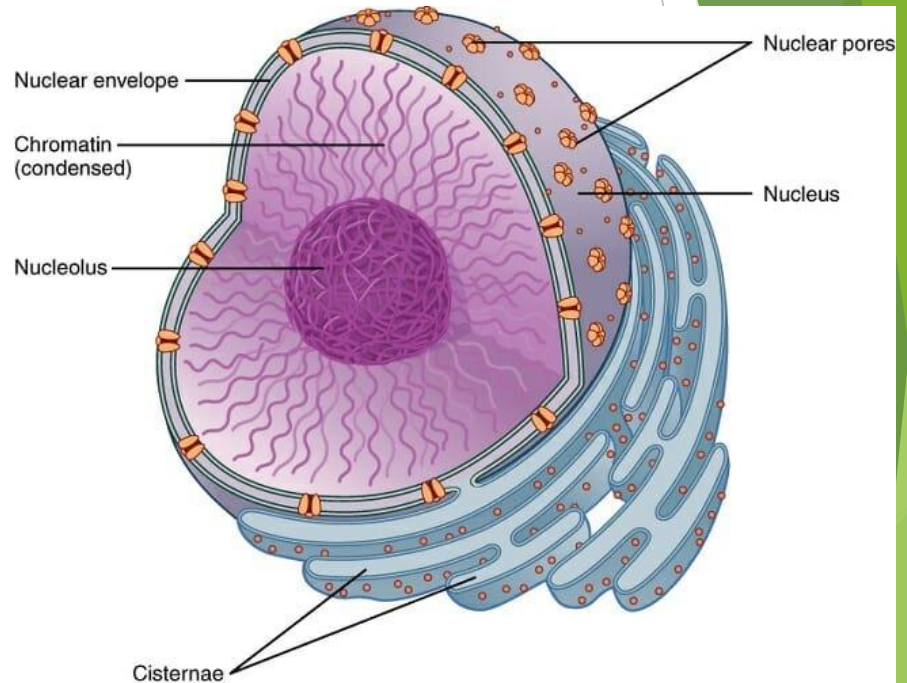
Mitochondria Inner Structure



Eukaryotic Cell Organelles and Function

Nucleus

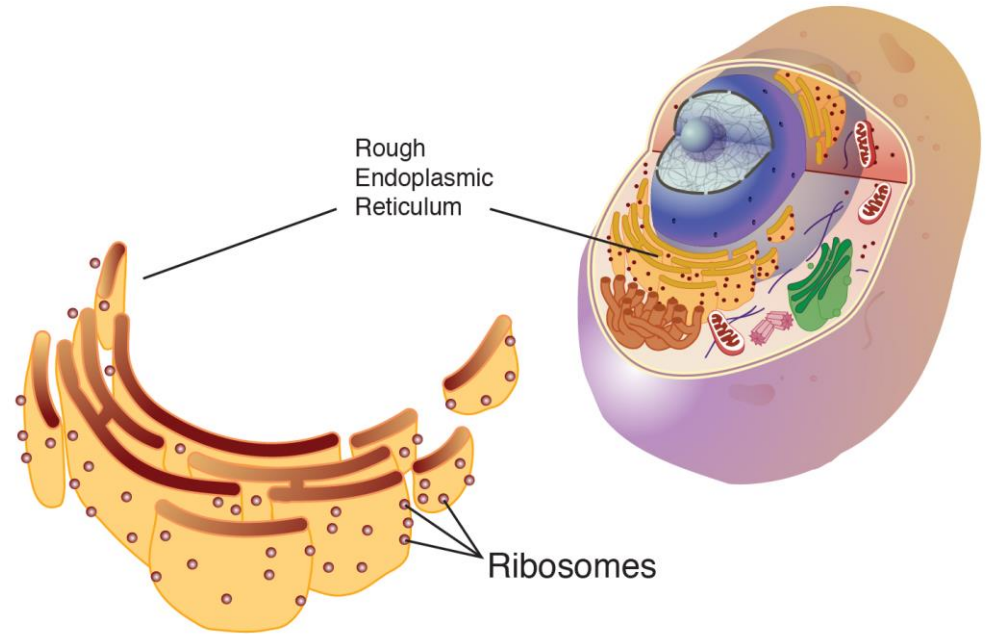
- ▶ Nickname: “The Control Center”
- ▶ Function: large (usually centered) organelle that holds the DNA
- ▶ Parts:
 - ▶ Nucleolus: dark spot in the middle of the nucleus that helps make ribosomes



Eukaryotic Cell Organelles and Function

Ribosomes

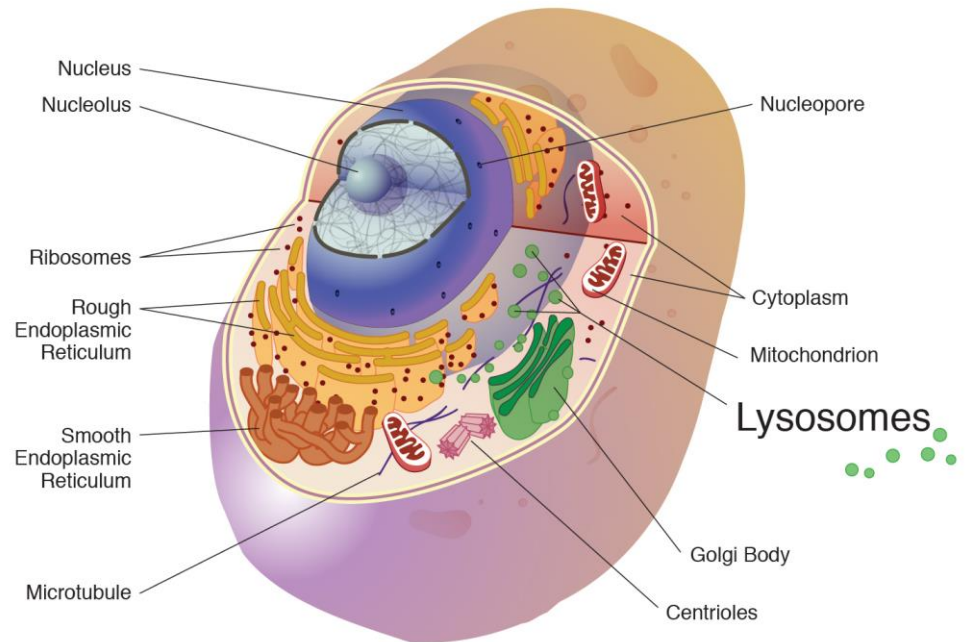
- ▶ Nickname: “The Construction Workers”
- ▶ Function: the smallest of all organelles; makes proteins
- ▶ Found in all cells
 - ▶ Prokaryotic and eukaryotic in the cytoplasm
 - ▶ Eukaryotic on the rough ER



Eukaryotic Cell Organelles and Function

Lysosomes: circular, but bigger than ribosomes)

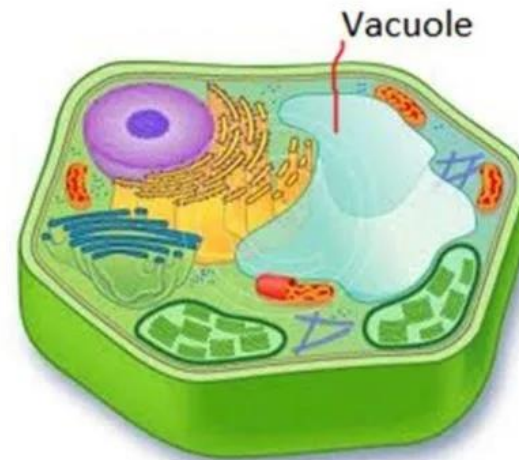
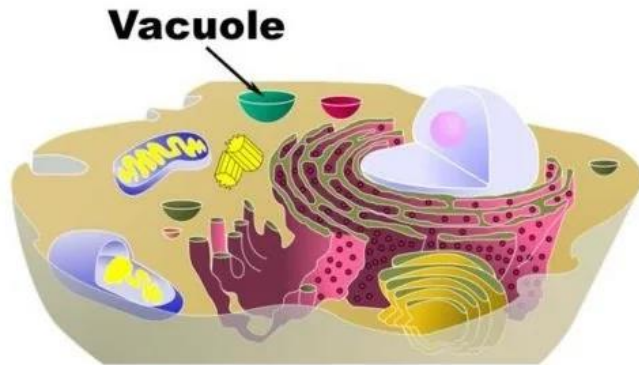
- ▶ **Nickname**: “Clean-up Crews”
- ▶ **Function**: to break down food into particles the rest of the cell can use and to destroy old cells



Eukaryotic Cell Organelles and Function

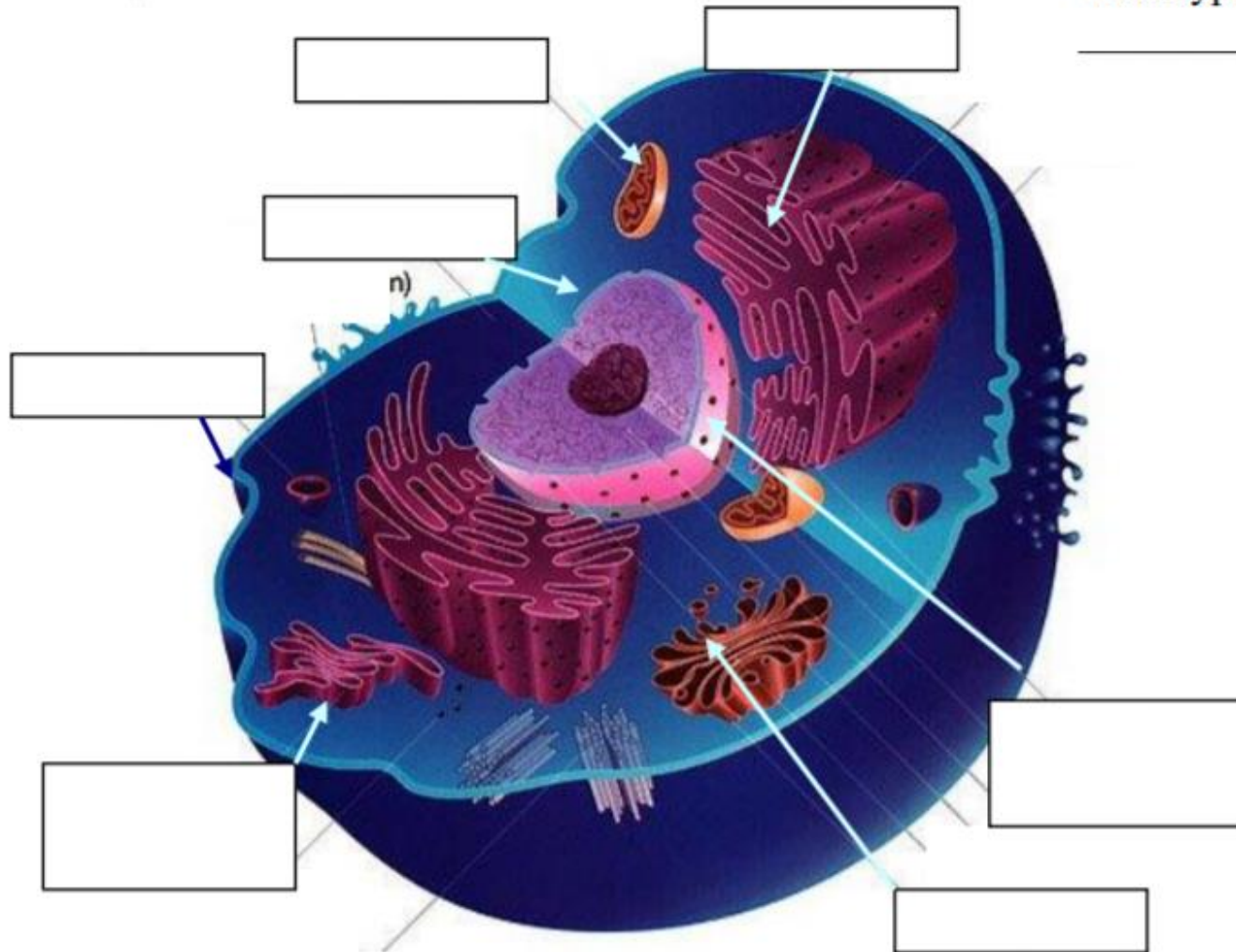
Vacuoles

- ▶ Nickname: “Storage Building”
- ▶ Function: stores water and other materials
- ▶ Found in both plant and animal cells
 - ▶ Large Central Vacuole in plants
 - ▶ Smaller vacuoles in animal cells



Directions: Label the parts of each cell. Be sure to indicate what type of cells they are.

What type of cell is this?



Anatomy of the Plant Cell

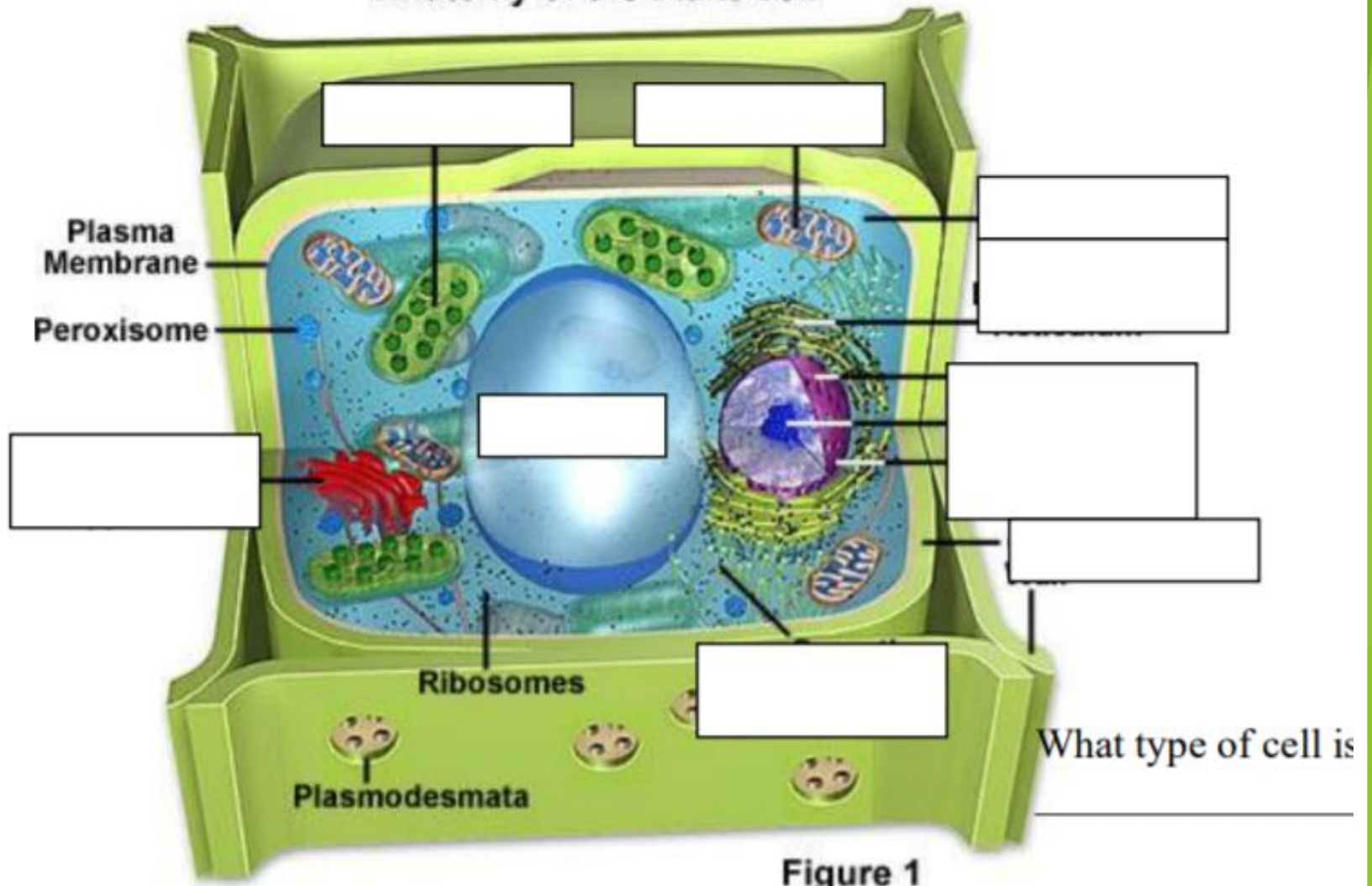


Figure 1