Cell Organelles and Structures Notes

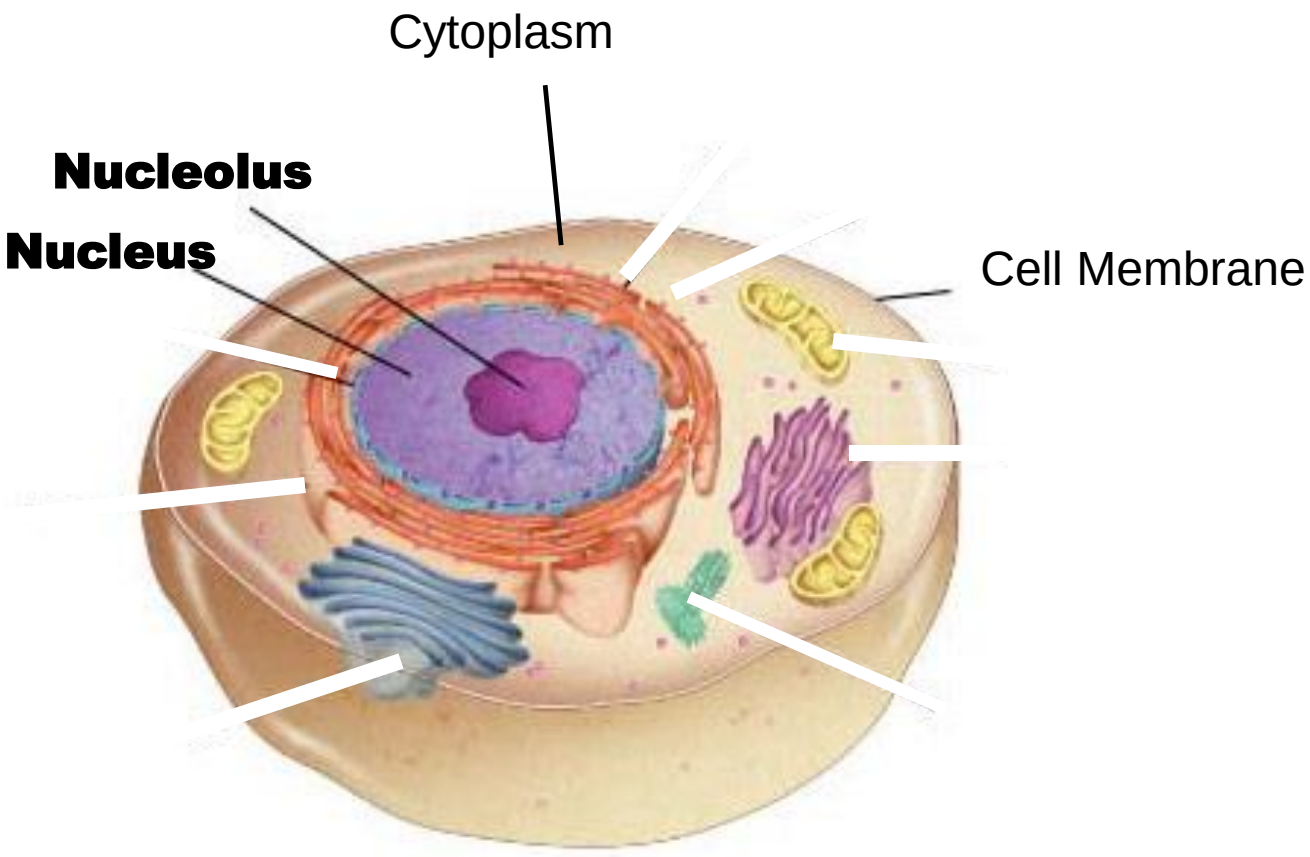
What is a Cell?

SPI 0707.1.1 Identify and describe the function of the major plant and animal cell organelles.

- **Cells** are the structural and functional units of all living organisms. Some organisms, such as bacteria, are **unicellular**, consisting of a single cell. Other organisms, such as humans, are **multicellular**, or have many cells—an estimated 100,000,000,000,000 cells!
- **Organelles-** a specialized subunit of a cell that has a specific function

Taking a look at plant and animal cells

Animal Cell



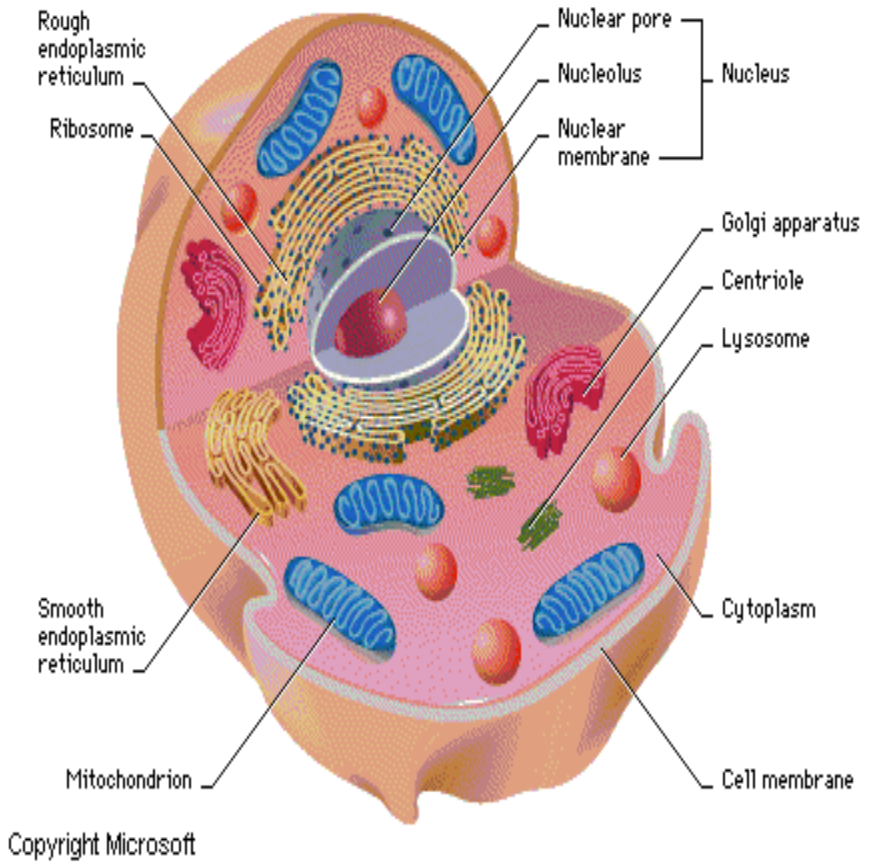
Cell Organelles and Function

1. **Nucleus**
   - Nickname: "The Control Center"
   - Function: holds the DNA
   - Parts:

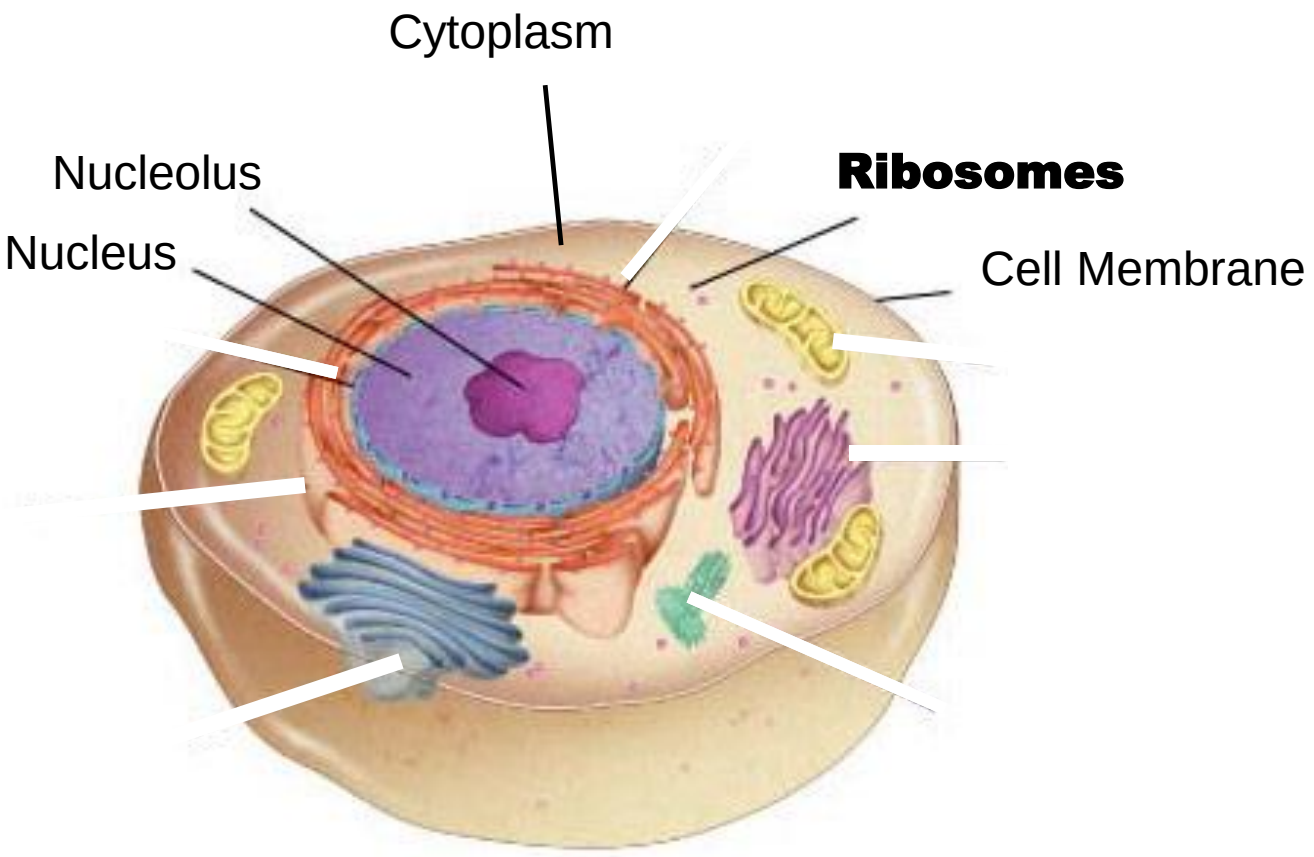
     Nucleolus: dark spot in the middle of the nucleus that helps make ribosomes

Cell Organelles and Structures

- **2. Cytoplasm**
- **Nickname**: Jell-O like “filler.
- **Function**: Where the organelles float around.



Animal Cell



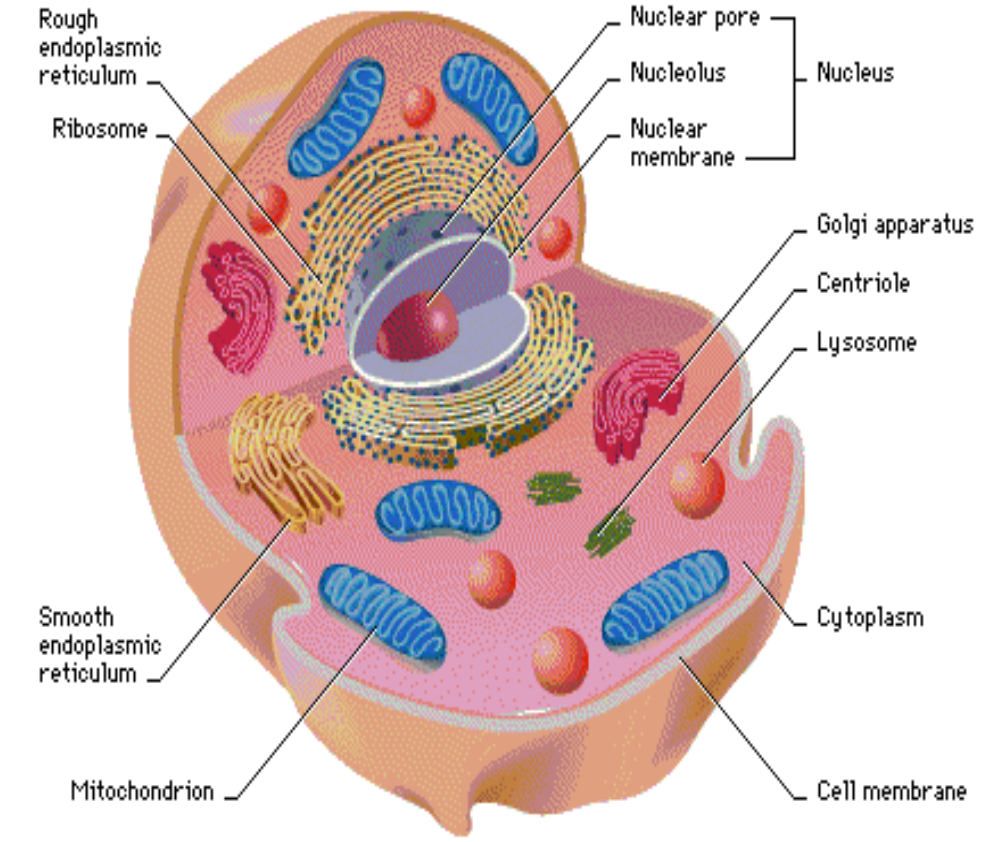
Eukaryotic Cell Organelles and Function

3. Ribosomes

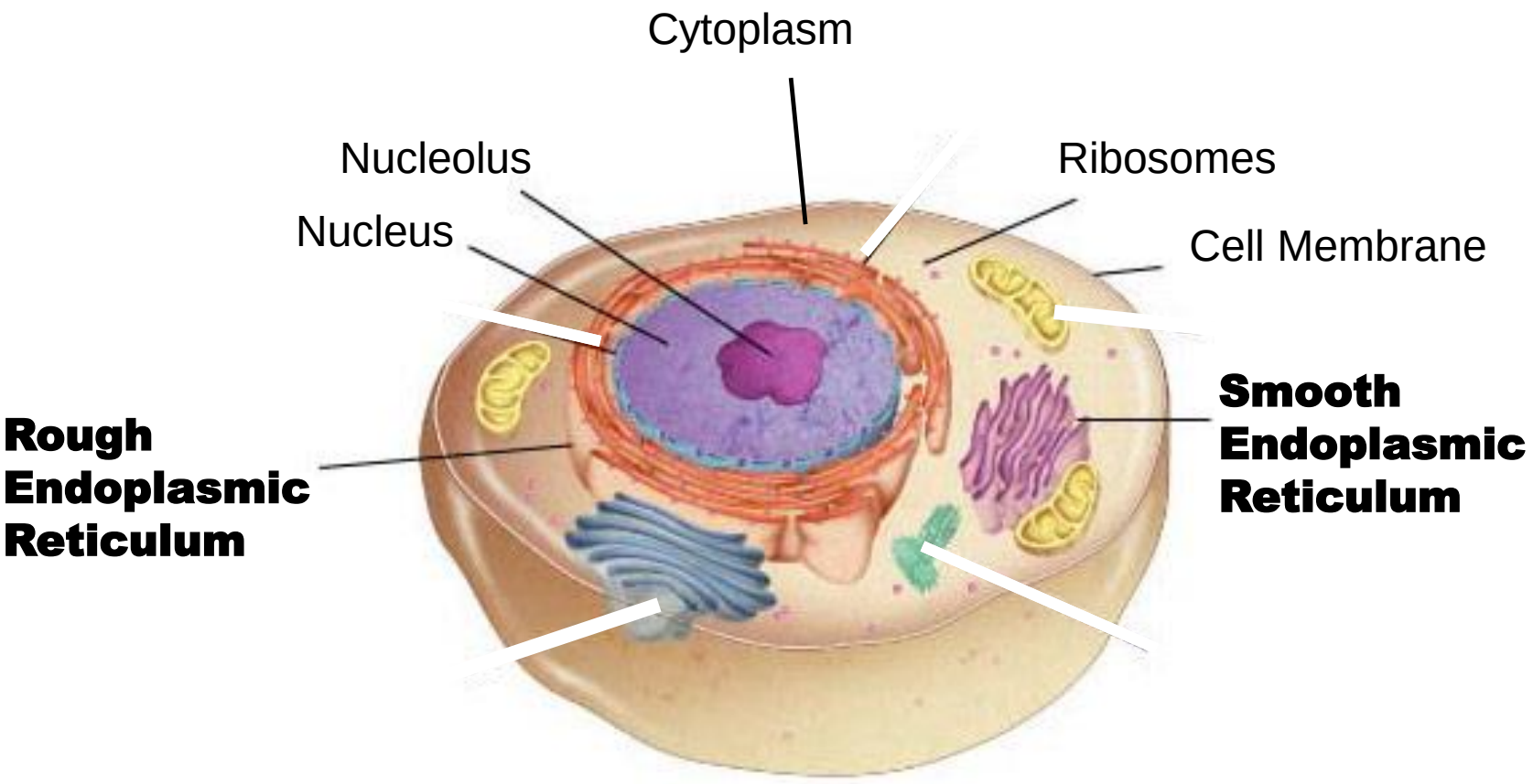
- Function: makes proteins
- Found in all cells, prokaryotic and eukaryotic

Cell Organelles and Structures

4. Cell membrane- **Function**: Structure, support, Semi-permeable membrane. Controls what goes into and comes out of the cell.



Animal Cell


Cytoplasm
Nucleolus
Nucleus
Ribosomes
Cell Membrane
Rough Endoplasmic Reticulum
Smooth Endoplasmic Reticulum

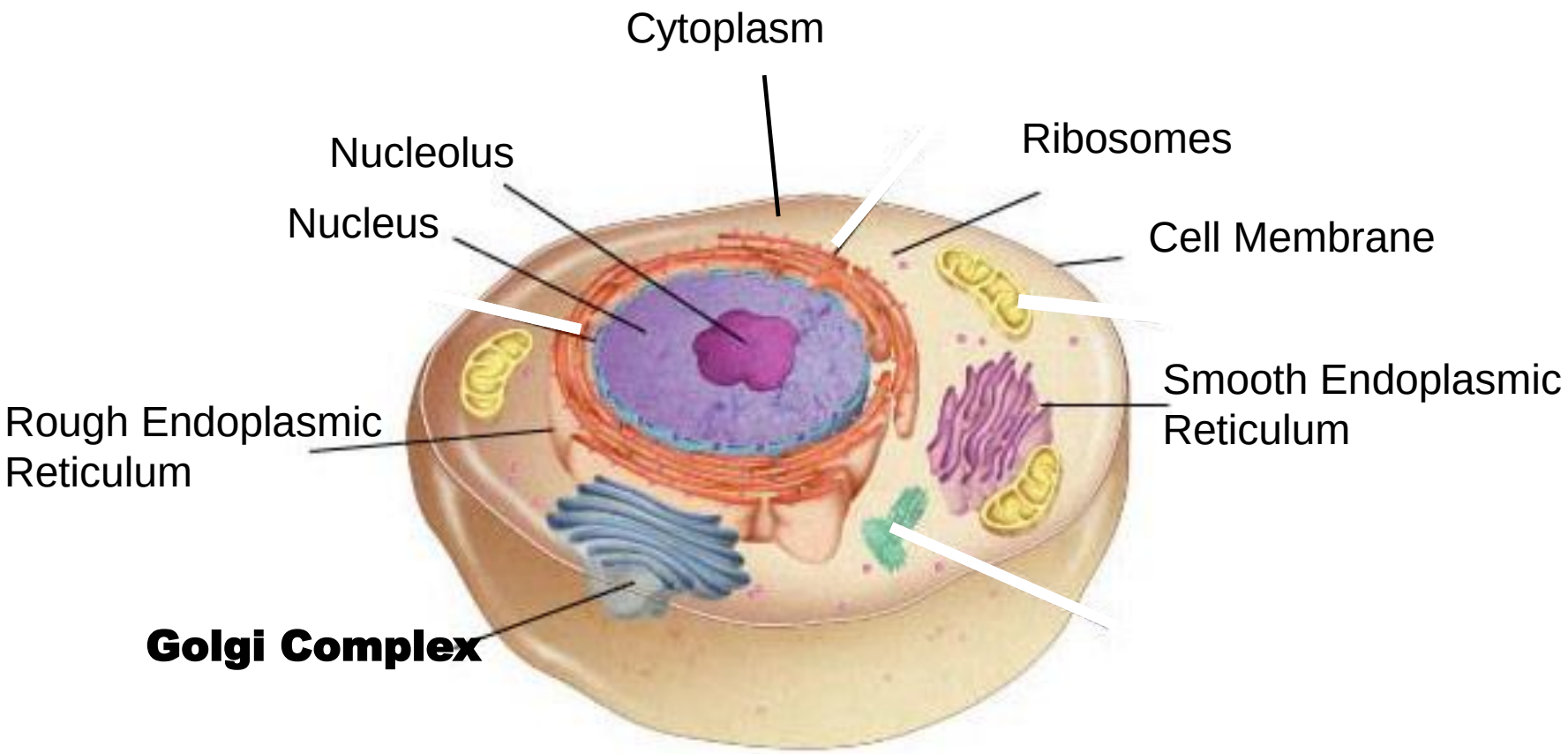
Eukaryotic Cell Organelles and Function

5. Endoplasmic Reticulum (ER)

- Nickname: "Roads"
- Function: The internal delivery system of the cell

- 2 Types:
  1. Rough ER:
     - Description: Rough appearance because it has ribosomes
     - Function: helps make proteins, that's why it has ribosomes
  2. Smooth ER:
     - Description: NO ribosomes
     - Function: makes fats or lipids

Animal Cell


Cytoplasm
Nucleolus
Nucleus
Ribosomes
Cell Membrane
Smooth Endoplasmic Reticulum
Rough Endoplasmic Reticulum
Golgi Complex

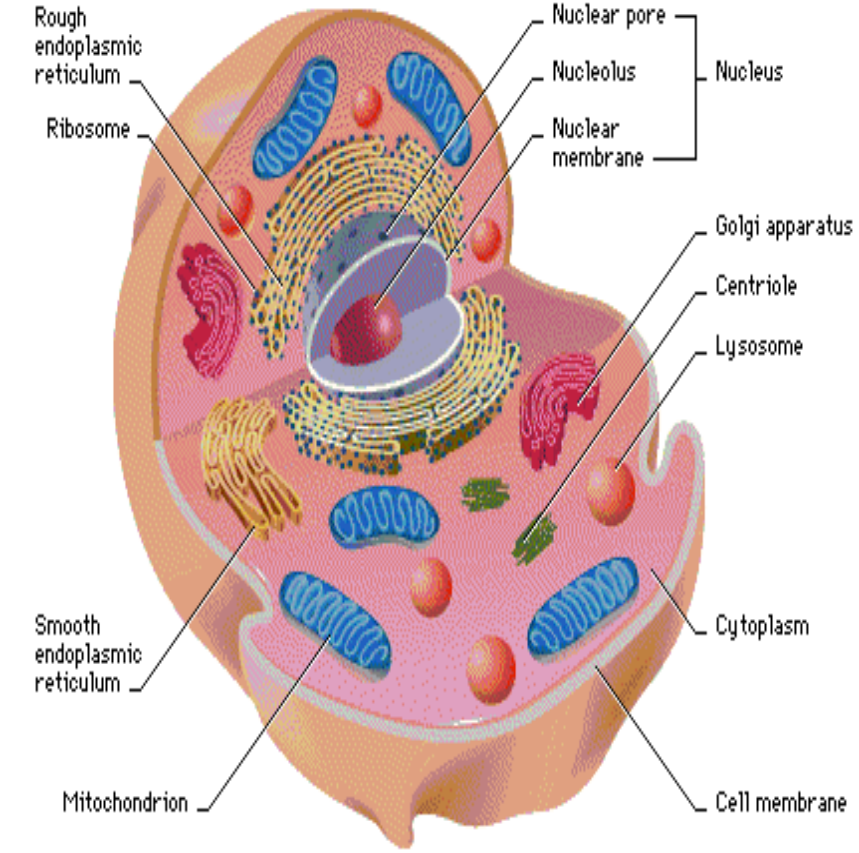
Eukaryotic Cell Organelles and Function

6. Golgi Complex, Golgi Bodies, Golgi Apparatus

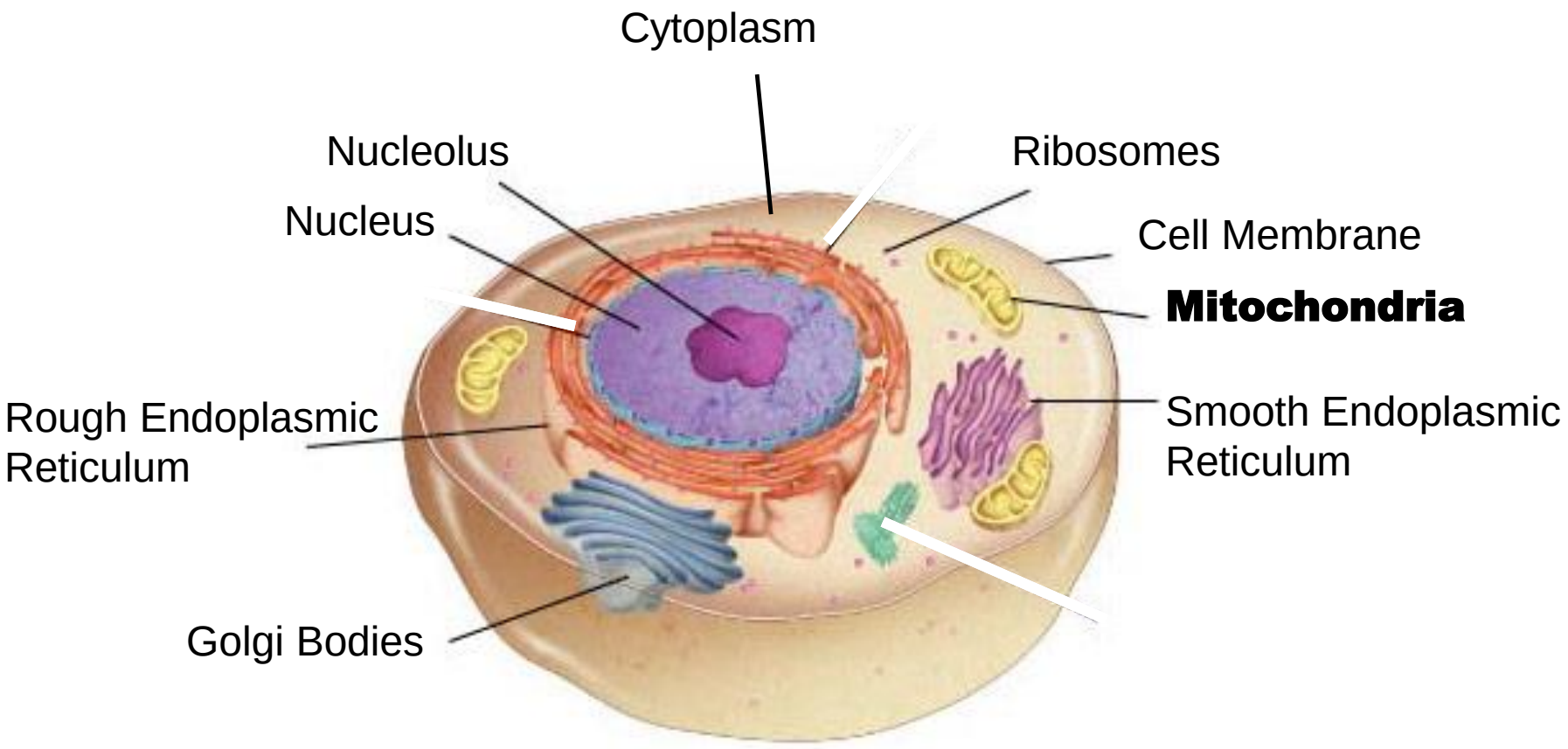
- Nickname: The shippers
- Function: packages, modifies, and transports materials to different location inside/outside of the cell
- Appearance: stack of pancakes

Cell Organelles and Structures

- **7. Lysosomes- Nickname-**“clean-up crews” of the cell.
- **Function**- Contain digestive chemicals that help break down food molecules, cell wastes, and worn out cell parts (cells also).



Animal Cell


Cytoplasm
Nucleolus
Nucleus
Ribosomes
Cell Membrane
Mitochondria
Rough Endoplasmic Reticulum
Smooth Endoplasmic Reticulum
Golgi Bodies

Eukaryotic Cell Organelles and Function

8. Mitochondria

- Nickname: "The Powerhouse"
- Function: Energy formation
  - Breaks down food to make ATP
    - ATP: is the major fuel for all cell activities that require energy

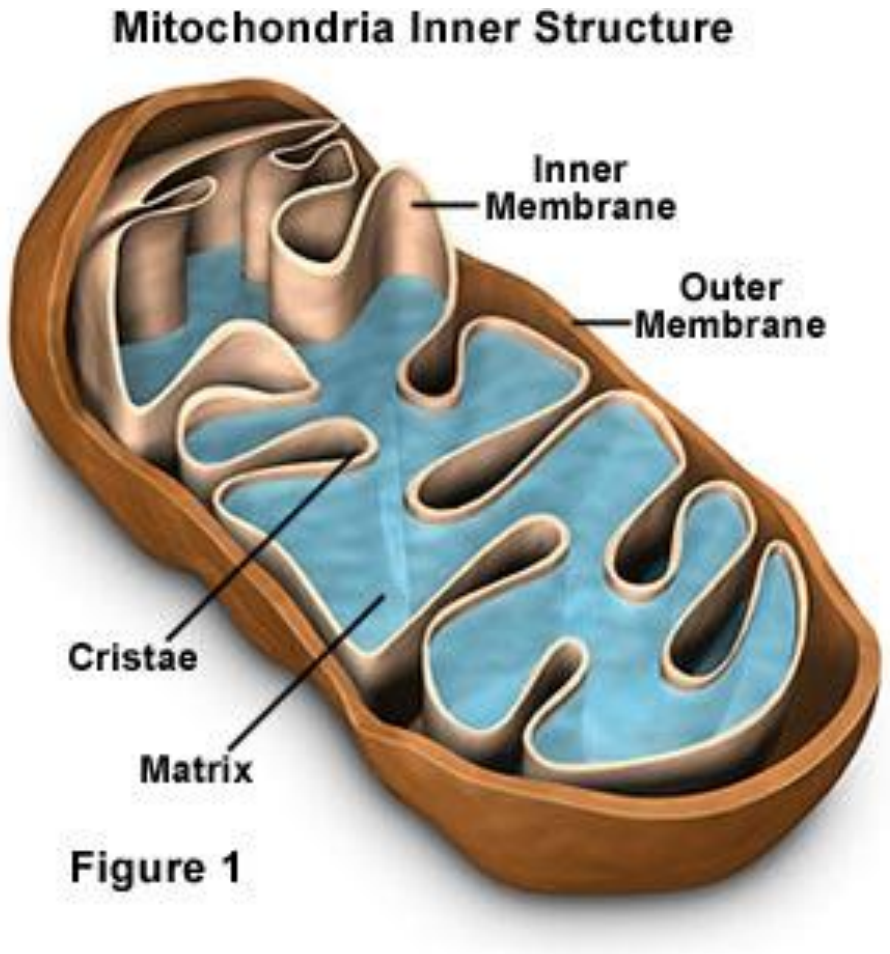

Mitochondria Inner Structure
Inner Membrane
Outer Membrane
Cristae
Matrix

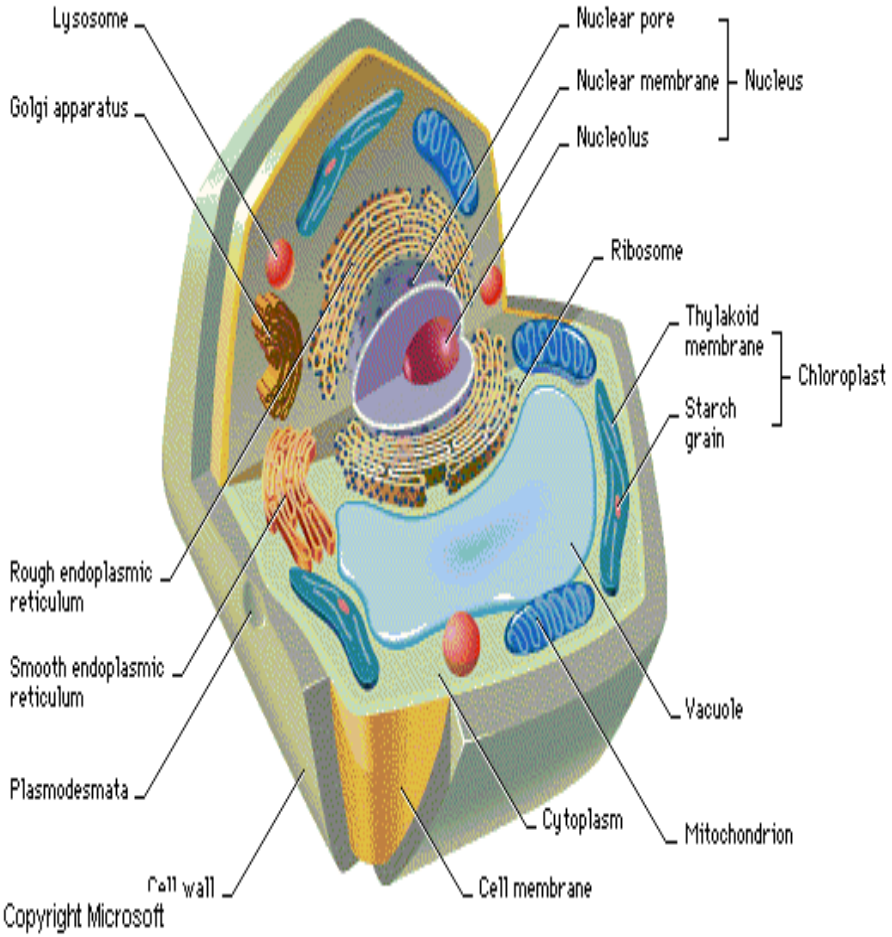
Figure 1

- Now let’s talk about structures only found in PLANT Cells!!

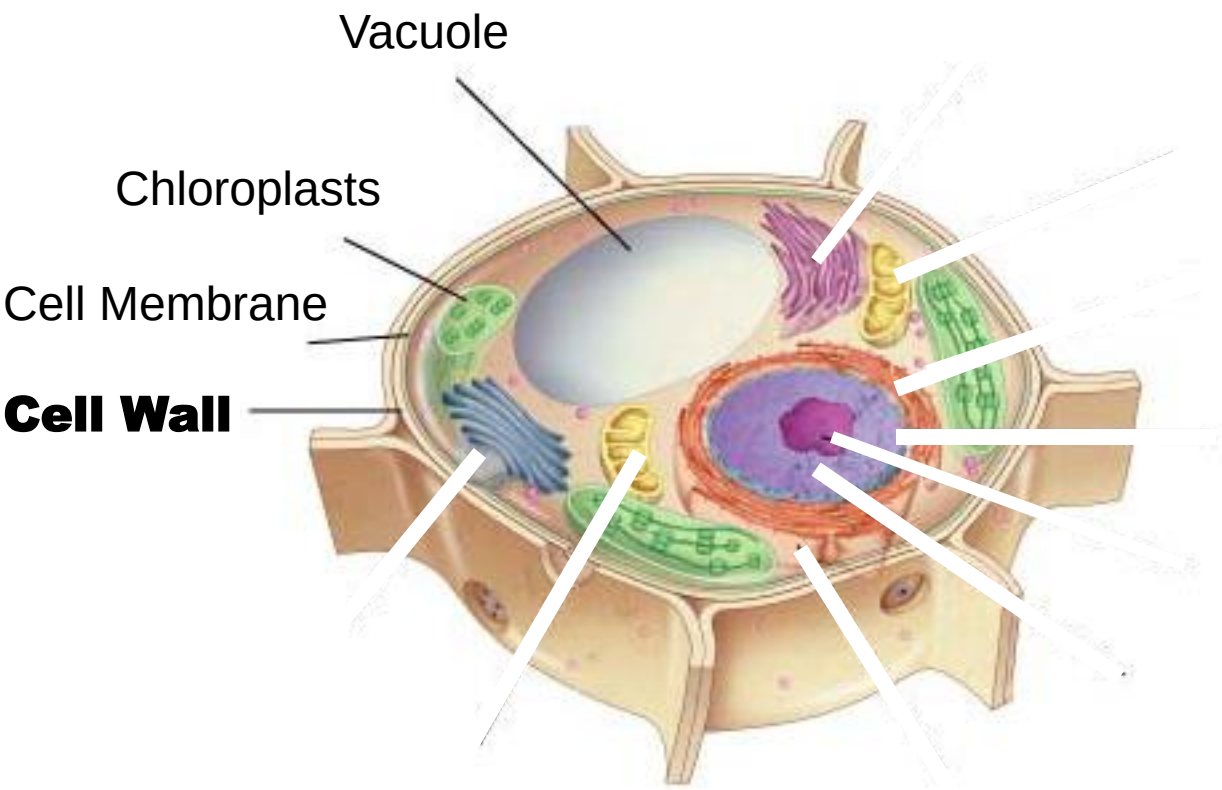
Cell Organelles and Structures

9. Cell Wall

Function: Structure, support, in Plant Cells only, Very rigid

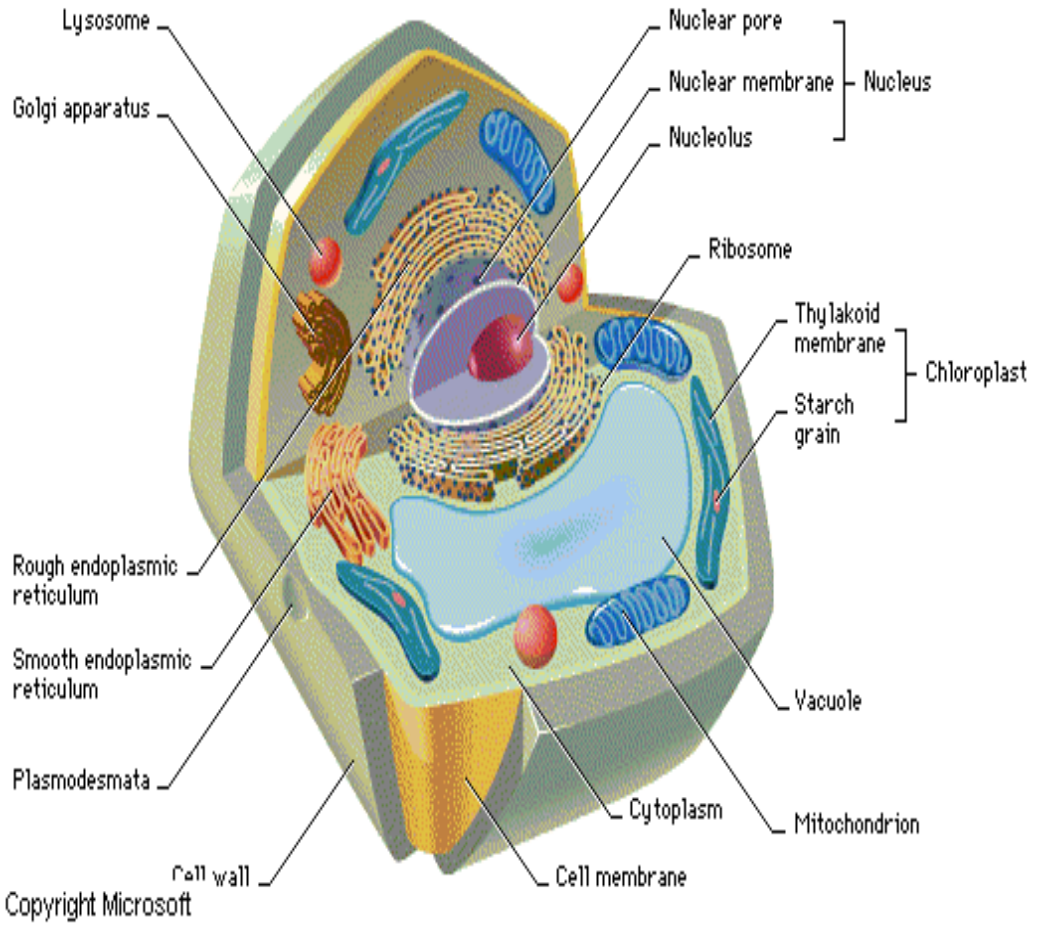


Plant Cell

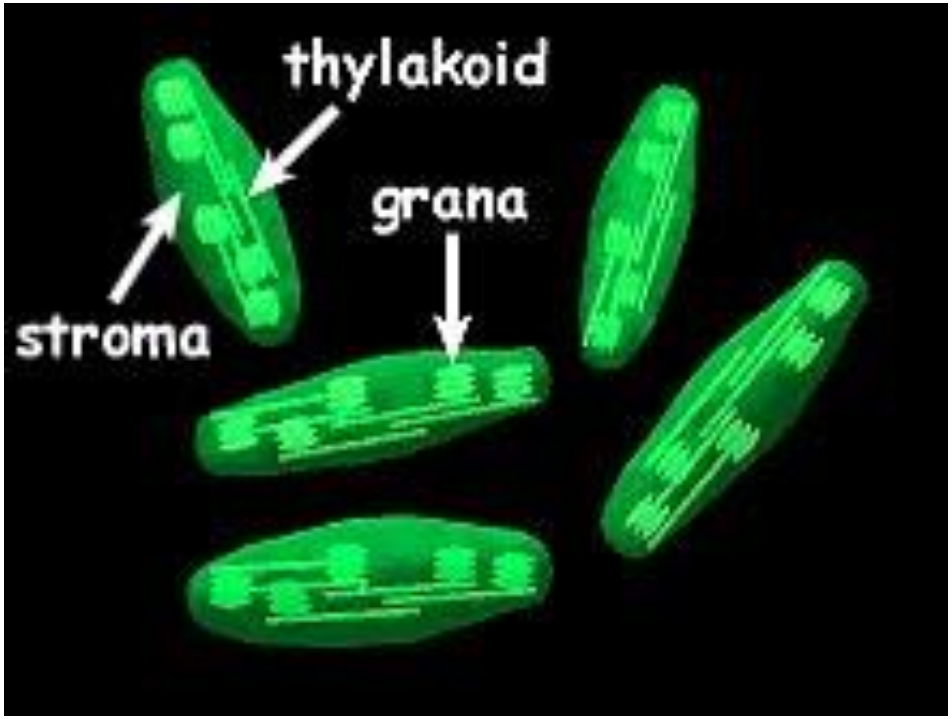


Cell Organelles and Structures

10. Chloroplasts – Function: use chlorophyll, carbon dioxide, and water to convert the energy in sunlight to Glucose and give off oxygen. Found only in Plants.

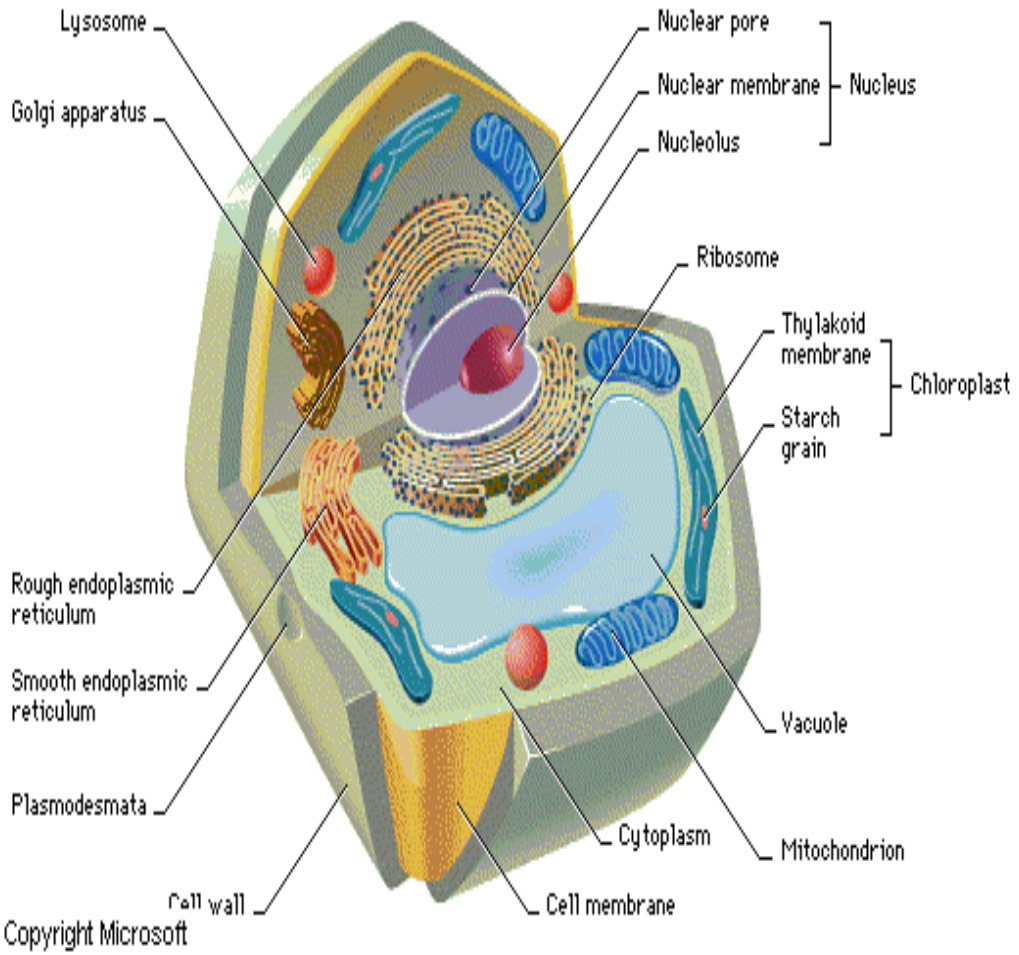


Chloroplasts



Cell Organelles and Structures

11. Vacuole-Function: storage for food, water, sometimes waste. Large in Plants. This is what makes lettuce crisp.



Directions: Fill in the VENN Diagram to compare ***PLANT CELLS*** to ***ANIMAL CELLS***. Use the words in the word box.

Cell Wall, Cell Membrane, Ribosomes, Golgi Bodies, Cytoplasm, Chloroplasts, Mitochondria, Vacuole, Endoplasmic Reticulum, Lysosomes, Nucleus

PLANT CELL ***ANIMAL CELL***