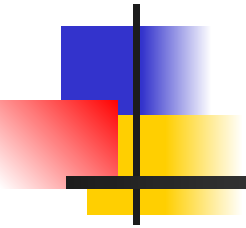
Cell Structures and Functions EE I Chapter 2 (Biology component)



The World of Cells

Cell – _____.

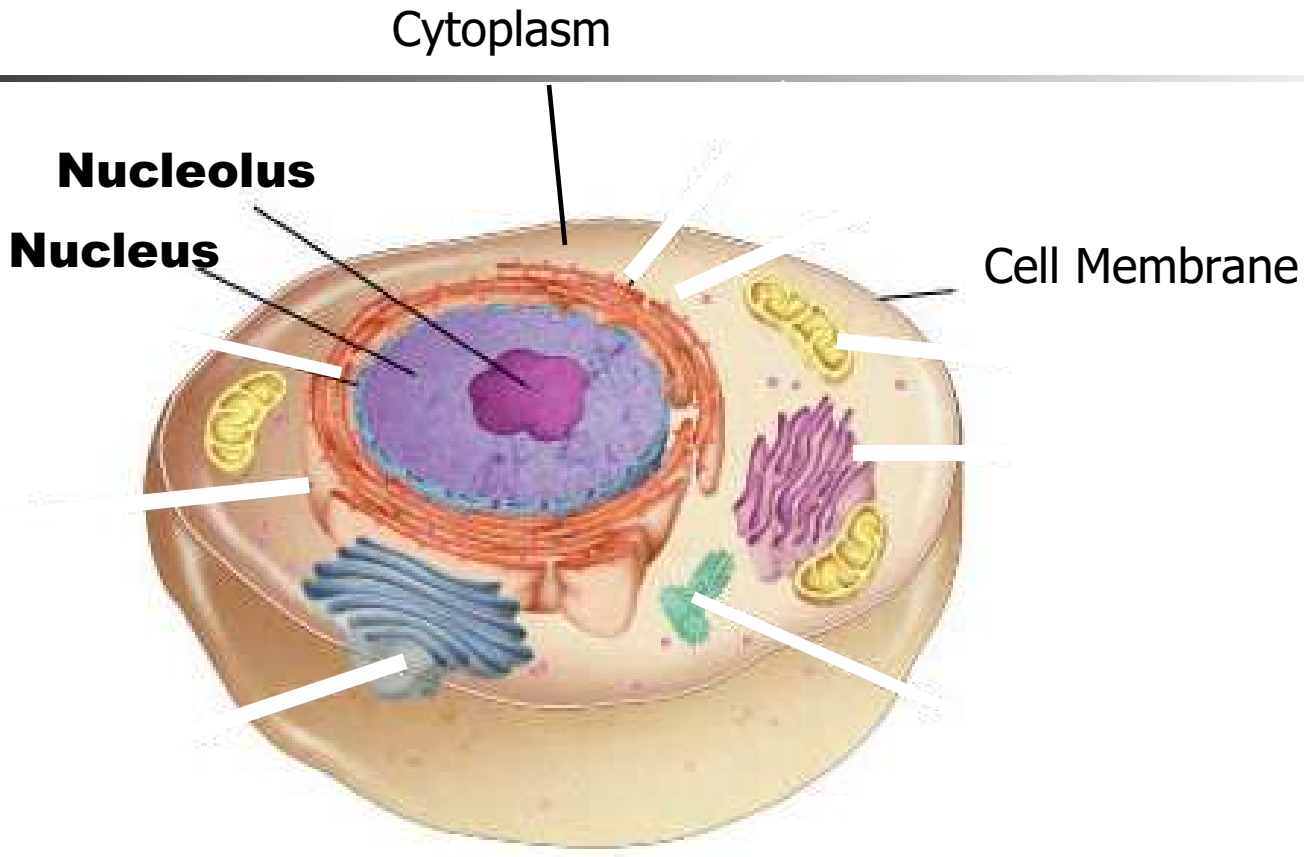
_____– (1665) – observed the dead cells of cork. He likened them to cells in a prison….thus coining the name "cell".

Cell Processes – nutrition, digestion, excretion, secretion, absorption, biosynthesis, respiration, response, reproduction.

2 Types of Cell Organization

1. _____:
   - Exs.) Bacteria and Cyanobacteria ONLY
   - smaller and less complex than eukaryotes
2. _____:
   - includes all cells other than bacteria and cyanobacteria (prokaryotes)
   - Larger and more complex than prokaryotes

Animal Cell



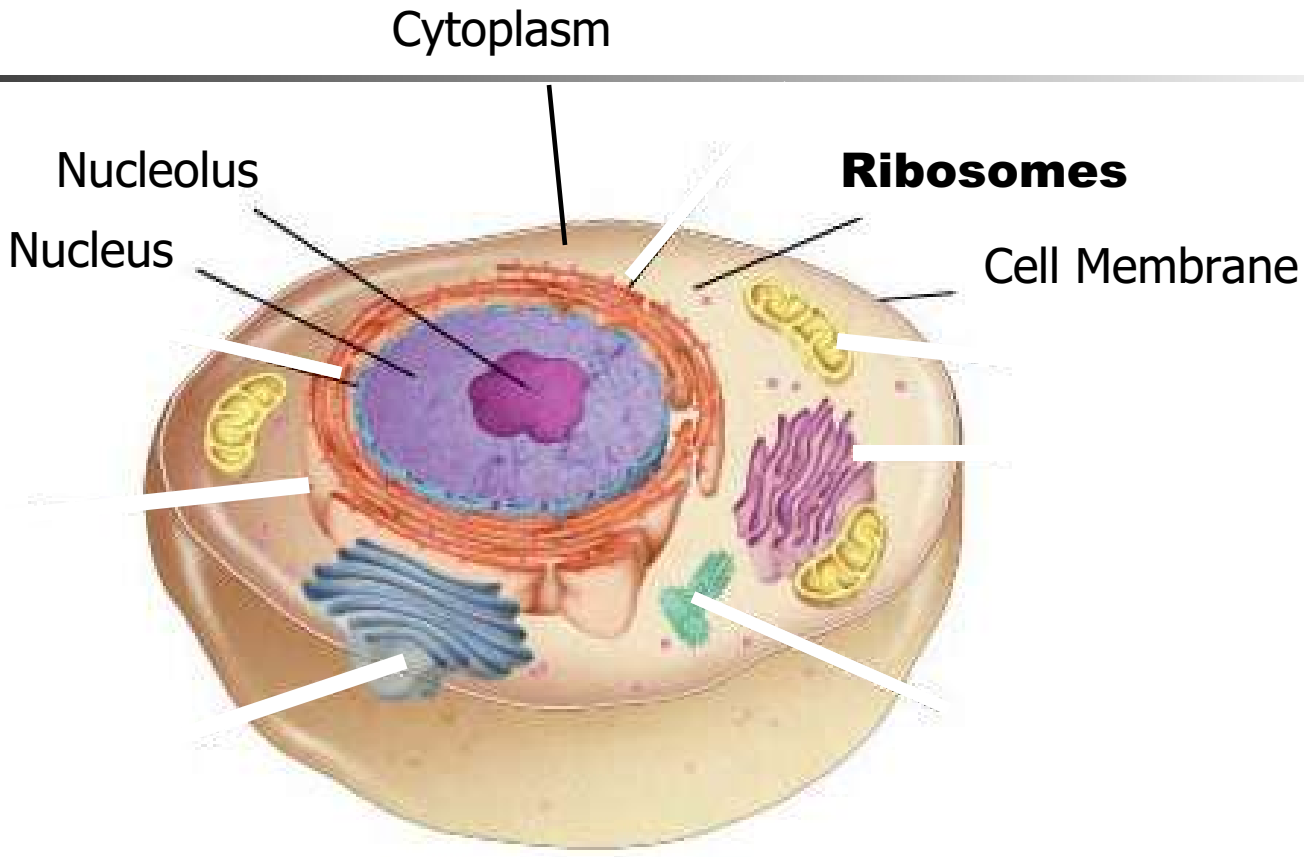
Eukaryotic Cell Organelles and Function

1. _____

Nickname: "The Control Center"

- Function: holds the DNA

Animal Cell



Eukaryotic Cell Organelles and Function

2. _____

Function: site where proteins are assembled

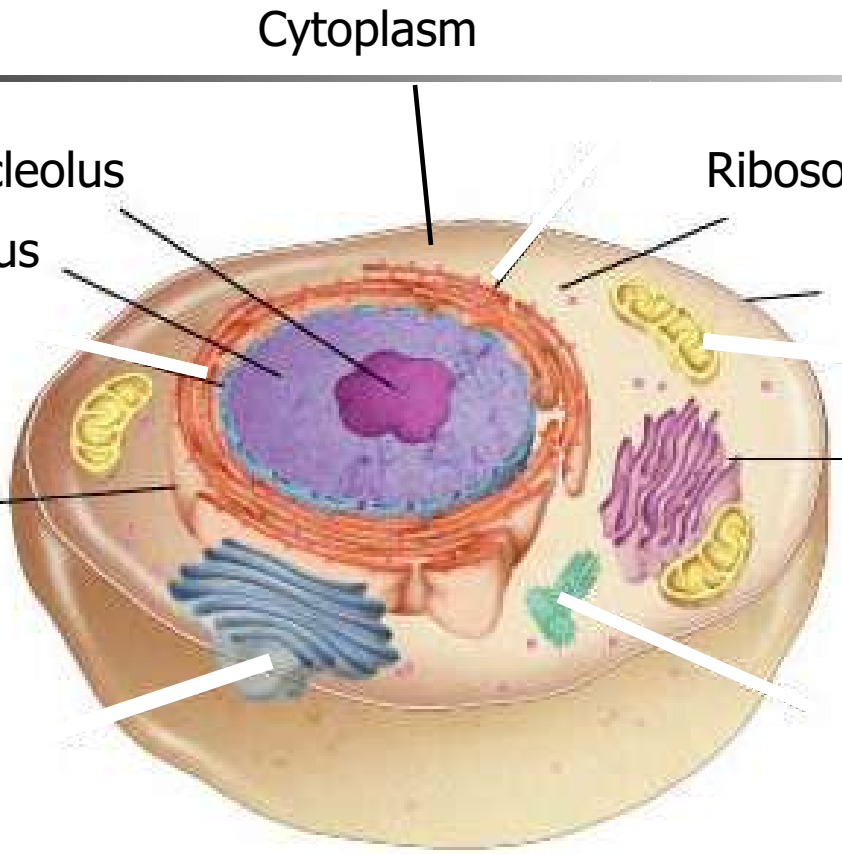
Eukaryotic Cell Organelles and Function

3. _____

Nickname: "Highway system"

- Function: Provides a route for cell products to move throughout the cell

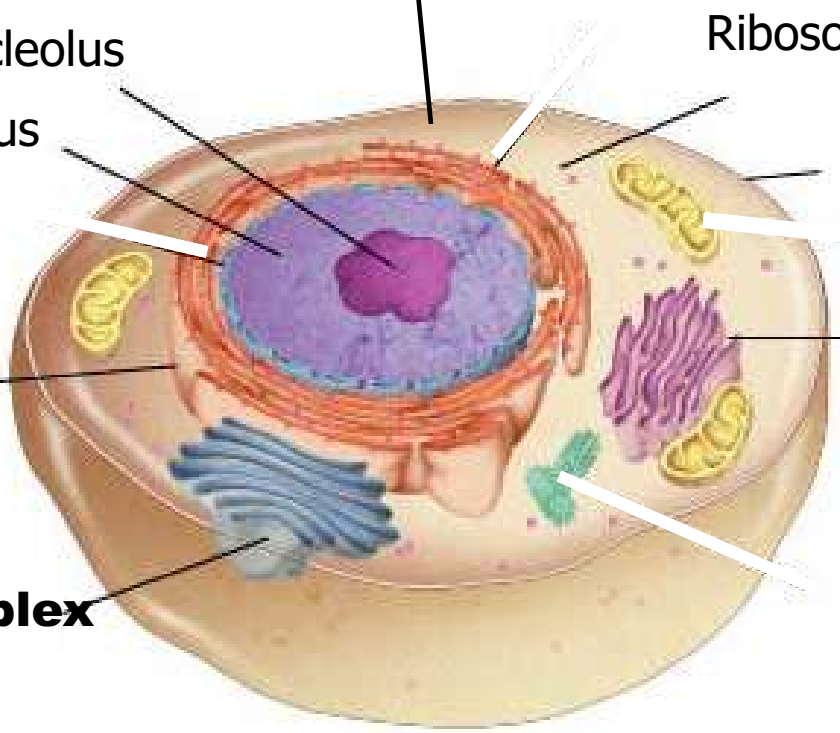
Animal Cell


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

Endoplasmic Reticulum

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

Animal Cell


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

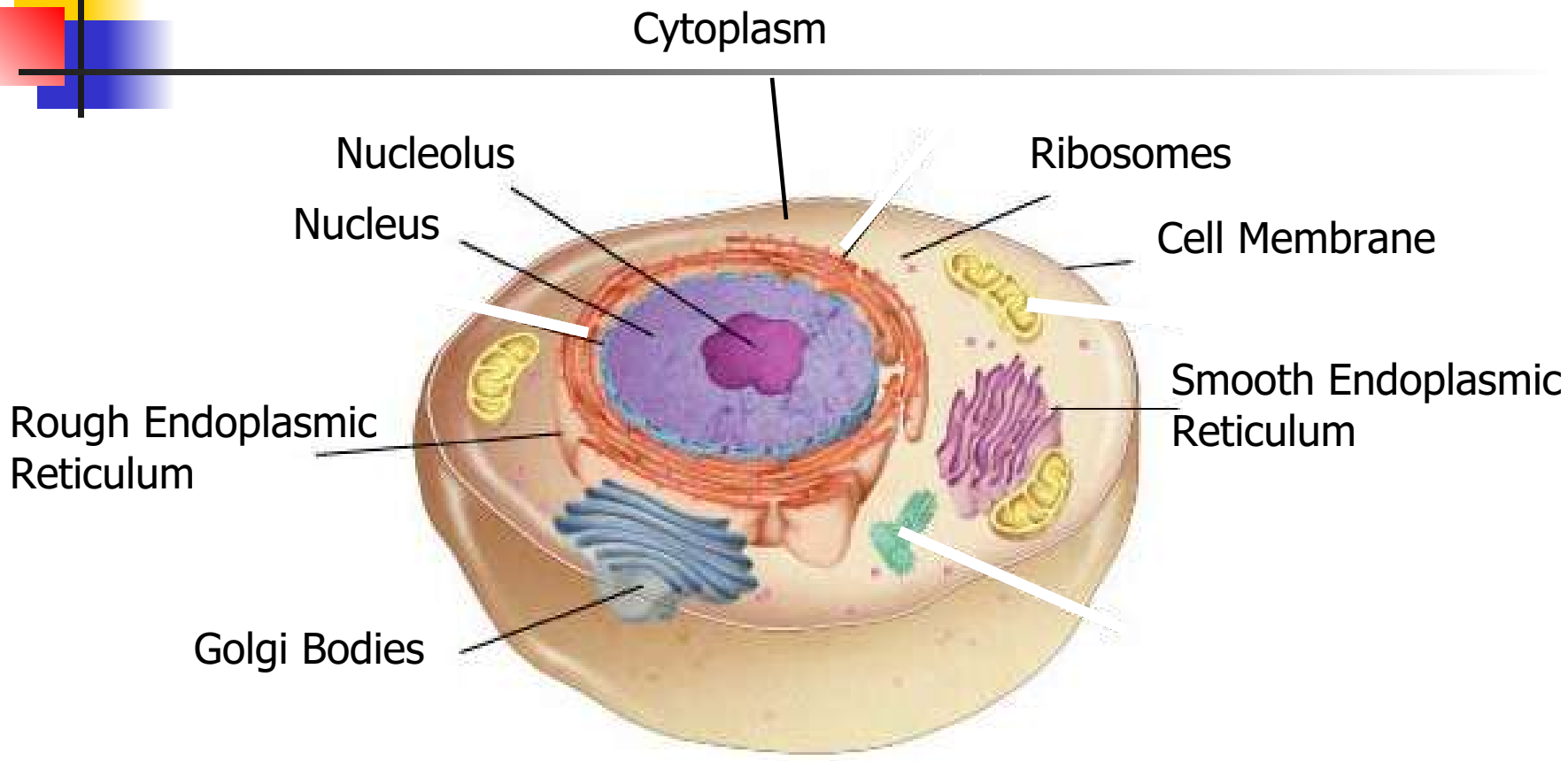
Eukaryotic Cell Organelles and Function

4. _____

Nickname: "Shipping department"

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

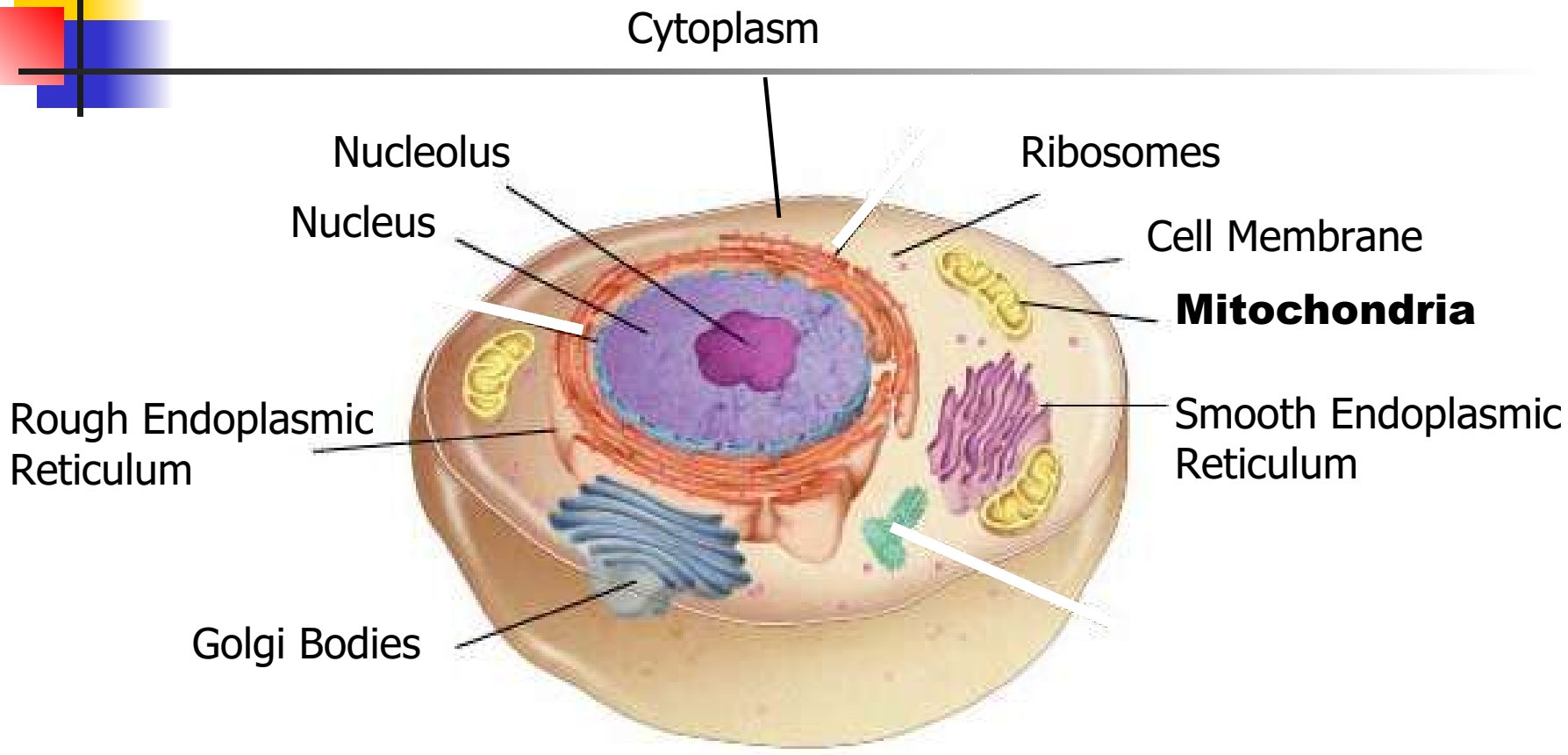
Animal Cell


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

Eukaryotic Cell Organelles and Function

5. **Lysosomes**: circular, but bigger than ribosomes)
   - Nickname: "Clean-up Crews"
   - Function: store digestive enzymes to break down food into particles the the cell can use, and to destroy old and diseased cells

Animal Cell


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

Eukaryotic Cell Organelles and Function

6. _____

Nickname: "The Energy Factory"

- Function: Site for cellular respiration
  - Uses oxygen to burn food to release its energy and make ATP
    - ATP: is the major fuel for all cell activities that require energy

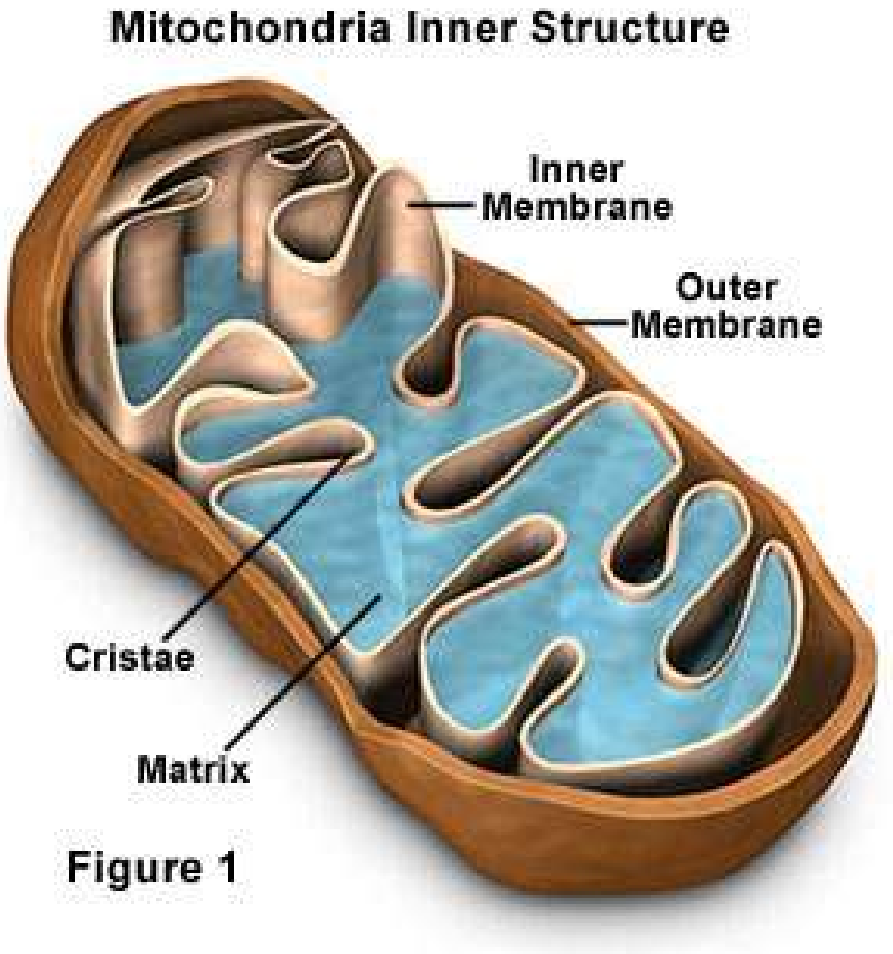
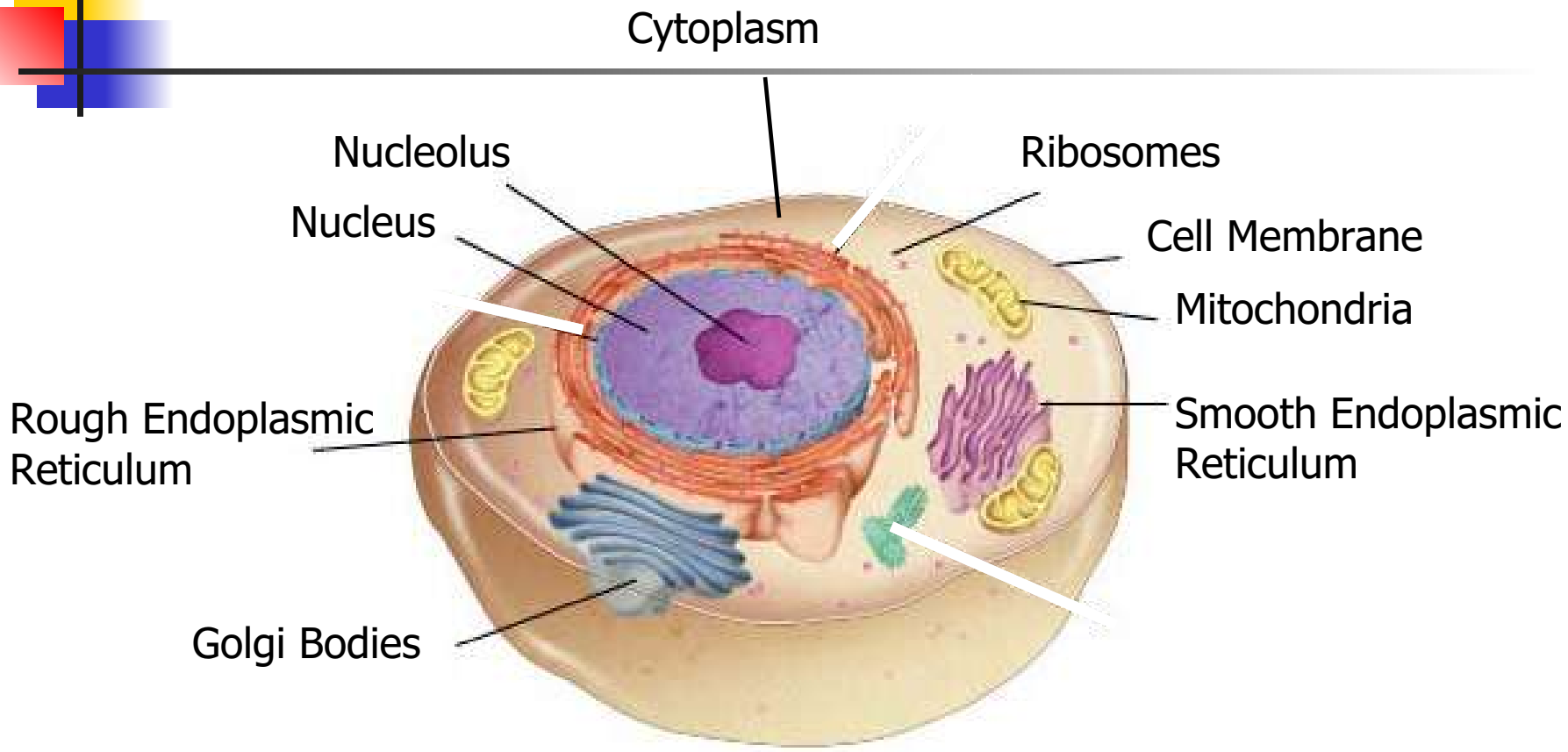

Mitochondria Inner Structure
Inner Membrane
Outer Membrane
Cristae
Matrix

Figure 1

Animal Cell


Cytoplasm
Nucleolus
Nucleus
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Mitochondria
Rough Endoplasmic Reticulum
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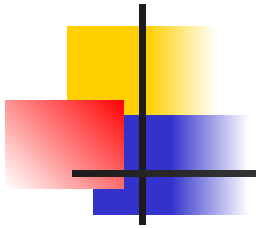
Golgi Bodies

A Few Additional Cell Organelles

_____ – in animal cells, this is a food storage sac.

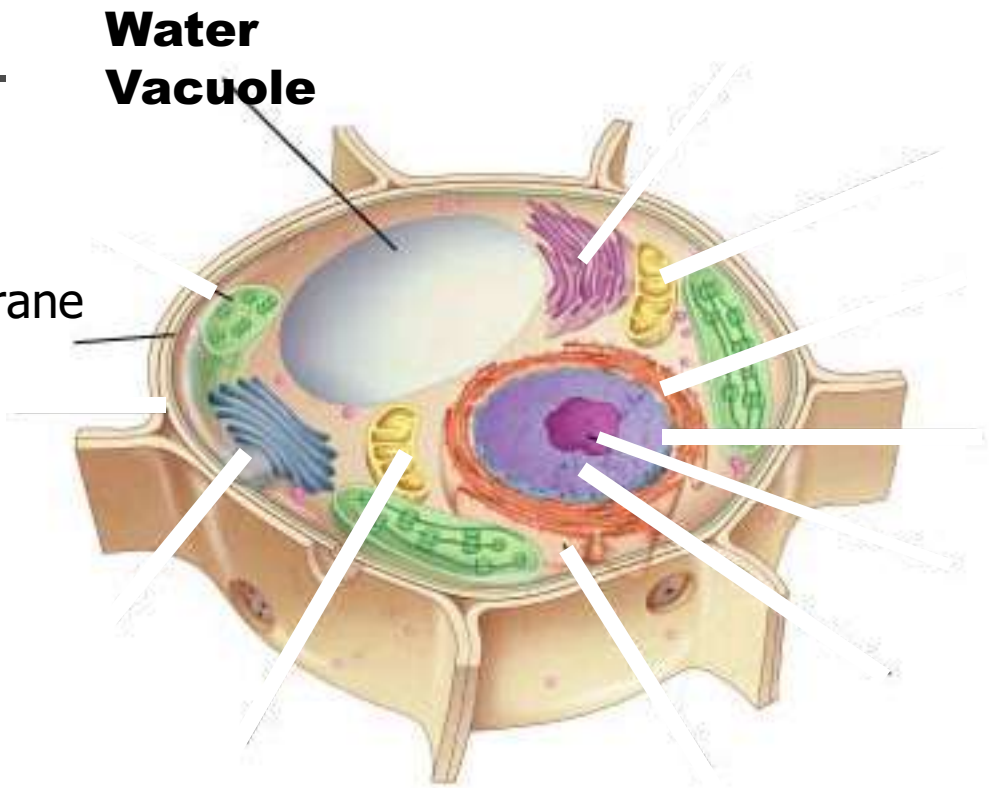
_____ – all substances OUTSIDE the nucleus.

_____– controls traffic in/out of the entire cell.



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

Plant Cell



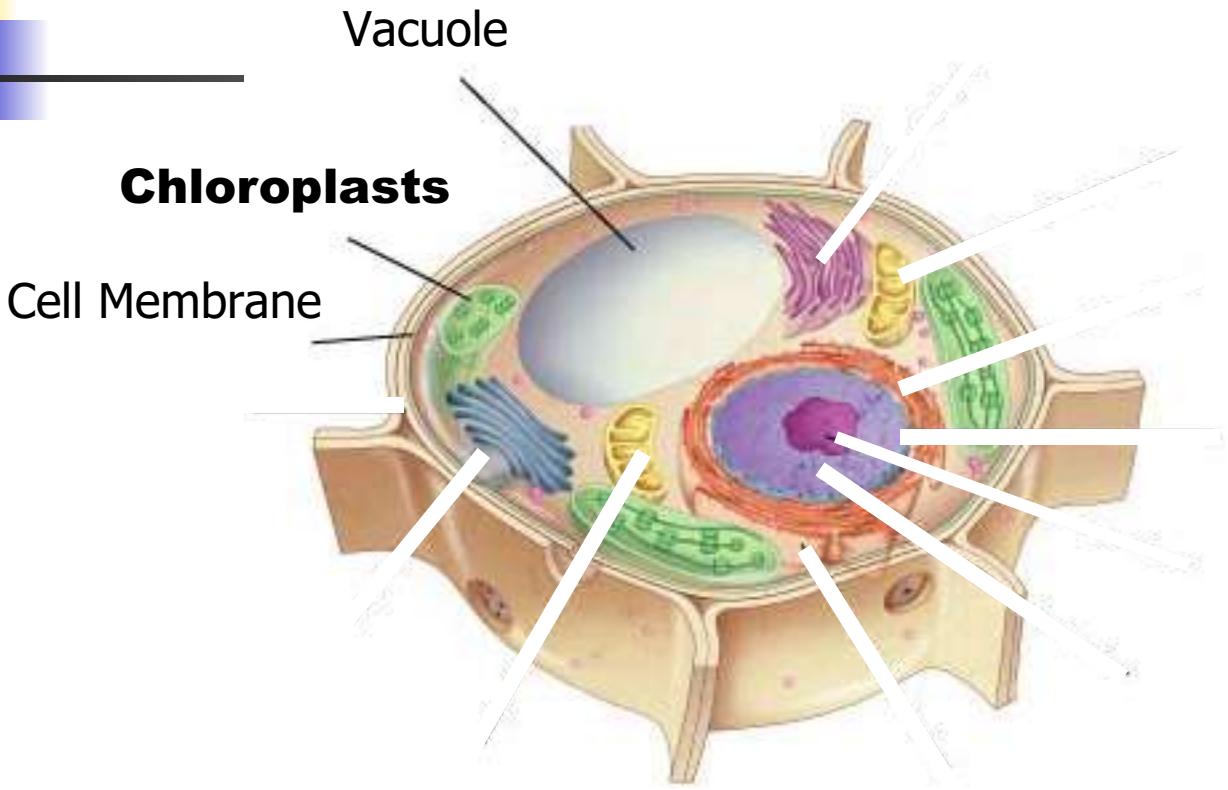
Eukaryotic Cell Organelles and Function

7. _____

Function: stores water, sugars, waste products

- This is what makes lettuce crisp
- When there is no water, the plant wilts

Plant Cell



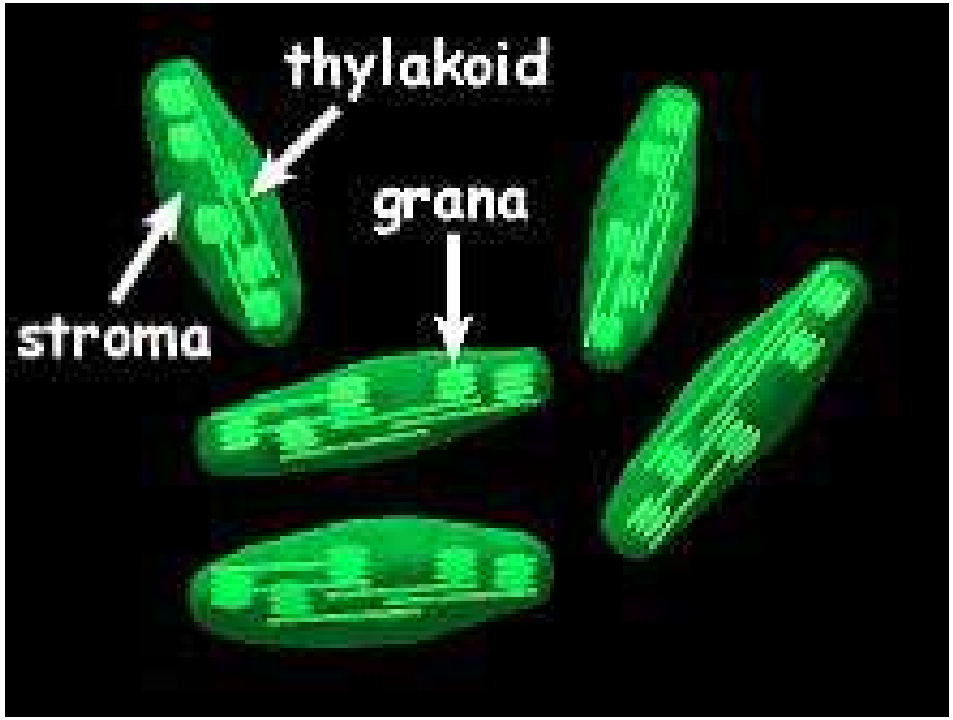
Eukaryotic Plant Cell Organelles and Function

8. _____

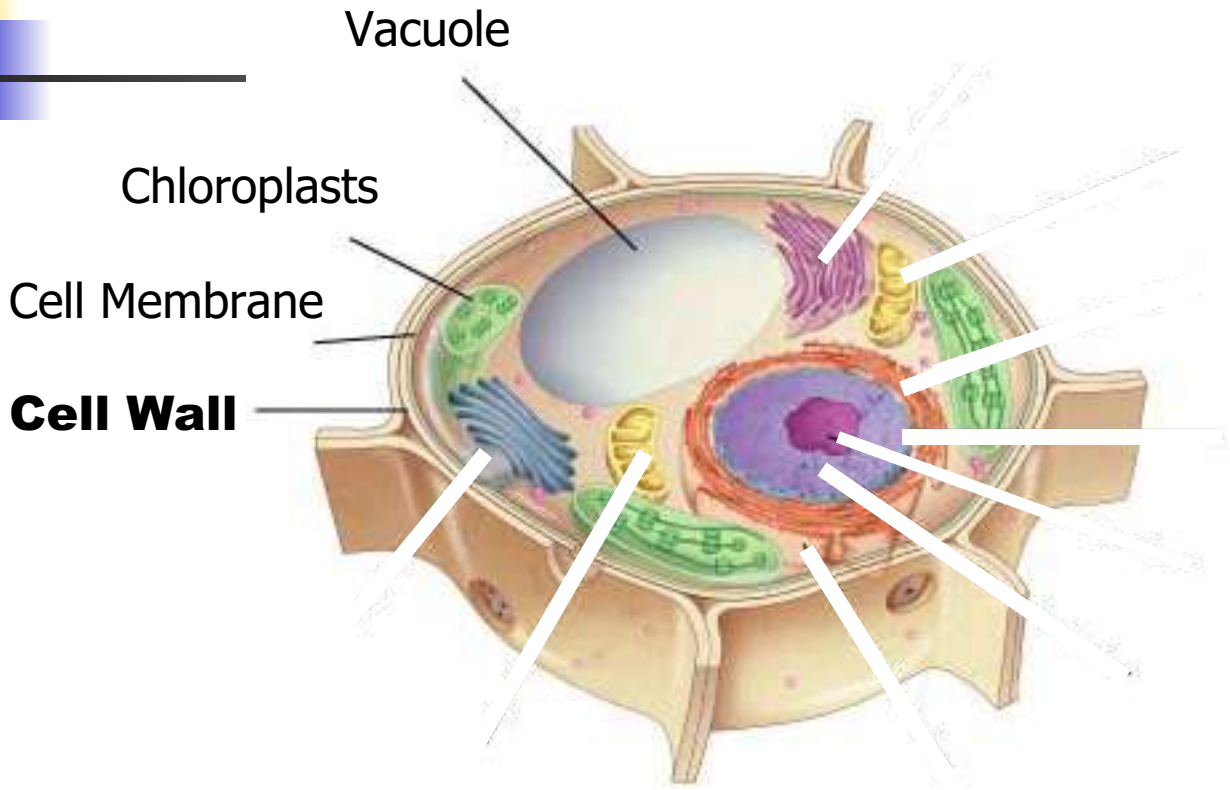
Function: traps energy from the sun to produce food for the plant cell

- Green in color because of chlorophyll, which is the green pigment that captures the sunlight

Chloroplasts



Plant Cell



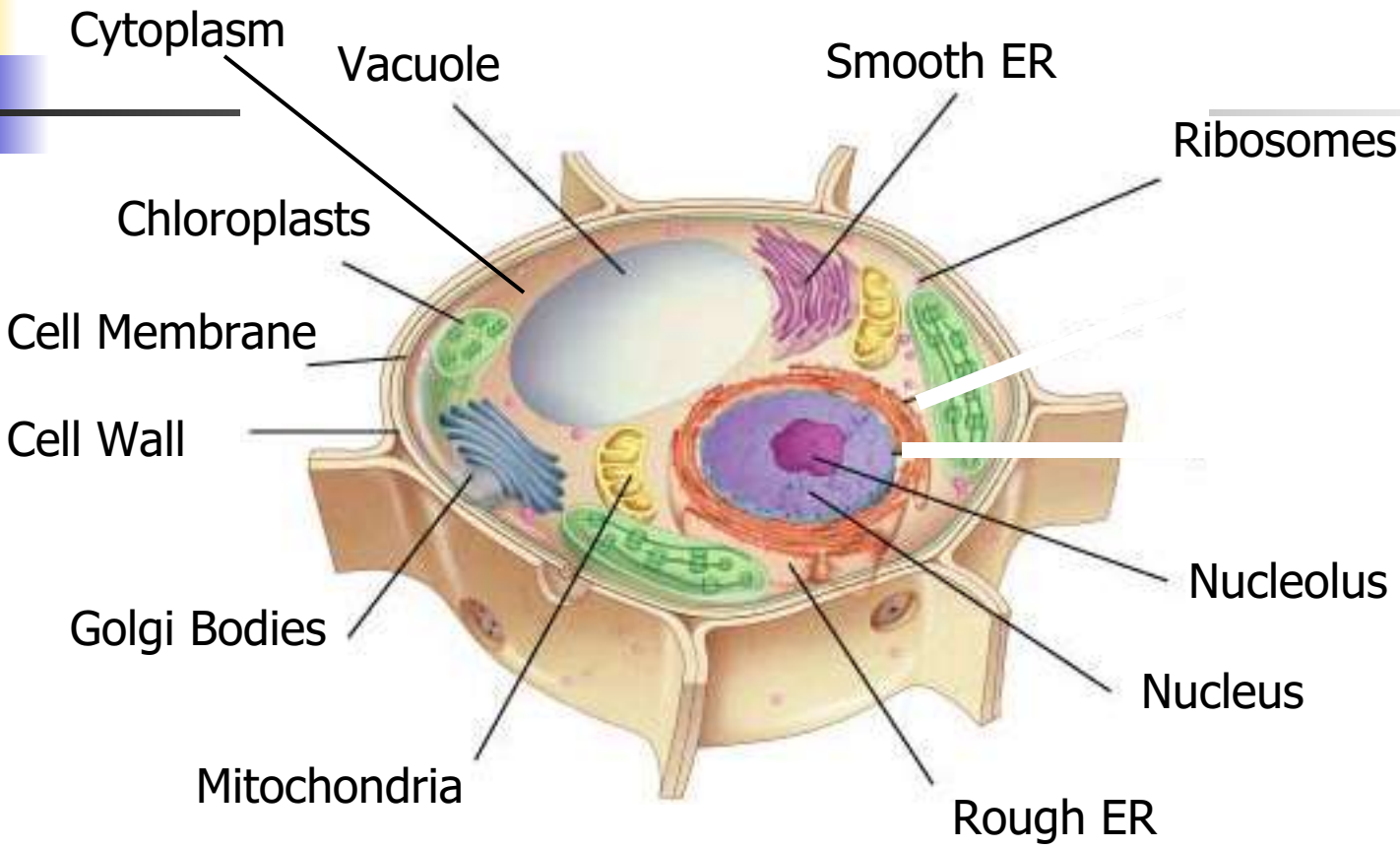
Eukaryotic Plant Cell Organelles and Function

9. _____

Function: provides support and protection to the cell membrane

- Found outside the cell membrane in plant cells

Plant Cell


Cytoplasm
Vacuole
Smooth ER
Ribosomes
Chloroplasts
Cell Membrane
Cell Wall
Nucleolus
Golgi Bodies
Nucleus
Mitochondria
Rough ER