Cells and Cell Organelles

Connections:

- *Compare a prokaryote to a eukaryote.*
- *Identify and know the function of each organelles in an animal and plant cell.*
- *Know which organelles are specific to animals, which are specific to plants, and which both have.*

The Levels of Life

- The levels of life from smallest to largest are:
  - Subatomic particles
  - Atoms
  - Molecules
  - _____
  - _____
  - Tissues
  - Organs
  - Organ Systems
  - Organism

The Cell Theory (VERY IMPORTANT)

- The cell theory is an important concept in biology.
- The Cell Theory States:
  - All living things are _____
  - Cells are the _____ _____.
  - New cells are made from _____

Types of Cells

- There are two types of cells:
  - _____
  - _____

Prokaryotes

- Prokaryotes are cells that do **not** have a _____.
  - Their _____ isn't protected.
- Prokaryotes do _____ have _____ bound organelles.
  - They do have _____
  - Ex. _____

Eukaryotes

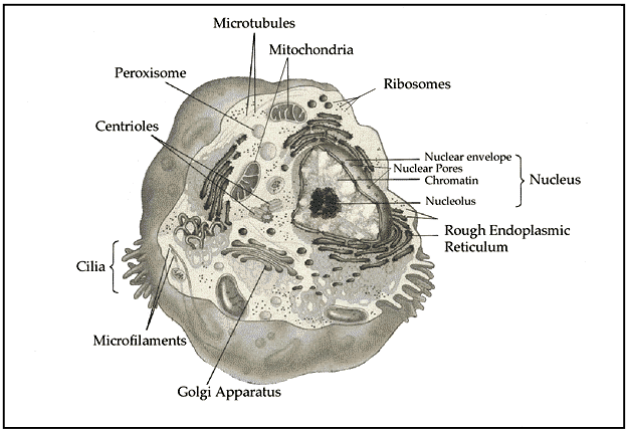
- Eukaryotes have a _____
  - Their _____ is separated from the rest of the cell.
- Eukaryotes HAVE _____ bound organelles.
  - Such as mitochondria, chloroplasts, ER, etc.
- Eukaryotes display great _____.
  - Ex. _____, _____, fungi, and protists.

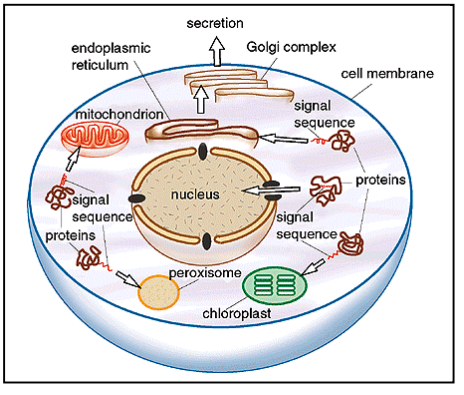
The Purpose of a Cell

- The main function of a cell is to make _____.
- Cells are often called "_____".

Cell Organelles

- The _____ in a cell that have specialized _____.





Cytoplasm

- Cytoplasm is the part of the cell between the _____ and _____ _____ _____.
- It is a _____ substance that holds the other _____.

Cell Membrane

- The cell membrane (_____) surrounds the cell.
  - Think of it as the _____ of the cell.
- It _____ what goes in and out of the cell.

Nucleus

- The nucleus contains the _____.
- _____ is the instructions for making _____.

Ribosomes

- Ribosomes are small structures where _____ are _____.
  - Some ribosomes are _____ to the _____ _____.

- Other ribosomes are _____ in the cytoplasm.

Endoplasmic Reticulum

- There are two types of endoplasmic reticulum (ER):
  - _____
  - _____
- Usually located around the _____.

Rough ER

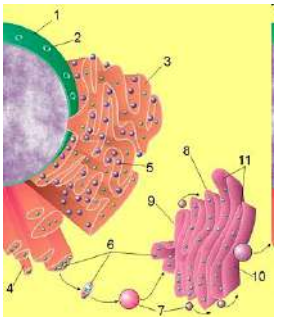
- Rough ER is called rough, because it has _____ attached to the _____ membrane.
- _____ made by the ribosomes enter into the rough ER where it is _____ and _____.

Smooth ER

- Smooth ER does _____ have _____ attached to the outer membrane; so, it has a "smoother" appearance.
- In the smooth ER, _____ are made and _____ (breaking down harmful substances) occurs.

Transportation out of the ER

- Once the _____ are modified in the ER they move to the _____ _____ in _____ (round, membrane bound 'bubbles').

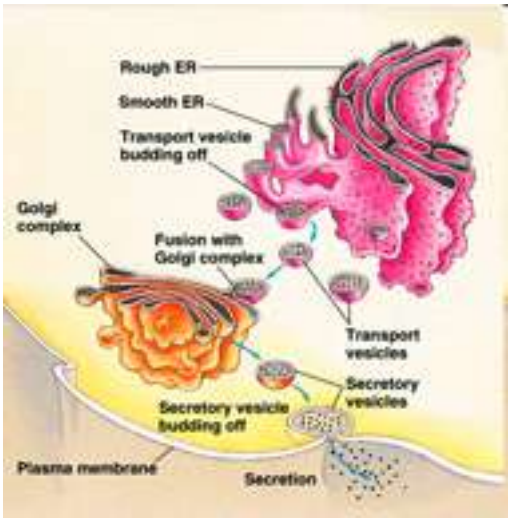


Golgi Apparatus

- Golgi apparatus' function is to _____, _____ , and _____ proteins from the ER and _____ them _____ of the cell.

Transportation of Protein

- Making proteins from start to finish involves several organelles.
  - First, protein is made in the _____.
  - From there it is sent to the _____ to be modified.
  - From there it goes to the _____ _____ to be packaged and shipped out.
  - From the golgi it goes to the _____ where it is deposited outside the cell.



- _____ → _____ → _____ → _____ → _____

Lysomsomes

- Lysosomes are small organelles filled with _____ _____.
    - Lysosomes break down _____, _____, and _____.
- Lysosomes also function in removing the _____ inside the cell.
    - They are the _____ crew of the cell.

Vacuoles

- Vacuoles store materials such as _____, salts, _____, and _____ for the cell.

Mitochondria

- Mitochondria are organelles that _____ _____ energy in food into usable _____.
    - This process is called _____.

Cilia and Flagella

- _____ appendages that extend from the _____ of a cells.
    - _____.
- If there are _____ of these appendages they are called _____; if there is only _____, or a _____, they are _____.
    - Flagella tend to be _____ than cilia.

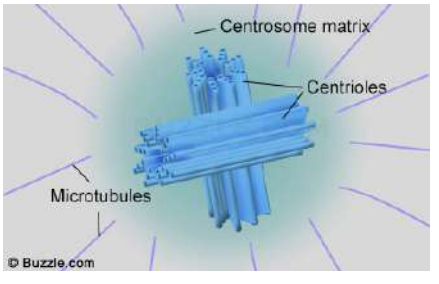
- Cilia and flagella move _____ past the _____ of the cell.
    - For _____ cells: this enables them to "_____"
    - For _____ cells that are stuck in one spot: moves liquid over the _____ of the cell.

Cytoskeleton

- The cytoskeleton is a network of _____ strands that helps the cell to maintain its _____.

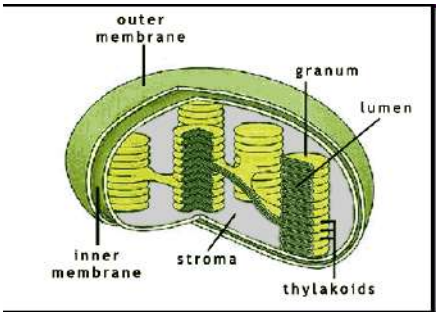
Centrioles

- The centrioles help in _____.
    - They are only found in _____ cells



Plant Specific Organelles

- Plants have a few organelles that other organisms do not have.
  - _____
  - _____
  - _____



Chloroplasts

- The chloroplasts are organelle where _____ occurs.
  - Photosynthesis is where _____ energy is converted into _____ energy (_____).

Cell Wall

- The cell wall is _____ the cell membrane of in plant cells.
- It provides _____ and _____ for the cell.
  - It is like the plant's _____.

Central Water Vacuole

- The central water vacuole (CWV) is a large _____ in plants that _____ water.
- It also keeps turgor _____ for the plant.
  - Turgor pressure is the force exerted _____ by water on the cell _____ that helps a plant _____ up.