Intro to Cell Structures

Drawing Cells

- You will be drawing two different cells, one to represent an animal cell and one to represent a plant cell.

- A template has been provided to start the process.

The **Cell Membrane**

- The line shown on each diagram represents the cell membrane. **Label this structure** on both cells.
- Now draw a rectangle around the cell membrane of the plant cell ONLY. This is the cell wall of the plant cell. Label the **cell wall** of the plant cell.

Cytoplasm

- The area inside of the cell membrane is a water-based material that contains all of the cell organelles (small organs). Draw an arrow to this space and label it as **CYTOPLASM** in both cells.

Nucleus

- The nucleus is a spherical structure found in all eukaryotic cells.
- It is typically the largest structure inside of the cell.
- Draw and label a **nucleus** in both cells.

Nucleolus

- The nucleolus is a smaller, spherical structure found inside the nucleus of eukaryotic cells.
- Draw and label a **nucleolus** in both cells.

Chromatin

- Chromatin appears as fine threads in the nucleus of plant and animal cells. It surrounds the nucleolus.
- Draw and label a **chromatin** in both cells.

Cytoskeleton

- The cytoskeleton is a network of fine protein fibers that crisscross in the cytoplasm, along the cell membrane, of the cell.
- Draw and label the **cytoskeleton** in both cells.

Central Vacuole

- A central vacuole is a large, somewhat rounded container found in the cytoplasm of a plant cell. It is larger than the nucleus.
- Draw and label a **central vacuole in the plant cell.**

Vacuoles or Vesicles

- Vacuoles or vesicles are rounded containers in the cytoplasm of the cell. They are smaller than the nucleus.
- Draw and label **3 vacuoles/vesicles** in the animal cell.

Endoplasmic Reticulum (E.R.)

- The endoplasmic reticulum appears as folded channels (passageways) in the cytoplasm.
- Draw and label 2 different **E.R.'s** in both cells.

Ribosomes

- Ribosomes as small dots that can be found in the cytoplasm of the cell. They can also be found attached to one type of E.R.
- Ribosomes are the smallest structure in the cytoplasm of the cell.
- Draw and label at least **10 ribosomes** in the cytoplasm of both cells.
- Draw and label **10 ribosomes on one E.R.** in both cells. Label this E.R. as the **ROUGH E.R.**
- Label the other **ER** as the **smooth ER** in both cells.

Golgi Apparatus

(Body, Complex)

- The Golgi apparatus resembles a stack of pancakes with tiny drops of syrup beside it in the cytoplasm of the cell.
- Draw and label a **Golgi** apparatus inboth cells.

Mitochondrion

- A mitochondrion looks like a grain of rice with a wavy pattern on the surface found in the cytoplasm of the cell.
- Draw and label **5 mitochondria** in both cells.

Lysosome

- A lysosome is a small, rounded, darkened structure in the cytoplasm of a cell. They are smaller that the nucleus and the vacuoles.
- Draw and label **2 lysosomes** in the animal cell only.

Centrioles

- Centrioles are small groupings of tiny protein tubules, arranged like a sunshine, found in the cytoplasm of animal cells.
- Draw and label **2 centrioles in the animal cell**.

Chloroplast

- A chloroplast is a football shaped structure in the cytoplasm of plant cells. It is smaller than the nucleus and central vacuole, but larger than the lysosomes.
- Draw and label **5 chloroplasts in the plant cell**.

Color both cells as instructed below:

* **Chloroplasts = light green**
* **Nucleus = yellow**
* **Nucleolus = orange**
* **Mitochondria = purple**
* **Endoplasmic Reticulum = light brown/tan**
* **Small vacuoles and Central vacuole = light blue**
* **Lysosomes = black**
* **Golgi body = red**
* **Centrioles = dark blue**
* **Ribosomes = pink**

Functions

- Cell (plasma)membrane = controls what moves in and out of cell; found in ALL cells
- Cell wall = protects the cell and provides support; never in animal cells
- Nucleus = control center for cell; storage area for DNA
- Nucleolus = produce ribosomes for the cell

Functions

- Chromatin = controls the production of proteins and contains the hereditary information of the cell
- Cytoplasm = fills all cells; location of many chemical reactions
- Cytoskeleton = helps shape and support cells internally; aids in cell movement; microtubules and microfilaments; form cilia (numerous short hair like structures) and flagella (1 or 2 long hair like structures).

- Centrioles (centrosomes)= help separate chromosomes during cell reproduction in animal cells only
- Ribosomes = proteins made here; can be free floating in cytoplasm or attached to ER
- Mitochondrion = site where food molecules (glucose) enter and are converted into useable energy (ATP)

- Rough ER = covered in ribosomes; produces proteins that will exit the cell; folds proteins into their unique shape; checks to see if proteins are formed properly
- Smooth ER = produces phospholipids and other lipids for the cell
- Golgi apparatus modifies and packages proteins; puts proteins in vesicles for export; produces lysosomes

- Lysosomes = destroy worn out parts and substances that do not belong in the cell; produced by the Golgi apparatus
- Vacuoles/vesicles =stores water, wastes, and sometimes fat; parts of all cells
- Central vacuole = large water filled vacuole in a plant

- Chloroplast = location of photosynthesis; contains green pigment chlorophyll; plants
- Chromoplasts = make and store colorful pigments for plants; carotene (orange), xanthophyll (yellow), and anthocyanin (red)
- Leucoplast =stores food such as starch, protein, and lipids in plants