

## Plant and Animal Cells Virtual Lab

### Structures in Animal and Plant Cells

<b>Structure/Function</b>	<b>Animal Cell Structure</b>	<b>Plant Cell Structure</b>
<b>Outer Boundary of the Cell</b>	<b>Cell Membrane</b>	<b>Cell Membrane</b>
<b>Contains Genetic Material(DNA)</b>	<b>Nucleolus</b>	<b>Nucleolus</b>
<b>Long, Uncoiled Strands of DNA</b>	<b>Chromatin</b>	<b>Chromatin</b>
<b>Watery, Gel-Like Substance</b>	<b>Cytoplasm</b>	<b>Cytoplasm</b>
<b>Channels That Move Material</b>	<b>Endoplasmic Reticulum</b>	<b>Endoplasmic Reticulum</b>
<b>Site of Protein Synthesis</b>	<b>Ribosome</b>	<b>Ribosome</b>
<b>Package and Move Proteins</b>	<b>Golgi Apparatus</b>	<b>Golgi Apparatus</b>
<b>Digest Waste</b>	<b>Lysosome</b>	<b>Lysosome(rarely found in plants)</b>
<b>Storage Centres</b>	<b>Vacuole</b>	<b>Vacuole</b>
<b>Rigid, Outer Cellulose Cover</b>	<b>None</b>	<b>Cell Wall</b>
<b>Site of Photosynthesis</b>	<b>None</b>	<b>Chloroplast</b>

### Journal Questions:

1. How are cells similar to a factory or business? List 5 similarities.

Cells are similar to factories or businesses in several ways. The nucleus acts as a command centre for the rest of the cell, kind of like how the CEO of a company sits in his central office and makes all the important decisions. The selectively permeable cell membrane regulates what enters and exits the cell, sort of like security in a factory. Ribosomes produce protein which is necessary for the cell, just like how in a factory the employees produce a consumable product from other materials. The endoplasmic reticulum transports protein and lipids throughout the cell, kind of like conveyor belts in a factory. The golgi apparatus sorts and repackages products received from the endoplasmic reticulum, sort of like how employees in the shipping department arrange specific orders of product into different boxes to be shipped to consumers.

2. How are animal and plant cells similar? How are they different.

Plant and animal cells are similar in several ways. They both have a nucleus with a nucleolus and chromatin located within it, they have ribosomes, Golgi apparatus, mitochondria, endoplasmic reticulum, and cytoplasm within their cell membranes. The main differences between the two are that plant cells have rigid cell walls which allow plants to hold their shape as they grow, while animal cells have only a lipid bilayer, which can change its shape depending on the location of the cell. Plant cells also have a large vacuole, contain chloroplasts where photosynthesis occurs, and have plasmodesmata while animal cells do not. Animal cells contain flagella, centrioles and lysosomes, which do not occur in plant cells.

3. The part of a plant cell most similar to a solar cell would be a chloroplast. Through the process of photosynthesis, it absorbs light from the sun and synthesizes with water and carbon dioxide to provide energy for the plant.

4. Why is the nucleus considered to be the “boss” of the cell?

The nucleus is considered to be the boss of the cell because it contains all the genetic material necessary to carry out the cell's operations.

5. Exploring the South American Rainforest, a scientist discovers a mysterious organism and brings it back to the lab for further study. What cell characteristics should the scientist examine to tell whether the organism is an animal or plant? why?

To tell if the organism is an animal or a plant, the scientist should first check if the cell has rigid cell walls, and contains chloroplast, because only plant cells contain these two things. Next he should check for lysosomes, because they are rarely found in plant cells. He could also check for the presence of a large central vacuole, of which only plant cells contain.