



Cells R Us! Cell Simile (☺)) Project

Cell Biology Assignment: You have embarked on a study of the cell, plant and animal cells. This project will allow you to communicate your understanding of the inner structures of the animal cell and how

those structures function interdependently.

PROCEDURE:

PART ONE:

1. You will work individually to create a poster simile of a cell.
2. Choose a human built structure to serve as the basis for your cell similes. The title of your poster will be "An Cell is like a.....". In the blank space you will put the name of your human built structure such as a/an airport, football game, circus, shopping mall, etc. The poster will actually show your human built structure - NOT the cell.
3. Choose details from your human built structure to compare to the structures and functions of the organelles of a cell. Often a cell is compared to a factory. A sample is attached - you will NOT use a factory for your simile. The logic and richness of your similes will help you to learn better how a cell and its structures function together to enable the cell to grow, acquire and use energy, produce wastes, divide, communicate, etc.
4. Next to each part of your human built structure, you will put a sentence that compares that part to a part of the cell. EXAMPLE: "Just as a shipping/receiving department determines what enters or leaves a factory, so the cell membrane selectively determines what can enter or leave a cell."
5. Use the following organelles/structures:

Plasma membrane	Mitochondria	Lysosomes
Cytoplasm	Nucleus	Peroxisomes
Rough ER (W/ Ribosome)	Cytoskeleton	Golgi Apparatus
Smooth endoplasmic reticulum	Nucleolus	Centrosome/centriole
6. Strive for EXCELLENCE
 - Use sturdy posterboard and PLAN BEFORE your start the poster.
 - Use neat printing or computer generated text.
 - Plan graphics that illustrate the simile without overwhelming it.
7. Assessment: Your posters will be evaluated on the following criteria:
 - Simile: Does your simile project a dominant, unified central image of the cell?
 - Details: Have you included all of the animal cell organelles WITH details?
 - Clarity: Have you produced clear, correct labels for each detail?
 - Unity: Does your simile show that the parts of the cell function together coherently - that the cell is using energy, growing, responding, etc.)?
 - Technical Details: Have you used posterboard? Does your poster have a title? Is your poster neat, attractive, and easy to read?
 - Excellence: Is your poster creative, original, and interesting?

Here is an example of comparisons of some cell parts to parts of a factory. You have more parts than this.

Factory Job	Cell Organelle	Simile
Shipping and Receiving Dept.	Plasma Membrane	Just as the shipping and receiving department controls what enters and leaves a factor, so the plasma membrane regulates what enters and leaves a cell.
CEO - Chief Executive Officer	Nucleus	Just as the CEO directs all operations of the factory, so the nucleus and DNA controls all cell activities and what proteins will be made.
Factory Floor	Cytoplasm	Just as the factory floor holds all of the machinery and parts in the factory, so the cytoplasm is the where all the organelles and activity are found in the cell.
Assembly Line	Rough ER (Endoplasmic Reticulum)	Just as the assembly line is the place where the workers to their job in the factory, so the ER is the place where the ribosomes do their job of assembling proteins.
Finishing and Packaging Dept.	Golgi Apparatus	Just as the finishing and packaging department prepares factory products for shipment, so the Golgi apparatus prepares the proteins for use or export out of the cell.
Maintenance Crew	Lysosomes	Just as the maintenance crew cleans up all of the trash and recycles what can still be used, so the lysosomes break down the cell waste so the parts can be reused.
Support Beams, Walls, Ceilings, Floor	Cytoskeleton	Just as the support beams, walls, ceilings and floor of the factory support the whole building, so the cytoskeleton supports and maintains the shape of the cell.
Power plant	Mitochondria	Just as the power plant provides energy for all the activities in the factory, so the mitochondria are the source of the ATP that is used for energy in cell processes.
Hazardous Waste Removal Bags	Peroxisomes	Just as special hazardous waste removal bags are used to get rid of dangerous waste in the factor, so the peroxisomes break down hazardous material such as hydrogen peroxide.

NOTE:

IF YOU HAVE DONE A CELL SIMILE PROJECT IN MIDDLE SCHOOL. you may do one of the following instead. If you prefer to do the cell simile, that is fine, also.

1. Write a song or poem or story about the cell structures - include functions.
2. Make a video about the cell structures (perhaps a video of a skit you write and get performed by friends). Make sure you include functions.
3. Create a cell model (a sturdy one!) - label parts and give functions.
4. Any othe creative idea that includes the functions of all the structures.