

Cell Station Lab

STATION 1: Complete the following on your paper (naturalist/Logical, mathematical)

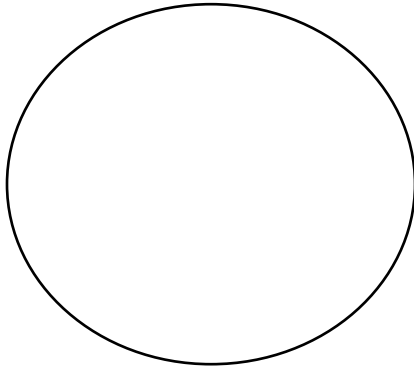
Goal : To use the microscope to view and describe plant and animal cells.

Materials : * microscope * colored pencils *prepared slides

Procedure:

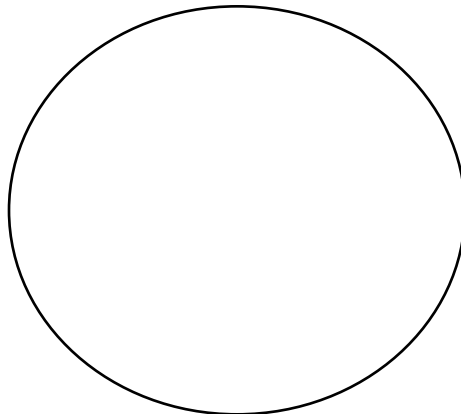
Part A : Observing Cork Cells/ Prokaryotic Cells/Eukaryotic Cells

- 1) CORK CELL: Use a microscope to view this sample on low, medium, and try high power. Measure the size of these “dead” cells and draw a color diagram of these cork cells and **describe in your own words** what you see.



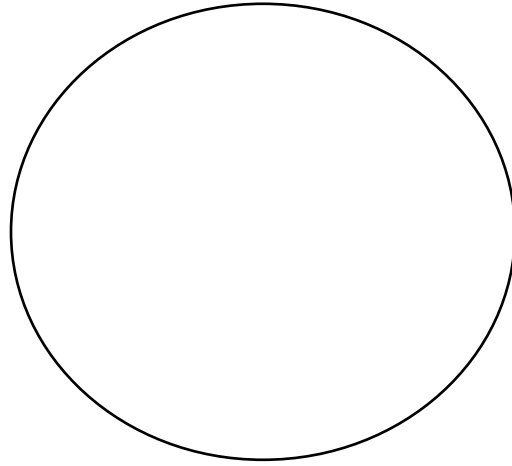
Size of cork cell : _____

- 2) PROKARYOTIC CELL. Observe this slide under the microscope. Draw what you observe and color the diagram. Explain how you know this is a prokaryotic cell by explaining the function of all of the organelles present as they relate to this cell type.



Size of cell : _____

3) EUKARYOTIC CELL. Observe this slide under the microscope. Draw what you observe and color the diagram. Explain how you know this is a eukaryotic cell by explaining the function of all of the organelles present as they relate to this cell type.



Size of cell : _____

Station 2: cell organelle song (musical)

Using a tune from a children's song or a popular song, re-write the lyrics to explain the organelles of a cell. Some examples and ideas are given to you below.

(to the tune of Girl Scout Camp)

Or-ga-nelles
Or-ga-nelles

The nucleus that they give us, they say it's like a boss
If it didn't control the production of protein, the cell'd be at a loss

The E.R that they give us, they say it's like a road
And as it transports proteins it carries quite a load

Our cells, they wanna grow
And we need to let them grow
Our cells they wanna grow up.

(to the tune of Wheels on the Bus Go Round and Round)

The membrane of the cell goes round the cell
Round the cell, round the cell
The membrane of the cell goes round the cell
Keeping bad stuff out

(to the tune of Mary Had a Little Lamb)

Mary had a little cell, little cell, little cell
Mary had a little cell whose nucleus ran the show

It had a mitochondria, chondria, chondria
It had a mitochondria that provided energy

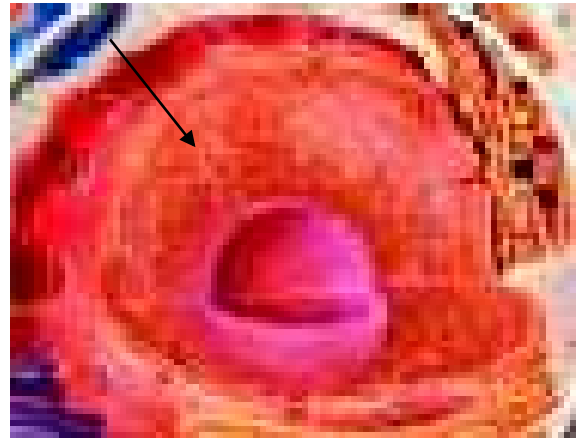
Station 3: Visual identification of organelles and their functions

Directions: For each of the organelles pictured give its name and identify its function. Explain how it helps the cell maintain homeostasis and what would happen without it.

1)



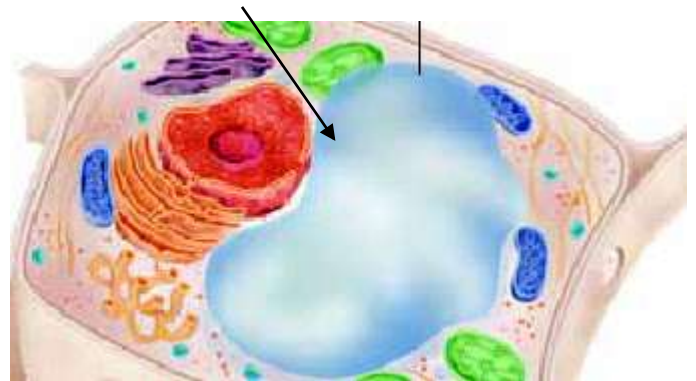
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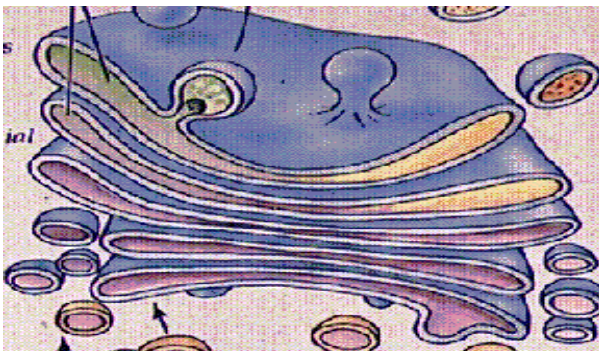
3)



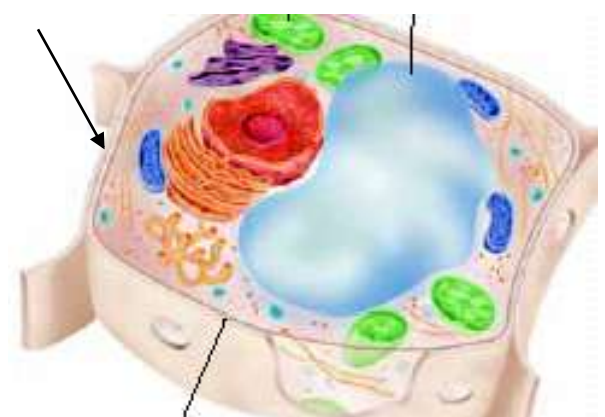
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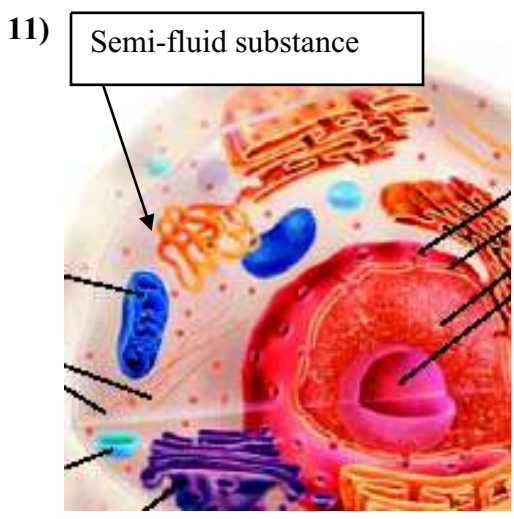
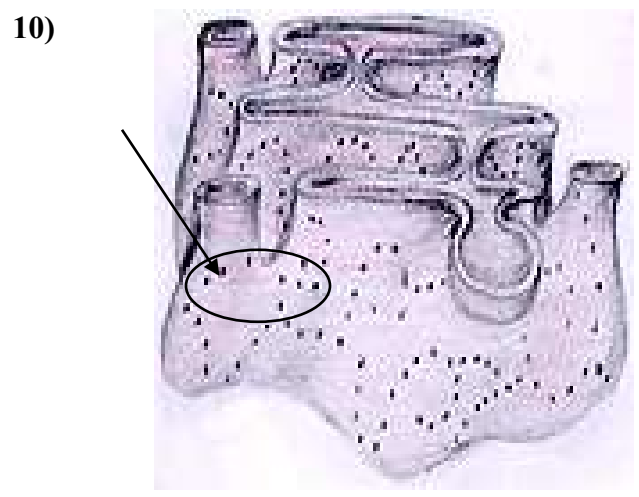
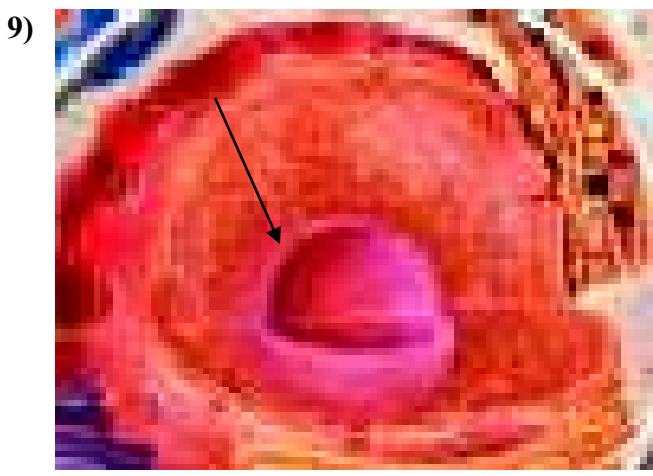
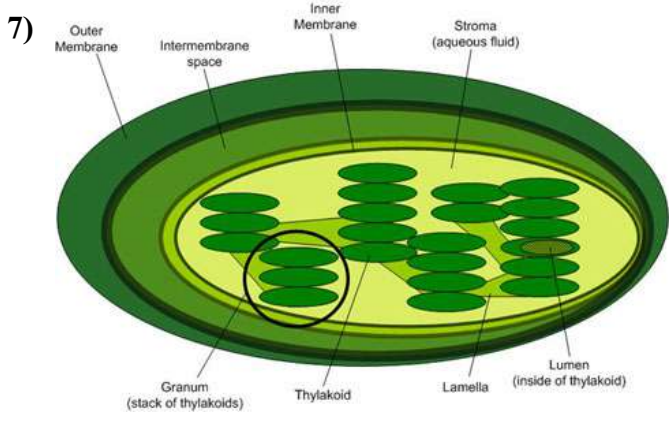


4)



6)





Station 4: Build it (kinesthetic)

Directions: Using the manipulatives provided match the organelles in the appropriate cell. Have the teacher check you off before disassembling.

- 1) What organelles are ONLY found in plants? Explain the significance of each.
- 2) What organelles are ONLY found in animals? Explain the significance of each.
- 3) Are plants and animals prokaryotes or eukaryotes? Explain how you know.
- 4) If vesicles are almost constantly pinching off from the ER to carry proteins to the Golgi apparatus, why does the ER not shrink and finally disappear?

Station 5: Microviewer station (visual/verbal, intra & interpersonal)

Plant cell: green cells of a leaf. You will complete slide 2 – only.

Directions: First, you will read the information in the brochure. Next, you will view the slide in the microviewer. Finally, you will answer the following questions.

- 1) The part of the leaf cell that makes food is called _____.
- 2) What is different about the shape of the cells that make up the leaf vein? _
- 3) The structure found in these cells NOT in the onion skin cell is _____.

Animal cell: cell membrane, slide 3

Directions: First, you will read the information in the brochure. Next, you will view the slide in the microviewer. Finally, you will answer the following questions.

- 1) What does this electron microscope slide tell us about the structure of a cell membrane NOT seen by a light microscope?
- 2) Can you count 7 layers through which substances must pass going from cell to cell? Why does it happen so quickly despite the 7 layers?

Animal cell: golgi body and vacuole, slide 4

Directions: First, you will read the information in the brochure. Next, you will view the slide in the microviewer. Finally, you will answer the following questions.

- 1) What do scientists believe the Golgi apparatus manufactures?
- 2) What is the function of the part labeled U?
- 3) What other structure does the golgi apparatus resemble? How does their functions compare?
- 4) Why would you expect to find more Golgi bodies in a gland cell than in a muscle or nerve cell?

Animal cell: mitochondrion, slide 5

Directions: First, you will read the information in the brochure. Next, you will view the slide in the microviewer. Finally, you will answer the following questions.

- 1) The inner membranes of the mitochondrion hold molecules of _____ involved in the release of energy for the cell.
- 2) Energy is released in small packets rather than in one large burst. What is the advantage of this?
- 3) Why is “powerhouse of the cell” a good nickname for the mitochondria?

Station 6: cell dance or cell comic book (Existential)

Directions: From the three activities below you must choose one to complete.

A. Cell Comic Book

Create a comic book story that includes 5-7 characters. Each character should be based on a different organelle of a cell. Give the organelles human characteristics based on their functions in the cell. Please include illustrations and an interesting story line. Each group will narrate their comic book in front of the whole class. Remember be CREATIVE!!!

B. Cell Dance

Hokey Pokey, Pop Lock and Drop It, and ALLL of the Jamaican dances you know (" Parachute", "Pon d river", " Hot Wuk"...are just a few dance that I am sure you all know how to do. What is it about these dances that help you remember how to do them every time their name is called out? Now it is your turn to create your own dances. Choosing 5- 7 cell organelles, create a dance for each organelle that is representative of its function. Make sure that the dances are engaging and will help your classmates remember the organelles. You may choose to either explain the dances through a " how to" book with illustrations and a step-by-step explanation for each one, or you may choose to explain the dances through a creative song (i.e Hokey Pokey). Each group will perform/show their dances for the class. Remember be CREATIVE!!!!

C. Cell your "organelle"

Select one organelle, found in either a plant or animal cell. After researching about your organelle, you will have to sell or "cell" your organelle to the class. Now, you will need to decide how you would like to advertise about your organelle using a brochure. You will need to design a brochure that contains a picture of your organelle, and an explanation of why a cell should "purchase" this organelle. What makes your organelle the BEST???? Now, in order to sell a product, you probably want to advertise in more than one place. So, now that you've created your brochure, you will need to advertise your organelle through a commercial. Each group will perform the commercial in front of the whole class. Remember to be CREATIVE!!!! Make your advertisements so good that even you would want to buy your own organelle!!

Cell station lab rubric

| STATION | EXCEEDS | MEETS | ALMOST THERE | JUST BEGINNING |
|---|---|---|---|---|
| 1: Microscope Station (Logical, Mathematical, Naturalist) (20 points) | All required parts are completed. You gave exemplary explanations with great detail. Your illustrations are complete and in color. (20 points) | All required parts are completed. You gave good explanations. Your illustrations are complete. (15 points) | 6 of the 9 parts are complete. Your explanations are adequate. One or more of your illustrations are not complete. (10 points) | 5 or fewer parts are complete. Your explanations lack the required detail. One or more of your illustrations are not complete. (5 points) |
| 2: Cell Song Station (Musical) (20 points) | Your song correctly explains at least 8 of the cell organelles. It is creative and interesting. (20 points) | Your song correctly explains at least 6 of the cell organelles. It is creative or interesting. (17 points) | Your song explains at least 5 of the cell organelles. It is a little hard to follow the logic. (10 points) | Your song explains at least 4 of the cell organelles. Some parts are incorrectly related to their functions. (5 points) |
| 3: Visual Identification (Visual, Intrapersonal, Interpersonal) (10 points) | You correctly identified all 11 of the organelles and gave an accurate and detailed description of its function. (10 points) | You correctly identified all 11 of the organelles and gave an accurate description for at least 9 of their functions. (9 points) | You correctly identified at least 9 of the organelles and gave an accurate description for at least 8 of their functions. (5 points) | You correctly identified at least 6 of the organelles and gave an accurate description for at least 6 of their functions. (3 points) |
| 4: Build It! (Kinesthetic) (5 points) | You correctly put the cell parts where they belonged. You also answered all 3 questions accurately. (5 points) | You correctly put all but 1 cell part where it belonged. You also answered all 3 questions accurately. (4 points) | You correctly put all but 3 cell parts where they belonged. You answered at least 2 questions correctly. (3 points) | You placed at least 4 cell parts incorrectly. You answered at least 1 question correctly. (1 point) |
| 5: Microviewer (Visual, Verbal, Intrapersonal, & Interpersonal) (15 points) | You answered all 12 questions with full detail and accuracy. (15 points) | You answered at least 10 of the questions with full detail and accuracy. (12 points) | You answered at least 8 of the questions with accuracy. (10 points) | You answered at least 6 questions with accuracy. (3 points) |

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|---|---|--|--|---|
| <p>6: Cell Dance, Cell your Organelle, or Cell Comic Book (Existential, Verbal, Kinesthetic, Interpersonal)</p> <p>(30 points)</p> | <p>1) a. You included the minimum required organelles for the dance or comic book. b. You completed the full details of the brochure for cell your organelle.</p> <p>2) You performed either your commercial, narration, or dance with enthusiasm and creativity. (30 points)</p> | <p>1) a. You included 4 organelles and the required details for the dance or comic book. b. You completed the illustration and explanation for your organelle but lack some detail on the “sell” part.</p> <p>2) You completed your performance but lacked creativity or enthusiasm. (20 points)</p> | <p>1) a. You included 3 organelles and the required details for the dance or comic book. b. You completed the illustration and explanation for your organelle but lack some detail on the “sell” part.</p> <p>2) You completed some of your performance but lacked creativity or enthusiasm. (15 points)</p> | <p>1) a. You included 2 organelles and the required details for the dance or comic book. b. You completed the illustration or explanation for your organelle but lack some detail on the “sell” part.</p> <p>2) You did not complete your performance but lacked creativity or enthusiasm. (5 points)</p> |
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