SB1 Looping Lab; SB1 a,b,c,d

Purpose: To analyze and understand the nature of relationships between the structures and functions of cell.

STATION # 1: Cell Organelle Functions and Images

Directions:

1. Open the plastic bag and match the organelle image to the corresponding function description. Some will have multiple blue pieces that match
2. Copy the table below onto your own paper and fill in based on your information from completing step 1.

Organelle	Function
Ribosome	
Nucleus	
Golgi Apparatus (body)	
Endoplasmic Reticulum	
Cytoskeleton	
Lysosomes	
Cell Membrane	
Cell Wall	
Vacuole	

Questions:

1. Which organelle is found only in animal cells? Which **3** organelles would you find in a plant cell that would not be in an animal cell?
   Animal only: _____ Plant only:_____ _____ _____
2. Explain why plant and animal cells are considered to be Eukaryotes.

3. Explain at least **3** reasons that prokaryotes and eukaryotes are different.
   a.
   b.
   c.

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STATION #2: MACROmolecule Manipulative

Directions: Take the pieces out of the plastic bag and complete the following tasks:

1. Locate the 4 macromolecule labels and their monomers.
2. Place the correct examples with its matching macromolecule.
3. Locate the pop-bead directions and create your macromolecules.
4. Locate the lettered puzzle pieces. Unscramble the letters and write the correct word here: _____.

Questions:

1. Copy down and complete the following table according to the information you put together in the steps above. You will have to fill in the function from memory.

Macromolecule	Monomer	Examples	Functions
Carbohydrates			
Lipids			
Nucleic Acids			
Proteins			

2. Connect at least 3 organelles with a different macromolecule (example: nucleus and nucleic acids----you cannot use this example).

3. What element are all macromolecules based on? Why?

4. Examine the cell membrane model and please do not invert or remove the cover. Thoroughly describe this fluid mosaic model, its composition and its role in maintaining homeostasis.

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STATION # 3: Diffusion Lab

Directions:

1. Place 150 ml of ice water in a 250 ml beaker. Record the initial temperature.
2. Place 150 ml of water in a 250 ml beaker. Record the initial temperature. Turn knob to 4 on the hot plate
3. Place 150 ml of water in a 250 ml beaker and leave it on table. Record the temperature.
4. Start answering the questions below and set timer and resume directions in 10 minutes.
5. After 10 minutes record the final temperature of each beaker in the table below.
6. After the 10 minutes is up add two drops of food coloring to each of the beakers. Start timer.
7. Record the amount of time it takes for the entire food coloring to appear evenly in all **3** beakers.

Beaker	Temperature Initial	Temperature Final	Time (sec) for Diffusion

Questions:

1. Describe the direction molecules flow during passive transport.

2. Explain the difference between active and passive transport.

3. Which two macromolecules can be related to facilitated diffusion?
   a.
   b.

4. Describe why you observed a difference in the food coloring diffusion in each of the beakers.
5. a. What is the independent variable in this experiment? _____
   b. What is the dependent variable in this experiment? _____
   c. Which beaker is the control? _____
   d. List **3** examples of constants: _____ _____ _____

6. Examine the diffusion model. Describe HOW molecules would move to reach homeostasis and justify your responses. Refer to them each by their color.

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STATION # 4: Osmosis Outcomes and Homeostasis

Directions:

1. Open the bags and match the 8 cell/solution examples with their appropriate labels (hypertonic, hypotonic, and isotonic).
2. In the space provided below write the corresponding solution label with the cell number.

Cell 1: _____

Cell 2: _____

Cell 3: _____

Cell 4: _____

Cell 5: _____

Cell 6: _____

Cell 7: _____

Cell 8: _____

Questions:

1. Explain how your cell membrane is similar to a window screen.

2. What characteristic of living things is the reason that water and other materials will move across the cell membrane?

3. Is osmosis a type of passive or active transport?

4. Define the two characteristics/properties of water. Give an example of each.
   a.
   b.

STATION 5: Characteristic of Living Things Collage

Directions:

Your group will be responsible for creating a collage of the characteristics of living things.

You will divide up the characteristics of living things amongst your group members. Each member will be responsible for drawing a picture that represents their characteristic(s). Underneath the drawing, you will label and define the characteristic and explain how your picture is related.

When each member has finished their drawing, the group will glue/tape each picture to a large piece of paper to form a collage. The large piece of paper should have a title, be creative, include all the characteristics and have all member's names listed. **Have fun and be creative**!

Finally, each group member is responsible for presenting their characteristic to the other group members.

Questions:

1. Which characteristic of living things do enzymes assist in maintaining? _____

2. Which characteristic of living things are nucleic acids and proteins involved in? _____

3. Carbohydrates (glucose) are broken down by the mitochondria to provide _____, which is a characteristic of living things.