***Lab****: Observing Osmosis- The Gummy Bear Lab*

**Goal**: In this activity, you will investigate the affect of water on objects, using gummy bears.

**Question:** What effect, if any, does soaking Gummy Bear in water have on the size of the candy?

1. Read the whole lab
2. **Hypothesis**:

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| If: Then: Because:  |

1. Design a data-collection table on a piece of binder paper.

- Get it approved by the teacher and include the final version here:

4. Procedure:

1. Label your beaker with your names (on tape)
2. Fill in your data table with the **height** and **weight** of your gummy bear.
3. Record descriptive **observations** about the candy bear.
4. Put your candy bear in a container with water covering the bear and set the container aside until the next day.
5. After the candy bear has been in the water overnight, gently take it out of the water and pat it dry. Be very careful because the candy is now extremely breakable.
6. Fill in your data table with the height, width, mass, and descriptive observations.

Calculate the following percent changes in the size of the candy and record in your notebook:

Percent change = (After soaking measurement - Before soaking measurement)/ Before soaking x 100

 % change in height \_\_\_\_\_\_\_\_\_%

\_\_\_\_\_\_\_\_\_\_\_\_ = (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­­­­\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) / \_\_\_\_\_\_\_\_\_\_\_\_\_ x 100

 % change in width \_\_\_\_\_\_\_\_\_%

\_\_\_\_\_\_\_\_\_\_\_\_ = (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­­­­\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) / \_\_\_\_\_\_\_\_\_\_\_\_\_ x 100

 % change in mass \_\_\_\_\_\_\_\_\_%

\_\_\_\_\_\_\_\_\_\_\_\_ = (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­­­­\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) / \_\_\_\_\_\_\_\_\_\_\_\_\_ x 100

 \*\*Make sure to label your answer with correct units

1. Graph the percent changes on a bar graph. You may use graph paper and cut and paste the graph into your science notebook. Remember to title and label both axes on your graph.

Title:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Y Axis\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_( ) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  | X Axis\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_( ) |

1. Look over the following information and use the vocabulary words to answer the questions below.
* **Concentration Gradient**: Molecules are in constant motion and tend to move from areas of higher concentrations to lesser concentrations.
* **Diffusion** is defined as the movement of molecules from an area of high concentration to an area of low concentration.
* The diffusion of **water molecules** through a selectively permeable membrane is known as **osmosis**.
* **Selectively permeable** means that some molecules can move through the membrane while others cannot.
* Movement through membranes is called **transport**.
* Diffusion and osmosis are **passive** forms of transport; this means that they do not need energy to move from areas of high concentration to areas of low concentration.
* **Active transport** requires energy to transport molecules from low concentration to high concentration.
1. **Questions**:
2. What happened to the candy after soaking in water overnight?
3. Why did you get these results? *Explain and use at least 3 of the key words listed above*
4. Write a scientific explanation that states the results of your investigation. Include a claim, evidence, and reasoning.
5. List any questions you still have.
6. Why do you think it reacted the way it did? What other solutions might be interesting to try putting a gummy bear in?
7. What do you think would happen to the candy if you let it soak in a different solution? Explain your answer. **Mentally set up the experiment, including taking the initial measurements and adding another data table in your notebook.**
8. After the gummy bear has spent the night in your solution water, fill out your data table.

**Rubric for Observing Osmosis Lab Conclusion**

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|  | **4 pts** | **3 pts** | **2pts** | **1pt** |
| **Introduction** | **🞎 Title** 🞎**Recap** 🞎**Purpose** 🞎**Hypothesis** - Clearly stated  |  |  | Purpose is unclearTitle is irrelevant |
| **Use of key words** | Key words within the paragraphs: 🞎**Bolded** 🞎**Defined** 🞎 **Connected** to the role they served in the lab experiment.

|  |  |
| --- | --- |
| * Concentration Gradient
* Diffusion
* Osmosis.
* Selectively permeable
 | * Transport.
* Passive Transport
* Active transport
 |

 |  |  | Failed to use, define and connect most key words.  |
| **Solute Vs Solvent** |  |  | **🞎 Define 🞎 Give Example** * Accurately define
* Explain example in our lab
 | Mostly fully define each and explain example of each in our lab |
| **Results (data)** | 🞎 **Data Table*** Results are clearly recorded
* Organized
* Use all appropriate labels
 | Results are clear and labeled, trends are not obvious | Results are unclear, missing labels, trends are not obvious at all | Results are present, though too disorganized or poorly recorded to make sense of |
| **Graph** | 🞎 **Graph*** Complete and correctly labeled
 | Complete and mostly correctly labeled | Incomplete and partially correctly labeled | Incomplete and poorly labeled |
| **Analysis** | 8Pts🞎 **Questions*** All questions were answered fully and clearly stated.

🞎 **Hypothesis** * Stated
* Was it supported, why or why not?
 | 6Pts * Questions were answered, but not fully.
* Hypothesis was discussed.
 | 4Pts * Most questions were answered, but not fully.
* Hypothesis was poorly discussed
 | 2Pts* Multiple questions were not answered.
 |
| **Format** |  |  | Neat, organized with **headings**, few spelling/grammar errors | Somewhat lacking in organization, multiple spelling/grammar errors, not neat |
| **On task** | You are **on task** all of the time during this project. | You are on task most of the time during this project. | You are on task some of the time during this project  | You are on task little of the time during this  |
| **Conclusion Grade:** **/30****A=30-27 B= 26-24 C= 23-21 D= 20-18 F=17⇓** |