

Egg Osmosis Lab Instructions

Full Name: _____

A chicken egg is a cell. Once you have removed the hard outer shell, water will move across the membrane of the egg based on the principles of osmosis, just as with any other cell. Since the membrane is semi-permeable, some liquids (and dissolved solids) will move across the membrane and others will not. In this experiment you will use chicken eggs to learn more about osmosis.

DAY ONE

1. Set up a data table similar to the one below to record information about your experiment. You may copy this into your OneNote or you may work directly in this Word document. You will record all information for BOTH eggs **in your own words**.

Egg Name		
Day 1 Observations		
Mass, Day 1 (in grams)		
Liquid #1	Syrup	
Day 2 Observations (of eggs AND liquids in cups)		
Mass, Day 2 (in grams)		
Change in mass (%)		
Liquid #2		
Day 3 Observations (of eggs AND liquids in cups)		
Mass, Day 3 (in grams)		
Change in mass (%)		

2. **Ms. Dodd added vinegar to each of the egg cups over the weekend**
3. Gently get your eggs from the cups. Be careful! Remember that the shell has been dissolved so it will be fragile. If you would like, you may gently pat the egg dry with a paper towel.
4. Observe what the vinegar has done to the uncooked eggs and record your observations. Be descriptive (and scientific in your description, e.g., not just "Gross!").
5. Find the mass of each egg using a weigh boat and balance. Record the mass in your data table.
6. Rinse out your cups. Fill each one approximately 1/2 of the way with syrup.
7. Gently place one egg in each cup (it's OK if the egg floats toward the top of the syrup) and return each cup to its location. Rinse your weigh boat thoroughly.
8. WITHOUT DOING ANY RESEARCH, write a hypothesis in proper "If...then...because..." format (ask Ms. Dodd for help if you aren't sure how to do this) of what you think will happen to the eggs now that they have been placed in syrup. Be sure that your hypothesis relates to the concept of **osmosis**. Record your hypothesis here (so that you will easily be able to reference it later) AND submit it to the assignment on Canvas called "CW: Syrup Hypothesis."

Syrup hypothesis:

DAY TWO

1. Gently get your eggs from the cups.
2. Observe what happened to the appearance of the eggs AND the appearance and amount of syrup in the cups and record your observations in the table.
3. Find the mass of the eggs using the weigh boats and balance. Record the mass in your data table.
4. Calculate the percent change in mass of your eggs and record it in your table. Calculate this using the formula below, and include two decimals in your answer:

$$\frac{Mass_{Day\ 2} - Mass_{Day\ 1}}{Mass_{Day\ 1}} \times 100$$

5. Pour the syrup down the drain.
6. Choose one (or two) different cold liquids in which you would like to immerse your eggs.
7. Transfer the eggs into the cold liquid(s) of your choosing. Rinse your weigh boat thoroughly.
8. Clean up your materials and ask Ms. Dodd where to store your cups.
9. Write your own hypotheses (in proper "If...then...because..." format) for what you think will happen to the egg in each new liquid. If you are using the same liquid for both, you only need to write one new hypothesis. Be sure to relate your hypotheses to the concept of osmosis.
Optional: show your hypotheses to Ms. Dodd.

Liquid #1 Hypothesis:

Liquid #2 Hypothesis:

DAY THREE

1. Gently get your eggs from the cups.
2. Observe what happened to the appearance of the eggs AND the appearance and amount of liquids in the cups and record your observations in the table.
3. Find the mass of the eggs on the balance. Record the mass in your data table.
4. Calculate the percent change in mass of your eggs using the formula below & record. Again, record to the hundredths place.

$$\frac{Mass_{Day\ 3} - Mass_{Day\ 2}}{Mass_{Day\ 2}} \times 100$$

5. Clean up by disposing of all liquids down the drain and the eggs in the trash can (ask your teacher for specific tips about how to dispose of your eggs). Wash your cups and weigh boats with soap and water and place them on the drying rack.

Analysis Questions. Answer using complete sentences.

1. Compare your results with your hypotheses (**all** of them). Were they what you had predicted? Why or why not?
2. Which of your liquids had a higher concentration of solute (dissolved molecules) as compared to the inside of the egg? What is your evidence?
3. Which of your liquids had a lower concentration of solute (dissolved molecules) as compared to the inside of the egg? What is your evidence?
4. In a well-written paragraph of at least four sentences, connect your results to the concept of osmosis. Be detailed. (Use words such as: molecules, concentration, low, high, and move.)