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| **Osmosis & Diffusion in an Egg** | http://www.biologyjunction.com/images/chicken_laying_eggs_md_clr1.gif |

***Objective:*In this investigation, you will use a fresh hen's egg to determine what happens during osmosis & diffusion across membranes.**

***Materials: (per lab group)*1-2 fresh hen eggs in their shells, masking tape & marker, distilled water, clear sugar syrup (Karo, for example), vinegar, clear jar with lid, tongs, electronic balance, paper towels, paper, pencil**

***Procedure:***

**Day 1**http://www.biologyjunction.com/images/Copy_4_of_Bird_hatches3.gif

1. **Label the jar with your lab group & the word "vinegar".**
2. **Mass the egg with the electronic balance & record in the data table.**
3. **Carefully place the raw egg into the jar & cover the egg with vinegar.**
4. **Loosely re-cap the jar & allow the jar to sit for 24 to 48 hours until the outer calcium shell is removed.**
5. **Day 2**http://www.biologyjunction.com/images/Copy_4_of_Bird_hatches3.gif
6. **Open the jar & pour off the vinegar.**
7. **Use tongs to carefully remove the egg to a paper towel & pat it dry.**
8. **Record the size & appearance of your egg in your data table.**
9. **Mass the egg on an electronic balance & record.**
10. **Clean and re-label the jar with your lab group & the word "distilled water".**
11. **Carefully place the egg into the jar & cover the egg with distilled water.**
12. **Loosely re-cap the jar & allow it to sit for 24 hours.**
13. **Day 3**http://www.biologyjunction.com/images/Copy_4_of_Bird_hatches3.gif
14. **Open the jar & discard the distilled water.**
15. **Use tongs to carefully remove the egg to a paper towel & pat it dry.**
16. **Record the size & appearance of your egg in your data table.**
17. **Mass the egg on an electronic balance & record.**
18. **Clean and re-label the jar with your lab group & the word "syrup".**
19. **Carefully place the egg into the jar & cover the egg with clear syrup.**
20. **Loosely re-cap the jar & allow it to sit for 24 hours.**

**Day 4**http://www.biologyjunction.com/images/Copy_4_of_Bird_hatches3.gif

1. **Open the jar & pour off the syrup.**
2. **Use tongs to very carefully remove the egg & rinse off the excess syrup under slow running water.**
3. **Pat the egg dry on a paper towel.**
4. **Record the size & appearance of your egg in your data table.**
5. **Mass the egg on an electronic balance & record.**
6. **Clean up your work area & put away all lab equipment.**

***Data:***

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| **RESULTS OF DIFFUSION** | | | |
|  | **Original Mass** | **Final Mass** | **Appearance of Egg** |
| **VINEGAR** |  |  |  |
| **WATER** |  |  |  |
| **SYRUP** |  |  |  |

***Questions & Conclusion:***

**1. Vinegar is made of acetic acid & water. Explain how it was able to remove the calcium shell.**

**2. (a) What happened to the size of the egg after remaining in vinegar?**

**(b) Was there more or less liquid left in the jar?**

**(c) Did water move into or out of the egg? Why?**

**3. (a) What happened to the size of the egg after remaining in distilled water?**

**(b) Was there more or less liquid left in the jar?**

**(c) Did water move into or out of the egg? Why?**

**4. (a) What happened to the size of the egg after remaining in syrup?**

**(b) Was there more or less liquid left in the jar?**

**(c) Did water move into or out of the egg? Why?**

**5. Was the egg larger after remaining in water or vinegar? Why?**

**6. Why are fresh vegetables sprinkled with water at markets?**

**7. Roads are sometimes salted to melt ice. What does this salting do to the plants along roadsides & why?**