

Post-Lab Questions

Lab 2

Note: These questions are due with your completed Lab Exercise pages.

Biology 102
Concepts of Biology Lab

Name: _____

Exercise 3

1. For Parts 1 (perfume in air) and 2 (dye in hot/cold water):

a) Which showed the fastest diffusion rates and which showed the slowest?

b) Clearly explain the relationship between medium (air vs. water) and diffusion rate, relating it to question 1a).

c) Clearly explain the relationship between temperature and diffusion rate, relating it to question 1a).

d) Was there any difference between diffusion rates between the red and green food coloring dyes? If so, hypothesize why there might be differences.

2. In Part 5 (potato in hypo/hyper tonic solution), you learned how tonicity of solutions can affect contents of exposed cells.

Considering this experiment, explain why my father liked to soak chicken in salt-water for a couple of hours before cooking to improve the flavor.

3. In Part 4/6 (replacement part), we used a modified procedure to examine osmosis and diffusion through a semi-permeable membrane.

a. How would your conclusions have been improved by the use of indicators (i.e. Benedict's solution and silver nitrate)? Explain clearly.

b. What was the relationship between the concentration of sucrose in the bag and osmosis (e.g., the weight gain or loss)? Explain why there is such a relationship.

c. When I was an undergraduate student, I had a job extracting proteins from kidney beans in a research lab. I would grind up the beans in a special salt solution (which helped to dissolve the proteins) in a blender, filter the bean slurry through a cheese cloth (to remove any solids), then put the remaining liquid into dialysis tubing bags, and circulate in a large beaker of distilled water. This last step was used to separate the salts from the bean proteins.

i) Explain how using dialysis tubing helped me separate the salts from the protein.

ii) Predict what would likely happen if I left these bags in the hypotonic water for a long period of time.