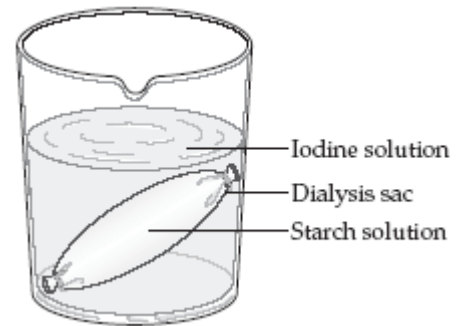


Lab: Cell Transport

BIOLOGY: UNIT 2

Introduction: In this lab you will observe the diffusion of a substance across a semi permeable membrane. Iodine or Lugol's solution is a known indicator for starch. An indicator is a substance that changes color in the presence of the substance it indicates. Watch as your teacher demonstrates how iodine or Lugol's solution changes in the presence of starch.



Prelab Observations: Describe what happened when iodine or Lugol's solution came into contact with starch.

Materials:

Dialysis tubing	Spoon	Water
Iodine	Corn starch	Rubber band
Beaker	Eyedropper	

Procedure:

1. Open the dialysis tubing as demonstrated by your instructor. Tie a knot in the tubing about 2 cm from the end.
2. Pour soluble starch solution to within 5 cm of the top of the tubing. Tie a piece of string around the tubing to seal the cornstarch solution inside the dialysis tubing. Rinse the tubing to remove any cornstarch solution on the outside.
3. Place the dialysis tube into a beaker of water. Add iodine solution to the water until you get a distinct yellow color. Observe for 20 minutes or until you get a definite reaction.
4. Record your observations from 5 to 20 minutes in Data Table #1.
5. While you are waiting, answer the questions.

Questions:

1. Define diffusion.
2. Define osmosis.
3. What is the main difference between osmosis and diffusion?
4. Why is iodine called an indicator?
5. Molecules tend to move from areas of _____ concentration to areas of _____ concentration.

What is in the Dialysis Tubing?

We are going to think about concentrations now, which substances are more or less concentrated depends on which one has the most stuff in it.

1. Is the dialysis tubing or beaker more concentrated in starch?
2. Is the dialysis tubing or beaker more concentrated in iodine?
3. Iodine solution: is the dialysis tubing or the beaker hypertonic?
4. Starch solution: is the dialysis or the beaker hypertonic?
5. Which one is hypotonic in relation to starch, dialysis tubing or beaker?

Make Some Predictions

1. If the dialysis tubing was permeable to starch, which way would the starch move, into the tubing or out of the tubing?
2. If the dialysis tubing was permeable to iodine or Lugol's solution, which way would the iodine or Lugol's solution move, into or out of the tubing?
3. If the dialysis tubing was permeable to iodine or Lugol's solution, what color would you expect the solution in the tubing to turn?

What about the solution in the beaker?

4. If the dialysis tubing was permeable to starch, what color would you expect the solution in the tubing to turn?

What about the solution in the beaker?

5. Make a prediction about what you think will happen:

DATA TABLE #1

	Starting Color	Color after 20 minutes
Solution in Beaker		
Solution in Bag		

Post Lab Analysis:

1. Based on your observations, which substance moved, the iodine or the starch?
2. How did you determine this?
3. The dialysis tubing was permeable to which substance?

4. Is the dialysis tubing selectively permeable? Explain.

5. Sketch the beaker and dialysis tubing in the space below. Use arrows to illustrate how diffusion occurred in this lab.

6. What would happen if you did an experiment in which the iodine solution was placed in the dialysis tubing, and the starch solution was in the beaker? Be detailed in your description.