


Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Inquiry Investigation: Observing Diffusion and Osmosis

 Iodine solution is toxic and an irritant. It may stain skin and clothing. Use rubber gloves when cleaning up spills, and rinse the areas of the spills with water.

### QUESTION

Which molecules move through a dialysis membrane?

### HYPOTHESIS

(a) Read the Experimental Design and Procedure, and write a hypothesis for this Investigation.

### EXPERIMENTAL DESIGN

This is a controlled investigation of the movement of a substance through a selectively permeable membrane.

### MATERIALS

- |                                  |                             |   |
|----------------------------------|-----------------------------|---|
| • apron                          | • microscope slide          | • funnel  |
| • safety goggles                 | • iodine solution           | • two 250 mL beakers                              |
| • 2 medicine droppers            | • dialysis tubing           | • prepared slide of human epithelial (skin) cells |
| • distilled water in wash bottle | • scissors                  |   |
| • 4 % starch solution            | • 100 mL graduated cylinder |   |

### OBSERVATIONS

Procedure Step 1 – Starch Test

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Procedure Steps 6 and 7

	Observations	Mass after 10 min
Dialysis tube with 4 % starch solution		
Dialysis tube with distilled water		

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## **Inquiry Investigation: Observing Diffusion and Osmosis (continued)**

### **ANALYSIS**

(b) Iodine is used as an indicator. Which substance can be identified using iodine?

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(c) List some molecules that move by diffusion and osmosis. Include any laboratory evidence you have.

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(d) Which dialysis tube acted as a control?

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(e) What would you have observed if dialysis tubing were permeable to starch?

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(f) Figure 2 (page 31 in student text) shows three different situations. Predict and explain any changes that would occur in each dialysis tube.

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### **EVALUATION**

(g) Did your observations support your hypothesis? Draw a diagram showing what you believe happened in each beaker and showing the movement of molecules.

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(h) Explain why dialysis tubing provides a good model for a cell membrane.

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(i) What are some of the limitations of dialysis tubing as a model of a cell membrane?

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