

Activity 32: Osmosis

Learning Objectives

Distinguish the terms hypertonic, hypotonic, and isotonic

Predict the direction of water flow between two solutions of different concentrations separated by a semipermeable membrane

Distinguish osmosis and diffusion

Distinguish three types of membrane transport; passive diffusion, facilitated transport, and active transport

Estimated Completion Time 45 Minutes

Instructor Information

Demonstration. This exercise requires the instructor to set up a demonstration of osmosis using foods. In the author's experience, whole carrots and lemon slices provide a visible effect. It is recommended that the glasses with the foods be started a day in advance of student observation. It is also useful to have a piece of food present that has not been subjected to either condition for comparison.

ANSWERS TO QUESTIONS

1.
 - a. The foods in the tap water should appear swollen.
 - b. The foods in the saltwater should appear shriveled. Some students may observe that the lemon in the pure water has a lemony smell to it.
2.
 - a. The foods expanded (got bigger).
 - b. The foods shriveled (got smaller). A variety of answers should be acceptable here; these are minimal.
3. The glasses containing pure water

4. The glasses containing the saturated solution
5. a. Tap water b. Saltwater
6. a. Outside of the cell
b. The solution inside the cell contains more water.
c. Out of the cell
d. Crenate
7. Hypertonic, crenating
8. Hypotonic, swell

9.

Mode of Transport	Requires Energy Input	Molecules Move with the Concentration Gradient
Passive diffusion	No	Yes
Facilitated transport	No	Yes
Active transport	Yes	No

10. Facilitated

Activity 32: Skill Development

1. a. Hypotonic b. Isotonic c. Hypotonic
2. a. Enter b. Swell c. Hypotonic