

Membrane Permeability

Are Plastic Bags Selectively Permeable?



Plastic bags, such as sandwich bags, are made of thin, plastic membranes. If the plastic is selectively permeable, it will allow certain molecules to diffuse across it but will hold back others. If particles diffuse through, they will have to pass between the molecules of polyethylene that make up the membrane. Molecules that are small enough to pass between the polyethylene molecules and cross the membrane should diffuse, but molecules that are too large will be held back.

Objectives:

- Experiment to determine whether diffusion occurs across a plastic membrane.
- Interpret the results to determine whether the plastic membrane was selectively permeable.

Problem:

- Will the polyethylene membrane allow iodine to cross the membrane?
- Will the polyethylene membrane allow starch, which is a larger molecule than iodine, to cross the membrane?

1. Formulate a hypothesis that predicts the movement of starch and iodine across the membrane.

2. Record your observations here:

3. Did iodine molecules pass through the membrane? How do you know?

4. Did starch molecules pass through the membrane? How do you know?

5. What can you infer from this experiment about the movement of large and small molecules through a thin polythene membrane?

6. Does the data support your hypothesis? Why or why not?

7. What is an advantage of selective permeability in regards to a cell and its membrane?