

## Investigating Selective Permeability

### Materials Available:

- dialysis tubing
- string, scissors
- glassware - beakers, test tubes, droppers, funnel, etc.
- water, starch solution, glucose solution
- iodine: an indicator that turns from reddish- orange to blue-black when in the presence of starch molecules (instant result)
- Benedict solution: an indicator that turns from blue to orange when in the presence of sugar molecules (must be heated 2-3 min)
- hot plate, test-tube tongs & rack
- others? (on request)

**Time frame: set up Thurs, run exp overnight, then test/collect data Fri**

As a team - state a testable hypothesis to explain how dialysis tubing allows certain substances through and not others. (how is it "selecting" what passes through?)

Then - devise an experiment (procedure etc) for testing your hypothesis! You may wish to draw a diagram of your set-up and write out steps.



Iodine solution  
when starch  
**IS** present  
(instant change)

Iodine solution  
**NOT** in the  
presence of starch



Benedict's  
solution when  
sugar **IS**  
present  
(after heating)

Benedict's  
solution **NOT**  
in the presence  
of sugar.  
(before or after heating)

To Wrap Up: Evaluate your hypothesis - was it supported or not by the data?

The defining property of dialysis tubing is that it is selectively-permeable.

Determine the answers to these questions:

- What molecule was the tubing permeable to in this lab (which passed through)?
- Why was the tubing permeable to this molecule and NOT the other molecule tested?  
(The answer to this question requires that you know major differences between starch and glucose molecules.)
- Explain your results using vocabulary terms such as diffusion, concentration gradient, passive transport, etc