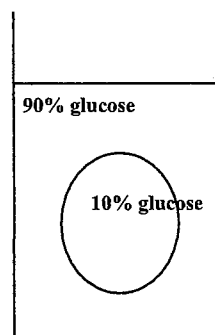


Worksheet - Osmosis & Tonicity

READ ME! In each diagram below, a “cell” with a semipermeable membrane has been placed in a beaker containing substances that are *dissolved in water*. The membrane is **permeable** to water & iodine. It is **not permeable** to glucose, sodium (Na⁺), or starch. *Please remember that iodine (Lugol’s solution) is an indicator for starch!* Therefore, it will turn from yellow-brown to blue-black in the presence of starch. If not otherwise indicated, you may assume for each problem that the remainder of the solution is water.

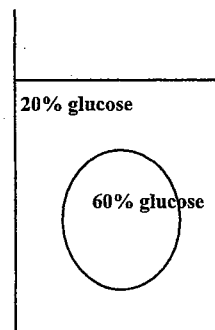
Beaker 1

- A. What is the % of water inside the cell? _____
- B. What is the % of water outside the cell? _____
- C. Will osmosis occur? _____
- D. If so, in what direction will osmosis occur? _____
- E. Will glucose diffuse? _____
- F. Will the cell shrink or swell? _____
- G. How do you know? _____
- H. This diagram shows the cell in a(n) (circle one) hypotonic / hypertonic / isotonic solution.



Beaker 2

- A. What is the % of water inside the cell? _____
- B. What is the % of water outside the cell? _____
- C. Will osmosis occur? _____
- D. If so, in what direction will osmosis occur? _____
- E. Will glucose diffuse? _____
- F. Will the cell shrink or swell? _____
- G. How do you know? _____
- H. This diagram shows the cell in a(n) (circle one) hypotonic / hypertonic / isotonic solution.



Beaker 3

- A. What is the % of water inside the cell? _____
- B. What is the % of water outside the cell? _____
- C. Will there be a *net* change in these concentrations? _____
- D. Will osmosis occur? _____ Why?
- E. Will starch diffuse? _____ Will glucose diffuse? _____
- F. If iodine were placed in the beaker, what would you see *immediately*?
- G. What would you see after *several hours*? Why?
- H. This diagram shows the cell in a(n) (circle one) hypotonic / hypertonic / isotonic solution.

