

Egg osmosis assignment



**ASSIGN
BUSTER**

Introduction Many might think that an egg is made up of cells, when in actuality and egg itself is a cell. An egg has several main parts, including the egg shell (that acts as the cell membrane), the egg yolk and the egg white. There's also a tiny white mass that is very important, it's called the ovum, and it is the living part of the cell. If a hen lays an egg without mating with a cock then the ovum will not develop. If the hen does mate, then the egg will be fertile and it develops into a little chick. The egg being worked with in this experiment is not fertile (Lawrence Hall of Science 2009).

The egg white is mostly water with a small amount of dissolved proteins known as albumin. The purpose of the egg white is to keep the embryo moist and cushioned during incubation. The yellow part in an egg is called the egg yolk. This is stored food for the embryo and fetus. The fetus consumes the yolk until it is almost gone, at hatching time (Lawrence Hall of Science 2009). An egg's shell is its membrane. The shell is selectively permeable. This means that it determines what may enter and exit the cell (GT Biology Notes 09). When there are two different concentrations, a concentration gradient exists.

When things move from a higher concentration to a lower concentration, it is known as diffusion. As long as diffusion is permitted to go on, equilibrium will be reached. Equilibrium is when two areas have reached equal concentration levels. The egg in this lab will have water and substances diffusing through it in and out. The direction, in which things diffuse, depends on the type of solution the egg is placed in. A hypertonic solution is a solution that is outside the cell and it has lower free water molecule concentration than cytosol. Water diffuses out of the cell and the cell shrinks.

A hypotonic solution is a solution that is outside the cell and it has a higher free water molecule concentration than cytosol. The water diffuses into the cell and the cell swells (GT Biology Notes 2009). Materials In order to conduct this experiment the following materials are needed; a chicken egg, 100mL of vinegar, a beaker, a balance, distilled water, saran wrap, a graduated cylinder, and 100mL of corn syrup . Methods This is a 5 day experiment. On Monday, label the beaker with your name. Determine the mass of your egg and place it in the beaker.

Pour 100mL of vinegar into the beaker, cover the beaker with saran wrap, and store for two days. On Wednesday GENTLY remove the egg from the vinegar and determine the mass of your egg. Measure the volume of the vinegar using a graduated cylinder and dump it down the sink. Pour 100mL of water into the beaker, cover the beaker with the saran wrap, and store over night. Then on Thursday, GENTLY remove the egg from the syrup and rinse it. Determine the mass of your egg, measure the volume of the syrup using a graduated cylinder, and then dump it down the sink.

Pour 100mL of water into the beaker, cover the beaker with the saran wrap, and store overnight. Finally, on Friday GENTLY remove the egg from the water and determine the mass of your egg. Measure the volume of the water using the graduated cylinder and then dump it down the sink. Results The initial amount of vinegar was 100mL. The final amount was 73mL. That was a total change of 27mL. The initial mass of the egg was 58. 40 and the final mass was 78. 6. This was an increase of 20. 20. The initial amount of syrup was 100mL and the final amount was 114. 5mL. This was a increase of 14. 5. The initial mass of the egg was 78. and the final mass was then 56. 7. This

was a decrease of 21.8. The initial amount of water was 100mL and it decreased to 42mL. The change in solution was 58mL. Finally, the initial mass of the egg was 56.7 and the final mass was 81.5. This was an increase in mass by 33.8 (Table 1). Graphs and Tables * Table 1*: Changes in the mass of the egg and the solution Discussion/Conclusion The reason that the egg gained mass when soaked in vinegar is because vinegar is a hypotonic solution to the egg. There are less dissolved solutes (more free water molecules) in the vinegar than inside the egg.

This makes the molecules move to even out and reach equilibrium. The water in the vinegar diffuses into the egg, causing it to become larger and gain mass. The hypothesis for this part was correct. It was said that if the egg is soaked in vinegar for two days, then the egg will get bigger and have an increased mass. Then, the egg was placed in syrup, which made the egg decrease in mass. The syrup is a hypertonic solution to the egg. There are more dissolved solutes (less free water molecules) so the water inside the egg diffuses out into the syrup to reach equilibrium.

The hypothesis for this part was also correct; if the egg is then soaked in syrup, then the egg will lose mass. There were errors that could have affected this experiment, small things like there was left over vinegar still at the bottom of the graduated cylinder when the syrup was poured in. The same kind of thing could have happened in to the cup. The amount of time the egg was left in the syrup and vinegar might not be exactly the same. These things could have affected the results, but only very subtly. An improvement to this lab could be made in the procedures.

Even though it was common sense, the directions could have been clearer by telling the person to put the egg back into the cup after dumping the used solution down the sink. It could have been inserted before or after step four, for all of the days, except Friday. More trials could have also improved this lab. Works Cited " Chicken Eggs. " Fossweb. Lawrence Hall of Science, 31 July 2009. Web. 6 Dec. 2009. <http://lawrencehallofscience.org/?foss/?fossweb/?teachers/?materials/?plantanimal/?chickeneggs.html>. Jong. " Biology Notes. " Memo to Biology Class. 2009. TS. Jong. " Egg Osmosis Lab. " Memo to Biology Class. 2009. MS.