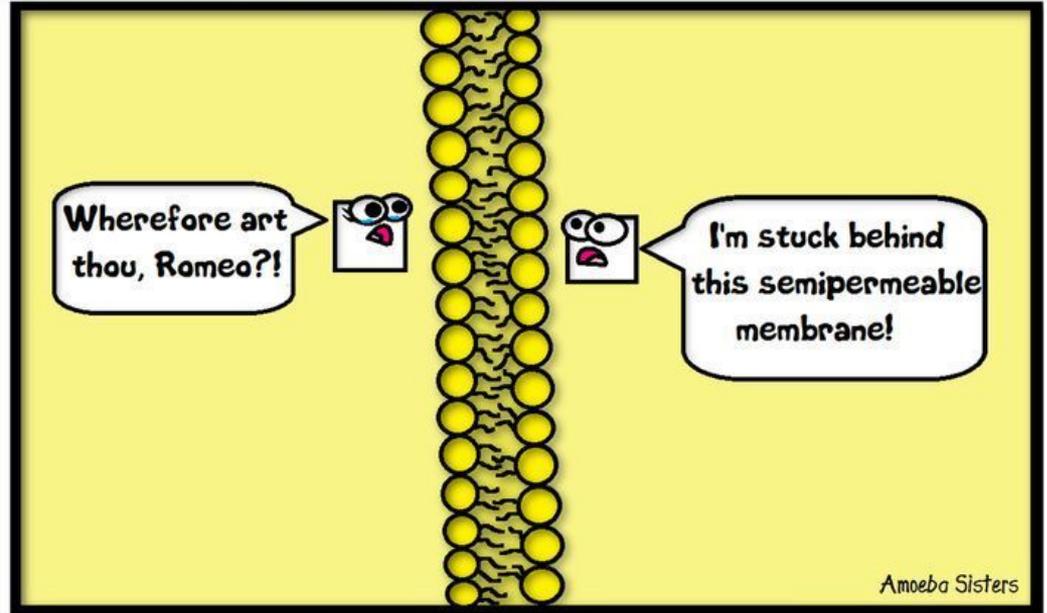


Agenda:

- Review Cell Division Quiz
- Work on Vocab Chart:
(solution, solute, solvent, selectively permeable, diffusion, osmosis)
- Introduce diffusion and osmosis
- Introduce Egg-speriment!
- Work on homework

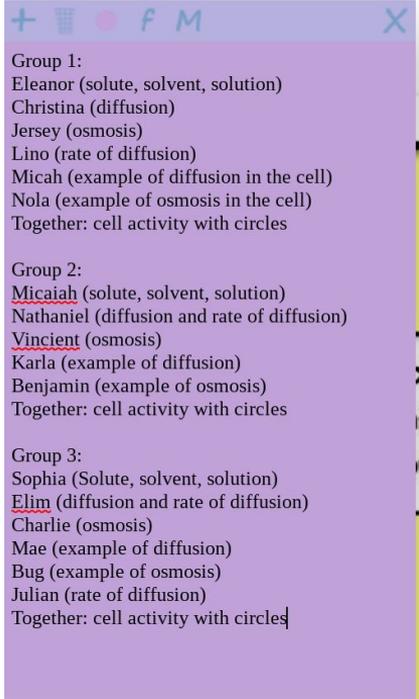
The Paramecium Parlor



Star-crossed solutes

Vocab Chart

- **SOLUTION**: A liquid mixture of 2 or more substances
- **SOLUTE**: The substance that is dissolved in the solution (ex: salt)
- **SOLVENT**: The substance that does the dissolving
- **Concentration**: Measurement of the amount of solute. (High concentration means high amount of solute. Low concentration means low amount of solute)
- **Permeable**: Membrane that allows every substance and particle through
- **Impermeable**: Membrane that doesn't allow any substance or particle through
- **SELECTIVELY PERMEABLE**: Membrane that allows some substances through
- **DIFFUSION**
- **OSMOSIS**



A screenshot of a purple sticky note with a white border and a close button in the top right corner. The note contains a list of names and their associated concepts, organized into three groups. The text is as follows:

Group 1:
Eleanor (solute, solvent, solution)
Christina (diffusion)
Jersey (osmosis)
Lino (rate of diffusion)
Micah (example of diffusion in the cell)
Nola (example of osmosis in the cell)
Together: cell activity with circles

Group 2:
Micaiah (solute, solvent, solution)
Nathaniel (diffusion and rate of diffusion)
Vincient (osmosis)
Karla (example of diffusion)
Benjamin (example of osmosis)
Together: cell activity with circles

Group 3:
Sophia (Solute, solvent, solution)
Elim (diffusion and rate of diffusion)
Charlie (osmosis)
Mae (example of diffusion)
Bug (example of osmosis)
Julian (rate of diffusion)
Together: cell activity with circles

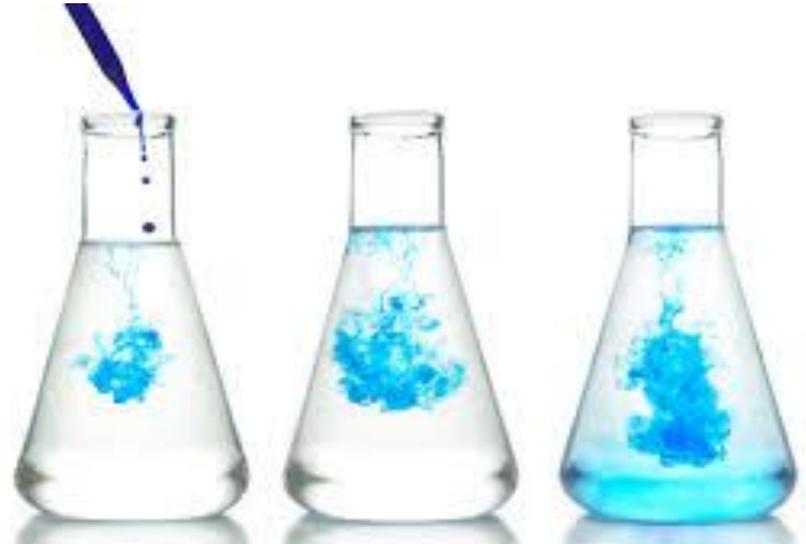
Cellular Transport - 1) Diffusion

Diffusion: Movement of a **SOLUTE** from an area of **high** solute concentration to an area of **low** solute concentration (Tendency of molecules to spread out evenly in the space available)

Examples: Cookies in an oven, food dye



<https://www.tasteofhome.com/article/the-best-oven-rack-position-for-baking-cookies/>



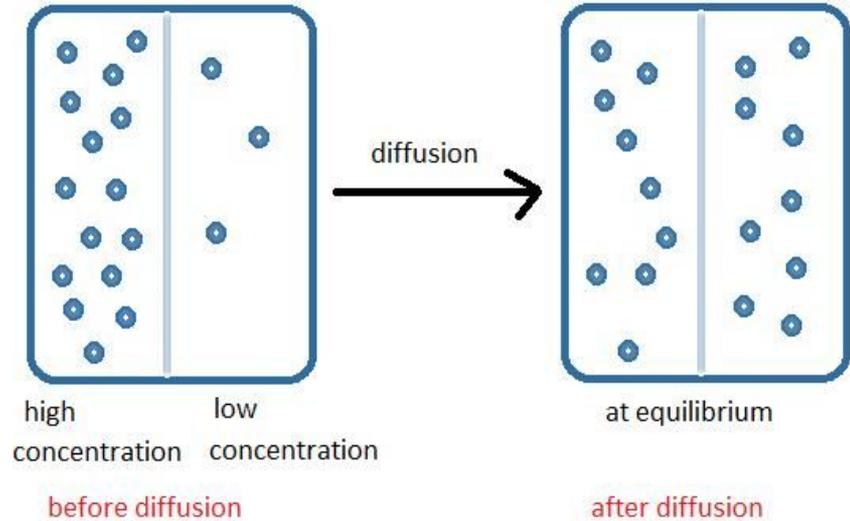
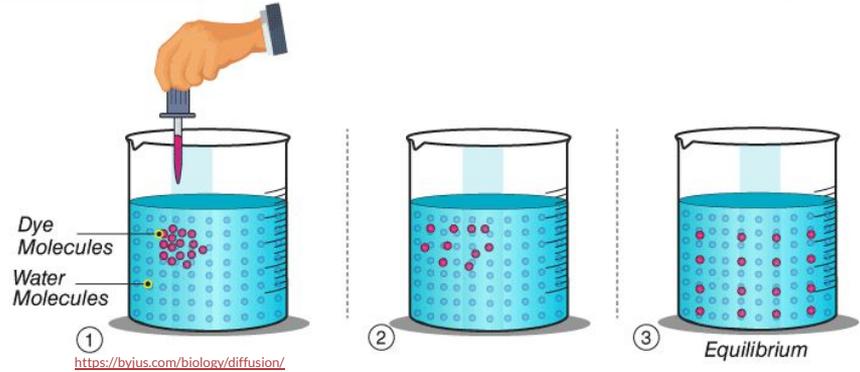
<https://www.thoughtco.com/diffusion-definition-and-examples-609182>

Diffusion

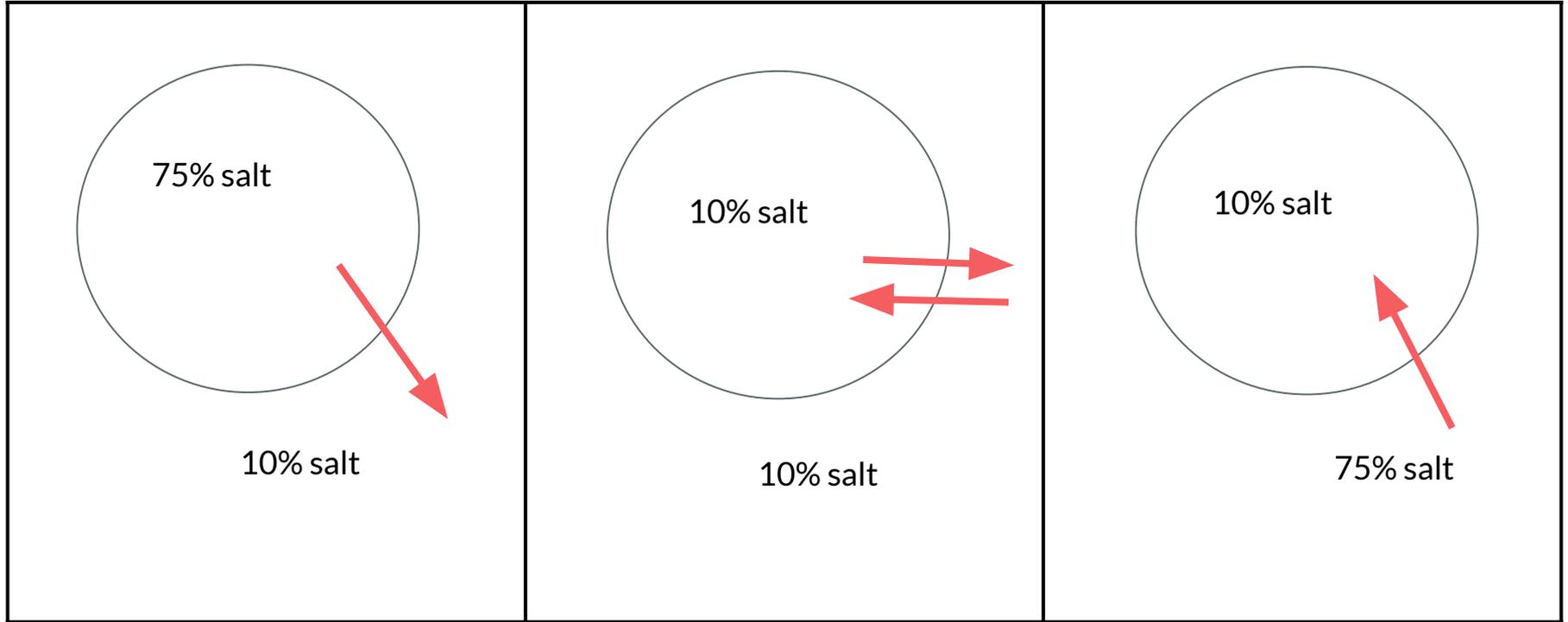
Equilibrium: The concentration of solute is evenly dispersed. The amount coming in is equal to the amount coming out.

Net movement of solute in one direction will continue until the cell reaches **EQUILIBRIUM**

Molecules are constantly moving in and out, but **net movement** will stop once the solute is evenly distributed.



Diffusion in the cell examples:



* Arrows are indicating the movement of the solute, which in this case, is salt

Factors that affect the rate of diffusion

High concentration gradient increases the rate of diffusion

High temperature increases the rate of diffusion

High pressure increases the rate of diffusion

Concentration Gradient

The difference in concentration of a substance across a space.

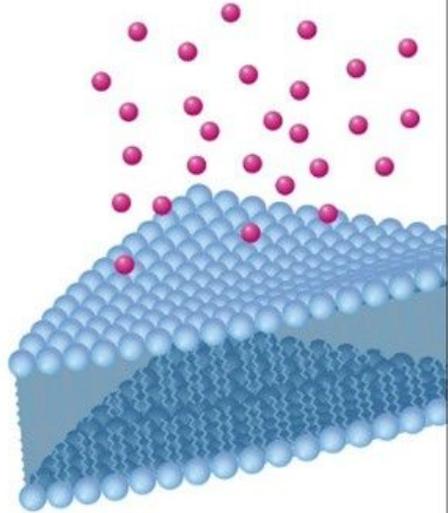
If a substance is moving from **high to low concentration** they are moving **WITH** the concentration gradient.

Diffusion in different temperatures of water?

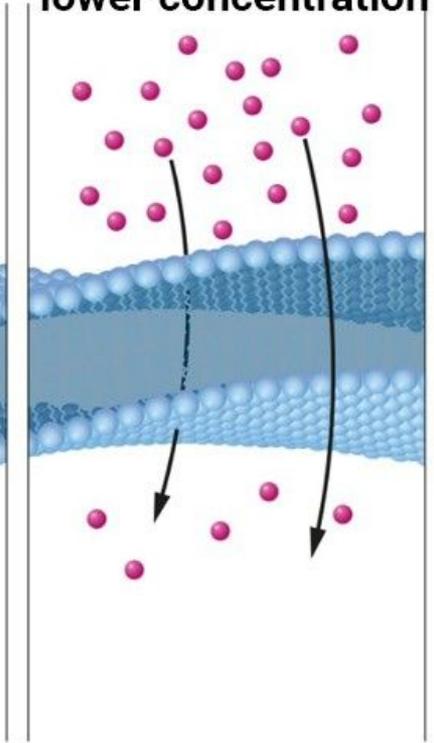


Why do you think this happens???

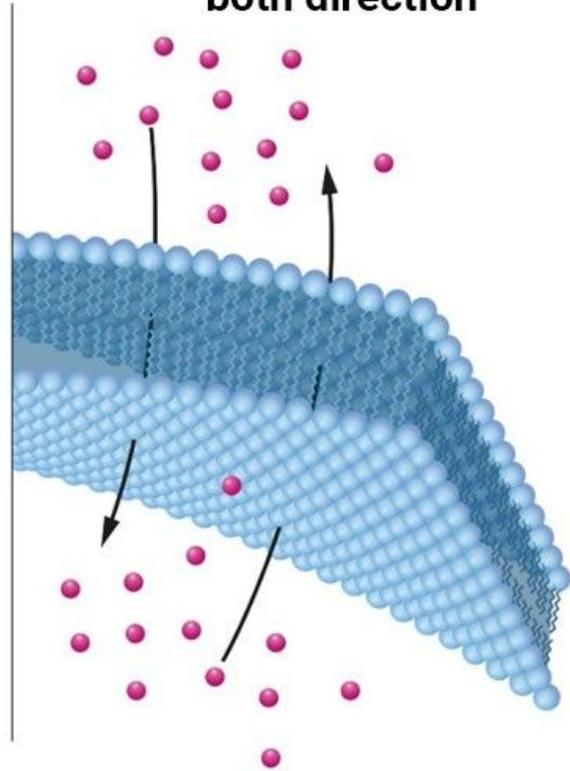
**Solute concentration
higher on one side
of membrane**



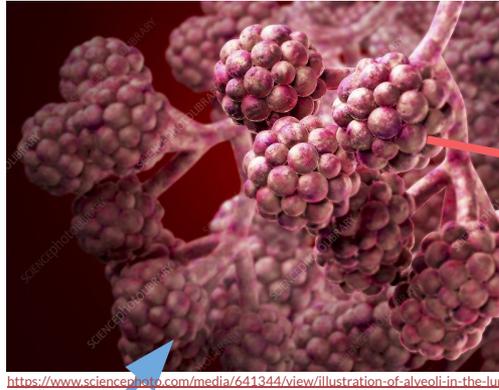
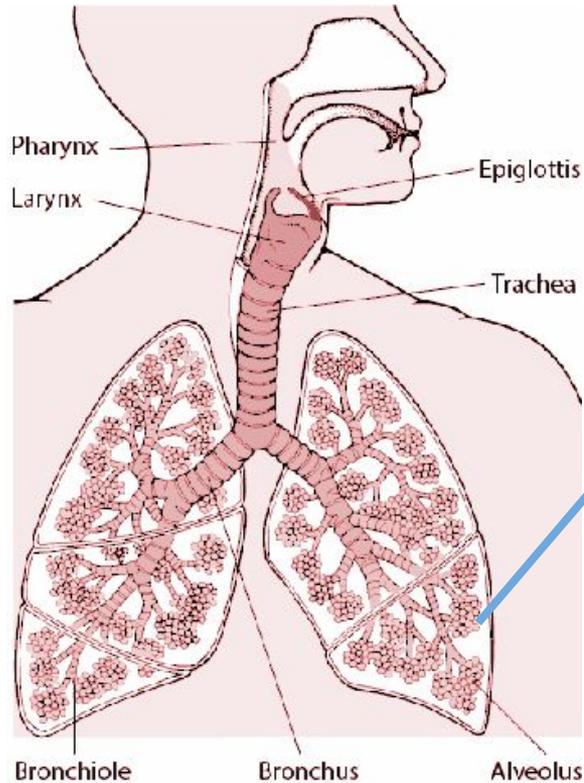
**Solute will move across
membrane towards
lower concentration**



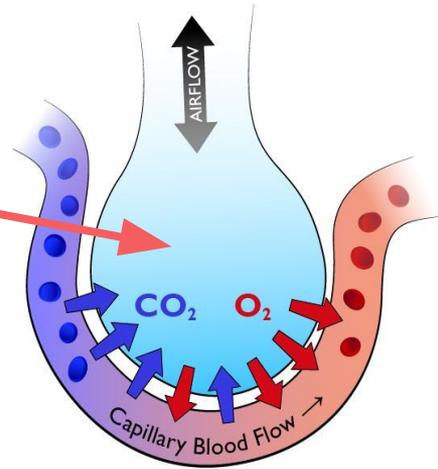
**Once equilibrium is reached,
solute moves in the
both direction**



Connection! Diffusion in the RESPIRATORY SYSTEM



<https://www.sciencephoto.com/media/641344/view/illustration-of-alveoli-in-the-lungs>



- In our lungs, we have bundles of alveoli
- Each alveoli is surrounded with capillaries that carry blood all over the body
- The blood cells in the capillaries travel throughout the body and give their oxygen away to the parts of the body that need it
- The alveoli are always rich with oxygen
- Because the concentration of oxygen is low in the capillaries and high in the alveoli, the oxygen DIFFUSES into the capillaries

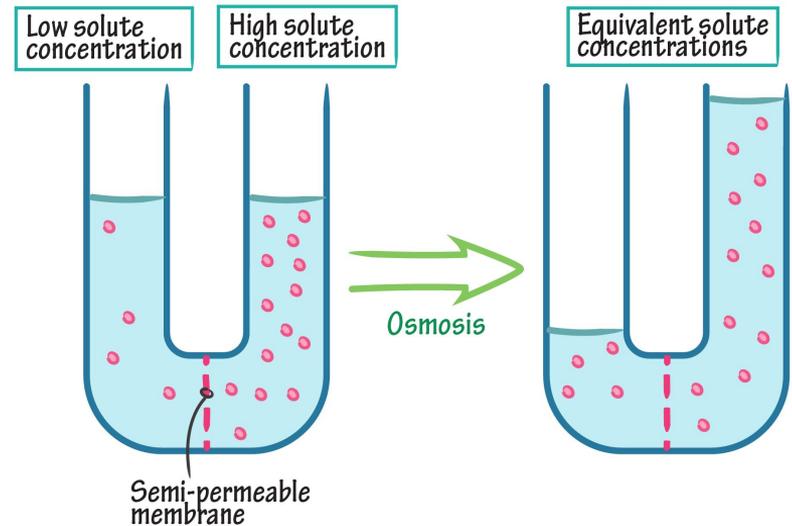
Connection! Diffusion in the DIGESTIVE SYSTEM!



Cellular Transport - 2) Osmosis

Osmosis: Movement of **WATER** from areas of low solute concentration to areas of high solute concentration, in order to reach equilibrium

Examples: Noodles left in water to get soggy, dead bodies get bloated in freshwater, your lips shrivel up when you eat something salty.



Connection! Osmosis in PLANTS

1. Plants are able to absorb water because when a plant is dehydrated, the roots have a higher solute concentration than the soil. This draws water into the roots!
2. Plants will die if we increase the concentration of solutes outside their cells without giving them water to make up for the imbalance (like we saw in the video)

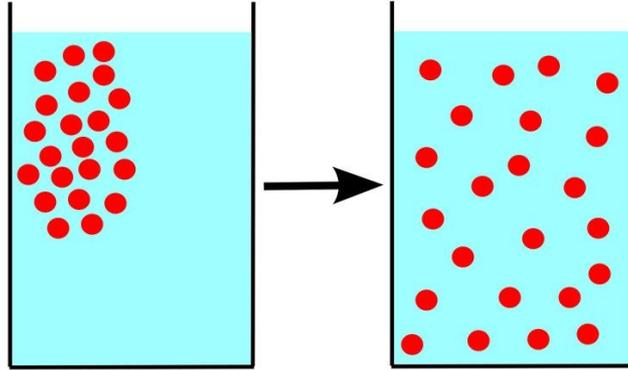


Diffusion vs. Osmosis

Diffusion

Movement of molecules
from high concentration
to low concentration

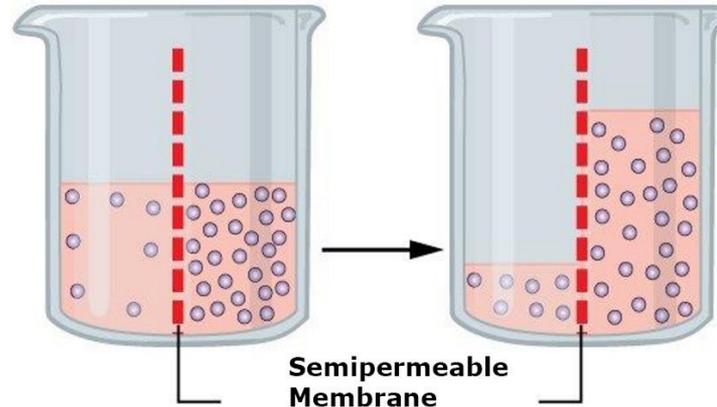
Both solute and solvent move



Osmosis

Movement of solvent (water)
across a semipermeable
membrane from high to
low solvent concentration

Only solvent moves



Naked Egg-speriment!

Through performing this experiment, you will observe first hand, how the process of osmosis will enlarge the size of an egg! (Materials: an egg, a bottle of vinegar, a glass)

1. Place one egg gently in a large glass
2. Fill the glass with vinegar to submerge the egg and set it aside for 24 hours.
Record your observations for Day 1 and Day 2 before step 3.
3. Replace the vinegar in the glass - gently hold the egg in your hand, throw out the old vinegar, and add new vinegar to submerge the egg in. Set this aside for 48-26 hours (2-3 days). Record your observations for Day 3, 4 and 5.
4. Remove the egg and record what you see has changed.
5. Describe how osmosis has occurred in this experiment!

Homework

- Naked Egg-speriment
-