Rachel Mordes
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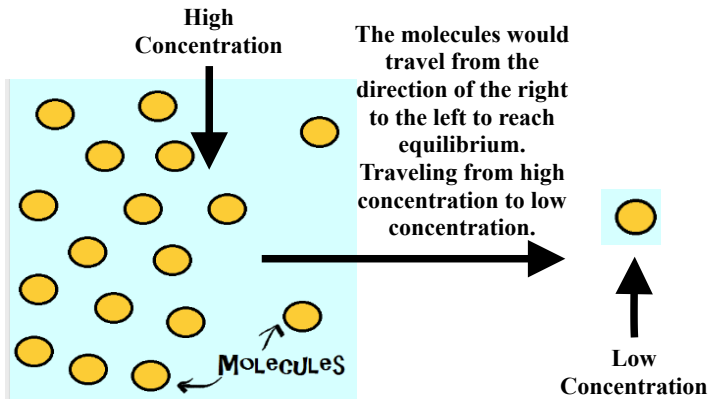
Amoeba Sisters Video Recap of *Osmosis*

1. The below picture represents **diffusion** of molecules. Place the following labels in the diagram**: high concentration**, **low concentration**, and **an arrow** showing the direction that the molecules would travel before equilibrium is reached.



2. **Osmosis** is a type of diffusion, but it involves the movement of water. Similar to diffusion, osmosis is the movement of molecules (water molecules if osmosis) from a high concentration to a low concentration.

The video clip explains that you can also look at water as moving to a **higher concentration of solute molecules (hypertonic)** concentration of **solute** molecules.

Why can it also be viewed this way?

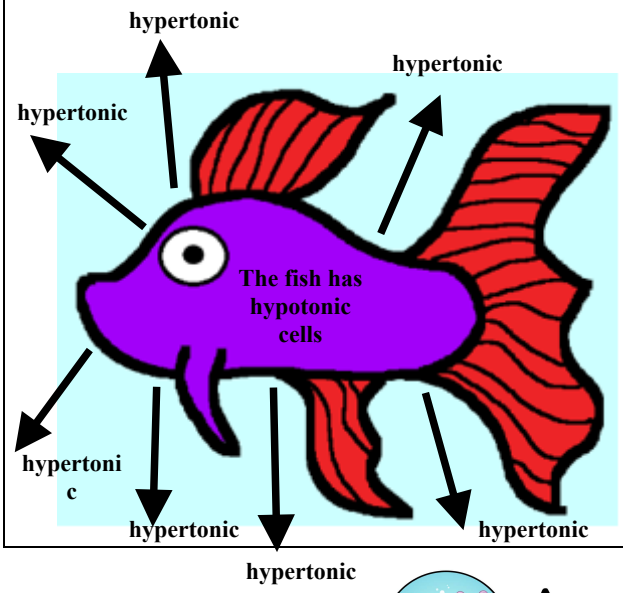
Osmosis can also be described as water moving toward the area of higher solute concentration (hypertonic solution).

This is because the side with more solute has fewer water molecules, so water moves there to balance concentrations and reach equilibrium.

3. **Osmosis Scenario:** The video clip mentioned a disaster scenario of a saltwater fish being placed in fresh water.

What would occur if, instead, a freshwater fish was placed in saltwater? **The fish would crenate, because the fish has hypotonic cells and salt water is hypertonic (because it has a higher solute concentration) so the water from the fish cells would be pulled toward the hypertonic salt water causing the fish to crenate.**

Your answer needs to have an **arrow** indicating the direction of water flow in osmosis, a label for "**hypertonic**," and a label for "**hypotonic**."



4. **Osmosis Scenario:** Fluid movement into the brain after traumatic brain injury can result in dangerous brain swelling.

One treatment that can be used in some of these cases is adding a **hypertonic** saline. You need to decide whether this blank should be the word hypertonic or hypotonic. Remember, you are trying to reduce the excessive fluid in the brain.

Explain your answer:

A hypertonic saline has a higher concentration than the fluid causing the brain cells to swell. The hypertonic solution will draw the water out of the cells and into the bloodstream by osmosis, reducing swelling and helping restore fluid balance.

It will create a more isotonic solution (or equilibrium).

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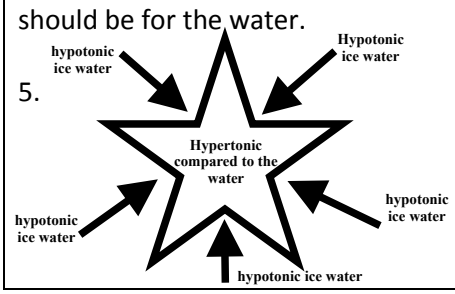
The Gummy Bear Mystery

Do you like gummy bears? We do! They are one of our favorite snacks, though we (try to) eat them in moderation because they are high in sugar. Consider that your sister is in a foul mood and decides to dump your gummy bears in your ice water about 30 minutes before you get home.

The gummy bears are greatly enlarged by the time you get home! Your sister and some friends have different viewpoints for what happened. Draw a diagram below showing the enlarged gummy bears in a cup of water. Place the labels "**hypertonic**" and "**hypotonic**" in your diagram. One label should be for the gummy bears and one label should be for the water.

5.



(The star is the gummy bear)

Viewpoints:

A) Your sister said that the sugar left the gummy bears, because the gummy bears were **hypertonic** compared to the water.

B) Your friend Joe said that water traveled into the gummy bears, because the gummy bears were **hypertonic** compared to the water.

C) Your friend Suzy said the sugar went into the gummy bears, because the gummy bears were **hypotonic** compared to the water.

D) Your friend Will said that water traveled into the gummy bears by osmosis, because the gummy bears were **hypotonic** compared to the water.

6. Whose viewpoint is correct in the viewpoint column? A good answer has a good defense! **Defend your answer,** and also **give reasons why the other explanations are incorrect**.

Joe's point of view is correct, because the water is hypotonic and hypotonic solutions are drawn into hypertonic solutions (like the gummy bear) so water was drawn into the gummy bear.

My sisters (option A) would not be correct because although the gummy bears are hypertonic the sugar is not leaving them, water is just going into them.

Suzy (option C) would not be correct because the gummy bears are not hypotonic and suagr is already in them, thats what mkaes them hypertonic.

Will (option D) would not be correct because altough he was right about water traveling into the gummy bears, he said they are hypotonic and that is not correct, they are hypertonic

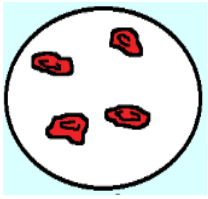
Hypertonic, Hypotonic, or Isotonic? Oh My!

These red blood cells have all been placed in different solutions! Based on their appearance after being placed in these solutions for a period of time, place on each line (A) for **hypertonic**, (B) for **hypotonic**, or (C) for **isotonic**.

7. The cells are **Hypertonic** compared to the **Hypotonic** solution.

SWELLING

8. The cells are **Hypotonic** compared to the **Hypertonic** solution.



SHRINKING

9. The cells are **Isotonic** compared to the **Isotonic** solution.

STABLE

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