

What do you think about the article you read for today's class?

V.O.D

- <https://www.youtube.com/watch?v=Oc5bXa5PcWo>

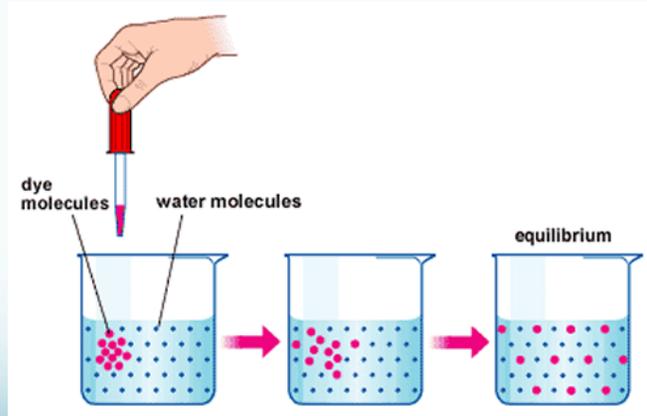
Learning Intentions

- I can explain how diffusion and osmosis work
- I can write a testable question and design a controlled experiment

New Vocabulary

- Selectively Permeable
- Concentration Gradient
- Diffusion
- Osmosis
- Osmotic Pressure
- Isotonic Solution
- Hypotonic Solution
- Turgor Pressure
- Hypertonic Solution

Diffusion



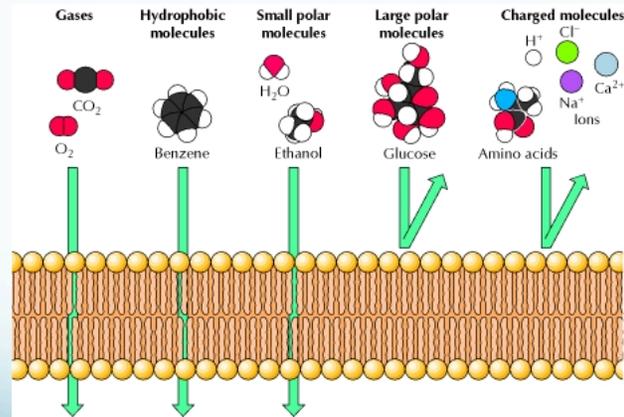
Diffusion



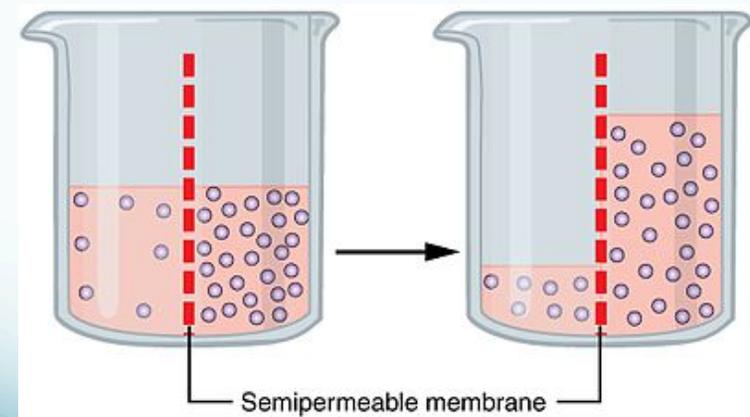
Diffusion: is when solutes move from an area of high concentration to an area of lower concentration.



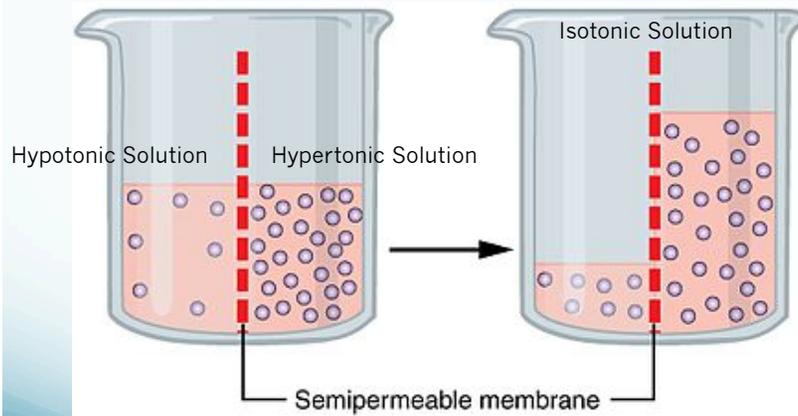
What can cross the cell membrane?



What would happen if the salt molecule can not pass through the membrane?



Osmosis

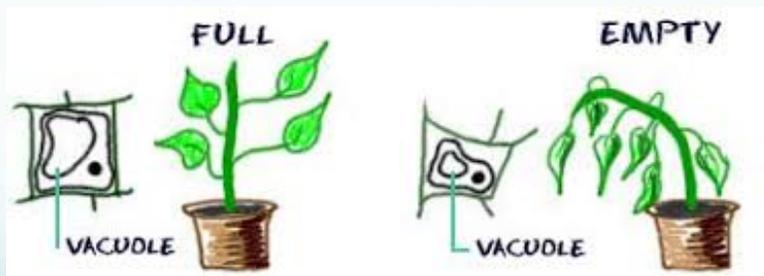


Turgor Pressure



What do you think is the difference between plant a and plant b?

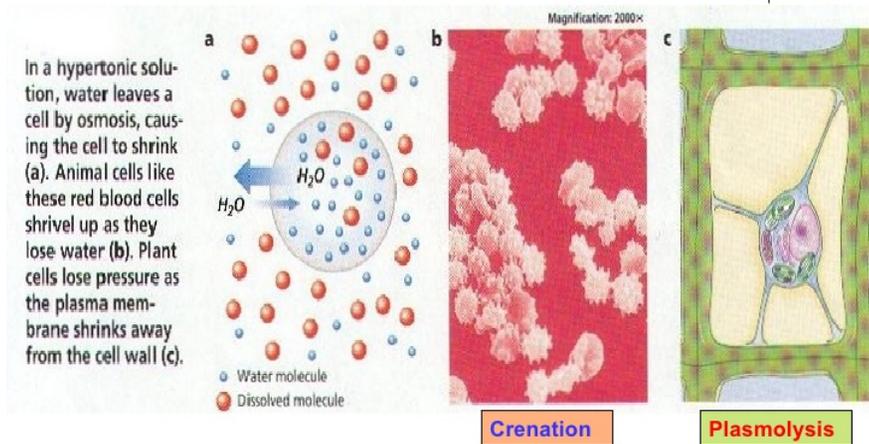
Turgor Pressure



Discussions Questions

1. In the winter when it is snowy often salt is added to the road. What impacts would this salt have on plants?
2. What would happen to our blood cells if was placed in a hypertonic solution?

Hypertonic solution + cells



Developing a Question

- If I have a plant sample (i.e. celery or potato) how could we determine if osmosis is happening?

Develop a question: if you change an environmental factor how will that impact the sample?

A Scientific Question is a question that is **testable** and can be answered by **gathering observations or measurements**.

Hypothesis

- A possible answer to the scientific question
- Support with reasoning
- Based on previous knowledge



Planning An Experiment

- Controls: things we keep the same
- Manipulative Variable: the thing that we change
- Responding Variable: the thing that we measure

When you have completed developing a question, hypothesis, planning an experiment – hand in to red basket.

There are two types of data:

Quantitative data are: numbers and are obtained by counting or measuring.

Qualitative data are: descriptions and involve characteristics that cannot be counted.



Designing a Controlled Experiment

1. The factors in an experiment that can be changed are called **manipulated variables**. Examples: changing the temperature, the amount of light present, time, concentration of solutions used.
2. If several **manipulated variables** were changed at the same time, the scientist would not know which **responding variable** was responsible for the observed results.
3. In a "**controlled experiment**" only **one manipulated variable** is changed at a time. All other variables should be unchanged or "controlled".
4. An experiment is based on the comparison between a **control group** with an **experimental group**.
 - a) These two groups are identical except for one factor (manipulated variable).
 - b) The control group serves as the comparison. It is the same as the experiment group, except that the one variable that is being tested is removed.
 - c) The experimental group shows the effect of the variable that is being tested.

Example: From Jen

Question: Does soap reduce the number of microbes on your hands?

Manipulative Variable: Soap

Controls: Same temperature, types of agar plate, time for growth

Responding Variable: number of microbes on hands

Experimental Group: Use Soap

Control Group: Not Use Soap