1 Cell Function: Diffusion and Osmosis

1.1 Procedure 1: Diffusion

DIFFUSION THROUGH A LIQUID

1.
2. 2.5 cm
3. $15\,\text{cm}\,\text{h}^{-1}$

Diffusion	Distance in 10 min	Distance in 1 h
Semi-solid	0.5 cm	3 cm
Liquid	2.5 cm	15 cm

4. Liquid
5. As gasses tend to be less dense than its counterparts, the movement and flow of solutes should be quicker resulting in a quicker rate of diffusion.

1.2 Procedure 2: Effect of Cell Size on Speed of Diffusion

Cell	Dimensions	SA	Volume	SA : Volume	Total time
A	$1 \times 1 \times 1$	$6\,\text{cm}^2$	$1\,\text{cm}^3$	6 : 1	10 min
B	$2 \times 2 \times 2$	$24\,\text{cm}^2$	$8\,\text{cm}^3$	3 : 1	1 h 23 min
C	$3 \times 3 \times 3$	$54\,\text{cm}^2$	$27\,\text{cm}^3$	2 : 1	2 h

1. Different sized cells
2. The vinegar represents a solute that gradually diffuses its "cell."
3. So we can observe the diffusion taking place, and accurately record the time it takes.
4. The change in color of the agar cube demonstrates that diffusion is occurring.
5. The ratio of the surface area decreases in respect to the volume of the cell.
6. The total time of diffusion gets longer.

1.3 Produce 3: Diffusion Across a Plasma Membrane

PREDICTION

I believe that glucose, starch, and water will be able to pass across the cell membrane. This is due to their chemical density being similar and significantly less than iodine, which I believe will not pass across the cell membrane.

1. Iodine is the indicator reagent for starch.
2. By heating Benedict's solution, we can indicate the location of sugar.
3. Iodine can be located by its amber color.

4. Iodine and starch when combined turn to a darker color, and with the water being tainted with iodine, observing where there the darker color is present can help determine where the water moves.

5.

6.

	Results/observations	Conclusions
Iodine	Black particles due to iodine	Iodine diffuses across membrane because of its small size
Starch	Starch and iodine reaction inside of cell membrane	The large density and size of starch makes it unable to difuse
Glucose	Water turned orange	The orange color in the water signifies glucose exiting the cell
Water	Weight decreased from 28.95 g to 27.64 g ∴ water left the cell membrane	Water exited the cell membrane

1.4 Procedure 4: Osmosis

OSMOSIS IN POTATO CELLS

1.

2.
- Initial Mass w/ 10% Salt - 0.05 g
- Initial Mass w/ Tap Water - 0.06 g

3.

4.

5.

6.

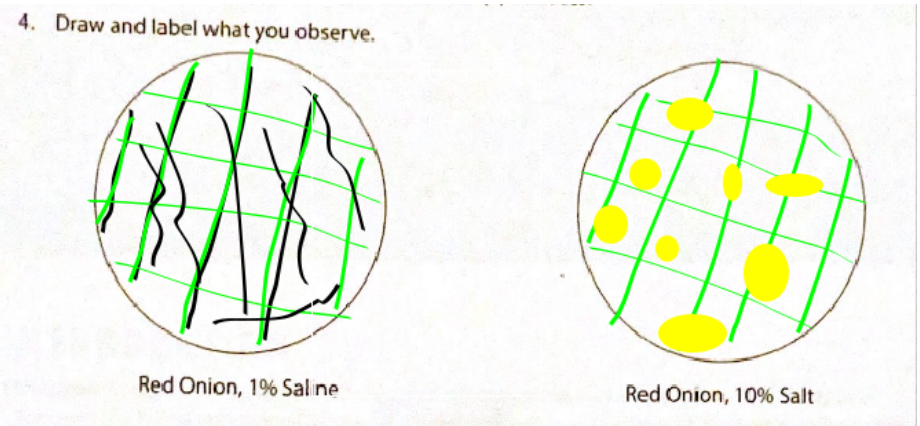
Potato Tissue	Final Mass	Initial Mass	Net ± of mass
Tap Water	7.27 g	0.05 g	7.22 g
10% Salt Water	6.93 g	0.06 g	6.87 g

7. Tap Water - Dense & Firm
10% Salt Water - Soggy & Flexible

QUESTIONS

1. Osmosis
2. 10% Salt Water
3. Tap Water

1.5 Procedure 5: Plasmolysis in Red Onion Skin Cells



QUESTIONS

1. After putting the salt water, I observed water exiting the onion skin and generally towards the outside demonstrating osmosis.
2. 10% Salt
3. 1% Saline
4. Plant cells have cell walls which assist against diffusion in contrast to animal cells.