Molecular Activity and Membrane Transport

Purpose

Understand the mechanism of Brownian motion and understand the difference between passive and active transportation through this experiment we did. We were able to see the results of when blood was mixed with 2% sodium chloride, 25% sodium chloride, and DI water.

Procedures

2-B

- Fill 3 petri dishes with 40 ml 24c water and drop one crystal potassium Permanente into each dish.
- Measure in millimeters and record the largest diameter after 5 minutes
- repeat these steps for water in 5c and 45c

2-C

- Petri dishes were filled with Agar two holes were made in the Agar. Into one whole place two drops of methanol blue into the other hole place two drops of potassium Permanente
- measure the diameter of each spot in millimeters every 15 minutes. Determine the diffusion rate of each chemical.

2-D

- Fold three papers into cones and insert them in three separate glass funnels. Wet the paper to make them stick to the glass.
- Prepare three 100 milliliters solution of charcoal and water make them different consistencies
- pour 50 milliliters of each solution into the tunnel and count the number of drops when it's half-filled and nearly empty. And repeat.

2-F

- Attach dialysis bags filled as much as possible. one bag should be filled with 25% sucrose solution and the others should be filled with 50% sucrose solution.
- insert both bags into separate beakers of distilled water. Check the fluid levels in each glass tube.

2-G

- Fill a dialysis bag with 1% starch and another with 10% glucose solution
- tie the bag with a glass rod suspended into the beaker with distilled water
- check every 15 minutes up to an hour for starch and sugar by adding five milliliters of water from beaker and applying 10 drops of Lugols solution to another sample apply 5 milliliters of water from the beaker then add three milliliters of Benedict solution and put them in a low boil for 5 minutes

2-H

- One milliliter of each of the following will be mixed with a small dot of blood

- DI water (hypotonic), 25% of sodium chloride (isotonic), and 2% of sodium chloride (hypertonic)
- examine each one under a microscope

Results

2-B

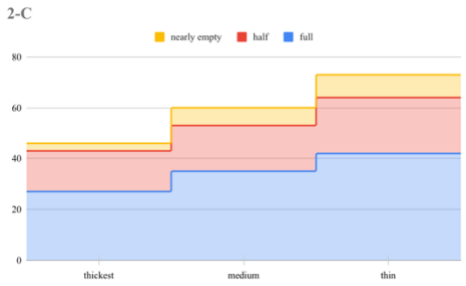
25 Celsius	**3.6mm**
5 Celsius	**3.2mm**
45 Celsius	**4.5mm**

2-C

	Methanol blue	Potassium permanente
0 min	**.8mm**	**.8mm**
1 min	**.9mm**	**1cm**
2 min	**1cm**	**1.1cm**
3 min	**1.1cm**	**1.2cm**
4 min	**1.1cm**	**1.3cm**
5 min	**1.2cm**	**1.4cm**
6 min	**1.2cm**	**1.5cm**
7 min	**1.3cm**	**1.5cm**
8 min	**1.3cm**	**1.5cm**
9 min	**1.4cm**	**1.6cm**
10 min	**1.4cm**	**1.7cm**

2-D

	Full	half	Nearly empty
Thickest	**27**	**16**	**3**
Medium	**35**	**18**	**7**
Thin	**42**	**22**	**9**

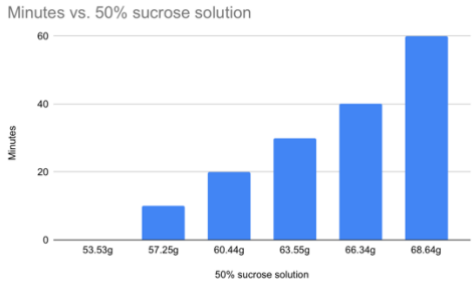


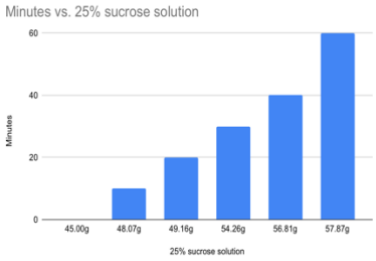
2-F

Min	50 % sucrose solution
0	**53.53g**

10	57.25g
20	60.44g
30	63.55g
40	66.34g
60	68.64g

Min	25% sucrose solution
0	45.00g
10	48.07g
20	49.16g
30	54.26g
40	56.81g
60	57.87g

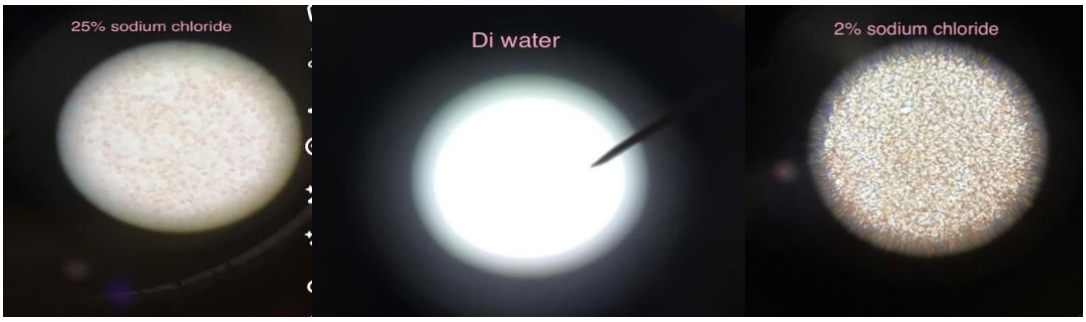




2-G

Time	Starch present	Sugar present
15 min	no	no
30 min	no	Yes, a little
45 min	no	Yes, more
60 min	no	Yes, a lot

2-H



Discussion

2-B

When potassium Permanente touched the water it spread to a purple dye I did notice that when mixed with warm water is spread faster. The reaction to the cold water took longer than with the hot water he reacted faster.

2-C

The potassium permanente spread at a quicker rate than menthol blue.

2-D

The thicker the liquid was the harder time the water had passing through the filters when mixed with charcoal. The thickest liquid it took the longest time and the thinnest liquid took less time.

2-F

The longer you left the dialysis bag filled with 25% sucrose solution and 50% sucrose solution the more distilled water got in. they weighed more then when initially started.

2-G

As the time passed the amount of sugar presented in the water increased. This shows the permeability in the water. When mixed with sugar it became a blue color as sugar was escaping into the water it turned from a blue to a green then to a cloudy red. As you could see the sugar had an easier time escaping however the starch didn't.

2-H

When the blood was mixed with 25% sodium chloride you could see some movement of the blood vessels however there wasn't many. When mixed with the distilled water as you could see there wasn't any movement. And then mix with the 2% sodium chloride I see you could see there was multiple cells you were able to see through the microscope.

Conclusion

I was able to understand the mechanism of the Brownian motion and I will see, but I understand the difference between passive and active transportation. Active transportation the process is moving the molecules across the cellular membrane they use cellular energy in order to do so. In passive transportation the fundamental movement of ions and other molecular subsets within the cell along the concentration gradient these don't use any energy.