

Physio 9.0



**ASSIGN
BUSTER**

Exercise 1: Cell Transport Mechanisms and Permeability: Activity 5:

Simulating Active Transport Lab Report Pre-lab Quiz Results You have not completed the Pre-lab Quiz. 01/31/13 page 1 Experiment Results Predict

Question: Predict Question 1: What do you think will result from these experimental conditions? Your answer : a. Na⁺ will be maximally

transported. Predict Question 2: Do you think the addition of glucose carriers will affect the transport of sodium or potassium? Your answer : a. Yes, it will

affect the transport of both ions. Stop & Think Questions: Why did the sodium transport stop before the transport was completed? You correctly

answered: c. The ATP was depleted. Why was the equilibrium for the solutes reached earlier? Your answer : a. There was more ATP available. Correct

answer: c. There were more pumps for transport. Experiment Data: Run

Run Number	1	1	2	2	3	4	4	5	5	5	Solute	Na ⁺	Cl ⁻	Na ⁺	Cl ⁻	Na ⁺	Cl ⁻	Na ⁺	Cl ⁻	Na ⁺	Cl ⁻	Na ⁺	Cl ⁻	Na ⁺	Cl ⁻	Glucose	ATP	
1	1	2	2	3	4	4	5	5	5	5	Na ⁺	1.00	1.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

00 --Start Conc. L 9.00 0.00 9.00 0.00 9.00 9.00 0.00 9.00 0.00 0.00

Start Conc. R 0.00 6.00 0.00 6.00 0.00 0.00 6.00 6.00 6.00 6.00 10.00

Pumps 500 500 500 500 500 800 800 800 800 --Carriers -----400

Rate 0.0188 0.0125 0.0050 0.0033 0.0000 0.0083 0.0056 0.0083 0.

0056 0.0046# 01/31/13 page 2 Post-lab Quiz Results You scored 0% by

answering 0 out of 4 questions correctly. 1. What happened when you increased the amount of ATP dispensed with the same concentration of

sodium and potassium on either side of the membrane? Your answer: c. The ions were transported more slowly. Correct answer: b. More ions were

transported. 2. At what concentration of ATP were the sodium and potassium maximally transported? Your answer: b. 1 mM ATP Correct answer: d. 3 mM

ATP 3. What was the effect of adding more Na⁺ -K⁺ pumps to the simulated

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cell? Your answer: b. More ions were transported in 60 minutes. Correct answer: a. Transport of the ions was faster.

4. Describe the effect of adding glucose carriers to the sodium and potassium transport. Your answer: b. The transport rate increased because the glucose was coupled to potassium. Correct answer: c. There was no change in the transport rate because glucose is transported independently.

01/31/13 page 3 Review Sheet Results

1. Describe the significance of using 9 mM sodium chloride inside the cell and 6 mM potassium chloride outside the cell, instead of other concentration ratios. Your answer: The significance for that is because there is more sodium chloride inside the cell than the outside and more potassium on the outside of the cell.

2. Explain why there was no sodium transport even though ATP was present. How well did the results compare with your prediction? Your answer: My answer was wrong because at this time the sodium didn't transport at all.

3. Explain why the addition of glucose carriers had no effect on sodium or potassium transport. How well did the results compare with your prediction? Your answer: My prediction was correct because the glucose affected both the transport of sodium and potassium.

4. Do you think glucose is being actively transported or transported by facilitated diffusion in this experiment? Explain your answer. Your answer: I think that glucose is being transported actively because it is using ATP to pass through the pores of the cell.

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