

Prelab for Lab #5: CELL RESPIRATION

1. Write the equation for the complete oxidation of glucose. Is this reaction endergonic or exergonic? Include the value of ΔG , in kcal/mol.

2. A. How many moles of oxygen gas are required to oxidize 1.00 mol of glucose? _____
B. How many moles of carbon dioxide are produced per mole of glucose? _____
What does this imply about the volume changes you would observe if you simply sealed the pea seeds in a flask?

C. What is the purpose of the KOH? (Give an equation and explain)

3. What, specifically, is the purpose of the respirometers containing only glass beads? ("control" is not a specific answer!)

4. When comparing the predicted oxygen consumption of dry v. germinating seeds, what results do you expect to get? Explain why.

5. Room temperature is approximately 21°C. When comparing the predicted oxygen consumption in the room temperature bath with that of the cold water bath, what results do you expect to get? Explain why.

6. After completing the calculations and graphing of the data on the next page, calculate the rate of oxygen consumption for the following, include appropriate units:

Room temp germinating peas _____

10°C germinating peas _____

Room temp dry peas _____

10°C dry peas _____

Show the calculation for the room temp germinating peas below, including an equation, substitution with units, + answer.

Here is a data table with sample data. Use information in the lab to complete the table. When you have completed the table, graph the data on the grid below.

Temp (°C)	Time (min)	Beads Alone		Germinating Peas			Dry Peas and Beads		
		Reading at time X	Diff. *	Reading at time X	Diff. *	Corrected diff. Δ	Reading at time X	Diff. *	Corrected diff. Δ
25.	0	0.93	/	0.91	/	/	0.92	/	/
	5	0.91		0.84			0.89		
	10	0.90		0.77			0.87		
	15	0.90		0.71			0.87		
	20	0.90		0.64			0.85		
10.	0	0.95	/	0.92	/	/	0.91	/	/
	5	0.94		0.88			0.90		
	10	0.92		0.85			0.87		
	15	0.93		0.83			0.86		
	20	0.93		0.80			0.85		

