

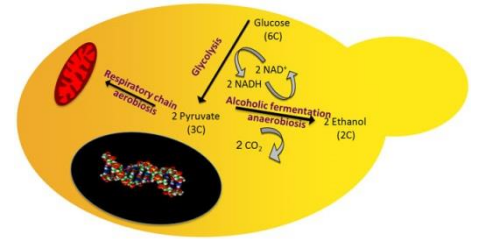
Factors that Affect Fermentation

Name: _____

Purpose: To determine how temperature and sugar concentration impacts the amount of fermentation in yeast.

Materials:

- | | |
|--------------------|--------------|
| Erlenmeyer flask | Water |
| Graduated Cylinder | Hot plate |
| Beaker | Ice bath |
| Sugar | Thermometers |
| Teaspoons | Balloon |
| Yeast | |



Method (completed by each individual):

- Note:** as a class we need to try to prepare these trials at the same time.
- Gather the materials – 1 Erlenmeyer flask, 1 graduated cylinder, 1 beaker & 1 balloon
- Put 1 teaspoon of yeast into the flask.
- You will be each assigned a trial. My trial is: _____
- Gather the materials for that trial
 - Appropriate amount of sugar
 - 100mL of the correct temp of water
- Record the temperature of the water
- Combine ingredients – sugar, water and yeast. Swirl the contents at least 10 times so that it is well mixed.
- Put a balloon over the top of the flask.
- Bring to the front of the room.

Data Table:

Trail #	Who?	Amount of sugar	Temperature of Water	Actual Temperature	Results (what happened to the balloon, compared to the other balloons in the other trials)
1a		0.5 tsp	30-35°C		
1b					
1c					
2a		1 tsp	30-35°C		
2b					
2c					
3a		1.5 tsp	30-35°C		
3b					
3c					

Trail #	Who?	Amount of sugar	Temperature of Water	Actual temperature	Results (what happened to the balloon, compared to the other balloons in the other trials)
4a		2 tsp	30-35°C		
4b					
4c					
5a		1 tsp	10-15 °C		
5b					
5c					
6a		1 tsp	20-25 °C		
6b					
6c					
7a		1 tsp	40-45 °C		
7b					
7c					
8a		1 tsp	50-55 °C		
8b					
8c					

Variables and Hypothesis:

Independent Variable: _____

Dependent Variable: _____

Controls: _____

Hypothesis: If _____ (independent variable)

then _____ (dependent variable) because _____

(scientific reasoning)

Data Analysis

1. Describe your results (from the data table) including scientific reasoning.
2. Was your hypothesis valid (shown to be correct)? Yes or no, why or why not?
3. List some positive aspects of the method (specifically about the variables, measurement and controls).
4. List some concern/negatives about the method (specifically about the variables, measurement and controls).

5. What would you do differently to get better results if you repeated the experiment? Do not comment on your lab skills but on the steps of the method.

	Beginning	Developing	Accomplished	Exemplary
Hypothesis	No variables identified includes hypotheses in incorrect format	variables are partially identified or identified incorrectly includes hypothesis in "If...then..." format with limited reasoning	variables are correctly identified includes and describes hypothesis in "If...then..." format using scientific reasoning	variables are correctly identified includes and explains hypothesis in "If...then..." format using correct scientific reasoning
Analysis Questions	Data is interpreted Validity of the hypothesis is stated Only 1-2 positives and negatives stated about the method. Improvements to the method are stated	Data is interpreted and results are explained Validity of the hypothesis is assessed and outlined using scientific reasoning. A minimal list of positives and negatives about the method Improvements to the method that would benefit the scientific investigation are outlined.	Data is accurately interpreted and results are explained using scientific reasoning Validity of the hypothesis is assessed and described using scientific reasoning. A list of positives and negatives about the method. Improvements to the method that would benefit the scientific investigation are described	Data is correctly interpreted and results are explained using correct scientific reasoning Validity of the hypothesis is assessed and explained using scientific reasoning. A detailed list of positives and negatives about the method. Improvements to the method that would benefit the scientific investigation are explained.