Biology I
Lab: Yogurt and Sauerkraut Lab

Anaerobic respiration is made up of reactions that occur without oxygen. We have discussed three reactions that lack oxygen: glycolysis, alcohol fermentation and lactic acid fermentation. This lab will focus on the two types of fermentation:

Pre-lab Questions

1. What is the difference between alcohol and lactic acid fermentation? Draw and label a diagram for each of these reactions.

2. What types of organisms typically undergo fermentation?

Materials

hot plate	2 400-mL beaker	scissors
goggles	whole milk	salt
yogurt	disposable test tubes	50-mL beaker
cabbage	wrapped straws	10-mL graduated cylinder

Procedure I: Making Yogurt

1. Plug in the hot plate and turn it to medium heat. Make sure that you are wearing goggles while around the hot plate.
2. Fill the 400-mL beaker about ¼ full of milk. Place the beaker on the hot plate. Keep an eye on the milk, it does not need to boil only warmed.
3. Remove milk from the hot plate. Using the 10-mL graduated cylinder, measure about 5-mL of the warm milk.
4. Pour the milk into the plastic test tube found in the tray. Place the lid on the test tube while waiting for the yogurt.
5. Remove the straw from the wrapper, trying to be as sterile as possible. Dip the straw into the yogurt to obtain a small sample. A very small sample is needed so be careful. Yogurt can be found on the middle table.
6. Place the straw into the test tube containing the warm milk. Stir to remove the yogurt sample from the straw.
7. Place the lid on the test tube being sure to secure it tightly. Put your name on the test tube and place it back into the 400-mL beaker.

Procedure II – Making Sauerkraut

1. Using the scissors in the tray cut up the cabbage into very small pieces. Try not to make a mess in doing this.
2. Place a small portion of the cabbage into the other plastic test tube.
3. Add a VERY small pinch of salt to the cabbage.
4. Repeat steps 2 and 3 until the test tube is full.
5. Place the lid on the test tube and place it in the beaker with the yogurt. Put your name of the test tube and place it back into the 400-mL beaker.

Data Table – Qualitative Analysis of Yogurt and Sauerkraut

Date	*Yogurt Observations*	*Sauerkraut Observations*
Today		

Data Analysis

1. Why was yogurt used to make yogurt?

2. In making the yogurt, why was the milk heated?

3. In making the sauerkraut, what are the reasons for the following:
    - Salt:

    - Cutting the cabbage in to small pieces:

4. Did your group successfully make yogurt and sauerkraut? Use your observations to answer this question.

5. Explain your results. If you successfully made yogurt, explain how it was created. If you did not make yogurt, explain the reasons for your results. Be specific in this answer.

6. The yogurt and sauerkraut that we attempted to make in class are both examples of lactic acid fermentation. Explain how they relate to this reaction.

7. Beer and wine are always made up of approximately 7% alcohol. Why?

8. Why are your muscles sore the day after you run or have a hard workout? Use appropriate terminology in your answer.