

Name: _____ Student ID: _____
CHEM 161 PAL Fall 2026

Worksheet #20: Fermentation

1. Why is fermentation necessary for glycolysis to continue under anaerobic conditions?
2. Write the reaction for lactic acid fermentation. Include the chemical structure of each product and reactant. Identify which reactant is being oxidized and which is being reduced.
3. Write the reactions for ethanol fermentation. Include the chemical structure of each product and reactant. Identify which reactant is being oxidized and which is being reduced.

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4. Draw a complete arrow-pushing mechanism for the pyruvate decarboxylase-catalyzed decarboxylation of pyruvate using thiamine pyrophosphate (TPP).

5. Radioactively labeled glucose is fed to yeast in a “pulse chase” experiment under anaerobic conditions. Determine the location of ^{14}C in the final products (ethanol and CO_2) if you label the following carbons in glucose:

- a. C1 is labeled with ^{14}C

- b. C4 is labeled with ^{14}C

- c. C2 is labeled with ^{14}C