



Colorado Science and Engineering Fair

2025 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: From Kitchen to Energy: Leveraging Fermentation Enhancers for Improved Biogas Production

Finalist's Name: Humza Memon

School and City: Crescent View Academy, Aurora

Sponsor's Name: Asma Memon

Category: Chemistry

Division: Junior (grades 6 - 8)

Abstract (250 words or less):

This experiment examines how the fermentation rate of idli batter is affected by natural enhancers, including fenugreek seeds, yogurt, yeast, and baking soda. By measuring indicators such as pH levels and volume increase, the objective is to quantify changes in fermentation speed and quality of fermentation. Our goal is to identify the most effective enhancer by conducting multiple trials with different additives and comparing them to a control group.

The findings are expected to provide valuable insights into food preparation techniques and broader biotechnological applications, such as biofuel production. The results may highlight organic methods to optimize microbial activity and accelerate fermentation under various environmental conditions. Ultimately, the choice of enhancer depends on the desired outcome—whether faster fermentation, greater volume increase, or a specific flavor profile.

This project isn't just about batter; it's about harnessing the power of fermentation to create a better future, including clean energy solutions.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature:

Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**