

The background of the slide is a blurred photograph of a laboratory. It features various pieces of glassware, including what appears to be a large Erlenmeyer flask and several test tubes, some of which contain liquids. The lighting is somewhat dim, with some highlights on the glass surfaces, creating a professional and scientific atmosphere.

# ENZYME EXPERIMENT

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# Introduction

- This experiment examines how enzymes, particularly trypsin, accelerate chemical reactions in living organisms. It also explores how changes in temperature and pH influence trypsin's effectiveness, demonstrating that enzymes require specific conditions to function properly.
- Does temperature change affect trypsin's ability to break down proteins in Azocasein?
- If we raise the temperature, then trypsin will not be as effective.
  - We believed our hypothesis was correct because as temperature increases, proteins denature.

# Methods

- Our experimental variable was temperature (21°C, 37°C, 50°C)
- Control variables
  - 0.15M NaCl at a pH of 8
  - 500 µL Azocasein
  - 450 µL Buffer
  - 50 µL Trypsin
  - 500µL TCA
- Negative controls were made at room temperature (no heat)
- Each temperature, including the negative control, had three replicates

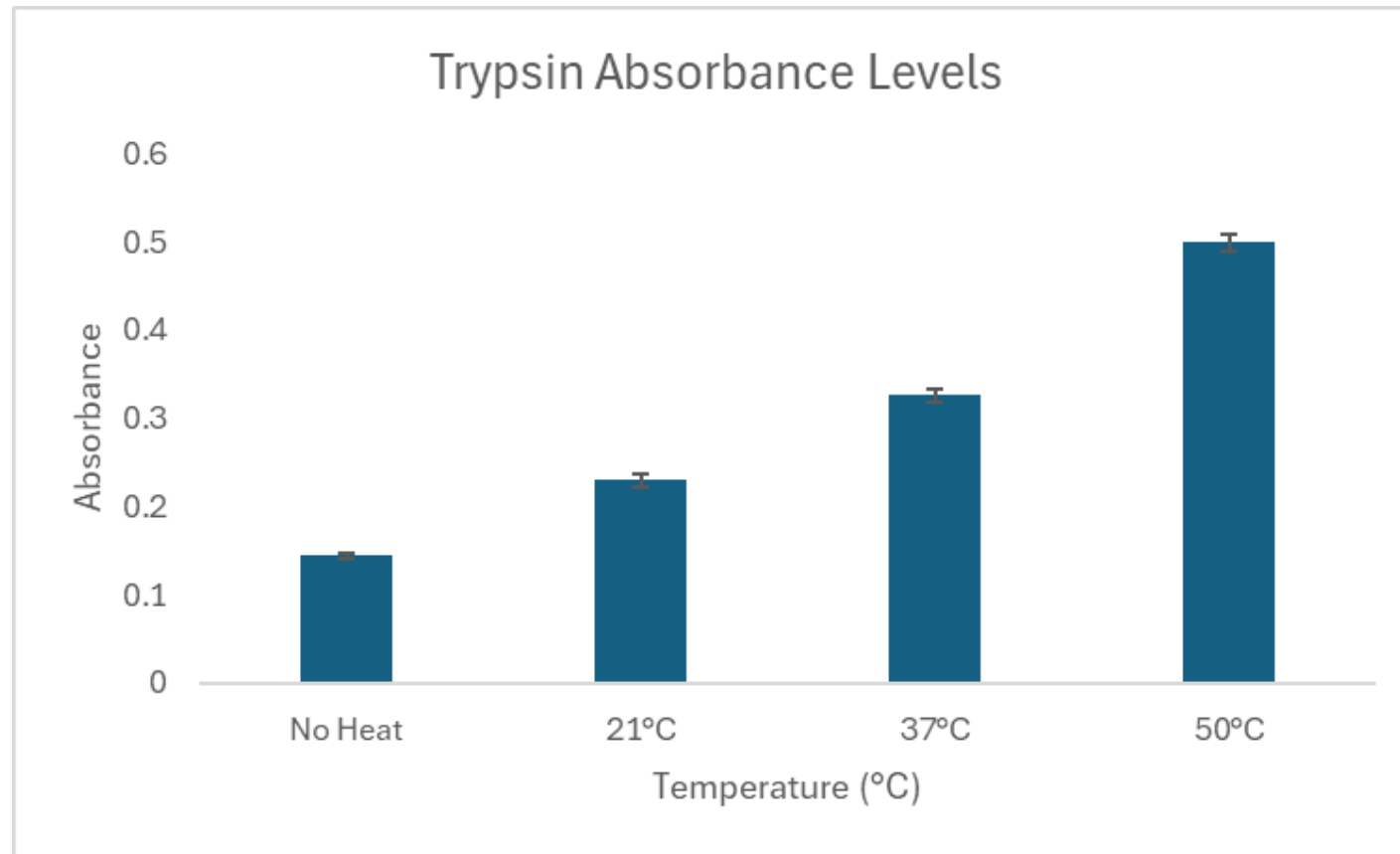
# Results

Temperature	Replicate I	Replicate II	Replicate III	Average Absorbance
No Heat	0.148	0.139	0.146	0.144
21°C	0.225	0.223	0.241	0.230
37°C	0.334	0.327	0.316	0.326
50°C	0.490	0.513	0.498	0.500

# Results

Null Hypothesis	P Value	Result
The absorbance at temperature 37°C is significantly different than the absorbance at No Heat	6.70732E-06	Significantly Different
The absorbance at temperature 37°C is significantly different than the absorbance at 21°C	0.000242759	Significantly Different
The absorbance at temperature 37°C is significantly different than the absorbance at 50°C	3.37092E-05	Significantly Different

# Results



# Results

- Observations:
  - All samples changed from a dark orange/red to a light orange, resembling the color of orange juice
  - Samples that experienced a higher temperature showed more clumping/clouding before being placed in the centrifuge
  - After centrifusion, a darker orange pellet formed, with a clear, light orange supernant
  - Samples that experienced 50°C had larger pellets than those of cooler temperatures
  - Pellets extended slightly up the sides of the tubes, less compacted than orange juice's pellet from the previous Vitamin C Lab
  - The suprenant color appeared to darken as the temperature of the sample increased

# Discussion

- Experimental Design:
  - Yes, even though our hypothesis was proven incorrect, our experimental design did allow us to adequately test our hypothesis
- Conclusion:
  - As the temperature increased, so did the absorbance, suggesting that lower temperatures hinder protein breakdown, making our hypothesis incorrect
- Changes:
  - If we were to run this experiment again, we could increase the number of replicates for each temperature condition and/or investigate a wider range of temperatures.