



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Kevin E. Chung	Project Number J0401
Project Title What Drives Kimchi Fermentation?	
Abstract Objectives/Goals My objective was to see how temperature, salt, and sugar affect the speed of fermentation in kimchi. I hypothesized that warmer temperatures and increased amounts of salt and sugar would speed up fermentation. Methods/Materials Thirty jars were filled with water and Napa cabbage. They were distributed evenly into six different groups of five jars each. The control group was stored at room temperature with no added salt or sugar. The other five groups were used to test my variables. One of them was stored in the fridge at about 4 degrees Celsius. Two sample groups contained 1mL and 5mL of salt and two sample groups contained 1mL and 5mL of sugar. Each sample was tested with litmus paper daily to measure pH levels. Results The two sugar groups fermented faster than the control group, while the fridge temperature group and the two salt groups fermented slower. Conclusions/Discussion My conclusion is that warmer temperatures and sugar speed up fermentation, while colder temperatures and salt slow down fermentation. By understanding how environment and ingredients affect fermentation, we can optimize our production of fermented food products. Also, we can find ways to preserve food by interfering with the bacteria that cause them to age.	
Summary Statement I investigated how environmental factors affect the rate of fermentation in kimchi by measuring lactic acid production.	
Help Received My mom and my brother gave me advice on how to set up the experimental procedure. Doctor Lisa Belluzzi from Santa Barbara City College helped me by giving me helpful background information for my project.	