



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Leif E. Morgan	Project Number J0516
Project Title Fruits Eat Jell-O: The Effects of Acids and Bases on Fruit Protease Activity	
Abstract Objectives/Goals My project was to determine if acids and bases have an effect on the protease activity in certain fruits. I believe the protease activity will be higher in an acidic environment than in a basic environment. Methods/Materials I made extracts of pineapple, kiwi, and papaya, which are known to have proteases. To measure the activity of the proteases, I poured Jell-O into petri dishes and made holes in the Jell-O with straws. I poured extracts in the holes and measured the increase in the size of the hole after six hours. To test the effects of acids and bases I also measured protease activity with plates made of Jell-O with vinegar or baking soda added. I used pH paper to measure the pH of the Jell-O. Results All three fruits made the Jell-O hole bigger. The activity of all three proteases was best in acidic environments and was lower in basic environments. When I compared kiwi and pineapple extracts closely, I found that pineapple protease was more active in basic environments than the kiwi protease. Conclusions/Discussion I concluded that most proteases are more active in acidic environments. This may be because fruits contain a lot of acids, such as citric acid, and so proteases have to work in these conditions.	
Summary Statement This project tested the effects of acids and bases on the activity of proteases from fruits.	
Help Received Father provided petri dishes and other supplies from his research lab at UCSF.	