



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) William S. Boyd	Project Number J0404
Project Title Extracting DNA from Fruit in Stages of Ripeness	
Abstract Objectives/Goals The objective of my project was to determine if ripe fruit yields the most extractable DNA utilizing underripe, ripe and overripe bananas, kiwis and strawberries. Methods/Materials In preparing to extract DNA from bananas, kiwis and strawberries, a buffer consisting of distilled water, pure table salt, dishwashing liquid containing sodium lauryl sulfate, and pineapple juice was added to the diced fruit that was slowly blended in a food processor. The fruit matter was then mixed with a chilled buffer and drained through a nylon filter. The filtered buffer or DNA solution was placed in a graduated test tube. Utilizing a graduated eyedropper, 91% isopropyl alcohol was deposited on top of the DNA solution. When the two liquids met, three distinct layers were formed. A drop of Methylene Blue Dye was placed in the test tube where measurements of the blue-stained middle layer containing the filaments of DNA were recorded. Results The results of the experiments where kiwis and strawberries were utilized support the hypothesis that fruit which is ripe will yield the most extractable DNA. However, the experiment utilizing bananas resulted in having underripe bananas yield the most extractable DNA when compared with ripe and overripe bananas. Conclusions/Discussion The nutritional value of fruit decreases as it ripens because the cells that bind the nutrients break down and begin the process of decomposition. Because DNA is stored in cells, the amount of extractable DNA in fruit is decreased as cells are destroyed in the ripening process. This emphasizes the importance of educating consumers as to when it is optimal to consume individual fruits based on which stage of ripeness yields the most extractable DNA.	
Summary Statement My project utilizes underripe, ripe and overripe bananas, kiwis and strawberries to test if ripe fruit yields the most extractable DNA, therefore, determining when it is optimally nutritious to consume fruit.	
Help Received My mother assisted me in assembling the necessary materials for my experiment, as well as taught me how to use a food processor. In addition, she assisted me in measuring the layout of my board.	