



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>David M. Duncan</b>  | <b>Project Number</b><br><b>J0596</b> |
| <b>Project Title</b><br><b>What's in the Food We Eat? Identifying Genetically Modified Foods Using DNA Analysis</b>   |                                       |
| <p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b><br/>The purpose of my experiment is to determine if common foods from Los Angeles grocery stores contain genetically modified organisms (GMOs). I believe that many of the foods I test will test positive for genetic modification. In the United States, foods containing GMOs are not labeled.</p> <p><b>Methods/Materials</b><br/>To check for genetic modification, I tested the food samples for two GMO-associated DNA sequences. If a food tested positive for one or both of these DNA sequences, it would indicate that it had been genetically manipulated. To conduct the experiment, I used a three-step process: (1) Food preparation and DNA extraction; (2) Polymerase Chain Reaction (PCR) -- using GMO and plant primers, and a wet bath method; and (3) Gel electrophoresis and a gel staining process.</p> <p><b>Results</b><br/>The results of the DNA testing showed that sixteen out of the twenty-two food samples tested positive for genetic modification; six food samples tested negative. (My positive control tested positive for GMOs, and my negative control tested negative.)</p> <p><b>Conclusions/Discussion</b><br/>I accept my hypothesis that many of the selected foods from Los Angeles grocery stores would test positive for genetic modification. In the United States, the first genetically modified foods were grown in 1994. The U.S. does not require food to be labeled for GMO content. In fact, foods containing less than 5% GMOs can be labeled as "GMO-free." There is still a lot to be learned about GMOs and their potentially positive or negative effects on human health and on our environment.</p> |                                       |
| <b>Summary Statement</b><br>My experiment tests common foods for genetic modification using DNA analysis.   |                                       |
| <b>Help Received</b><br>My science teacher (Norm Brennan) and my parents helped me order and get supplies and equipment for my experiment; Mr. Brennan advised me about contamination control; my father helped me with the boiling water for the wet bath; my parents drove me to grocery stores to buy food for my experiment.  |                                       |