



CALIFORNIA STATE SCIENCE FAIR 2005 PROJECT SUMMARY

Name(s) Sarah B. Levin	Project Number J0409
Project Title Genetically Modified Plants: Are Your Foods Wearing Designer Genes?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals U.S. agencies do not require labeling of foods containing genetic modifications. In Europe, however, label regulations require that any genetically modified plant DNA be identified. The purpose of this experiment was to see if genetically modified plants could be detected in foods sold in local grocery stores, and if foods labeled as #organic# were truly free of genetically modified plants. Foods having the #organic# label by label definition cannot contain plants that are genetically modified or sprayed with pesticides.</p> <p>Methods/Materials A variety of commercial and organic foods containing soy and corn ingredients were purchased from local grocery stores, as well as fresh papaya. In a laboratory setting, I extracted DNA from the plant foods using a Qiagen#s DNeasy Kit. After extraction, I mixed the DNA with polymerase chain reaction (PCR) buffer and reagents. I then placed the samples in a PCR machine and amplified for 54 cycles over 3 hours. After the PCR was completed, a technician loaded the DNA on an agarose gel. The results of the gels were then photographed and I analyzed the results.</p> <p>Results Gel results showed that some of the samples contained the NOS gene, which is only found in genetically modified plants. Samples of health food store bin products: #Wild Oats Soy Flour# and #Wild Oats Corn Meal#, as well as #Albers Yellow Corn Meal#, #Boca (soy) Burger#, #Gardenburger#, and papaya fruit all contained the NOS sequence, meaning they were also genetically modified. The food samples with organic labels such as #Arrowhead Mills Corn Meal#, #Arrowhead Mills Soy Flour#, #Organic Boca Burger# and one sample of non-organic soybean (Safeway Select Shelled Edamame) did not possess the NOS gene.</p> <p>Conclusions/Discussion Although foods specifically labeled as organic were not genetically modified, the results of this experiment demonstrate that many foods sold in local grocery stores are indeed genetically modified, including bin products sold in local health food stores and commercial vegetarian products.</p>	
Summary Statement This project investigated bin products sold in health food stores, commercial vegetarian foods, and food products labeled as "organic" for evidence of genetic modification in plant DNA.	
Help Received Dr. Madeline Butler allowed me to use her lab at UCSD and assisted me when I was unable to perform various tasks due to GSDSEF/CSSF regulations.	