



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Sophia J. Powers	Project Number S1614
Project Title Redesigning Nature: The Life Span of a Genetically Engineered Tomato	
Abstract Objectives/Goals Genetically engineered (GE) crops have the potential to change the future of agriculture. Transgenic crops may be the solution to environmental problems, such as the run-off of pesticides, herbicides, and organic farming by-products into tributaries and oceans. My goal was to determine if genetically modified tomatoes will have a longer usable life span passing the economical benefit on to the agricultural industry and the environment. My hypothesis was that the simultaneous suppression of expansins (EXP) and hydrolase polygalacturonase (PG) would cause the tomato to ripen slower and the skin of the tomato to deteriorate at a slower rate. Methods/Materials I designed three environments for the usable life of transgenic tomatoes and non-transgenic tomatoes: storage, refrigeration and counter. To determine usable life I measured the circumference, firmness, weight, and percentage of mold. Eleven percent of the transgenic tomatoes with simultaeously suppressed proteins, EXP and PG, grew mold. Thirty-six percent of the control group grew mold. Results My research and investigation indicated that suppressing EXP decreases cell wall strength and suppressing PG increases the ripening of the tomato. As expected, the tomatoes with the proteins, PG and EXP, suppressed had a longer usable life. On the average the transgenic tomatoes lived about 16 to 20 days longer than the control tomatoes, or any other genotype. Conclusions/Discussion This experiment has created an extension to the usable life of a tomato. Accepting GE tomatoes as a commercial crop, could be the key to returning GE foods back as an environmental and economical solution for our world.	
Summary Statement The purpose of this project is to find out if genetically modified tomatoes will have a longer usable life span and ultimately pass an economical benefit to the agricultural industry.	
Help Received My mother was my sponsor.	