



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Ryan C. Fong</b>	<b>Project Number</b>  31117
<b>Project Title</b> <b>Determination of Similarities and Differences of Family Members using a DNA Profile</b>	
<b>Objectives/Goals</b> My objective is to determine if DNA profiles will allow me to compare the differences and similarities of my family members. Many family members and friends have told me that I physically look like my father and my little brother physically looks like my mother. My other friends say that I look like my mother and my brother looks like my father. DNA analyses using saliva were performed and fifteen different genes were evaluated. Based on the separate genes of the DNA, I used specific locus on the genes to evaluate my similarities and differences to my parents and my brother. <b>Abstract</b> My objective is to determine if DNA profiles will allow me to compare the differences and similarities of my family members. Many family members and friends have told me that I physically look like my father and my little brother physically looks like my mother. My other friends say that I look like my mother and my brother looks like my father. DNA analyses using saliva were performed and fifteen different genes were evaluated. Based on the separate genes of the DNA, I used specific locus on the genes to evaluate my similarities and differences to my parents and my brother. <b>Methods/Materials</b> Collect saliva samples using swabs. Perform in duplicate (2 swabs per person). Prior to collecting samples, do not eat or drink for 30 minutes. Saturate the swab with cheek cells and saliva. Make sure to rub firmly against the inside of the cheek as well as under the tongue and behind the lips. Allow one hour to dry. Epicentre Biotechnologies QuickExtract DNA test kits were used. Place sample into tube containing DNA extraction solution. Mix for 15 seconds. Incubate sample at 98°C for 2 minutes. Analyze sample on the Applied Biosystem Genetic Analyzer, which produces a DNA electropherogram. <b>Results</b> There were a total of fifteen different genes evaluated. These fifteen genes analyzed for are different for every person. Each person has these genes but may express at different locations on the genes, called the locus or loci. I evaluated the similar locus/loci from in each subject. Comparing the similar locus/loci to my mother, we share sixty-five percent of the genes analyzed for. My father and I share seventy-six percent of the genes analyzed for and my brother and I share eighty-seven percent. A comparison of my brother to my mother and father are quite different. My brother and my mother share fifty-eight percent of the genes analyzed for and sixty-eight percent with my father. <b>Conclusions/Discussion</b> This experiment would lead me to conclude that I am most similar to my brother, followed by my father, then my mother. Although I have many similarities to my father of the genes analyzed, it has yet to be determined what each of these genes does in the body. Most of these genes may indicate how cells are made. Also if more genes are analyzed, the results may differ.	
<b>Summary Statement</b> Determination of Similarities and Differences of Family Members using a DNA Profile	
<b>Help Received</b> Used laboratory supplies and equipment under the supervision of Dr. Leonard Fong at Agricultural & Priority Pollutants Laboratory in Clovis, California. My father helped me print the poster board.	