



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

<b>Name(s)</b> <b>Alberto Ruiz</b>	<b>Project Number</b> <b>S1224</b>
<b>Project Title</b> <b>Tracking Ancient Ancestry though DNA</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective is to reveal through DNA that our human species arose over 100,000 years ago in Africa from a single founding population and that every single human being can trace their ancestry back to this founding population showing that all humans share a unique genetic relationship to each other. <b>Methods/Materials</b> Informed consent was received by 25 students and their parents to participate in having their Mitochondrial DNA extracted from their cheek cells using a saline solution. The DNA was amplified using Polymerase Chain Reaction. Gel electrophoresis was done to see how much amplified DNA I received and sent the samples off to the lab to be sequenced. The results were posted online. I looked for Single nucleotide polymorphisms (SNP). SNPs are identifiable with a haplogroup. When each haplogroup was found, the SNP, age of the group, area it arose, and from what haplogroup it descended from was documented. <b>Results</b> 46% are members of haplogroup D, 24% were in haplogroup H, 8% were in haplogroup B, and the rest were unique and spread evenly by 4% among haplogroups A, B, C, L, M, N, T, U, and X. The results I obtained displayed that the haplogroups are descendants of one another and can be traced back to one founding population. Individuals in haplogroups D, X, U, L, and A are all descendants of haplogroup M. Haplogroup M is a descendent of haplogroup L, the founding population. <b>Conclusions/Discussion</b> Due to the fact that haplogroups are descendants from one another a pattern of descent is created leading to the founding human population. We share a genetic relationship to each other. We are all members of the human species regardless of the physical differences. Race is simply a way of classifying all the diversity of our species. We are all one diverse, big family.	
<b>Summary Statement</b> My project is about how DNA contains the answers to our human ancestry and how we are all related to one another.	
<b>Help Received</b> Used lab equipment at Mount Diablo High School under the supervision of my biotechnology teacher Colin Jones. Professor John Riggs of UC Davis consulted with me about further steps I could take to help advance my project. My dad helped me construct my board. I used sciencebuddies.com to help me answer	