



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Fiona T. Ryder</b>	<b>Project Number</b> <b>J1014</b>
<b>Project Title</b> <b>Hereditary Identity? Genetics and Fingerprints</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My goal was to find out if the basic characteristics of one's fingerprints are inherited from one's parents. <b>Methods/Materials</b> To test this theory, I took all ten fingerprints from six families, consisting of two biological parents and one of their biological children. I compared three different basic characteristics; the basic ridge arrangement, the slant of the basic ridge arrangement, and the size of the basic ridge arrangement, (basic ridge arrangement being the primary comparison), within the families by tallying up the similarities the child had with either one or the other or both parents together. My control groups were a set of randomly selected parents with a child unrelated to them. Fingerprinting equipment was borrowed from the local police department to take the fingerprints. <b>Results</b> I found that 73% of the related children's fingerprints had two or more basic characteristics the same, including the primary source, as their parents, where as the control group children had 51% with two or more characteristics in common with a random set of adults. In interesting finding was that 23 out of the 31 (74%) basic ridge arrangement matches in the control group were loops (the most common type of basic ridge arrangement found in this study) which might account for the percentage of matches in the control group. <b>Conclusions/Discussion</b> I concluded from my results that the basic characteristics of one's fingerprints are genetic. There was a 22% difference in positive matches (two or more characteristics in common) in favor of the biological families. There was a 15% difference in perfect matches in favor of the biological families.	
<b>Summary Statement</b> My project analyzes the fingerprints of families, and compares them to find inherited traits.	
<b>Help Received</b> My mother helped do graphs. My father helped attach papers to the display board with rings. The Arcata Police Department showed me how to take fingerprints and loaned me some materials. Six families let me take their fingerprints.	