



**CALIFORNIA STATE SCIENCE FAIR  
2012 PROJECT SUMMARY**

<b>Name(s)</b> <b>Daniela H. Gottesman</b>	<b>Project Number</b> <b>J1212</b>
<b>Project Title</b> <b>Exploring the Relationship among Fingerprints and Toeprints</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this research was exploring the correlation among toeprints and fingerprints. The first aspect was to explore the relationship between pairs of corresponding left and right fingerprints, as well as pairs of corresponding toeprints. The second aspect focused on exploring the correlation between the set of corresponding fingerprints and toeprints of the same side. One goal of this work is to develop methods and tools for predicting one sides' fingerprints and toeprints from the corresponding fingerprints and toeprints of the other side. Another goal of this work is to develop methods and tools for correlating the right sides' fingerprint pattern to the corresponding right toeprint pattern, and similarly for the left side. <b>Methods/Materials</b> Ink pads Table to keep track of the prints of the specific finger and toe 61 individuals Each individual's hands and feet were rolled on the ink-pad so that their entire finger from the last knuckle to the fingernail was evenly covered with ink. After the latter was completed, the chosen finger or toe was guided to the correct area in the grid. The prints were manually inspected classified into 10 categories of finger/toeprint patterns, according to the Henry Classification System, including Ulnar Loop, Radial Loop, Whorl, Tented Arch, Central Pocket Loop etc., and were organized in a table for analysis. <b>Results</b> The data show that the most dominant fingerprint and toeprint pattern on the left side of the body is the Ulnar Loop, and the most frequent fingerprint and toeprint pattern on the right side of the body is the Radial Loop. Interestingly, these two prints are "mirrors" of each other. <b>Conclusions/Discussion</b> This research revealed that, the most dominant fingerprints (and toeprints) on the left side are "mirrors" of those on the right side. This research also rejected my initial hypothesis that if the fingerprints of a group of individuals are similar, then there must be a similarity between their toeprints. Rather, the data displayed no strong correlation between an individual's fingerprints and toeprints. This research proves that one cannot predict a fingerprint from a toeprint. On the other hand, detectives can conclude that a discovered Ulnar Loop has a high probability of coming from an individual's left side finger or toe. Likewise, if detectives discover a Radial Loop, then it is likely to be from an individual's right side finger or toe.	
<b>Summary Statement</b> This project is about exploring the correlation among fingerprints and toeprints.	
<b>Help Received</b> Ms. Miller reviewed my abstract.	