



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>Benjamin T. Ellerbrock</b>  | <b>Project Number</b><br><b>J1306</b> |
| <b>Project Title</b><br><b>Fingerprints: Barcodes of Life</b>  |                                       |
| <b>Objectives/Goals</b><br>An individual's fingerprints are unique thus giving all humans an identification barcode. Fingerprint patterns, however, are limited to eight different types. This study examined fingerprint patterns of thirteen families to determine if those patterns are similar and therefore might have a genetic link. One set each of identical triplets and twins were included in the study.   |                                       |
| <b>Abstract</b><br><b>Methods/Materials</b><br>Fingerprints from both thumbs and both index fingers were collected using standard fingerprinting techniques. All fingerprints were examined under light magnification and placed into either one of eight categories of classic fingerprint pattern types or into a category of unreadable.<br><br>Materials used included fingerprint ink, ink roller, fingerprint cards, card holder and lighted magnifying glass. |                                       |
| <b>Results</b><br>All eight fingerprint patterns were seen. Ulnar loops were the most common pattern (39%). Family pattern similarities were seen in 11/13 families. Identical twins had similar thumb patterns but different index finger patterns. Similar patterns were seen in 2 of 3 identical triplets; the 3rd triplet displayed patterns different from his brothers.  |                                       |
| <b>Conclusions/Discussion</b><br>Fingerprint pattern similarities were seen in 85% of the families suggesting there may be a genetic link to these patterns. Of special interest is the case of the triplets. The two with similar patterns are both right handed; the one with different patterns is left handed. This makes me wonder if there might be a connection between the pattern difference and the handedness difference.                                 |                                       |
| <b>Summary Statement</b><br>My project examines family member fingerprint patterns to see if similarities might suggest a genetic link to fingerprint pattern type.  |                                       |
| <b>Help Received</b><br>My Mom and Dad helped type the report; my Dad read the report and offered suggestions for editing it.  |                                       |