



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Alexander J. Morgan	Project Number J1714
Project Title Thumb's Up	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I attempted to show that people with a predominant ethnic heritage (one to two) tend to have fewer fingerprint patterns than people with several ethnic heritages (more than two).</p> <p>Methods/Materials I fingerprinted each finger of the right hand using 50 human volunteers chosen at random. Age, gender, and ethnic heritage were my variables and the use of the right hand only was my control. Then I observed the fingerprints under a magnifying glass and classified them as whorls, arches, or loops. I also noted the person's name, age, major ethnic heritage/s, and gender. Finally I charted the information to see if my results supported by hypothesis (objectives/goals).</p> <p>Results The results of my 10 experiments confirm my hypothesis: That people with multi-ethnic heritages (MEH) will tend to have a greater variety of fingerprint patterns on their hands than those with only one or two ethnic heritages.</p> <p>Conclusions/Discussion Today, the FBI has the largest fingerprint database in the world -- complete with the fingerprint records of more than 44 million criminals. Because the FBI has so much fingerprint-related data to process, new ideas about fingerprint classification can help solve crimes more quickly and effectively.</p> <p>During my research, I was able to correspond via e-mail with several forensic scientists in different parts of the world. A few of them said that there is growing evidence of a connection between ethnic heritage and fingerprint patterns -- not just in terms of variety, but kind of pattern. Many also said they actively looking for ways to improve fingerprint classification systems: For example, to come up with better-designed systems that can help investigators find missing children more quickly.</p> <p>For this reason, I'm gratified that my results supported my hypothesis.</p>	
Summary Statement My project is about showing how ethnic heritage and fingerprint patterns correspond and how that information might be used to help forensic scientists solve crimes.	
Help Received My father, who is a senior vice president at his company, helped me get volunteers to give their fingerprints.	