



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Grant E. Weiner	Project Number 36071
Project Title The Evaluation of Latent Fingerprints on Objects of Varying Temperatures	
Abstract Objectives/Goals The objective of this study was to determine how the temperature of an object would affect the ability to evaluate latent fingerprints on it, by measuring the size of the print, the number of ridge lines seen, the clarity of the print, and the pattern of the print. Methods/Materials 2 sets of 4 glasses each of varying temperatures, noncontact infrared thermometer, mm ruler, magnifying glass, cocoa powder, soft brush, transparent tape, black marker, latex gloves, fingerprint pattern diagram, ink pad, index card Results The arch pattern of the fingerprint was the same on all samples and at all temperatures. The 2 sample sets had different results in other areas. There were 25 ridge lines seen at the lowest 3 temperatures (-11C, +5C, +21C) and 30 at +37.2C. The second set differed with the 2 lowest temperatures at 25 lines and the hottest at 23. Fingerprint length in set #1 had matching 25mm on the 3 lowest temperatures and the longest print (30mm) at +37.2. On sample #2, the 2 coldest were 30mm long. The hottest was shortest (25mm). Clarity on both sets had the hottest matching the coldest at 4.5 or 4 out of 5. Middle temperatures were 2 or 3 or 3.5 out of 5. Conclusions/Discussion I expected the number of ridge lines to be the greatest, the fingerprint size to be the longest and the fingerprint to be clearest with the colder temperatures of the object, since more sweat or water would have evaporated from the print in warmer temperatures, making them harder to evaluate. My results did not support my hypothesis. Perhaps I had my finger on the glass for inconsistent times while creating the print, the glass had warmed up while I was making the print so the actual temperature was higher, or I may have used too much pressure on the brush while dusting it, creating a smeared print. Since crimes are committed at different times of the day and year, a possible link between temperatures and the quality of latent fingerprints could be helpful in future investigations.	
Summary Statement I found that temperature of an object did not reliably affect the ability to evaluate latent fingerprints left on it.	
Help Received My science teacher guided me through the initial process. I designed and performed the experiments by myself.	