



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

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Project Title Electrostatics	
Abstract Objectives/Goals My project was done to learn about electricity, specifically static electricity, using a charge detector and accumulating charge by combing hair. I hypothesized that the more charge (supposedly gained through more comb strokes), the further away it will be detected. I also hypothesized that a longer antenna would increase the detector's sensitivity and that it would not matter who combed their hair to accumulate charge. Methods/Materials I built a charge detector from a transistor, a light-emitting diode (LED), and a 9-volt battery. I had someone comb their hair with a plastic comb to accumulate charge and then placed the comb on a non-conducting stand, varying at different times the number of strokes, the person combing their hair, and the length of the antenna. Then I moved the charge detector closer until it could sense the charge. I also conducted an experiment on charge blockage to determine whether the charge detector could sense the charge through a barrier of a varying material. Results I found that there was not much difference in the detection distances at which varying numbers of strokes were sensed. There also was not much difference between the distances at which the charge from different people's hair was sensed. When I extended the antenna, the LED (on the charge detector) behaved unpredictably. I tested the extra-long antenna in different places and concluded that either a), there was charge on the plastic insulation surrounding the wire or b), the detector was so sensitive it could sense charge from up to 20 feet away. The experiment on charge blockage was inconclusive because I could not be sure whether the detector was sensing charge on the comb or the barrier. Conclusions/Discussion In conclusion, I learned a lot about how charge is accumulated through friction/contact and about electricity.	
Summary Statement I conducted a series of experiments about how static charge is accumulated through friction/contact and detecting those charges.	
Help Received Mother typed report; Father answered questions about background reading.	