



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Darby R. Hurlbert	Project Number J1715
Project Title Chemical Lightening/Dyeing Effect on the Structure of Human Hair	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this experiment was to see if hair lightening and dyeing would make human hair weaker or stronger than untreated hair.</p> <p>Methods/Materials I tested twenty-seven strands of hair, nine were untreated and served as the control group, nine were lightened, and nine were dyed. I purchased one box of hair lightener and one box of hair dye from a local store. I applied both the lighter and the dye according to the package directions. I measured how far each hair stretched and how much weight it took to break it. I did this by securing one end of each hair to the top of a box, and the other end to a Dixie cup. I placed two pennies in the Dixie cup every 30 seconds. Then I recorded how much weight it took to break the hair and how much the hair stretched before it broke.</p> <p>Results My data shows that untreated hair is the strongest, dyed hair is the most elastic or flexible, and lightened hair is the weakest.</p> <p>Conclusions/Discussion The lightening and dyeing of human hair changes the hair's structure because, as the data shows, the treated hair is weaker than untreated hair. If I pursued another experiment, I would test different types of hair, shades of lightener, and colors of dye.</p>	
Summary Statement My project is about the chemical effects of dyeing and lightening on human hair.	
Help Received My mom gave me her hair from her hairbrush and helped me with the lightening and dyeing of the hair. My dad helped me decide on some of the ideas for my methods, gluing some of the hair, and formatting some of the text for my presentation board.	