



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Kristy M. Drutman	Project Number J2105
Project Title Hairy Situation	
Abstract Objectives/Goals The objective of this experiment was to find out the affects Sodium Laureth Sulfate,a chemical found in common shampoos,has on hair's length,tensile strength,and overall condition.The goal was to find if the accusations that this chemical in regular brands of shampoo,damages hair extensively,is accurate. Methods/Materials After gathering hairstrands from the 16 year old and 4 year old females,the initial condition was observed with a microscope,the initial tensile strength was measured with a apparatus and spring scale,and the initial length was measured with a ruler and cut all the same length.Every other day for 5 days the hair was washed in segregated washing solutions,dried, and measured.In the midpoint of the experiment, hair was again observed for its progressing condition.On the fifth day,the final condition,length,and tensile strength was measured and recorded. Results In the resulting averages it was concluded that the hair from the 16 year old female exposed to the chemical SLS resulted in the hair being broken down to 5.5 cm,along with a tensile strength of 2.1 newtons and the hair from the 4 year old female resulted in a length broken down to 6.28 cm,and a tensile strength of 2.4 newtons.Pantene Pro-V did have the worst affect on both the hair from the 16 year old and 4 year old females,leaving the hair from the 16 year old to decompose to 8.6 cm and the hair from the 4 year old to decrease to 7.5 cm.However,in regards to tensile strength,Pantene left the hair from the 16 year old with an average 2.36 newtons,and hair from the 4 year old with 2.32 newtons, whereas Paul Mitchell left it with a higher decrease of 2.2 newtons and Garnier Fructis left the hair with 2.18 newtons,another higher decrease than Pantene Pro-V. Conclusions/Discussion The main hypothesis that the isolated chemical Sodium Laureth Sulfate would exceed the most damage was supported.The specific hypothesis that PantenePro-V would cause the most damage among all the sulfate shampoos tested was partially supported and partially rejected.It was supported because it did result in the most extensive damage on length,but in terms of tensile strength,Paul Mitchell caused the most damage to the hair from the 16 year old hair,and Garnier Fructis on the hair from the 4 year old.A major factor in manipulation of the resulting length and tensile strength is how the hair from the 16 year old has had much more initial exposure and damage.	
Summary Statement A chemical called Sodium Laureth Sulfate found in common shampoo was investigated on its affects on hair length, tensile strength,and condition.	
Help Received Ms. Fisher provided guidance in using certain tools, processes of experimentation, and lab supplies; Brittany Drutman donated hair for experimentation; Maya Flores donated hair for experimentation; North Carolina Science Department provided Chemical SLS for tests.	