**Name(s)**

Taelor S. Robertson

**Project Number**

25898

**Project Title**

What Are the Effects of Perm Solution on Hair?

<table>
<thead>
<tr>
<th><strong>Objectives/Goals</strong></th>
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<tr>
<td>By conducting this experiment I am trying to find out how strong hair really is and to see what kind of damage perm solution does to different types of hair. The purpose was to find out which one of the four types of hair that I used was the strongest.</td>
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<tr>
<th><strong>Methods/Materials</strong></th>
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<tr>
<td>Materials: Natural brown hair, blonde hair, bleached blonde hair, red hair, spring scale, rubber gloves, soap, water, tape, foil, perm solution, scissors, ruler, and paper towels.</td>
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<tr>
<td>Methods: 1. Cut hair and thoroughly wash. 2. Tape each of the four types of hair on separate sheets of foil. 3. Form foil into a bowl-like shape and submerge hair in perm solution. 4. Allow perm solution to soak for 25 minutes. 5. Rinse and blot dry with a paper towel. 6. Let air dry overnight. 7. Cut hair so it is no longer attached to foil. 8. Cut the hair so that all hair is 6 centimeters long. 9. Put rubber gloves on for a better grip. 10. Take Spring Scale in one hand and one piece of hair in the other. 11. Take the piece of hair and make it into a loop. 12. Twist loop so hair has less chance of slipping out of your grip. 13. Gently pull hair until it snaps.</td>
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<th><strong>Results</strong></th>
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<td>The natural hair is stronger than the permed hair. The red hair is the strongest. The bleached blonde hair is the weakest. The natural blonde and the dark brown are the same strength before and after being permed. Stayed in the 1.0 to 2.1 range. By looking at the line graph you can see they have the same pattern.</td>
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<th><strong>Conclusions/Discussion</strong></th>
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<td>I feel that my hypothesis is correct. You can see that the red hair was the strongest and the bleached blonde was the weakest. While doing this experiment and by studying the graphs, I have noticed that after the hair had been soaked in perm solution it wasn't as strong because the keratins in the hair break down. I also noticed that the bleached blonde hair was the weakest due to the fact that it had already been through the process of being bleached. As you can see, once the hair was permed it's strength decreased. According to the graphs the natural blonde and the dark brown turned out to have a strength of 1.6 Newtons. The strongest was the red hair with a strength of 1.7 Newtons. Also, the bleached blonde hair had a strength of 1.2 Newtons. But, before the hair was permed the bleached blonde had a strength of 1.4 Newtons. While the red hair had a strength</td>
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<th><strong>Summary Statement</strong></th>
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<td>Seeing how perm solution effects the strength of different types of hair.</td>
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<th><strong>Help Received</strong></th>
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<td>Science teacher provided spring scale; Mother supplied the perm solution.</td>
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