



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Emma A. Dolan	Project Number J2010
Project Title SPF Test	
Abstract Objectives/Goals My mom was diagnosed with Melanoma when she was 40 years old, and my grandma has had several basal cell and squamous cell carcinomas removed in her lifetime. I take after them with fair skin and hair, and I wanted to learn about protecting myself from ultra-violet (UV) rays so I won't go through the same experiences with my skin. The objective of my project was to find out if higher Sun Protection Factor (SPF) sunscreens are more effective in blocking ultra-violet rays by using UV reactive beads.	
Methods/Materials Materials: Neutrogena Ultra-Sheer Broad Spectrum Dry Touch Sunscreens with SPF's 30, 45, 55, 70, 85+, and 100+, 630 UV Reactive Beads, 21 small plastic bags, and a timer. Method: First, label 7 small plastic bags with time of test and one with each SPF. Next count 30 UV beads and put in each bag. Then measure out 1/4 teaspoon of each SPF sunscreen and spread evenly on to the coordinating plastic bag. One bag will be left with no sunscreen. Finally, place all bags in the sun for 5 minutes. Record observations. Record the number of beads that were protected (or showed no change in color). Repeat all steps at 3 different times of the day placing the bags in the same location each time.	
Results The SPF 100+ was proven to be the most protective sunscreen in 2 out of the 3 tests. SPF 100+ had blocked the most UV rays which was shown by the number of beads that did not change color in the sun. SPF 55 was proven to be better than SPF 75 and 85+, and in fact the SPF 55 blocked more rays than SPF 100+ on one of the tests.	
Conclusions/Discussion Before the results were averaged numerically (by number of beads unchanged), it was harder to tell the difference between the different SPF's visually. However, after the results were averaged, it became clear that the results were in fact very different. In general, SPF 55 and above were all proven to be very protective. When people are buying sunscreen, they should purchase one that is SPF 55 or above (but of course still remember to reapply it often). Next year I plan on doing another sun protection test. I will test UV protective clothing to see if they are as effective as sunscreen. I would hope that would give me more valuable information on UV protection.	
Summary Statement My project was testing the effectiveness of different SPF sunscreens on blocking the UV rays from UV color changing beads.	
Help Received My mom and my sister helped carry bags outside and by taking pictures.	