# CALIFORNIA STATE SCIENCE FAIR
# 2016 PROJECT SUMMARY

**Name(s)**
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**Project Number**
**J1919**

**Project Title**
## Ultra-Protection against Ultra-Violet

**Abstract**

**Objectives/Goals**
The objective of this experiment is to determine which SPF value protects the skin from skin cancer, skin aging, sunburns, cataracts, a weakened immune system, and other effects of UV radiation the most.

**Methods/Materials**
Two experiments were conducted. Experiment 1 needed sunlight; however, in December, it was raining, so I moved on to Experiment 2, an indoor project. For Experiment 1, SPF 8,15,30,50, the UV checker, and the homemade sunscreen (Aloe Vera juice, carrot seed oil, olive oil, and coconut oil) were needed. The UV checker was used to determine the UV index of each of the Ziploc Bags with the sunscreens on and the blank Ziploc Bag for 5,10,15,20, and 30 minutes. The UV black light, UV beads, and Petri dishes were the main materials used in Experiment 2. The UV beads in different Petri dishes and SPF values were exposed to the UV black light for 5 minutes and turned from a white to purple color. Finally, I took the lids out and recorded the amount of time it took for the UV beads to turn from purple back to white.

**Results**
The results were that the blank Ziploc bag had the highest UV index, SPF 50 had the lowest UV index, and the homemade sunscreen and SPF 30 had approximately the same UV index. On an average, the UV beads in the blank Petri dish took about 3 minutes 16 seconds, and SPF 50 took the shortest time of 7.52 seconds.

**Conclusions/Discussion**
According to the results, the increase in organic ingredients in SPF 50 block more UV radiation. The organic ingredients absorb the UV radiation and release it back as harmless heat, a chemical block. The organic ingredients are carbon compounds which consist of carbon,hydrogen,nitrogen, and oxygen atoms. Homemade sunscreen doesn#t have chemicals which are better for our skin. We should stop pollution because it releases more chlorofluorocarbons into the air, causing the ozone layer to deplete. Therefore, more UV radiation will be able to pass through. So when you go outside, use sunscreen and be safe!

**Summary Statement**
After I tested all of the sunscreens in both experiments, I found out that SPF 50 blocks the most UV radiation, but SPF 30 and the homemade sunscreen's results were closer to SPF 50.

**Help Received**
My mom helped me in understanding some concepts of this project and the design of how to conduct both of the experiments.