



# CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

<b>Name(s)</b> <b>Dolores Hernandez; Natalie Montes</b>	<b>Project Number</b> <b>S1511</b>
<b>Project Title</b> <b>The Highlight of UV and Makeup</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b> My partner and I know how many people all over the world wear makeup and that their applicators contain bacteria that they don't know they put on their face daily. In this experiment me and my partner hope to kill bacteria found in makeup applicators with a UV light more than soap and water can. Our hypothesis if UV light is known to kill bacteria, the makeup applicators placed under UV will have more decrease in bacteria than the applicators washed with soap and water.</p> <p><b>Methods</b> We used powdered agar (23 grams) and mixed it with water, creating a solution and putting into an autoclave at 121 degrees Celsius and 15 psi in order to limit the most possible contamination. When we took out the solution, we poured it equally into 25 petri dishes and let them harden overnight. We swabbed the different types of applicators with sanitized cotton swabs and swabbed them into the dishes with the hardened agar. These dishes were then placed in an incubator at 37 degrees Celsius for 48 hours. During those hours, we placed the 1 blush and contour brush and a beauty blender under UV light for 8 hours and 1 blush and contour brush and beauty blender washed with soap and water. Once done, we swabbed these applicators again and repeated the same process with the cotton swabs.</p> <p><b>Results</b> After doing both UV light and soap and water treatments, we found that the UV light treatment was most effective in killing bacteria than the soap and water treatment. The soap and water treatment did kill a significant amount of bacteria but not as much as the UV light treatment did. In the average, there was a 28 centimeters squared decrease in bacteria with the UV light treatment in beauty blenders. In the average with soap and water, there was a 20 centimeters squared of bacteria decrease also in beauty blenders. These results showed that UV light showed a greater decrease in bacteria. We made sure that everything on the petri dish was bacteria because we had a control group that showed no sign of contamination so that meant that everything on the petri dishes was bacteria.</p> <p><b>Conclusions</b> The UV light treatment was more effective in killing bacteria than the soap and water treatment. This means that the UV light treatment is a more easy and effective way to kill bacteria off of makeup applicators than soap and water because unlike soap and water, you don't have to wait a long time for your applicators to dry. This expiration will save makeup users time and money by not having to wait days for makeup applicators to fully dry and saving money by not buying many anti-bacterial soap.</p>	
<b>Summary Statement</b> We experimented an easier way to remove bacteria from makeup applicators.	
<b>Help Received</b> Our advanced placement Biology teacher and her experienced friends helped up with materials and with the process of autoclave.	