



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Leia Gluckman	Project Number J1409
Project Title A Clean Conscience: Formulating an All-Purpose Dental, Hair, and Body Cleansing Powder for the Homeless Population	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals As the most requested hygiene items at homeless shelters are toothpaste, shampoo and body powder, I wanted to create an all-purpose tooth, hair and body cleansing powder that could be made from natural and inexpensive ingredients. Taking common ingredients found in tooth powder, body powder and dry shampoo, I set out to formulate a natural powdered product that would: (1) absorb sweat and oil, (2) clean teeth, (3) kill bacteria, and (4) have a pleasant taste/smell.</p> <p>Methods/Materials A variety of food-grade flours, clay, baking soda, salt, essential oils and stevia mixed in various proportions. Tested individual ingredients and combinations for absorptive and antibacterial effects, cleansing ability and taste/smell, using water, oil, sterile swabs, LB agar plates, tryptic soy agar plates, incubator (I built), sweaty shirt, toothbrushes. For absorbency, I used a dropper to add water/oil to each powder and observed when the water/oil was fully absorbed. For antibacterial properties, I contaminated my science classroom counter, cleaned it with (1) essential oils, and (2) my best formulas, then swabbed the cleaned areas and grew bacteria in agar plates. For tooth-cleansing, I brushed coffee-soaked eggs with toothbrushes dipped in each of the powders. Taste and smell were my own opinions.</p> <p>Results I created 13 formulas, most of which had absorbent and antibacterial properties, but did not taste well enough to function as a tooth cleanser, until I added stevia and significantly increased the amount of essential oils.</p> <p>Conclusions/Discussion I created three formulas that are able to absorb sweat and oil, clean teeth, kill bacteria, and have a pleasant taste/smell.</p>	
Summary Statement I created an all-purpose tooth, hair and body cleansing powder to assist the homeless population	
Help Received I designed and performed the experiments myself, supervised by my mother and Caryn Asherson, my science teacher.	