



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Alonzo Javier	Project Number J2010
Project Title Which Won? Wipe or Wash	
Objectives/Goals Objective: The objective of my experiment is to determine which cleans hands better, wiping hands with hand sanitizer or washing hands with soap and water. Hypothesis: I believe that wiping with hand sanitizer will cleanse hands better than washing with soap and water.	
Abstract Methods/Materials Material: Hand Sanitizer (Unscented and Up & Up brand), Soap (Unscented and Up & Up brand), Paper Towel, Growth Media (R2A Agar # Heterotrophic Media), Media Plates with Lids (Plastic), Sharpie Marker, and Incubator (35°C) Method: Using growth media, test subject hands (palm & fingers) before and after using hand sanitizer. Similarly, compare this by testing another subject's hands before and after washing with soap and water. Incubate the test growth media accordingly for two (2) days and read results directly by counting the number of dots (bacteria). Compare results.	
Results The results showed that before cleaning my hands with either soap and water or hand sanitizer, there were quite a number of bacteria compare with after the hands were cleaned which were considerably less. Before cleaning the hands using soap and water and hand sanitizer, the average number of bacteria were 4,282 and 61, respectively. After cleansing with soap and water, the average number of bacteria reduced was 154 or a 96.3% reduction. Cleansing with hand sanitizer resulted in the average reduction of the number of bacteria was 12 or a 71.1% reduction.	
Conclusions/Discussion My hypothesis was incorrect. The results show soap and water clean hands better than hand sanitizer does. There was an initial difference in the number of bacteria before the hands were cleaned, and this was due to the use of different volunteer for each test. However, the results showed that soap and water killed an average of 96.3% of the bacteria while the sanitizer killed an average of 71.1%. Though the hand sanitizer didn't kill as much as the soap and water, both are meant to be used for cleaning the hands. The hand sanitizer still did a good job of reducing the number of bacteria but not as great as simply washing you hands.	
Summary Statement My experiment is to determine which cleans hands better, wiping hands with hand sanitizer or washing hands with soap and water.	
Help Received My parents helped with the assembly of the presentation board. I also had help with my Dad on the experiment using the laboratory (and lab equipment) at his work at a water company.	