



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> <b>Hannah N. Zimmerman</b>	<b>Project Number</b> <b>J1341</b>
<b>Project Title</b> <b>The Effect of Non-Antibacterial and Antibacterial Cleansers on E. coli, P. aeruginosa, and S. aureus Growth</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective is to determine which of the eight types of disinfectant products is most effective in limiting the growth of bacteria strains of E. coli, P. aeruginosa and S. aureus.</p> <p><b>Methods/Materials</b> The experiment was conducted in a sterile microbiology lab. Three large Petri dishes with nutrient agar were swabbed with a different bacterial broth. Filter paper discs were dipped into the eight numbered products (antibacterial and non- antibacterial: liquid soap, hand gel, and mouthwash, as well as bleach and alcohol). After 24 hours, the dishes were removed from the incubator and transferred to the experiment room. A millimeter ruler was used to measure the diameter of the circle of non-growth to show how much each product limited that type of bacteria growth.</p> <p><b>Results</b> Purell antibacterial hand gel and 20% Bleach were the only products that killed some of every type of organism. Dial Antibacterial hand soap killed an extreme amount of both E. coli and S. aureus. Although these products had the best results, the other products had an effect as well. Overall, P. aeruginosa was the hardest bacterium for the liquid hand soaps and mouthwashes to kill, even if they were labeled antibacterial</p> <p><b>Conclusions/Discussion</b> Dial antibacterial hand soap and Purell antibacterial hand gel are the most effective products tested at inhibiting E. coli and S. aureus. Dial antibacterial hand soap greatly limited the growth of E. coli and the S. aureus compared to all the other products. E. coli and S. aureus are found either on or in the skin and Dial is a antibacterial hand soap. Overall, P. aeruginosa was the hardest bacterium for the liquid hand soaps and mouthwashes to kill, even if they were labeled antibacterial. P. aeruginosa is found in distilled water and in hospitals, which means P. aeruginosa has very simple nutritional habits. Although Dial and Purell had the best results, the other products had an effect as well. From these results, it is recommended to wash your hands with Dial antibacterial hand soap instead of a nonantibacterial soap, and if using a hand gel, Purell is an effective antibacterial cleanser.</p>	
<b>Summary Statement</b> I tested eight products, antibacterial and nonantibacterial on three different organisms to determine which product was most effective in killing the bacteria.	
<b>Help Received</b> I recieved help from my mentor Mrs. Herbst with checking the scientific accuracy on my report; I conducted my experiment at Santa Barbara City College under the supervision of Lab tec. Brett Dicks	