



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Eli W. Erlick	Project Number J1707
Project Title Staphylococcus aureus: Resistance to Silver-Impregnated Materials	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project was to see if Staphylococcus aureus could develop resistance to a silver-impregnated catheter. Silver containing polymers are being increasingly used in products to decrease human exposure to infectious bacteria. There is little data on the development of resistance of Staphylococcus aureus to silver impregnated polymers.</p> <p>Methods/Materials A solution containing Staphylococcus aureus was placed into two test tubes containing thioglycollate solution and thioglycollate solution that contained .5 cm of silver catheter. Those two solutions were incubated, and plated. Digital pictures of the solutions were taken and imported into Adobe Photoshop to calculate percent plate coverage. Both solutions were then placed into test tubes containing thioglycollate solution and were allowed to culture. Each Staphylococcus aureus solution was then placed into both a test tube containing thioglycollate solution and a test tube containing thioglycollate solution and .5 cm of silver catheter. These solutions were allowed to incubate for 3 hours and were then plated and the percent plate coverage was calculated. This procedure was repeated for a total of three trials.</p> <p>Results The Staphylococcus aureus which had a prior exposure to the silver-impregnated catheter had less suppression of growth on a second exposure to the silver catheter than the Staphylococcus aureus which had not been previously exposed.</p> <p>Conclusions/Discussion Based on my results, it appears that there is a mechanism of resistance that can develop in Staphylococcus aureus to a silver-impregnated polymer.</p>	
Summary Statement Staphylococcus aureus# ability to resist the effects of silver-impregnated catheter was tested, and it was found that Staphylococcus aureus developed a resistance to the anti-bacterial effects of this product.	
Help Received Ms. Judy Ferleman, Bacteriologist at Howard Memorial Hospital, helped me obtain coagulase-positive Staphylococcus aureus. Dr. Carla Longchamp helped me obtain materials and reviewed biohazard precautions in regards to my use of this bacteria. She also helped me dispose of the biohazardous	