



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Andrew J. Strachan	Project Number S1514
Project Title The Effect of Metallic Conductivity on Microbial Life	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of this project was to determine if there is a correlation between microbial death and metallic conductivity. This is to extend published research demonstrating anti-microbial properties of copper to other metals.</p> <p>Methods/Materials Materials: Petri dishes with agar, an incubator, various metal strips ranging from higher to lower conductivities than copper, bacteria from my hands, pen, tape, labeling materials and a camera.</p> <p>Method: At the start of the experiment, I rubbed each dish with two of my fingers across the agar to introduce common bacteria to the growth mixture. The bacteria was incubated for 10 days at which time numerous bacterial colonies were present. In each dish, a metal strip of different conductivity was placed. In addition, there was a single control dish in which no metal was placed. Over a period of five days, the life of the bacteria was monitored.</p> <p>Results I found a direct correlation between conductivity and microbial death rate. Silver, with the highest conductivity, had the highest death rate while tungsten, with the lowest conductivity, had the least. The objectives of the project were met. We were able to show a correlation between conductivity and microbial death. We were also able to reproduce the published results which claims copper exhibited anti-microbial properties. To our knowledge, the correlation between conductivity and microbial death has never been reported before.</p> <p>Conclusions/Discussion This project set out to investigate a speculative claim about why copper exhibits anti-microbial properties. We were able to reproduce the original results and go beyond them by investigating the claims about conductivity. More study is necessary though. In order to effectively kill the bacteria had to make physical contact with it. In some cases, the bacteria was growing on the bottom of the growth media and not in direct contact with the metal. In these cases, it was often difficult to determine if the bacteria was in contact with the metal or not.</p> <p>In this project, we investigated the correlation between conductivity and microbial death. A closely related</p>	
Summary Statement In order to extend published research demonstrating the anti-microbial properties of copper, we performed an experiment to investigate the possible correlation between metallic conductivity and microbial death.	
Help Received	