



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Luca V. Mendoza	Project Number J1609
Project Title Can Electricity Kill Bacteria?	
Abstract Objectives/Goals Bacteria is one of the main causes of sickness and disease. Antibiotics are harmful poisons. An effective, quick, and practical solution to the cause of some of the most foreboding of sicknesses is yet to be found. The purpose of this lab is to illustrate how bacteria can be eradicated with the use of an electric current. This simulates the method of the most common type of leukocyte, the neutrophil. The neutrophil, comprising the majority of leukocytes, uses an electromagnetic flux around 60mA to kill invading microbes. Methods/Materials In this experiment, two types of bacteria, the gram-negative <i>Serratia Marcescens</i> and the gram-positive <i>Micrococcus Roseus</i> , were smeared onto 12 different plates. The plates contained "Nutrient Agar 1.5," which has an added amount of sodium for conductivity. The ends of two copper wires carrying nine volts for half the trials and six for the other were then inserted into the dishes for varying times of 1 minute and 30 seconds. This results in 12 plates, three of each of the bacteria, one for each time length and one control. Results Each of the dishes showed a distinct difference from the control, the 1 minute plate more so than the 30 second plate. This took approximately two days to show, but upon that, there was no visible sign of bacteria between the slits created from inserting the wires into the agar. Conclusions/Discussion The experiment accurately represented the hypothesis, as both bacteria showed no growth in the area affected by the electrical current, indicating the bacteria had been exterminated.	
Summary Statement Low voltage electricity was successfully used to eradicate two types of bacteria, <i>Serratia Marcescens</i> and <i>Micrococcus Roseus</i> .	
Help Received Parents ordered supplies.	