



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Hagop J. Chinchinian	Project Number J0203
Project Title Micro-Electricity: The Effect of Various Microorganisms on the Output of a Microbial Fuel Cell	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of the project was to improve the efficiency of a microbial fuel cell by using various microorganisms from different items. Additionally, the purpose was to see if household items containing microorganisms could be used in a microbial fuel cell.</p> <p>Methods/Materials I built three mediator-less microbial fuel cells at home. I also collected river mud which was used within 24 hours of collecting it. I also used organic potting mix with compost enhancer and organic potting mix alone in the microbial fuel cell. Each item contained microorganisms. I placed each in one of the three fuel cells, and did it three times for three trials.</p> <p>Results After doing the experiment, the organic potting mix produced the most electricity, followed by the river muck, and the organic potting mix with compost enhancer produced the least electricity. The organic potting mix produced on average 99.67 mV, the river muck produced 63 mV on average, and the organic potting mix with the compost enhancer produced on average 44.33 mV.</p> <p>Conclusions/Discussion After the experiment, I found out my hypothesis was proven wrong. Instead of the muck producing the most electricity and the organic potting mix producing the second most electricity as I hypothesized, the organic potting mix alone produced the most electricity because it contained microorganisms that worked the best in the microorganisms. I also found out that the river muck produced the second highest amount of electricity, while the organic potting mix with the compost enhancer produced the least electricity since the compost enhancer broke down the organic potting mix and altered the reactions that take place in the microbial fuel cell. Other questions I had about the experiment were if the material of the electrode of the microbial fuel cell affected the output. Additionally, I wondered if the aquarium pump that provided oxygen to the microbial fuel cell would affect the output.</p>	
Summary Statement The project's purpose is to help improve efficiency of a microbial fuel cell by using various microorganisms found in different items.	
Help Received My father helped me drill a hole in the microbial fuel cell. My mother helped glue items onto the board.	