



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Ian J. Bennett	Project Number J0804
Project Title Generating Electricity from Wastewater Using a Microbial Fuel Cell	
Abstract Objectives/Goals My project is to determine which wastewater sample creates the most millivolts using a microbial fuel cell (MFC). I believe that the simulated ground food wastewater sample will produce the most millivolts using an MFC. Methods/Materials Three microbial fuel cells with identical cathode and anode chambers, electrodes, and salt bridges were built. The secondary (biological) treatment sample was collected from the wastewater plant, and the ground food household wastewater sample was mixed. The wastewater samples and control were poured into individual anode bottles, and sealed airtight. Each cathode bottle was filled with a saltwater conductive solution. The external circuit was connected to the resistor (multi-meter) and the millivolt readings were recorded twice daily, for seven days. Results The secondary (biological) treatment wastewater sample from the Sunnyvale, CA Water Pollution Control Plant produced the highest reading, 152.45 millivolts. Simulated ground food wastewater sample generated a 78.75 millivolt reading. Conclusions/Discussion My conclusion does not support my hypothesis that the simulated ground food wastewater sample will produce the most millivolts using an MFC. Microorganisms added to the secondary (biological) treatment wastewater at the treatment plant, generated the highest reading of 152.45 millivolts. This is only 10.16 percent of a 1.5 volt AA battery output. Ground food naturally produced nearly half the secondary treatment millivolt level. The data demonstrates that a microbial fuel cell can be used to harvest electricity from ground food and secondary (biological) treatment wastewater.	
Summary Statement The purpose of my project is to present experimental data comparing the amount of electricity, measured in millivolts, generated from wastewater samples using a microbial fuel cell.	
Help Received My parents drove me to purchase supplies, collect wastewater plant samples, and borrow the multi-meter. My parents paid for all materials and lent me tools. My parents answered questions about grammar and word choice, took pictures, and made sure I thought safety first.	