



**CALIFORNIA SCIENCE & ENGINEERING FAIR  
2018 PROJECT SUMMARY**

<b>Name(s)</b> Natalie G. Neypes	<b>Project Number</b>  38439
<b>Project Title</b> Micro Machines: Determining the Optimal Temperature Range for a Microbial Fuel Cell	
<b>Abstract</b> <b>Objectives/Goals</b> To determine how to create a well-functioning microbial fuel cell, I decided to test what temperature range a microbial fuel cell best functions. <b>Methods/Materials</b> Tested what temperature range a two-chambered microbial fuel cell best functions by creating 3 two-chambered microbial fuel cells. Placed mud in the fuel cell to generate the energy. Connected a multimeter to the fuel cell and tested milliamps and millivolts every day for 10 days to determine the optimal temperature range. After, I converted the data into watts. <b>Results</b> The 3 two-chambered microbial fuel cells were placed at three different temperature ranges to determine what temperature a microbial fuel cell best functions. I found that when placing a fuel cell at the baseline temperature (room temperature), at a temperature cooler than the baseline temperature, and at a temperature warmer than the baseline temperature, the fuel cell generated the most energy at a temperature warmer than the baseline temperature. <b>Conclusions/Discussion</b> Creating two-chambered microbial fuel cells and testing the optimal temperature range proved that a microbial fuel cell best functions at a temperature warmer than the baseline temperature. It also proves that a microbial fuel cell can be an effective renewable energy resource.	
<b>Summary Statement</b> After building 3 two-chambered microbial fuel cells, placing them at 3 different temperature ranges to test the energy generated for 10 days, I found that a microbial fuel cell best functions at a temperature warmer than room temperature.	
<b>Help Received</b> I designed, built, and performed the experiments myself. However, my dad assisted in drilling holes on plastic containers in order to build the fuel cells.	