



**CALIFORNIA STATE SCIENCE FAIR  
2017 PROJECT SUMMARY**

<b>Name(s)</b> <b>Sadie R. Howard</b>	<b>Project Number</b> <b>J0207</b>
<b>Project Title</b> <b>Pee Is for Power</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this study is to measure the affect of human urine on the energy output of a microbial fuel cell. <b>Methods/Materials</b> Microbial fuel cells were constructed using fuel cell vessels, soil, anodes, cathodes, hacker boards, capacitors, and LEDs. Human urine was added in varied quantities to the fuel cells. The energy output of each fuel cell was measured using a multimeter and seven resistors in several trials both before and after adding the urine. <b>Results</b> The addition of human urine increased the energy output of the microbial fuel cells. In the fuel cell where 1ml of urine was added, the peak power occurred at 470 ohms with an increase of 40.01 micro watts after adding urine. In the microbial fuel cell where 5ml of urine was added, the peak power occurred at 47 ohms with an increase of 896.81 micro watts after adding the urine. <b>Conclusions/Discussion</b> I was able to build microbial fuel cells that convert human urine into electricity using microorganisms. I determined that using human urine in microbial fuel cells increases the energy output of the fuel cell. I hope to expand this idea by making a septic tank into a microbial fuel cell that could possibly power a house. This idea could create a single solution to solve the problems of human waste and generating electricity.	
<b>Summary Statement</b> I showed that human urine increases the energy output of a microbial fuel cell.	
<b>Help Received</b> None, I built the microbial fuel cells and conducted the tests myself.	