H2O and Bacteria Make the Current Go

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Microbial fuel cells are a newly innovative idea that allows solutions rich with electrochemically active bacteria to produce electricity using cellular respiration. In this experiment, different types of water were tested while functioning in microbial fuel cells to determine which one is most efficient in producing electricity. Distilled water, tap water, lake water, sludge wastewater, and raw wastewater were all collected in containers and tested in microbial fuel cells. A microbial fuel cell consists of an anode and cathode joined together by a salt bridge, and attached to an outside electrode. A voltmeter will be used to record the amount of voltage produced by each fuel cell, during different time intervals. Energy was harvested from microorganisms, exoelectrogenic bacteria, whose outer membrane cytochromes are primarily responsible for the energy output. The organisms were superficially identified using preliminary confirmatory tests. Their respected bacteria cultures exhibiting a growth pattern of multiple organisms yielded greater electrical energy than cultures of greater purity. Microbial fuel cells are imperative to multiple science disciplines, their research and examination proves their potential to help solve water purification, and energy production issues that the world faces today.

Awards Won: