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Microbes Make Electricity

The purpose of this project was to generate electricity directly from microbes eating glucose in a bio-battery. I put microbes in a fuel cell and fed them glucose. The cell was connected using carbon paper electrodes. to an electrical circuit through a small load (300 Ohms) and the voltage measured. I tested several different microbes for their ability to generate electricity including baker's yeast and microbes I isolated from pond mud and coal sludge. All the microbes were able to generate small amounts of electricity. The maximum voltage achieved was around 400 mV. The maximum power output was from the yeast and was 150 microWatts for over 10 minutes. The most efficient electricity production was from the coal sludge microbes which I was able to directly grow on the carbon electrode. Alternative power sources are needed to help reduce the nation's dependence on foreign oil and to reduce global warming and pollution. On a small scale, a bio-battery using sugar could power an iPod, and on a bigger scale a bio-battery using household waste could provide electrical power for a house.