

SINGLE-CHAMBER MICROBIAL FUEL CELL

Aim

- To develop a **low-cost, renewable battery**.
- To investigate the **optimization of microbial-powered fuel cells (MFCs)** using glucose.
- To produce a **4000-word** research paper in **chemistry** for IB program.

Process

- Applied **engineering design cycle** to **improve on prototype**: enlarged cell base for a greater electrode surface area, generating greater voltage output.
- Constructed 15 MFCs, wiring them into a breadboard** and **Arduino circuit** to collect **multimeter** readings.
- Implemented **PASCO Capstone** and **Excel** to process, manipulate, and graph data
- Synthesized research and experiment results** into a formal **APA 7** paper.

Results

- Synthesized findings and **curated improvements** and directions for future research.
- Awarded highest grade (A)** for essay composition by the International Baccalaureate Organization.

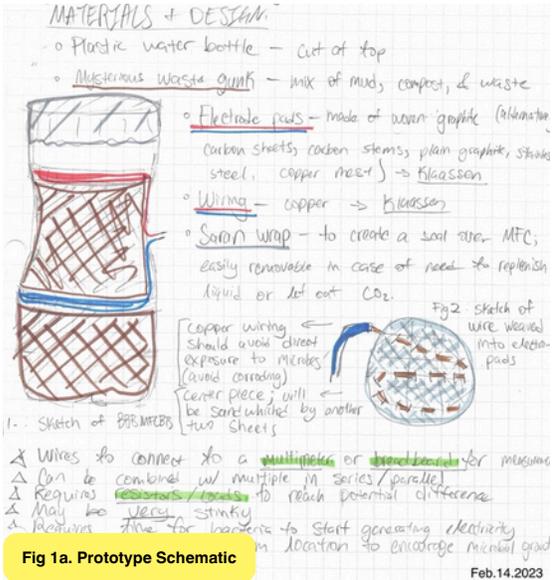


Fig 1a. Prototype Schematic



Fig 1b. Prototype MFC Build

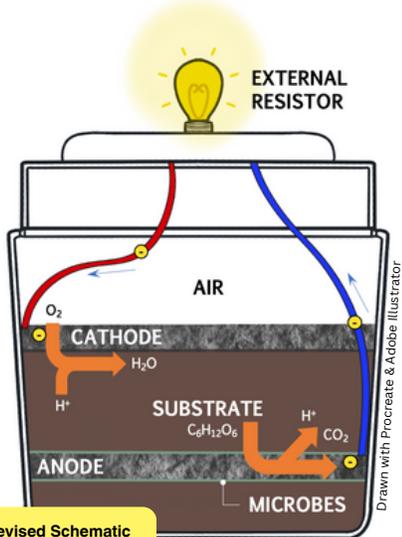


Fig 2a. Revised Schematic



Fig 2a. Revised MFC Build