

*BME 400: Biomedical Engineering Design*  
**A Finger Plethysmograph to Measure Blood Resistivity**

**Clients:**

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November 11<sup>th</sup> to November 17<sup>th</sup>

**Problem Statement:**

Our goal is to design a finger plethysmograph to measure blood resistivity. Impedance plethysmography may be used to measure arterial volume change that occurs with propagation of the blood pressure pulse in a limb segment. For this measurement, we assume a constant value of blood resistivity. However, blood resistivity may change under both physiological and pathological conditions. Use of an impedance plethysmograph on a finger immersed in a salt-filled beaker may yield a simple method for determining blood resistivity. This may develop into a method that diabetics can use to measure glucose level noninvasively.

**Last Week's Goals:**

- Finish building and testing out circuit
- Finish building and testing the finger holder prototype
- Purchase/buy electrodes
- Finalize saline solutions
- Start collecting data

## Summary of Accomplishments:

- The team finished constructing the circuit and started testing it.
- Lucas finished up the finger vessel
- The team met with Professor Webster and reviewed our circuit idea and acquired several tin defibrillator electrodes.

## This Week's Goals:

- Finish building and testing out circuit
- Finish building and testing the finger holder prototype
- Finalize saline solutions
- Finalize current requirements.
- Begin working on the final paper and poster

## Difficulties:

No difficulties thus far

## Activities:

**Tim Balgemann:** Advisor Meetings: 1 hr  
Research 1 hrs  
Team Meeting: 5.5 hrs  
**Total: 7.5 hrs**

**Lucas Vitzthum:** Advisor Meetings: 1 hr  
Research 1 hrs  
Team Meeting: 5.5 hrs  
**Total: 7.5 hrs**

**Nick Harrison:** Advisor Meetings: 1 hr  
Research 1 hrs  
Team Meeting: 5.5 hrs  
**Total: 7.5 hrs**

**Tyler Lark:** Advisor Meetings: 1 hrs  
Research 1 hrs  
Team Meeting: 5.5  
**Total: 7.5 hrs**

