**Research Question**

What is the optimal PDMS design for heating the Eppendorf tube?

**Independent Variables**

1. PDMS size

**Dependent Variables**

1. Time it takes for Eppendorf to reach 65°C

**Extraneous Variables**

1. Battery Size
   1. Keep the battery size the same and make sure it does not run out of charge.
2. Nichrome wire length
   1. Use the same length of nichrome wire for each PDMS mould, with a similar coil design.
3. PID settings (Kp, Kd, Ki)
   1. Keep the settings the same

**Hypothesis**

**H0:** Decreasing the size of PDMS will not affect the time it takes for the Eppendorf to reach 65°C.

**H1:** Decreasing the size of PDMS will affect the time it takes for the Eppendorf to reach 65°C.

**Method**

1. Design 3 different sized moulds (Ø20,25,30 & 40h) for the PDMS that will still be able to fit the Eppendorf tubes in them.
2. Print the moulds.
3. Set the PDMS in the moulds with nichrome wire in them.
4. Hook up the Ø30 mould to the Arduino circuit and plot how long it takes for the temperature to settle at 65°C.
5. Repeat step 4 with Ø25 and Ø20.
6. Compare results.