

# Temperature-Controlled Assembly and Characterization of a Droplet Interface Bilayer

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## Materials

| Name  | Company              | Catalog Number | Comments  |
|---|----------------------|----------------|---|
| 25 mm x 40 mm x 1 mm insulative rubber (x2) | Any                  |                | Insulates the bottom of the aluminum fixture from the stage of the microscope   |
| 25 mm x 40 mm x 6 mm insulative rubber (x2) | Any                  |                | Protects heating elements from being damaged by the microscope stage clips and insulates the top of the heating elements.                 |
| 3-(N-morpholino) propanesulfonic acid       | Sigma Aldrich        | M3183          | Buffering agent for lipid solution  |
| Acrylic substrate                           | Fabricated in house  | HTD_STG_2      | ~1000 uL acrylic well with a poka-yoke exterior profile to fix orientation  |
| Aluminum fixture                            | Fabricated in house  | HTD_STG_1      | Base fixture with an oil well that holds the acrylic fixture and includes two flat pads adjacent to the oil well for the heating elements |
| Brain Total Lipid Extract                   | Avanti               | 131101C-100mg  | 25 mg/mL porcine lipid extract  |
| Compact DAQ Chassis (cDAQ)                  | National Instruments | cDAQ-9174      | Chassis to house multiple types of sensor measurement or output modules   |
| Data Acquisition System (DAQ)               | Molecular Devices    | Digidata 1440A | High resolution analog to digital converter   |
| Fixed gain amplifier/power supply           | Hewlett Packard      | HP 6826A       | Amplifies DC voltage output from the voltage output module  |
| Glass Cover Slip                            | Corning              | CLS284525      | Seals bottom of aluminum base and allows for optical characterization of the bilayer  |
| Heating element (x2)                        | Omega                | KHLV-101/5     | 25 mm x 25 mm polyimide film kapton heating element with a 5 watt power limit.  |
| M3 Stainless Steel Screw                    | McMaster Carr        | 90116A150      | Secures thermocouple to aluminum fixture  |
| Patch clamp amplifier                       | Molecular Devices    | AxoPatch 200B  | Measures current and outputs voltage to the headstage   |

|                          |                      |              |   |
|--------------------------|----------------------|--------------|---|
| Personal computer        | Any                  |              | Computer with multiple high speed usb ports and a minimum of 6 Gb of ram      |
| Potassium Chloride       | Sigma Aldrich        | P3911        | Electrolyte solution of dissociated ions                                      |
| Temperature input module | National Instruments | NI 9211      | Enables open and cold junction thermocouple measurements for the cDAQ chassis |
| Thermocouple             | Omega                | JMTSS-020U-6 | U-type thermocouple with a diameter of 0.02 inches and 6 inches in length     |
| UV Curable Adhesive      | Loctite              | 19739        | Secures glass coverslip to aluminum base fixture                              |
| Voltage output module    | National Instruments | NI 9263      | Analog voltage output module for use with the cDAQ chassis                    |
| Waveform generator       | Agilent              | 33210A       | Used to output a 10 mV 10 Hz sinusoidal waveform                              |