

Materials Needed

- + Agarose (i.e., Millpore Sigma, A7431)
- + Silicone Ice Cube Tray
- + 1000 - 5000 μ L pipettor
- + 100 - 1000 μ L pipettor
- + 50 mL graduated cylinder
- + 250 mL glass flask
- + Deionized water
- + Weigh boats + Scale
- + Microwave
- + Food coloring (optional)
- + Gallon sized storage bags
- + Paper towels

1.5% Pia Layer (600 μ m thickness)

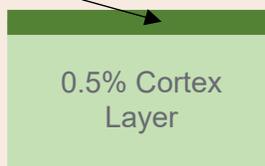


Figure 1: Two-Layer Agarose Model.



Figure 2: Silicone Ice Cube Tray. Cube dimensions: 1.25" x 1.25" x 1.125".

While there is no perfect substitute for in vivo tissue studies, a two-layer agarose model (Figure 1) is useful for early testing to familiarize yourself with the NeuralGlider Inserter and to confirm efficient vibration coupling to your neural implant.

Creating the 0.5% Cortex Layer

1. Combine 0.75 g agarose powder and 150 mL of deionized water into a 250 mL glass flask. Swirl to integrate.
2. Heat solution in microwave until a rolling boil is observed.
 - a) Use 20-30 second heating increments, swirling solution between cycles.
 - b) Repeat until agarose has fully dissolved and solution boils.
3. Allow solution to cool for 5 minutes.
4. Pipette 5 mL of solution into each well of the silicone ice cube tray (Figure 2), minimizing air bubbles.
5. Allow the 0.5% solution to solidify (~ 2 hours).

Creating the 1.5% Pia Layer

1. Combine 0.75 g agarose powder and 50 mL of deionized water into 250 mL glass flask. Swirl to integrate.
2. Heat solution in microwave until a rolling boil is observed.
 - a) Use 20-30 second heating increments, swirling solution between cycles.
 - b) Repeat until agarose has fully dissolved and solution boils.
3. Allow solution to cool for 5 minutes.
4. Add two (2) drops of food coloring to solution and swirl (optional).
5. Deliver 0.6 mL of solution into each well of the silicone ice cube tray, creating a thin 1.5% agarose layer over 0.5% solidified agarose.
6. Gently shake and tilt the mold to an even surface layer of the 1.5% agarose.
7. Repeat until all the cubes are filled and allow the solution to solidify (~1 hour).

Storage

Store the silicone ice cube tray in a humidified environment (i.e., gallon-sized storage bag with a moistened paper towel).

Recipe Modified from:

Das R, Gandhi D, Krishnan S, Saggere L, Rousche PJ. A benchtop system to assess cortical neural interface micromechanics. *IEEE Trans Biomed Eng* 2007;54(6):1089-1096. doi:10.1109/TBME.2007.897139

Pervin F., Chen W.W. (2011) Mechanically Similar Gel Simulants for Brain Tissues. In: Proulx T. (eds) *Dynamic Behavior of Materials*, Volume 1.

Learn more at
NeuralGlider.com



CONTACT SALES

Actuated Medical, Inc.
+1 (814) 355-0003 x117
info@actuatedmedical.com
www.ActuatedMedical.com