



MED64

Initial MED Probe (MEA) coating instructions for acute tissue preparations

Purpose

Caution: Do not touch electrodes located in the center of the MED Probes

A MED Probe is an 8x8 microelectrode array (MEA). The microelectrodes are composed of platinum black or carbon nanotube, which are insulated with polyimide (or, acrylic), all of which are hydrophobic materials. To make the surface more hydrophilic, the MED Probe must be coated with polyethyleneimine (PEI), a cationic polymer. This allows tissue samples to sit near the electrodes. Typically, the PEI coating process needs to be performed only once before the first use of each MED Probe.

Materials

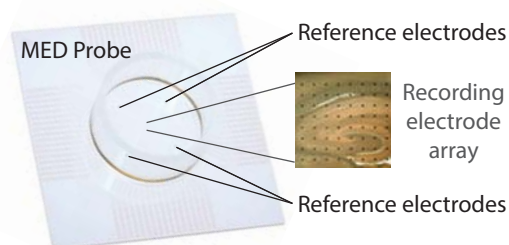
- 1) 25 mM borate buffer - sodium tetraborate (Sigma S9640) + HCl (to adjust pH)
- 2) 50% (w/v) Polyethyleneimine (PEI) in water (Sigma P3143)
- 3) Parafilm wax
- 4) Distilled water

PEI Coating Protocol

- 1) Make 25 mM borate buffer, as follows:
 - Dissolve 4.768 g $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10 \text{H}_2\text{O}$ in 450 ml distilled water
 - Adjust pH to 8.4 with HCl
 - Add distilled water to final volume of 500 ml
- 2) Dilute PEI to a 1% stock solution in water
- 3) Dilute PEI again to 0.1% in borate buffer
- 4) Pipette 0.7 ml of PEI in borate buffer onto each MED Probe (enough to cover)
- 5) Seal MED Probes with parafilm wax (to reduce evaporation) and coat overnight at room temperature
- 6) Aspirate PEI solution (avoid touching electrodes) and rinse 4x (or more) with distilled water
- 7) Store PEI-coated MED Probes under 1 ml distilled water, sealed with parafilm wax at 4°C until needed

Usage of MED Probe

The MED Probe has a grid of recording electrodes in the center as well as several reference electrodes. Tissue need to be placed on the recording electrode, but not on the reference electrodes.



For additional information, please see our Applications Notes at <http://www.med64.com/documentation>