

Supplementary File 1

Based on the results, the final protocol is as following:

1. Rinse screen-printed substrates with Isopropyl Alcohol/Milli-Q water.
2. Dry using a N₂ stream.
3. Immerse screen-printed substrates in ODT (10mM in ethanol) solution at room temperature (RT) in dark overnight.
4. Rinse electrode array with ethanol
5. Dry using a N₂ stream.
6. Deposit each antibody (CTx, PINP 100 µg/mL in PBS) on corresponding working electrodes & incubate at 37 °C in a humidity-controlled environment for 2 hrs.
7. Rinse electrode array with PBS solution (10 mM pH 7.4)
8. Dry gently using a N₂ stream.
9. Deposit Blocker Casein 1% (in PBS) on working electrodes & incubate at 37 °C in a humidity-controlled environment for 1 hr.
10. Rinse electrode array with PBS Tween-20 solution (0.05% Tween 20 in 10mM PBS, pH 7.4)
11. Rinse electrode array with PBS solution (10 mM pH 7.4)
12. Dry gently using a N₂ stream.

The screen-printed electrode arrays are characterized after each step using Cyclic Voltammetry/EIS electrochemical measurements.