

## SUPPLEMENTARY MATERIAL

### Propofol Detection and Quantification in Human Blood: The Promise of Feedback Controlled, Closed-loop Anesthesia

Francine Kivlehan<sup>a</sup>, Edward Chaum<sup>b</sup>, Ernő Lindner<sup>a</sup>

<sup>a</sup> Department of Biomedical Engineering, University of Memphis, Memphis, Tennessee 38152

<sup>b</sup> Departments of Ophthalmology and Biomedical Engineering, University of Tennessee Health  
Science Center, Memphis, Tennessee 38152

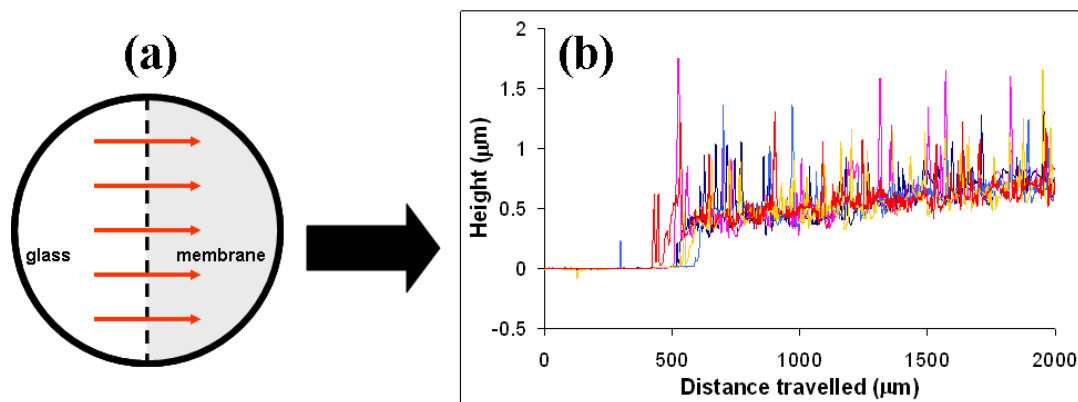


Figure S1: Schematic representation of the surface profiler scans over a partially membrane-coated glass cover slip (left) and the recorded surface profiles (right).

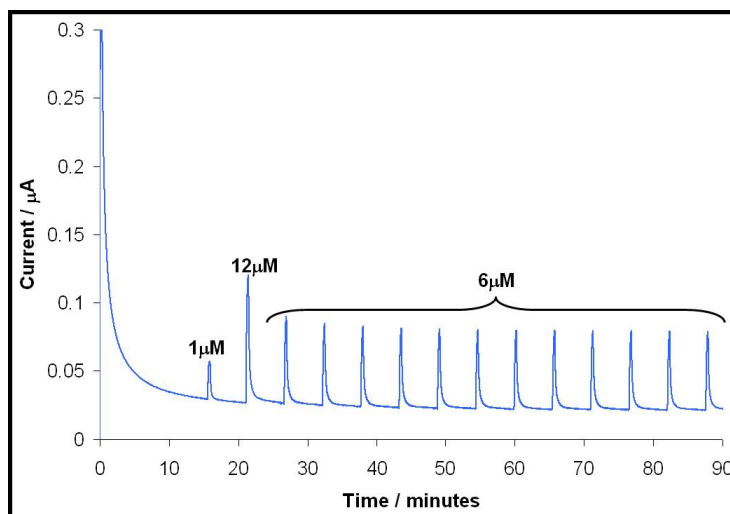


Figure S2: CA transients recorded with a PVC membrane-coated GC sensor following the injection of 175  $\mu\text{L}$  propofol standards (1.00  $\mu\text{M}$  and 12.00  $\mu\text{M}$ , with 5% BSA content) and HSA samples with 6.00  $\mu\text{M}$  nominal propofol concentration into a continuously flowing PBS buffer solution.

The results of the standard addition measurements were calculated using the following equation:

$$c_s = \frac{c_{St}V_{St}}{\frac{i_{2corr}}{i_{1corr}}(V_s + V_{St}) - V_s} \quad \text{Eq. S1}$$

where  $c_s$  is the sample concentration,  $c_{St}$  is the concentration of the standard,  $V_s$  is the sample volume,  $V_{St}$  is the volume of the standard, and  $i_{1corr}$  and  $i_{2corr}$  are background current corrected current values measured in the sample before and after the addition of the standard, respectively.

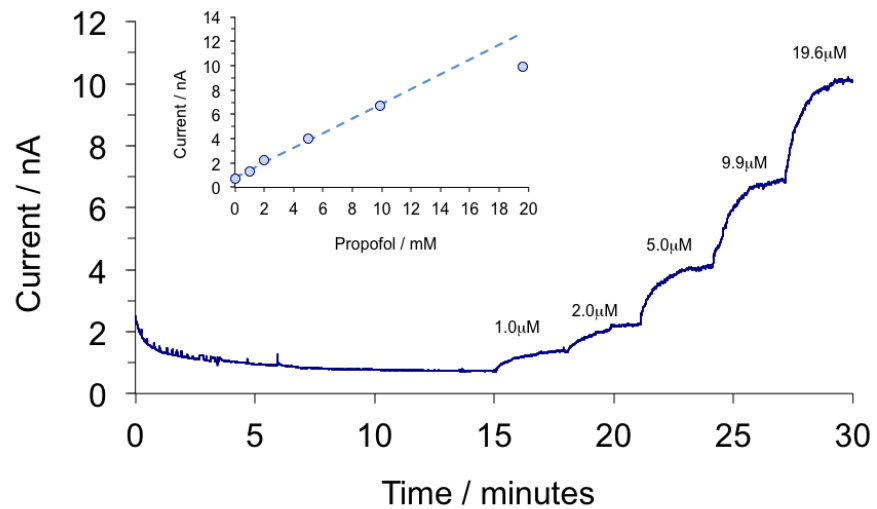


Figure S3: CA response of a membrane-coated GC working electrode on the external surface of a catheter prototype to propofol injectable emulsion in PBS in combination with an external reference and counter electrodes Inset: Calibration curves constructed from the corresponding steady state current and concentration values.