

Supplemental Section

Electrochemical Identification of the Property of Peripheral Nerve Fiber Based on a Biocompatible Polymer Film via in-Situ Incorporating Gold Nanoparticles

Wei Zhao, Si-Xin Sun, Jing-Juan Xu*, Hong-Yuan Chen, Xiao-Jian Cao*, Xiao-Hong Guan

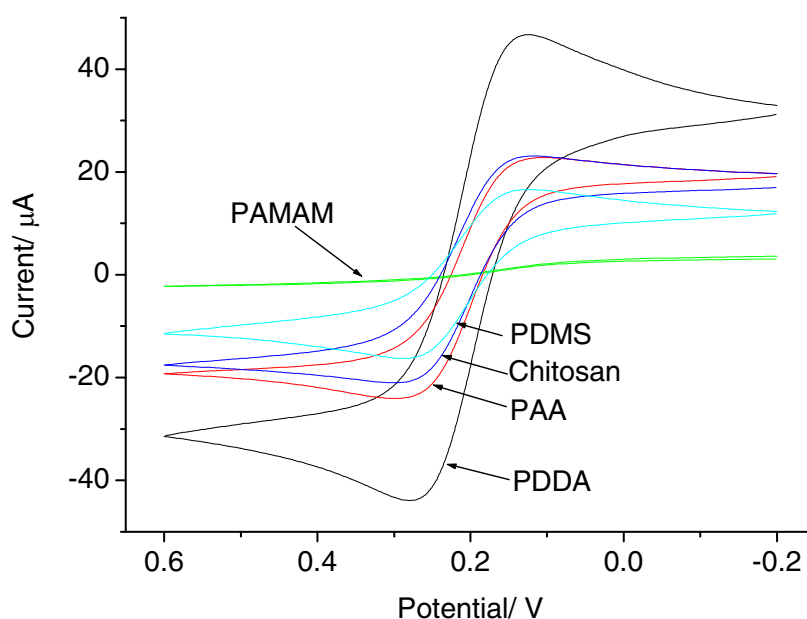


Figure S1. Cyclic voltammograms for 5 mM $\text{Fe}(\text{CN})_6^{3-/4-}$ at PDMS, PDMS-chitosan (1% chitosan aqueous solution : PDMS = 1 : 2), PDMS-PAA (20 % PAA aqueous solution : PDMS= 8 : 10), PDMS-PDDA (20 % PDDA aqueous solution : PDMS = 7 : 10), PDMS-PAMAM (10 % PAMAM methanol solution : PDMS= 1: 1) modified electrodes. Scan rate: 50 mV/s.

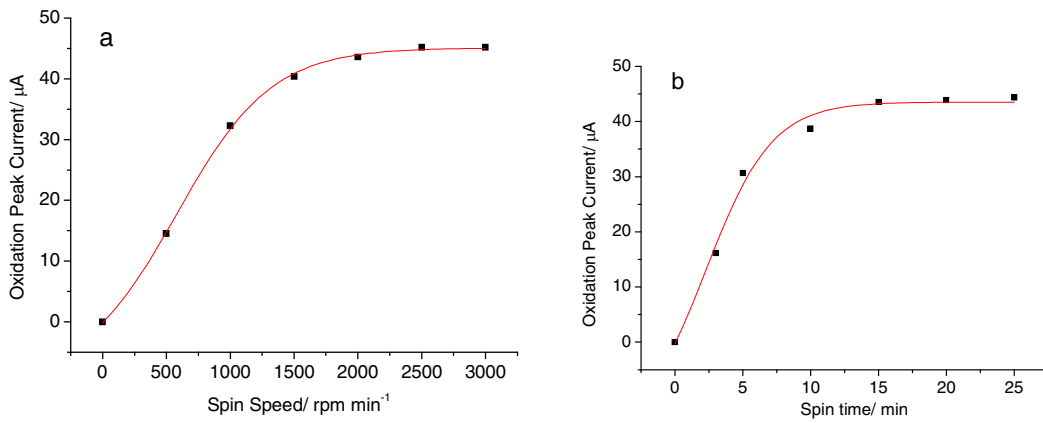


Figure S2. Influence of spin speed (with a constant spin time of 15 min) (a) and spin time (with a constant spin speed of 2000 rpm min⁻¹) (b) on oxidation peak currents of 5 mM Fe(CN)₆^{3-/4-} at PDMS-PDDA modified electrode. Scan rate: 50 mV/s.

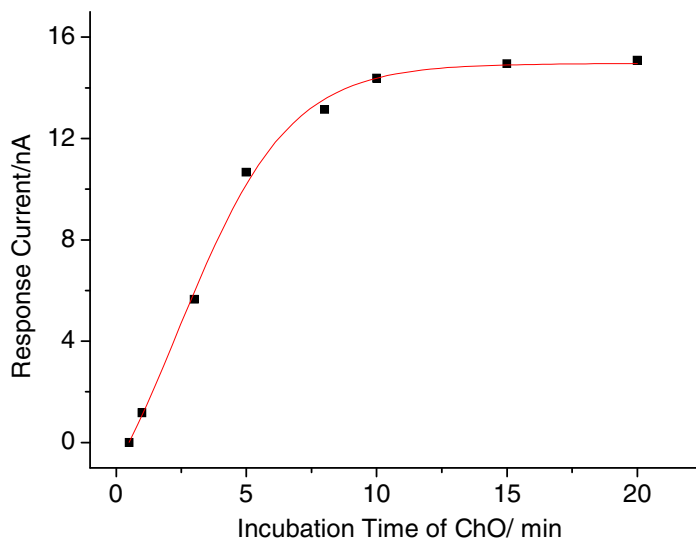


Figure S3. Influence of incubation time of ChO for the amperometric response of PDMS-PDDA/AuNPs modified electrodes to 0.2 mM choline.

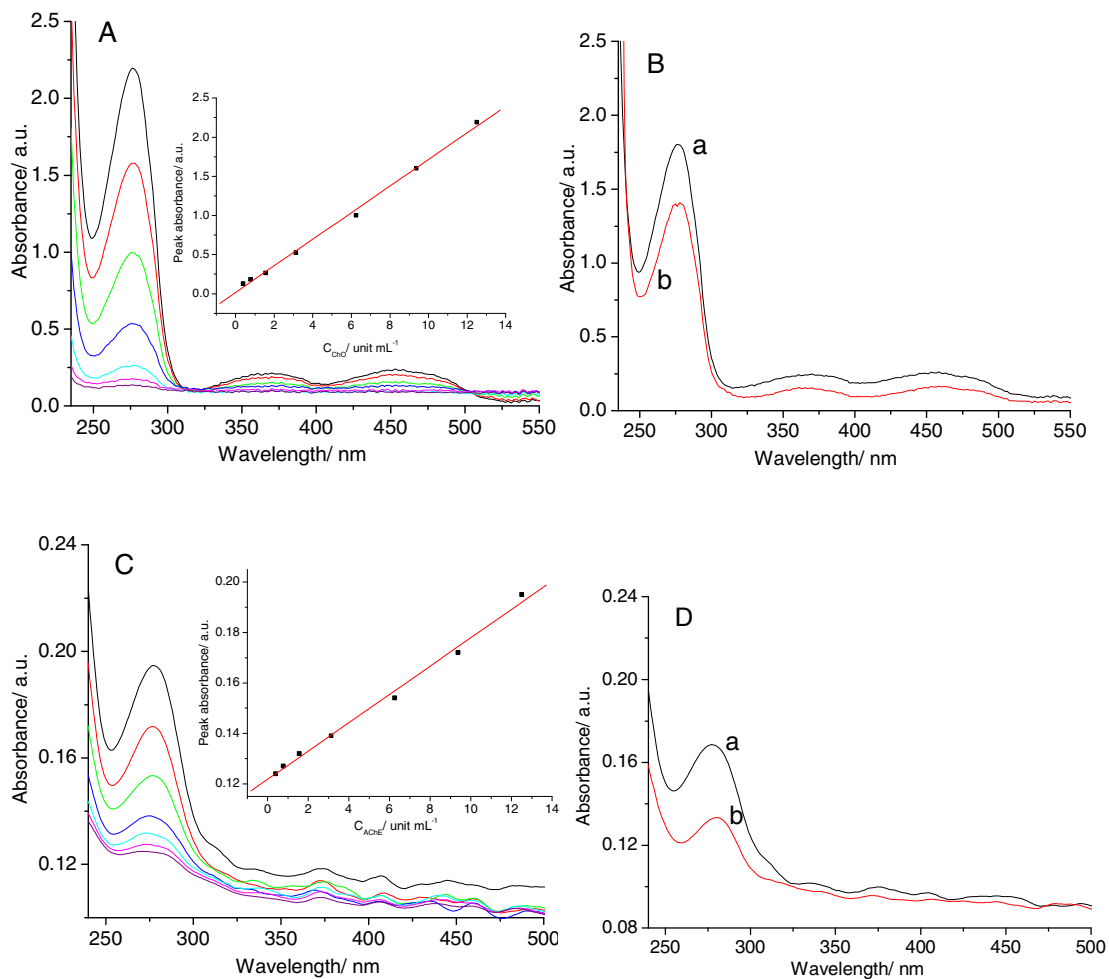


Figure S4. UV-visible adsorption spectra of ChO (A) and AChE (C) dissolved in 0.1M phosphate buffer solution of pH 7.4 with concentrations increase from 0.39-12.5 unit/mL (from lower to upper), and ChO (B) and AChE (D) dissolved in 0.1M phosphate buffer solution of pH 7.4 before (a) and after (b) 10 min incubation of the PDMS-PDDA/AuNPs and PDMS-PDDA/AuNPs/ChO modified electrodes in them, respectively. Inset: plot of ChO (A) and AChE (C) concentrations vs. peak absorbance at 276 and 277 nm, respectively.

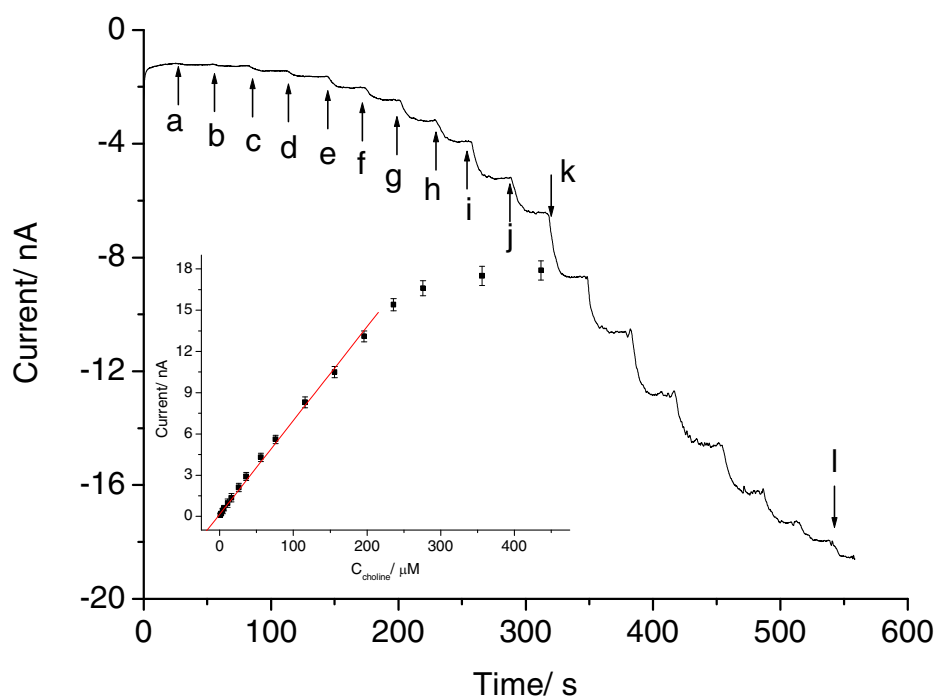


Figure S5. Typical amperometric response of the PDMS-PDDA/AuNPs/ChO modified electrode for choline in a stirring 0.1 M phosphate buffer (pH 7.4) by successive injection of choline with a→b, 1.0 μM , c→d, 2.0 μM , e→f, 5.0 μM , g→h, 10.0 μM , i→j, 20.0 μM , k→l, 40.0 μM . The applied potential was 0.7 V. Inset: the calibration curve of the PDMS-PDDA/AuNPs/ChO modified biosensor.

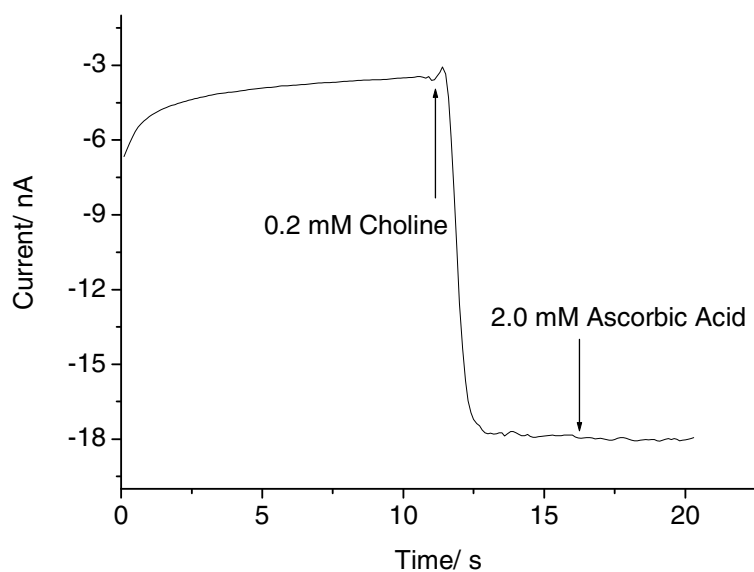


Figure S6. Amperometric response of the PDMS-PDDA/AuNPs/ChO modified electrode for 0.2 mM choline and 2.0 mM ascorbic acid in a stirring 0.1 M phosphate buffer (pH 7.4). The applied potential was 0.7 V.

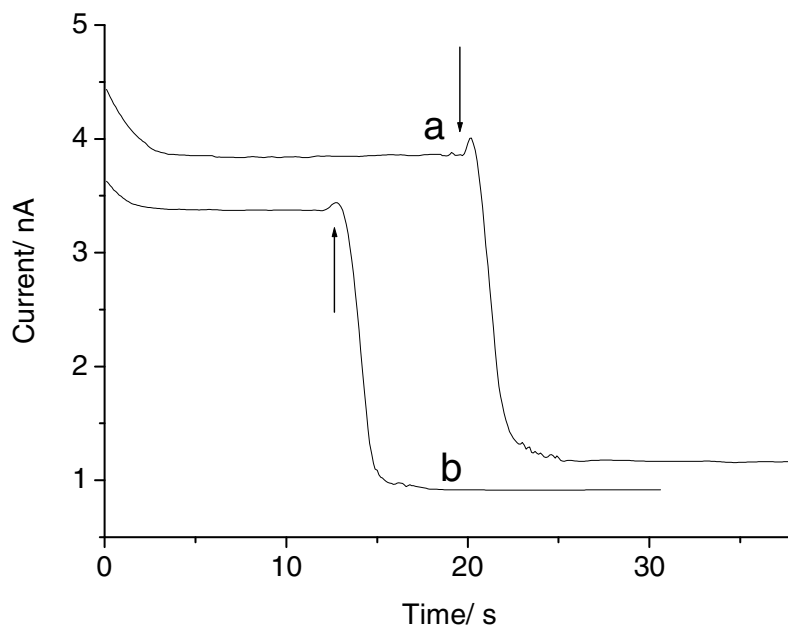


Figure S7. Amperometric response of the PDMS-PDDA/AuNPs/ChO modified electrode for choline by injection of 100 μ L motor (a) and sensory (b) fiber homogenates in a stirring 0.1 M phosphate buffer (pH 7.4) (arrows show the injection of samples).