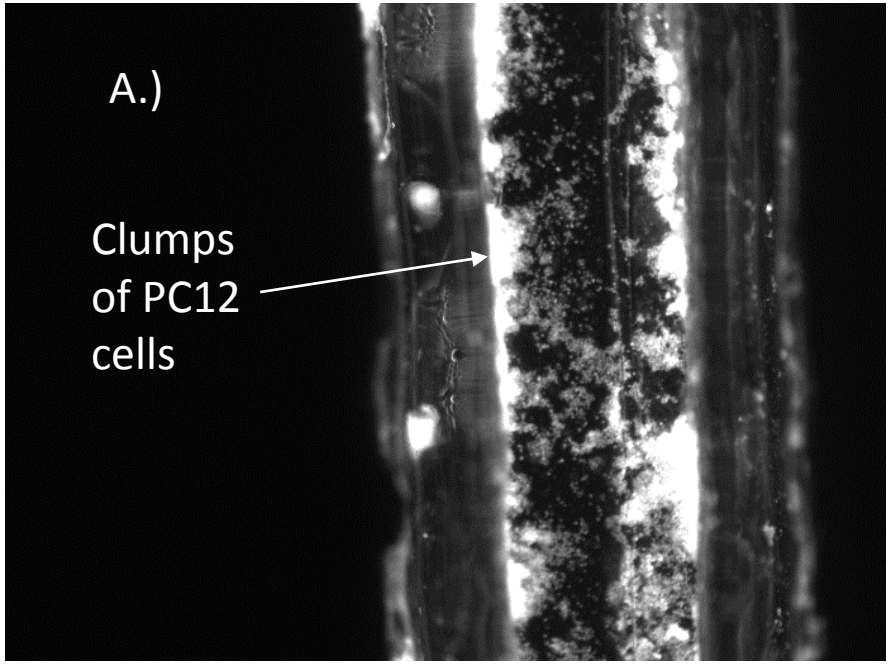
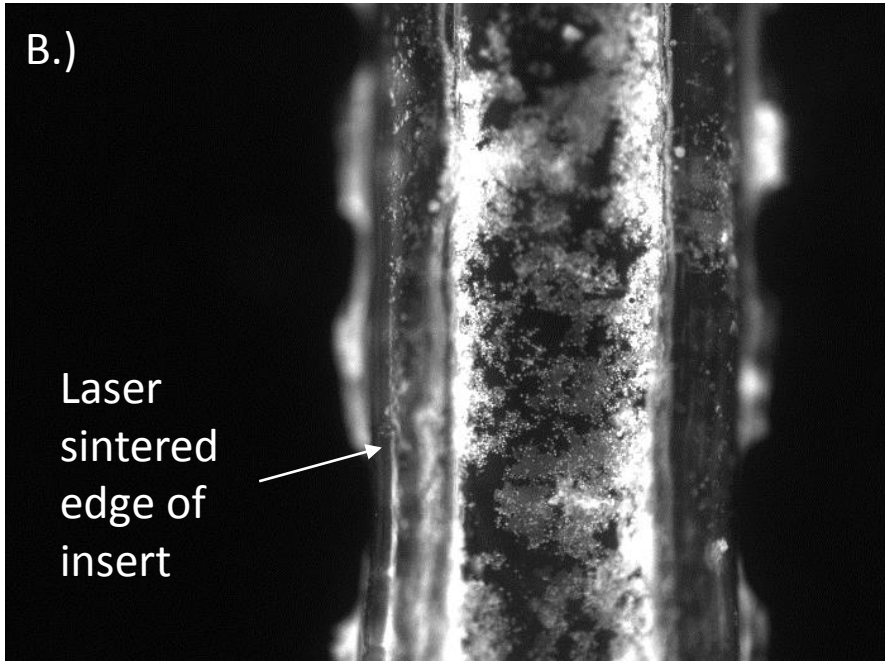
Electronic Supplementary Material (ESI) for Analytical Methods.





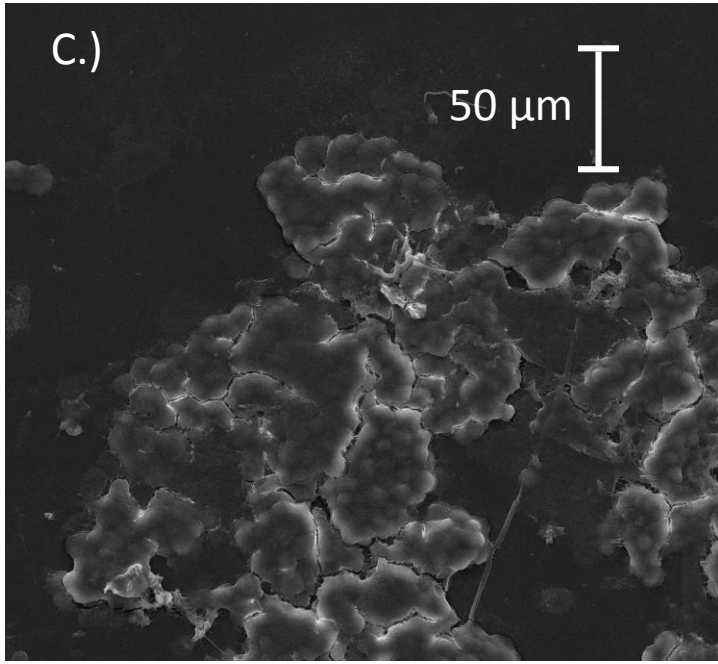
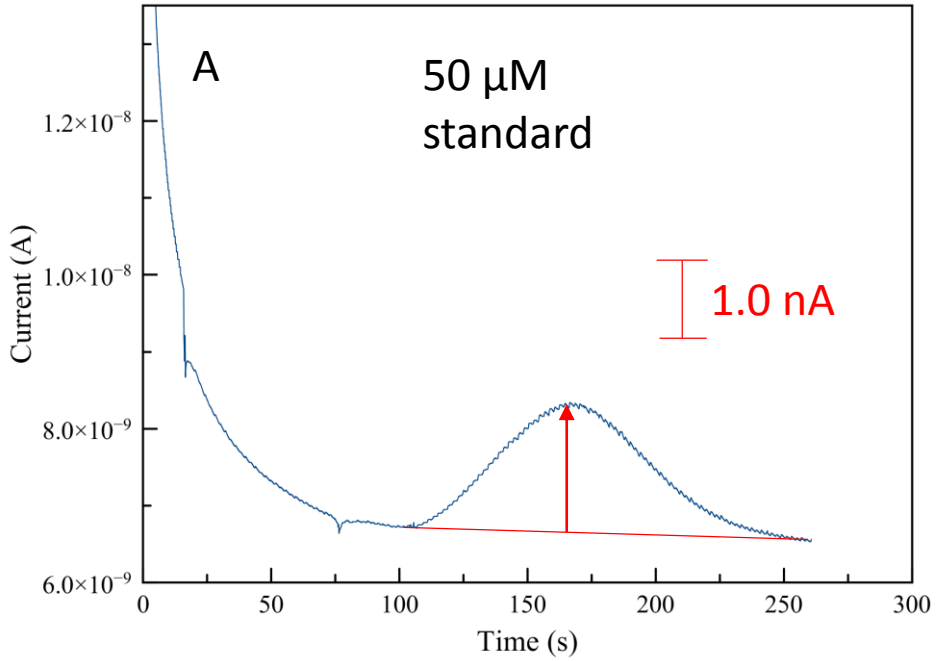
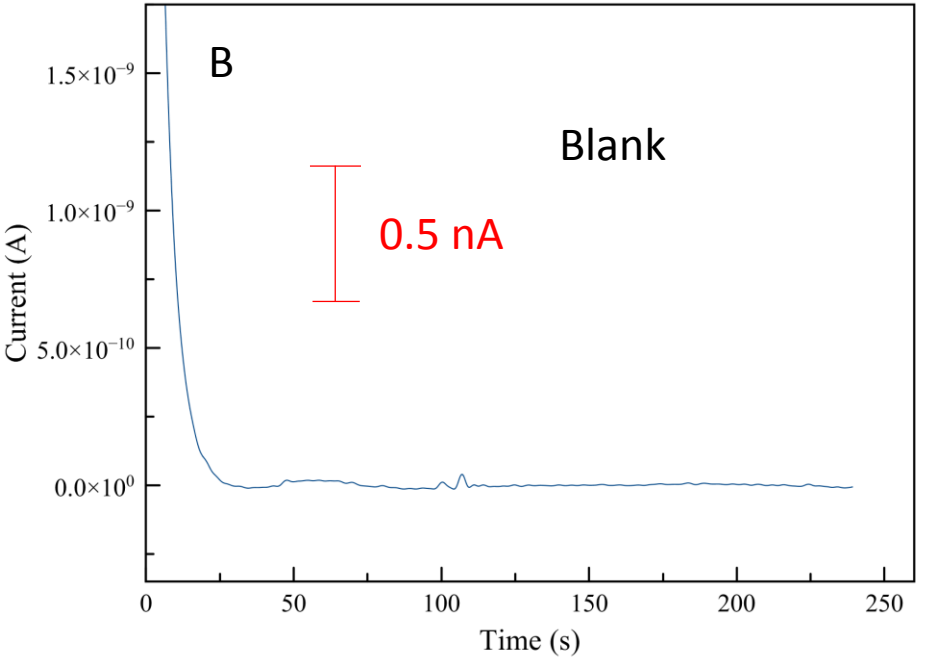
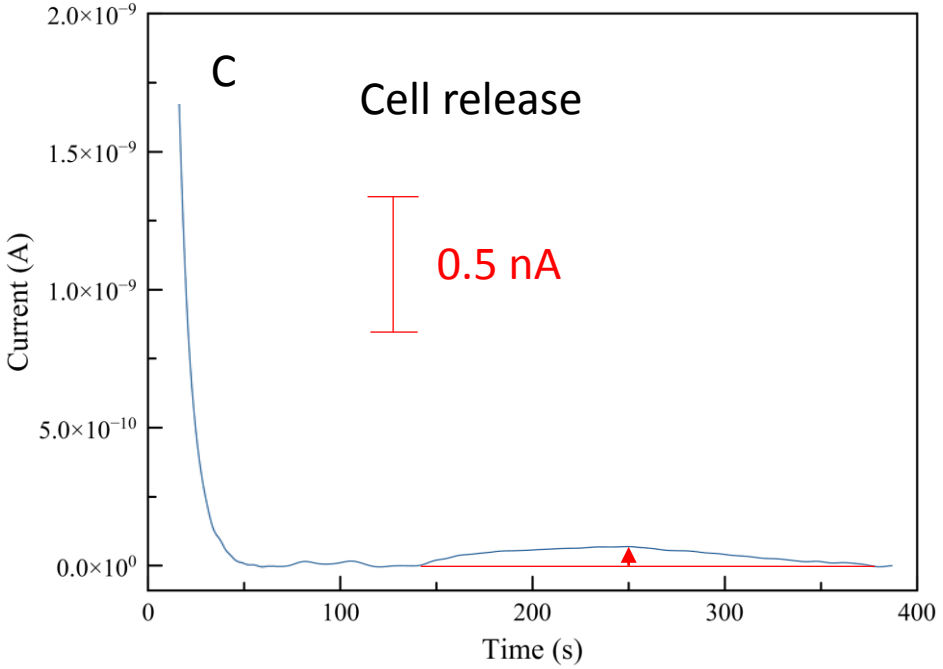


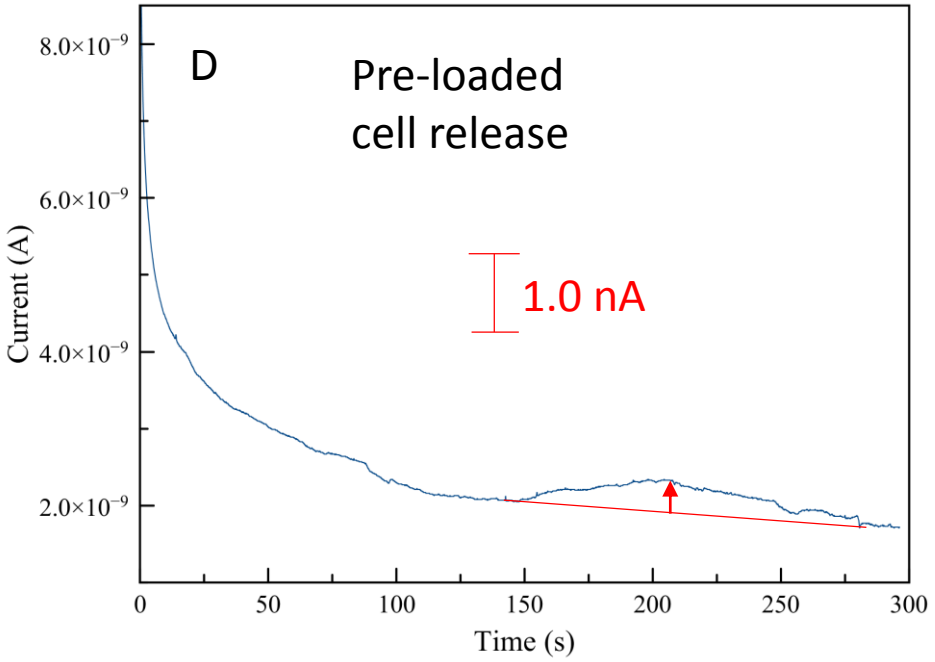
Figure S-1. A.) and B.) Acridine orange stained PC12 cells under fluorescence. Cells are immobilized on a flat sheet. The cells are noticeably clumped with a high degree of void space. This combined with the lower surface area of the flat sheet makes flat sheets more difficult to combine with the insert method. C.) SEM image of cells cultured on a flat insert

Figure S-2 A-D.) Amperograms showing the detection of A.) a 50 µM standard of dopamine, B.) The injection of K+ stimulant without cells present (blank), C.) the release of catecholamines from PC12 cells with a K+ stimulant dopamine D.) the release of dopamine from PC12 cells preloaded with 1 mM dopamine for 1 hour prior to the experiment. For presentation purposes only, PeakFit (San Jose, CA, USA) was used to do a baseline correction (due to sloping baseline from charging current) and a small (2.5% window) Savitzky-Golay filter (to help filter noise).









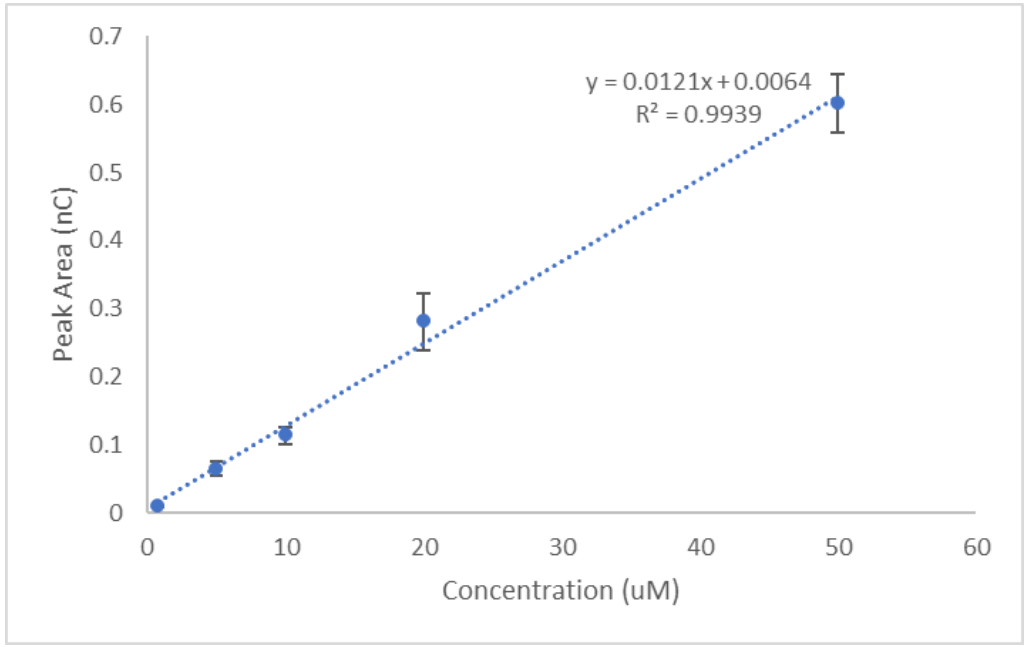


Figure S-3. Standard curve for the flow studies (injection of dopamine standards). The experimentally determined LOD was found to be 600 nM.

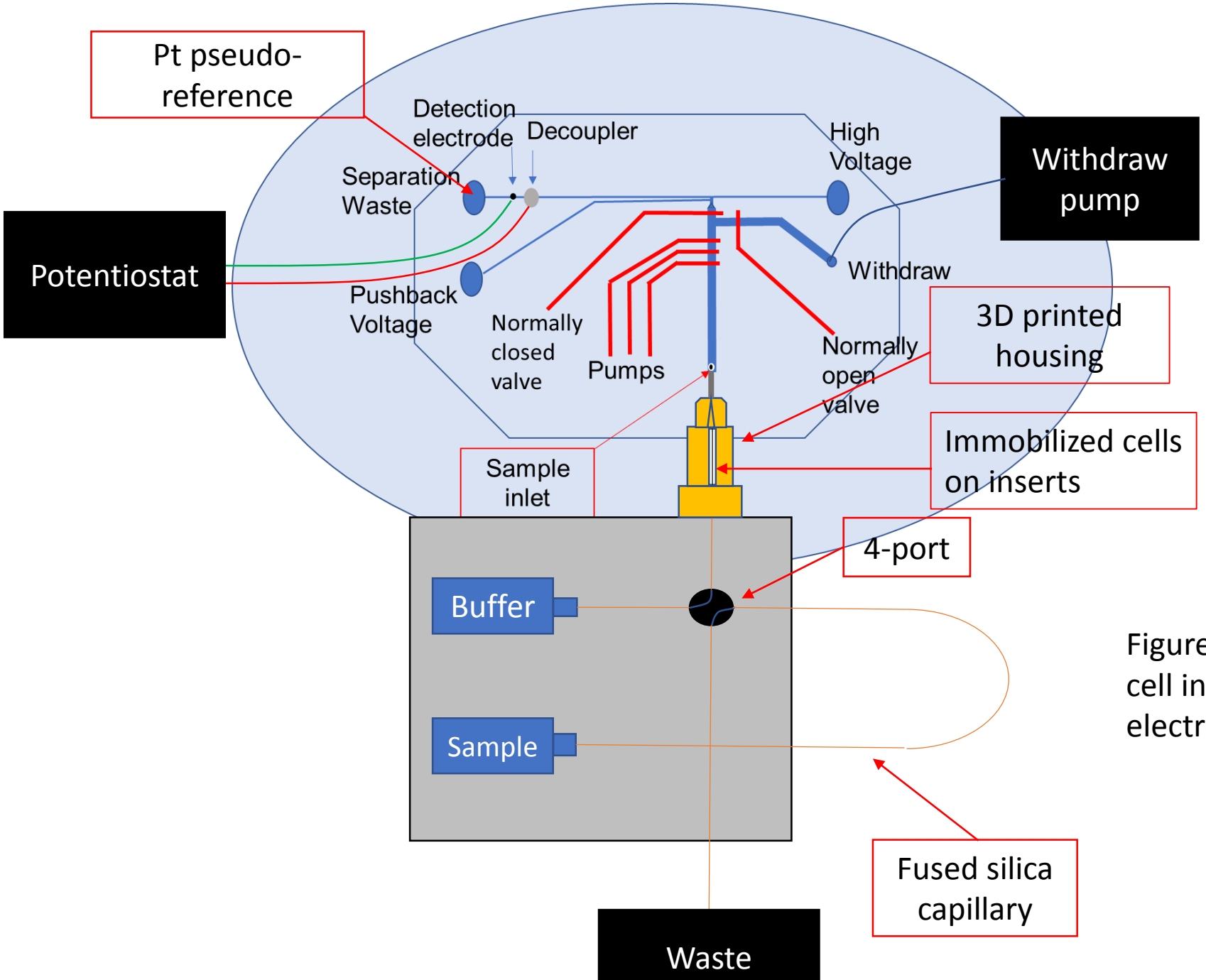


Figure S-4. Schematic showing integration of cell insert with valving-based microchip-electrophoresis and electrochemical detection

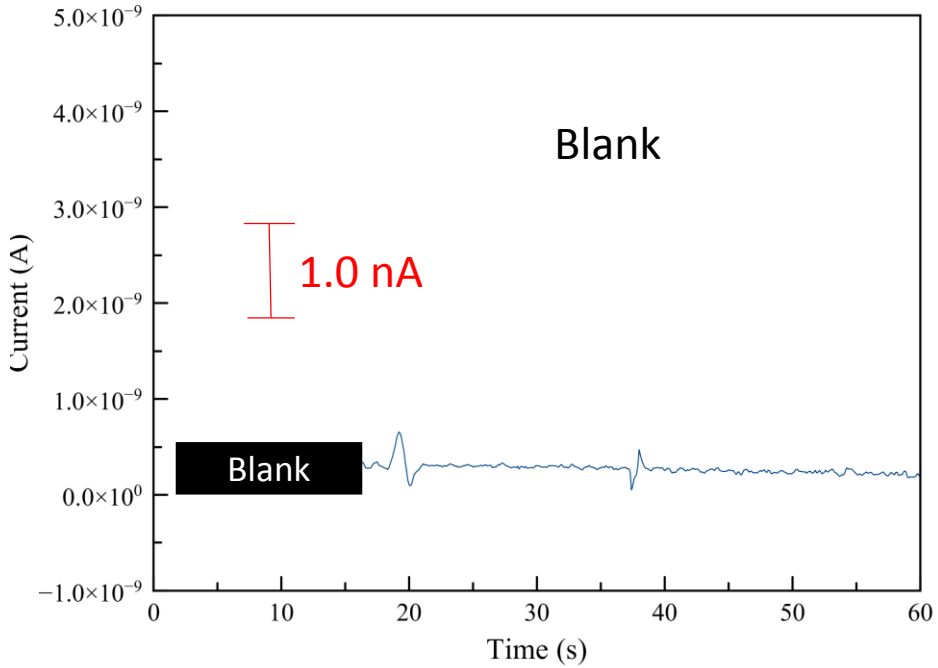


Figure S-5. Electropherogram of a blank injection of K^+ stimulant with no cells present.