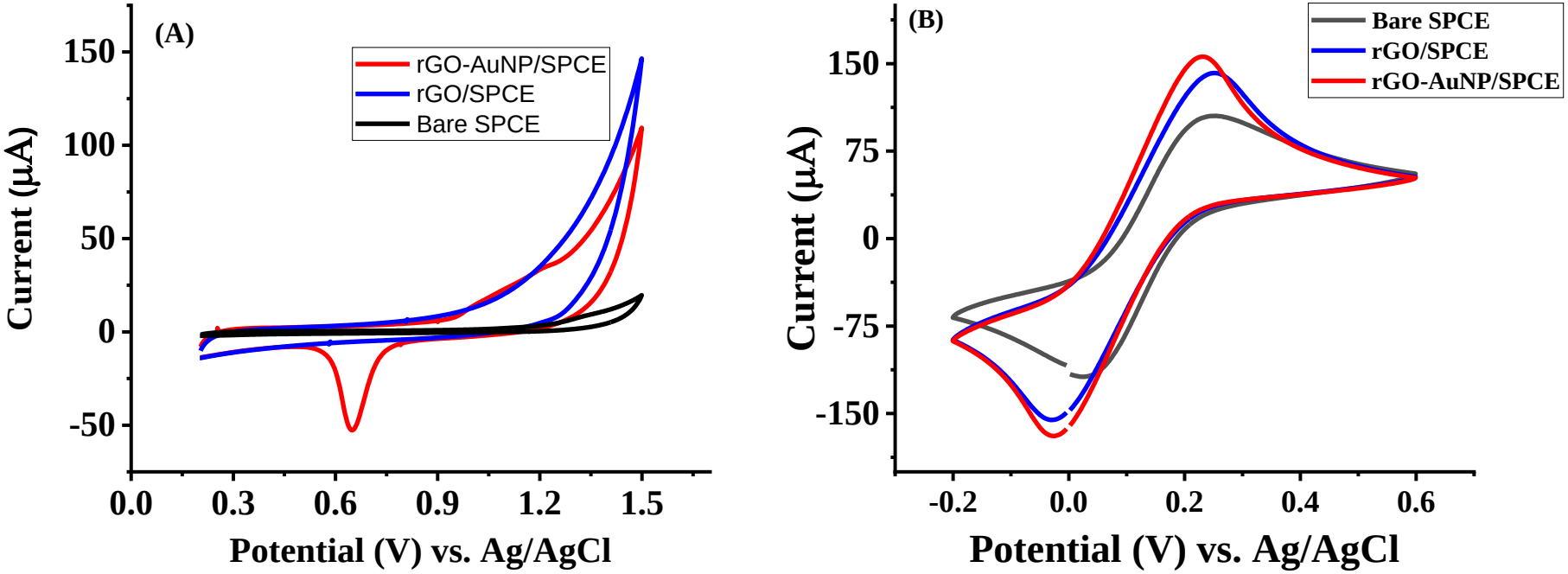
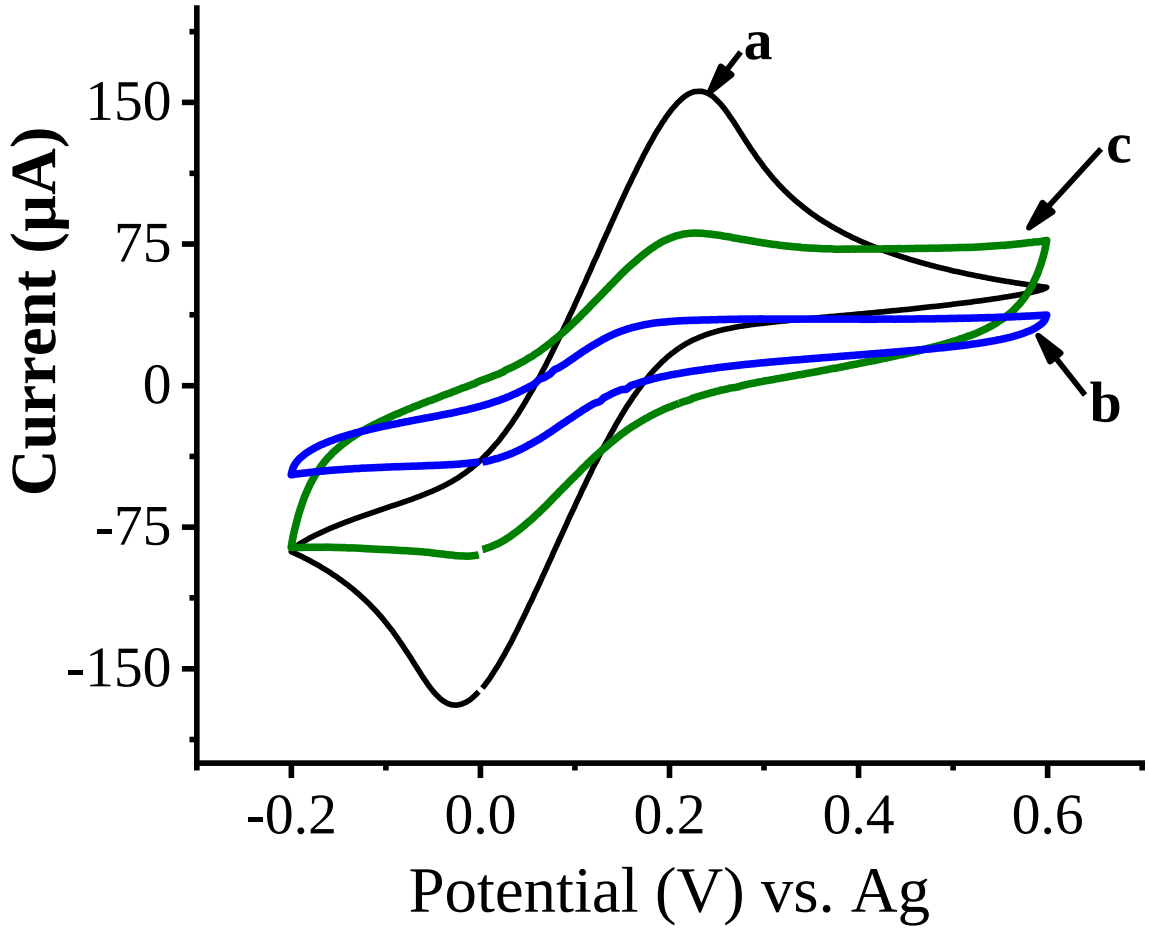
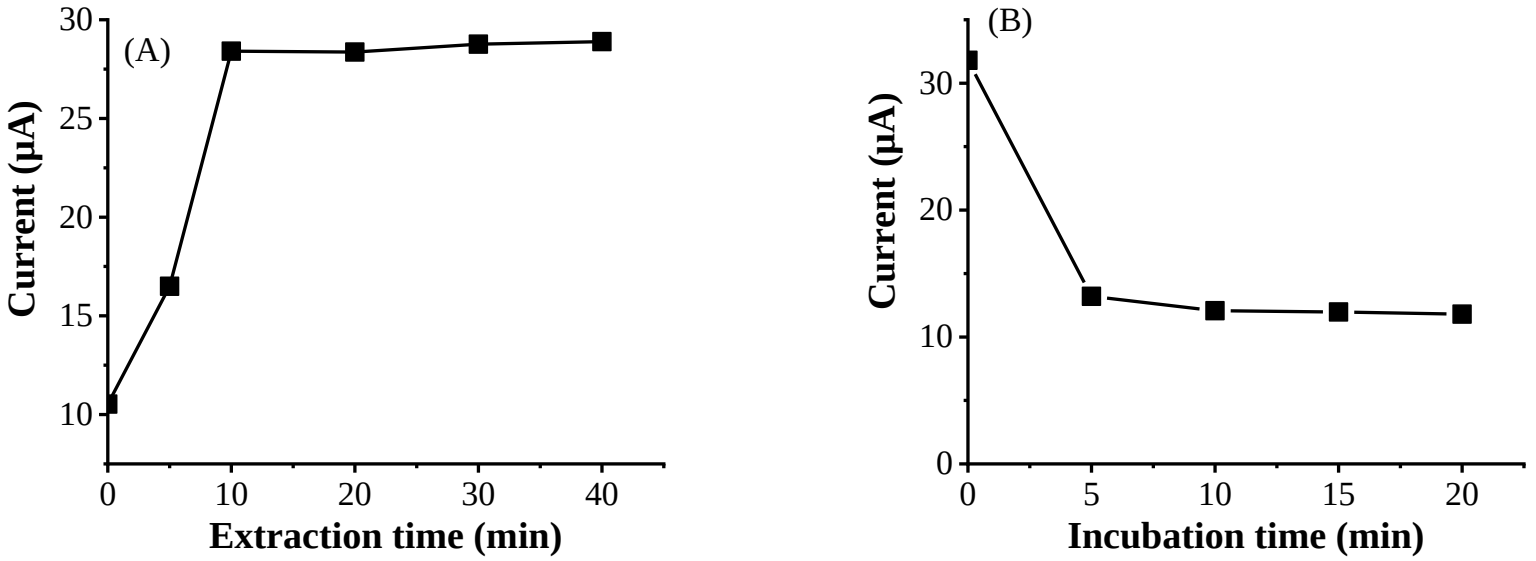


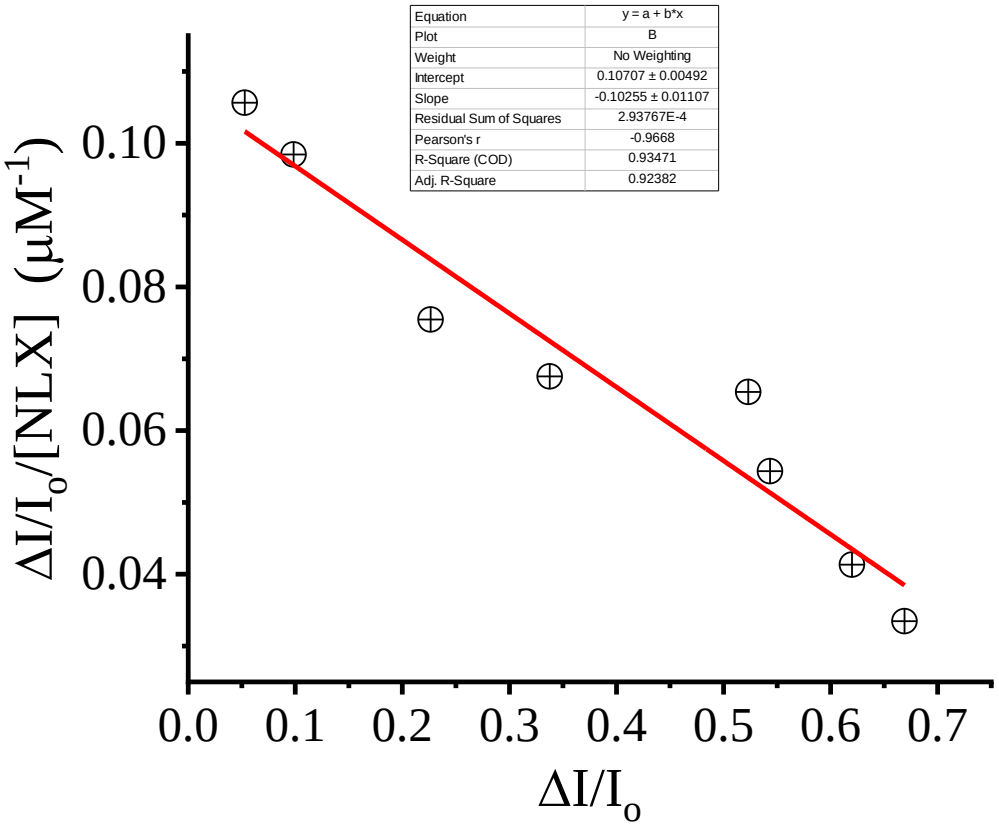

Supplementary Figure S1. (A) The appearance of gold oxidation peak at +0.63 V in the rGO-AuNP/SPCE, but the lack of this peak on the other two electrode surfaces, indicates the presence of gold on this electrode material. The presence of anodic currents at potentials >+1.0 V in the CV profiles of the rGO/SPCE and rGO-AuNPs/SPCE surfaces *vs* the bare SPCE at potentials indicates the oxidation of rGO on the modified electrodes. (B) CVs of 5 mM $[Fe(CN)_6]^{3-/4-}$ in the three electrode materials show that current (by implication electroactive surface area of the electrode) is higher for the rGO-AuNPs modified electrode than the rGO modified and bare electrodes.



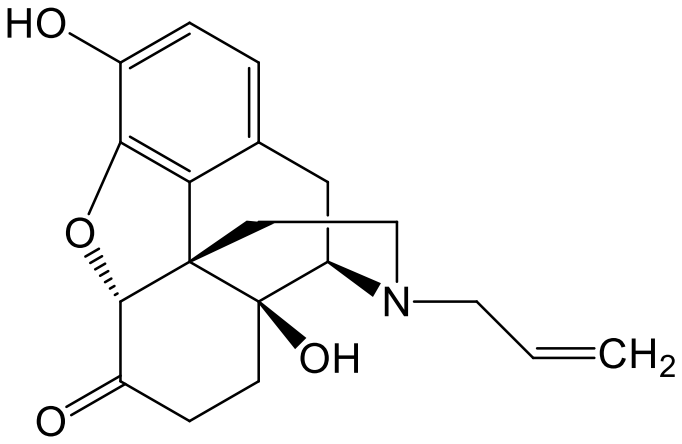

Supplementary Figure S2. CVs of 5 mM $[Fe(CN)_6]^{3-/4-}$ at a scan rate of 50 mV/s using (a) rGO-AuNPs/SPCE, (b) NIP/rGO-AuNPs/SPCE after soaking in the extraction solution and (c) MIP/rGO-AuNPs/SPCE after removal of NLX using extraction solution.



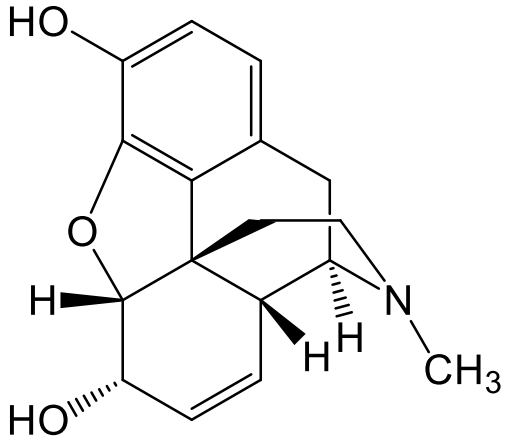

Supplementary Figure S3. Variation in peak current as a function of (a) extraction time and (b) incubation time of 50 μM NLX in the MIP/rGO-AuNPs/SPCE sensor.



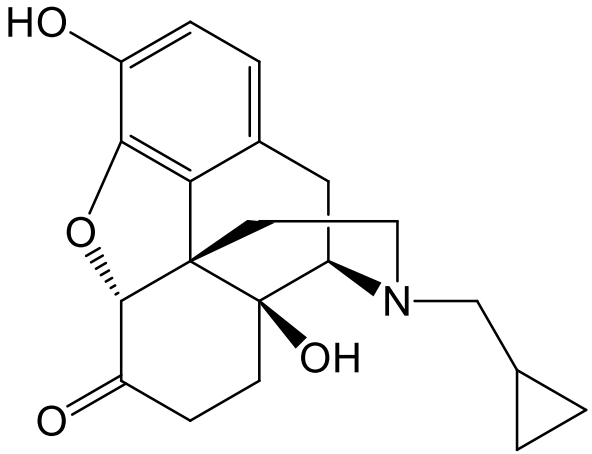

Supplementary Figure S4. Scatchard plot of the binding of NLX to the MIP/rGO-AuNPs/SPCE sensor. Plot was generated from the data shown in Figure 6 using the Scatchard equation $\Delta I/I_o/[NLX] = \{(\Delta I/I_o)_{max} - \Delta I/I_o\}/K_d$.



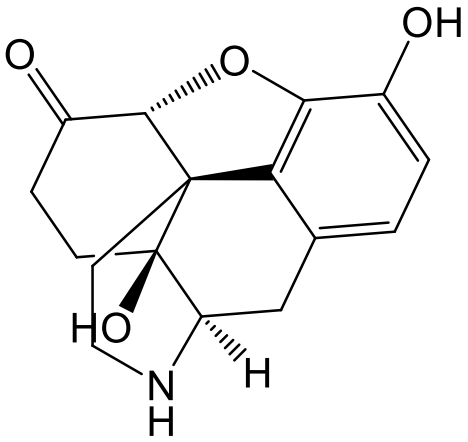

Naloxone




Morphine




Naltrexone




Noroxymorphone

Supplementary Figure S5. Chemical structures of the analyte naloxone, and the structurally similar molecules (morphine, naltrexone and noroxymorphone) tested in study.

Supplementary Table S1. DPV current response of the various electrodes to 5 μM NLX in buffer as shown in Figure 4.

| Surface | $\Delta I_{average}$ (μA) | $I_o$ (μA) | STDV |
|---|---|---|---|
| MIP/rGO-AuNPs/SPCE | 16.75 | 50.90 | 0.03 |
| NIP/rGO-AuNPs/SPCE | 0.86 | 13.72 | 0.02 |
| MIP/rGO/SPCE | 7.75 | 38.77 | 0.01 |
| MIP/SPCE | 4.22 | 40.02 | 0.04 |

Supplementary Table S2. List of ingredients in artificial urine

| Ingredient | Concentration (g/L) |
|---|---|
| Urea | 25 |
| Sodium chloride | 9 |
| Disodium hydrogen orthophosphate, anhydrous | 2.5 |
| Potassium dihydrogen orthophosphate | 2.5 |
| Ammonium chloride | 3 |
| Creatinine | 2 |
| Sodium sulphite, hydrated | 3 |