

Supplementary

Tethering of spherical DOTAP liposome gold nanoparticles on cysteamine monolayer for sensitive label free electrochemical detection of DNA and transfection

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Fig.S1. FTIR Spectrum in the frequency range of 900-1500 (A) and 2200 to 3000 (B). Curve a. AuNP, Curve b. DOTAP, Curve c. DOTAP + AuNP, Curve d. DOTAP + ssDNA, Curve e. DOTAP+AuNP+ssDNA, Curve f. ssDNA, recorded in solution phase.

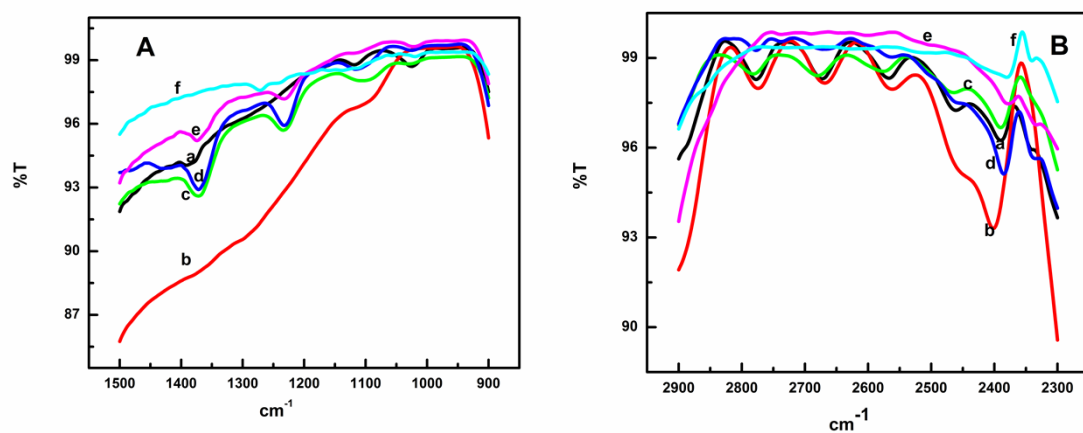


Fig.S2. UV-Visible spectra for AuNP, DOTAP, DOTAP-AuNP

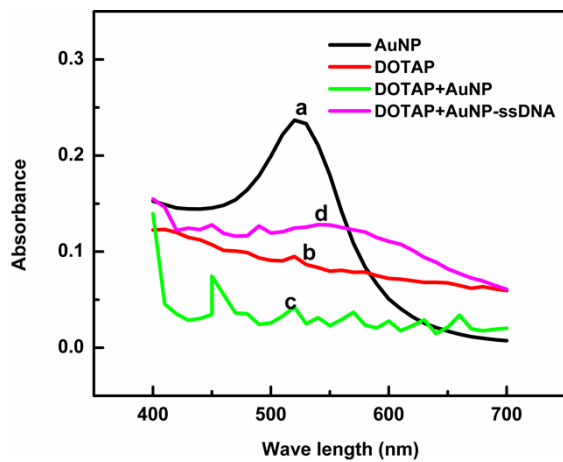


Fig. S3: CV behavior of bare Au (curve a), sequentially modified with cysteamine (curve b), AuNP - DOTAP (curve c) and HS-ssDNA (curve d) in presence of 1mM $[\text{Ru}(\text{NH}_3)_6]^{3+}$ in PBS buffer pH 7.4

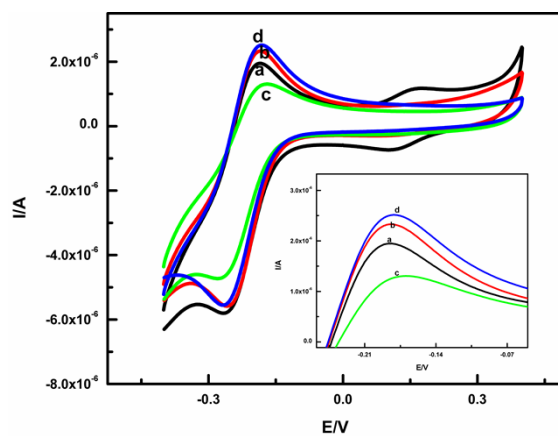


Fig.S4. EIS behavior of gold electrode (curve a, unmodified) on modification using DOTA (curve b), DOTAP-AuNP (curve c), Cysteamine DOTAP-AuNP (curve d) and cysteamine (curve e) monolayers in phosphate buffer pH 7.4 measured in the frequency range 100 kHz to 1 Hz. The equivalent circuit fit data is shown in another figure for clarity of presentation.

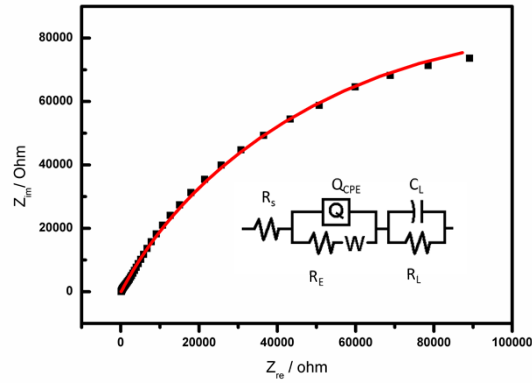
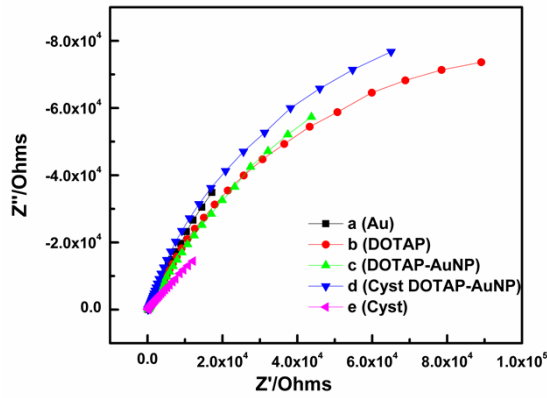


Fig. S5. DNA hybridization detection at cysteamine-DOTAP-AuNP modified gold electrode in phosphate buffer pH 7.4. Curve a: Single stranded DNA. Curve b: Double stranded DNA (fully complementary). Non complementary behavior is shown as insert. **A. CV and B . EIS**

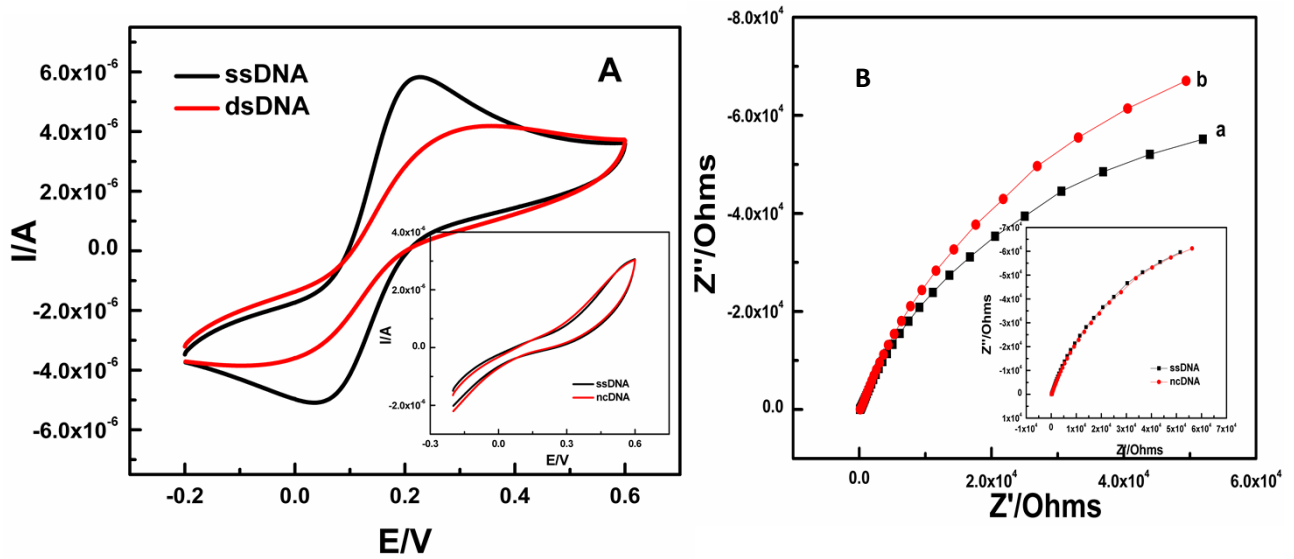


Fig.S6. ΔR_L change noticed from EIS measurements for the complementary, non-complementary and single nucleotide polymorphism target DNA concentration in presence of 1 mM $[\text{Fe}(\text{CN})_6]^{3-/4-}$ at cysteamine DOTAP-AuNP

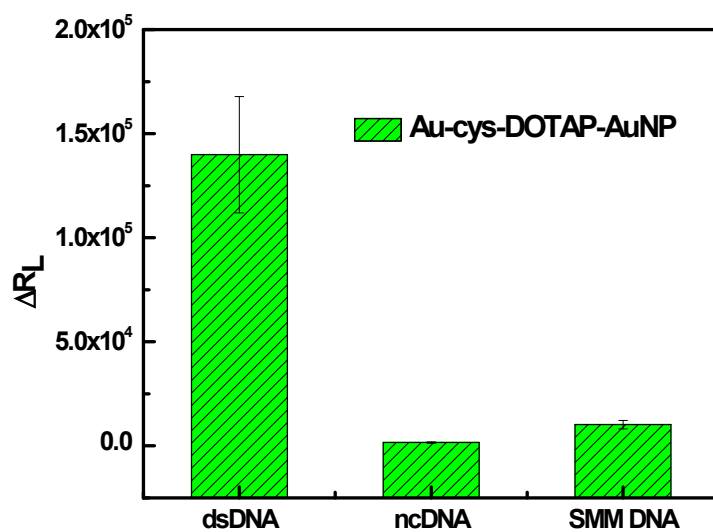


Fig.S7. DPV peak current change noticed for the complementary, non-complementary target DNA concentration in presence of 1 mM $[\text{Fe}(\text{CN})_6]^{3-/4-}$ at cysteamine DOTAP-AuNP

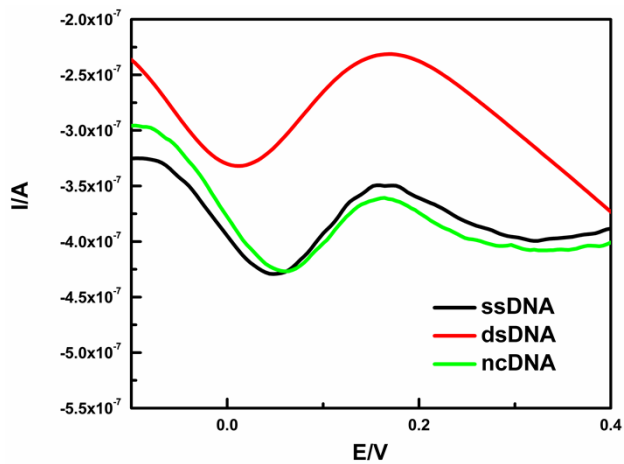


Fig.S8. Comparative images of DOTAP measured using optical microscope (A) and HRTEM technique (B).

