

Supporting Information

Amplified Detection of Femtomolar DNA Based on One-to-Few Recognition between DNA-Au Conjugate and Target DNA

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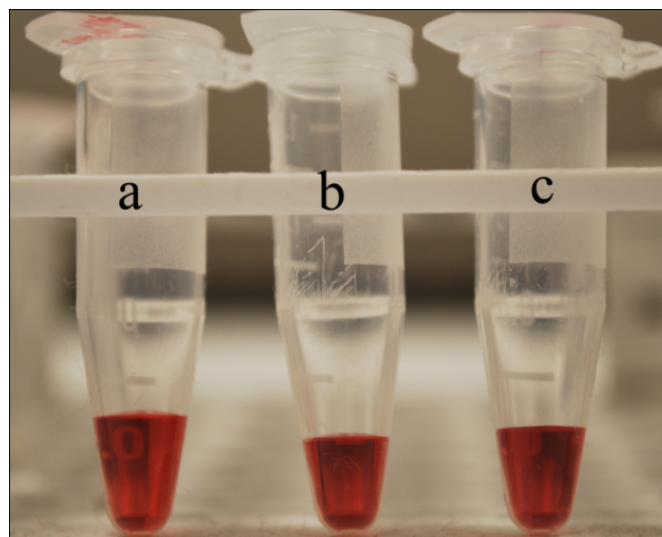


Figure S1. Photographs of (a) AuNPs, (b) DNA-AuNP conjugates and (c) DNA-AuNP conjugates stabilized in NaCl solution.

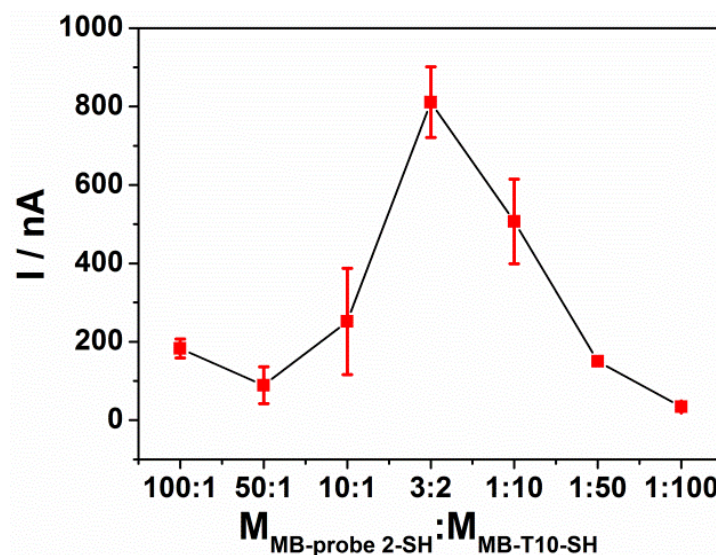


Figure S2. The plot of current versus the initial molar ratio of MB-probe 2-SH and MB-T10-SH. The error bar shows the standard deviation of current measured from 3 parallel experiments.

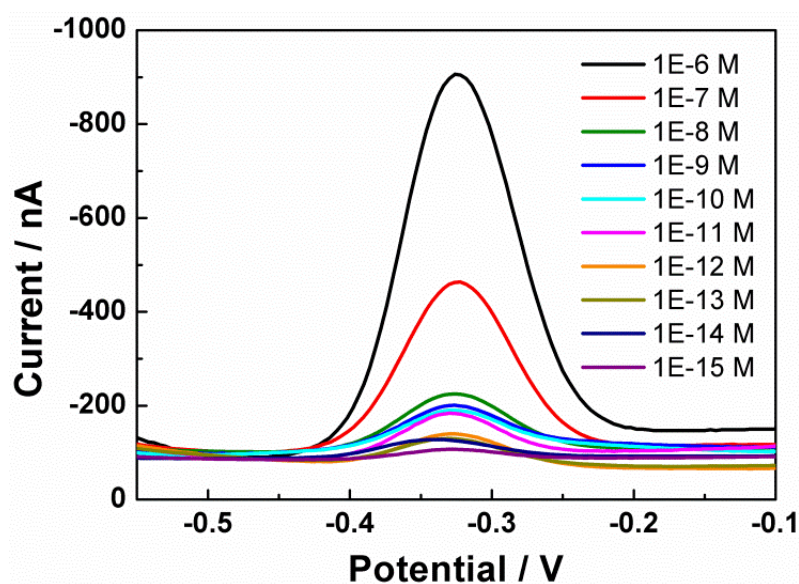


Figure S3. DPV curves of target DNA with different concentrations in the presence of DNA-AuNP conjugates. Electrolyte: 10 mM PBS (pH 7.4) containing 0.4 M NaNO_3 . Scan rate: 50 mV/s.

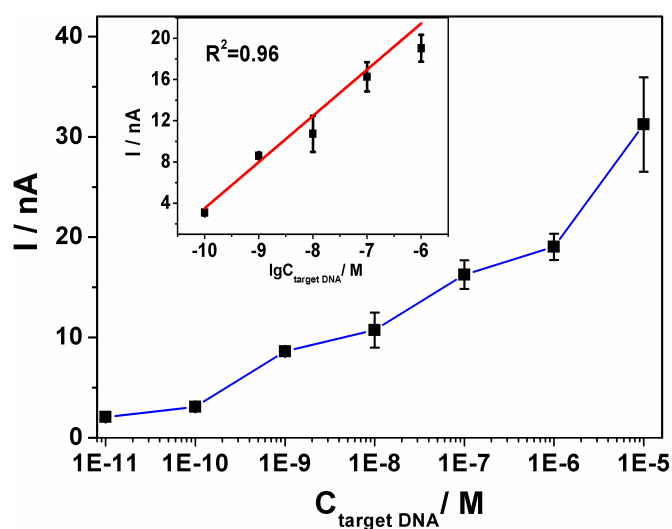


Figure S4. Plot of current versus concentration of target DNA in the presence of sole MB-probe2-SH. Inset: The linear relationship between current and logarithmic concentration of target DNA from 10^{-10} to 10^{-6} M. Error bar shows the standard deviation of current measured from three parallel experiments. The noise of this detection mode is around 3 nA. Electrolyte: 10 mM PBS (pH 7.4) containing 0.4 M NaNO_3 ; scan rate: 50 mV/s.

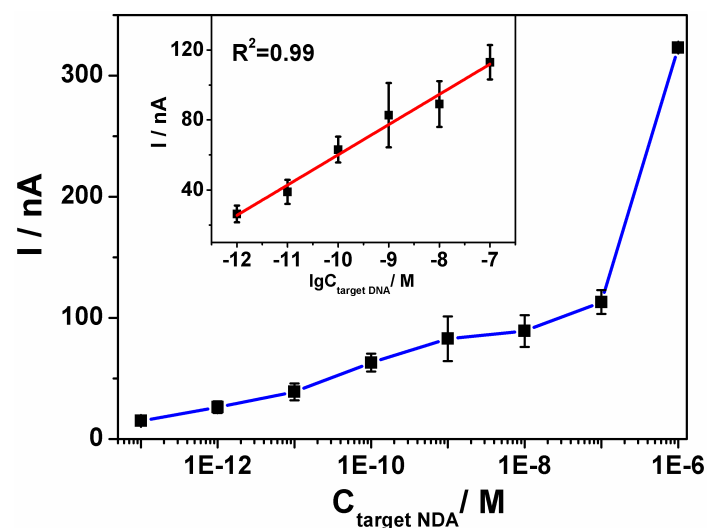


Figure S5. Plot of current versus concentration of target DNA in the presence of MB-probe2-AuNP conjugates. Inset: The linear relationship between current and logarithmic concentration of target DNA from 10^{-12} to 10^{-7} M. Error bar shows the standard deviation of current measured from three parallel experiments. The noise of this detection mode is around 6 nA. Electrolyte: 10 mM PBS (pH 7.4) containing 0.4 M NaNO_3 ; scan rate: 50 mV/s.

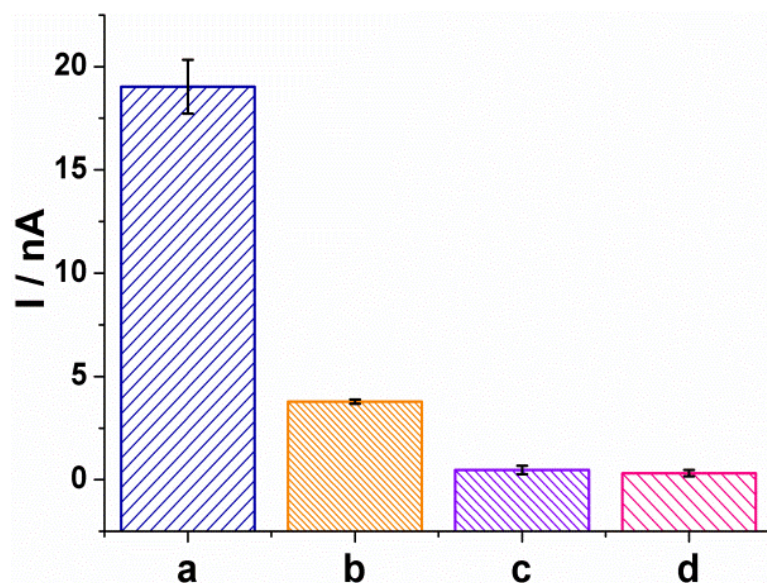


Figure S6. Current responses for different target DNA sequence in the presence of MB-probe2. (a) Target DNA, (b) 1-mismatched DNA, (c) completely mismatched DNA, and (d) background (in pure buffer). The concentration of target DNA was 1 μM . The error bar shows the standard deviations of measurements taken from 3 independent experiments with 3 distinct sensors.

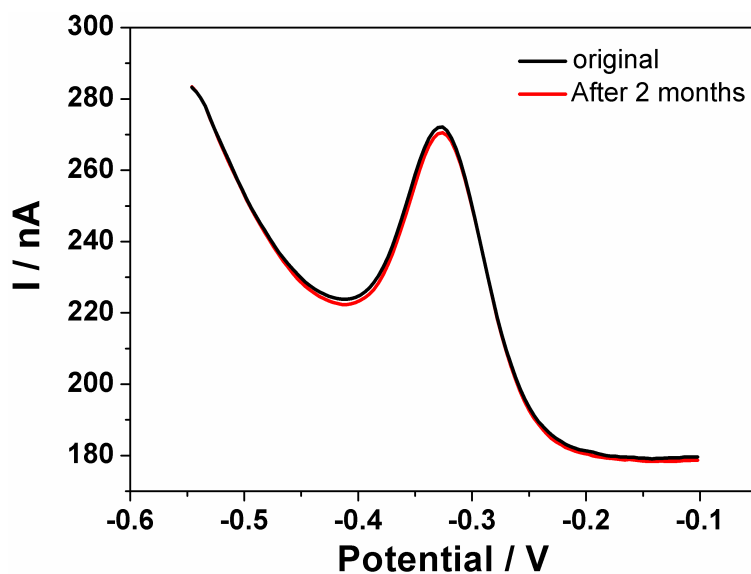


Figure S7. Differential pulse voltammetry (DPV) curves of the freshly prepared Au-probe 1-target-DNA-AuNP conjugates (black curve) and Au-probe 1-target-DNA-AuNP conjugates (red curve) used after 2 months. The concentration of target DNA is 10^{-12} M. Electrolyte: 10 mM PBS (pH 7.4) containing 0.4 M NaNO_3 . Scan rate: 50 mV/s.