

Supplementary Materials

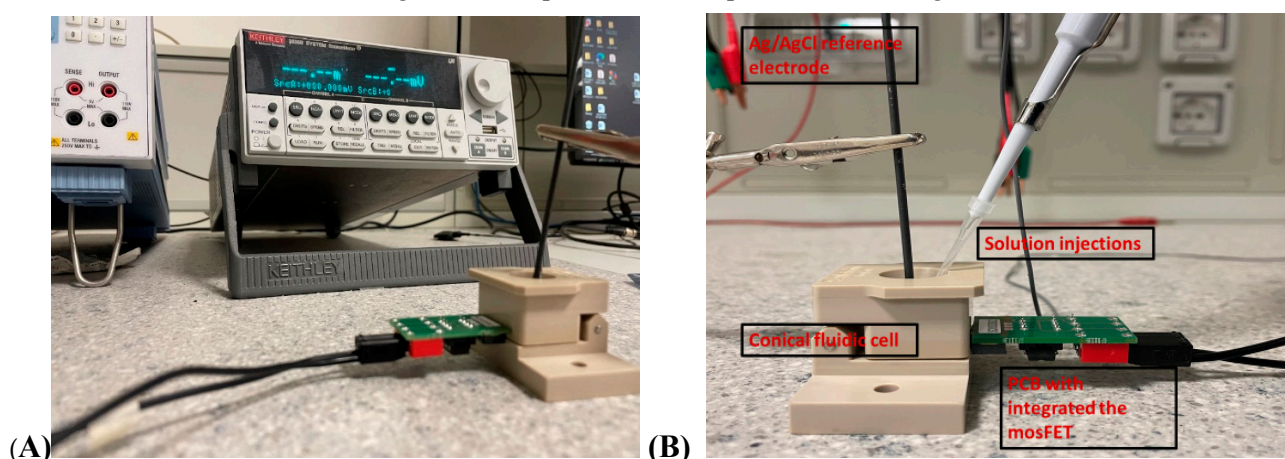
# Detection of miR-155 Using Peptide Nucleic Acid at Physiological-like Conditions by Surface Plasmon Resonance and Bio-Field Effect Transistor

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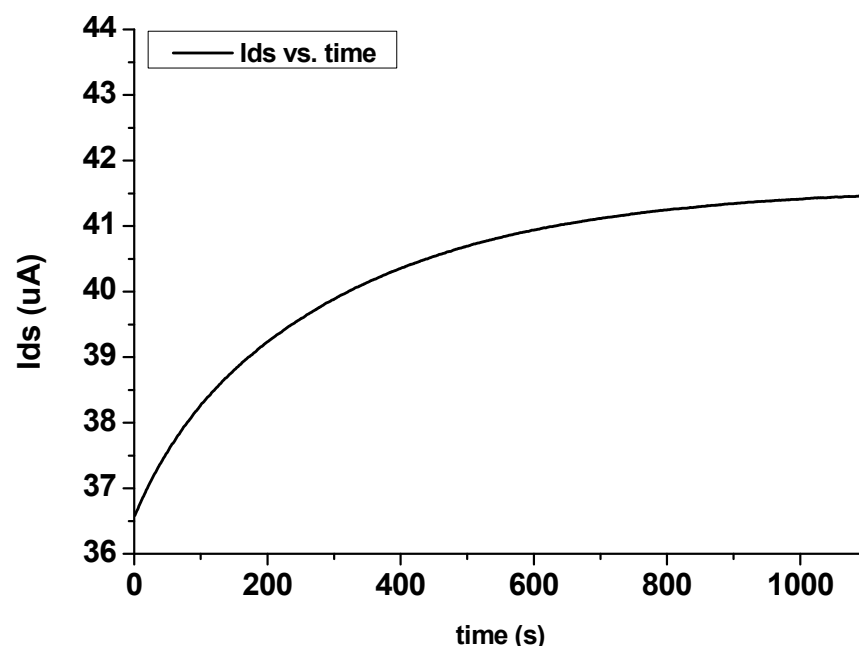
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Images of the experimental setup are shown in Figure S1.



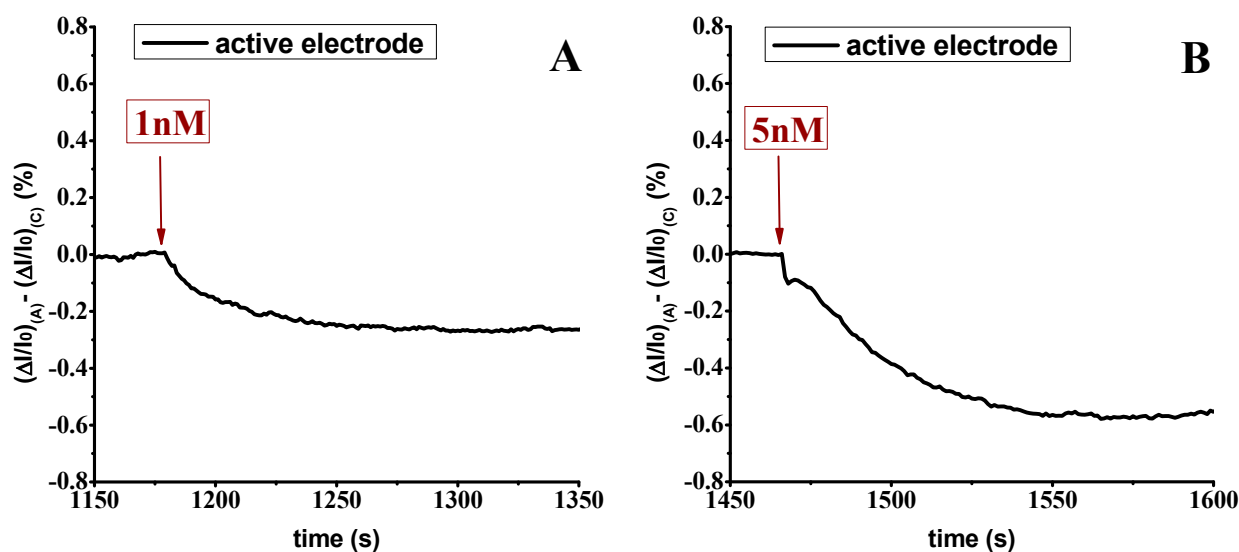
**Figure S1.** Images of the experimental bioFET setup used for detection of miR-155. (A) Keithley apparatus used to apply the selected potentials and to record the current for bio-sensing experiments; (B) zoom of the conic fluidic cell during the injection.

A representative  $I_{ds}$  vs. time stabilization curve of functionalized electrodes is shown in Figure S2. The curve shows an initial increase in the order of  $\mu A$  with an approximately exponential trend before reaching a stable value. In almost all the cases, stability is reached between 1000 and 2000 seconds and the  $I_{ds}$  value reached at equilibrium ( $I_0$ ) ranging from 40 to 50  $\mu A$  for functionalized electrodes. Such differences could be ascribed to small constructive differences between electrodes and to the heterogeneity of functionalized layer.



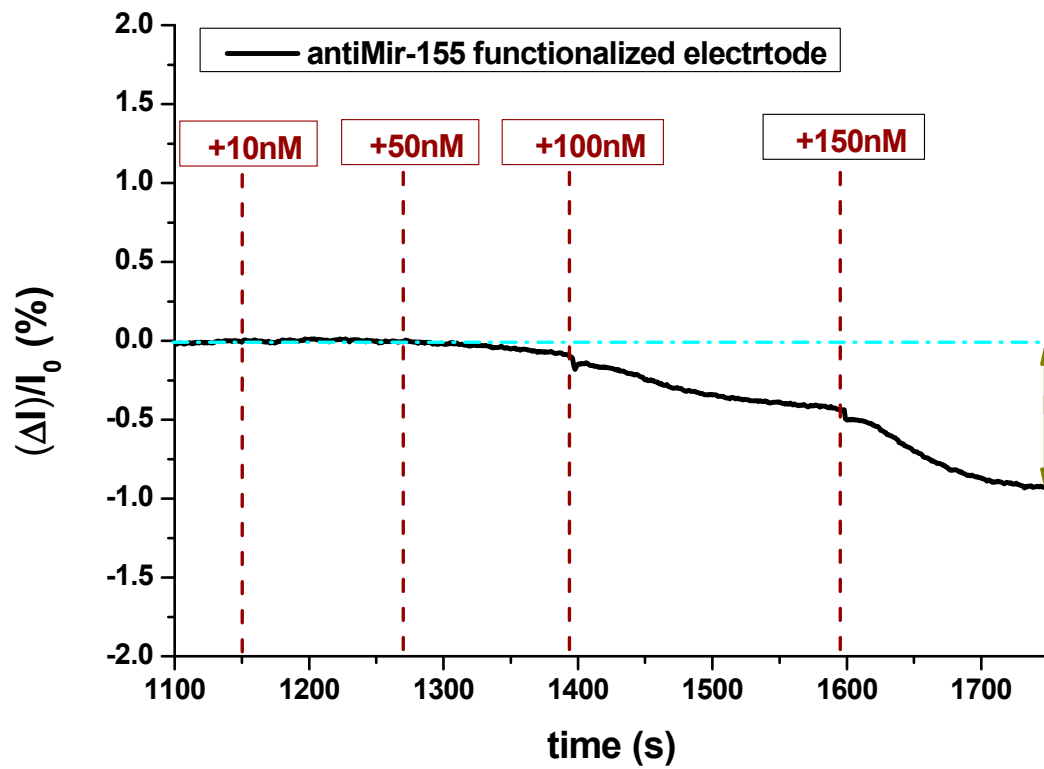
**Figure S2.** A representative stabilization curve of functionalized electrodes obtained before performing injections of target.

Figure S3 show the real-time responses of representative biosensing assays performed on electrode functionalized with PNA with injection of 1 nM and 5nM.



**Figure S3.** Real time biosensing analysis. Injections of miR-155 at the concentrations of A) 1nM, and B) 5nM, on PNA-functionalized active electrode.

Figure S4 shows the real-time responses of representative biosensing assays performed on the active electrode functionalized with anti miR-155 (aaa aaa aac ccc uau cac gau uag cau uaa-3' tagged with the ThiolC6 linker group) complementary to miR-155, by adding successive solutions of miR-155 at 10, 50, 100, 150 nM concentrations. The electrode has been prepared by following the same procedure used for PNA. Upon adding a miR-155 containing solution, a significant current drop occurs only at concentrations higher than 150 nM. Additionally, the current drop is lower in comparison to that detected using as probe PNA at the same miR-155 concentration (see Figure 5).



**Figure S4.** Representative biosensing assay using antisense RNA (antiMir-155) as probe in experimental conditions comparable to the biosensing experiments using PNA as probe.