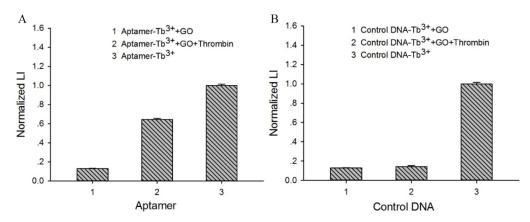
## **Supporting Information**

A label-free and time-resolved luminescent strategy for the detection of protein based on DNA-Tb<sup>3+</sup> luminescence quenched by graphene

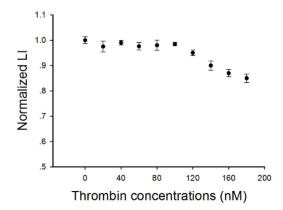
## oxide

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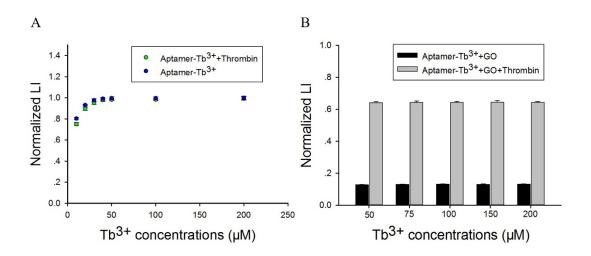
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**Figure S1**. (A) Anti-thrombin aptamer binding with thrombin to desorb from the GO. (B) The control DNA interacting with thrombin.

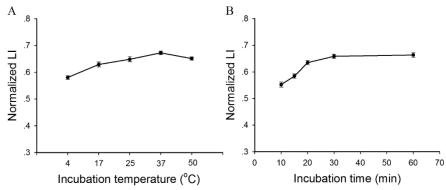


**Figure S2**. The influence of different concentrations thrombin to aptamer-Tb<sup>3+</sup> complex.



**Figure S3**. (A) The influence of thrombin to the luminescence of Aptamer-Tb<sup>3+</sup> complex for different Tb<sup>3+</sup> concentrations (green dots), luminescence of different concentration of Tb<sup>3+</sup> binding

aptamer complex (blue dots). Thrombin, 100 nM. (B) The influence of  $Tb^{3+}$  concentration to the recovery experiments.



**Figure S4**. (A) The optimization of incubation temperature. (B) The optimization of incubation time.