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# Competition-derived FRET-switching cationic conjugated polymer-Ir(III) complex probe for thrombin detection

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## Abstract

A novel, label-free and convenient strategy for thrombin assay has been developed based on the fluorescence resonance energy transfer (FRET) from a cationic conjugated polymer (CCP) to Ir(III) complex. The energy donor (CCP) and acceptor (Ir(III) complex) were taken into close proximity through  $\pi$ - $\pi$  stacking interaction and electrostatic interaction, leading to the occurrence of FRET. However, the introduction of the thrombin aptamer upset the status and blocked the FRET process, but afterwards the reappearance of FRET phenomenon was confirmed by the special binding interaction between aptamer and thrombin, thus achieving the quantitative detection of thrombin. This assay could detect thrombin as low concentration as about 0.05 pM and provided a highly specific selectivity among other nonspecific proteins. Moreover, the strategy may allow our platform to provide similar sensitivity toward different targets in an aptamer-structure-independent

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