

RCA based biosensor for detection of pathogen DNA in two analytical modes

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Rolling circle amplification (RCA) has been widely exploited as a powerful technique for continuous polymerization of DNA. In the present study, we fabricated RCA-based biosensor for pathogen DNA detection in the two different ways. Only in the presence of the target DNA, closed circular DNA was fabricated which enables persistent polymerization via RCA. By RCA in the presence of target DNA, DNAs were continuously synthesized which results in structural change of surface of Au electrodes and gap between the electrodes. The presence of target DNA was easily detected by naked eye as the color of Au electrode changes from bright yellow to orange-red after RCA. Furthermore, existence of target DNA was detected in electrical way by simple introduction of the hydrogen tetrachloroaurate, which improves the conductivity of DNA. It is believed that RCA-based biosensor enables precise detection of pathogen DNA by two different detection way.