

# **Supporting Information (SI) for Modification of Nitrocellulose Membrane with Nanofibers for Sensitivity Enhancement in Lateral Flow Detecting Strips**

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## 1. UV-visible and TEM tests of AuNPs and Au-mAb conjugate

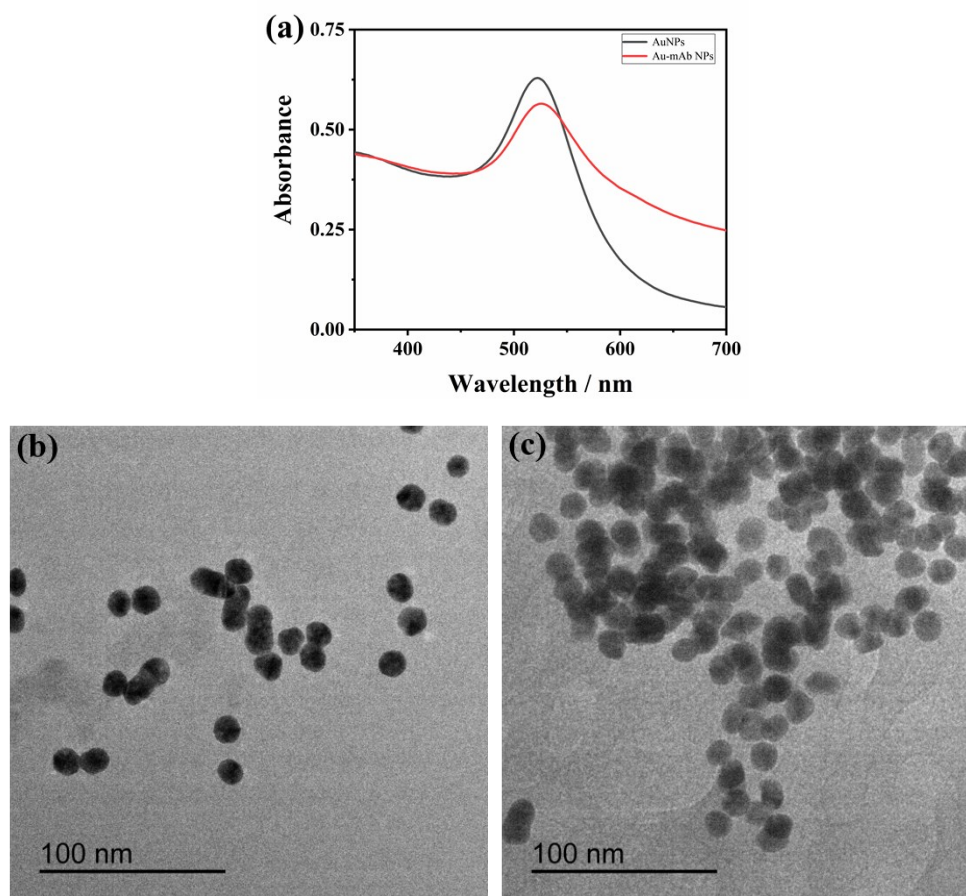


Figure S1 UV-vis spectra of AuNPs and Au-mAb conjugate (a), (b) TEM image of AuNPs, (c) TEM image of Au-mAb conjugate

Figure S1(a) shows the UV-vis spectra test of AuNPs and Au-mAb conjugates, which was carried out at room temperature. We can see that the UV absorption peak of the AuNPs is red-shifted after coupling with the  $\beta$ -hCG monoclonal antibody, demonstrating the successful coupling of the antibody to the particle surface, and the redshift wave number is 8 nm.

To further prove that the successful preparation of the conjugate, the AuNPs and Au-mAb conjugate was characterized by transmission electron microscopy. Figure S1(b) shows a micrograph of AuNPs, the particle size is evenly distributed about 13-17 nm with the shape of a sphere, and the background is clean with good dispersibility.

Figure S1(c) shows the microscopy of the Au-mAb conjugate, which can be seen to have a sphere shape and the particle size is about 18-23 nm with good dispersibility by electrostatic adsorption. Around the spherical nanoparticles, we can see a layer of 'protein halogen' around AuNPs, indicating that the conjugate is immobilized by electrostatic adsorption.

## 2. Reproductivity test

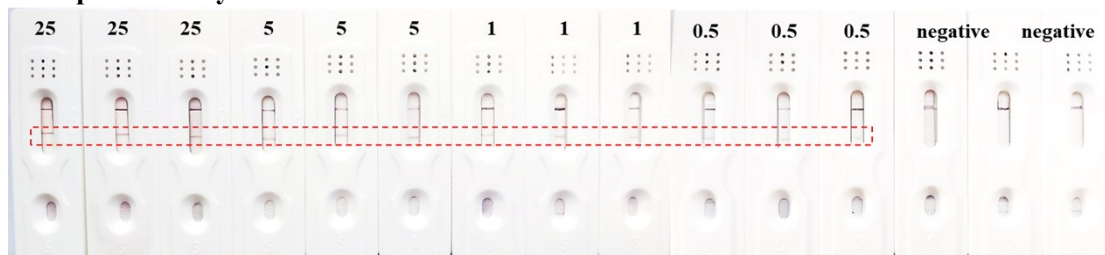


Figure S2 The reproductivity test of LFA strips based on the ENC-2 membrane

## 3. Urine test



Figure S2 The pregnancy test paper was constructed with ENC-2 membrane to detect different dilutions of positive urine samples and negative urine samples

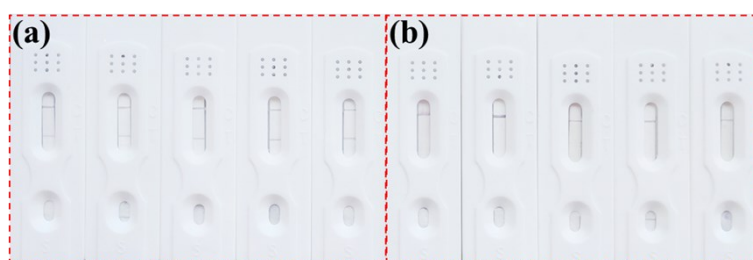


Figure S3 Five positive urine samples (a) and five negative urine samples (b) were detected by pregnancy test paper constructed with ENC-2 membrane