Supporting Information

A rapid immunoassay for dual-mode detection of HPV16 and HPV18 DNA based on Au@PdPt nanoparticles

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Figure and table captions

Table. S1 Sequence of standard DNA-RNA hybrid and RNA probe

Names	Sequences	
	sense (5'-3') DNA	antisense (5'-3') RNA
HPV16 RNA probe	/	Digoxin-CGACCCCUUAUAUUAUGGAAUCUUUGCUUUUUGUCC
HPV18 RNA probe	/	Biotin-CUAUACACCACAAAUAAAUCUUUAAAUGCA
HPV 16 DNA-RNA-digoxin	GGACAAAAAGCAAAGATTCCATAATATAAGGGGTCG	Digoxin-CGACCCCUUAUAUUAUGGAAUCUUUGCUUUUUGUCC
HPV18 DNA-RNA-biotin	TGCATTTAAAGATTTATTTGTGGTGTATAG	Biotin-CUAUACACCACAAAUAAAUCUUUAAAUGCA

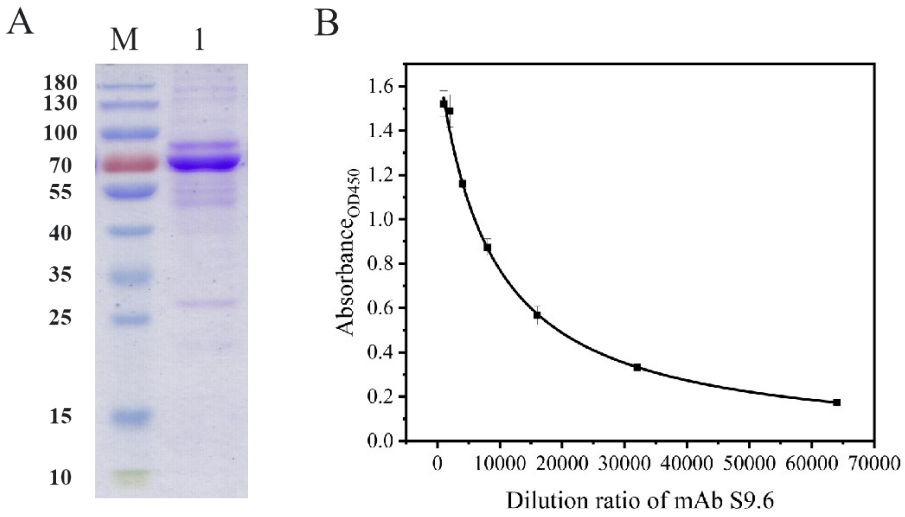

Fig. S1 Characterization of mAb S9.6. (A) SDS-PAGE char-acterization of mAb S9.6: M. Marker; lane 1. mAb S9.6; (B) ELISA characterization of mAb S9.6 Titer.

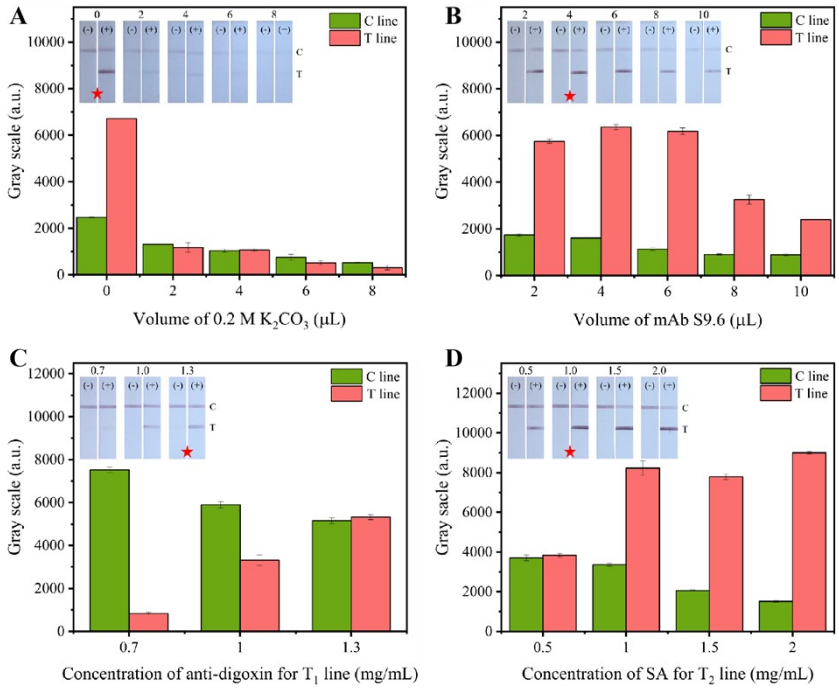

Fig. S2 Optimization of the AuNPs-LFIA. (A) Optimized volume of 0.2 M K_2CO_3 in the synthesis of AuNPs-mAb probe; (B) Optimized amount of mAb S9.6 in the synthesis of AuNPs-mAb probe; (C) Optimized concentration of T_1 line; (D) Optimized concentration of T_2 line.

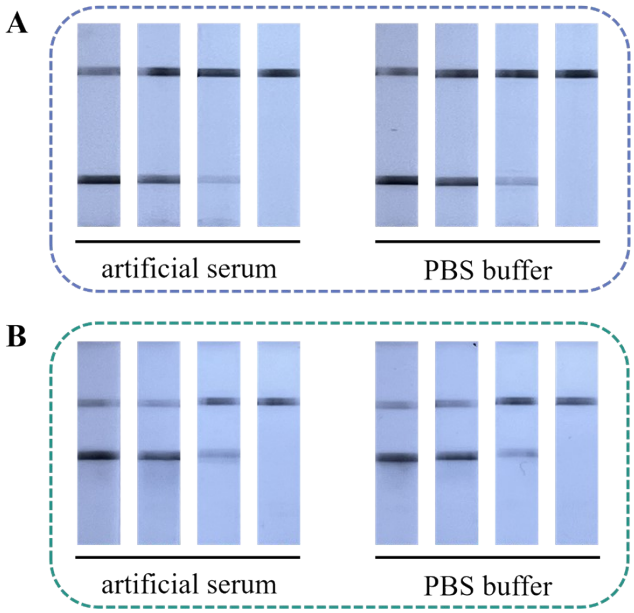

Fig. S3 Detection of HPV 16 DNA-RNA-digoxin (A) and HPV 18 DNA-RNA-biotin (B) in artificial serum and PBS buffer by Au@PdPt-LFIA.

Table. S2 Comparison with other studies of HPV detection

Method	Genotype	LOD	Assay duration	Reference
CuO-based LFSB[a]	16	1 nM	＜20 min	1
ELISA[b]	16 E6/E7	0.92/0.42 pg/mL	＞300 min	2
CRISPR/Cas12a based LFB[c]	16/18	0.9 copies/μL	~50 min	3
LAMP-LFD[d]	16/18	10/1 copies/reaction	45 min	4
tailed primer isothermal amplification and lateral flow detection assays	16/18/45	50/50/500 copies/reaction	＜35 min	5
electrochemical DNA biosensor	16	0.23 copies/μL	75 min	6
MCLSA[e]	16	54 copies/tube	45 min	7
electrochemical resistive DNA biosensor	16	2.39 nM	＞120 min	8
microchip electrophoresis	16/18	10^2 cells/mL	＞130 min	9
WarmStart colorimetric LAMP[f]	16/18	100/10 copies/reaction	＞80 min	10
PEC based on SiW12@CdS QDs[g]	16	0.8 nM	＞120 min	11
DNA sandwich hybridization with AuNP probe	16/18	0.14 nM	＞20 min	12
Paper-based colorimetric assay	16	1 nM	＞30 min	13
AuNPs-LFIA[h]	16/18	0.23/0.20 nM	＜15 min	This work
Au@PdPt-LFIA	16/18	0.05/0.02 nM	＜15 min	This work

(a) LFSB: lateral flow strip biosensor; (b) ELISA: enzyme-linked immunosorbent assay; (c) LFB: lateral flow biosensor; (d) LFD: lateral flow dipstick; (e) MCLSA: multiple cross-linking spiral amplification; (f) LAMP: loop-mediated isothermal amplification; (g) QDs: quantum dots; (h) LFIA: lateral flow immunoassay.

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