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A colorimetric aptasensor for the simple and rapid detection of human papillomavirus type 16 L1 proteins

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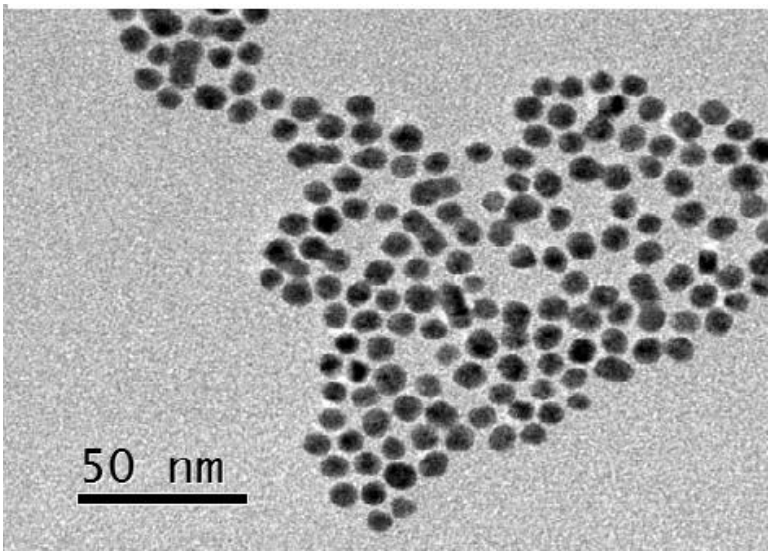

Fig. S1 TEM image of AuNPs at 5 nm.

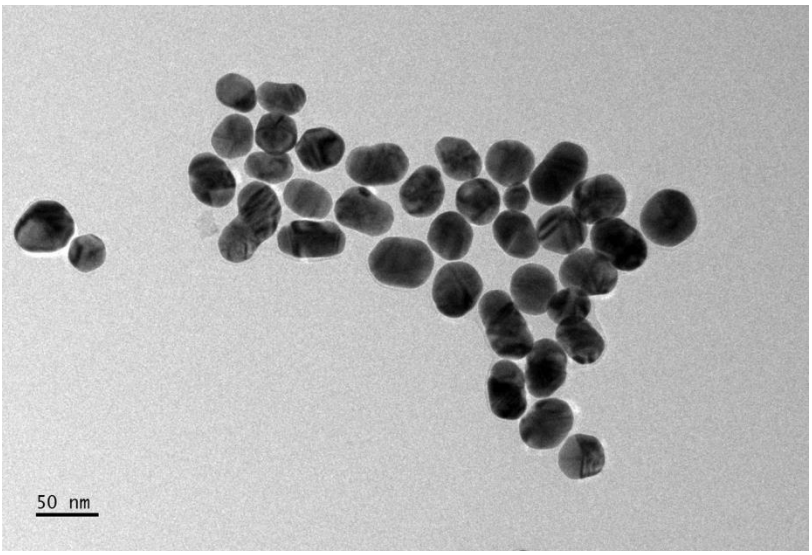

Fig. S2 TEM image of AuNPs at 40 nm.

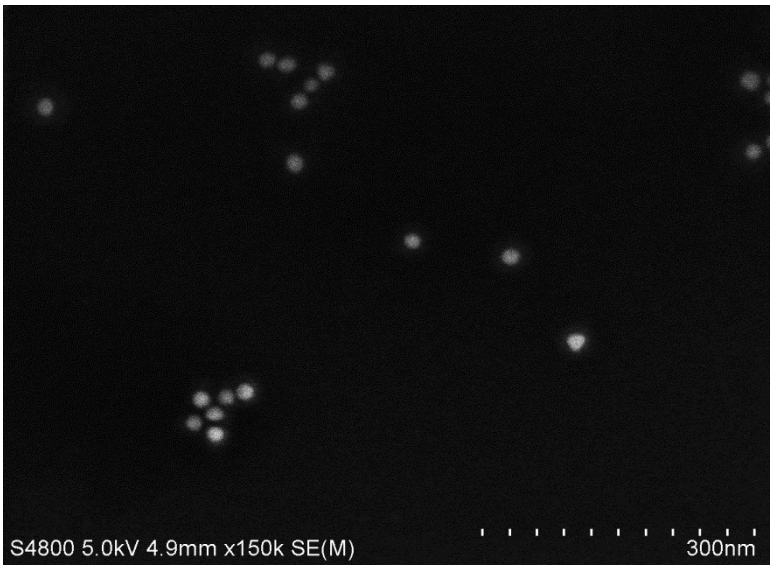

Fig. S3 SEM image of AuNPs at 20 nm.

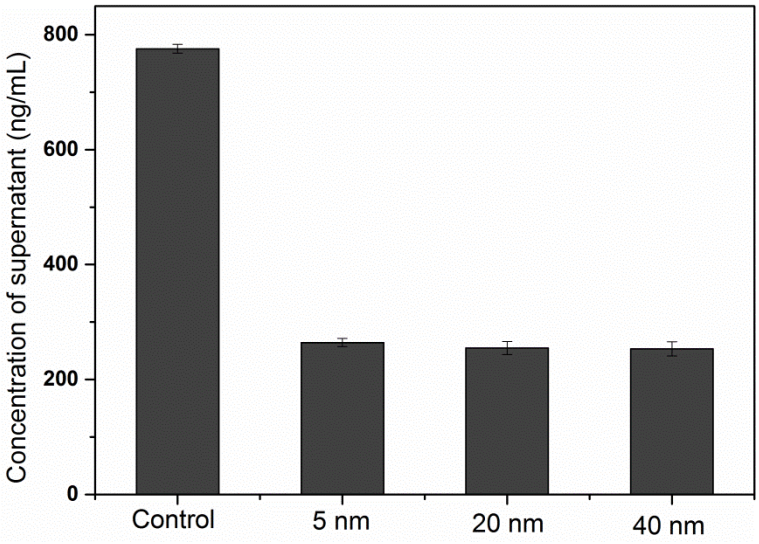

Fig. S4 Concentration of the APT $_{HPV16\ L1}$ in supernatant.

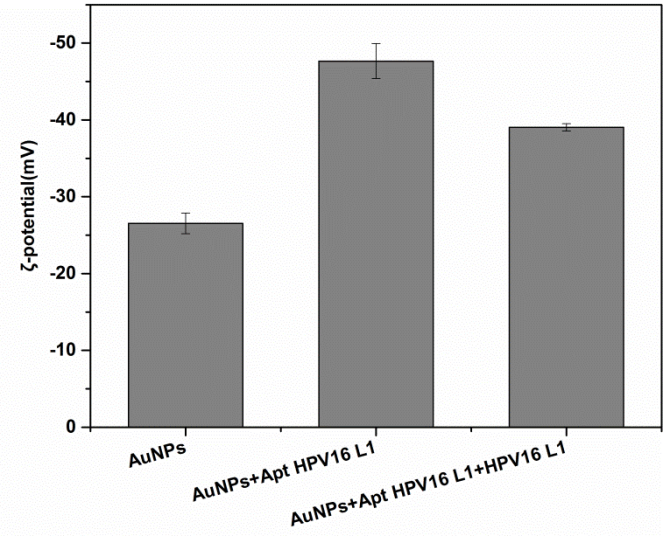

Fig. S5 Zeta potentials of AuNPs solution, AuNP-$APT_{HPV16\ L1}$ solution and AuNP-$APT_{HPV16\ L1}$-HPV16 L1 protein solution.

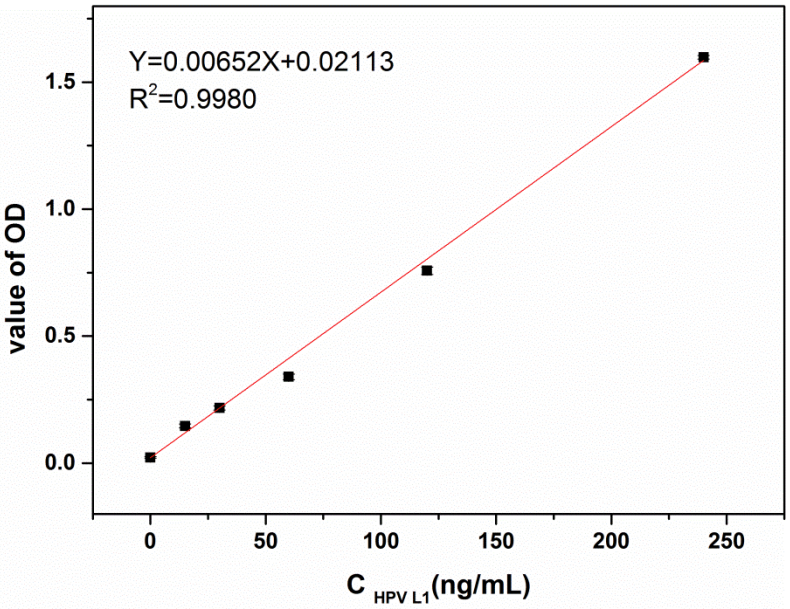

Fig. S6 Linear calibration curve for HPV16 L1 protein in clinical samples by using ELISA method.

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Table S1. Determination of HPV16 L1 protein in real samples by using the as-prepared colorimetric aptasensor.

Sample name	HPV16 L1 protein Concentration (ng/mL)(n=3)	SD
Positive clinical sample	121.4	1.21
Negative clinical sample	n.d.	/
Vaccine sample	31828.0	4.68

n.d. = not detected

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Table S2. Determination of HPV16 L1 protein by using ELISA method.

HPV16 L1 protein concentration (ng/mL)	**0**	**15**	**30**	**60**	**120**	**240**
Optical density(OD)	0.019	0.156	0.222	0.339	0.778	1.605
	0.024	0.145	0.213	0.342	0.757	1.602
	0.025	0.137	0.209	0.326	0.746	1.589
	0.021	0.147	0.227	0.352	0.749	1.595

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Table S3. Determination of HPV16 L1 protein in real samples by using ELISA method.

Sample name	HPV16 L1 protein concentration (ng/mL) (n=5)	SD
Positive clinical sample	112.9	0.041
Negative clinical sample	n.d.	/
Vaccine sample	34168.8	0.060

n.d.= not detected

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Table S4. Recoveries for the determination of HPV16 L1 protein in real samples by using the as-prepared colorimetric aptasensor.

Sample No.	Sample content (n=3) ng/mL	Added ng/mL	Found(n=3) ng/mL	RSD(n=3) %	Recoveries %
1	67.2	9.6	64.1	2.8	83.5
2	67.2	57.6	93.6	1.5	74.8
3	67.2	119	158.9	1.9	85.4