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Detection of HPV16 in cell lines deriving from cervical and head and neck cancer using a genosensor made with a DNA probe on a layer-by-layer matrix

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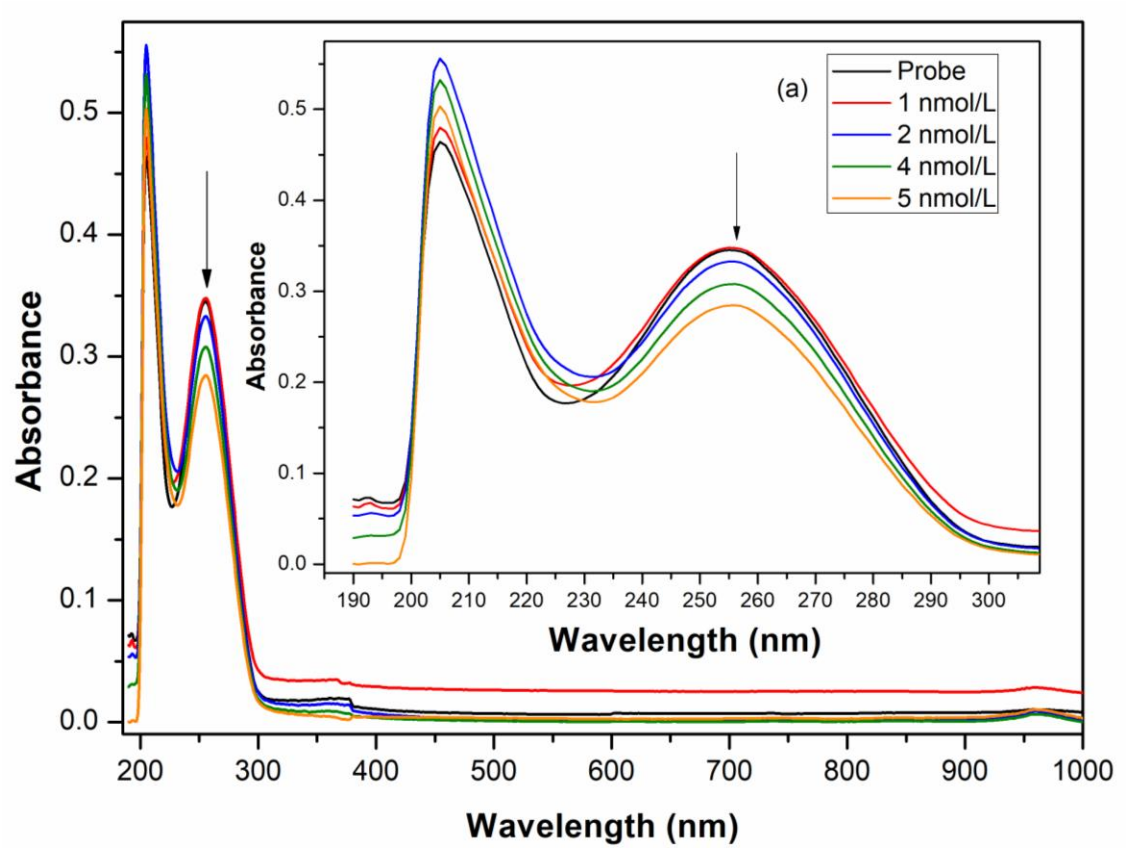
UV-vis measurements

We have confirmed that hybridization leads to a decrease in optical absorbance by making the DNA probe to hybridize in a PBS solution with distinct amounts of the complementary ssHPV16 DNA. Figure S1 shows that the band at 260 nm characteristic of the DNA chain has its intensity decreased with increasing concentration of ssHPV16 DNA. The experimental procedure adopted was as follows. One cuvette was filled with 900 µL PBS solution containing cpHPV16 100 µL and ssHPV16 solutions at the same concentrations: 1, 2, 4 and 5 nmol/L. During hybridization, a decrease in the absorption

at 260 nm decreased with ssHPV16 concentration. The limit of detection was 1.5 nmol/L.



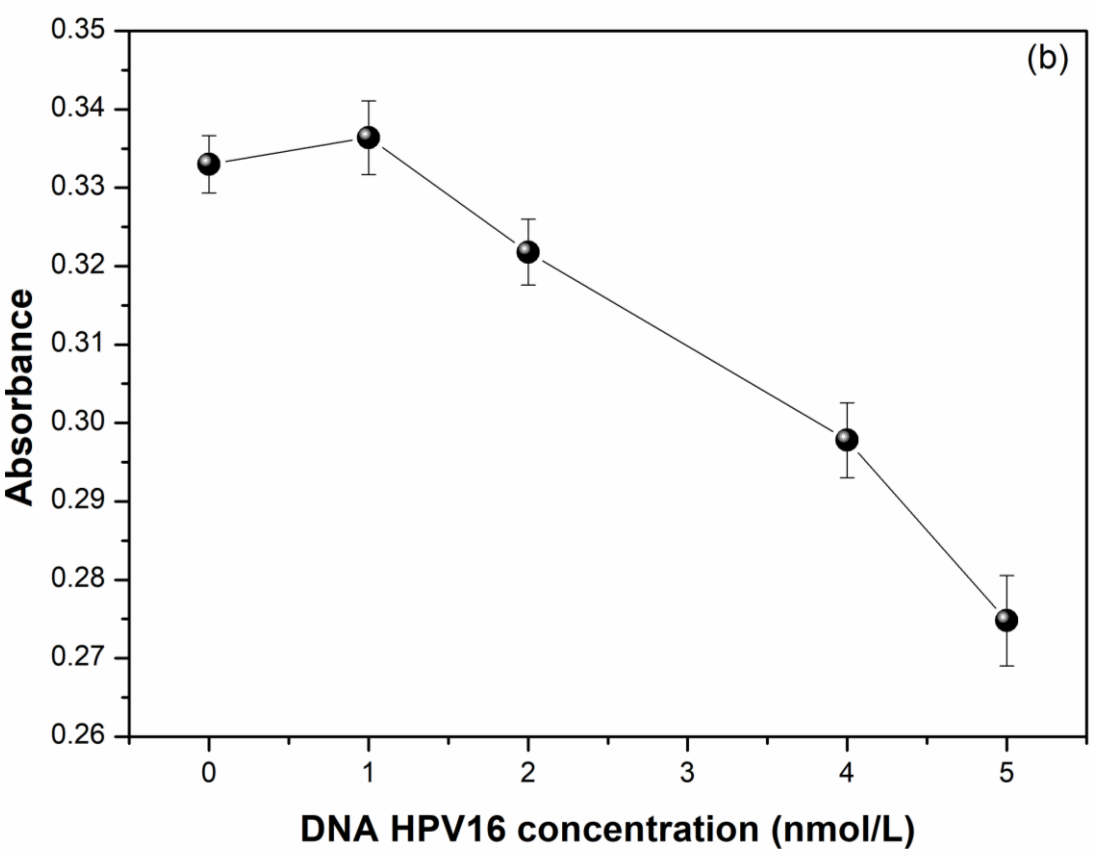
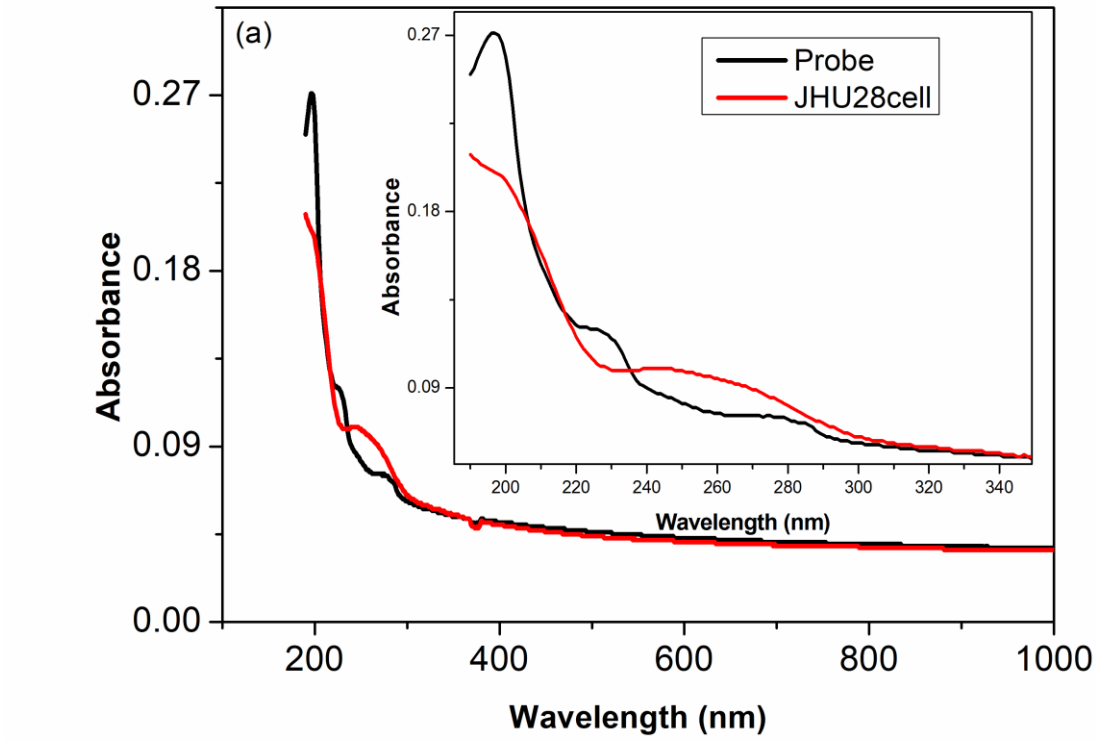
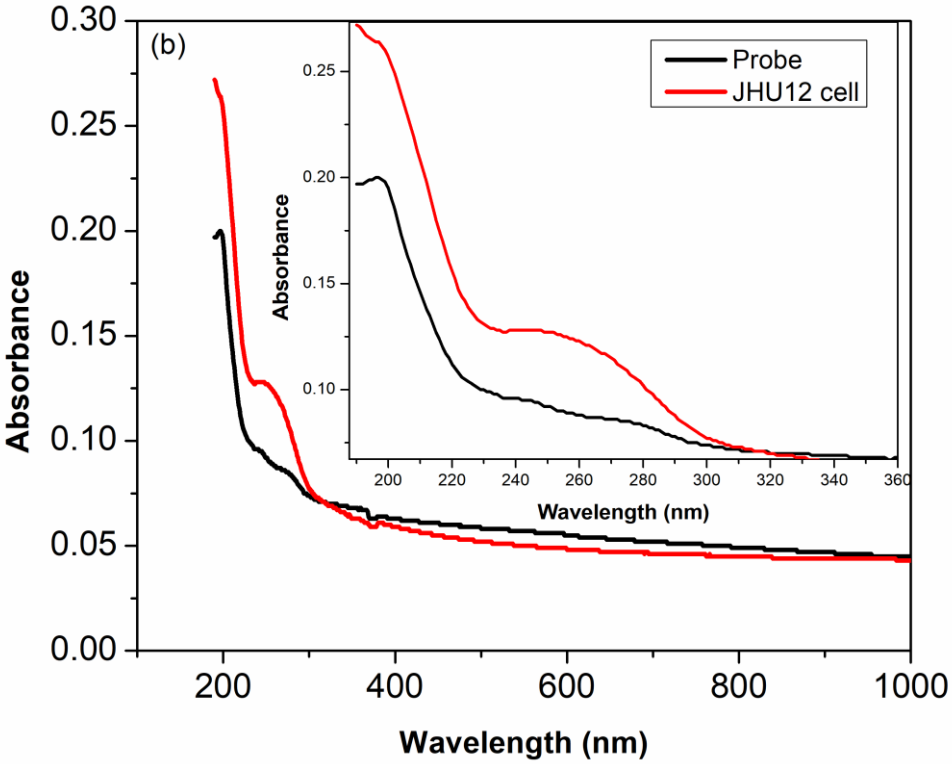


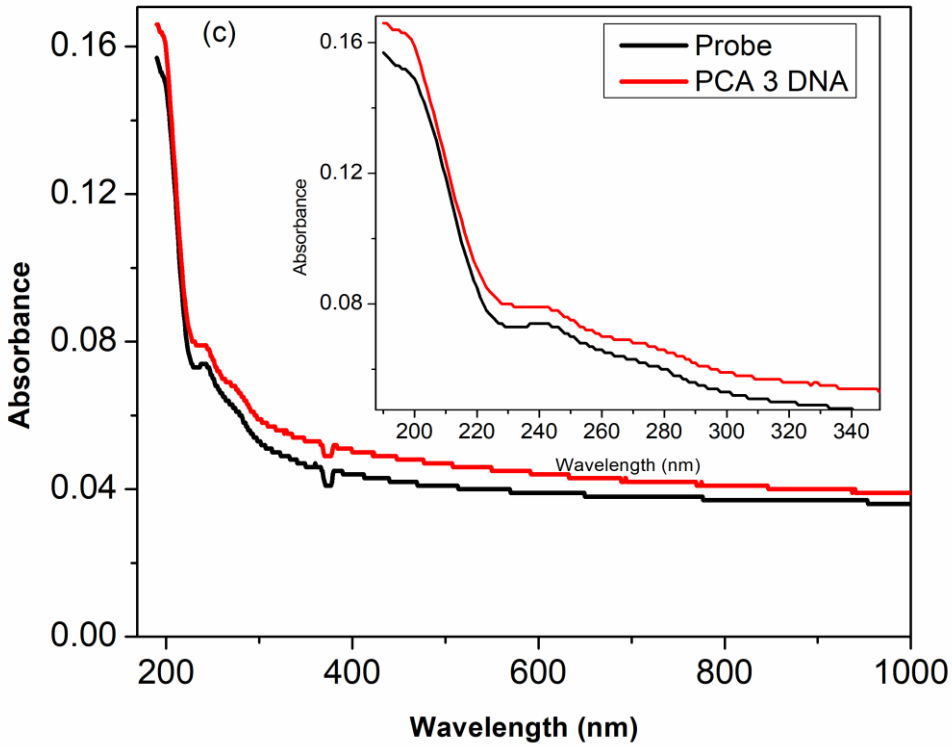
Figure S1. (a) Absorbance spectra for cpHPV16 sample with various concentrations of ssHPV16 positive in PBS solutions. (b) Calibration curve of cpHPV16 sample versus concentration of ssHPV16 positive at 260 nm.

ssHPV 16 DNA Experiments

Control Experiments were carried out with UV-VIS measurements for positive and negative cells immobilized onto the genosensors. Figure S2 shows the spectra for the cell lines: CasKi and SiHa (positive control from cervical cancer), JHU12, JHU28 and PCA3 DNA sample as negative control.


(a)
Absorbance
0.27
0.18
0.09
0.00
200
400
600
800
1000
Wavelength (nm)
Probe
JHU28cell
Absorbance
0.27
0.18
0.09
200
220
240
260
280
300
320
340
Wavelength (nm)


(b)
Probe
JHU12 cell
Absorbance
Wavelength (nm)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
200
400
600
800
1000
0.10
0.15
0.20
0.25
200
220
240
260
280
300
320
340
360


(c)
Probe
PCA 3 DNA
Absorbance
Wavelength (nm)
0.00
0.04
0.08
0.12
0.16
200
400
600
800
1000
0.08
0.12
0.16
200
220
240
260
280
300
320
340

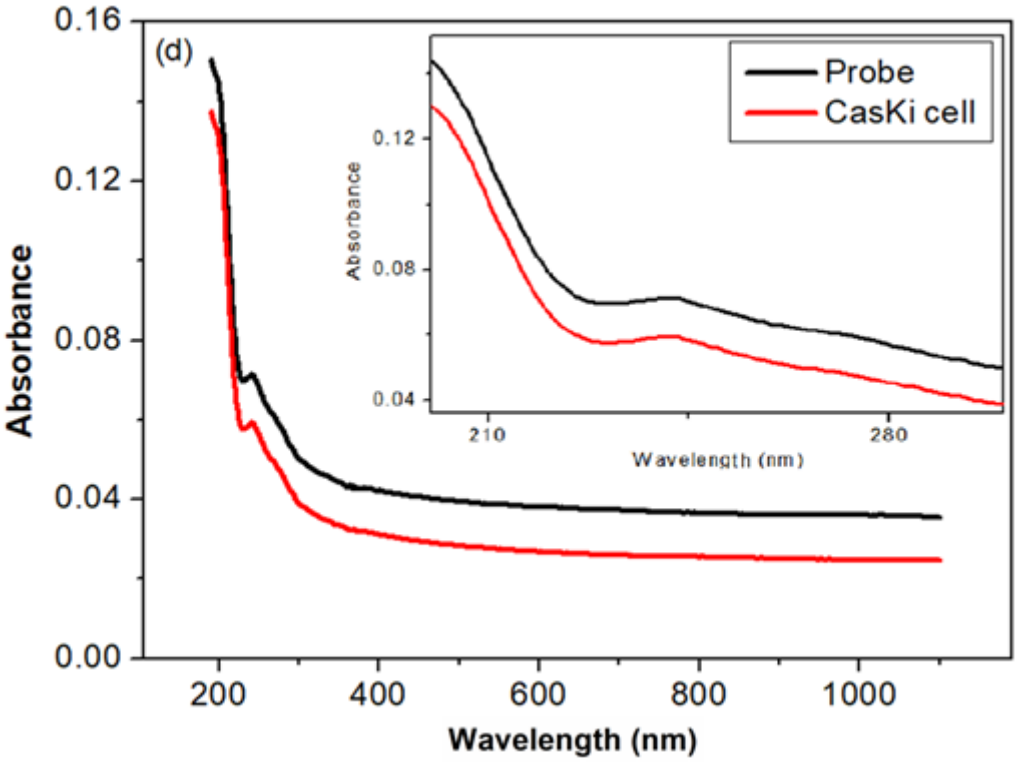


Figure S2. Absorbance spectra for Chi/CNT/cpHPV16Probe (---) exposed to (a) JHU28 cell solution, (b) JHU12 cell solution, (c) PCA3 DNA solution, (d) CasKi cell solution, (e) SiHa cell solution (---). All solutions were prepared in PBS.