Supplementary Information

A graphene-based fluorescence nanoprobe for simultaneous monitoring of miRNA and mRNA in living cells

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Table S1. DNA sequences employed in this work.

Oligonucleotide	Sequence
P-21: Cy5-tagged DNA strand	5′-Cy5-TCAACATCAGTCTGATAAGCTA-3′
T-21: miR-21 perfectly matched target	5′-TAGCTTATCAGACTGATGTTGA-3′
P-PDCD4: FAM-tagged DNA strand	5′-FAM-TCTAGCCTGCACACAATCTAC-3′
T-PDCD4: PDCD4 mRNA perfectly matched target	5′-GTAGATTGTGTGCAGGCTAGA-3′
T-221: miR-221 perfectly matched target	5′-AGCTACATTGTCTGCTGGGTTTC-3′
T-PTEN: PTEN mRNA perfectly matched target	5′-AGGCGAGGGAGATGAGA-3′
T-survivin: survivin mRNA perfectly matched target	5′-GACCACCGCATCTCTA-3′

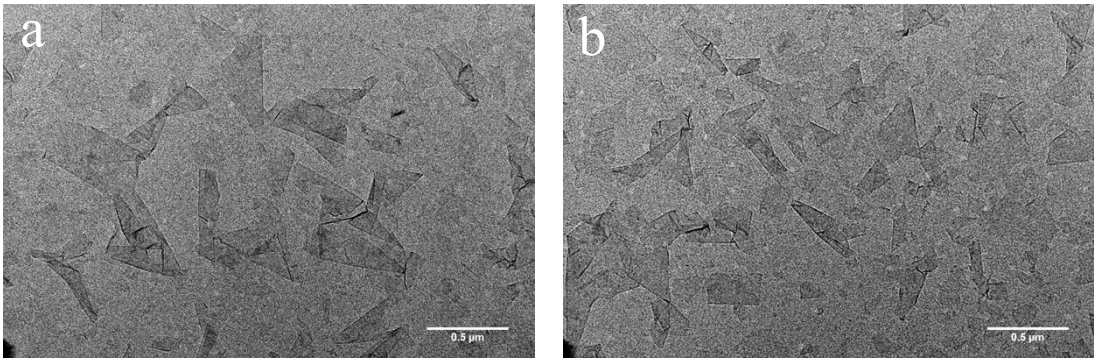

Fig. S1 HRTEM images of GO (a) and nanoprobe (b).

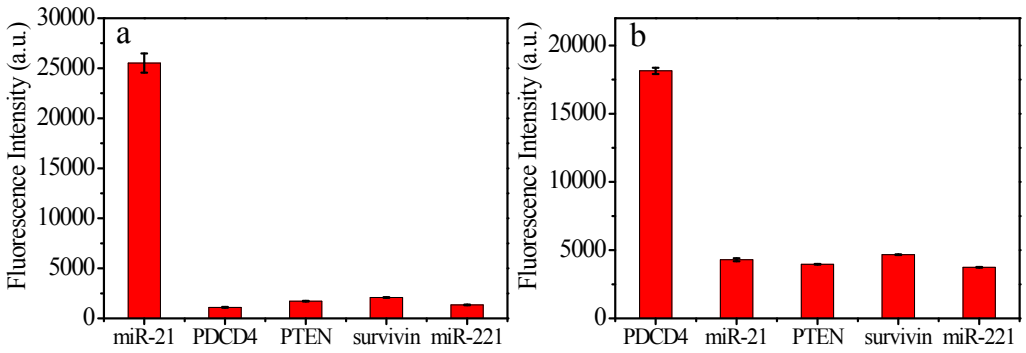

Fig. S2 Fluorescence intensity responses of the nanoprobe measured at excitation wavelengths of 645 nm (a) and 492 nm (b). Concentrations of all the targets are 150 nM. Error bars were obtained from three parallel experiments.

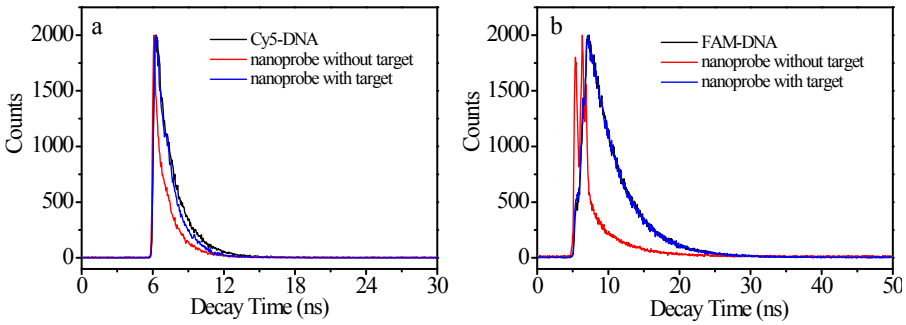

Fig. S3 Fluorescence decay curves of dye-DNA, and nanoprobe in the absence and presence of target: Cy5 (a) and FAM (b).

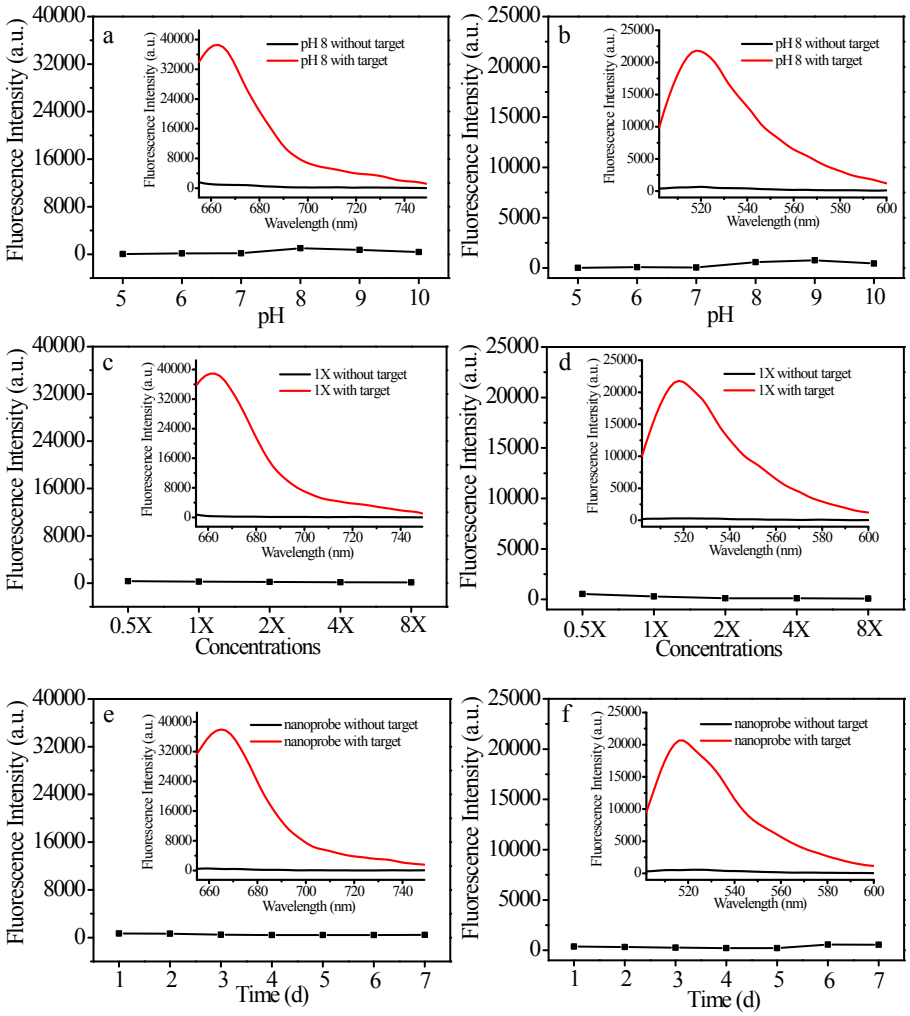

Fig. S4 Fluorescence intensity of the nanoprobe in buffer with different pH (a, b), ionic strength (c, d) and storage time (e, f). The fluorescence intensity was obtained at the wavelength of 665 nm (a, c, e) and 519 nm (b, d, f). Insets: fluorescence spectra of the nanoprobe in the absence of target (black) and presence of target (red). 1X buffer：

20 mM Tris-HCl, 100 mM NaCl, 13.65 mM KCl, 1.647 mM $MgCl_2$, pH=8.0. X represents the multiple of buffer concentration.

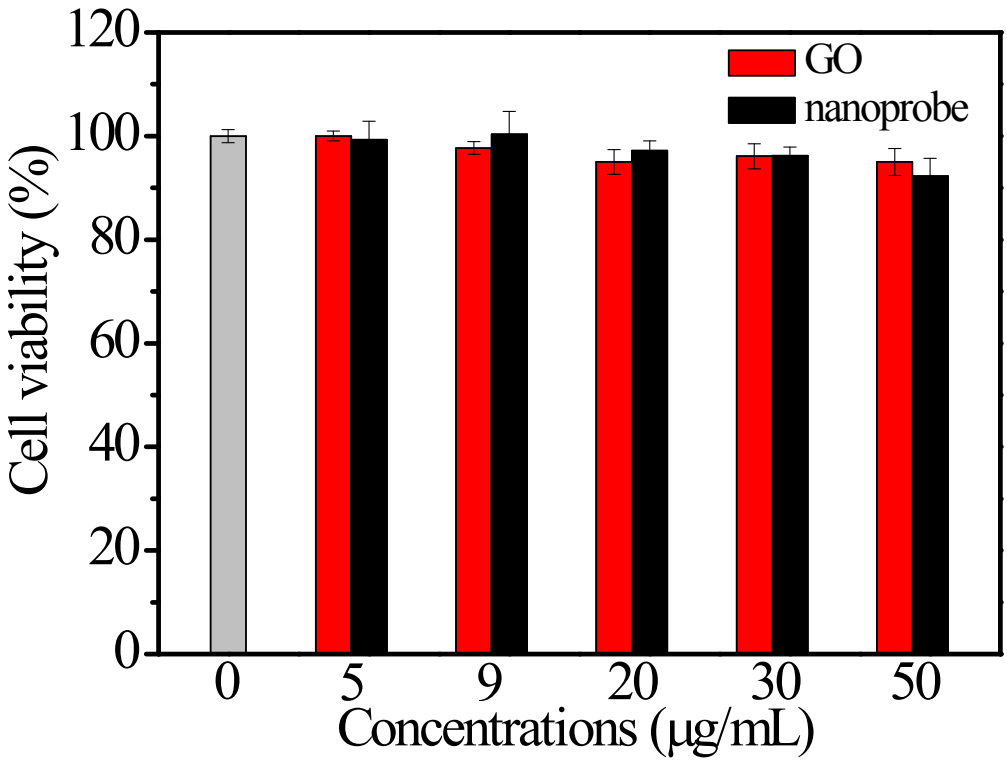

Fig. S5 Cytotoxicity induced by GO and nanoprobe in MCF-7 cells. The cells were incubated with GO and nanoprobe of varying concentrations (0, 5, 9, 20, 30, 50 μg/mL) for 6 h.

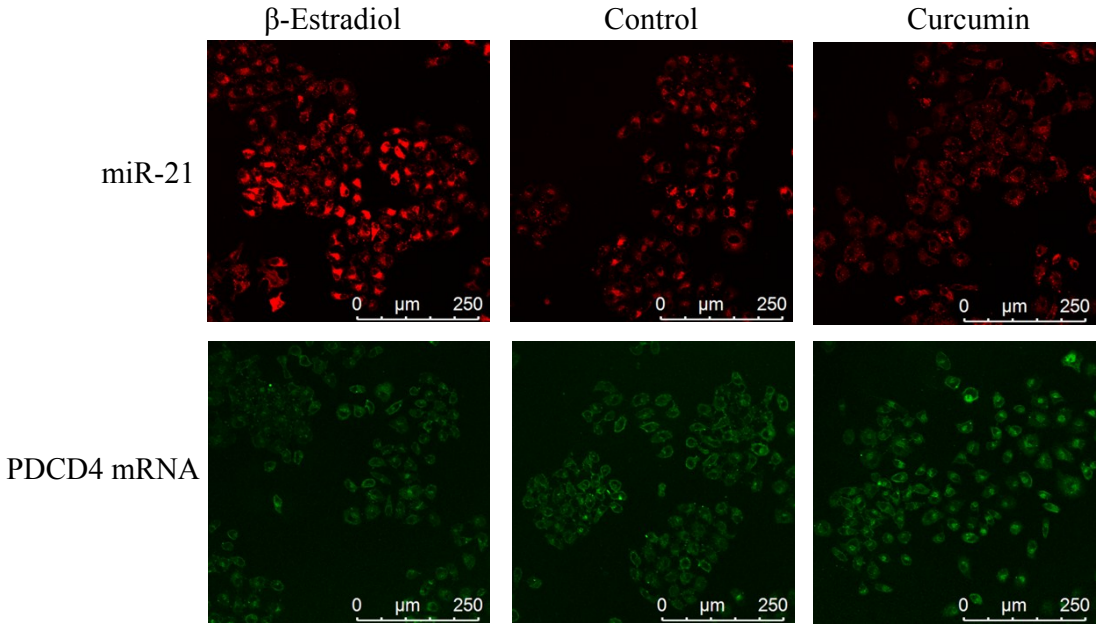

Fig. S6 Confocal fluorescence microscopy images of miR-21 and PDCD4 mRNA in HeLa cells. Images of miR-21 and PDCD4 mRNA were obtained with excitation at 633 nm and 488nm, respectively.