Electronic Supplementary Information (ESI)

Nanowire Based Localized Catalytic Hairpin Assembly Reaction for MicroRNA Imaging in Live Cells

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Supporting tables

Table S1. Oligonucleotide sequences

Oligo	sequences (5’-3’)
miR-21	UAGCUUAUCAGACUGAUGUUGA
L1	ACAGGATTAATCTTATTAGTCGTCTCGTTACTTAAATGGTC AGAAATATGGGATTAACCATGGTGTTTATGATATGAAGTGT TGGAAGCT
L2	CTCGAGATTATTCTAATTAGGACATTAATCCCATATTTCTGA CCATTTAACGAACGAAGCTTCCAACACTTCATATCATAAAC ACCATGG
H1	GACGACTAATAAGATTAATCCTGTTCAACATCAGTCTGA T(FAM)AAGCTA CATTGGATGCTCTAGCTTA T(BHQ)CAGACTG
H2	TGTCCTAATTAGAATAATCTCGAGTAAGCTAGAGCATCCAA TGTAGCTTA TCAGACTGCATTGGATGCTC
Anti-miR-21	U*C*A*ACAUCAGUCUGAUAAGC*U*A*
miR-21 mimics	U*A*G*CUUAUCAGACUGAUGUU*G*A*
miR-200b	UAAUACUGCCUGGUAAUGAUGA
miR-429	UAAUACUGUCUGGUAAAACCGU
let-7d	AGAGGUAGUAGGUUGCAUAGUU

The * represents phosphorothioate modification.

Supporting Figures

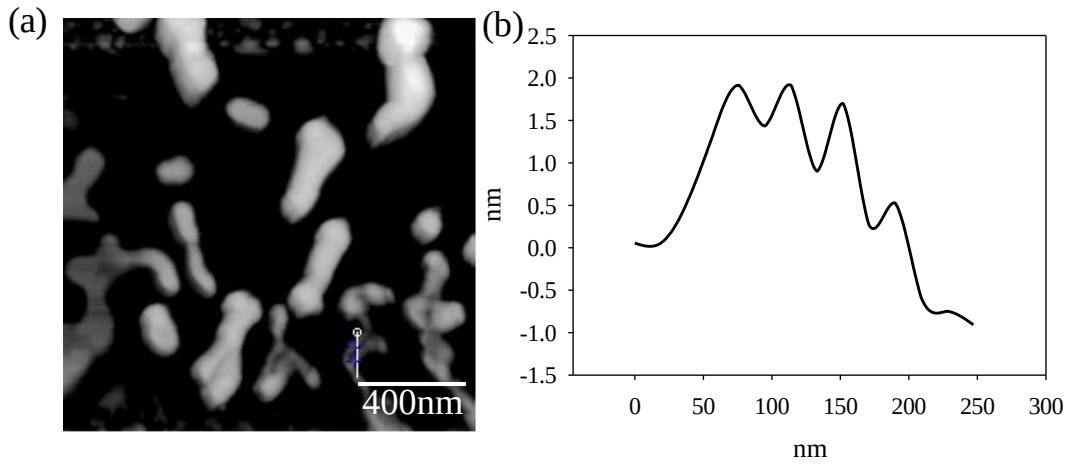

Figure S1. (a) AFM phase image of DNA nanowire. (b) Crosssection profile of the white line in (a).

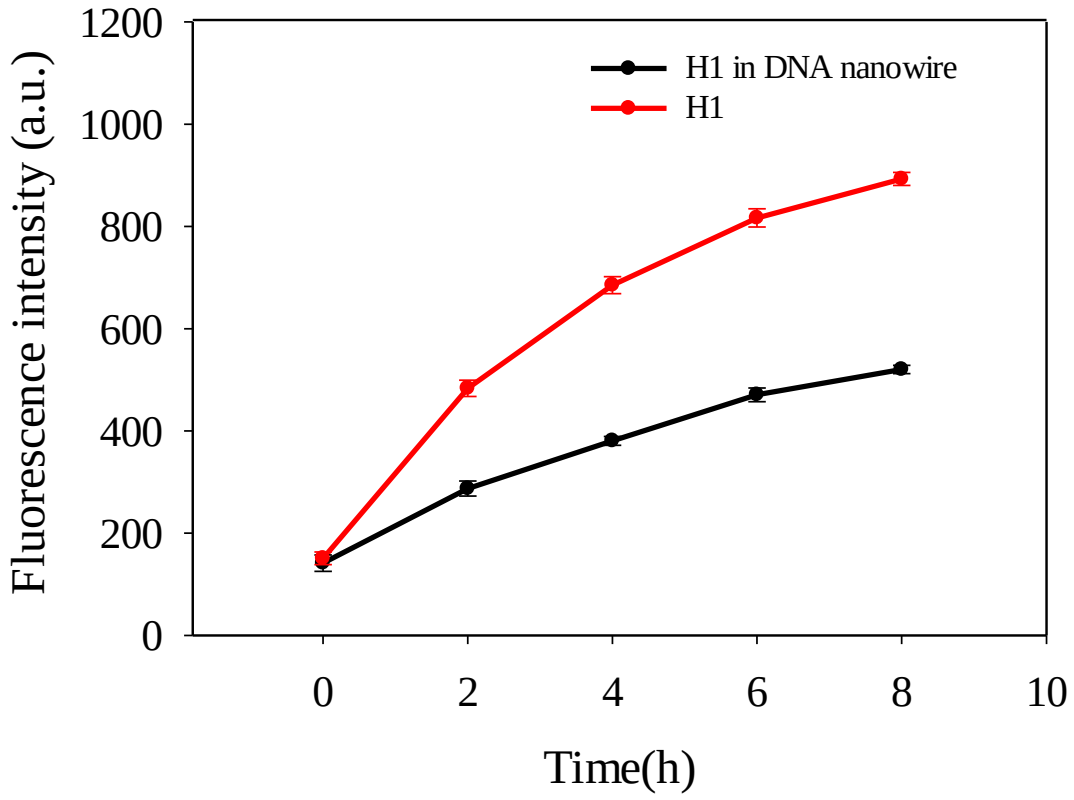

Figure S2. Stability of free H1 and H1 in DNA nanowire in HeLa cell lysate. The data error bars indicate means ± SD (n=3). The concentrations of probes were both 100 nM.

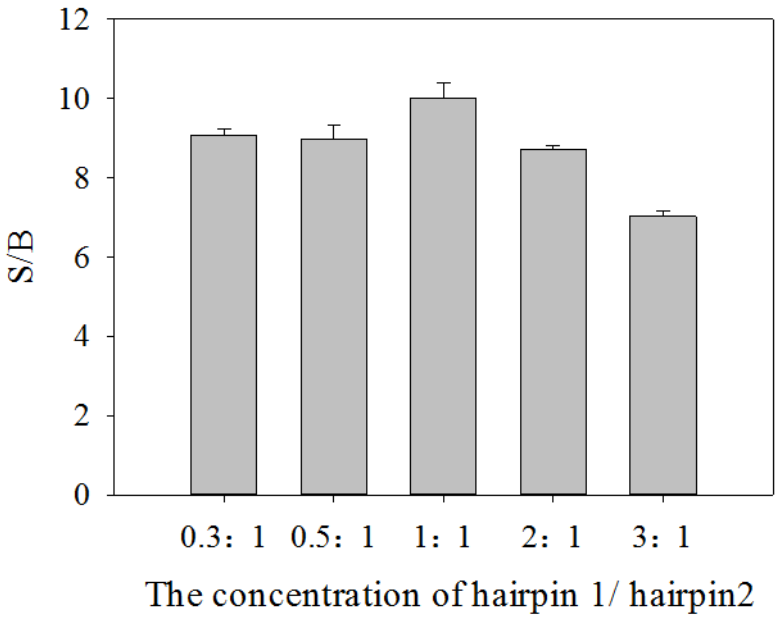

Figure S3. The signal-to-background (S/B) of LCHA in different ratio of H1 and H2. The concentration of H1 was fixed, and H1=100 nM, the reaction time was 1h.

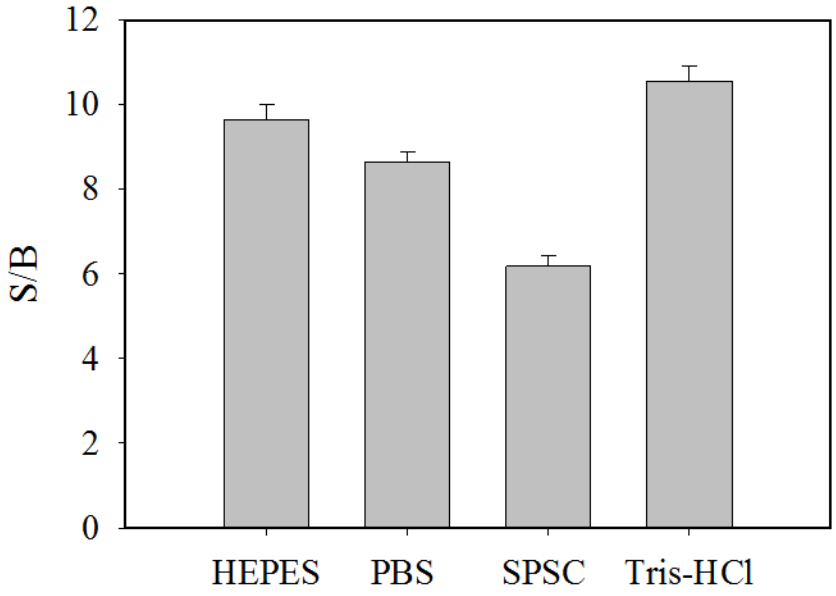

Figure S4. The signal-to-background (S/B) of LCHA in different kinds of buffer. The concentrations of probe and target were 100 nM and 20 nM, respectively. The reaction time was 1h

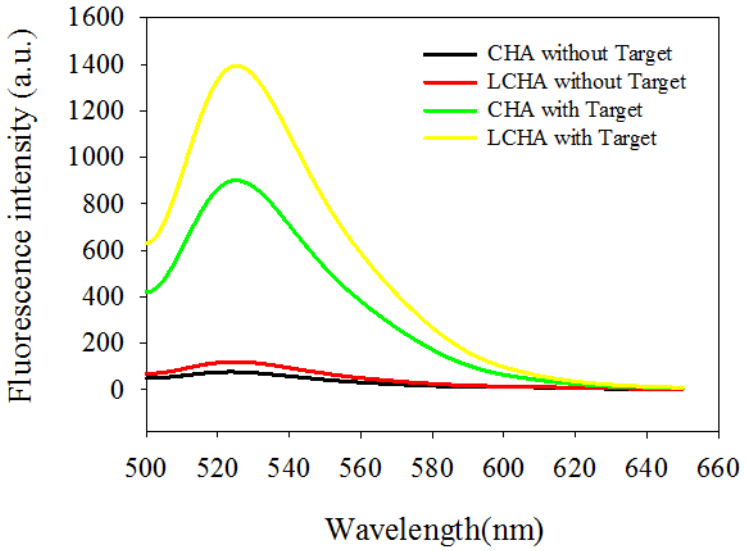

Figure S5. Fluorescence emission spectra of CHA and LCHA responds to DNA targets *in vitro* at 37 ℃ with 488 nm excitation wavelength. The concentrations of probe and target were 100 nM and 20 nM, respectively. The reaction time was 1h

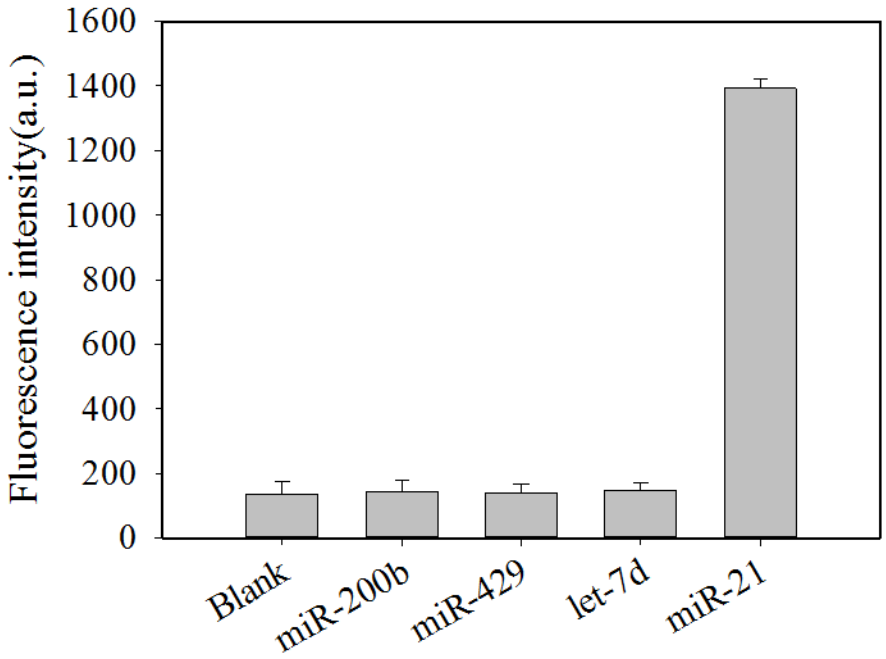

Figure S6. Specificity of the LCHA method for several miRNA targets. Error bars were estimated from three replicate measurements.

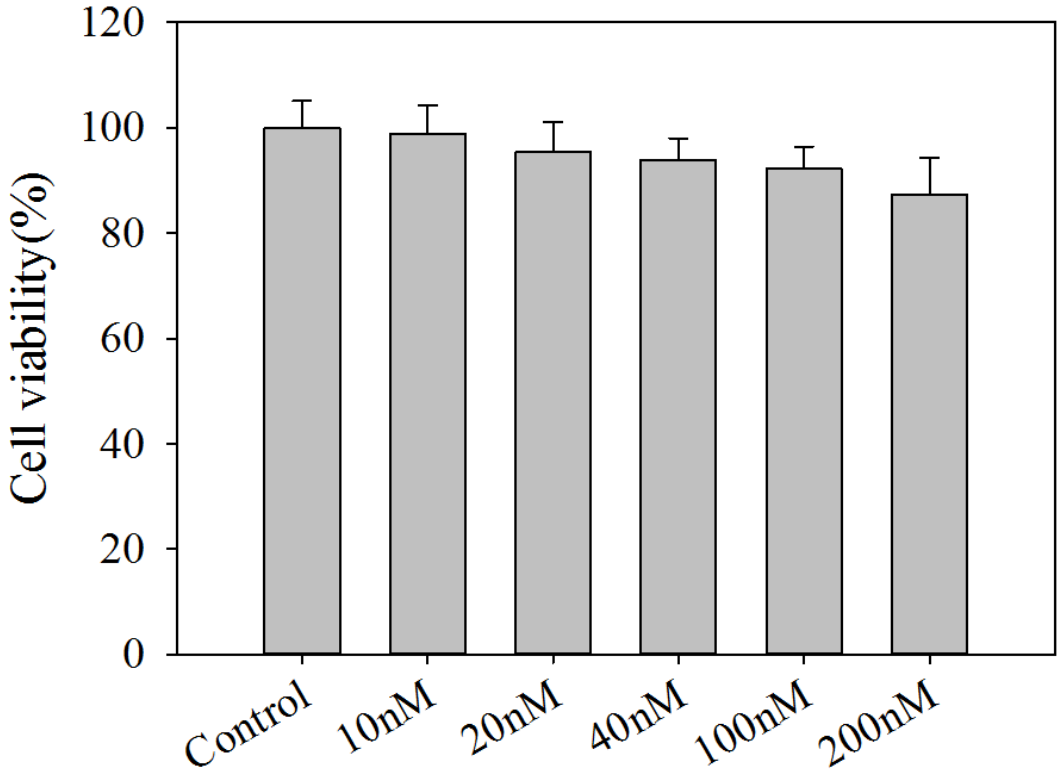

Figure S7. Cytotoxicity of the LCHA system incubated with HeLa cells at different concentrations of probes.

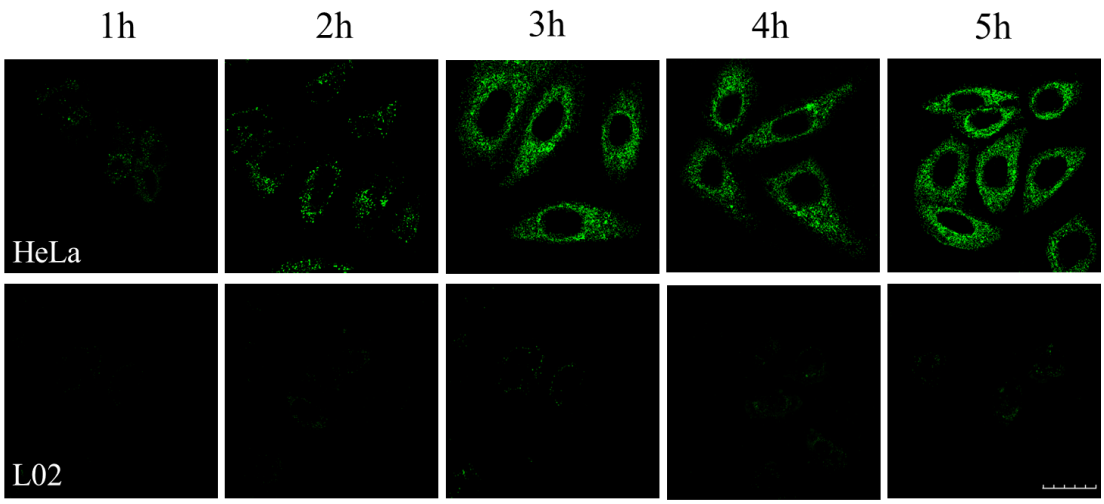

Figure S8. Real-time fluorescence imaging of intracellular miR-21 in HeLa cells and L02 cells. Scale bar is 20 μm.

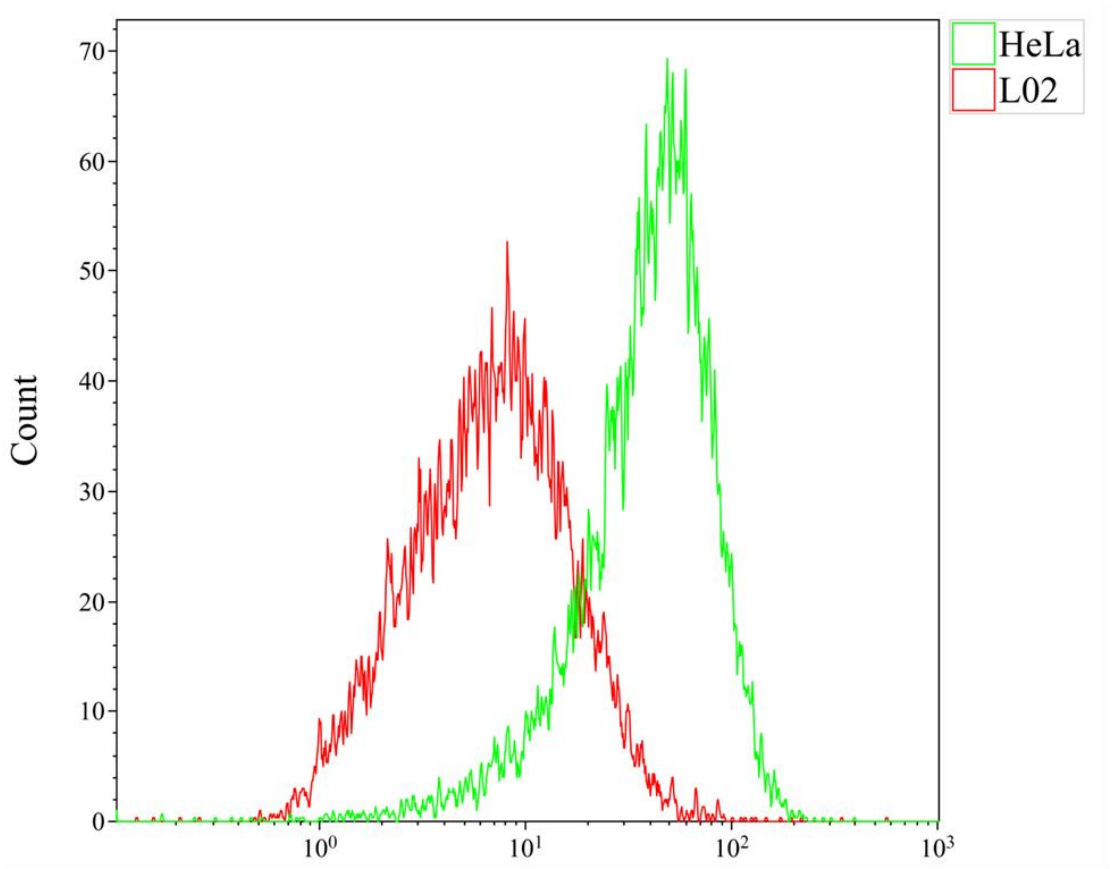

Figure S9. Flow cytometry analysis of the LCHA incubated with Hela cells and L02 cells, respectively.

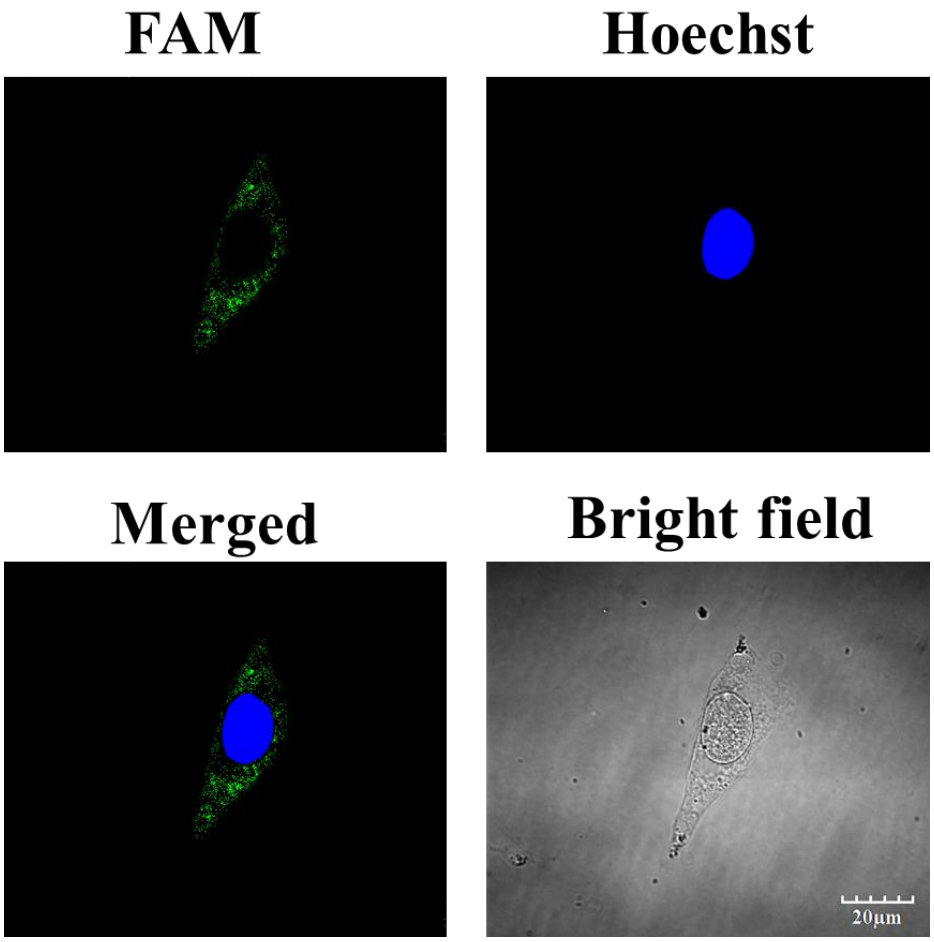

Figure S10. Fluorescence imaging of miR-21 in HeLa cells by LCHA. The green fluorescence represents FAM, and the blue fluorescence represents Hoechst stained cell nuclei. Scale bar is 20 μm.

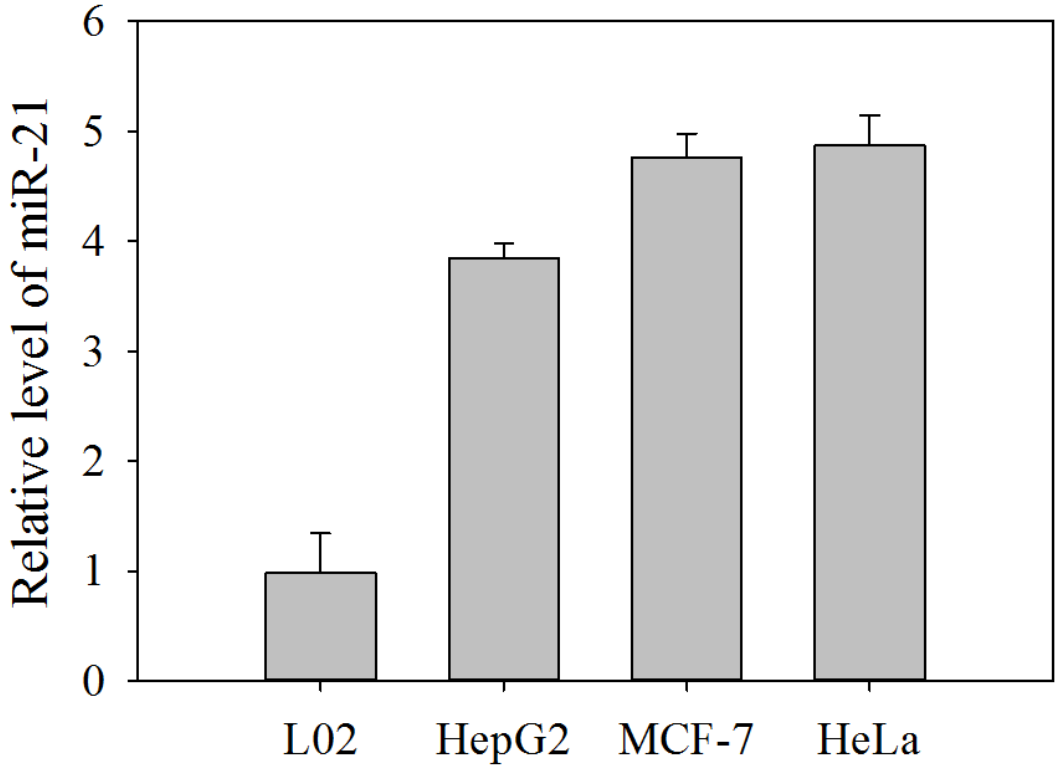

Figure S11. qRT-PCR analysis of relative expression levels of miR-21 in L02 cells, HepG2 cells, MCF-7 cells and HeLa cells.