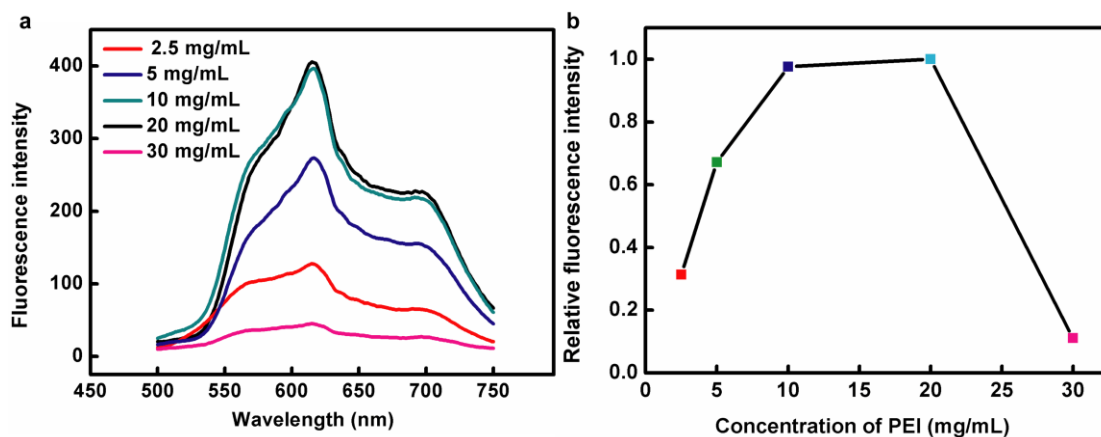
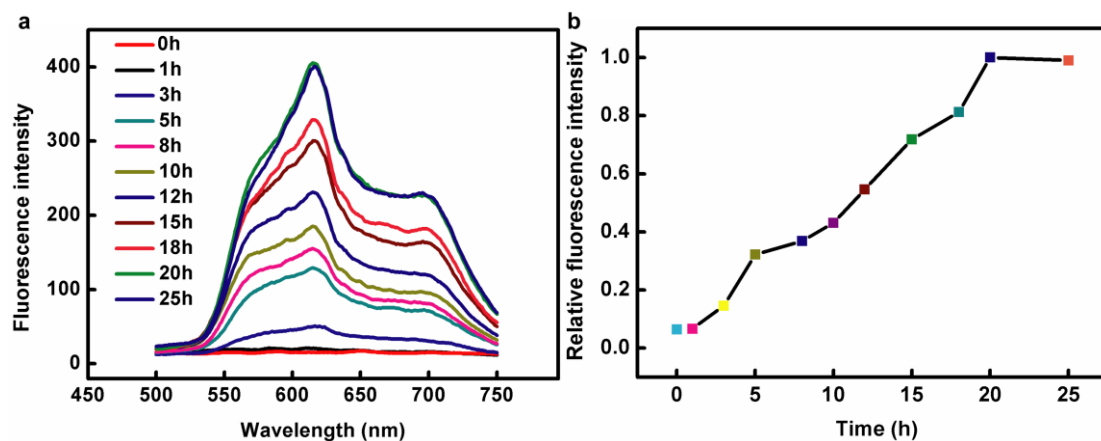


## Supporting information

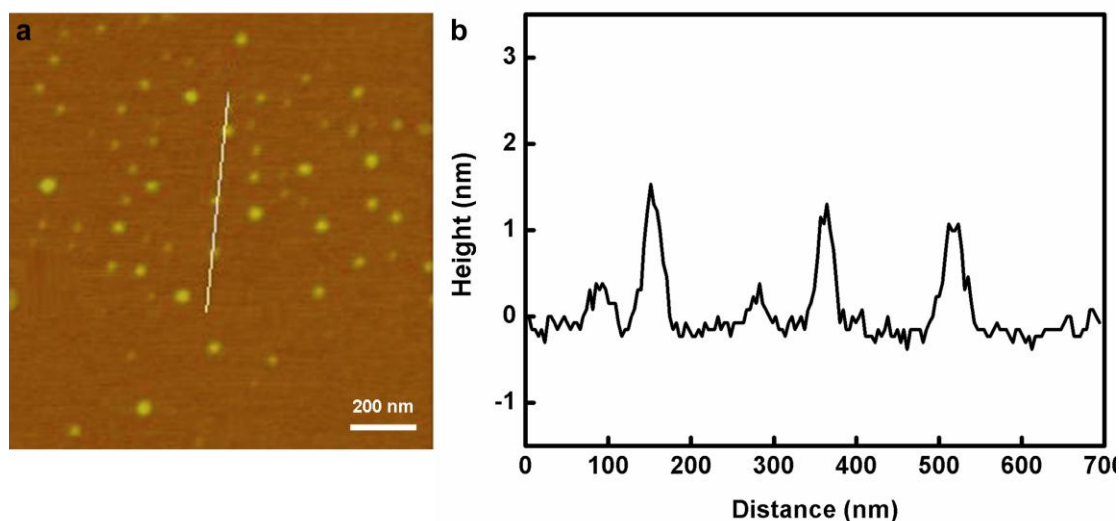
### Polycations-functionalized water-soluble gold nanoclusters: a potential platform for simultaneous enhanced gene delivery and cell imaging



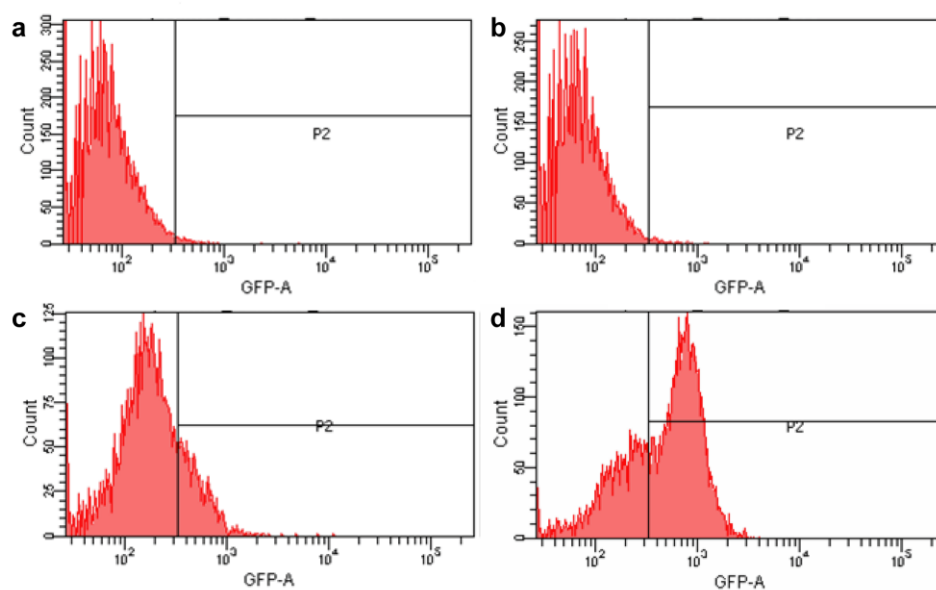
**Figure S1** Dependence of the fluorescence intensities with the concentration of PEI.



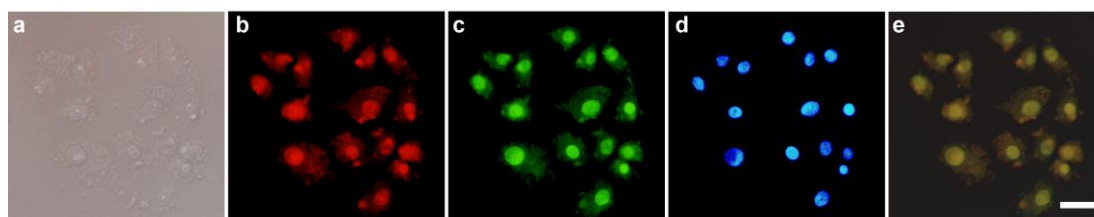
**Figure S2** Time evolution of the fluorescence intensities of the PEI-AuNCs.



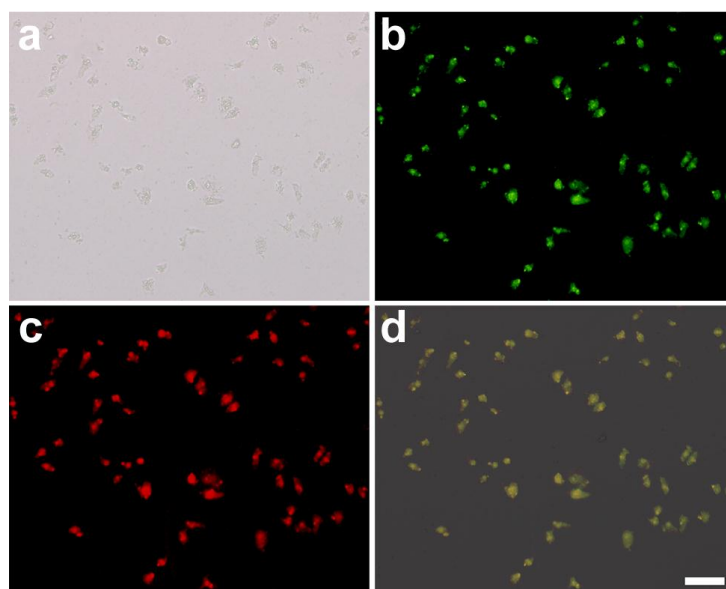
**Figure S3** (a) AFM image and (b) height profile of the PEI-AuNCs deposited on mica substrates.



**Figure S4** Flow cytometry measurement of EGFP gene expression in HepG2 cells. Transfection was performed at a dose of 1  $\mu\text{g}$ /well of pDNA. (a) Cells without treatment. (b) Cells treated with free pDNA. (c) Cells treated with PEI/pDNA complexes under an N/P ratio of 5:1. (d) Cells treated with PEI-AuNCs/pDNA complexes under an N/P ratio of 5:1.



**Figure S5** Fluorescence images of the PEI-AuNCs/DNA complexes with FITC-labeled DNA. (a) Bright field image of HepG2 cells. (b) PEI-AuNCs exhibit red luminescence. (c) Fluorescence image of FITC-labeled DNA in HepG2 cells. (d) The cell nucleus was indicated using Hoechst 33258. (e) Fluorescence image overlay of the four images. Scale bar = 20  $\mu\text{m}$ .



**Figure S6** The PEI-AuNCs can efficiently enhance the gene transfection efficiency while simultaneously act as an imaging agent. (a) Bright field image of HepG2 cells. (b) Fluorescence image of EGFP gene expression in HepG2 cells. (c) PEI-AuNCs exhibit red luminescence. (d) Fluorescence image overlay of the three images. Scale bar, 50  $\mu\text{m}$ .