

Supplementary information

Nuclear-Targeted Carbon Quantum Dots Mediated CRISPR/Cas9 Delivery for Fluorescence Visualization and Efficient Editing

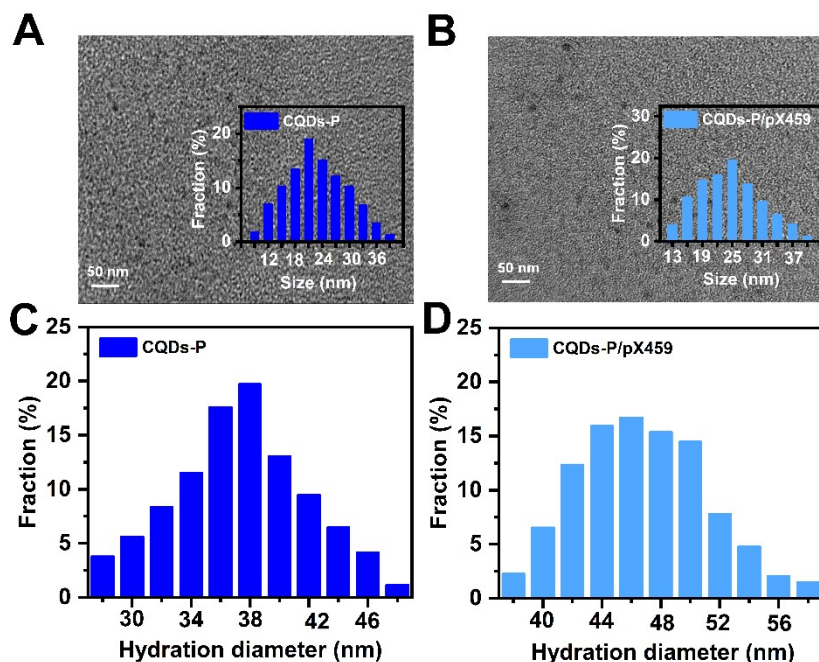


Fig. S1 TEM image of (A) CQDs-PP/pX459 and (B) CQDs-P/pX459. The insets show corresponding histograms were obtained by statistical analysis of 100 particles randomly selected from the TEM images using the ImageJ software. Hydration diameter distribution histogram of (C) CQDs-P and (D) CQDs-P/pX459.

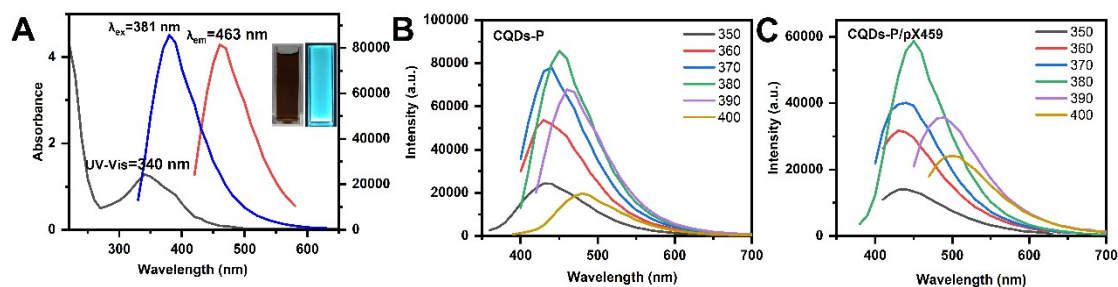


Fig. S2 Optical properties of CQDs-P. (A) Normalized UV-vis, excitation and emission spectra of CQDs-P. The inset shows the CQDs-P aqueous solution under ambient light and 365 nm UV lamp. Excitation-dependent emission spectra of (B) CQDs-P and (C) CQDs-P/pX459 with the weight ratio of 20:1.

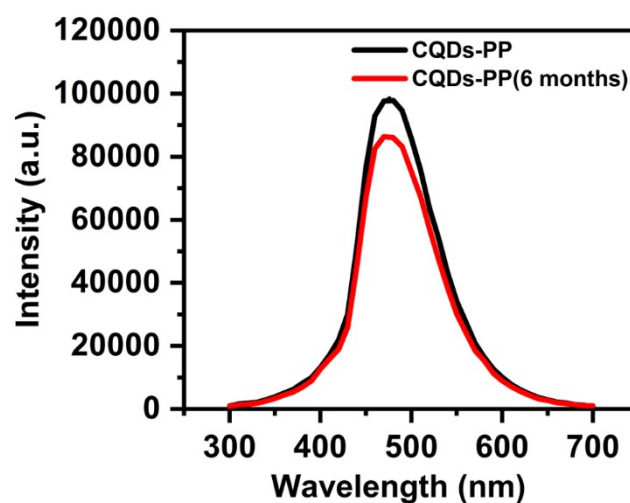


Fig. S3 Emission spectra of fresh CQDs-PP and CQDs-PP (keeping in 4 °C for 6 months) using excitation wavelength of 390 nm.

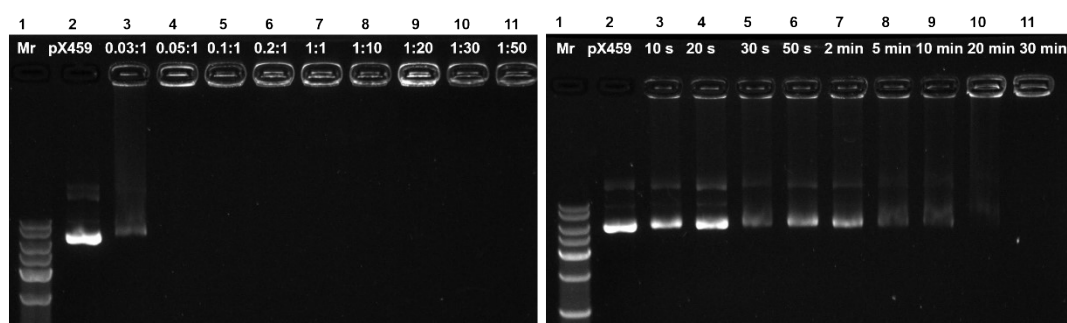


Fig. S4. Agarose gel electrophoresis of (A) CQDs-P/pX459 complexes with different weight ratios of CQDs-P to pX459 and (B) Lipo2000/pX459 with the weight ratio of 2:1 at different recombination times. Mr: DNA Marker

Table. S1 Effects of inhibitors on cellular uptake.

Inhibitor	Effect
NH ₄ Cl	Interfere with the transport of acidic endosomes and lysosomes.
Glucose	Inhibition of clathrin dependent endocytosis
Genistein	Inhibition of caveolae mediated endocytosis
Colchicine	Inhibition of microtubule dependent active transport
Filipin III	Blocking caveolae mediated endocytosis
SOV	Blocking cytoskeleton motor-mediated transport
DMA	Interfere with Na ⁺ / H ⁺ exchange dependent macropinocytosis

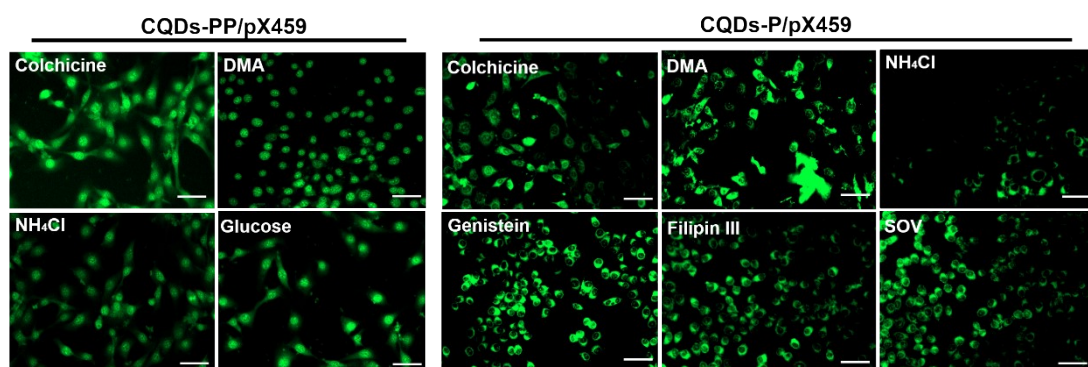


Fig. S5 The effects of various inhibitors on cellular uptake of CQDs-PP/pX459 and CQDs-P/pX459 complexes. Fluorescent images of cells treated with inhibitors before transfection with CQDs/pX459 complexes. Scale bars = 100 μ m.

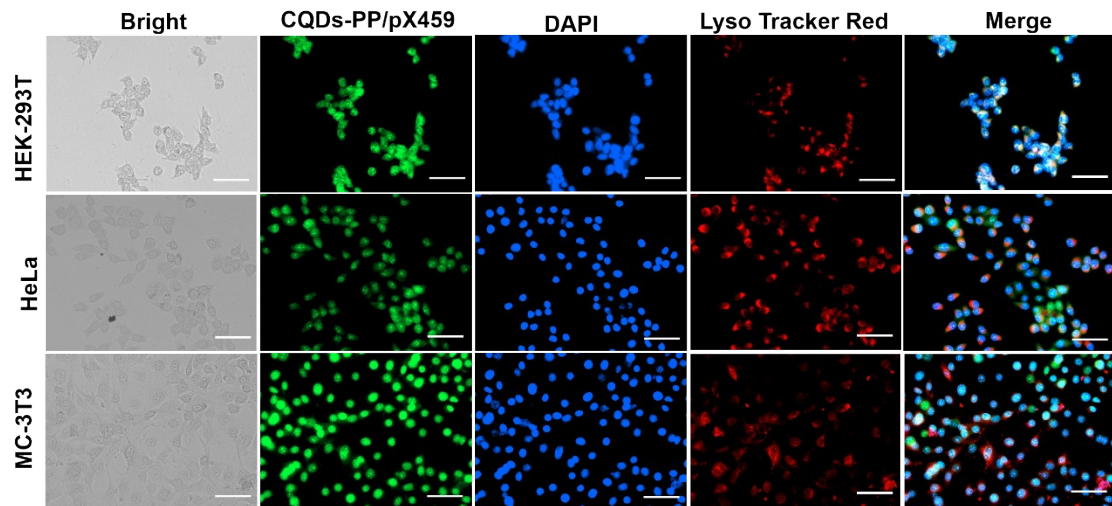


Fig. S6 Fluorescent images of HEK-293T, HeLa and MC-3T3 cells transfected with CQDs-PP/pX459 at 45 min post-transfection. Scale bars =100 μ m.

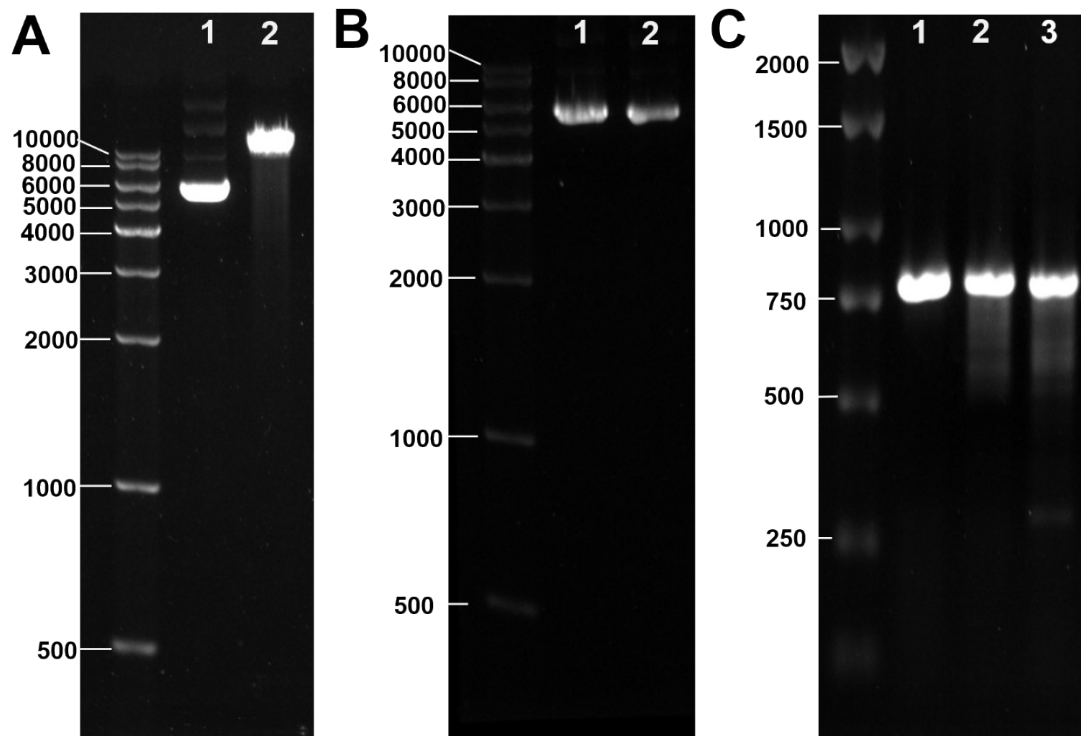


Fig. S7 Agarose gel electrophoresis of (A) supercoiled (lane 1) and linearized (lane 2) pX459, (B) supercoiled pX459 (lane 1) and supercoiled pX459-EFHD1-sgRNA(lane 2). (C) PCR amplification bands of the EFHD1 gene from genomic DNA of CQDs-PP (lane 1), Lipo2000 (lane 2) and CQDs-P (lane 3) transfected cells.