

Supplementary Data

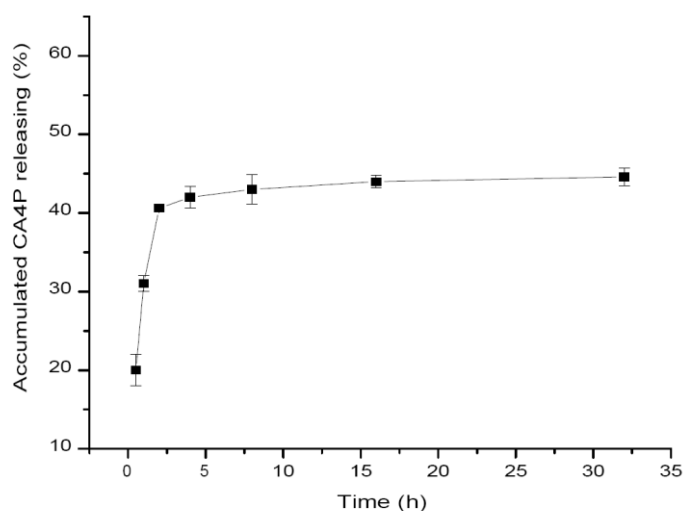


Figure S1 UCN-FA-CA4P (2 mg) was redispersed in 2 ml PBS solution (pH 7.4.) and filled into a dialysis bag (molecular weight cut—off 1000). The dialysis bag was clamped and placed into 20 ml PBS solution for a dynamic dialysis (37 °C) 1 ml dialysate was taken and the fresh PBS solution was added. The absorption at 295 nm of the dialysate was detected by a UV/VIS spectrometer (Lamda35, Perkin Elmer, Shelton, USA). CA4P of concentrations at 5, 15, 25, 35, 45, 55 μ M were prepared and the absorptions of solutions in a quartz cell (1 ml) at 295 nm were detected by the UV/VIS spectrometer for standard curve building. Based on the detection CA4P concentration of the solution samples and the drug release rate were calculated.

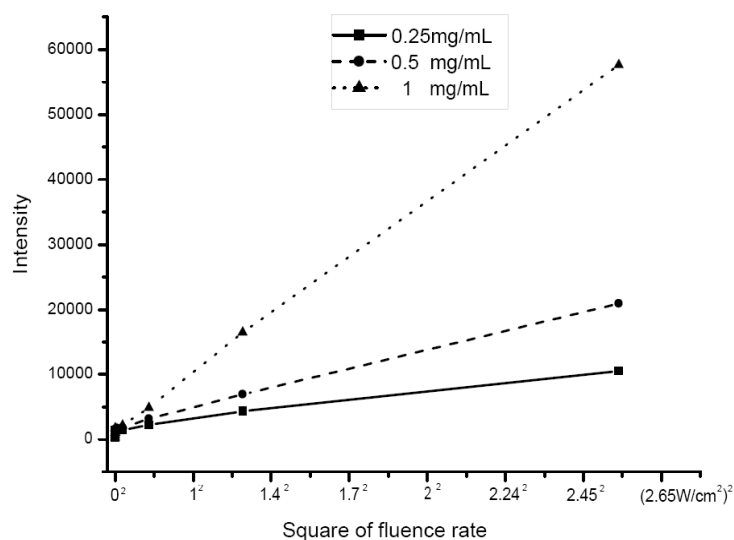


Figure S2 Light fluence rate dependence on the fluorescence of the UCN-FA with 980 nm excitation. UCN solution (1 ml) in a glass dish was irradiated with series light

fluence rates ($5\text{--}2.56\text{ W/cm}^2$). The fluorescence intensity (per pixel counts) was simultaneously recorded with an ICCD instrument.

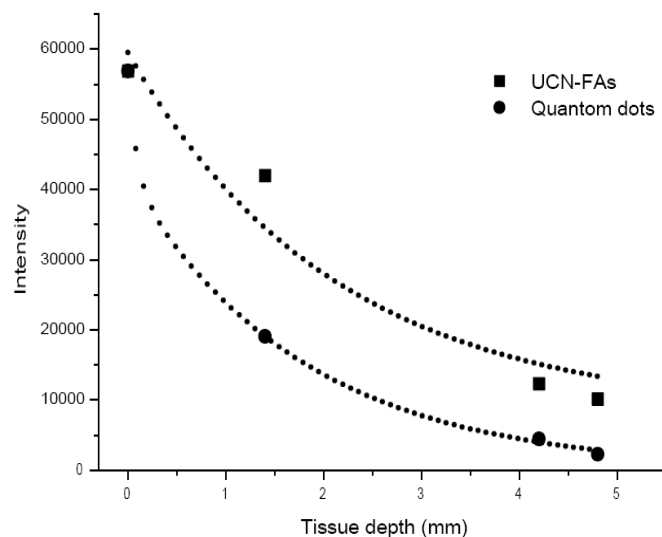


Figure S3 Comparison of the imaging depth of UCN-FA and quantum dot. To evaluate the effective depth for upconversion fluorescence imaging, particles were filled in an indent ($\Phi=1\text{ mm}$) drilled in a thick plastic board and covered with different chicken breast tissue depths. The fluorescence was imaged with 980 nm laser exciting. UCN-FA: 521, 540 and 654 nm, excited by 980 nm laser, 280 mW/cm^2 , concentration, 1 mg/ml; semiconductor quantum dots: CdSe, 630 nm, excited by 488 nm, 3 mW/cm^2 , concentration, 1 mg/ml.

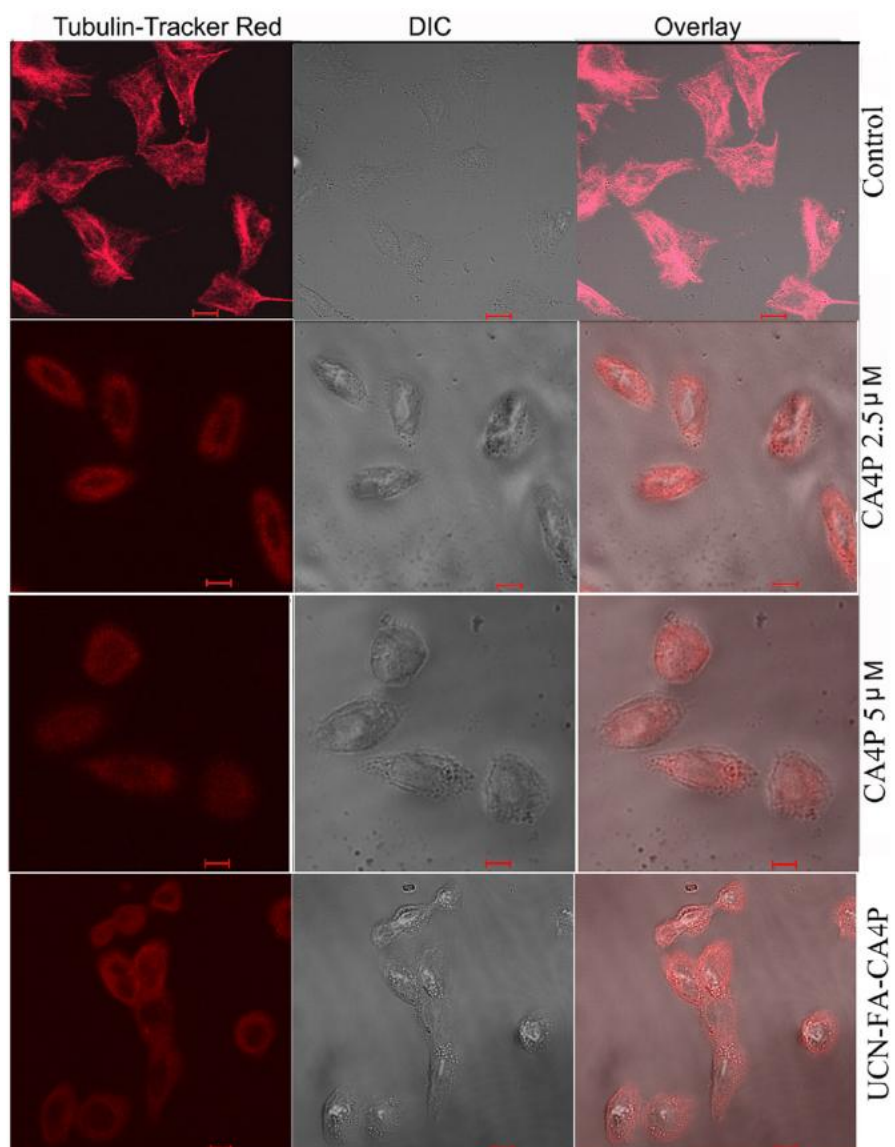


Figure S4 Tubulin staining of cells with Tubulin-Tracker Red. Cells in three dishes were incubated with Control (non-CA4P), 2.5 μ M, 5 μ M and UCN-FA-CA4P respectively for 24 h and then stained. The bar is 10 μ m.

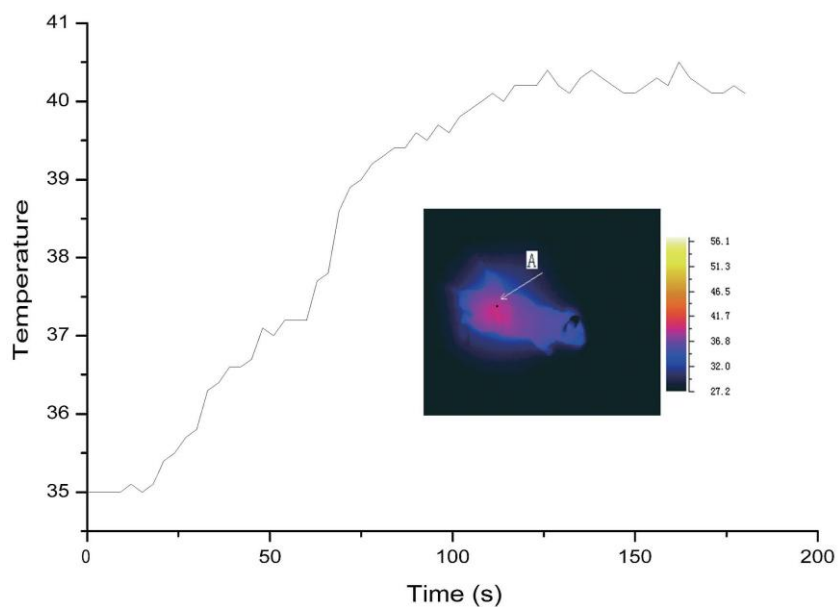


Figure S5 To validate the tissue safety of the used laser power ($300\text{mW}/\text{cm}^2$), the temperature was monitored by a thermal instrument (TVS-200EX NEC Avio infrared Technologies Co., Ltd. Japan). The thermal image and the time profile of a point show the temperature less than $41\text{ }^\circ\text{C}$.