Electronic Supplementary Information

Intrinsically Radiolabeled Multifunctional Cerium Oxide Nanoparticles for in vivo Studies

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Fig. S1 (A) UV of DT10 141Ce-rCONP, (B) Radio-HPLC of DT10 141Ce-rCONP, (C) UV of DT10-PEG 65Zn-rCONP, (D) Radio-HPLC of DT10-PEG 65Zn-rCONP, (E) UV of DT10-SB 65Zn-rCONP, (F) Radio-HPLC of DT10-SB 65Zn-rCONP, (G) Radio-HPLC of 65ZnCl₂.
Fig. S2 Hydrodynamic size of (A) DT10 rCONP (6.0 nm), (B) PAA rCONP (2.0 nm 93% and 5.3nm 7%), (C) DT10-NH₂ rCONP (9.0 nm), (D) DT10-PEG rCONP (6.4 nm), (E) DT10-SB rCONP (6.3 nm), (F) ultrasmall size DT10-NH₂ rCONP (2.0 nm) without NH₄OH in H₂O.

Fig. S3 Selected ¹H NMR of (a) DT10-PEG-10%, (b) DT10-PEG-20%, (c) DT10-PEG-30% and (a') DT10-SB-10%, (b') DT10-SB-20%, (c') DT10-SB-30%.
Fig. S4 Thermal gravimetric analysis (TGA) of DT10-NH₂ CONP.

Fig. S5 Autocatalytic redox properties of DT10^{111}In-rCONP.
Cell viability of (A) A549 cells and (B) SK-OV-3 cells after 24 hrs exposure to various cerium concentrations of DT10, DT10-NH2 and PAA $^{141}$Ce-rCONP. Data is expressed as mean % viability ± SD. Significant increase or significant decrease in viability is indicated by # and *, respectively (p<0.05).
Fig. S7 Biodistribution (%ID/g) at various time points post i.v. administration of (A) DT10-PEG $^{65}$Zn-rCONP and (B) DT10-SB $^{65}$Zn-rCONP.
Fig. S8 Quantitative analysis of micro-SPECT images of a nude mouse injected with DT10 $^{141}$Ce-rCONP.