

Supporting Information

**Oxygen Self-supplied Upconversion Nanoplatfom Loading Cerium Oxide for Amplified
Photodynamic Therapy of Hypoxic Tumors**

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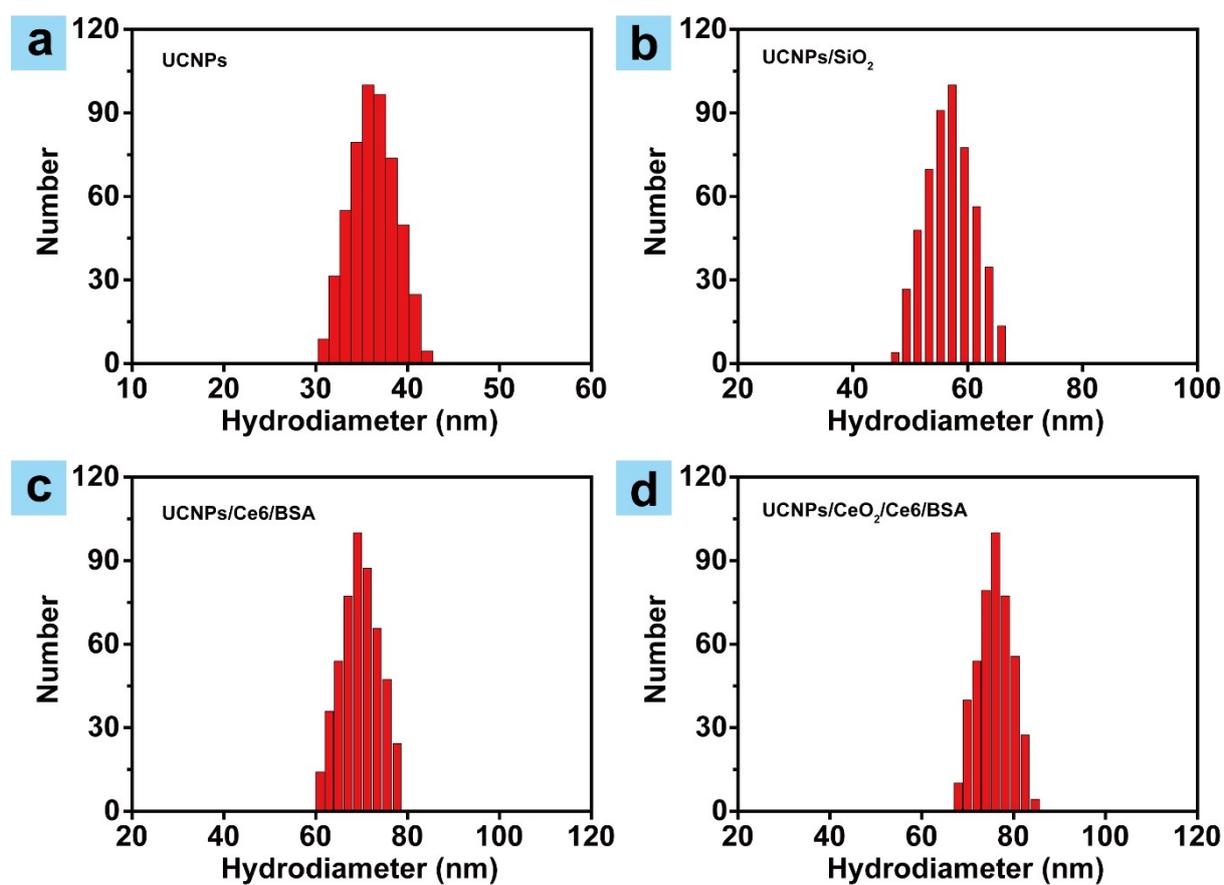


Fig. S1. (a), (b), (c), and (d) are DLS results of UCNPs, UCNPs/SiO₂, UCNPs/Ce6/BSA and UCNPs/CeO₂/Ce6/BSA corresponding to TEM, respectively.

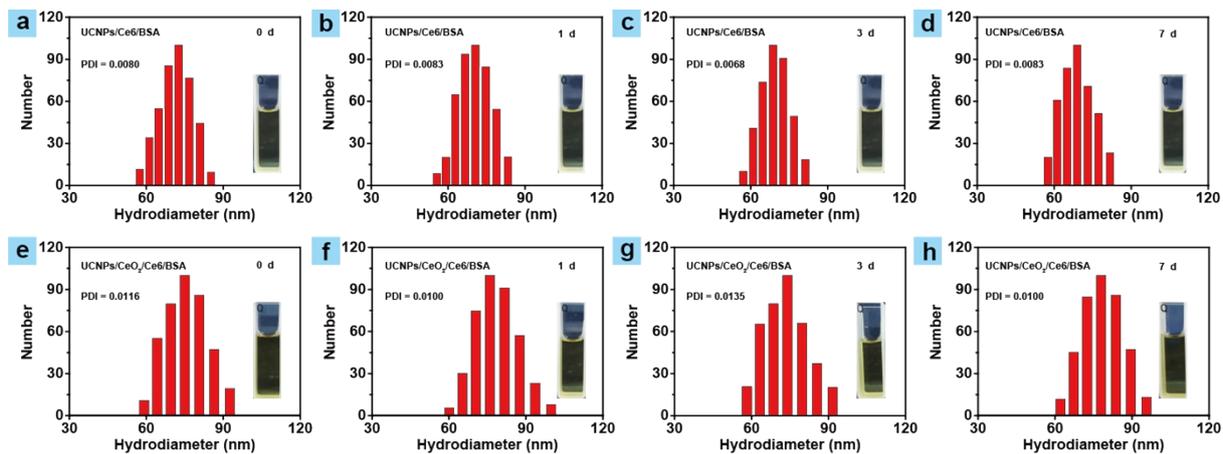


Fig. S2. (a) - (d) and (e) - (h) are DLS results of UCNPs/Ce6/BSA and UCNPs/CeO₂/Ce6/BSA in PBS (pH = 7.4) at various time, respectively. Inset are corresponding BSA solution of samples.

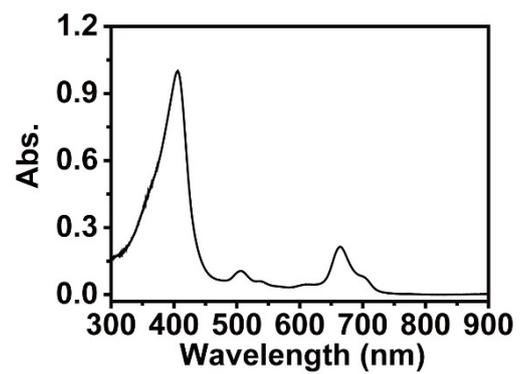


Fig. S3. Absorption spectrum of Ce6/BSA in PBS (pH = 7.4). The intensity has been normalized.

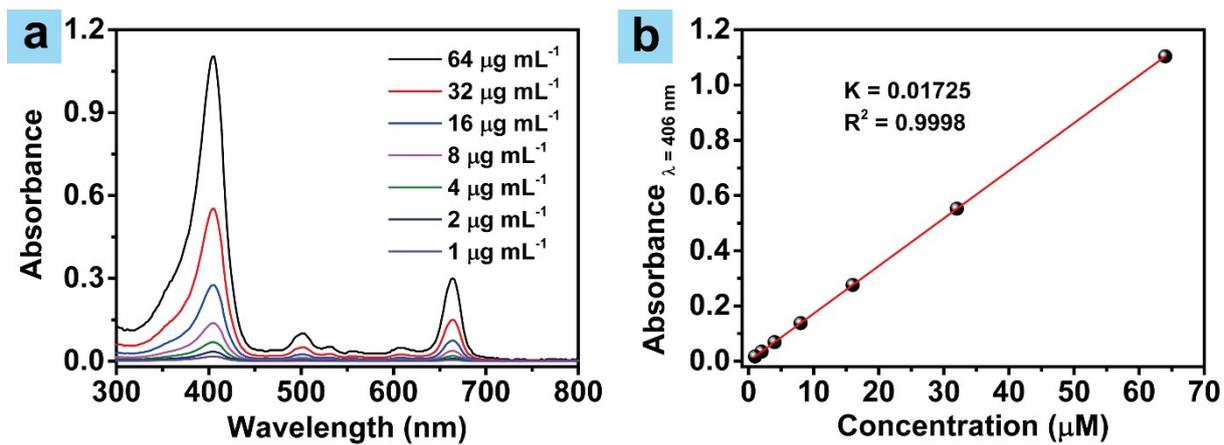


Fig. S4. (a) Concentration-dependent absorption spectra and (b) absorbance at 406 nm of Ce6 in DMSO, respectively.

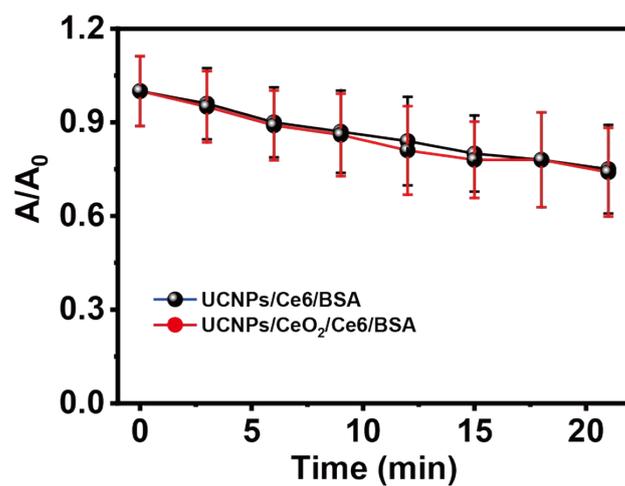


Fig. S5. A/A_0 vs irradiation time. A_0 and A are the characteristic absorbances of ABDA and UCNPs/Ce6/BSA or UCNPs/CeO₂/Ce6/BSA mixture in PBS before and after irradiation (808 nm, 1.0 W cm⁻²) with time, respectively.

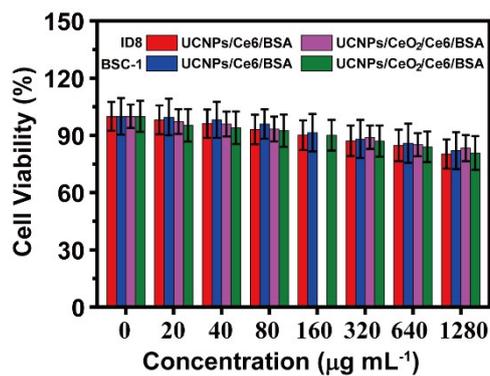


Fig. S6. Viabilities of ID8 and BSC-1 cells after incubation with UCNPs/Ce6/BSA and UCNPs/CeO₂/Ce6/BSA in different concentrations for 24 h, respectively.

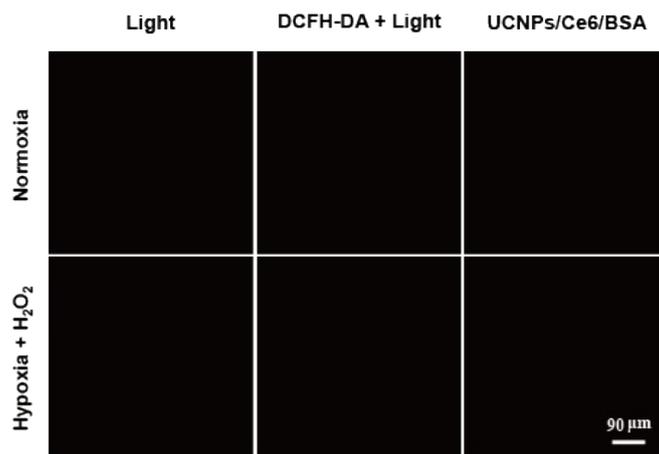


Fig. S7. Confocal imaging of ID8 cells with different treatments for $^1\text{O}_2$ generation under normoxic and hypoxic conditions, respectively.

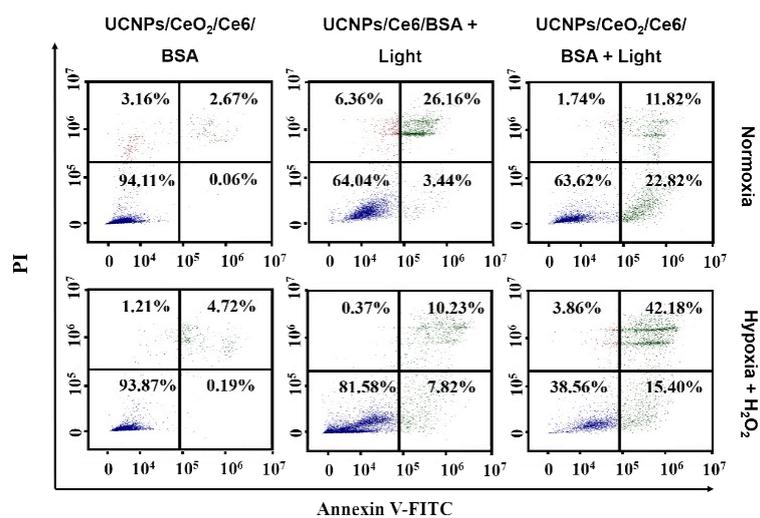


Fig. S8. Flow cytometric analysis was used for evaluating PDT capabilities of UCNPs/Ce6/BSA and UCNPs/CeO₂/Ce6/BSA on ID8 cells with different treatments, respectively.

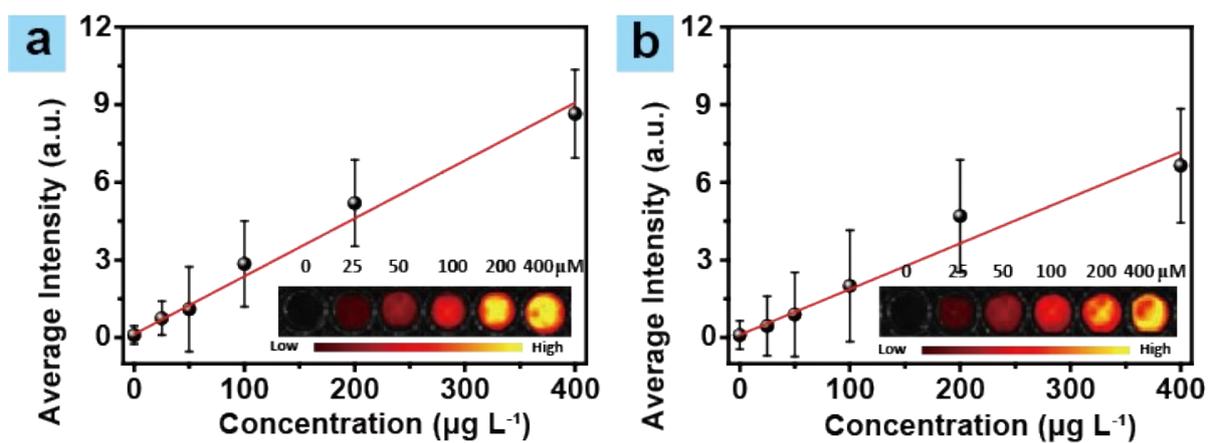


Fig. S9. Concentration-dependent fluorescence intensity of (a) UCNPs/Ce6/BSA and (b) UCNPs/CeO₂/Ce6/BSA in PBS (pH = 7.4), respectively. Inset: Fluorescence intensity photos of (a) UCNPs/Ce6/BSA and (b) UCNPs/CeO₂/Ce6/BSA in different concentrations, respectively.

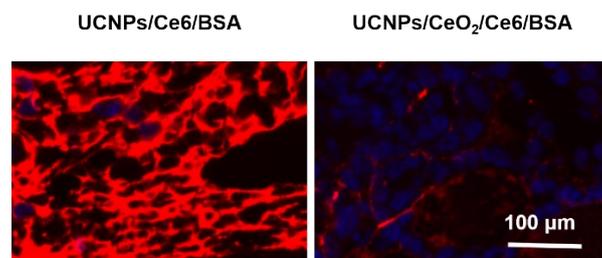


Fig. S10. The hypoxic immunofluorescence results of tumor slices with various treatments. The red color is for the content of HIF-1 α . All images share the same bar.

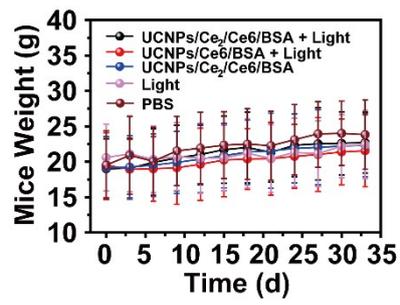


Fig. S11. The weight of mice after treatment with PBS, light, UCNPs/CeO₂/Ce6/BSA, UCNPs/Ce6/BSA + light, and UCNPs/CeO₂/Ce6/BSA + light for 33 d, respectively.

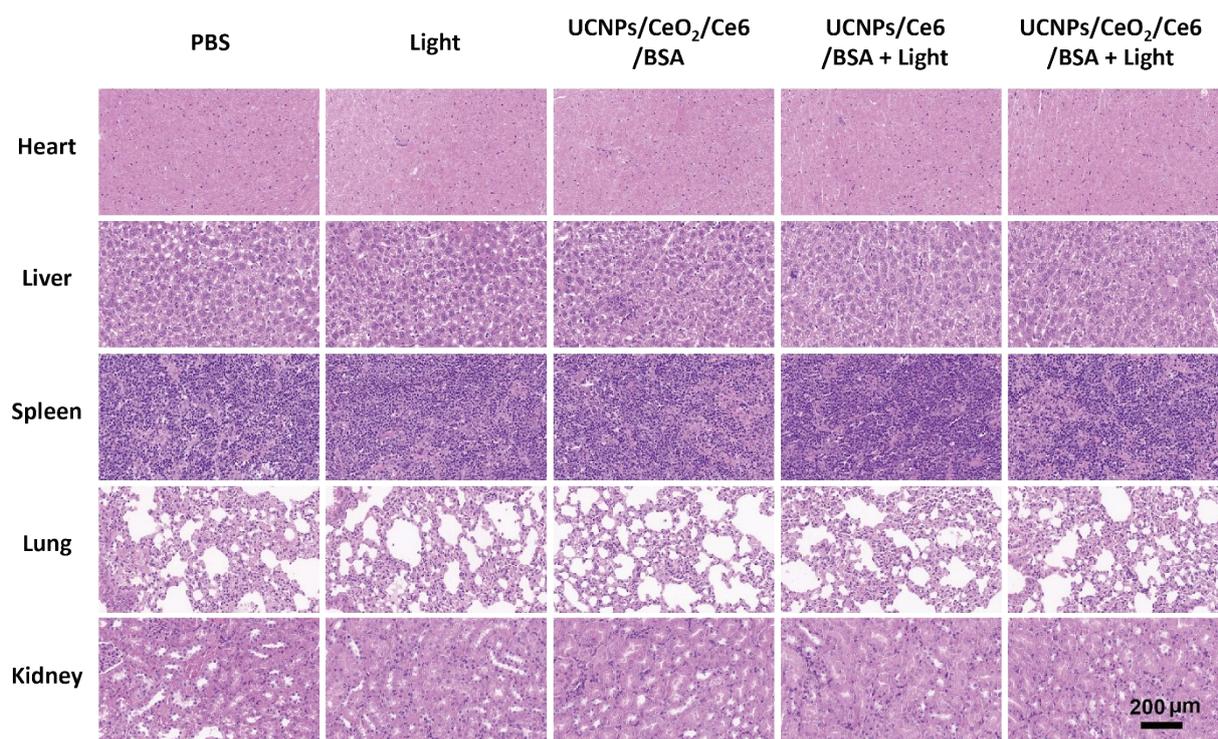


Fig. S12. H&E staining of mice major organs after treated with PBS, light, UCNPs/CeO₂/Ce6/BSA, UCNPs/Ce6/BSA + light, and UCNPs/CeO₂/Ce6/BSA + light for 33 d, respectively.