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Supporting Information

For

Self-Assembled DNA Nanowires as Quantitative Dual-drug Nanocarriers for Antitumor Chemophotodynamic Combination Therapy

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Fig. S15 Cell viability of HepG-2 cells after incubation with various concentrations of free Ce6 and DOX or nanowire-Ce6-DOX with white light irradiation.

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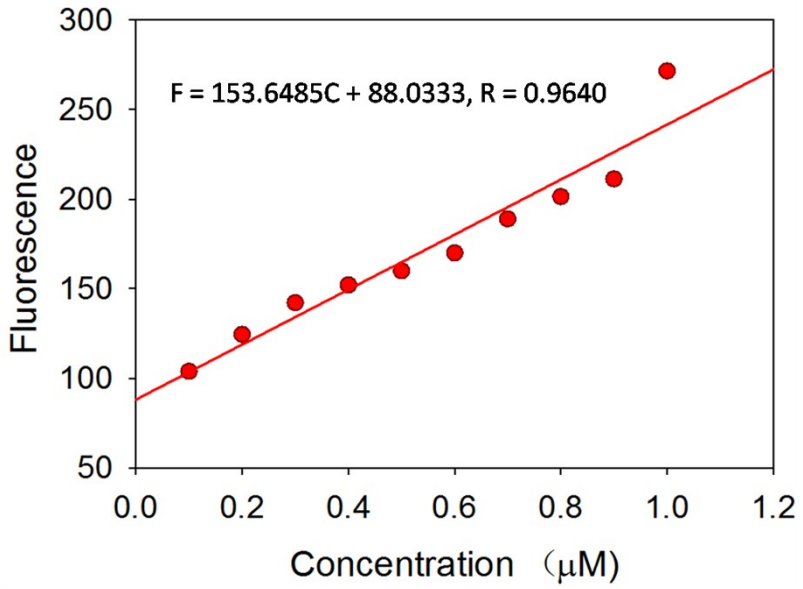

Fig. S1 Fluorescent standard curve of the DOX. The standard curve of the DOX is F = 153.6485C + 88.0333, R = 0.9640. F is the fluorescence signal of DOX. Concentration is the molar concentration of DOX.

ssDNA1: Ce6-5'-AGA GTG AGG CTA GCT ACA ACG AGG AGT-3'

Calculated MW	Measured MW	Relative error (ppm)
9245.3	9244.0	141

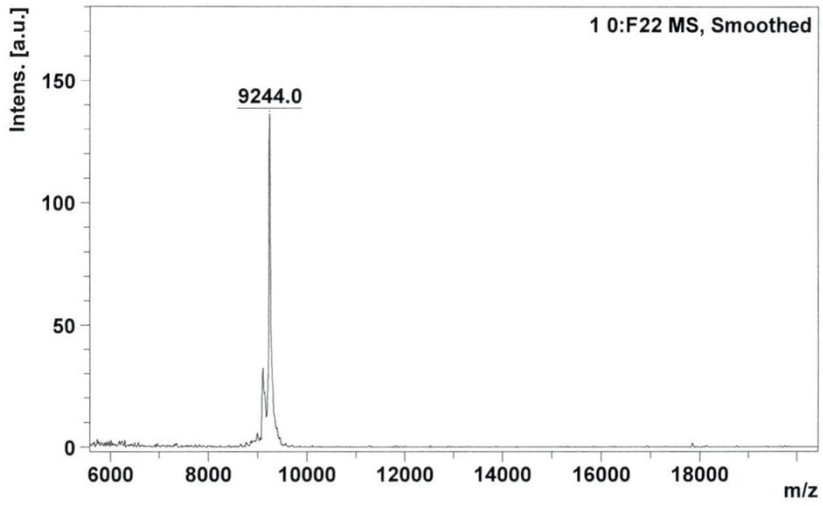

Fig.S2 Molecular weight of ssDNA1 characterized by MALDI-TOF-MS.

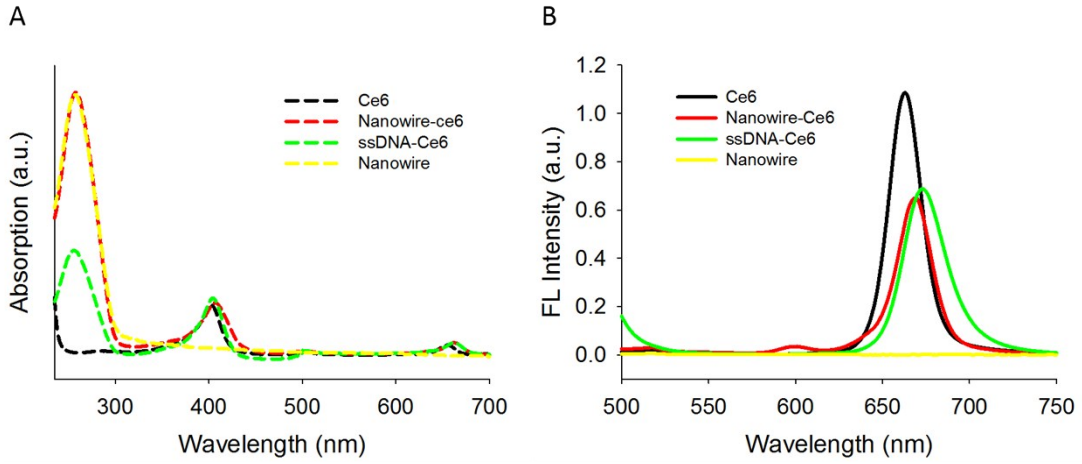

Fig. S3 (A) UV-vis and (B) fluorescence spectra of Ce6 (black), nanowire-Ce6 (red), ssDNA1-Ce6 (green) and nanowire (yellow).

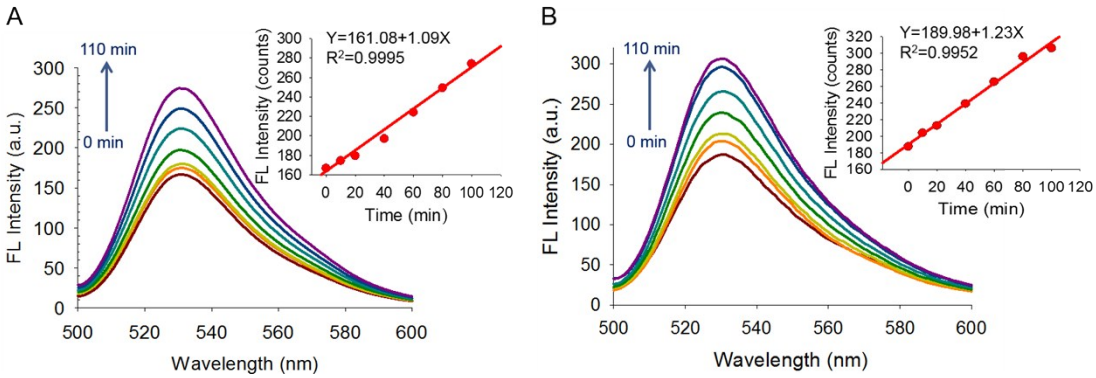

Fig. S4 Measurement of ROS produced by (A) free Ce6, and (B) nanowire-Ce6-DOX. Fluorescence spectra of SOSG after continuous irradiation at 403 nm. SOSG fluorescence was collected with an excitation at 488 nm at different time intervals.

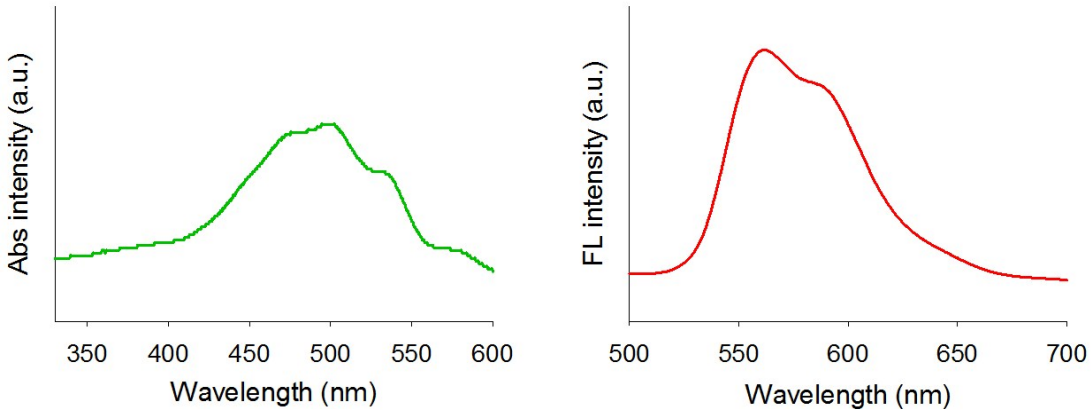

Fig. S5 The absorption (left) and emission (right) spectra of DOX.

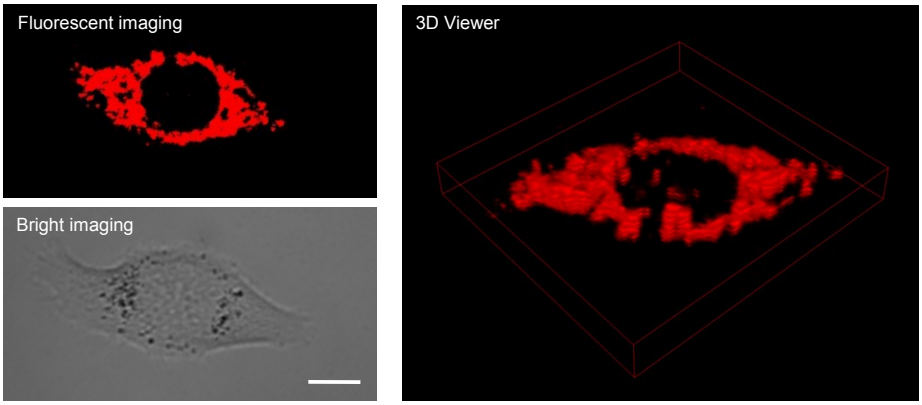

Fig. S6 3D reconstruction of cell after incubated with Cy5 labeled nanowire for 180 min. Scale bar: 5 μm.

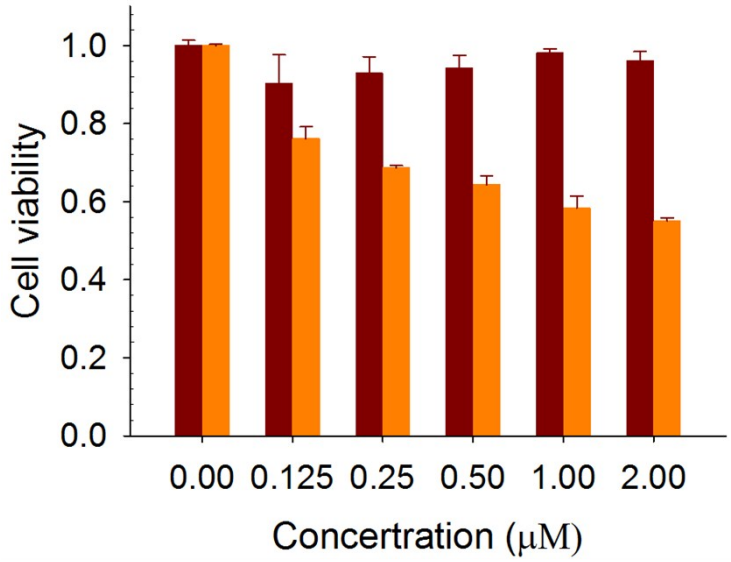

Fig. S7 Cell viability of HepG-2 cells after incubation with various concentration of nanowire-Ce6 with (+L, orange) or without white light irradiation(-L, brown) (3.3 mW/cm for 30 min).

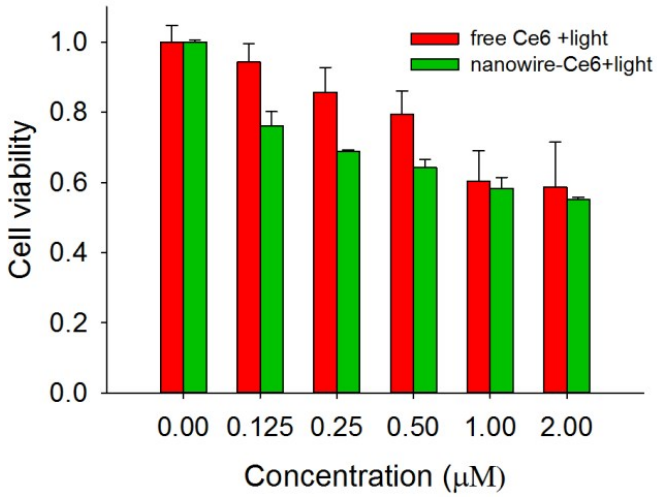

Fig. S8 Viability of HepG-2 cells after incubation with free Ce6 (red) or nanowire-Ce6 (green) with white light irradiation (3.3 mW/cm for 30 min).

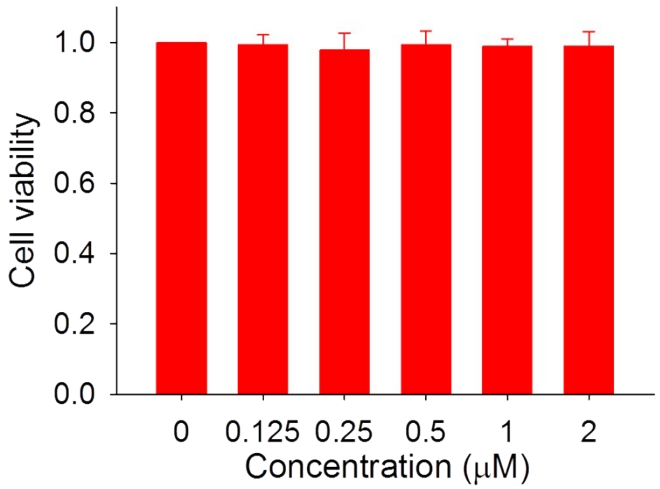

Fig. S9 Determination of biocompability of DNA nanowires. The HepG-2 cells were incubated with different concentration of DNA nanowires for 48 h, and the cell viability was measured by MTT assay.

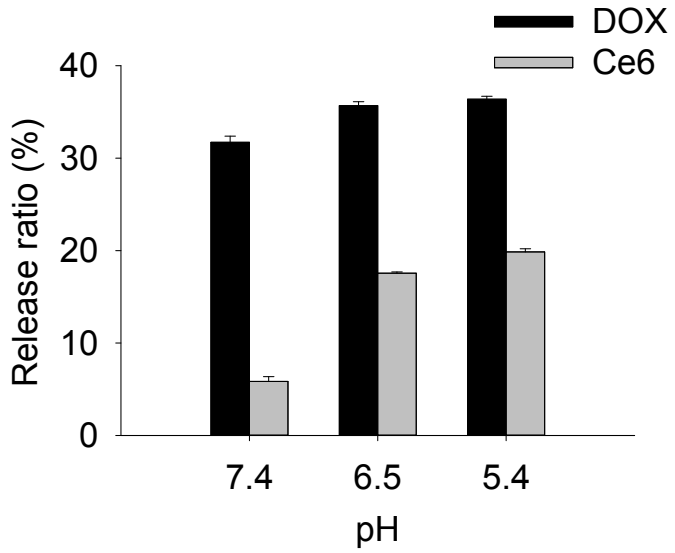

Fig. S10 The release of Dox and Ce6 from DNA nanowire at different pH value. DNA nanowires with Ce6 and Dox were sealed in dialysis tubes (Gbioscience, 4000 MW cutoff) and immersed in 50 mM HEPES buffer (pH 7.4, 6.5 or 5.4), the tubes were maintained at 37 °C in a constant temperature shaker at 100 rpm. Samples were withdraw after incubated for 24 h. The release amount of DOX and Ce6 were analyzed by using UV-spectrophotometer. All the experiments were carried out in triplicate.

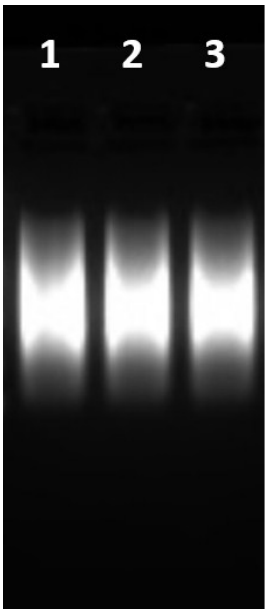

Fig. S11 Agarose gel electrophoresis of DNA nanowires incubated with HEPES buffer at pH 7.4, 6.5, 5.4 at 37 °C for 24 h, respectively (lane1, lane2, lane3).

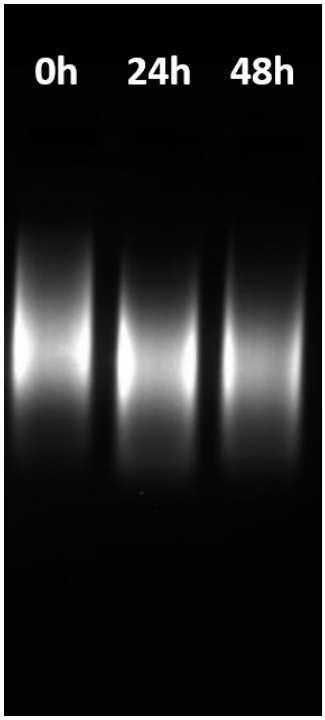

Fig. S12 The stability of DNA nanowire in FBS media. DNA nanowires with Ce6 and DOX were immersed in 10% FBS solutions for different times. Samples were then analyzed by using agarose gel electrophoresis.

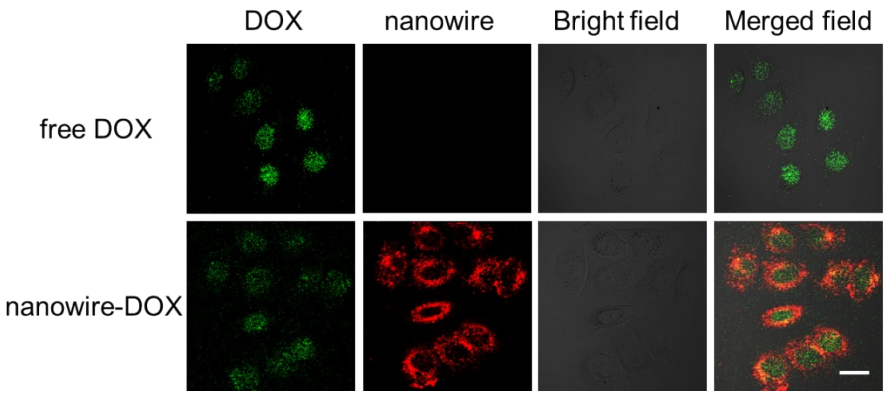

Fig. S13 CLSM images showing the intracellular distribution of DOX after incubation with free DOX (top) or nanowire-DOX (bottom) for 12 h. DOX fluorescence was measured in the range of 560–600 nm with excitation at 488 nm, and the Cy5 (nanowire) fluorescence was measured above 660 nm with excitation at 633 nm. Scale bar: 20 μm.

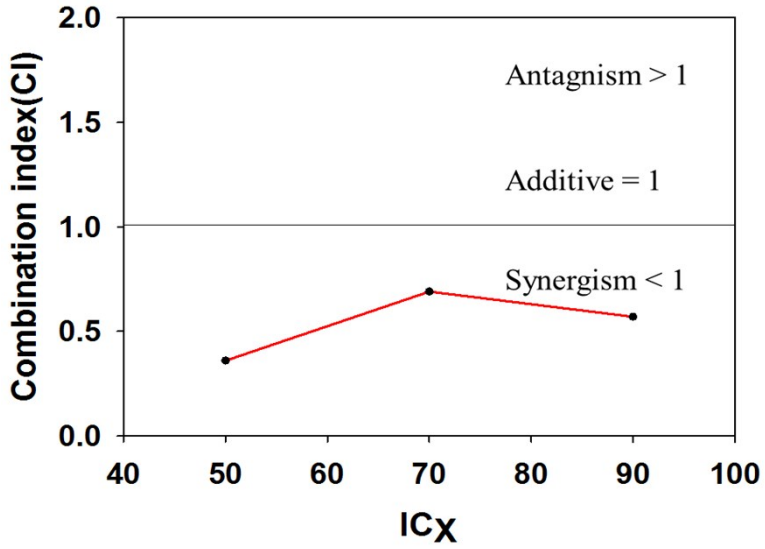

Fig. S14 The Combination Index (CI) analysis of nanowire-Ce6-DOX. The resulting combination index (CI) theorem of Chou-Talalay offers quantitative definition for additive effect (CI = 1), synergism (CI < 1), and antagonism (CI > 1) in drug combinations.

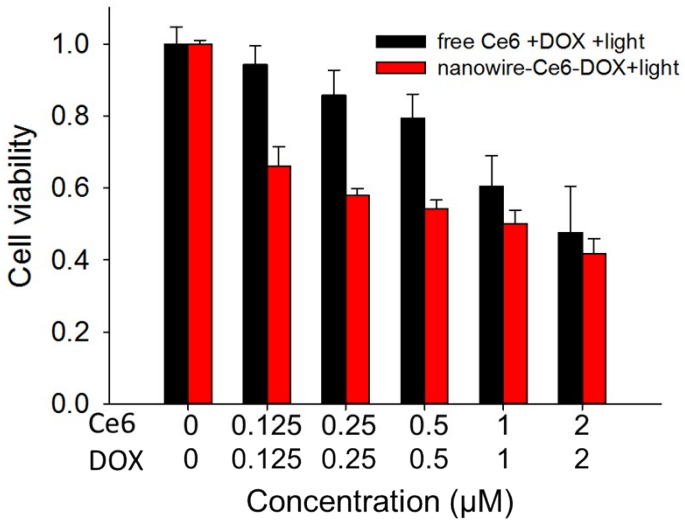

Fig. S15 Cell viability of HepG-2 cells after incubation with various concentrations of free Ce6 (black) or nanowire-Ce6-DOX (red) with white light irradiation (3.3 mW/cm for 30 min).