

# Supporting Information

## **Doxorubicin-Incorporated Nanotherapeutic Delivery System Based on Gelatin-Coated Gold Nanoparticles: Formulation, Drug Release, and Multimodal Imaging of Cellular Internalization**

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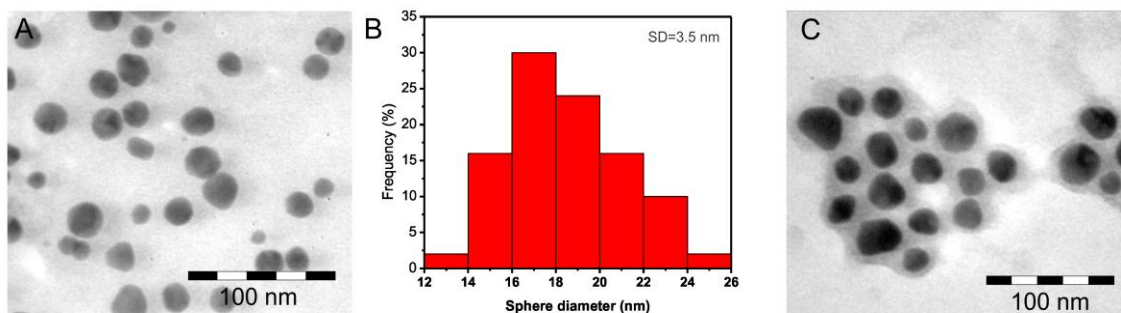
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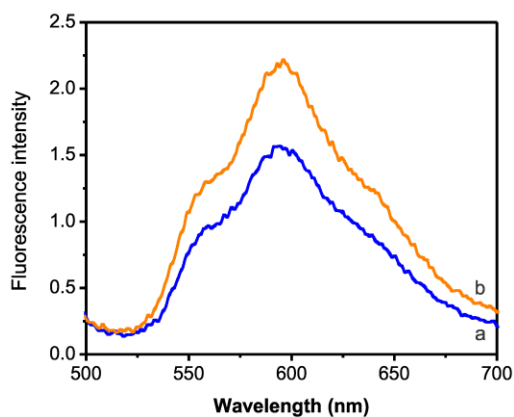
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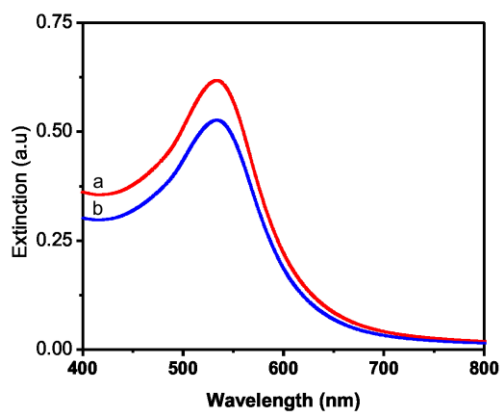
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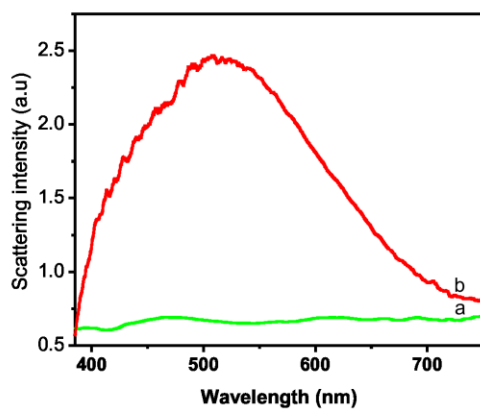
**Figure S1.** (A) TEM image of spherical bio-synthesized AuNPs@gelatin and (B) corresponding histogram; (C) TEM image of DOX-AuNPs@gelatin nano-chemotherapeutic system. SD represents standard deviation.



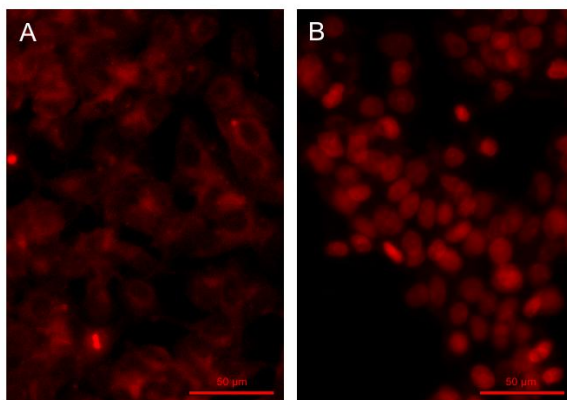
**Figure S2.** Fluorescence emission of DOX-AuNPs@gelatin chemotherapeutic system (a) immediately after purification and (b) after one week in water



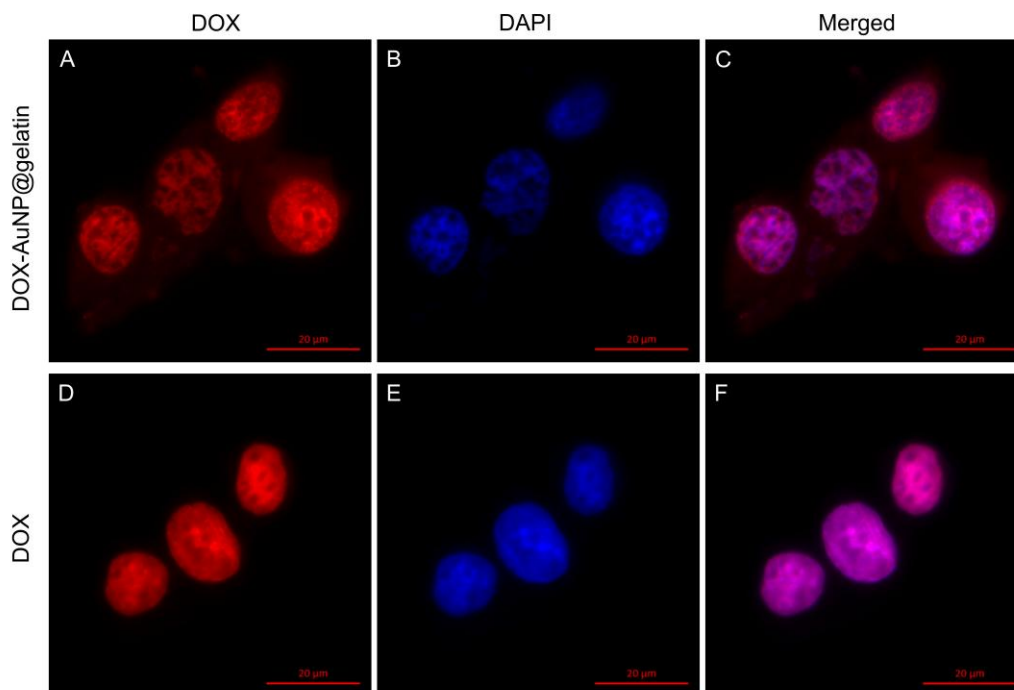
**Figure S3.** LSPR spectra of DOX-AuNPs@gelatin (a) in ultrapure water (b) at physiological temperature of 37 °C in 0.9% NaCl solution recorded after 48 h



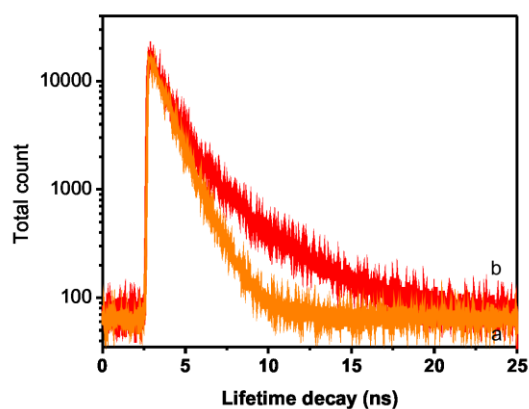
**Figure S4.** Background corrected scattering spectra recorded from a MCF-7 cell (a) untreated (b) treated with DOX-AuNPs@gelatin



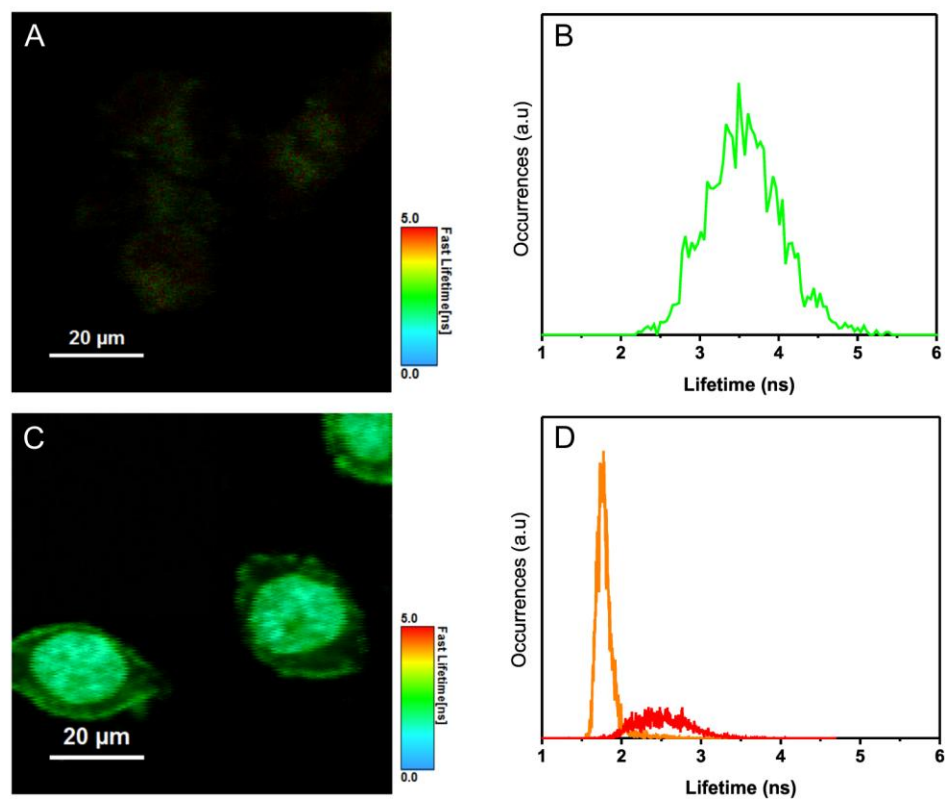
**Figure S5.** Magnified fluorescence images of MCF-7 cells treated with (A) DOX-AuNPs@gelatin and (B) free DOX for 24 h. Scale bars indicate 50  $\mu\text{m}$



**Figure S6.** Fluorescence images of MCF-7 cells treated for 48 h with DOX-AuNPs@gelatin and free DOX, showing the different (A) intracellular released and (D) free DOX internalization into nuclei, (B, E) DAPI stained nuclei and (C, F) merged images



**Figure S7.** Lifetime decay curves of (a) free DOX ( $1.0 \pm 0.001$  ns) and (b) DOX loaded onto AuNPs@gelatin ( $1.9 \pm 0.002$  ns) in solution



**Figure S8.** (A) FLIM image and (B) histogram of MCF-7 control untreated cells, (C) FLIM image and (D) histogram of MCF-7 DOX treated cells for 3 h