Mapping the L-tryptophan Capped Copper Nanocluster Mediated Binding and Targeted pH-Responsive Release of Doxorubicin via Fluorescence Resonance Energy Transfer (FRET)

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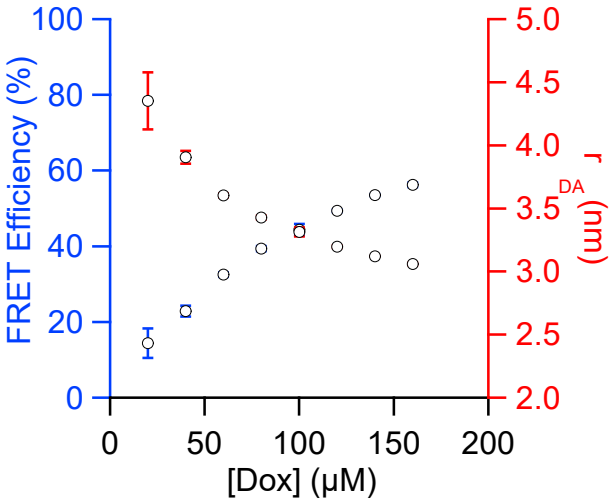

Figure S1: Changes in the FRET efficiency (blue) and donor-acceptor distance (r_{DA}) (red) at increasing concentrations of Dox calculated from time-resolved FRET measurements.

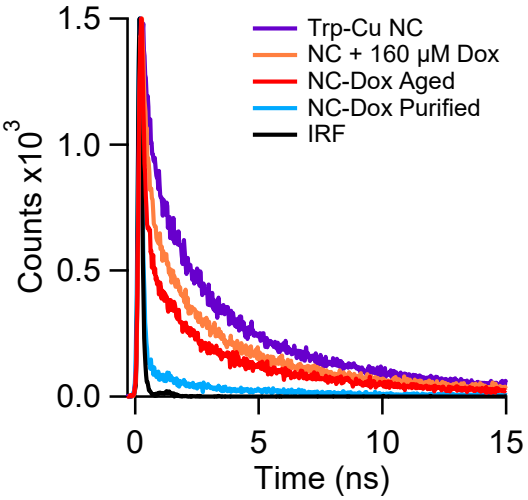

Figure S2: Time-resolved PL intensity decay curve (λ_{ex} = 405 nm, λ_{em} = 480 nm) of pure Trp-Cu NC (violet), Trp-Cu NC-Dox nano-conjugate before (orange) and after aging (red). The lifetime further decreased upon purification of the aged sample (cyan). The black curve represents the instrument response function (IRF).

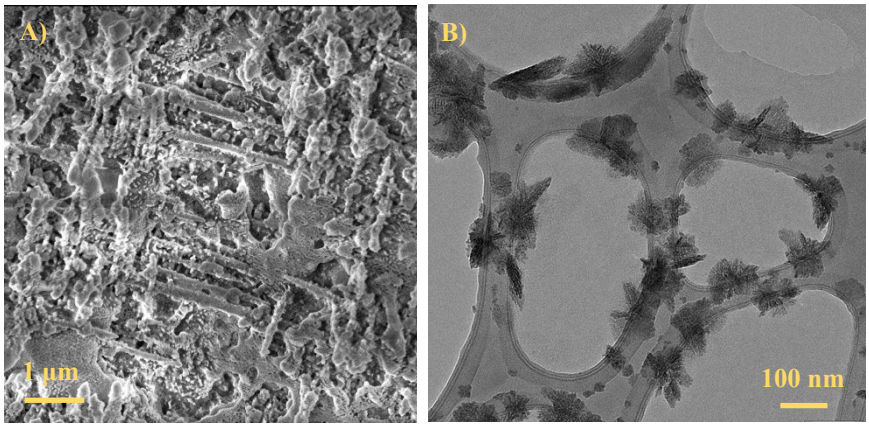

Figure S3: (A) FESEM image at low magnification (scale bar: 1 µm) of purified Trp-Cu NC-Dox nanoconjugates. (B) HRTEM image at low magnification (scale bar: 100 nm) of purified Trp-Cu NC-Dox nanoconjugates.

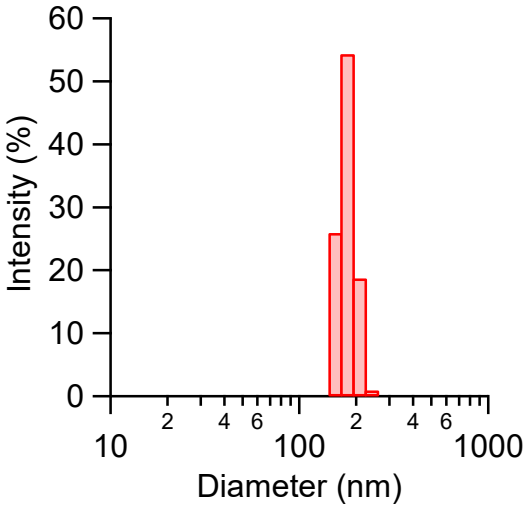

Figure S4: Dynamic light scattering (DLS) spectrum of Trp-Cu NC-Dox nanocnjugate.

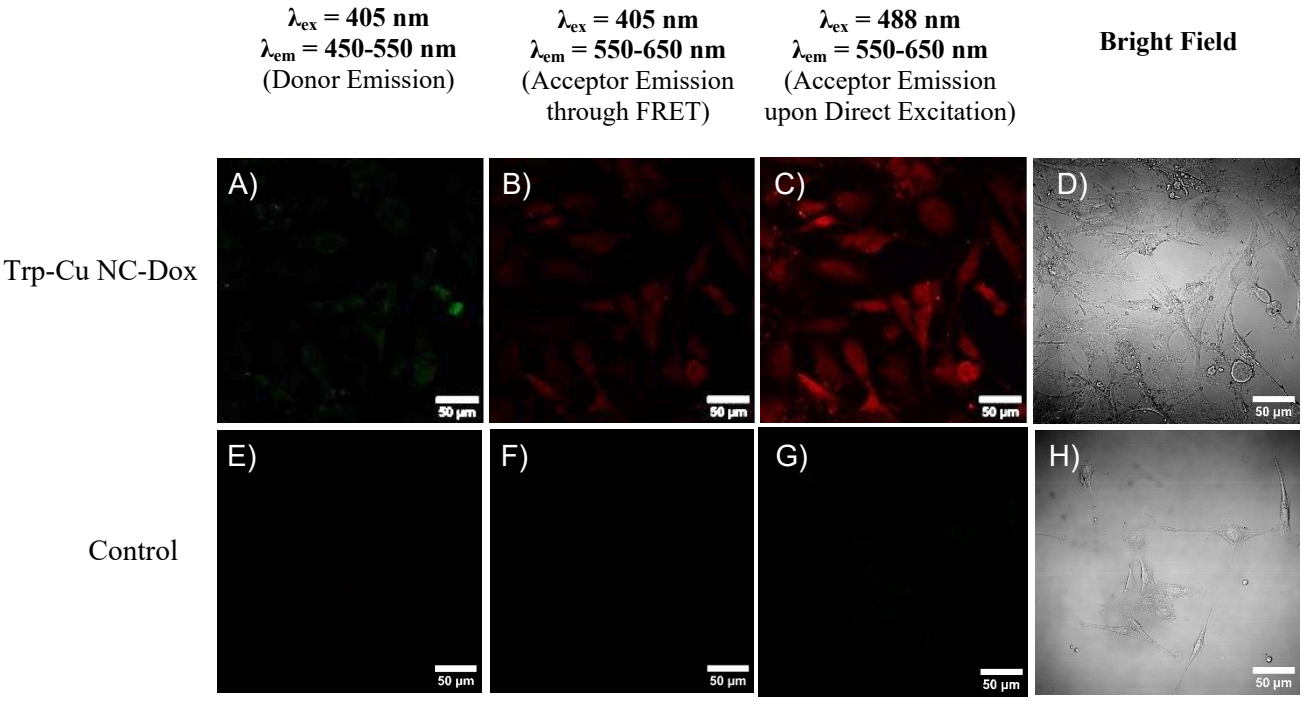
λ_{ex} = 405 nm
λ_{em} = 450-550 nm
(Donor Emission)
λ_{ex} = 405 nm
λ_{em} = 550-650 nm
(Acceptor Emission through FRET)
λ_{ex} = 488 nm
λ_{em} = 550-650 nm
(Acceptor Emission upon Direct Excitation)
Bright Field
Trp-Cu NC-Dox
Control
A)
B)
C)
D)
E)
F)
G)
H)
50 µm

Figure S5: Confocal microscope images of 3T3 cells incubated (A-D) with and (E-H) without Trp-Cu NC-Dox nanoconjugate.

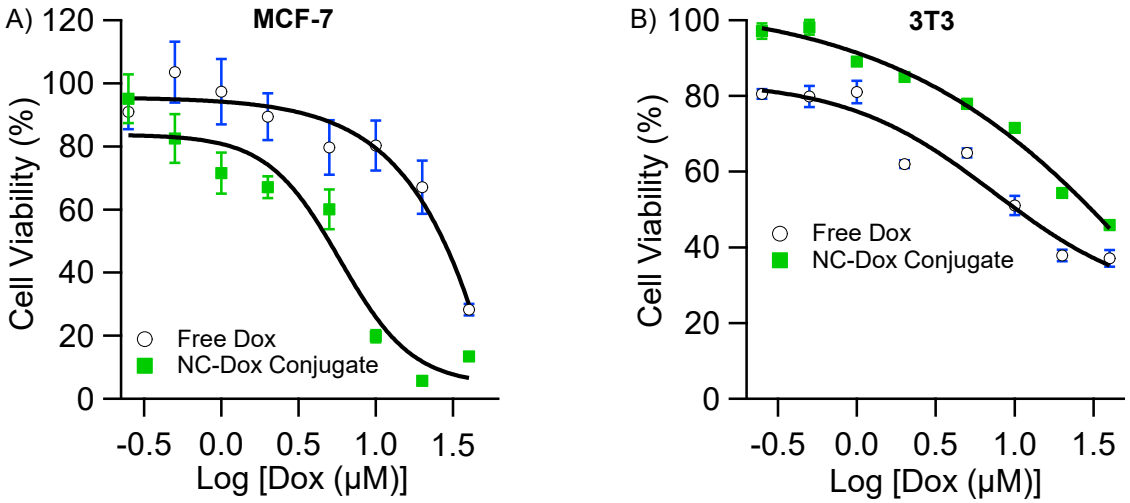

Figure S6: Cell viability (%) was plotted against the log of Dox concentration for free Dox (blue) and the Trp-Cu NC-Dox nanoconjugate (green) in (A) breast cancer (MCF-7) cells and (B) normal mouse fibroblast (3T3) cells. A sigmoidal fit is represented by the black line.