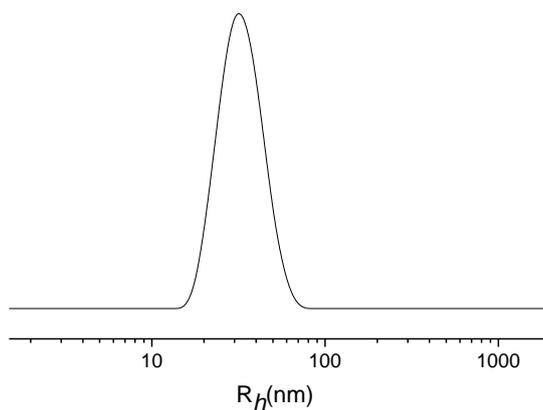


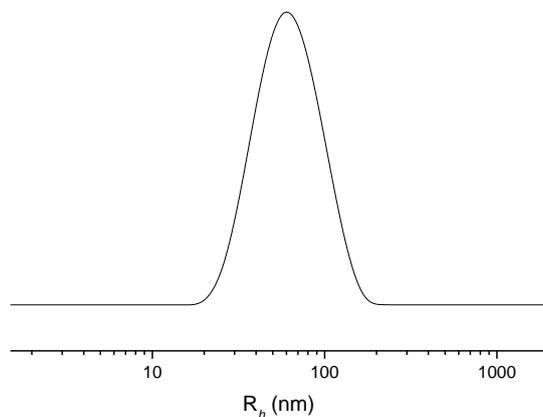
# Supplementary Materials:

## A Triphenylphosphonium-Functionalized Mitochondriotropic Nanocarrier for Efficient Co-Delivery of Doxorubicin and Chloroquine and Enhanced Antineoplastic Activity

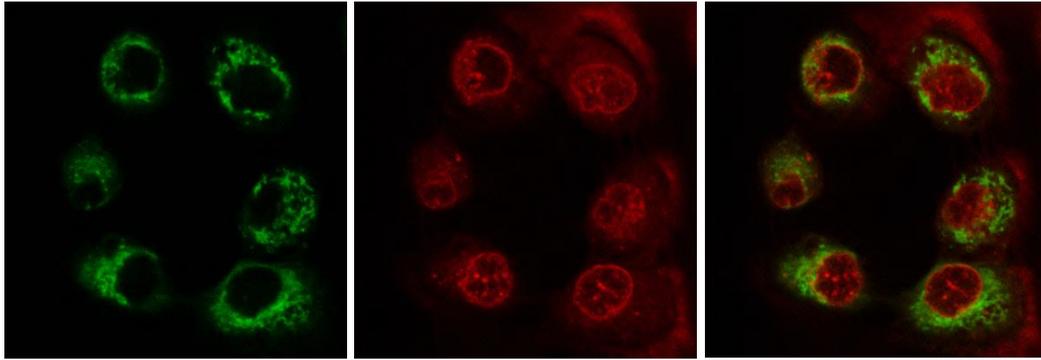
Katerina N. Panagiotaki, Zili Sideratou, Spiros Vlahopoulos, Maria Paravatou-Petsotas, Michael Zachariadis, Nikolas Khoury, Vassilis Zoumpourlis, Dimitris Tsiourvas



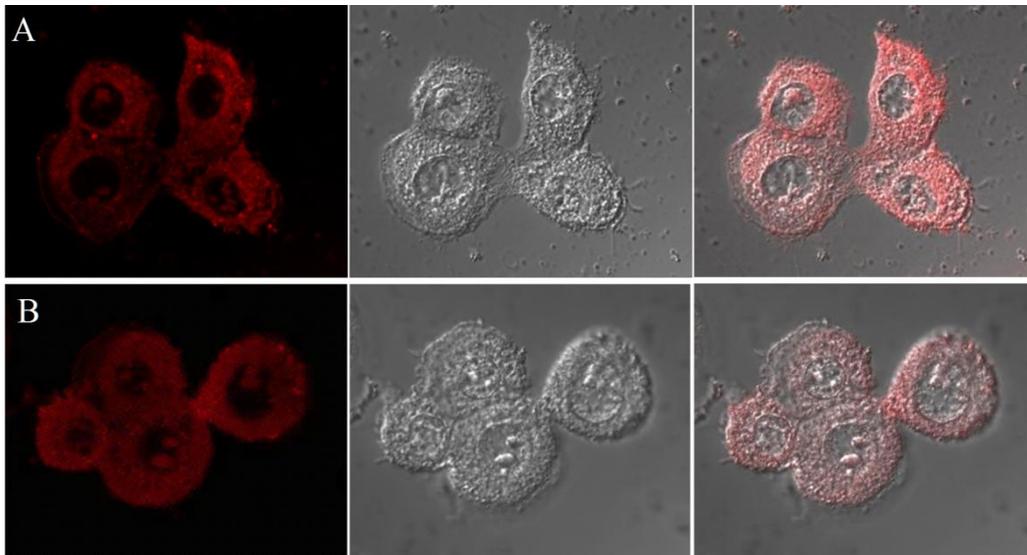
**Figure S1.** Intensity-weighted hydrodynamic radii size distribution of DOX-loaded P-TPP nanoparticles.



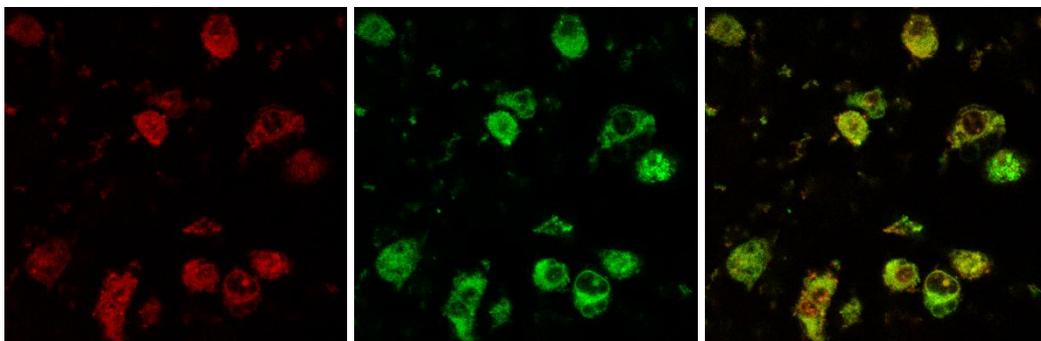
**Figure S2.** Intensity-weighted hydrodynamic radii size distribution of CQ-loaded P-TPP nanoparticles.



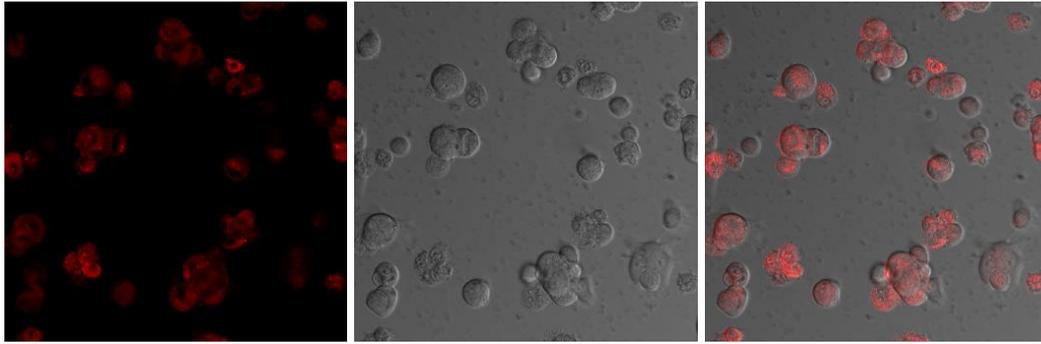
**Figure S3.** Confocal fluorescence microscopy on live DU145 cells incubated with DOX (5  $\mu$ M DOX concentration) for 2 h and 100 nM MitoTracker® Green FM for 15 min: (left) DOX (red channel,  $\lambda_{ex}$  = 561 nm,  $\lambda_{em}$  = 570–650 nm); (middle) MitoTracker® Green (green channel,  $\lambda_{ex}$  = 488 nm,  $\lambda_{em}$  = 500–550 nm); and (right) overlay image showing co-localization of green and red fluorescence in yellow.



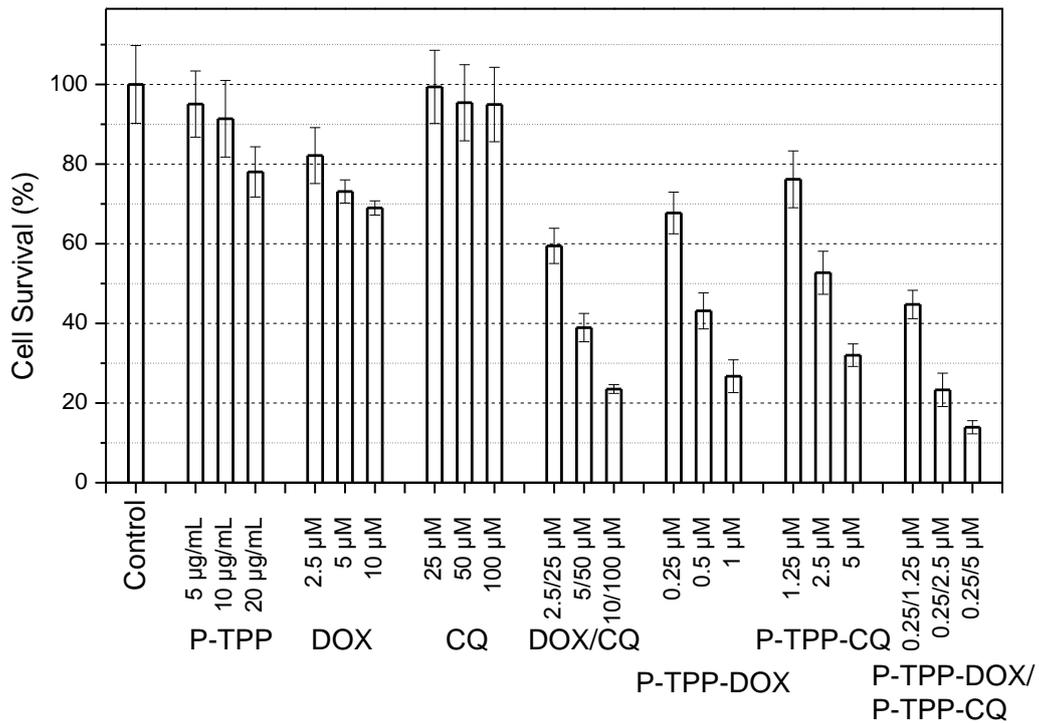
**Figure S4.** Confocal fluorescence microscopy on live DU145 cells incubated (A) with P-TPP-DOX (0.5  $\mu$ M DOX concentration) or (B) with P-TPP-DOX/P-TPP-CQ (0.5  $\mu$ M DOX, 1.25  $\mu$ M CQ) for 2 h. The confocal fluorescence images, the corresponding brightfield images and their overlay are shown in the first, second and third column, respectively.



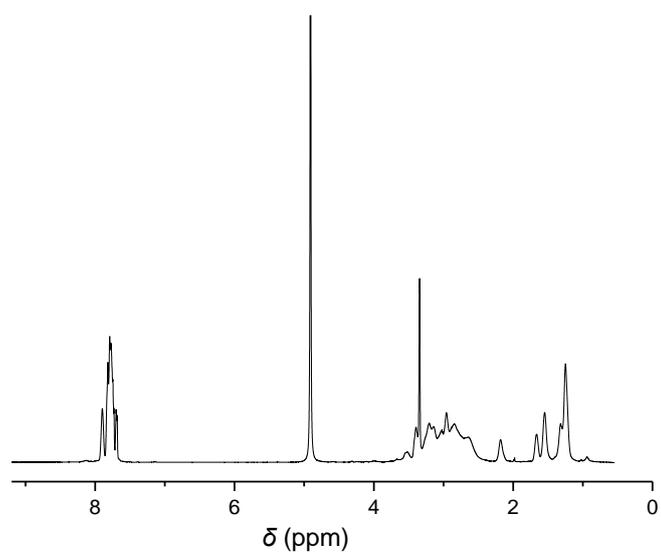
**Figure S5.** Confocal fluorescence microscopy on live DU145 cells incubated with P-TPP-DOX/P-TPP-CQ (0.25  $\mu$ M DOX, 1.25  $\mu$ M CQ) for 2 h and 100 nM MitoTracker® Green FM for 15 min: (left) DOX (red channel,  $\lambda_{ex}$  = 561 nm,  $\lambda_{em}$  = 570–650 nm); (middle) MitoTracker® Green (green channel,  $\lambda_{ex}$  = 488 nm,  $\lambda_{em}$  = 500–550 nm); and (right) overlay image showing co-localization of green and red fluorescence in yellow.



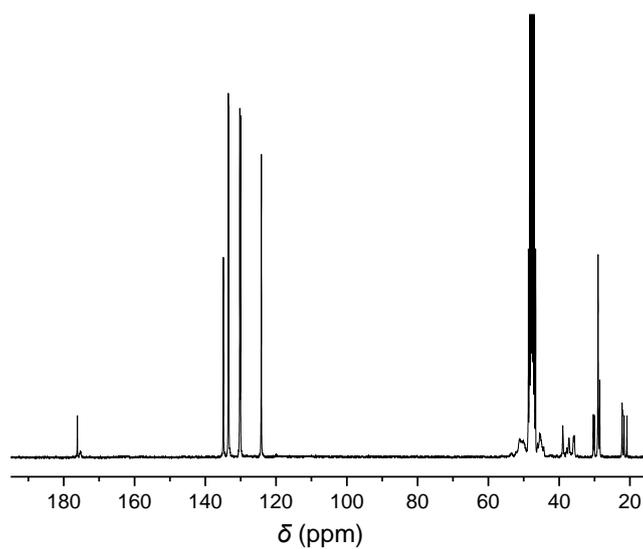
**Figure S6.** Confocal fluorescence microscopy on DU145 cells incubated for 2 h with poly(ethyleneimine) (PEI)-TPP-DOX at a 0.25  $\mu\text{M}$  DOX concentration. The confocal fluorescence images, the corresponding brightfield images and their overlay are shown in the first, second and third column, respectively.



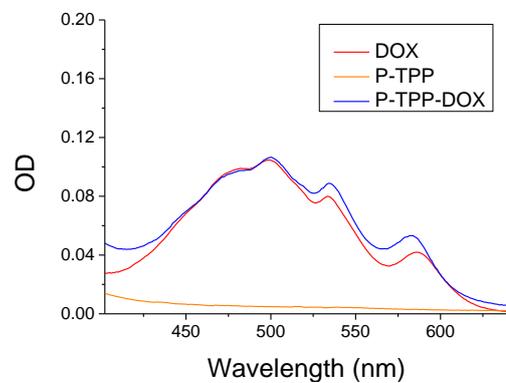
**Figure S7.** Comparative toxicities of P-TPP (vehicle), free DOX, CQ and their combination, as well as of P-TPP-DOX, P-TPP-CQ and their combination on 3T3 cells following incubation at various concentrations for 3 h as determined by MTT assays 24 h following incubation.



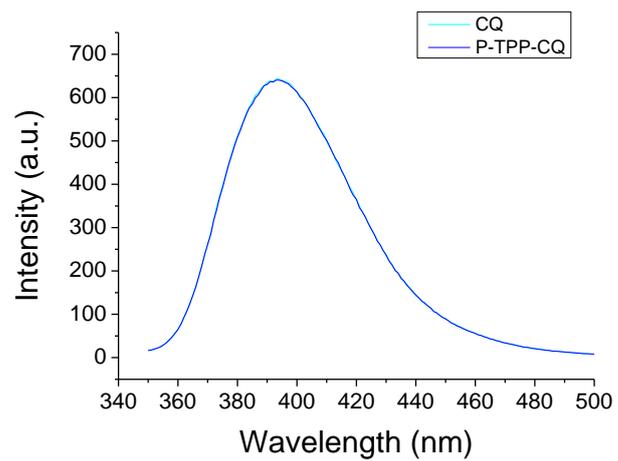
**Figure S8.** <sup>1</sup>H-NMR (500 MHz, MeOD-*d*<sub>4</sub>) spectrum of P-TPP.



**Figure S9.** <sup>13</sup>C-NMR (125.1 MHz, MeOD-*d*<sub>4</sub>) spectrum of P-TPP.



**Figure S10.** UV-Vis spectra of the carrier P-TPP, free DOX and P-TPP-DOX (DOX concentration of 9.3 μM) in ethanol.



**Figure S11.** Fluorescence spectra of CQ or P-TPP-CQ (CQ concentration of 3.5  $\mu$ M) in ethanol.