**Development of a functionalized UV-emitting nanocomposite for the treatment of cancer using indirect photodynamic therapy**

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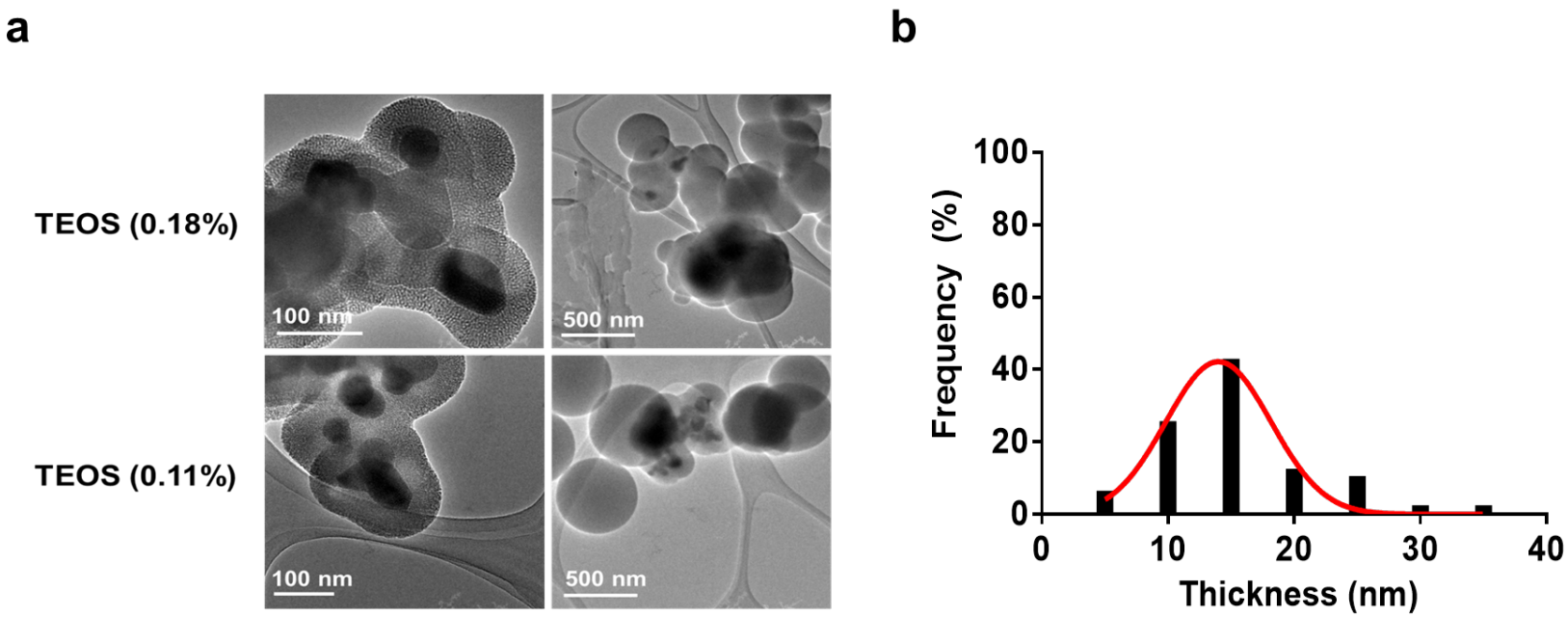


**Figure S1. (a)** TEM micrographs of mesoporous silica coated YAG:Pr synthesized using 0.18% or0.11% of TEOS. **(b)** Size distribution histogram of mesoporous silica coating on YPMS.

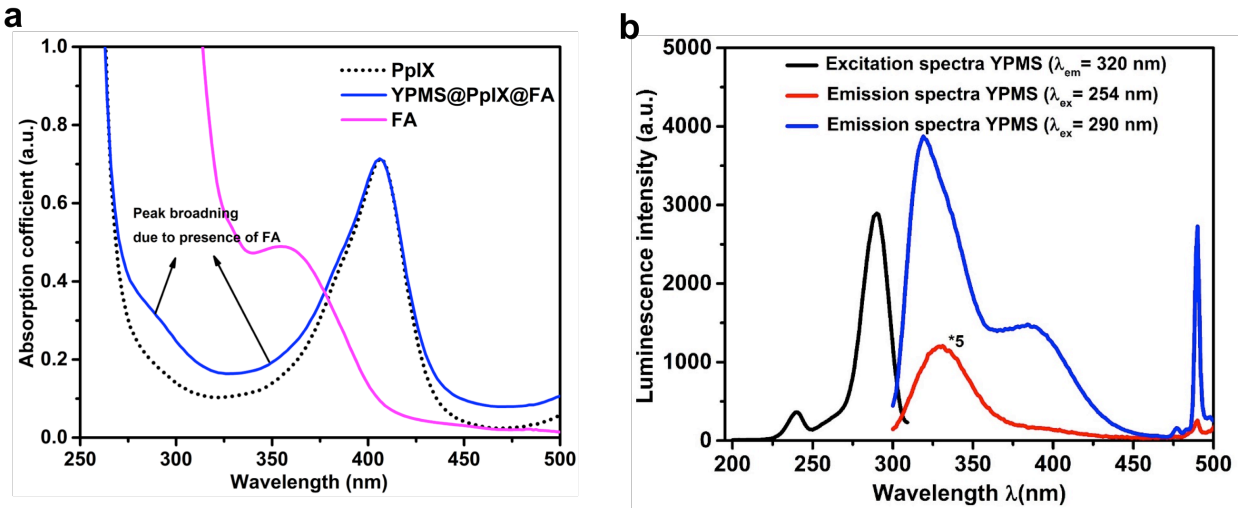


**Figure S2**. (**a)** UV-Vis spectra of PpIX, FA and YPMS@PpIX@FA nanoparticles. **(b)** Photoluminescence excitation and emission spectra of YPMS. In the red curve, *5 indicates the 5-fold increase in the emission spectrum from the initial value.

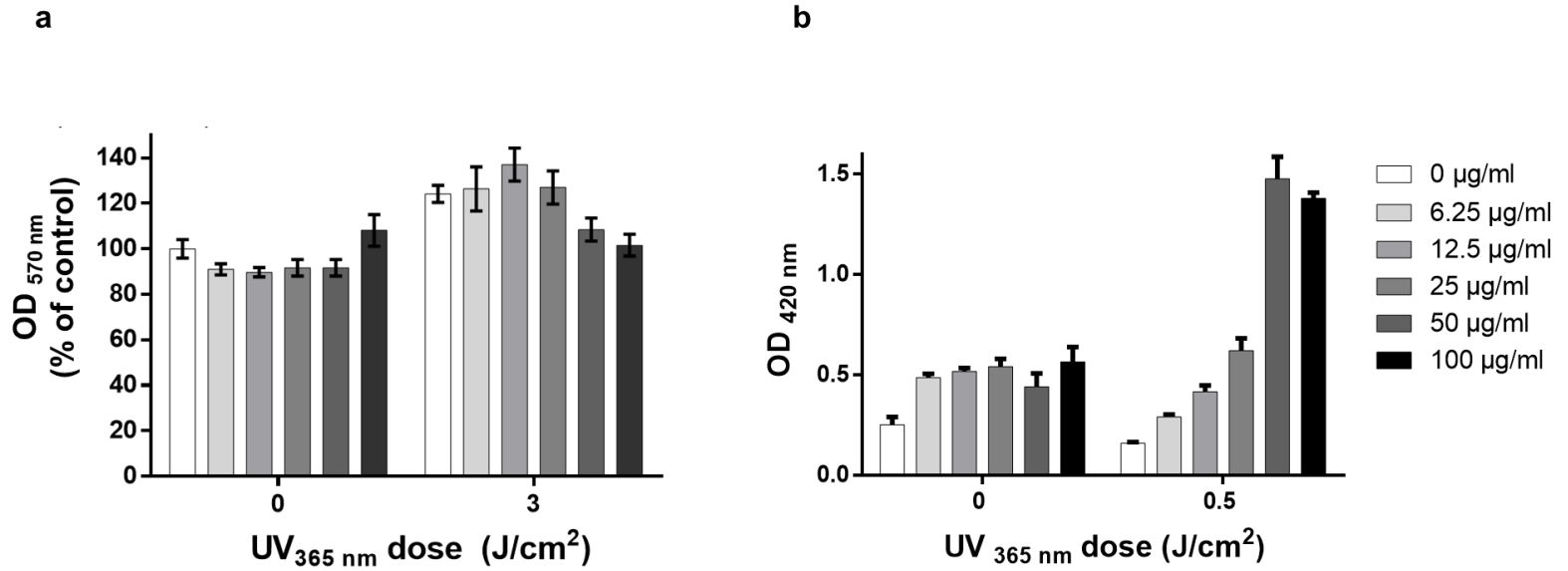


**Figure S3. Cytotoxicity analysis of YPMS and YPMS@PpIX@FA nanoparticles**. **(a)** UV exposure on YPMS treated PyMT-R221A cells had no significant effect on cell viability. For cytotoxicity analysis cells were grown, treated with increasing concentrations of nanoparticles for 24 h and irradiated with 3 J/cm$^2$ UV dose. Cell viability was analyzed using an MTT assay, 24 h after the UV exposure. **(b)** ß-Galactosidase release assay of YPMS@PpIX@FA on PyMT-ßGal cells.

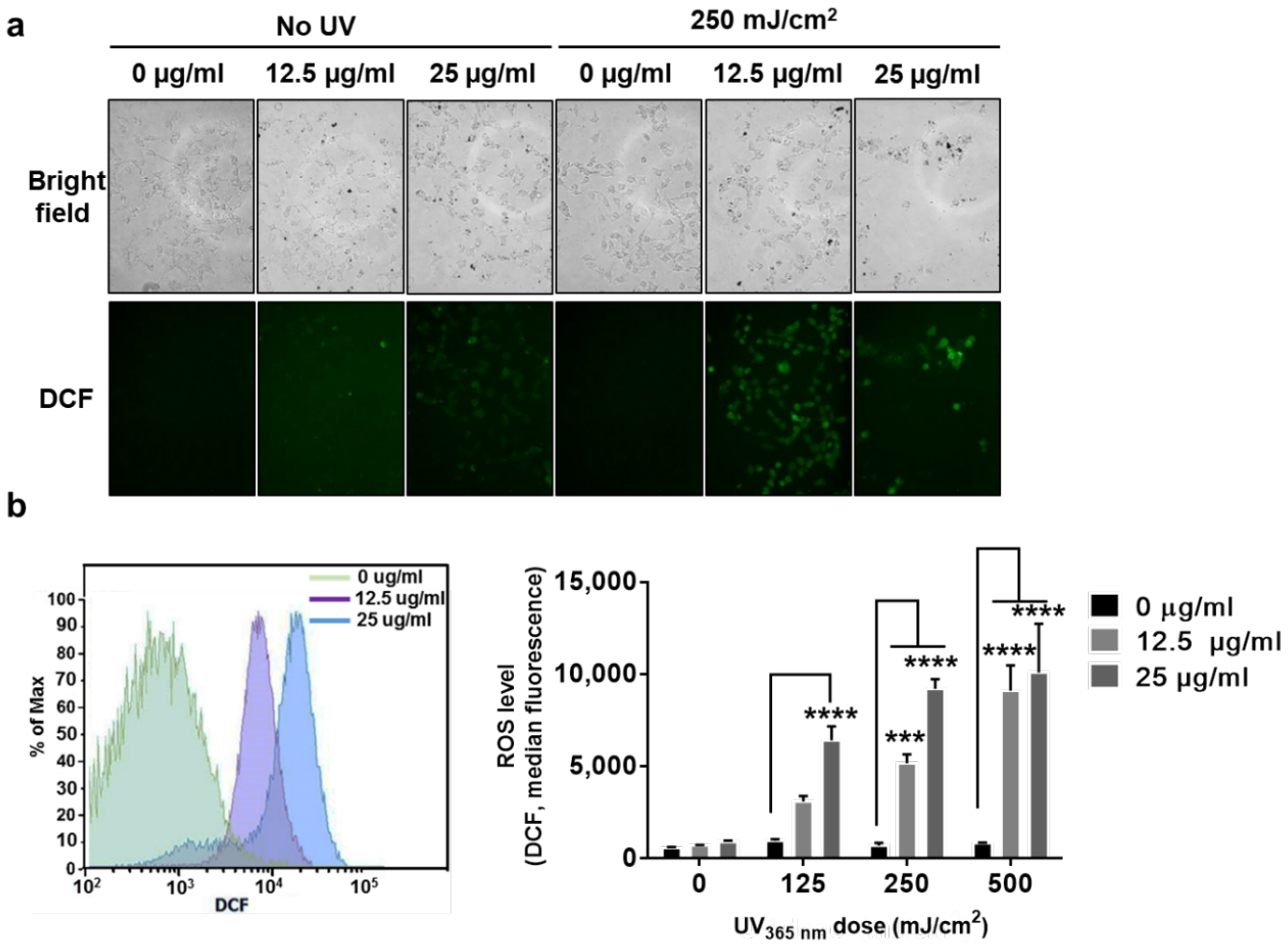


**Figure S4. Generation of cellular ROS on YPMS@PpIX@FA treated PyMT cells upon $UV_{(365\ nm)}$ irradiation. (a)** Fluorescent microscopy image. **(b)** Flow cytometry analysis. Results are expressed as the mean ± SEM of three independent experiments. *p < 0.05, **p < 0.01, ***p < 0.001, ****p < 0.0001 using a 2-way ANOVA with Tukey posttest.

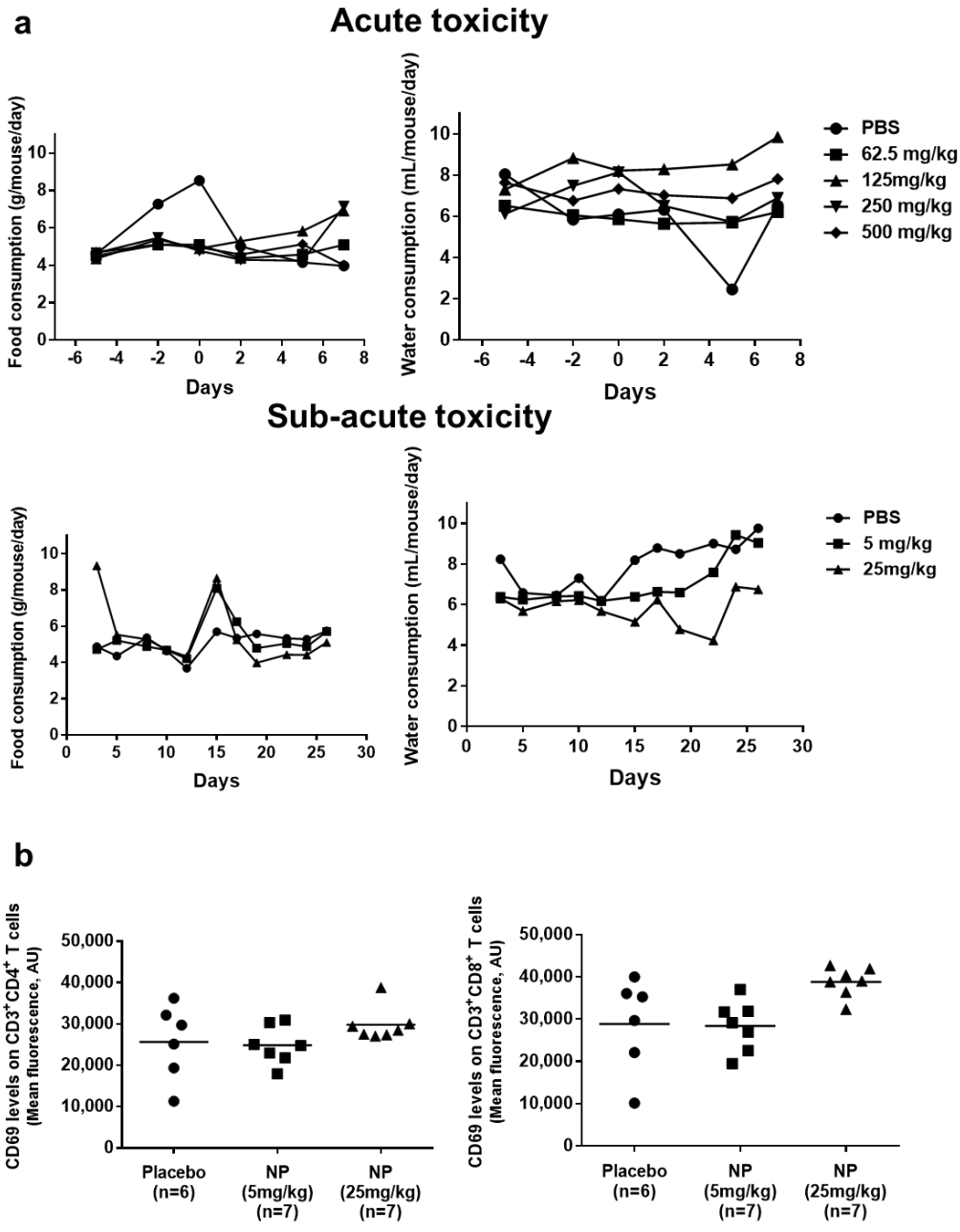


**Figure S5. Effect of treatment with YPMS@PpIX@FA nanoparticles on the feeding of mice and T cell activation.** (a) Food and water consumption for acute and sub-acute toxicity of YPMS@PpIX@FA. (b) Effect of multiple dose of NP on CD69 expression in T lymphocytes. Results were analyzed using a 1-way ANOVA with Tukey posttest.

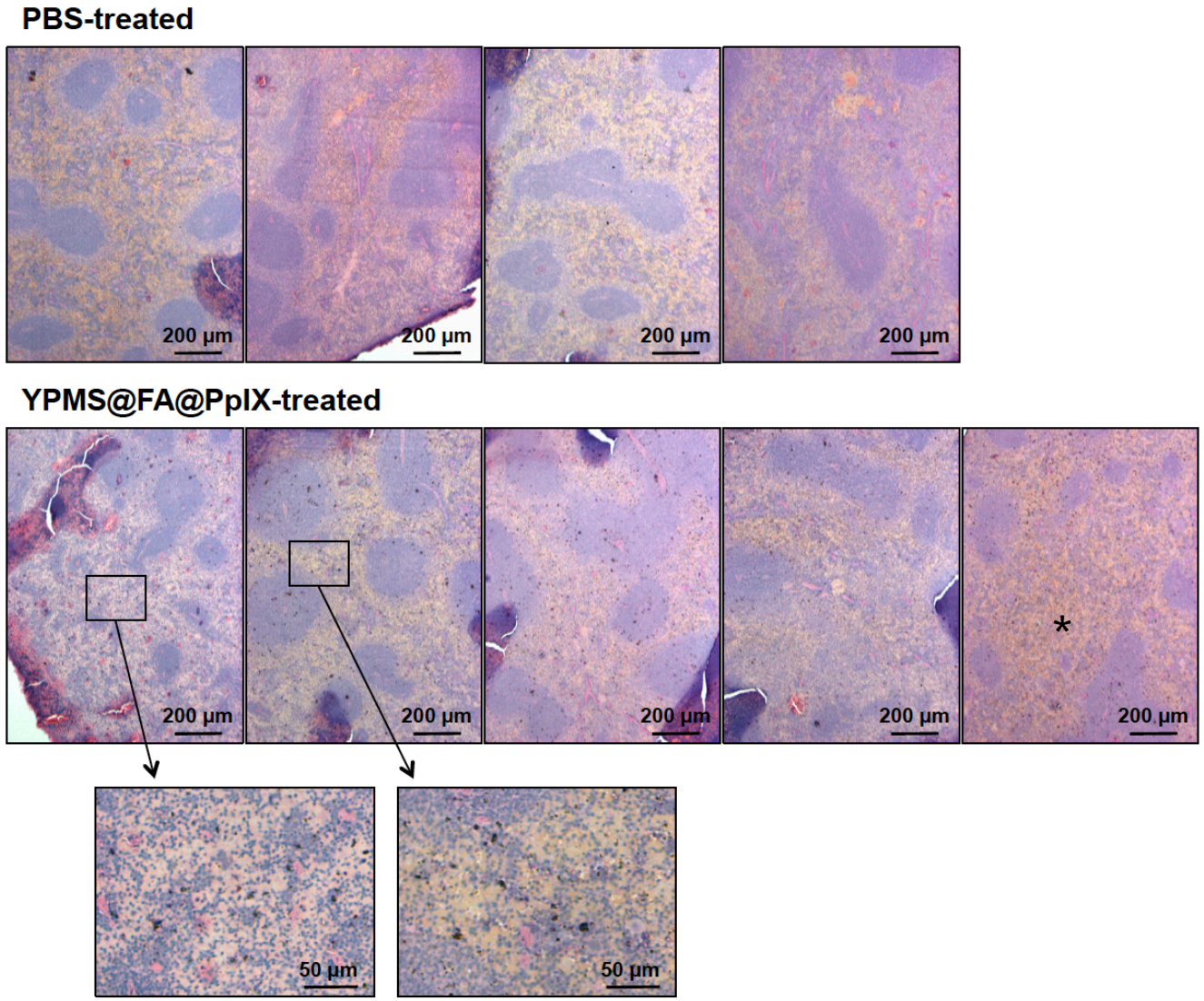


**Figure S6.** Tissue sections of spleens of mice treated with PBS (n = 4) or YPM@FA@PpIX nanoparticles (25 mg/kg) (n = 5), stained with hematoxylin and eosin. All the spleens of the mice treated with YPMS@FA@PpIX showed the presence of brown/black deposits (see higher magnification pictures and 1 of these mice showed signs of red pulp expansion (indicated by *).