Supplementary Materials

Lysosome Passivation Triggered by Silver Nanoparticles Enhances Subcellular-Targeted Drug Therapy

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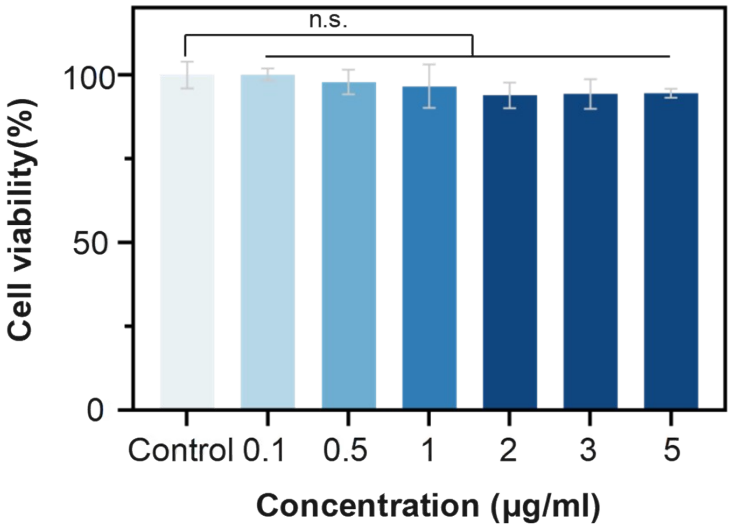
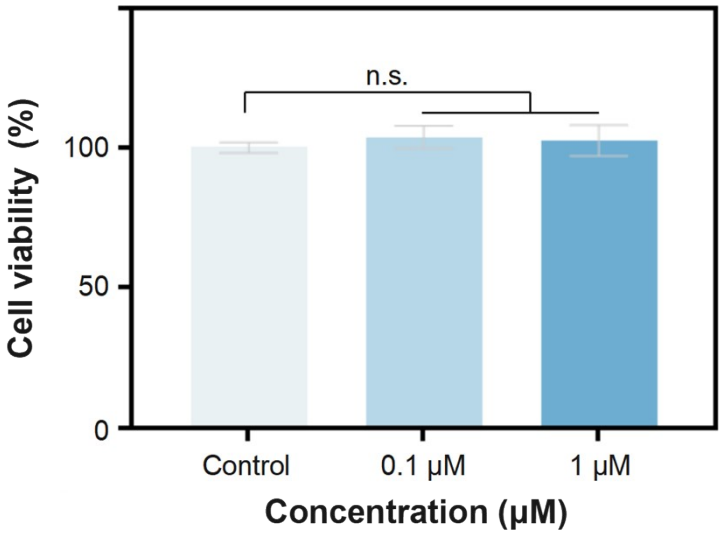
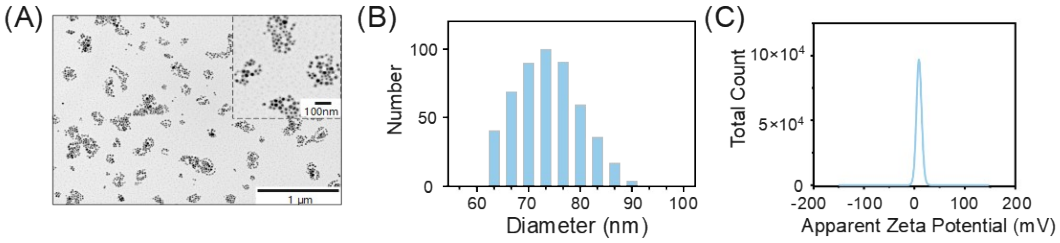


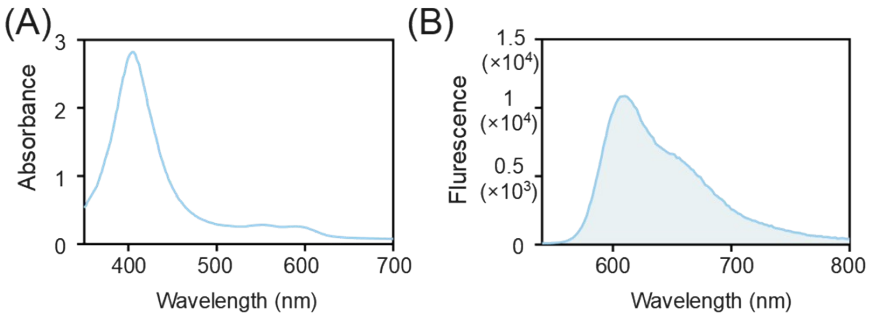
Supplementary Figure 1. HeLa cells viability treated with different concentration of Cy3.5@Ag NPs for 24 h via CCK-8 assay. Data are presented as mean ± standard error of mean (SEM) (n.s. for no significant difference).



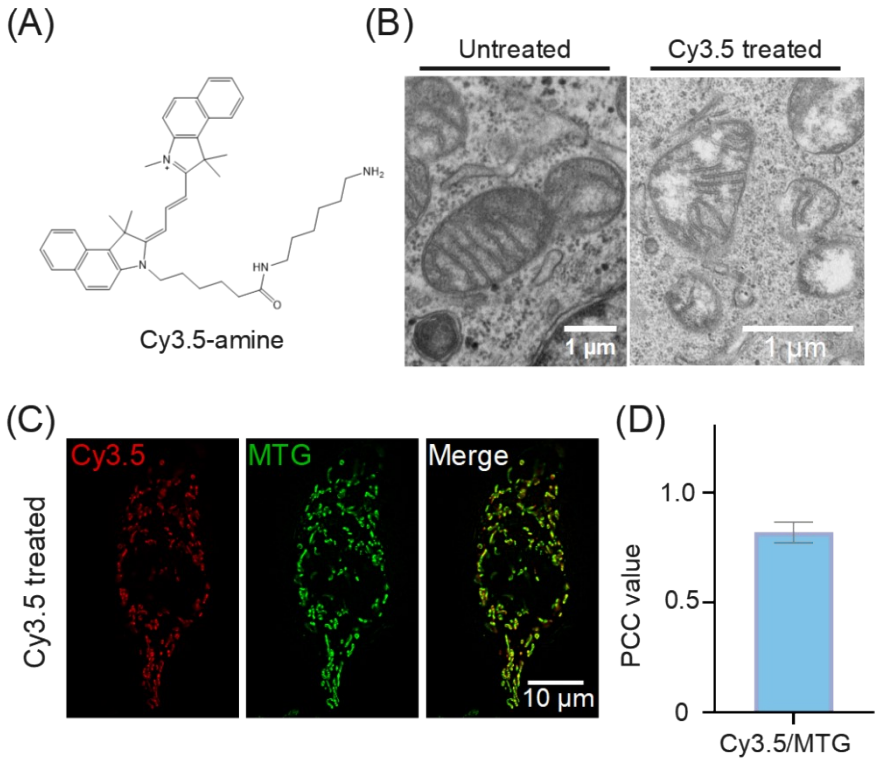
Supplementary Figure 2. Cell viability of Cy3.5 (0.1 μM, 1.0 μM) for 24 h via CCK-8 assay. Data are presented as mean ± SEM (n.s. for no significant difference)



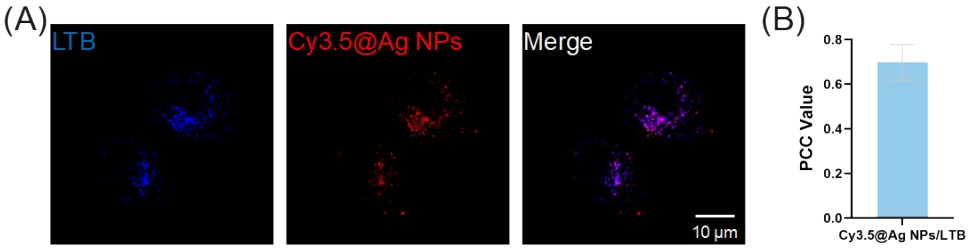
Supplementary Figure 3. Morphology characterization of Cy3.5@Ag NPs. (A) TEM images of the Cy3.5@Ag NPs. (B) DLS results of Cy3.5@Ag NPs from 3 independent experiments. (C) Zeta potential of Cy3.5@Ag NPs from 3 independent experiments.



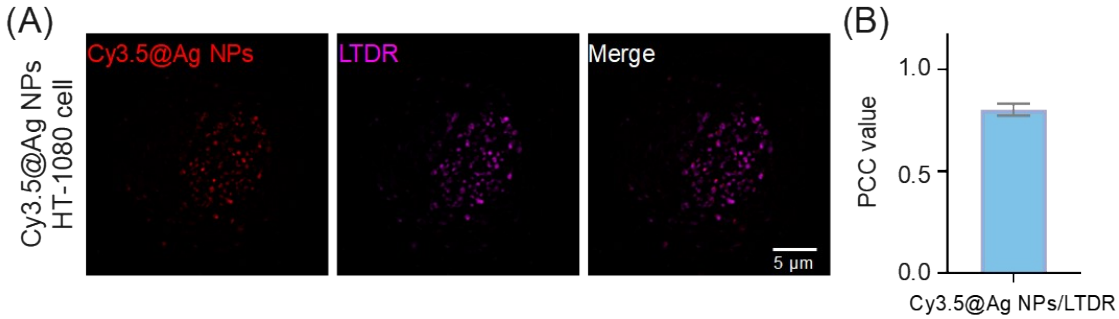
Supplementary Figure 4. Photophysical properties of Cy3.5@Ag NPs. (A) Absorption spectrum of Cy3.5@Ag NPs (1 mg/mL). (B) Fluorescence of **Cy3.5@Ag NPs** (1 mg/ml) solution, E_x=500 nm, E_m=610nm.



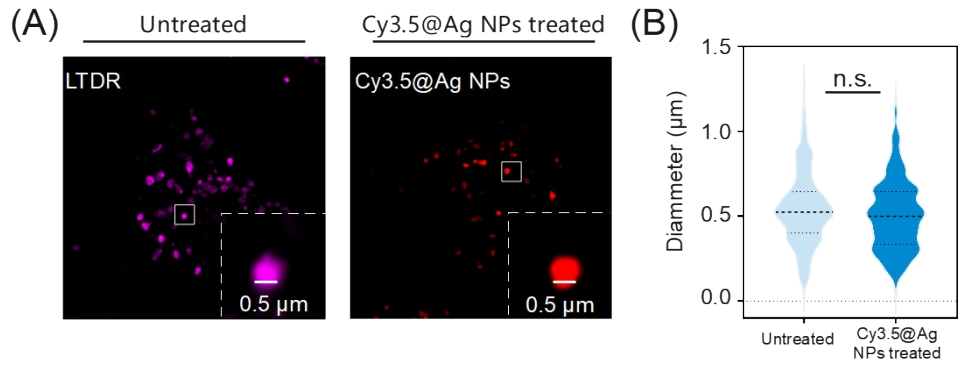
Supplementary Figure 5. The chemical structure and cell imaging of Cy3.5. (A) The chemical structure of Cy3.5. (B) TEM images of mitochondria with Cy 3.5 (0.1 μM, 6 h) treatment. (C) Colocalization images of HeLa cells stained by Cy 3.5 (0.1 μM, λ_{ex} = 561 nm, λ_{em} = 580–627 nm) for 1 h and MTG (100 nM, λ_{ex} = 488 nm, λ_{em} = 500–550 nm) for 30min. (D) PCC value of $Cy3.5^{561\text{-}590}$/$MTG^{488\text{-}525}$.



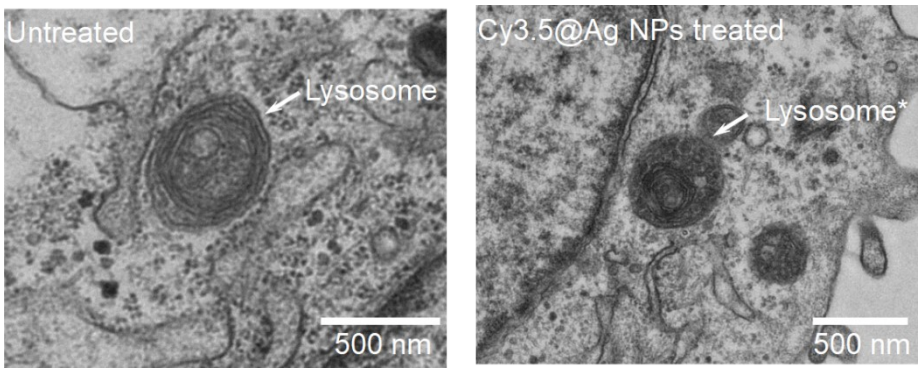
Supplementary Figure 6. Colocalization of Cy3.5@Ag NPs and LTB. (A) HeLa cells co-stained with Cy3.5@Ag NPs (0.5 μg/ml, 1 h, λ_{ex} = 488 nm, λ_{em} = 580-627 nm) and Lyso-Tracker Blue (LTB, 100 nM, 30 min, λ_{ex} = 405 nm, λ_{em} = 417–476 nm). (B) PCC values of Cy3.5@Ag $NPs^{488\text{-}590}$/ $LTB^{405\text{-}488}$.



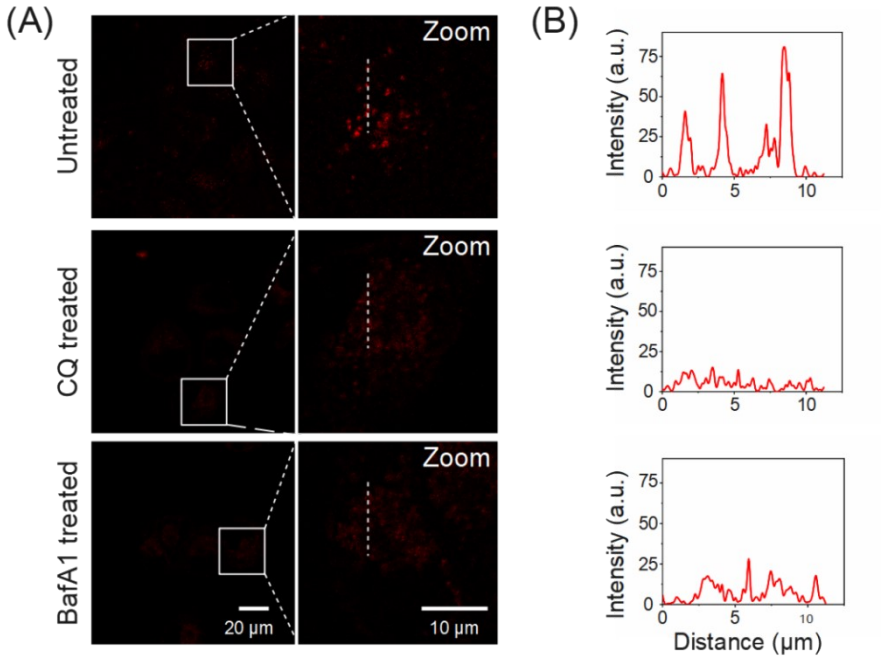
Supplementary Figure 7. (A) Representative images of HT-1080 cells co-stained with Cy3.5@Ag NPs (0.5 μg/ml, 1 h, λ_{ex} = 488 nm, λ_{em} = 580-627 nm) and LTDR (100 nM, 30min, λ_{ex} = 640 nm, λ_{em} = 655–705 nm). (B) PCC value of Cy3.5@Ag NPs$^{488\text{-}590}$/LTDR$^{640\text{-}690}$



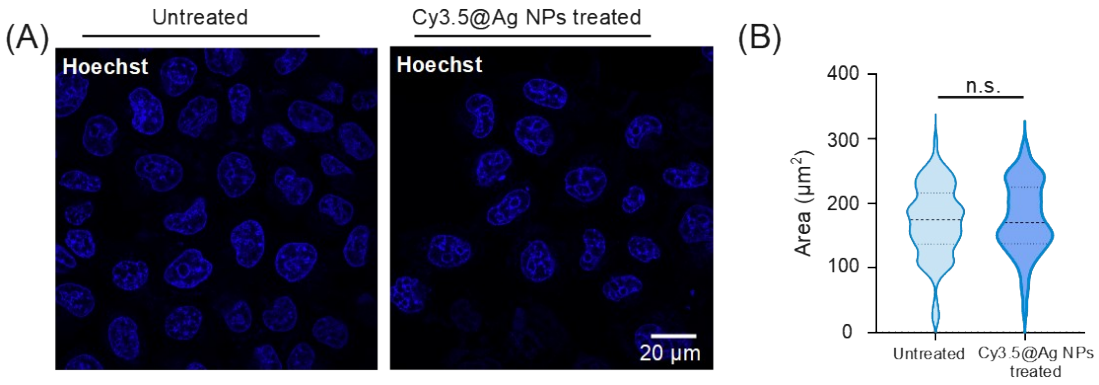
Supplementary Figure 8. (A) Fluorescence images of lysosome in HeLa cells incubated with LTDR (100 nM, λ_{ex} = 640 nm, λ_{em} = 655–705 nm) and **Cy3.5@Ag NPs** (0.5 μg/mL, λ_{ex} = 488 nm, λ_{em} = 580-627 nm). (B) The size distribution of lysosomes in HeLa cells with or without **Cy3.5@Ag NPs** treatment. Data are presented as mean ± SEM (n.s. for no significant difference).



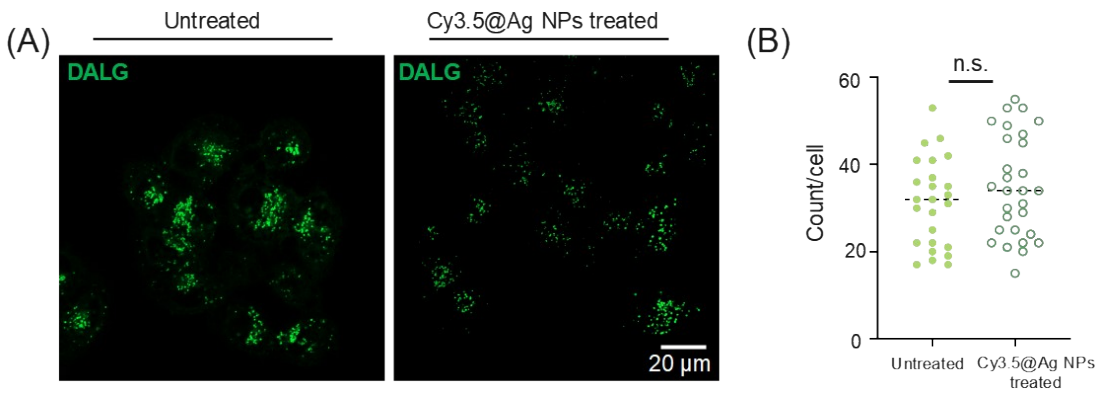
Supplementary Figure 9. Representative TEM images of lysosomes for HeLa cells with or without Cy3.5@Ag NPs (0.5 μg/ml, 1 h) treatment.



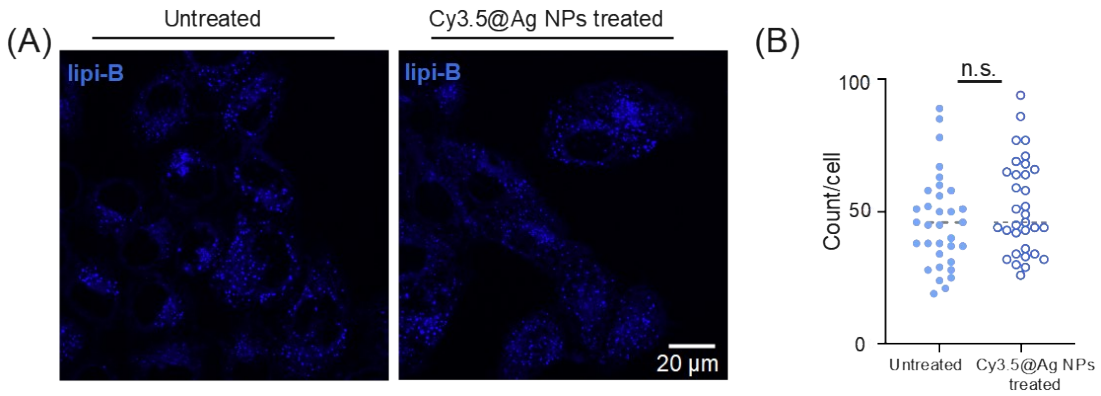
Supplementary Figure 10. Specific localization of Cy3.5@Ag NPs in lysosomes. (A) Confocal images of HeLa cells treated with CQ (100 nm, 3 h) or BafA1 (50 mM, 3 h) and Cy3.5@Ag NPs (0.5 μg/ml, 1 h, λ_{ex} = 488 nm, λ_{em} = 580-627 nm). Zoom-in images of regions of interest are presented in white rectangles. (B) Fluorescence intensity of Cy3.5@Ag NPs in white line from zoom images.



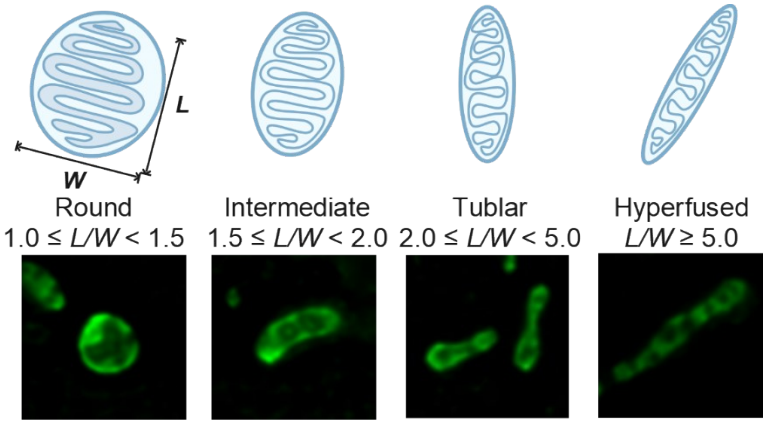
Supplementary Figure 11. Effect of Cy3.5@Ag NPs on the nucleus. (A) Confocal imaging of Hoechst-labeled nucleus in HeLa cells with or without Cy3.5@Ag NPs (0.5 μg/ml, 1 h) treatment. (B) The plot shows the fluorescence area of nucleus for HeLa cells. Data are presented as mean ± SEM (*n*=50 cells for each group, n.s. for no significant difference).



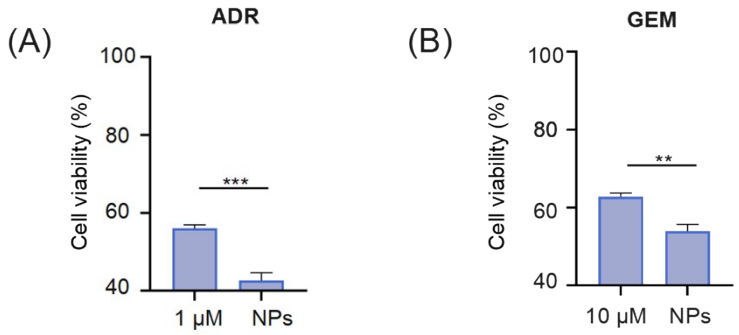
Supplementary Figure 12. Effect of Cy3.5@Ag NPs on autophagolysosome (ALs). (A) Confocal imaging of DALG-labeled Als in HeLa cells with or without Cy3.5@Ag NPs (0.5 μg/ml, 1 h) treatment. (B) The plot shows the count of autophagolysosome for HeLa cells. Data are presented as mean ± SEM (*n*=25 for untreated cells, *n*=29 for Cy3.5@Ag NPs treated cells, n.s. for no significant difference).



Supplementary Figure 13. Effect of Cy3.5@Ag NPs on lipid droplets (LDs). (A) Confocal imaging of Lipi-Blue-labeled LDS in HeLa cells with or without Cy3.5@Ag NPs (0.5 μg/ml, 1 h) treatment. (B)The plot shows the count of LDS for HeLa cells. Data are presented as mean ± SEM (*n*=33 cells, n.s. for no significant difference).



Supplementary Figure 14. Representative images of mitochondrial structure and definition of *L/W* parameters for description of mitochondrial morphology description.



Supplementary Figure 15. Cytotoxicity assay of ADR (A) and GEM (B) for HeLa cells with or without Cy3.5@Ag NPs treatment. Data are presented as mean ± SEM. $P < 0.05$ is considered significant (**$P < 0.01$, ***$P < 0.001$).