

Supplemental Information

Quantification of cellular uptake of gold nanoparticles via scattering intensity changes in flow cytometry

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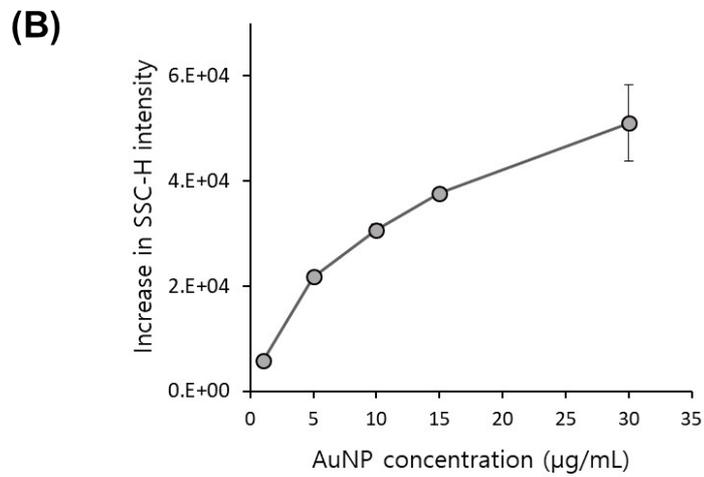
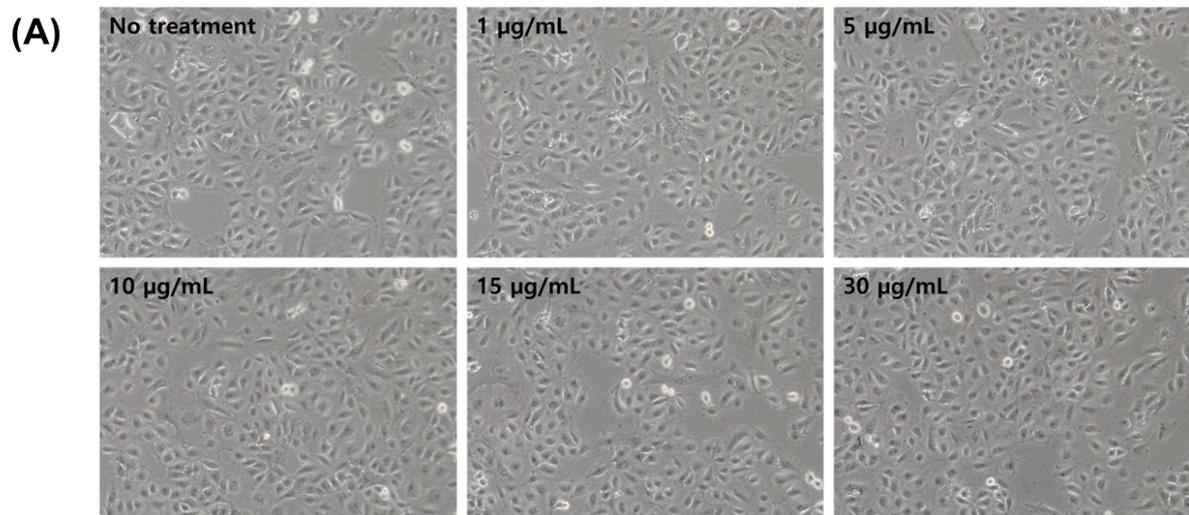


Figure S1. (A) Microscopic images of A549 cells treated with varying concentrations of AuNPs (1, 5, 10, 15, and 30 µg/mL) compared to the untreated control group, showing no noticeable morphological changes upon treatment. (B) Quantification of the increase in SSC intensity as a function of AuNP concentration, demonstrating a dose-dependent effect. Error bars represent the standard deviation from the mean (n = 3).

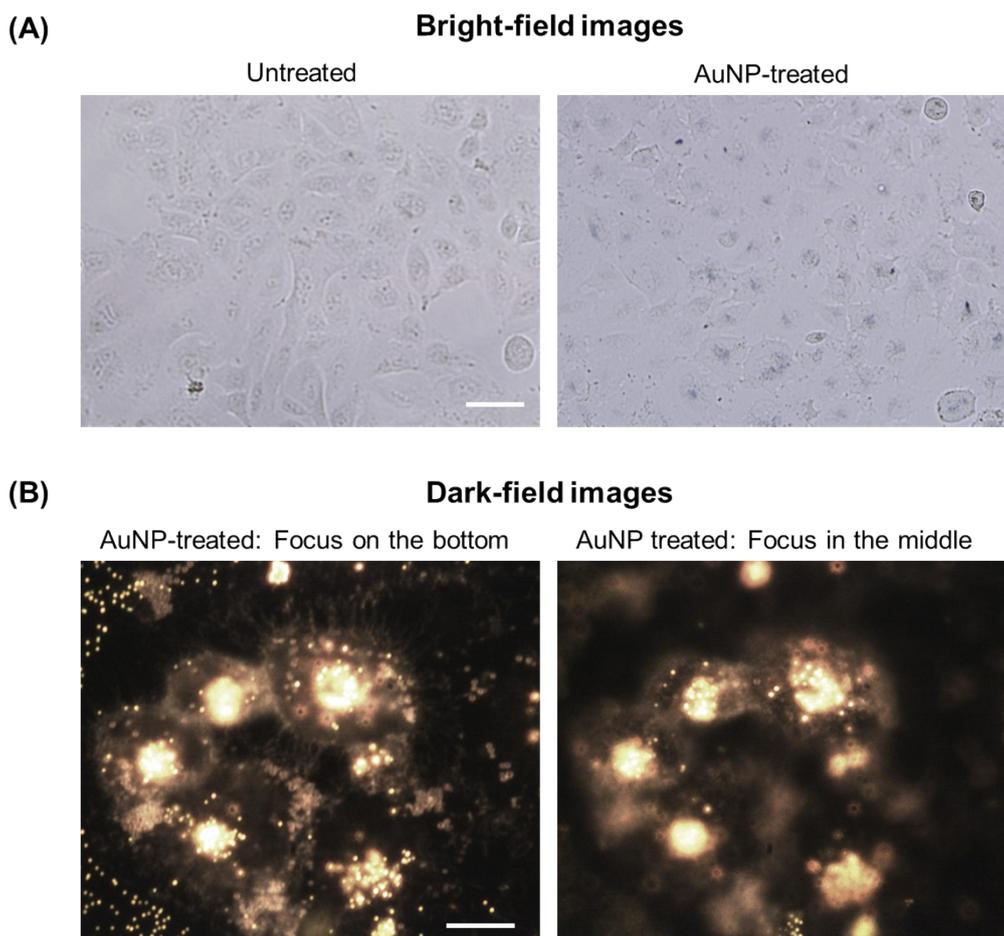


Figure S2. Visualization of AuNP uptake in A549 cells. (A) Bright-field images showing the absence and presence of regions appearing bluish purple, indicating AuNP accumulation in the AuNP-treated cells. Scale bar = 50 μm . (B) Dark-field images of AuNP-treated A549 cells. The bright regions correspond to organelle-rich areas where AuNPs are localized, suggesting their accumulation near the perinuclear region. Scale bar = 20 μm .

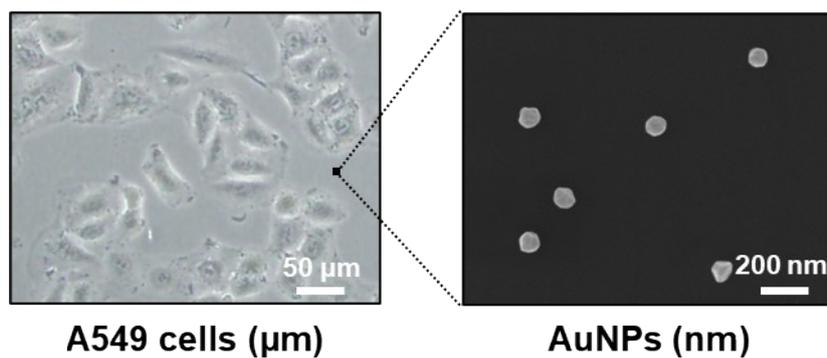


Figure S3. Comparison of the size difference between A549 cells and AuNPs. The left image shows A549 cells on the microscale (scale bar = 50 μm), while the right image displays AuNPs on the nanoscale (scale bar = 200 nm).

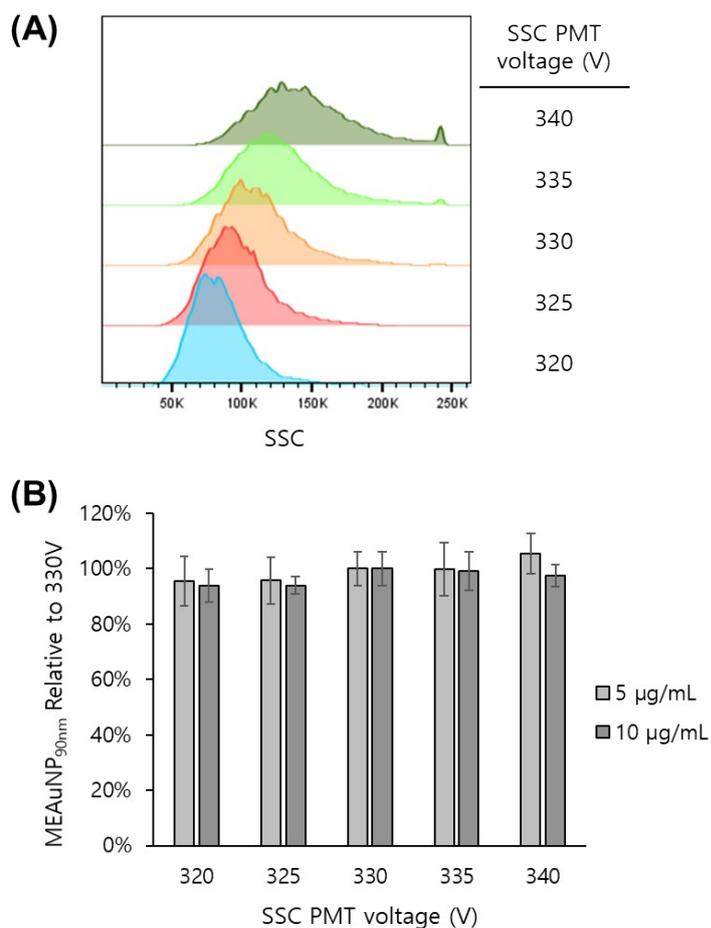


Figure S4. Comparison of results across different acquisition settings. (A) SSC histograms of 10 µg/mL AuNP-treated cells at different PMT voltages (320–340 V), illustrating the effect of PMT voltage on SSC intensity. (B) Comparison of MEAuNP values relative to those measured at 330 V for AuNP concentrations of 5 and 10 µg/mL. The consistent MEAuNP values across different acquisition settings demonstrate that the proposed method, calibrated using the SSC intensity of single AuNPs, yields comparable results regardless of changes in PMT voltage. Error bars represent the standard deviation (n = 4).