

## An Understanding of the Accumulation of Silica Nanoparticles in the Lysosomal Compartments of Macrophages upon Exposure

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This talk will discuss the growing interest in monitoring the dynamics of nanoparticles (NPs) inside cells, particularly in endo-lysosomal pathways and their long-term fate. Precise fluorescence microscopy methods are crucial for comprehending NP interactions with lysosomes at the single-cell level. To improve the reproducibility of colocalization studies of amorphous silica nanoparticles in mouse macrophage lysosomes, I will discuss common errors made in NP research and suggest potential solutions. We will outline a comprehensive methodology. Additionally, we will evaluate the nanoparticle trafficking and accumulation within human macrophages after repeated exposure, as well as their intracellular distribution. Our study provides important knowledge on how nanoparticles behave after sequential exposure at the cellular and organelle levels, which is essential for developing nanomaterials as efficient cargo for biomedical applications.

