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Interactions of carbohydrate-conjugated nanoparticles with *Mycobacterium smegmatis*

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ABSTRACT: *Mycobacterium smegmatis* is a non-pathogenic microorganism and has been widely used as a model organism to study infections caused by *M. tuberculosis* and other mycobacterial pathogens. We report that nanoparticles conjugated with selected carbohydrate show a striking increase in the surface adherence by *M. smegmatis*. This applies to silica nanoparticles and magnetic nanoparticles ranging from 100 nm to 5 nm. Under the same experimental conditions, minimum adhesion was observed for unfunctionalized nanoparticles. The synthesis and characterization of the glyconanoparticles will be presented. The finding is applied to imaging *M. smegmatis* infected lung epithelial cells, and the results will be discussed.