

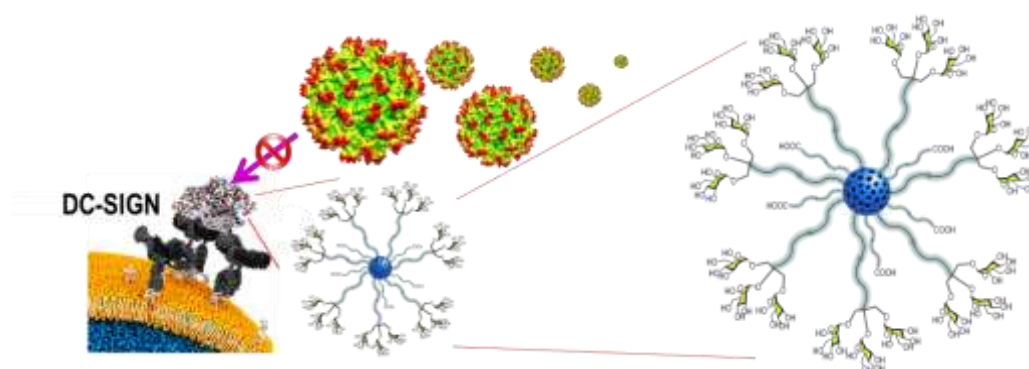
Silica-based glyconanoparticles for biomedical applications: from the immune system to infection diseases

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DC-SIGN (Dendritic Cell-Specific Intercellular adhesion molecule-3-Grabbing Non-integrin) is a C-type lectin presented on the surface of immature dendritic cells and plays a key role in the immune response and viral infections.¹ This lectin recognizes mainly fucosylated and mannosylated glycoconjugates. Our research group is interested in the study of this carbohydrate-protein interaction, both blocking and internalizing, of multivalent sugar-decorated glycoconjugates with this lectin due to the enormous relevance in many biological applications.²

In order to gain more insights, we proposed the use of silica-based nanoparticles as platforms for a multivalent carbohydrate presentation with biomedical applications. For this purpose, we focused on the design and preparation of different carbohydrates and their respective multivalent system based in glycodendrimers, as well as the conjugation to biocompatible silica nanoparticles. This silica-based nanoparticles could be act as virus inhibitors or modulator in adaptative immune response.



¹ a) Figdor, C. G.; van Kooyk, Y.; Adema, G. J. *Nat. Rev. Immunol.* **2002**, *2*, 77; b) Engering, A.; Geijtenbeek, T. B. H.; van Vliet, S. J.; Wijers, M.; van Liempt, E.; Demareux, N.; Lanzacecchia, A.; Fransen, J.; Figdor, C. G.; Piguët, V.; van Kooyk, Y. *J. Immunol.* **2002**, *168*, 2118.

² Ramos-Soriano, J.; Rojo, J. *Chem. Commun.* **2021**, *57*, 5111-5126.