Fluorinated natural epitope Man9 as chemical probe for DC-SIGN molecular recognition studies

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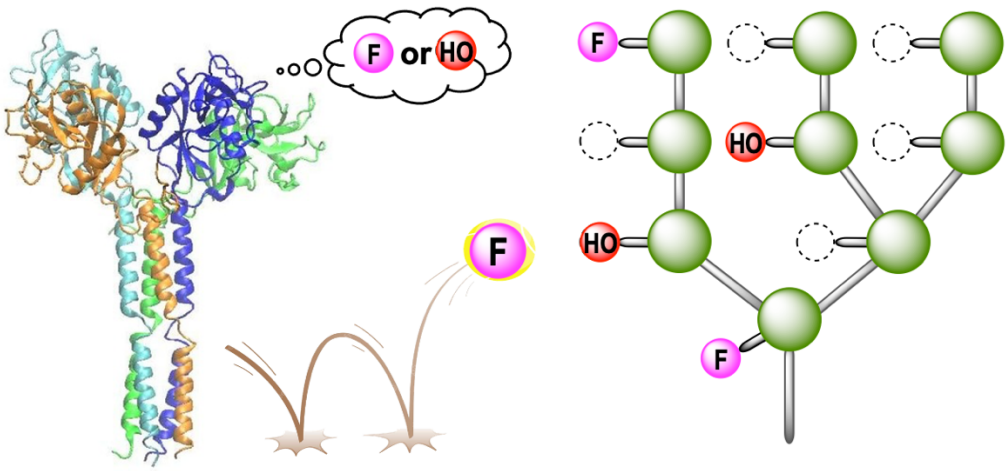
DC-SIGN (Dendritic Cell-Specific Intercellular adhesion molecule-3-Grabbing Non-integrin) is a C-type lectin that plays a key role in many biological events (including viral infections, cancer, inflammation, etc.). The main carbohydrate ligand recognized by DC-SIGN is the high-mannose glycan, $(Man)_9(GlcNAc)_2$, with the mannosyl nonasaccharide $(Man)_9$ as the epitope to interact with this receptor.[1]

Recently, our research group reported a convergent, fast, straightforward, high yield and large amount accessible synthesis of Man_9 epitope.[2] In spite of this advance, the complexity of Man_9 itself has impeded a deep analysis of its interaction with DC-SIGN. In this sense, fluorination of carbohydrates is becoming one of the most used strategies in glycoscience to investigate protein-carbohydrate interactions at the molecular level owing to favourable NMR properties of the ^{19}F nucleus.[3]

Herein, we proposed the convergent, and straightforward synthesis of fluorinated Man_9 as chemical probe for DC-SIGN molecular recognition studies. In particular, using ^{19}F STD NMR experiments, we could gain insights at molecular level of the binding of the natural epitope to the carbohydrate recognition domains of DC-SIGN.



Bibliographic references:

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