EN ROUTE TO *NEISSERIA MENINGITIDIS* SEROGROUP Y FULLY SYNTHETIC VACCINE CANDIDATES

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Neisseria meningitidis bacteria are gram-negative diplococci that colonize mainly mucosal surfaces of the upper human respiratory tract. This pathogenic organism is responsible for meningitis and septicemia, which even today raise mortality in children as well as in young adults worldwide. Serotype Y ranks amongst the clinically most relevant strains, due to its highly invasive pathogenesis and widespread abundancy. [1] [2] [3]

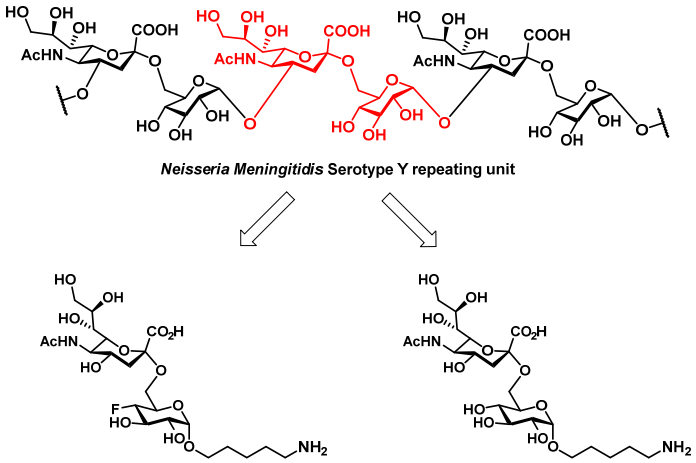

Figure 1: Capsular polysaccharide repeating unit, natural and fluorinated *Neisseria meningitidis* antigen fragments.

Vaccines based on carbohydrate antigens often lack a satisfying intrinsic immunogenicity and are prone to *in vivo* metabolic degradation. However, fluorination provides an attractive strategy to overcome these drawbacks as fluorinated carbohydrates are presumed to provide enhanced stability regarding enzymatic glycosidic bond cleavage, while maintaining the properties of the natural congener. Furthermore fluorinated mimics usually seem more foreign to the immune system since fluorine atoms are absent from most organisms. [4] [5] [6]

Herein, the synthesis of a disaccharide antigen fragment of *Neisseria meningitidis* serogroup Y and its fluorinated analogue is introduced. Both fragments comprise an aminopentyl handle to allow for construction of fully synthetic vaccine candidates.

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[1] N. G. Rouphael, D. S. Stephens, *Meth. Mol. Biol.* **2012**, *799*, 1-20.

[2] P. C. McCarthy, A. Sharyan, L. Sheikhi Moghaddam, *Vaccines* **2018**, *6*, 1-12.

[3] D. S. Stephens, *FEMS Microbiol. Rev.* **2007**, *31*, 3-14.

[4] M. Reindl, A. Hoffmann-Röder, *Curr. Top. Med. Chem.* **2014**, *14*, 840-854.

[5] M. Johannes, M. Reindl, B.Gerlitzki, E. Schmitt, A. Hoffmann-Röder, *Beilstein J. Org. Chem.* **2015**, *11*, 155-161.

[6] L. Morelli, L. Poletti, L. Lay, *Eur. J. Org. Chem.* **2011**, *2011*, 5723-5777.