

Technology Offer

Parallel glycan synthesis on a membrane

Ref.-No.: MI 0401-5724-MG

A process for parallel synthesis of glycans on cellulose membranes by using a novel VaporSPOT method and an experimental setup that ensures controlled conditions suitable for glycosylation reactions.

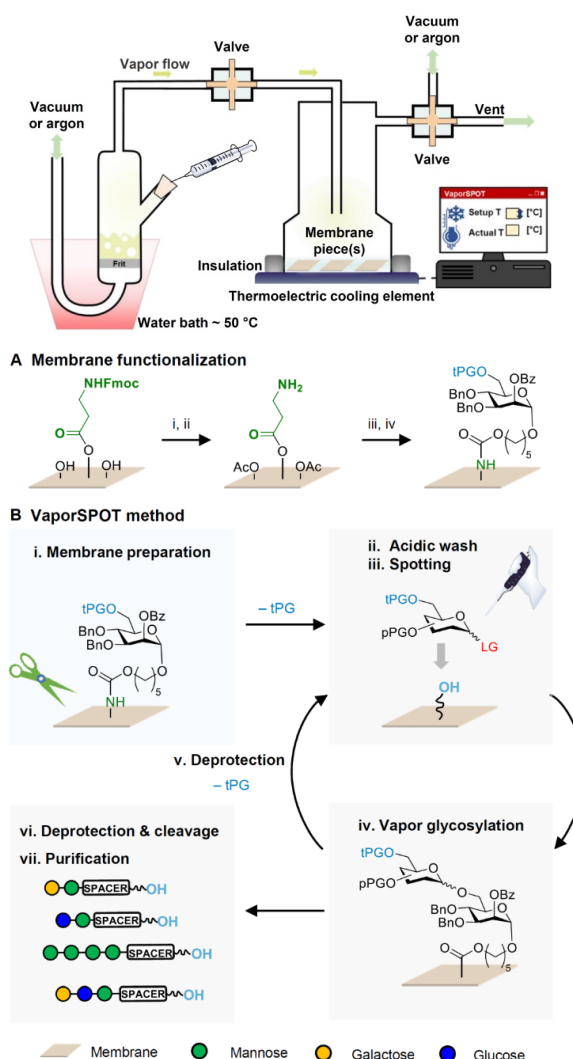
Background

Glycan arrays help to study disease specific biomarkers and provide information for the development of carbohydrate-based vaccines and new drugs. However, structural heterogeneity, complexity, and diversity of glycans often make their isolation from natural sources a cumbersome process. Automated glycan assembly has enabled the successful synthesis of defined and complex synthetic oligosaccharide libraries, but so far is limited to one single oligosaccharide at a time. Parallel synthesis like the SPOT synthesis used to generate peptide libraries, would be more cost- and time-efficient, but remains a major challenge for glycan synthesis due to inert and temperature-controlled glycosylation conditions.

Technology

Scientists from the Max-Planck-Institute of Colloids and Interfaces have developed a process for parallel synthesis of glycans on cellulose membranes by using a novel VaporSPOT method and an experimental setup that ensures controlled conditions suitable for glycosylation reactions. The method offers a flexible and cost-efficient way to rapidly screen glycosylation outcomes of different glycosyl donors in parallel and synthesize oligosaccharides in good purity on micromolar scale. Diffusion or contamination between the different spotted glycosyl donors was ruled out. The VaporSPOT approach is the basis for the development of parallel automated glycan synthesis platforms. The technique may be further expanded to high-throughput glycan array synthesis on functionalized glass slides and can enable even higher parallelization together with automated spotting of building blocks.

We are now looking for either a licensing partner, or a collaboration partner to further develop this project.





Publication

Tsouka et al., 2022. J. Am. Chem. Soc. <https://doi.org/10.1021/jacs.2c07285>

Patent Information

A PCT application was filed on December, 17th 2019: WO2020127391A1. National in EP, US and CA.

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