

Novel carbohydrate microarray platform introduced COCs for on-chip enzymatic glycan synthesis and analysis of specific carbohydrate-protein interaction

히혜령¹, 김창섭^{1,2}, 서정현^{1,2}, 차형준^{1,†}

¹POSTECH; ²Yeungnam University

(hjcha@postech.ac.kr[†])

Synthesizing the specific glycan is important for analysis and understanding of interaction with glycan-binding proteins (GBP). Especially, on-chip enzymatic synthesis of glycan can be efficient and useful tool since this method can directly provide diverse glycans to use for analyzing carbohydrate-protein interaction on the chip. However, efficient identification of yield of the synthesized glycan on the chip remains a major challenge. In this work, we prepared novel carbohydrate microarray platform in which glycan-conjugated single-stranded DNA was synthesized using DNA synthesizer, and the synthesized carbohydrate-oligonucleotide conjugates (COCs) were immobilized onto the complementary single-stranded DNA-modified glass slide. Due to the property of DNA to be possible for reversible hybridization and denaturation under certain condition, we effectively obtained the synthesized glycan on the chip, and optimized the synthesis condition for target glycans. In our study, we anticipate that this novel carbohydrate microarray can be successfully used in a number of glycan-related studies and applications.