

GLYCOANALYSIS OF CELL MEMBRANE PROTEINS ON A LECTIN ARRAY

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Abstract

Protein glycosylation often plays important structural and functional roles in many biological processes. Hence, exploring glycan structures on proteins is a major interest for understanding these processes in cells and body fluids. Procognia has developed a lectin-array based technology for analyzing the glycan composition of glycoproteins. The technology does not require lengthy sample preparation, nor high analytical laboratory skills as with chromatographic and MS- based methods. The first product developed from this technology is a platform for glycoanalysis of therapeutic proteins, the GlycoScope. This product provides accurate, quantitative glycoanalysis for single proteins.

Based on this technology a kit for comparative glycoanalysis of membrane protein extracts from cultured cells was developed. The kit enables the assessment of differences in glycosylation patterns of membrane proteins from two comparable cell populations such as before and after drug treatment, before and after differentiation, metastatic and non-metastatic cancer cells and others. The kit contains a knowledge-based algorithm that compares the lectin binding fingerprints of the two populations to produce a list of changes in glycan epitopes (for example an increase in sialic acid). The applicability of this technology will be demonstrated using various biological systems such as cells treated with well characterized glycosylation inhibitors, cells exposed to the ER stress inducing agent, Brefeldin, reported to affect cellular protein glycosylation and cells subjected to adipogenic differentiation.

Keywords: glycosylation glycoprotein lectin microarray cell-state

Key references:

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