

sciFLEXARRAYER Application Note  
No. 08011

Carbohydrate Microarray for the Detection of Antibodies in Human Serum

Carbohydrate specific antibodies play an important role in human disease. For example, the glycans on the surface of infectious microorganisms elicit the formation of antibodies. Furthermore, auto-immune diseases like immune thrombocytopenic purpura and neuropathy involve anti-carbohydrate antibodies. Several tumor antigens are glycoproteins as well, like the prostate specific membrane antigen. For diagnostic purposes carbohydrate assays are therefore highly desirable. For a proof of principle, carbohydrate assays printed by Scienion were tested in the Institute for Laboratory Medicine, Clinical Chemistry and Pathobiochemistry of the Charité University Medicine Berlin.

Materials and methods

A selection of glycans was printed on Codelink glass slides with a sciFLEXARRAYER. After incubation with human serum, either anti-human-IgG-HRP or anti-human-IgG-Cy3 antibodies were used for detection (see figures 1 a and 1 b). The arrays were scanned with a sciREADER CL or a Tecan LS Reloaded. Figure 2a and 2c were obtained after incubation with different serum samples.

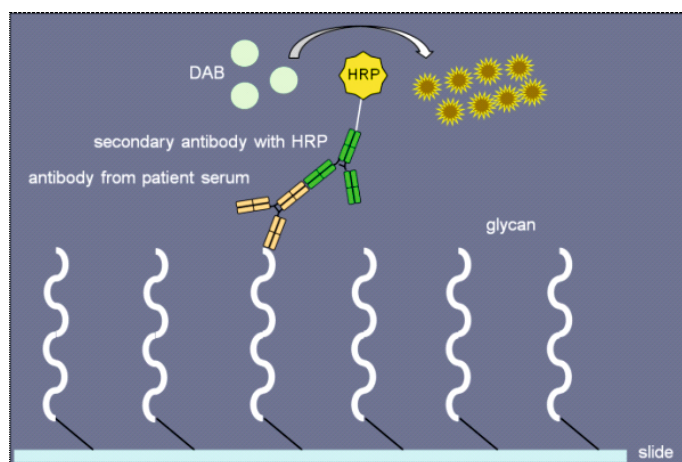


Fig.1a colorimetric detection principle

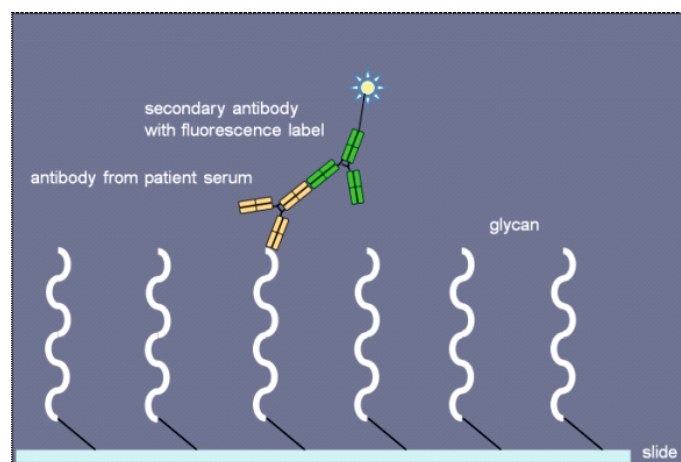
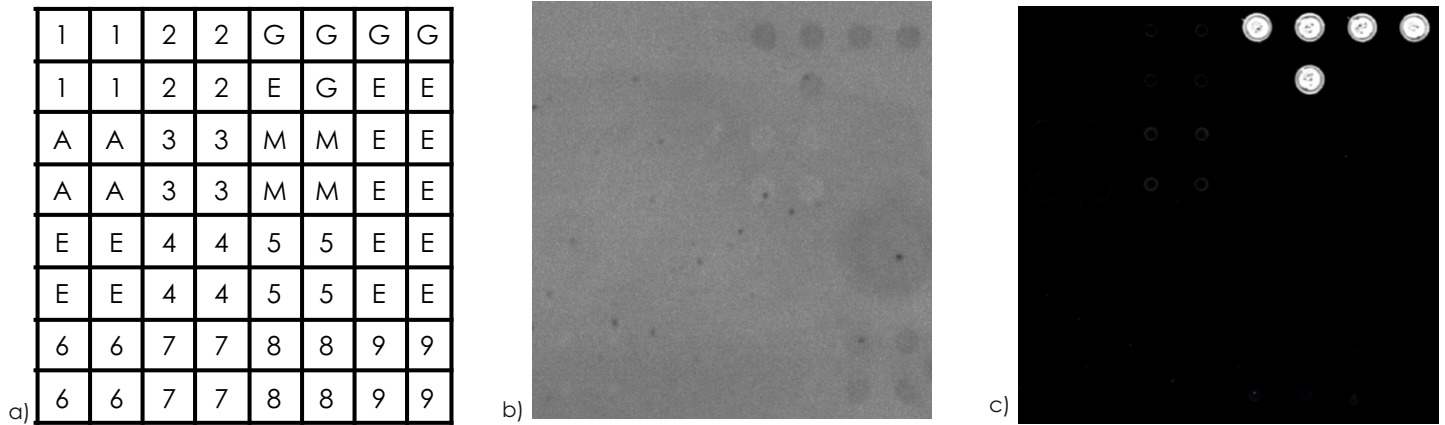


Fig.1b fluorescence based detection principle

Results and discussion

In figure 2a the successful colorimetric detection of bound antibodies can be seen as dark precipitate. The fluorescence signals in picture 2c however are depicted in white. The IgG positive control in the upper right corner was stained as expected. Both, the colorimetric and the fluorescence based method detected the binding of anti-carbohydrate antibodies from human serum to the microarray.



**Fig.2** (a) Carbohydrate array layout: 1-9: carbohydrates, E: empty, G, M, A: IgG, IgM, IgA positive control;  
 (b) Colorimetric detection;  
 (c) Fluorescence based detection

Courtesy of Dr. Christina Hoffmann

This work was performed at Institute for Laboratory Medicine, Clinical Chemistry and Pathobiochemistry of the Charité University Medicine Berlin.

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