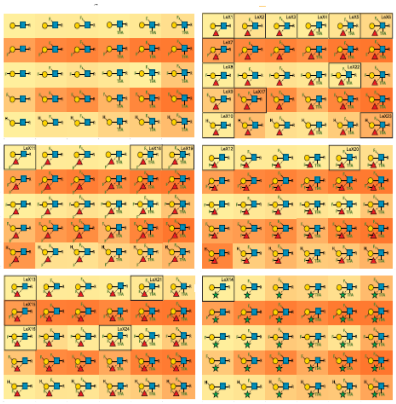

Synthesis and screening of a library of LewisX deoxyfluoro-analogues reveals differential recognition by glycan-binding partners

Description

Glycan-mediated interactions are crucial in biology and medicine, influencing signalling, immune responses, and disease pathogenesis. However, the use of glycans in biosensing and diagnostics is limited by cross-reactivity, as multiple biologically distinct protein receptors can recognise certain glycan motifs. To address this specificity challenge, the authors report the enzymatic synthesis of a 150-member library of site-specifically fluorinated Lewis^{X} analogues (â??glycofluoroformsâ??) using naturally occurring enzymes and fluorinated monosaccharides.

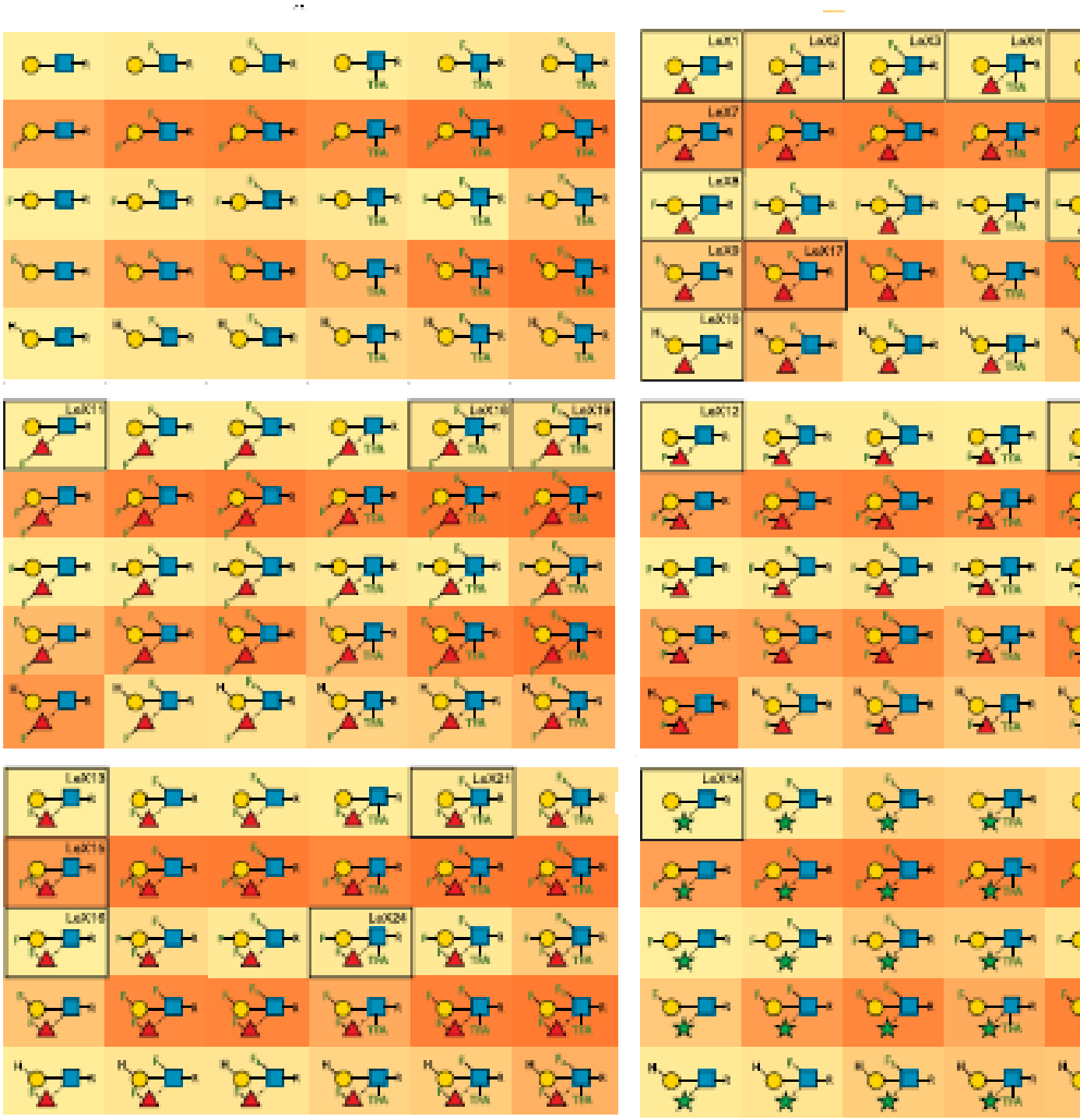

Figure: Ebzymtic synthesis of LewisX analogues https://doi.org/10.1038/s41467-024-51081-7

Subsequent incorporation of a subset of these glycans into nanoparticles or a microarray revealed a striking spectrum of distinct binding intensities across different proteins that recognise Lewis^X. Notably, the authors show that for two proteins with unique binding sites for Lewisx, glycofluoroforms exhibited enhanced binding to one protein, whilst reduced binding to the other, with selectivity governed by fluorination patterns. The work showcases the potential diagnostic utility of this approach in glycofluorofor mediated bacterial toxin detection by lateral flow.

Category

1. News