

EXPLORING GLYCAN MICROARRAYS: ADVANCES AND APPLICATIONS

Glycan microarrays, introduced in the early 2000s, have revolutionized the field of glycobiology by providing a powerful and systematic way to study glycan-protein recognition on a large scale. They offer a high-throughput platform to discover novel interactions and understand biological processes involving carbohydrates.

Glycans can be obtained through chemical or enzymatic synthesis or sourced directly from natural materials. To facilitate their attachment to a support surface, glycans are modified using specialized linkers. These modified glycans are then immobilized onto functionalized slides either covalently or non-covalently. Using robotic printing systems, glycans are precisely spotted onto slides at defined locations.

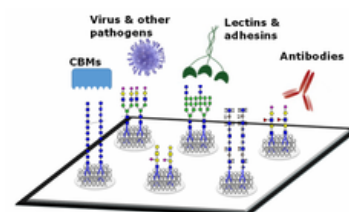
The **NCFG array**, developed by the Consortium for Functional Glycomics and widely used over the past 20 years, features mammalian-type N- and O-glycans—mostly synthetic structures with over 500 unique defined glycans. This widely used resource is available as a service through our core facility.

WHY SHOTGUN GLYCAN MICROARRAY?

Structurally diverse glycans—such as N-glycans extracted from specific tissues—are purified, tagged, and stored in a Tagged Glycan Library (TGL), preserving their natural diversity.

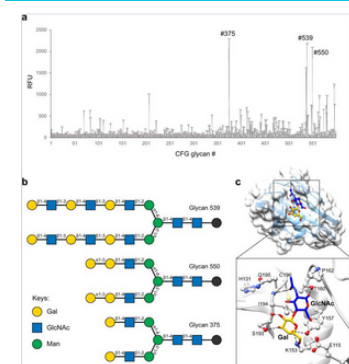
- **Discovery-Oriented:** The shotgun array approach enables the identification of novel and unexpected glycan structures recognized by natural glycan-binding proteins (GBPs).
- **Natural Relevance:** Since glycans are derived from biological sources, these arrays offer highly relevant insights into protein-glycan interactions as they occur in nature.
- **Expanded Diversity:** This method greatly increases the range of glycans available on microarrays, overcoming the limitations posed by synthetic methods for complex natural structures.

TECHNOLOGY HIGHLIGHT



From <https://www.creative-proteomics.com/services/glycan-microarray-assay.htm>

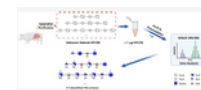
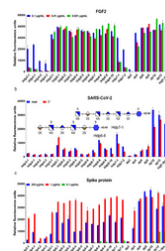
NCFG ARRAY



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HEPARIN /HEPARAN SULFATE (HP/HS) ARRAY

- HP/HS are characterized by heterogeneous sulfation motifs, uronic acid epimerization (GlcA/IdoA), and variations in N-acetyl and N-sulfo groups.
- Structures of 17 natural HP/HS glycans separated from porcine intestinal mucosa, and their glycan microarray data further validated the structural accuracy.



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