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Biomarker discovery in diabetes mellitus and lipid metabolism: multi-platform glyco(proteo)mic approaches

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Citation
Demus, D. A. (2024, October 1). *Biomarker discovery in diabetes mellitus and lipid metabolism: multi-platform glyco(proteo)mic approaches*. Retrieved from https://hdl.handle.net/1887/4093481

Version:	Publisher's Version
License:	Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden
Downloaded from:	https://hdl.handle.net/1887/4093481

Note: To cite this publication please use the final published version (if applicable).

Stellingen behorende bij het proefschrift getiteld

Biomarker discovery in diabetes mellitus and lipid metabolism:

Multi-platform glyco(proteo)mic approaches

1. Liquid chromatography (LC) is a gold-standard method in clinical glycomics and several studies since 2013 have indicated its potential in differentiating patients with HNF1A MODY by measuring *N*-glycan antennary fucosylation levels of blood plasma protein. Nevertheless, the implementation of LC methods in public diagnostic laboratories remains insufficient, hindering the translation of glycan biomarkers into clinical practice. (this thesis)
2. The plate-based assay developed for identifying HNF1A-MODY shows comparable diagnostic power and superior throughput to liquid chromatography-based approaches. Despite this, it may never be available in clinics. (this thesis)
3. Reporting detailed data quality metrics adds a significant value to research discoveries in the omics field, yet it is not a standard practice. Collecting large datasets without these critical metrics will not facilitate inter-laboratory evaluations assessing both diagnostic and technical performance of biomarkers. (this thesis)
4. GWAS: not a tell-us-all but a powerful complementary tool to analytical strategies. When combined with glycomics data, GWAS allows studying the functional manifestations of genetic variants. (this thesis)
5. In Vitro Diagnostic (IVD) regulations serve to ensure safety and performance, however, they are a major bottleneck in translating novel glycan-based biomarkers into clinics. Broader adoption of glycophenotype characterization would be a key milestone in personalized medicine.

6. A more in-depth understanding of inflammatory events that affect glycosylation profiles and have a potential influence on the biomarker's performance is needed.
7. Data processing poses a significant bottleneck in large-scale omics studies, highlighting the urgent need for tailored data-processing tools.
8. Personalized and precision medicine are often used interchangeably, but it is crucial to acknowledge their distinct differences.
9. The slow adoption of novel analytical approaches emerging from academia by industrial sectors is driven by multiple factors, with applicability and sustainability often being the primary concerns rather than technological potential.
10. 3D - In the relationship between academia, industry, and society, we must reject the concept of giver and taker.
11. Quality and quantity do not have to be conflicting objectives in the race of winning, which depends on how we individually define "winning".
12. Designing the cover of a PhD thesis is a scientific outreach activity.