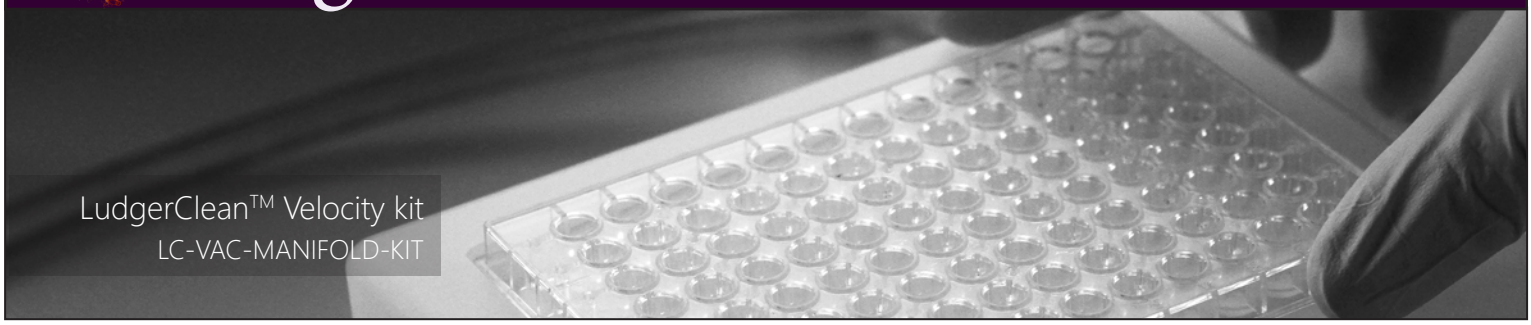
Ludger News

January/February 2022



HNF1A-MODY biomarker detection using Ludger plate-based assay

Ludger has successfully published an article in **Glycobiology journal** on the *"Development of an exoglycosidase plate-based assay for detecting α1-3,4 fucosylation biomarker in individuals with HNF1A-MODY"*

Maturity-onset diabetes of the young (**MODY**) is a rare **type of diabetes** caused by an autosomal-dominant **mutation** in the **single gene**, hepatocyte nuclear factor-1 alpha (**HNF1A)**, which is involved in regulating β-cell development and insulin secretion. Studies have demonstrated that **decreased α1-3 and α1-4 fucosylation of N-glycans** in **blood plasma proteins** can be used as a **biomarker for detection of MODY** using liquid chromatography methods. However, its implementation requires a simpler analytical approach as the relatively lower throughput and high costs of LC-based methods make them unsuitable for clinical practice.

In this article, our scientists –**Daniel Demus**, **Paulina Urbanowicz**, **Dr Richard Gardner**, and **Dr Daniel Spencer**– and collaborators have successfully used Ludger plate-based assays for identifying **MODY** patients using blood plasma samples. The assay has been optimised and its validity tested using 1000 clinical samples from a cohort of individuals with young-adult-onset diabetes including cases with **HNF1A-MODY**. The **α1-3,4 fucosylation** levels in blood plasma showed a good differentiating power in identifying cases with damaging **HNF1A** variants, as demonstrated by receiver operating characteristic curve analysis with the **AUC values of 0.87 and 0.95**.

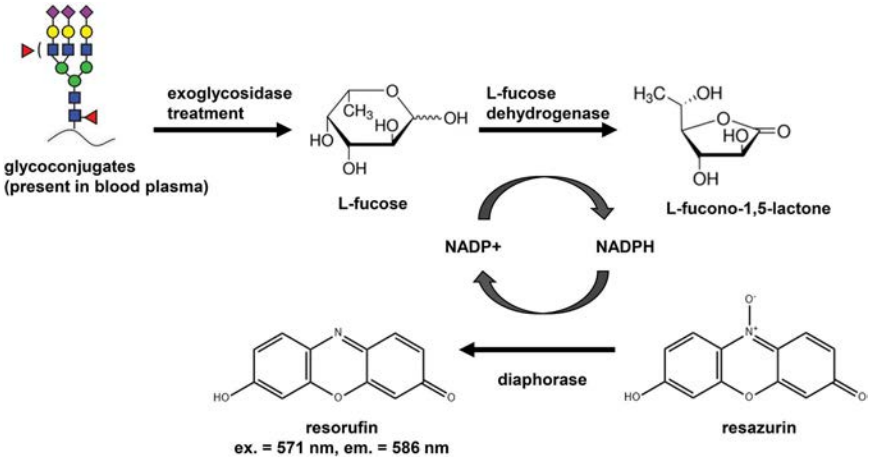


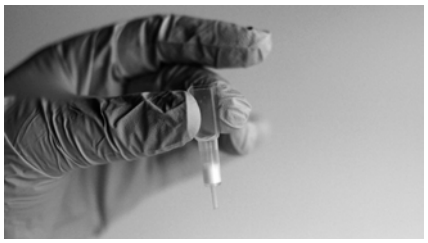
Fig 1. Schematic of the enzymatic redox reaction resulting in the formation of fluorescent product resorufin that forms the detection mechanism of the exoglycosidase plate-based assay.

At **Ludger**, we are excited about sharing this work with our scientific community and hope this can contribute to the development of simpler diagnostic tests that help reduce misdiagnosis and improve the life of **HNF1A-MODY** patients.

Visit **our website** to find more information on **LudgerZyme α(1-3,4) Fucosidase Kit** used in this article or contact us at **info@ludger.com**

Full article available at **Glycobiology journal**.

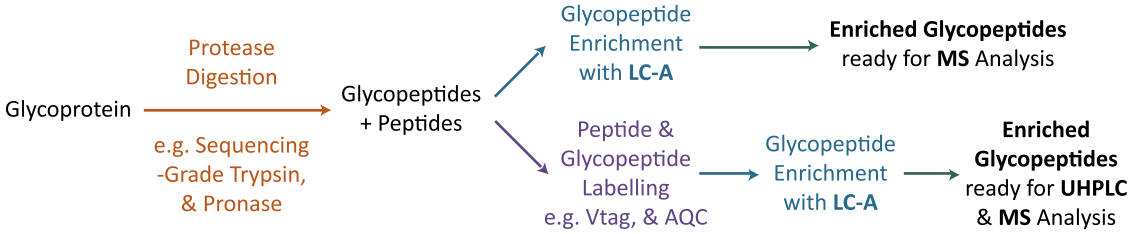
LudgerClean A cartridges for glycopeptide enrichment



LudgerClean-A technology removes residual non-glycosylated peptides that interfere with your **MS analysis**

Use **LC-A cartridges (LC-A-24)** to consistently enrich both **unlabelled** and **labelled** samples after **protease digestion**.

Follow our **UHPLC** and **MS workflows** for high-quality and consistent results.



LC-A cartridges are used by world-leading biopharmaceutical companies. At Ludger, they are used for both internal research projects and daily quality control due to its robustness and efficacy. See our **MALDI-MS** profiles below.

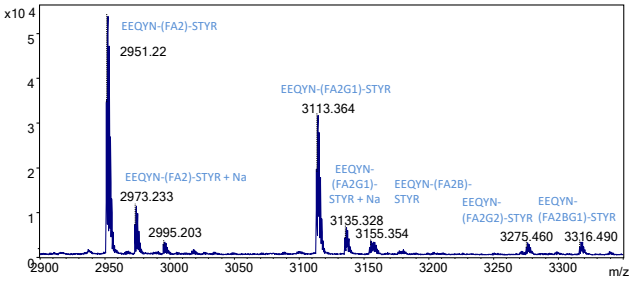


Fig 2. MALDI-MS profile - V-TAG IgG1 sample after LC-A enrichment

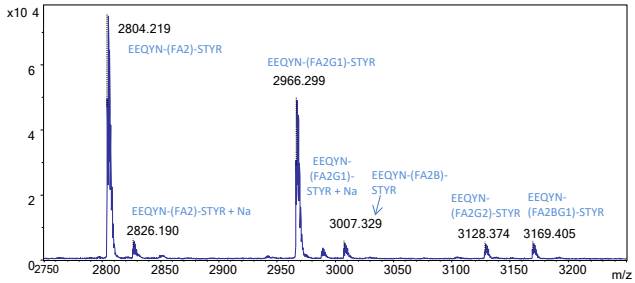


Fig 3. MALDI-MS profile - AQC IgG1 sample after LC-A enrichment

For more information visit our **LC-A-24 feature page**. And visit **our website** to know more about glycopeptide preparation, labelling and analysis. Our team of experts have prepared a list of materials that will guide you through the process.

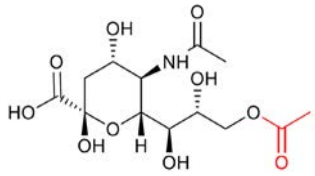
If you require additional information or support, please contact us at **info@ludger.com**

Neu5,9Ac2 and Neu4,5Ac2 synthesis for Biomedical research

Ludger scientific team –**Jack Cheeseman**, **Dr Concepcion Badia**, **Dr Richard Gardner**, and **Dr Daniel Spencer**– have published an article on *"Quantitative Standards of 4-O acetyl and 9-O acetyl N-acetyl Neuraminic Acid for the Analysis of Plasma and Serum"* in **Chembiochem journal**. This work was the culmination of our long-term collaboration with **The University of Reading** and it details the synthesis of **O-acetylated sialic acid** derivatives of low commercial availability.

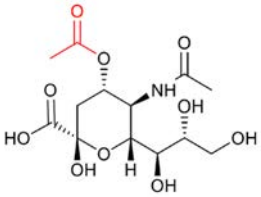
Neu5,9Ac2 has been identified as a potential biomarker for **oral and breast cancers**; however, advances in analysis have been hampered due to a lack of commercially available quantitative standards. In this article, **Ludger scientists** report the optimised synthesis of 9-O-acetyl and 4-O-acetyl sialic acids (**Neu5,9Ac2** and **Neu4,5Ac2**) and demonstrate the utilisation of these derivatives for the **identification** and **quantification** of specific **acetylated sialic acid** derivatives in biological samples.

At Ludger, we offer **a range of sialic acid standards** and **a fluorometric sialic acid quantitation kit (LT-KDMB-A1)** that allows you to obtain information on the relative levels of the N-acetyl, N-glycolyl and O-acetyl sialic acids. These standards and kit can be used for **biomarker studies** as well as in **QC** to monitor batch-to-batch variation, and/or for **comparability studies** of your glycoprotein therapeutics. For more information, please contact us at **info@ludger.com**



Neu5,9Ac2

Cat. no. **CM-NEU5,9AC2-01**



Neu4,5Ac2

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