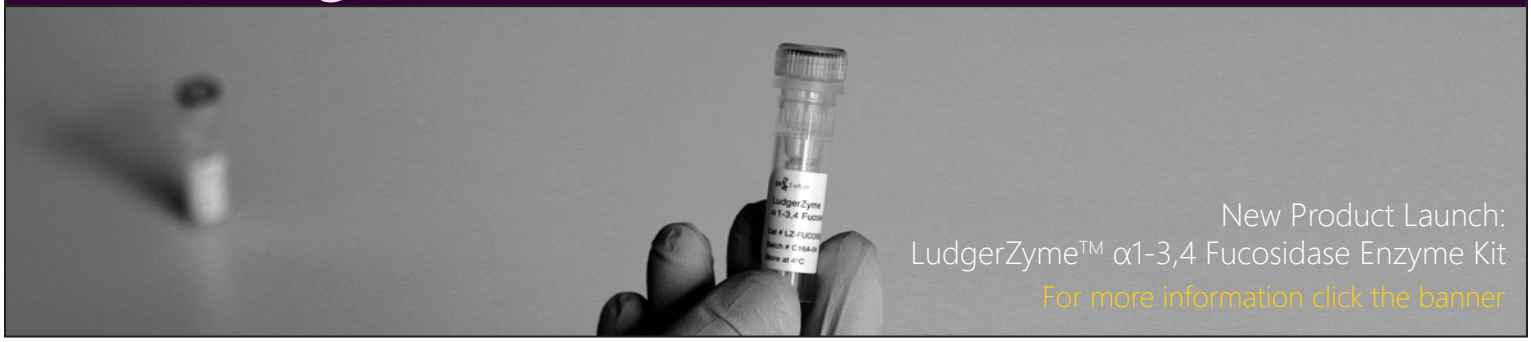
Ludger News

September/October 2021



Announcing the Launch of a New Ludger Website

We are delighted to announce an extensive update to www.ludger.com, now designed to responsive standards to improve the user experience (UX) for our visitors on whichever device you are using.

We aimed to provide: improved content, enhanced visual design, improved navigation to better the UX and to make it easier to learn about Ludger's product and service offerings. To note, alongside our Services enquiry form, we have added an additional form to our Products webpage to make it easier for you to request quotes and product information.

We sincerely hope you enjoy your experience navigating through our updated webpages. Your feedback is very important and appreciated in our development process, so please be in touch with any comments to info@ludger.com

Publication in Glycoconjugate Journal

A successful collaboration between Ludger and Leiden University Medical Centre, as part of the Horizon 2020 GlyCoCan grant, resulted in the publishing of an article in Glycoconjugate Journal titled "***A semi-automated, high throughput approach for O-glycosylation profiling of in vitro established cancer cell lines using MALDI-FT-ICR MS***".

The study of protein O-glycosylation is important in biological research as alterations in O-glycosylation are involved in the development and progression of cancer. However, the O-glycosylation analysis of large numbers of samples is often challenging. In this study, O-glycans from human colorectal cancer cell lines and human pancreatic cancer cell lines were used to optimise and evaluate the semi-automated, high throughput reductive β-elimination release, recovery, and analysis of O-glycans. (Figure 1) The use of ultrahigh resolution MALDI-FTICR MS, with higher resolving power and mass accuracy, coupled with automated data integration and processing using MassyTools, enabled a total of 126 O-glycan compositions, ranging from a single monosaccharide to large oligosaccharides, to be detected. This high throughput approach can be used for the O-glycosylation analysis of large numbers of biological samples, such as patient sample cohorts, being able to produce accurate, reliable and repeatable data for the identification and quantitation of O-glycans.

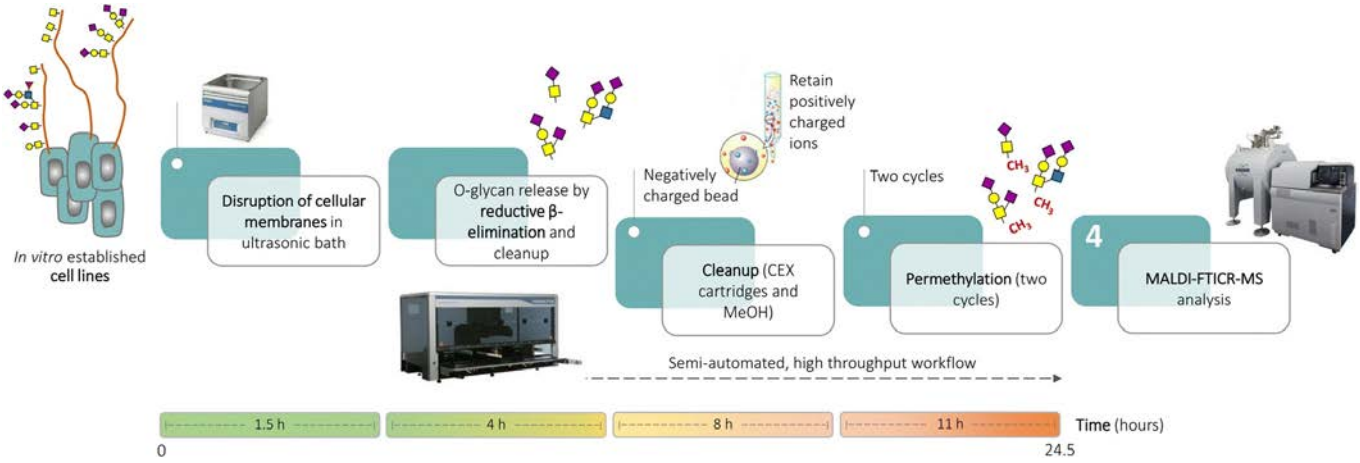


Figure 1. Workflow for semi-automated, high throughput reductive β-elimination, coupled to ultrahigh resolution MALDI-FT-ICR MS for O-glycosylation analysis of in vitro established cell lines

To find out about different release methods for O-glycans please visit our Glycan release kits page and visit our Permethylation webpage for more information on how to derivatise O-glycans for analysis using MALDI-MS platform. For more information about this article visit our Publications webpage.

Publication in Journal of Biotechnology

Successful collaboration between Ludger and School of Biological Sciences, University of Concepcion, Chile, resulted in publishing an article in Journal of Biotechnology titled "***Expression and characterization of a novel single-chain anti-vascular endothelial growth factor antibody in the goat milk.***"

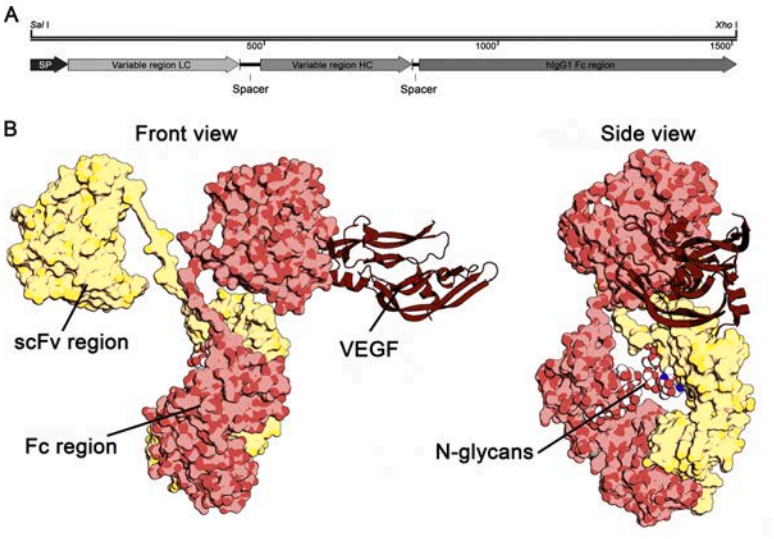


Figure 1. Scheme of chimeric molecule scVEGFmAb. (A) Gene construction and (B) Structural Model

Vascular endothelial growth factor (VEGF) has essential functions in angiogenesis, endothelial cell proliferation, migration, and tumor invasion. Different approaches have been developed to suppress tumor angiogenesis, which is considered a hallmark of cancer. Anti-VEGF monoclonal antibodies constitute an important strategy for cancer immunotherapy, which has been produced on several platforms. In this study, a novel single-chain anti-VEGF monoclonal antibody (scVEGFmAb) was produced in the goat mammary gland by adenoviral transduction. The N-glycans were released from goat IgG and scVEGFmAb and analysed by orthogonal techniques such as UHPLC, LC-ESI-MS and exoglycosidase digestions providing detailed information about their structures and relative abundances. The N-glycans attached to scVEGFmAb backbone were mainly neutral biantennary core fucosylated with Galβ1,4GlcNAc motif, and charged structures were capped with Neu5Ac and Neu5Gc (See figure 2). These results demonstrated for the first time the feasibility of producing an anti-VEGF therapeutic antibody in the milk of non-transgenic goats with the potential to counteract tumor angiogenesis.

Ludger's contribution to this study included:

- Help with the study design and strategy for N-glycan analysis
- Release of N-glycans from goat IgG and a single-chain anti-VEGF monoclonal antibody (scVEGFmAb)
- N-glycan profiling and characterisation using orthogonal techniques such as UHPLC, LC-ESI-MS and exoglycosidase digestions
- Supporting the visual reporting of structures and nomenclature of glycans identified in the study

To find out how to utilise enzymes in glycan characterisation visit our Exoglycosidase enzyme page.
Visit our Procainamide webpage for more information on how to characterise glycans using LC-MS.
And for more information about this article visit our Publications webpage.

Review Published in Biomarkers in Medicine Journal

A successful collaboration between Ludger and the School of Pharmacy, University of Reading has resulted in publishing a review titled "***Sialic acid as a potential biomarker for cardiovascular disease, diabetes and cancer***" by Jack Cheeseman (an Industrial PhD student funded by the MRC and supervised by Prof. Helen Osborn and Dr. Daniel Spencer). This review covers the literature published for the use of sialic acid as a biomarker for several diseases including Cardiovascular disease (CVD), diabetes and cancer that pose increasing global healthcare burdens. The article reviews the use of total sialic acid (TSA), bound sialic acid (BSA) and free sialic acid (FSA) as potential biomarkers for these diseases and makes a comparison with existing markers. Elevated sialic acid has been shown to be indicative of the pathogenesis of CVD, diabetes and malignant tumors. While not a specific marker for one disease there is promise in utilizing sialic acid as a marker for monitoring disease progression and effectiveness of treatment programs. For more information view our publications page.

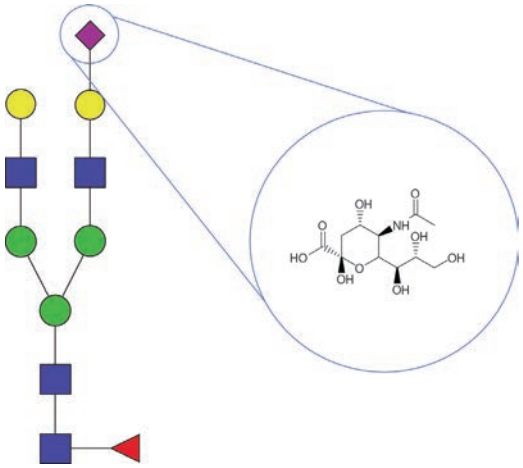


Figure 1. N-acetylneuraminic acid (sialic acid) and its position as part of a complex glycan

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