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

Demus, D.A.

Curriculum vitae

Daniel A. Demus was born on the 2nd of February 1991 in Lubaczów, Poland. He pursued his passion for biomedical science during an undergraduate degree program, earning a Bachelor of Engineering in Biotechnology with a specialization in biomaterials and biophysical approaches for nanostructure research at Rzeszów University in Poland in 2014. Subsequently, he continued his education by enrolling in the Master of Science in Biotechnology program at the University of Life Sciences in Lublin, Poland.

Daniel gained his initial industrial experience in a GMP-regulated department at Merck, Germany, in 2014, during a one-year internship during his Master's degree. This experience provided him with a solid understanding of quality control and processes within a large organization. He successfully completed his Master of Science in Biotechnology degree in June 2016, with his master's thesis focusing on whole cell proteome profiling of bacterial species isolated from poultry, utilizing MALDI-TOF mass spectrometry. This research was part of collaborative efforts between the Biotechnology and Veterinary faculties of the University of Life Sciences in Lublin and external partners, aiming to advance the development of animal vaccines.

With a growing interest in the application of mass spectrometry in biomedical science, Daniel joined Ludger in Oxford, UK, in February 2017, as part of the European Industrial Doctorate training program "GlySign" (www.glysign.eu). This program was initiated in collaboration with Leiden University Medical Centre (LUMC), Netherlands, and Genos, Croatia. He conducted research projects studying glycan-based stratification biomarkers in diabetes mellitus and was involved in other GlySign network projects addressing cancer and autoimmune diseases. He participated in annual network meetings and completed a 12-month secondment at LUMC between 2018 and 2019. The highly collaborative nature of the network, bridging academia and industry, provided him with extensive experience in the development and optimization of analytical methods for glycosylation and glycoproteomics analysis in large clinical

sample cohorts, with a focus on method robustness, data quality, and compliance with good clinical practice.

In March 2022, Daniel joined a large molecule characterization team as a senior scientist at Lonza in the UK, gaining an opportunity to explore the biologics field in a manufacturing organization. His next career move within the industry was taking on the role of an analytical lead for biologics at GSK in the UK.

Daniel holds major interests in translational research, precision medicine, biomedical innovations, biologics discovery, and evidence-based wellness.

List of publications

1. **Demus D**, Jansen BC, Gardner RA, Urbanowicz PA, Wu H, Štambuk T, Juszczak A, Medvidović EP, Juge N, Gornik O, Owen KR, Spencer DIR. *Interlaboratory evaluation of plasma N-glycan antennary fucosylation as a clinical biomarker for HNF1A-MODY using liquid chromatography methods*. **Glycoconj J. 2021** Jun;38(3):375-386. doi: 10.1007/s10719-021-09992-w. Epub 2021 Mar 25. PMID: 33765222; PMCID: PMC8116301.
2. **Demus D**, Urbanowicz PA, Gardner RA, Wu H, Juszczak A, Štambuk T, Medvidović EP, Owen KR, Gornik O, Juge N, Spencer DIR. *Development of an exoglycosidase plate-based assay for detecting α1-3,4 fucosylation biomarker in individuals with HNF1A-MODY.* **Glycobiology. 2022** Mar 30;32(3):230-238. doi: 10.1093/glycob/cwab107. PMID: 34939081; PMCID: PMC8966479.
3. **Demus D**, Naber A, Dotz V, Jansen BC, Bladergroen MR, Nouta J, Sijbrands EJG, Van Hoek M, Nicolardi S, Wuhrer M. *Large-Scale Analysis of Apolipoprotein CIII Glycosylation by Ultrahigh Resolution Mass Spectrometry.* **Front Chem. 2021** May 7;9:678883. doi: 10.3389/fchem.2021.678883. PMID: 34026735; PMCID: PMC8138127.
4. Naber A, **Demus D**, Slieker R, Nicolardi S, Beulens JWJ, Elders PJM, Lieverse AG, Sijbrands EJG, 't Hart LM, Wuhrer M, van Hoek M. *Apolipoprotein-CIII O-Glycosylation, a Link between GALNT2 and Plasma Lipids.* **Int J Mol Sci. 2023** Oct 2;24(19):14844. doi: 10.3390/ijms241914844. PMID: 37834292; PMCID: PMC10573541.
5. Naber A, **Demus D**, Slieker RC, Nicolardi S, Beulens JWJ, Elders PJM, Lieverse AG, Sijbrands EJG, 't Hart LM, Wuhrer M, van Hoek M. *Apolipoprotein-CIII O-Glycosylation Is Associated with Micro- and Macrovascular Complications of Type 2 Diabetes.* **Int J Mol Sci. 2024** May 14;25(10):5365. doi: 10.3390/ijms25105365. PMID: 38791405; PMCID: PMC11121677.

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A learning and growing journey. Thank you!