

Dear Faculty, Postdocs & Grad students,

This Friday the Department of Chemistry will welcome **Professor John Klassen** from the **University of Alberta**, who will give the next Colloquium Series talk.

Please see the details below:

Date: Friday, October 13, 2023 at 10:00 am

Title: Native Mass Spectrometry Tools for Glycomics

Host: Professor Prof. Mark Nitz

Location (in person): Davenport East, 3rd Floor, (Room 380) [Lash Miller Building](#)

Location (virtual): Join Zoom Meeting <https://utoronto.zoom.us/j/86092773171>
Meeting ID: 860 9277 3171 Passcode: 802024

Abstract: Native mass spectrometry (nMS) electro-spray ionization (ESI)-MS carried out under physiological solution conditions with experimental/instrumental parameters that preserve the non-covalent interactions present in solution has become an indispensable tool in glycomics research. When performed with the catch-and-release (CaR)-ESI-MS technique, nMS serves a sensitive, label-free method for screening glycan libraries (defined and natural) against glycan-binding proteins (GBPs) and accelerates the discovery of ligands and provides new insights into the fine glycan specificity of endogenous and exogenous GBPs. When combined with model membranes, such as nanodiscs, nMS allows for the detection of glycosphingolipid ligands and the quantification of their interactions with GBPs. Implementation of nMS in a time-resolved manner enables the precise measurement of the kinetics and substrate specificities of carbohydrate-active enzymes (CAZymes). This talk will review recent advances in nMS methods for natural glycan library screening (concentration-independent (COIN) nMS) and quantification of glycan/glycoconjugate interactions with GBPs (slow-mixing mode (SLOMO) nMS). New methods capable of quantifying the relative substrate specificities of CAZymes will also be presented, together with examples of how this information can be exploited for precision glycoengineering and cancer diagnostic applications.



Bio: John S. Klassen received a BSc (Honours) in chemistry from Queen's University in 1991. He pursued his doctoral research under the supervision of Professor Paul Kebarle at the University of Alberta and obtained his PhD in 1996. From 1996 to 1997 he was a NSERC postdoctoral fellow at the University of California at Berkeley in the lab of Professor Evan Williams. In 1998, he returned to the University of Alberta as an Assistant Professor. He was promoted to Associate Professor in 2004 and Professor in 2008. In 2004 he became a Principal Investigator in the Alberta Glycomics Centre and, in 2015, was appointed Scientific Director of the Centre. He has

been an Investigator in the Canadian Glycomics Network (GlycoNet) since 2015 and leads the Glycan Screening Node of GlycoNet Integrated Services, a CFI Major Science Initiative. He has served on the editorial boards of the International Journal of Mass Spectrometry and the Journal of the American Society for Mass Spectrometry. His research primarily focuses on the development and application of native mass spectrometry to study biomolecular interactions, with an emphasis on the discovery and characterization of protein-glycan interactions implicated in human health and disease. His work also aims to elucidate the influence of glycosylation on protein function, to precisely quantify carbohydrate-active enzyme kinetics and substrate specificities and to establish the connections between glycosylation dysregulation and disease. He has co-authored over 160 journal articles and book chapters. His contributions to the fields of mass spectrometry and bioanalytical chemistry have been recognized with an American Society for Mass Spectrometry Research Award (2000), the Canadian Society for Mass Spectrometry Award (2004), a Petro-Canada Young Innovator Award (2004) and the Ron Hites Award (2015) from the Journal of the American Society for Mass Spectrometry. In 2011, he received the F.P. Lossing Award for distinguished contributions to mass spectrometry in Canada and was a co-recipient of NSERC's prestigious Brockhouse Canada Prize for Interdisciplinary Research in Science and Engineering.

This seminar will be hosted by Prof. Mark Nitz will be in-person and virtual (hybrid). The talk will also be recorded. Please send your request for a recording to chem.reception@utoronto.ca.

All are encouraged to attend!

Best regards,

Keisha