SEMINAR

David C. Muddiman, Ph.D.
Jacob and Betty Belin Distinguished Professor

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and

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TITLE: Innovations in Chemistry and Mass Spectrometry Platform Technologies and Their Application to Diverse Biological Problems

DATE: Thursday, August 1, 2019
TIME: 4:00pm
ROOM: Michael Smith Lecture Hall (MSL 102)

HOSTS: Robin Turner (2-6132) *turner@msl.ubc.ca*
David Chen (2-0878) *chen@chem.ubc.ca*

Abstract

Mass spectrometry offers a versatile and robust platform to discover and characterize new diagnostic, prognostic, and therapeutic biomarkers for disease, elucidate and understand pathways including protein-protein interactions, visualize endogenous and exogenous compound distributions in tissues via mass spectrometry imaging, and characterize post-translational modifications. Moreover, a transOMIC approach will allow the underlying biology to be defined, enabling modeling of pathways and identify potential drug targets. This presentation will cover a diverse range of biological questions from a systems biology approach to lignin biosynthesis and fluxomics, a glycomics approach to epithelial ovarian cancer and Alzheimer's Disease, to imaging of HIV drug distributions in tissues. These approaches are made possible by innovations in chemistry and novel ionization sources developed in our laboratory. The fundamentals of these strategies will be integrated throughout the presentation.

Biography

David C. Muddiman is the Jacob and Betty Belin Distinguished Professor of Chemistry and Director, Molecular Education, Technology, and Research Innovation Center (METRIC) at North Carolina State University in Raleigh, NC. Prior to moving his research group to North Carolina State University in 2006, David was a Professor of Biochemistry and Molecular Biology and Founder and Director of the Proteomics Research Center at the Mayo Clinic College of Medicine in Rochester, MN. Prior to this appointment, David was an Associate Professor of Chemistry at Virginia Commonwealth University. It was there that he began his professional career as an assistant professor with an adjunct appointment in the Department of Biochemistry and Molecular Biophysics and as a member of the Massey Cancer Center in 1997. These academic appointments followed a postdoctoral fellowship at Pacific Northwest National Laboratory in the Environmental Molecular Sciences Laboratory under Richard D. Smith from 1995-1997. David was born in Long Beach, CA in 1967 but spent most of his formative years in a small town in Pennsylvania. David received his B.S. in chemistry from Gannon University (Erie, PA) in 1990 and his Ph.D. in Analytical Chemistry from the University of Pittsburgh in 1995 under the auspices of David M. Hercules. Dr. Muddiman is Editor of *Analytical and Biological Chemistry* as well as on the Editorial Advisory Board of *Mass Spectrometry Reviews*, *Molecular and Cellular Proteomics*, *Rapid Communications in Mass Spectrometry*, and the *Journal of Chromatography B*. He also serves on the advisory board of the NIH Funded Complex Carbohydrate Research Center, University of Georgia and the Yale/NIDA Neuroproteomics Center, Yale University. Dr. Muddiman has served as a member of the ASMS Board of Directors and Treasurer of US-HUPO; he is currently the Past-President of US HUPO. His group has presented over 625 invited lectures and presentations at national and international meetings including 29 plenary/keynote lectures. His group has published over 275 peer-reviewed papers and has received six US patents. He is the recipient of the 2016 Graduate School Outstanding Graduate Faculty Mentor Award in the Mathematical, Physical Sciences, and Engineering, 2015 ACS Award in Chemical Instrumentation, 2010 Biemann Medal (American Society for Mass Spectrometry), 2009 NCSU Alumni Outstanding Research Award, the 2004 ACS Arthur F. Findeis Award, the 1999 American Society for Mass Spectrometry Research Award, and the 1990-1991 Safford Award for Excellence in Teaching (University of Pittsburgh). Dr. Muddiman's research is at the intersection of innovative mass spectrometry technologies, systems biology, and model organisms for diseases and bioenergy, and is funded by the National Institutes of Health, the National Science Foundation, the Department of Energy, and The United States Department of Agriculture.