Application of Mass Spectrometry for Detecting and Finding Cures to Brain Disorders

Our laboratory has been engaged in research to determine the mechanistic basis of compounds that inhibit protein aggregation found in neurodegenerative disorders, such as Alzheimer’s and Parkinson’s diseases. Protein “native” mass spectrometry, ion mobility, and tandem mass spectrometry are key techniques used in these studies. The role of mass spectrometry and quantitative liquid chromatography/MS (i.e., proteomics) to discover new protein biomarkers for head trauma, i.e., traumatic brain injury (TBI) and how these markers perform in clinical studies will also be highlighted. TBI is an expanding public health epidemic with pathophysiology that is difficult to diagnose and thus treat. TBI biomarkers should assess patients across severities, but currently, their kinetics and specificity are unclear. Our primary objective has been to select candidate neurotrauma biomarkers that are robustly released by trauma and that are brain specific.

Brief biography:
Joseph A. Loo is a Professor in the Department of Chemistry & Biochemistry and the Department of Biological Chemistry, David Geffen School of Medicine, University of California, Los Angeles (UCLA). He is the author of over 300 scientific publications in the areas of protein mass spectrometry and proteomics. Currently he is the Editor-in-Chief for the Journal of the American Society for Mass Spectrometry. Before moving to UCLA, he was an Associate Research Fellow at Parke-Davis Pharmaceutical (currently Pfizer Global Research), Ann Arbor, MI. Dr. Loo received his Ph.D. in analytical chemistry from Cornell University with Professor Fred W. McLafferty, and he carried out research as a post-doctoral fellow, and later as a Senior Scientist, at Pacific Northwest National Laboratory (Richland, WA) with Dr. Richard Smith on the development of electrospray ionization mass spectrometry for protein analysis.

Monday, September 30, 2019
4 p.m.
1220 Chemistry Building