

Institute for integrative Genome Biology Seminar Series

You are cordially invited to attend:

Lan Huang

Professor of Physiology & Biophysics
University of California, Irvine



**"Developing Cross-linking Mass Spectrometry for Interactomics and
Structural Biology"**

Date: Friday, November 4, 2022

Time: 12:00 pm - 1:00 pm

Location: Genomics Auditorium 1102A

Host: Dr. Quanqing Zhang

Abstract: Protein-protein interactions (PPIs) play a key role in defining protein functions in biological systems. Perturbations of PPIs fundamental to the structure and function of protein complexes can cause deleterious effects on cellular activities and thus lead to various human diseases. Thus, detailed characterization of PPIs is not only critical to unraveling molecular details that underlie human pathologies, but also important for identifying potential targets for better therapeutics. In recent years, cross-linking mass spectrometry (XL-MS) have become a powerful structural tool for mapping PPIs and elucidating architectures of large protein complexes. In comparison to standard structural methods, XL-MS offers distinct advantages due to speed, accuracy, sensitivity and versatility, especially for the study of heterogeneous and dynamic protein complexes. Despite its great potential, XL-MS analysis remains challenging due to the difficulty in unambiguous identification of cross-linked peptides. To advance XL-MS studies, we have developed a series of sulfoxide-containing MS-cleavable cross-linkers to enable simplified and accurate identification of cross-linked peptides. Our MS-cleavable reagents have been successfully applied to define global PPIs and elucidate architectures of protein complexes in vitro and in vivo. Here, we will present the development of cross-linking mass spectrometry technologies and their applications to facilitate new biological discoveries.