



DEPARTMENT OF
CHEMISTRY &
CHEMICAL BIOLOGY

December 6, 2019

SMLC 102

4:00 p.m.

COMBINING NATIVE MASS SPECTROMETRY AND NANODISCS TO ANALYZE INTERACTIONS OF MEMBRANE PROTEINS AND ANTIMICROBIAL PEPTIDES WITHIN LIPID MEMBRANES

PRESENTED BY:
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Native mass spectrometry (MS) has emerged as a powerful technique for studying membrane protein oligomeric state and interactions. However, conventional native MS of membrane proteins has relied on detergent micelles, which may distort membrane protein interactions and are unsuitable for assembly of smaller membrane-embedded peptide complexes. We are developing nanodiscs as an alternative membrane mimetic for native MS that provide a native-like lipid bilayer environment with a defined lipid composition. We have discovered that chemical reagents that modulate the ionization conditions allow us to analyze intact nanodiscs with membrane protein and peptide complexes inside. This novel approach allows us to measure the oligomeric state of membrane protein complexes within the intact nanodisc membrane. We are also employing this technique to characterize complexes of antimicrobial peptides and membrane active drugs. Ultimately, we expect this unique combination of nanodiscs and native MS will provide new insights into interactions of biomolecules with and within lipid membranes.

