UC DAVIS HEALTH | SCHOOL OF MEDICINE

Department of
Physiology and Membrane Biology

# Distinguished Lecture Series in Physiology

## Lisa M. Jones, Ph.D.

Chancellor's Associates Endowed Chair in Chemistry and Biochemistry,
Professor, University of California, San Diego

# "In-Cell Protein Footprinting Coupled with Mass Spectometry for Structural Biology Across the Proteome"

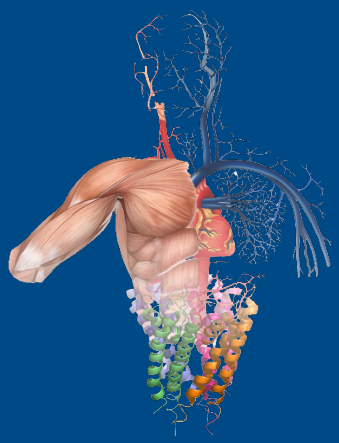
Recent In recent years, protein footprinting coupled with mass spectrometry has been used to identify protein-protein interaction sites and regions of conformational change through modification of solvent accessible sites in proteins. The footprinting method, fast photochemical oxidation of proteins (FPOP), utilizes hydroxyl radicals to modify these solvent accessible sites. To date, FPOP has been used in vitro on relatively pure protein systems. We have further extended the FPOP method for in vivo analysis of proteins. This will allow for study of proteins in their native cellular environment and be especially useful for the study of membrane proteins which can be difficult to purify for in vitro studies. A major application of the in vivo method is for proteome-wide structural biology.

In one such application, we used in-cell FPOP (IC-FPOP) to identify on and off targets of the anti-cancer drug methotrexate in leukemia cells. By obtaining structural information on proteins across the proteome, we were able to distinguish downstream structural changes that occur due to drug treatment. We have further extended the FPOP method for analysis in C. elegans, a member of the nematode family. This allows us to study protein structure directly in animal model for human disease. These methods have the potential to become a powerful tool in the structural biology toolbox.

Thursday, April 18, 2024
GBSF and Zoom
12 p.m.

April
**18**

**Lisa Jones, Ph.D.**
Chancellor's Associates Endowed Chair in Chemistry and Biochemistry, Professor
University of California, San Diego



Host: Jorge Contreras

jecontrer@ucdavis.edu