

**Analytical Organic Chemist**

Dr. Landgraf is an analytical chemistry professional with over 10 years of experience and expertise in analytical method development and mass spectrometry. She is a classically trained mass spectrometrist with the ability to analyze a broad range of compounds from small molecules to proteins utilizing an array of sample preparation techniques with mass spectrometric detection. She has collaborated with nationally recognized companies as well as top tier research organizations.

Education

Ph.D., Analytical Chemistry, University of Florida, 2009

B.S., Chemistry, Texas A&M University-Corpus Christi, 2004

EXPERIENCE**October 2018 to Present: Marine Ventures International, Inc. – Analytical Organic Chemistry Consultant**

- ❖ Method development for CSA Ocean Sciences Inc. for the detection of total petroleum hydrocarbons in sea water using solid phase extraction with fluorescence detection

February 2014 to July 2017: Wildcat Pharmaceutical Development Center – Mass Spectrometry Director, Senior Scientist

- ❖ Project implementation and management for pre-clinical and phase I analytical method development
- ❖ Pharmacokinetic studies for Onyx Pharmaceuticals to determine carfilzomib (MW 719.2 Da) concentrations of a liposomal formulation in mouse tissue by means of SPS extraction and LC-MS/MS detection
- ❖ Pharmacokinetic studies for The University of Texas MD Anderson Cancer Center to determine WP1066 (MW 356.2 Da) concentrations in mouse tissue by means of liquid-liquid extraction and LC-MS/MS detection
- ❖ Feasibility study for The University of MD Anderson Cancer Center for the detection of novel monosaccharides by LC-MS/MS
- ❖ Feasibility study for Mallinckrodt Pharmaceuticals for the detection of hormones in mouse serum by LC-MS/MS
- ❖ Feasibility study for Davos Pharmaceuticals for the detection of heavy and light chains and active pharmaceutical ingredient of the antibody Kadcyla ado-trastuzumab emtansine (MW 148.5 kDa) using bottom-up LC-MS/MS

August 2011 to November 2013: The University of Texas MD Anderson Cancer Center – Research Scientist

- ❖ Lead scientist for pre-clinical and phase I analytical method development and biomarker discovery
- ❖ Pharmacokinetic studies for clinicians using a range of anti-cancer agents in various tissues including 5-azacytidine (MW 244.2 Da), doxorubicin (MW 543.5 Da), nadolol (MW 309.4 Da), histamine (MW 111.2 Da), serotonin (MW 176.2 Da) and adenosine (MW 267.2 Da) by means of liquid-liquid extraction and normal, reverse and HILIC LC-MS/MS

July 2009 to August 2011: The Scripps Research Institute-Florida – Research Associate

- ❖ Collaborating scientist for developing hydrogen/deuterium exchange (HDX) technology
- ❖ Probing the mechanism of action of AMP kinase (MW 134-150 kDa) in collaboration with Pfizer using bottom-up LC-MS/MS
- ❖ Probing the mechanism of action of androgen (MW 110 kDa), estrogen (MW 66 kDa) and progesterone (MW 90 kDa) receptors in collaboration with Baylor College of Medicine using bottom-up LC-MS/MS

August 2004 to May 2009: The University of Florida – Research Assistant

- ❖ Collaborating scientist for method development for the qualitative and quantitative analysis of small molecules and proteins
- ❖ Quantifying lipid content of rat nerve tissue using MALDI imaging MS/MS
- ❖ Studying the effect of carrier gas content of charge states of apo- and holo-myoglobin using FAIMS-MS/MS

ANALYTICAL INSTRUMENT PROFICIENCY

- ❖ Waters Xevo TQS
- ❖ Waters TQD
- ❖ Waters MALDI Synapt G1
- ❖ Thermo LTQ with vMALDI source
- ❖ Thermo hybrid LTQ/Orbitrap with ESI, nESI, and MALDI sources
- ❖ Thermo ExactiveOrbitrap
- ❖ Finnigan LCQ Deca with ESI, nESI, and APCI sources
- ❖ Eksigent Express HT Ultra HPLC
- ❖ Waters Acquity UPLC
- ❖ Agilent 1100 HPLC
- ❖ Leap HTX Twin PAL autosampler
- ❖ Ionalytics beta FAIMS

REPRESENTATIVE PUBLICATIONS

- Landgraf, R.R., D. Goswami, F. R., M. S. Harris, M. F. Calabrese, L. R. Hoth, R. Magyar, B. D. Pascal, M. J. Chalmers, S. A. Busby, R. G. Kurumbail, and P. R. Griffin. 2013. Activation of AMP-activated Protein Kinase Revealed by Hydrogen/Deuterium Exchange Mass Spectrometry. *Structure* 21: 1942-1953.
- Pascal, B. D., S. Willis, J. L. Lauer, R. R. Landgraf, G. M. West, D. Marciano, S. Novick, D. Goswami, M. J. Chalmers, and P. R. Griffin. 2012. HDX Workbench: Software for the Analysis of H/D Exchange MS Data. *Journal of the American Society for Mass Spectrometry* 23: 1512-1521.
- Landgraf, R. R., M. J. Chalmers, and P. R. Griffin. 2011. Automated Hydrogen/Deuterium Exchange Electron Transfer Dissociation High Resolution Mass Spectrometry Measured at Single-Amide Resolution” *Journal of the American Society for Mass Spectrometry* 23: 301-309.
- Landgraf, R. R., T. J. Garrett, M. C. Prieto Conaway, N. A. Calcutt, P. W. Stacpoole, and R. A. Yost. 2011. Considerations for Quantification of Lipids in Nerve Tissue Using Matrix-Assisted Laser Desorption/Ionization Mass Spectrometric Imaging. *Rapid Communications in Mass Spectrometry*. 25: 3178-3184.
- Landgraf, R. R., T. J. Garrett, M. C. Prieto Conaway, Peter W. Stacpoole, and Richard A. Yost. 2009. Imaging of Lipids in Spinal Cord Using Intermediate Pressure Matrix-Assisted Laser Desorption-Linear Ion Trap/Orbitrap MS. *Analytical Chemistry* 81: 8488-8495.
- Landgraf, R. R., T. J. Garrett, N. A. Calcutt, P. W. Stacpoole, and Richard A. Yost. 2007. MALDI-Linear Ion Trap Microprobe MS/MS Studies of the Effects of Dichloroacetate on Lipid Content of Nerve Tissue. *Analytical Chemistry* 79: 8170 – 8175.

ORAL PRESENTATIONS

- Co-author. 2011. Software for the Analysis of Large HDX Datasets. 59th ASMS Conference on Mass Spectrometry and Allied Topics.
- Co-author. 2010. Hydrogen Deuterium Exchange Mass Spectrometry Applied to the Characterization of Proteins of Therapeutic Interest. 58th ASMS Conference on Mass Spectrometry and Allied Topics.

Co-author. 2009. Mass Spectrometric Imaging by MALDI/MS/MS: Bioanalysis and Quantitation. The 2009 Eastern Analytical Symposium.

Presenting Author. Identification and Imaging of Lipids in Spinal Cord using Intermediate Pressure MALDI-LIT/Orbitrap MS. 21st Sanibel Conference on Mass Spectrometry.

Co-author. 2007. MALDI Imaging: Higher Pressures, Ion Trap MSn, and Applications to Lipids"19th Sanibel Conference on Mass Spectrometry

Presenting Author. Effect of Carrier Gas Composition on the Separation of Charge States and Conformers of Intact Proteins by Electrospray Ionization High-Field Asymmetric-Waveform Ion Mobility Spectrometry-Mass Spectrometry. 82nd Florida Meeting and Exposition of the American Chemical Society.

POSTER PRESENTATIONS

2013. Reduced workflow 96 well plate solid phase extraction strategies for the determination of histamine and serotonin in mouse plasma prior to UPLC-ESI-MS/MS" 14th Annual Land O'Lakes Bioanalytical Conference.

2012. HDX Workbench: software for confident analysis of high throughput HDX MS data" 60th ASMS Conference on Mass Spectrometry and Allied Topics.

2011. Hydrogen/Deuterium Exchange Mass Spectrometry Reveals Quaternary Conformational Changes for AMP Activated Protein Kinase upon Binding of Small Molecules" 59th ASMS Conference on Mass Spectrometry and Allied Topics.

2011. Automated Hydrogen/Deuterium Exchange Electron Transfer Dissociation High Resolution Mass Spectrometry Measured at Single-Residue Resolution" 59th ASMS Conference on Mass Spectrometry and Allied Topics.

2011. Hydrogen Deuterium Exchange Measured at Single-Residue Resolution by Electron Transfer Dissociation High Resolution Mass Spectrometry" 23rd Sanibel Conference on Mass Spectrometry.

2010. Investigation of the Protein Dynamics of AMP-Activated Protein Kinase with Hydrogen/Deuterium Exchange Mass Spectrometry" 58th ASMS Conference on Mass Spectrometry and Allied Topics.

2009. The Use of MS and High Resolution MS for the Identification and Imaging of Lipids in Nerve Tissue" 57th ASMS Conference on Mass Spectrometry and Allied Topics.

2008. Quantitation of Lipids in Nerve Tissue using IP-MALDI-LIT-MS: Strategies for Applying Internal Standards" 56th ASMS Conference on Mass Spectrometry and Allied Topics.

2007. Identifying Lipid Changes in Nerve Tissue as a Result of Dichloroacetate Treatment using IP-MALDI Coupled to a Linear Ion Trap" 55th ASMS Conference on Mass Spectrometry and Allied Topics.

2007. Perspectives for Quantitative Tissue Imaging by Intermediate-Pressure MALDI/Linear Ion Trap Tandem Mass Spectrometry" 55th ASMS Conference on Mass Spectrometry and Allied Topics.

2007. Identifying Lipid Changes in Nerve Tissue as a Result of Dichloroacetate Treatment using Laser Desorption Mass Spectrometric Imaging" 1st Moffitt Symposium on Mass Spectrometry.

2007. Identifying Lipid Changes in Spinal Cord as a Result of Dichloroacetate Treatment using Laser Desorption Mass Spectrometric Imaging" University of Florida College of Medicine Research Day.

2007. Identifying Lipid Changes in Spinal Cord as a Result of Dichloroacetate Treatment using Intermediate Pressure-MALDI Coupled to a Linear Ion Trap" 19th Sanibel Conference on Mass Spectrometry.

2006. Effect of Carrier Gas Composition in FAIMS/MS on Separation of Charge States and Conformers of Intact Proteins" 54th ASMS Conference on Mass Spectrometry and Allied Topics.



RACHELLE R. LANDGRAF, Ph.D.

PROFESSIONAL MEMBERSHIPS

- ❖ American Society for Mass Spectrometry
- ❖ Imaging Mass Spectrometry Society