

Address

Contact information

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**Education**

AUGUST 2007 - JULY 2011

**University of Texas at Austin**—*Austin, TX*

*Department of Chemistry and Biochemistry*

Ph.D., Analytical Chemistry

Advisor: Dr. Jennifer S. Brodbelt

Dissertation Topic: Advancement of Photodissociation and Electron-Based Tandem Mass Spectrometry Methods for Proteome Analysis

AUGUST 2001 - MAY 2005

**University of Colorado, Boulder**—*Boulder, CO*

*Department of Chemistry and Biochemistry*

B.A., Chemistry, May 2005

Advisor: Dr. Robert E. Sievers

Thesis Topic: Dry Powder Formation, Stabilization, and Characterization of Biological Materials  
Honors: Magna Cum Laude, Chemistry, April 2005

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**Professional  
Experience**

AUGUST 2011 - PRESENT

**University of Texas at Austin**—*Austin, TX*

*Postdoctoral Research Scientist*

Characterization of glycans and glycopeptides from antibodies and other glycoproteins, analysis of global phosphorylation networks in molecular and cellular systems, development of novel liquid chromatography mass spectrometry LC-MS/MS methods, mentorship of laboratory research assistants

JANUARY 2008 - JULY 2011

**University of Texas at Austin**—*Austin, TX*

*Graduate Research Assistant*

Bioanalytical mass spectrometry, mapping protein modifications, chemical derivatization/labeling of peptides, characterization of nucleic acids, structural elucidation of novel lipid A species, development of photodissociation and electron transfer dissociation MS/MS methods for proteomics ("bottom-up" and "top-down"), improvement of nanoscale UHPLC separations using high pH eluents for anion proteomic characterization, development of *de novo* and *in silico* strategies for automated MS/MS analysis

AUGUST 2007 - DECEMBER 2009

**Baxter Healthcare Corporation**—*Round Lake, IL*

*Technical Writer*

Writing and development of experimental protocols for the validation of analytical methods in GMP and GLP pharmaceutical industry environment

AUGUST 2007 - DECEMBER 2007

**University of Texas at Austin**—*Austin, TX*

*Teaching Assistant*

CE, GC, HPLC, undergraduate laboratory instruction

Address

Contact information

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**Professional  
Experience  
(continued)**

SEPTEMBER 2005 - AUGUST 2007

**Baxter Healthcare Corporation**—Round Lake, IL

*Research Associate II*

Validation of HPLC, GC, and atomic absorption AA analytical methods for active and excipient components of pharmaceutical formulations, characterization of container leachables, experimental design and leadership, technical writing, GLP and GMP pharmaceutical industry environment

MAY 2004 - MAY 2005

**AKTIV-DRY LLC**—Boulder, CO

*Research Assistant*

Development of protein assays, SE-HPLC and MALDI-MS for antibodies

SEPTEMBER 2003 - MAY 2005

**University of Colorado at Boulder**—Boulder, CO

*Research Assistant*

Novel pharmaceutical fine powder synthesis, coating and characterization, development of dry powder measles vaccine formulations

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**Fellowships  
and Grants**

David L. Miller and Mary H. Miller Endowed Graduate Fellowship, University of Texas at Austin. *Approved Fall 2010.*

ACS Division of Analytical Chemistry (SACP) Graduate Research Fellowship—sponsored by The Society for Analytical Chemists of Pittsburgh. *Approved Spring 2010.*

Undergraduate Research Opportunities Program (UROP), University of Colorado at Boulder. "Dry Powder Formulation, Stabilization, and Characterization of Biological Materials." *Approved Fall 2004.*

Undergraduate Research Opportunities Program (UROP), University of Colorado at Boulder. "An Improved Micronization Method to Reduce Particle Size Distribution." *Approved Fall 2003.*

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**Publications**

Robinson, M.R.; Madsen, J.A.; Brodbelt, J.S. "193 nm Ultraviolet Photodissociation of Imidazolinyated Lys-N Peptides for De Novo Sequencing" *Analytical Chemistry*, submitted.

Madsen, J.A.; Xu, H.; Horton, A.P.; Boutz, D.R.; Kaoud, T.S.; Dalby, K.N.; Brodbelt, J.S. "A Flexible Searching Algorithm for Acidic Proteome Characterization by UVPD of Peptide Anions" *Molecular and Cellular Proteomics*, submitted.

Madsen, J.A.; Brodbelt, J.S. "Charge-Site Dependent Dissociation of Hydrogen-Rich Radical Peptide Cations upon Vacuum UV Photoexcitation" *Chemistry - A European Journal*, submitted.

Cullen, T.W.; Madsen, J.A.; Ivanov, P.L.; Brodbelt, J.S.; Trent, M.S. "Characterization of a unique modification of the flagellar rod protein FlgG by the *Campylobacter jejuni* lipid A phosphoethanolamine transferase, linking bacterial locomotion and antimicrobial peptide resistance" *Journal of Biological Chemistry*, accepted.

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**Publications  
(continued)**

Hankins, J.V.; Madsen, J.A.; Giles, D.K.; Childers, B.M.; Klose, K.E.; Brodbelt, J.S.; Trent, M.S. "Elucidation of a Novel *Vibrio cholerae* Lipid A Secondary Hydroxy-Acyltransferase and its Role in Innate Immune Recognition" *Molecular Microbiology*, **2011**, *81*, 1313-1329.

Madsen, J.A.; Cullen, T.W.; Trent, M.S.; Brodbelt, J.S. "IR and UV Photodissociation as Analytical Tools for Characterizing Lipid A Structures" *Analytical Chemistry*, **2011**, *83*, 5107-5113.

Madsen, J.A.; Kaoud, T.S.; Dalby, K.N.; Brodbelt, J.S. "193-nm Photodissociation of Singly and Multiply Charged Peptide Anions for Acidic Proteome Characterization" *Proteomics* **2011**, *11*, 1329-1334.

Madsen, J.A.; Boutz, D.R.; Brodbelt, J.S. "Ultrafast Ultraviolet Photodissociation at 193 nm and its Applicability to Proteome Workflows" *Journal of Proteome Research* **2010**, *9*, 4205-4214.

Madsen, J.A.; Brodbelt, J.S. "Asymmetric Charge Partitioning upon Dissociation of DNA Duplexes" *Journal of the American Society of Mass Spectrometry* **2010**, *21*, 1144-1150.

Ledvina, A.R.; McAlister, G.C.; Gardner, M.W.; Smith, S.I.; Madsen, J.A.; Schwartz, J.C.; Stafford, G.C. Jr.; Syka, J.E.P.; Brodbelt, J.S.; Coon, J.J. "Infrared Photoactivation Reduces Peptide Folding and Hydrogen-Atom Migration following ETD Tandem Mass Spectrometry" *Angewandte Chemie, International Edition* **2009**, *48*, 8526-8528.

Madsen, J.A.; Gardner, M.W.; Smith, S.I.; Ledvina, A.R.; Coon, J.J.; Schwartz, J.C.; Stafford, G.C.; Brodbelt, J.S. "Top-Down Protein Fragmentation by Infrared Multiphoton Dissociation in a Dual Pressure Linear Ion Trap" *Analytical Chemistry (accelerated article)* **2009**, *81*, 8677-8686.

Gardner, M.W.; Smith, S.I.; Ledvina, A.R.; Madsen, J.A.; Coon, J.J.; Schwartz, J.C.; Stafford, G.C.; Brodbelt, J.S. "Infrared Multiphoton Dissociation of Peptide Cations in a Dual Pressure Linear Ion Trap Mass Spectrometer" *Analytical Chemistry* **2009**, *81*, 8109-8118.

Madsen, J.A.; Brodbelt, J.A. "Simplifying Fragmentation Patterns of Multiply Charged Peptides by N-terminal Derivatization and Electron Transfer Collision Activated Dissociation" *Analytical Chemistry* **2009**, *81*, 3645 - 3653.

Madsen, J.A.; Brodbelt, J.A. "Comparison of Infrared Multiphoton Dissociation and Collision-Induced Dissociation of Supercharged Peptides in Ion Traps" *Journal of the American Society of Mass Spectrometry* **2009**, *20*, 349 - 358.

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**Presentations  
and Conference  
Proceedings**

Madsen, J.A.; Hankins, J.V.; Cullen, T.W.; Trent, M.S.; Brodbelt, J.S. "Characterizing Lipid A and its Modifications by 193 nm UVPD" 59<sup>th</sup> ASMS Conference on Mass Spectrometry and Allied Topics 2011, Denver, CO.

Hankins, J.V.; Madsen, J.A.; Giles, D.K.; Klose, K.E.; Brodbelt, J.S.; Trent, M.S. "Discovery of a Novel Lipid A Secondary Hydroxy-Acyltransferase and its Role in *Vibrio cholerae* Pathogenesis" Molecular Microbiology Meeting 2011, Wurzburg, Germany

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**Presentations  
and Conference  
Proceedings  
(continued)**

Madsen, J.A.; Brodbelt, J.S. "Ultrafast Ultraviolet Photodissociation at 193 nm for Proteomic Workflows" 58<sup>th</sup> ASMS Conference on Mass Spectrometry and Allied Topics 2010, Salt Lake City, UT.

Madsen, J.A.; Gardner, M.W.; Smith, S.I.; Ledvina, A.R.; Brodbelt, J.S. "Top-Down Protein Fragmentation by Infrared Multiphoton Dissociation in a Dual Cell Linear Ion Trap" 57<sup>th</sup> ASMS Conference on Mass Spectrometry and Allied Topics 2009, Philadelphia, PA.

Madsen, J.A.; Brodbelt, J.S. "Comparison of Infrared Multiphoton and Collisionally Activated Dissociation of Supercharged peptides in a Quadrupole Ion Trap" 56<sup>th</sup> ASMS Conference on Mass Spectrometry and Allied Topics 2008, Denver, CO.

Cape, S.P.; Villa, J.A.; Huang, E.T.S.; Rinner, L.V.; Hibbard, S.M.; Madsen, J.A.; Piester, T.L.; Alargov, D.K.; Quinn, B.P.; Sievers, R.E. "Manufacturing and Coating Nanoparticles and Microparticles with Dense Carbon Dioxide Nebulization in Mixing Tees and Crosses in a Bubble Dryer®" Partec Meeting 2004, Nuremburg, Germany.

Sievers, R.E.; Huang, E.T.S.; Burger, J.L.; Best, J.A.; Madsen, J.A.; Rebits, L.; Cape, S.P.; Quinn. "B.P. Needle-free Inhalable Vaccine and Antibiotic Powder Aerosols" Scientific Conference on Chemical and Biological Defense Research 2004, Hunt Valley, MD.

**References**

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