

*Curriculum Vitae*

**JOSÉ S. MADALENGOITIA**

Associate Professor  
Department of Chemistry  
University of Vermont  
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**Education**

B.S.-Chemistry      1987    James Madison University  
Ph.D.-Chemistry    1993    University of Virginia

**Professional Experience**

Associate Professor, Department of Chemistry, University of Vermont, 2001-present.

Assistant Professor, Department of Chemistry, University of Vermont, 1995-2001.

Postdoctoral Research Associate, University of California, Irvine, 1993-1995.

**Graduate and Postdoctoral Advisors**

Ph.D. Advisor - Timothy L. Macdonald  
Postdoctoral Advisor - Larry E. Overman

**Publications**

R. Aranha, A. M. Bowser, J. S. Madalengoitia "Structure-Reactivity Relationships of Zwitterionic 1,3-diaza-Claisen Rearrangements" Submitted.

S. Flemer, J. S. Madalengoitia "A Comprehensive and Facile Entry into Substituted Amidines via the Condensation of N-Pmc-Substituted Thioamides with Amines Using Mukaiyama Reagent as a Thiophile" Accepted *Synthesis*.

R. M. Aranha, A. M. Bowser, J. S. Madalengoitia "Facile 1,3-diaza-Claisen Rearrangements of Tertiary Allylic Amines Bearing an Electron Deficient Alkene" *Org. Lett.* **2009**, *11*, 575-578.

S. Flemer, A. Wurthmann, A. Mamai, J. S. Madalengoitia "Strategies for the Solid-Phase Diversification of Poly-L-Proline Type II Peptide Mimic Scaffolds and Peptide Scaffolds Through Guanidinylation" *J. Org. Chem.* **2008**, *73*, 7953.

N. Huang, T. Jiang, T. Wang, M. Soukri, R. Ganorkar, B. Decker, J.-M. Leger, J. Madalengoitia, M. E. Kuehne "The Acyclic Dieneamine Indoloacrylate Addition Route to Catharanthine" *Tetrahedron* **2008**, *64*, 9850.

- S. Flemer, J. S. Madalengoitia "Synthetic Routes into N-Pmc-N', N''-Disubstituted Guanidine Systems via Guanylation of Amines with N-Pmc-N'-alkyl Substituted Thioureas: Scope and Limitations of the Reaction" *Synthesis* **2007**, *13*, 81.
- R. Ganorkar, A. Natarajan, A. Mamai, J. S. Madalengoitia "Synthesis of Conformationally Constrained Lysine Analogs" *J. Org Chem.* **2006**, *71*, 5004.
- R. Zhang, A. Natarajan, S. Flemer, A. Mamai, C. Nickl, W. Dostmann, and J. S. Madalengoitia "Poly-L-Proline Type II Peptide Mimics as Probes of the Active Site Occupancy Requirements of cGMP Dependent Protein Kinase" *J. Peptide Res.* **2005**, *66*, 151-9.
- A. M. Bowser and J. S. Madalengoitia "Synthesis of Highly Substituted Ureas and Thioureas Through 1,3-Diaza-Claisen Rearrangements" *Tetrahedron Lett.* **2005**, *46*, 2869.
- A. M. Bowser and J. S. Madalengoitia "A 1,3-Diaza-Claisen Rearrangement that Affords Guanidines" *Org. Lett.* **2004**, *6*, 3409.
- A. Mamai, N. E. Hughes, A. Wurthmann and J. S. Madalengoitia "Synthesis of Conformationally Constrained Arginine and Ornithine Analogues Based on the 3-Substituted Pyrrolidine Framework" *J. Org. Chem.* **2001**, *66*, 6483.
- A. Mamai and J. S. Madalengoitia "Solid-Phase Guanidinylation as a Diversification Strategy of Poly-L-Proline Type II Peptide Mimic Scaffolds" *Org. Lett.* **2001**, *3*, 561.
- A. Mamai, R. Zhang, A. Natarajan and J. S. Madalengoitia "Poly-L-Proline Type II Peptide Mimics Based on the 3-Aza-bicyclo[3.1.0]hexane System" *J. Org. Chem.* **2001**, *66*, 455.
- A. Mamai, and J. S. Madalengoitia "Lewis Acid Mediated Diastereoselective and Enantioselective Cyclopropanation of Michael Acceptors with Sulfur Ylides" *Tetrahedron Lett.* **2000**, *41*, 9009.
- A. Natarajan and J. S. Madalengoitia "Molecular Diversity Approach to the Synthesis of Peptide Derived Ruthenium Complexes and their Evaluation as Oxidation Catalysts" *Tetrahedron Lett.* **2000**, *41*, 5789.
- A. Natarajan and J. S. Madalengoitia "Optimization of Variables for Screening Solid Supported Metal Complexes as Oxidation Catalysts" *Tetrahedron Lett.* **2000**, *41*, 5783.
- J. S. Madalengoitia "A Novel Peptide Fold: A Repeating  $\beta$ II'-Turn Secondary Structure" *J. Am. Chem. Soc.* **2000**, *122*, 4986.

- R. Zhang and J. S. Madalengoitia "Design, Synthesis and Evaluation of Poly-L-Proline Type II Peptide Mimics Based on the 3-Aza-bicyclo[3.1.0]hexane System" *J. Org. Chem.* **1999**, *64*, 330.
- R. Zhang, A. Mamai and J. S. Madalengoitia "Cyclopropanation Reactions of Pyroglutamic Acid-Derived Synthons with Alkylidene Transfer Reagents" *J. Org. Chem.* **1999**, *64*, 547.
- R. Zhang, F. E. Brownwell and J. S. Madalengoitia "Stereoselective Alkylations of a Bicyclic Lactam Derived from Pyroglutamic Acid" *Tetrahedron Lett.* **1999**, *40*, 2707.
- R. Zhang, F. E. Brownwell and J. S. Madalengoitia "A(1,3) Like Strain as a Key Conformational Control Element in the Design of Poly-L-Proline Type II Peptide Mimics" *J. Am. Chem. Soc.* **1998**, *120*, 3894.
- R. Zhang and J. S. Madalengoitia "Conformational Stability of Proline Oligomers" *Tetrahedron Lett.* **1996**, *37*, 6235.
- J. S. Madalengoitia, J. J. Tepe, K. Werbovetz, E. K. Lehnert, and T. L. Macdonald "Structure Activity Relationships of Substituted Azatoxin Analogs" *Bioorg. Med. Chem.* **1997**, *5*, 1807.
- J. J. Tepe, J. S. Madalengoitia, K. M. Slunt, K. Werbovetz, P. G. Spoor and T. L. Macdonald "Inhibition of DNA Topoisomerase II by Azaelliptitoxins Functionalized in the Variable Substituent Domain" *J. Med. Chem.* **1996**, *39*, 2188.
- F. Leteurtre, D. Sackett, J. S. Madalengoitia, G. Kohlhagen, T. L. Macdonald, E. Hamel, K. Paull and Y. Pommier "Azatoxin Derivatives with Potent and Selective Action on Topoisomerase II" *Biochem. Pharm.* **1995**, *49*, 1290.
- E. K. Lehnert, K. Miller, J. S. Madalengoitia, T. J. Guzi and T. L. Macdonald "Inhibition of DNA Topoisomerase II by 1,2,3-Tetrahydro- $\beta$ -carboline" *Biorg. Med. Chem. Lett.* **1994**, *4*, 2421.
- J. S. Madalengoitia, and T. L. Macdonald "Synthesis of Tetrahydrofurocarbazolones by Intramolecular Diels-Alder Reactions" *Tetrahedron Lett.* **1993**, *43*, 6237.
- F. Leteurtre, J. S. Madalengoitia, A. Orr, T. J. Guzi, E. K. Lehnert, T. L. Macdonald and Y. Pommier "Rational Design and Molecular Effects of a New Topoisomerase II Inhibitor, Azatoxin" *Cancer Research* **1992**, *52*, 4478.
- D. M. Downey and J. S. Madalengoitia "Ion Chromatographic Separation of Platinum Palladium and Iridium" *L.C.-G.C.* **1987**, *5*, 890.

### Contributed Presentations

R. M. Aranha, Y. Yang; A. M Bowser, J. S. Madalengoitia “Design and Development of 1,3-diaza-Claisen Rearrangements” poster presented at the Gordon Research Conference: Heterocycles, June 20-24, 2010, Salve Regina University, Newport, Rhode Island.

S. Flemer, J. S. Madalengoitia “On-Resin Synthesis of Novel Arginine-Containing Peptide Systems Bearing Substituted Amidine Headgroups” poster presentation, Bioorganic Gordon Conference, Proctor Academy, Andover, NH, June 14-19, 2009.

R. M. Aranha, A. M Bowser, J S. Madalengoitia “Design and Development of 1,3-diaza-Claisen Rearrangements” poster presentation, ACS National Meeting, March 22-26, 2009, Salt Lake City, UT.

R. M. Aranha, J. S. Madalengoitia “Electronic Effects on the 1,3-Diaza-Claisen Rearrangement” Poster presentation, 2008 Northeast Regional Meeting, June 29-July 2, 2008, Burlington, VT.

S. Flemer and J. S. Madalengoitia “EDCI-Mediated Guanylation Methodology Between N-Pmc-N'-Alkyl Thioureas and Amines: Applications Toward in-situ SPPS Arginine Headgroup Diversification in Poly-L-Proline Peptide Mimic Libraries” oral presentation, ACS National Meeting, August 19-23, 2007, Boston, MA.

C. K. Nickl, K. E. Laskovski, P. Ruth, W. Tegge, J. E. Brayden, J. S. Madalengoitia, S. Raidas, W. R. Dostmann “Probing vasomotor mechanisms by acute inhibition of PKG in vivo” 2006 FASEB Summer Research Conferences, Smooth Muscle, July 29-August 3, 2006, Snowmass Village, Colorado.

R. Ganorkar, S. Raidas, A. Natarajan, W. R. Dostmann, and J. S, Madalengoitia “Design and Synthesis of PPII Mimics as Substrate Probes of the Active Site Occupancy Requirements of cGMP-Dependent Protein Kinase” presented at the ACS National Meeting, September 10-14, 2006, San Francisco.

A. M. Bowser, J. S. Madalengoitia “Design and Development of 1,3-diaza-Claisen Rearrangements” poster presented at the Gordon Research Conference: Heterocycles, July 2-7, 2006, Salve Regina University, Newport, Rhode Island.

A. M. Bowser, J. S. Madalengoitia “Synthesis of Highly Substituted Ureas, Thioureas and Guanidines Through 1,3-diaza-Claisen Rearrangements” presented at the Northeastern Regional Meeting, July 14, 2005, Sacred Heart University, Fairfield, CT.

A. Wurthmann, S. Flemer, J. S. Madalengoitia “Strategies Toward the Facile Synthesis of PPII Libraries” presented at the Northeastern Regional Meeting, July 14, 2005, Sacred Heart University, Fairfield, CT.

R. Ganorkar, J. S. Madalengoitia “Stereoselective Synthesis of Proline Templated Lysine” presented at the Northeastern Regional Meeting, July 14, 2005, Sacred Heart University, Fairfield, CT

A. M. Bowser, J. S. Madalengoitia "Electronic Effects in the Design of 1,3-diaza-Claisen Rearrangements" poster presented at the Gordon Research Conference: Heterocycles, July 3-8, 2005, Salve Regina University, Newport, Rhode Island.

S. Flemer, A. Wurthmann, A. Mamai, J. S. Madalengoitia "Strategies for the Diversification of Poly-L-Proline Type II Peptide Mimic Scaffolds" presented at the American Peptide Symposium, July 18, 2003, Boston, MA.

K. Foley, A. Bowser, J. S. Madalengoitia, W. Dostmann "Uptake Characteristics of the PKG Inhibitor DT-2 in Smooth Muscle Cells" poster presented at the Northeast Smooth Muscle Cell Conference" September 11, 2002, Burlington, VT.

A. Natarajan, J. S. Madalengoitia "Synthesis of a Conformationally Constrained Lysine Analog" poster presented at the American Chemical Society Annual Meeting April 9, 2002, Orlando, FL.

A. Natarajan, J. S. Madalengoitia "Synthesis of a Conformationally Constrained Lysine Analog Based on the 3-Aza-bicyclo[3.1.0]hexane System" poster presented at the Northeastern Regional Meeting June 25, 2001, Durham, NH.

S. Flemer, J. S. Madalengoitia "Diversification Strategies of Poly-L-Proline Type II Peptide Mimic Scaffolds" presented at the Northeastern Regional Meeting June 25, 2001, Durham, NH.

K. Desisto, J. S. Madalengoitia "Conformation of Poly-L-Proline Type II Peptide Mimics Based in 3-Substituted Prolines" poster presented at the Northeastern Regional Meeting Northeastern Regional Meeting June 25, 2001, Durham, NH.

R. Zhang, A. Mamai, C. Nickl, W. Dostmann, J. S. Madalengoitia American Chemical Society Annual Meeting "Poly-L-Proline Type II Peptide Mimics as Inhibitors of PKA and PKG" March 2000, San Francisco, CA.

A. Mamai, J. S. Madalengoitia "Lewis Acid Mediated Diastereoselective and Enantioselective Reactions of Michael Acceptors with Sulfur Ylides" presented at the American Chemical Society Annual Meeting March 2000, San Francisco, CA.

A. Natarajan, J. S. Madalengoitia "Combinatorial Approach to the Solid Phase Synthesis of Novel Complexes and Their Evaluation as Catalyst Systems" presented at the American Chemical Society Annual Meeting March 2000, San Francisco, CA.

R. Zhang, C. Nickl, W. Dostmann, J. S. Madalengoitia "Inhibition of PKA and PKG by PPII Peptide Mimics" poster presented at the Gordon Conference: Chemistry and Biology of Peptides Feb 13-18, 2000, Ventura, CA.

A. Natarajan, J. S. Madalengoitia “Combinatorial Approach to the Synthesis of Modified Peptides as Ligands for Redox Active Metals and Their Evaluation as Catalyst Systems” presented at the Solid Phase Synthesis and Combinatorial Chemical Libraries Sixth International Symposium September 4, 1999, York, England.

R. Zhang, J. S. Madalengoitia “Cyclopropanation Reactions of Pyroglutamic Acid-Derived Synthons with Alkylidene Transfer Reagents” poster presented at the American Chemical Society Annual Meeting August, 1998, Boston, MA.

### **Invited Seminars**

Concordia University, Montreal, Canada, September 5, 1997

Dartmouth College, Hanover, NH, February 26, 1998

Central Connecticut State University, October 15, 1998

Middlebury College, Middlebury, VT, October 21, 1998

University of Massachusetts, Lowell, MA, November 16, 1998

University of Virginia, Charlottesville, VA, January 18, 1999

Norwich University, Northfield, VT, February 4, 1999

Rensselaer Polytechnic Institute, Troy, NY, February 11, 1999

University of Vermont, Pharmacology, March 25, 1999

Washington and Lee University, Lexington, VA, April 21, 1999

Virginia Polytechnic Institute and State University, Blacksburg, VA, April 22, 1999

James Madison University, Harrisonburg, VA, April 23, 1999

Smith Kline Beecham Pharmaceuticals, King of Prussia, PA, September 14, 1999

St. Michaels College, Winooski, VT, October 29, 1999

SUNY Binghamton, Binghamton, NY, November 12, 1999

College of the Holy Cross, Worcester, MA, December 3, 1999

University of Vermont, Biochemistry, March 23, 2000

National Cancer Institute, Bethesda, MD, April 7, 2000

University of California, Irvine, CA, May 31, 2000

University of California Riverside, CA, June 2, 2000

California Institute of Technology, Pasadena, CA, June 5, 2000

Michigan State University, Lansing, MI, September 6, 2000

Wayne State University, Detroit, MI September 7, 2000

University of New Hampshire, Durham, NH, September 19, 2000

Synexis, Chemistry and Automation, Research Triangle Park, NC, October 23, 2000

Duke University, Durham, NC, October 24, 2000

University of Montreal, Montreal, Quebec, Canada; March 28, 2001

Schering-Plough Research Institute, Kenilworth, NJ; April 17, 2001

Boehringer Ingelheim Pharmaceuticals, Ridgefield, CT, August 9, 2001

Skidmore College, Saratoga Springs, NY, September 19, 2001

Union College, Schenectady, NY October 11, 2001

SUNY Plattsburgh, Plattsburgh, NY, October 19, 2001

Brown University, Providence, RI, February 28, 2003

La Pontificia Universidad Catolica del Peru, Lima, Peru, March 17, 2003

Elan Pharmaceuticals, South San Francisco, CA, April 25, 2003

University of Vermont, Department of Pathology, February, 14 2005

University of Connecticut, Storrs, CT, March 31, 2005

Wesleyan University, Middletown, CT, April 1, 2005

Washington State University, Pullman, WA, October 24, 2005

University of Toronto, Toronto, Canada, November 28, 2005

Virginia Commonwealth University, Richmond, VA, February 16, 2006

The University of Virginia, Charlottesville, VA, November 6, 2006

Amherst College, Amherst, MA, January 2, 2007

University of Rochester, Rochester, NY, April 25, 2008

### **Invited Lectures**

Overman Symposium in honor of Professor Larry Overman's 60<sup>th</sup> Birthday. Irvine, CA, March 28, 2003.

Keynote speaker at the Chemical Biology Symposium of the American Chemical Society Northeast Regional Meeting. Saratoga Springs, NY, June 18, 2003.

### **Grants Awarded**

National Science Foundation "Novel Peptide Mimics as Probes of the Active Site Occupancy Requirements of Protein Kinases" \$379,000 awarded for 7/1/04 - 6/30/07.

Lake Champlain Cancer Research Organization Pilot Project Award "Synthesis of Novel Cell Penetrating Agents" \$10,000 awarded for 1/9/02 – 30/8/03.

DOE EPSCoR Structural Biology Initiative "Crystallographic Screening and Structural Characterization of Exogenous Small Molecule Binding" with Mark Rould and Cathy Trybus. Susan Wallace, PI. \$30,000 awarded for 8/03 – 7/04.

Synexis Chemistry and Automation "Library Template Consultancy" \$11,677 awarded for 11/01 - 12/02.

DOE EPSCoR Structural Biology Initiative "Crystallization of PKG with High Affinity Ligands" with Wolfgang Dostmann and Mark Rould. Susan Wallace, PI. \$30,000 awarded for 6/01 – 5/02.

National Institutes of Health "Design and Synthesis of Poly-L-Proline Type II Peptide Mimics", \$531,930 awarded for 4/98 - 3/03.

National Science Foundation "Molecular Recognition by Protein Kinases" \$200,000 awarded for 6/98 - 5/01.

American Cancer Society-Vermont Division "Inhibition of Cell Cycle Control Regulatory Kinases by Peptide Mimics", \$5,000 awarded for 1996-97.

American Chemical Society Petroleum Research Fund Type G "Molecular Diversity and Catalysis: The Synthesis of Modified Peptides as Ligands for Redox Active Metals", \$20,000 awarded for 1996-98.



Vermont Cancer Center Pilot Project Award “Inhibition of Collagenases by PII Peptide Mimics”, \$10,000 awarded for 1996-97.

Vermont EPSCoR “Inhibition of ErbB2 Mediated Signal Transduction by Novel Peptide Mimics” \$80,000 awarded for 1996-1998.

### **Collaborators**

Wolfgang Dostmann, Associate Professor, Department of Pharmacology, University of Vermont

Mark Rould, Research Assistant Professor, Department of Physiology, University of Vermont

Robert Hondal, Assistant Professor, Department of Biochemistry, University of Vermont

Susan Bane, Associate Professor, Department of Chemistry, Binghamton University

Chris Holmes, Assistant Professor, Department of Medicine, University of Vermont

### **Courses Taught**

Chem 32, Introductory Chemistry  
Chem 42, Introductory Organic Chemistry  
Chem 141, Organic Chemistry  
Chem 142, Organic Chemistry  
Chem 143, Organic Chemistry for Majors  
Chem 144, Organic Chemistry for Majors  
Chem 146, Advanced Organic Lab  
Chem 205, Biochemistry I  
Chem 241, Advanced Organic Chemistry  
Chem 242, Advanced Organic Chemistry

### **Current Graduate Students**

Yambo, Yang (Ph.D.), Davirai Musingarabwi (Ph.D.),

### **Former Graduate Students**

Rui Zhang (Ph.D. Jan 2000, postdoc Yale University, currently at Johnson & Johnson), Floyd Brownell (Ph.D. Feb 2000; postdoc Stanford University, currently at Albany College of Pharmacy), Amarnath Natarajan (Ph.D. Jan 2001, postdoc Harvard University, currently Assistant Professor at UTMB), Kevin Desisto (Ph.D. Jan 2004, current employment unknown), Stevenson Flemer (Ph.D. Jan 2005, currently director University of Vermont, Peptide Core Facility), Rakesh Ganorkar (Ph.D. January 2006,), Alexander

Wurthmann (Ph.D. September 2006, currently lecturer, University of Vermont), Amy Bowser (Ph.D. March 2007, currently Lecturer at Williams College), Rachel Aranha Potter (Ph.D. August 2009, currently postdoc Johns Hopkins University), Nan Wang (M.S. August 2007, Currently at Carnegie-Mellon), Norman Hughes (M.S. March 2002, currently at Eli Lilly), Delmy Diaz (M.S. August 2002, currently Professor in Honduras), Tammie White (M.S. to be completed, currently at Abbott Pharmaceuticals)

### **Former Postdoc**

Dr. Ahmed Mamai (currently at Synexis Chemistry and Automation)

### **Service**

#### Department:

Graduate Admissions Committee (1996-2000)

Curriculum Committee (1996-present)

Seminar and Humphrey Symposium Committee (1999-present (Chair))

Organic Search Committee (1998, 2000, 2001 (chair), 2002 (Chair), 2003 (Chair), 2004 (Chair), 2005 (Chair), 2006 (chair))

Chemistry Chair Search Committee (2001)

Chemistry Chair Search Committee (2008)

#### College:

College Honors Committee (2002-2003)

Biology Department Chair Search Committee (2005)

Faculty Standards Committee (2008-2009)

#### University:

Executive Committee of the Graduate College (2001-2004)

#### Professional:

Ad hoc member NIH Bioorganic and Natural Products Study Section; June 20-21, 2002.

Scientist Reviewer DOD Prostate Cancer Research Program; July 8-10, 2002.

Reviewer DOD Breast Cancer Concept Awards: April 4, 2003.

Scientist Reviewer DOD Prostate Cancer Research Program; June 8-10, 2003.

Reviewer DOD Breast Cancer Concept Awards: March 12, 2004.

Scientist Reviewer DOD Prostate Cancer Research Program; April 21-23, 2004.

Reviewer DOD Breast Cancer Concept Awards: April 4, 2005.

Scientist Reviewer DOD Prostate Cancer Research Program; April 6-8, 2005.

Review Panel Member, NSF Chemistry Research Instrumentation and Facilities Instrument Acquisition Program, October 27-28, 2005.

Reviewer DOD Breast Cancer Concept Awards: March 21, 2006.

Review Panel Member, NSF CAREER Award Program, November 13-14, 2006.

Reviewer DOD Breast Cancer Research Program: March 18-20, 2007.

Reviewer DOD Prostate Cancer Research Program: July 8-10, 2007.

Reviewer DOD Breast Cancer Concept Awards: March 13, 2008

Scientist Reviewer, DOD Prostate Cancer Research Program: September 7-9, 2008.  
Review Panel Member, NSF Chemistry Research Instrumentation and Facilities  
Instrument Acquisition Program, October 28-29, 2008.  
Reviewer DOD Breast Cancer Concept Awards: December, 2009  
Reviewer NIH Fellowship Study Section, March 5, 2009  
Reviewer DOD Breast Cancer Concept Awards January 2010

**Patent:**

Yves Pommier, Timothy L. Macdonald and Jose S. Madalengoitia "Topoisomerase  
Inhibitors and Therapeutic Uses Therefor", filed Oct 23, 1992 application serial number  
07/868,408.