

# **Dr. Kevin M. Bucholtz**

e-mail: bucholtz\_km@mercer.edu

**Present Address:**  
Department of Chemistry  
Mercer University  
1400 Coleman Avenue  
Macon, GA 31207

**Contact Information:**  
(478)-301-5626  
Fax (478)-301-301-2802  
[http://faculty.mercer.edu/bucholtz\\_km/](http://faculty.mercer.edu/bucholtz_km/)

## **EDUCATION**

- 2006**            **Ph.D. in Chemistry**  
University of Rochester, Rochester, NY
- Research Advisor: Professor Benjamin L. Miller
  - Research: *Synthesis of Cyclobutyl ter-cycloalkane Scaffolds and Development of General Methods for the Synthesis of cis-1,3 Disubstituted Cyclobutanes.*
- 2002**            **M.S. in Chemistry**  
University of Rochester, Rochester, NY
- 2000**            **B. S. in Chemistry - Cum Laude**  
Gannon University, Erie, PA
- Member of NCAA Div. II men's tennis team 4 Years

## **TEACHING EXPERIENCE**

- 2005-Current**    **Assistant Professor of Chemistry**  
Mercer University, Macon, GA
- Courses Taught: Organic Chemistry I and II, Problems in Chemistry, General Chemistry I, Chemistry Seminar, Scientific Inquiry, University 101
  - Supervising an Active Undergraduate Research Program
- 2000-2005**        **Graduate Teaching Assistant**  
Department of Chemistry, University of Rochester, Rochester, NY
- Courses involved with: Honors Organic II Lecture, Honors Organic Laboratory I and II. Graduate Level Organic Spectroscopy, Organic II Peer Led Team Learning Workshop Leader.
  - Guest Lectured at University of Rochester (Organic I) and SUNY Brockport (Organic II)
  - Undergraduate Mentor: Jessica Goodman, Nazareth College, Rochester NY, *Design and Synthesis of Small Libraries of Functionalized Coumarin Dimer Cyclobutanes.* (Presented Poster at 49<sup>th</sup> Annual Undergraduate Research Symposium at Roberts Wesleyan College, Rochester, NY, 2004.)
  - Undergraduate NSF REU Mentor: Edward O'Neil, Nazareth College, Rochester NY, *Synthesis of Libraries of Functionalized cis,trans,cis Cyclobutane Derivative and Regiochemical Opening of the Maleic Anhydride Dimer.* (Presented Poster of Results at the Spring 2003 ACS National Meeting in New Orleans, LA.)
- 1998-2000**        **Chemistry Tutor**  
Gannon University, Erie, PA
- Commonwealth Academic Achievement Program
  - Tutored General, Organic and Analytical Chemistry to Undergraduates and AP General Chemistry to High School Students

**RESEARCH EXPERIENCE**

- 2005-current Private Investigator**  
Department of Chemistry, Mercer University, Macon, GA
- Direct and Guided 16 Undergraduate Researchers in Several Areas of Bioorganic Chemistry
  - Collaborations: James Thomas, Basic Medical Sciences, Mercer University Medical School; Andrew Pounds, Chemistry Department, Mercer University, John Wright, Bill Jenkins, Psychology Department, Mercer University
- 2000-2005 Graduate Research Assistant**  
Department of Chemistry, University of Rochester, Rochester, NY
- *Synthesis of Cyclobutyl ter-cycloalkane Scaffolds and Development of General Methods for the Synthesis of cis-1,3 Disubstituted Cyclobutanes.*
- 1999-2000 Undergraduate Research**  
Department of Chemistry, Gannon University, Erie, PA
- *Analysis of Zebra Mussels for Various Heavy Metals Absorbed in Their Shells Through Atomic Absorption.*
- 1998 Air Technician**  
Microbac Laboratories, Erie, PA.
- Monitoring asbestos removal in public areas such as schools and government buildings.
- Field Technician**  
Microbac Laboratories, Erie, PA.
- Performed various tests for customers, flow test for home wells, septic dye test, stack emissions test for the EPA (testing for total particulate, chromium and sulfur emissions), periodic well water sampling.

**AWARDS AND FELLOWSHIPS**

- 2008 Outstanding Student Organization Advisor Award:** Mercer University
- 2003 Weissberger Fellow:** Department of Chemistry, University of Rochester and Kodak, Rochester, NY.
- 2001 W.D. Walters Teaching Award:** Department of Chemistry, University of Rochester, Excellence in Graduate Assistant Teaching.
- 2000- 2005 Sherman Clarke Fellow:** Department of Chemistry, University of Rochester.
- 2000 Academic All Conference:** Great Lakes Intercollegiate Athletic Conference, Men's Tennis

**PUBLICATIONS**

7. Bucholtz, K. M.; Hugdahl, J. D.; Kiefer, K. M. "A Green Multi-component Synthesis in Organic Chemistry Laboratory: A Hantzsch Dihydropyridine Condensation and Oxidation to the Corresponding Pyridine." Submitted to the Journal of Chemical Education August 25, 2009.
6. Thomas, J. L.; Bucholtz, K. M.; Sun, J.; Mack, V. L.; Kacsoh B. "Structural basis for the selective inhibition of human 3beta-hydroxysteroid dehydrogenase 1 in human breast tumor MCF-7 cells." *Mol Cell Endo* **2009**, 301(1-2), 174-82.

5. Thomas, J. L.; Mack, V. L.; Glow, J. A.; Moshkelani, D.; Terrell, J. R.; Bucholtz, K. M.; "Structure/function of the inhibition of human  $3\beta$ -hydroxysteroid dehydrogenase type 1 and type 2 by trilostane." *J Steroid Biochem Molec Biol* **2008**, *111*, 66-73. Includes 2 undergraduate co-authors.

4. Bucholtz, K. M.; Gareiss, P. C.; Tajc, S. G.; Miller, B. L. "Synthesis and evaluation of the first *cis*-cyclobutane containing receptor for lipid A." *Org. Biomol. Chem.* **2006**, *4*, 3973-3979.

\* This article was featured on the cover of the issue and selected for inclusion in the RSC's Chemical Biology Virtual Journal. The Chemical Biology Virtual Journal brings together all chemical biology literature from more than 15 RSC journals in order to raise its visibility and profile in the chemical biology community.

3. Bucholtz, K. M.; Miller, B. L. *Synthesis of Cyclobutyl ter-cycloalkane Scaffolds and Development of General Methods for the Synthesis of cis-1,3 Disubstituted Cyclobutanes* Ph.D. Dissertation University of Rochester, 2006.

2. McNaughton, B. R.; Bucholtz, K. M.; Camaño-Moure, A.; Miller, B. L. "Selection in Olefin Metathesis: A Study in the Effects of Remote Functionality." *Org. Lett.* **2005**, *7*, 733-736.

1. Bucholtz, K. M., Miller, B.L; Development of General Synthetic Methods Towards Oligocycloalkanes. In *Strategies and Tactics in Organic Synthesis*, Harmata, M. ed.; Volume 5; Elsevier Ltd.: London, 2004, 183-220.

## PATENTS

Taghizadeh, F.; Horner, S. R.; Bucholtz, K. M. "Methods and Apparatus for the Detection of an Enzyme." US # 7,402,423.

## PRESENTATIONS

**9/08** **Invited Seminar:** "The Hunt for Ligand Selectivity: Examination of PPAR  $\delta$  and 3 $\beta$ HSD1." Department of Chemistry, Sewanee: The University of the South, Sewanee, TN.

**9/08** **Invited Seminar:** "The Pharmaceutical Industry: Insight into a Tough Dilemma" Science-focused Learning Community Seminar Series, Sewanee: The University of the South, Sewanee, TN.

**9/08** **Invited Seminar:** "The Hunt for Ligand Selectivity: Examination of PPAR  $\delta$  and 3 $\beta$ HSD1." Department of Chemistry, University of Georgia, Athens, GA.

**6/08** Thomas, J.L. (Presenter), Mack, V.L., Glow, J.A., Moshkelani, D., Bucholtz, K.M. "Structure/function of the differences in the inhibition of human  $3\beta$ -hydroxysteroid dehydrogenase type 1 ( $3\beta$ -HSD1) and  $3\beta$ -HSD2 by trilostane and its novel analogs." Abstract No. P2-31. Endocrine Society, San Francisco, CA, June 2008.

**6/08** Thomas, J.L. (Presenter), Bucholtz, K.M., Kacsoh, B. "Structural differences responsible for the higher affinity of human  $3\beta$ -hydroxysteroid dehydrogenase type 1 ( $3\beta$ -HSD1) for inhibitors compared to human  $3\beta$ -HSD2 both *in-vitro* and in breast tumor MCF-7 cells." Adrenal 2008, San Francisco, CA, June 2008.

**5/08** Thomas, J.L. (Invited Speaker), Bucholtz, K.M., Kacsoh, B. "Structure/function relationships responsible for the substantially higher affinity of human type 1  $3\beta$ -hydroxysteroid dehydrogenase/isomerase ( $3\beta$ -HSD1) for substrates and inhibitors relative to human  $3\beta$ -HSD2. "Workshop on "Pre-receptor steroid metabolism as target for pharmacological treatment", Eibsee, Germany, May, 2008

- 3/08**      **Poster Presentation:** Terrell, J.R. (Student Presenter), Parkerson, J.A. (Student Presenter), Bucholtz, K.M., Thomas, J.L. “Conformational Analysis and in silico Docking of Trilostane and Analogs with 3 beta HSD1” American Chemical Society, Georgia Section Herty Medalist Undergraduate Research Symposium.
- \*This poster was awarded honorable mention in the Herty Medalist Undergraduate Research Symposium.
- 3/08**      **Poster Presentation:** McCranie, E.K., Ford, A.F., Bucholtz, K.M “Development and Automation of a Synthesis of Potential PPAR delta Ligands” American Chemical Society, Georgia Section Herty Medalist Undergraduate Research Symposium.
- 11/07**      **Invited Seminar:** “The Design and Solid-Phase Synthesis of Potentially Selective, High-Affinity Ligands to PPAR delta” Department of Chemistry, University of Mississippi, Oxford, MS.
- 8/07**      **ACS National Meeting:** Aldrich, L. A., Dortch, J. D., Bucholtz, K. M. “Solid-phase Synthesis of Rationally Designed Selective PPAR delta Ligand.” Undergraduate Research Poster Session, American Chemical Society National Meeting, Boston, MA.
- 4/07**      **Poster Presentation:** Leslie Aldrich (Student Presenter) Kevin Bucholtz “Synthesis of Rationally Designed Selective PPAR delta Ligands” American Chemical Society, Georgia Section Herty Medalist Undergraduate Research Symposium, April 2007.
- \*Leslie Aldrich’s poster won the award for the best undergraduate poster at the Herty Medalist Undergraduate Research Symposium.
- 11/06**      **Oral Presentation:** John Dortch and Leslie Aldrich (Student Oral Presenters) “Rational, Structure-based Design and Synthesis of Potential Selective High-Affinity PPAR delta Ligands” Seminars for All Undergraduate Students, Mercer University Nov. 2006.
- 11/06**      **Oral Presentation:** “Medicinal Chemistry 101: Basics of Bio-organic Chemistry and Pharmaceuticals” Seminars for All Undergraduate Students, Mercer University Nov. 2006
- 11/06**      **ACS Regional Meeting:** Dortch, J. D., Bucholtz, K. M. Abstracts of the Technical Meeting, Southeast Regional Meeting of the American Chemical Society, Nov. 1-4, 2006, “Rational, Structure-Based Design of Potential High-Affinity PPAR delta Ligands Using a Simulated Docking Study” American Chemical Society: Washington, DC, 2006, Abstract #755.
- 9/06**      **Poster Presentation:** John Dortch (Student Poster Presenter) , Kevin Bucholtz “Rational, Structure-Based Design of Potential High-Affinity PPAR delta Ligands Using a Simulated Docking Study” American Chemical Society, Georgia Section Herty Medalist Undergraduate Research Symposium, September 2006.
- \*John Dortch’s poster won the award for the best undergraduate poster at the Herty Medalist Undergraduate Research Symposium.
- 9/06**      **Oral Presentation:** “Rational, Structure-Based Design of Potential High-Affinity PPAR delta Ligands Using a Simulated Docking Study” Basic Science Seminar Series, Mercer University September 2006.
- 3/06**      **Oral Presentation:** Omar Khatib (Student Oral Presenter), Kevin Bucholtz “Development of an Efficient Route to a Wide Variety of Highly Functionalized Aromatics for Use in Chemical Biology” Georgia Academy of Science Annual Meeting March 2006, Georgia Perimeter College.

- 1/06**      **Oral Presentation:** “Pharmaceuticals: Society and Science; a Chemists Perspective”  
Seminars for All Undergraduates Series, Mercer University Jan. 20, 2006.
- 11/04**      **ACS Northeast Regional Meeting:** Oral presentation, “Synthesis of Cyclobutane ter-Cycloalkane Scaffolds and Development of General Methods for the Synthesis of cis-1,3 Disubstituted Cyclobutanes.” Rochester, NY.
- 9/03**      **ACS National Meeting:** Oral presentation, “Synthesis of Cyclobutyl ter-cycloalkane Scaffolds and Development of General Methods for the Synthesis of cis-1,3 Disubstituted Cyclobutanes.” New York, NY.
- 8/03**      **Oral Presentation:** Organic Retreat, Department of Chemistry, University of Rochester, *Synthesis of Cyclobutyl ter-cycloalkane Scaffolds and Development of General Methods for the Synthesis of cis-1,3 Disubstituted Cyclobutanes.*
- 3/03**      **Oral Presentation:** Department of Chemistry, University of Rochester, *Illudins: Development of Powerful Antitumor Analogs from a Toxic Natural Product.*
- 2/03**      **Guest Speaker:** Nazareth College, Rochester, NY. Hosted by Prof. Timm Knoerzer, *Deciding on Going to Graduate School.*
- 11/01**      **Guest Speaker:** Gannon University, Hosted by Prof. Wes Tallmadge *Deciding on Going to Graduate School.*

#### OTHER ACADEMIC ACTIVITIES

- 4/09**      **Mercer University Undergraduate Research Symposium:** Organizer, 58 posters, 85 student presenters. Keynote Speaker: Dr. Nancy Hensel, Chief Executive Officer, Council on Undergraduate Research
- 4/08**      **Mercer University Undergraduate Research Symposium:** Organizer, 34 posters, 44 student presenters. Keynote Speaker: Dr. Moses Lee, Professor and Dean of the Natural Sciences, Hope College
- 4/07**      **Mercer University Undergraduate Research Symposium:** Organizer, 26 posters, 41 student presenters.
- 6/06**      **Associated New American Colleges (ANAC) Summer Institute:** North Central College, Naperville, IL “Growing Together: Institutions and Their Next Generation of ANAC Member Faculty and Professional Staff.”
- 2/06-4/06**      **College of Liberal Arts Faculty Development Reading Group:** What the Best College Teachers Do” by Ken Bain.
- 1/06**      **National Science Foundation Grantsmanship Workshop,** Clemson University, Clemson, SC.
- 4/04-8/05**      **Steering Committee:** Leadership in Education, A university-wide seminar series dedicated to promoting quality education in the sciences.
- 11/03**      **Academic Careers for Chemists:** Eastern Analytical Symposium and National Science Foundation, Neil Jespersen, A 2-day course to prepare Graduate Students and Post Doctoral Students for Careers in Academia.

- 10/02**      **Frontiers in Undergraduate Research Conference:** Department of Chemistry, University of Rochester.
- 9/01-12/01**      **Preparing for Academic Careers in Engineering and Science:** Department of Electrical and Chemical Engineering, University of Rochester, Philippe Fauchet, ECE 589.

#### SERVICE

- 2008-Current**      **Committee Member:** College of Liberal Arts Faculty Welfare Committee, Mercer University. Chair of the Faculty Salary Report Sub-committee.
- 2008-Current**      **Homecoming Planning Committee:** Mercer University
- 2008**      **Judge:** Intel International Science Fair, Atlanta GA
- 2007-2008**      **Committee Member:** Health and Vocational Advising Committee , Mercer University
- 2007-Current**      **Faculty Advisor:** Alpha Tau Omega Fraternity, Mercer University, Macon, GA.
- 2006-Current**      **Faculty Representative:** National Science Foundation Graduate Research Fellowship
- 2006-Current**      **Organic Laboratory Coordinator:** Coordinator for CHM 221/222 Laboratory Sequence
- 2006-2007**      **Committee Member:** College of Liberal Arts Faculty Welfare Committee, Mercer University.
- 2005-Current**      **Interviewer:** Scholarship Weekend, Mercer University.
- 2005-Current**      **Science Judge:** Bibb County Science Fair
- 2004-2005**      **Committee Member:** University of Rochester, Rothchild Lecture Series.
- 3/04**      **Science Judge:** The Science Congress Science Fair. St. John Fisher College, Rochester, NY.

#### MEMBERSHIP

- 2008 - Current**      **Sigma Xi, Full Member**
- 2006 - Current**      **Gamma Sigma Epsilon Chemistry Honor Society**
- 2005 - Current**      **Council on Undergraduate Research**
- 2000 - Current**      **American Chemical Society, Organic Division and Middle Georgia Local Section.**
- 2006-2007**      **Georgia Academy of Sciences**