

***CURRICULUM VITAE***  
**DR. JUSTIN S. MILLER**

Associate Professor  
Department of Chemistry  
Hobart and William Smith Colleges  
Geneva, NY 14456  
Web: <http://campus.hws.edu/academic/popup.asp?id=366>

3324 Dandelion Trail  
Canandaigua, NY 14424  
Phone: (315) 781-3884  
Email: [jsmiller@hws.edu](mailto:jsmiller@hws.edu)

**EDUCATION**

*Sloan-Kettering Institute for Cancer Research*

Postdoctoral Fellow (2001 – 2004), Advisor: Dr. Samuel J. Danishefsky

*Massachusetts Institute of Technology*

Ph.D., Organic Chemistry (2001), Advisors: Dr. Daniel S. Kemp, Dr. Scott C. Virgil

- Dissertation: "I. Efforts towards the Synthesis of CP-263,114. II. On Solubilized, Spaced Polyalanines and Amino Acid  $\alpha$ -Helix Propensities."
- Graduate Student Teaching Award (1998)

*Princeton University*

A.B., Chemistry (1995), Advisor: Dr. Jeffrey Schwartz

- Senior thesis: "The Reduction of Methyl Cinnamate by Titanocene Borohydride: A Mechanistic Study."

**ACADEMIC APPOINTMENTS**

*Associate Professor*, organic chemistry, Hobart and William Smith Colleges (HWS) (2010 – present;  
Chair 2013 – 2016)

*Assistant Professor*, organic chemistry, Hobart and William Smith Colleges (HWS) (2004 – 2010)

Research interests

- Peptide and protein synthetic methodology
- Organic synthesis of bioactive molecules
- Principles of bioorganic chemistry

Courses taught

- CHEM 240 *Introductory organic chemistry*, including laboratory
- CHEM 241 *Intermediate organic chemistry*, including laboratory
- CHEM 304 *Bonding with Food: The Chemistry of Food Preparation, Production, and Policy*
- CHEM 447 *Advanced organic chemistry*
- CHEM 110 *Introductory general chemistry*, including laboratory
- FSEM 130 *I Know What You Ate Last Summer*
- BIDS 210 *The Curious Cook: The Science and Art of Cooking and Eating*  
(Bidisciplinary, with faculty in Writing and Rhetoric)

**EXTERNAL GRANT FUNDING**

co-PI, NSF – Transforming Undergraduate Education in STEM (NSF-TUES) (2011 – 2014)

- (\$180,000) "NSF-TUES: Transforming Cell Biology and Organic Chemistry through Incorporation of the HDACi Cancer Therapeutic Laboratory Project"

PI, National Institutes of Health Academic Research Enhancement Award (NIH-AREA) (2010 – 2014)

- (\$355,523) "NIH-AREA: Synthesis of Anticancer HDAC Inhibitor Natural Products and Analogs"

PI, National Science Foundation Major Research Instrumentation (NSF-MRI) Award (2007 – 2010)

- (\$342,000) "MRI: Acquisition of an NMR Spectrometer to Advance Active Undergraduate Education and Research Programs"

Research Corporation Cottrell College Science Award (2005 – 2009)

- (\$40,218 + \$15,000 institutional matching) "Solid-Phase Synthesis of Cyclic, Cysteine-Containing Natural Products and Analogues"

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Camille and Henry Dreyfus Start-up Award (2004 – 2009)

- (\$30,000) “Solid-Phase Synthesis of Peptide Bioconjugates and Peptidic Natural Products”

U.S. Army Prostate Cancer Research Postdoctoral Training Award (2003 – 2004)

- (\$98,000) “Toward a Diagnostic Immunoassay Specific for Prostate Cancer: Chemical Synthesis of Homogeneous *N*-Linked Prostate Specific Antigen Glycopeptides”

Advisor (with Adonis Cruz), American Chemical Society Division of Organic Chemistry Summer Undergraduate Research Fellowship (ACS-DOC SURF) (2015)

- (\$5,000) “Solid-Phase Total Synthesis of Cysteine-Containing, Depsipeptidic Natural Products and Analogs”

**INTERNAL GRANT FUNDING**

Center for Teaching and Learning (CTL) Enhanced Teaching and Learning Grant (Spring, 2012)

- (\$1,500) “Edible Science Fair and other course improvements to *Bonding with Food*”

Center for Teaching and Learning (CTL) Enhanced Teaching and Learning Grant (Spring, 2010)

- (\$1,500) “*Bonding with Food: The Chemistry of Food Preparation, Production, and Policy*”

**PUBLICATIONS (undergraduate coauthors in bold)**

- (17) **E. M. Smith, L. Peraro, S. L. Cramer, R. T. Davison**, D. J. Slade, and J. S. Miller. “Semester-Long Solid-Phase Synthesis Laboratory Targeting Novel, Potential Anticancer Molecules to Complement Second-Semester Organic Coursework.” *Manuscript in preparation*.
- (16) **W. S. Perkins, R. T. Davison, G. B. Shelkey, V. E. Lawson, G. E. Hutton**, and J. S. Miller “Unmasking Latent Thioesters under Hydrophobic-Compatible Conditions.” *Manuscript in preparation*.
- (15) **X. Zang, L. Peraro, R. T. Davison, T. R. Blum, D. Vallabhaneni, C. E. Fennell, S. L. Cramer, H. K. Shah, D. M. Wholly, E. A. Fink, J. T. Sivak, K. M. Ingalls, C. T. Herr, V. E. Lawson, M. R. Burnett**, D. J. Slade, K. E. Cole, S. A. Carle, and J. S. Miller. “Synthesis and Biological Evaluation of a Depsipeptidic HDAC Inhibitor *via* a Generalizable Approach Using an Optimized Latent Thioester Solid-Phase Linker.” *J. Org. Chem.* **2020**, *85*(12), 8253-8260. DOI: 10.1021/acs.joc.0c00854
- (14) D. J. Slade and J. S. Miller. “A Project Provides an Opportunity: Multiple Drafts of an Introduction Require Students to Engage Deeply with the Literature.” *J. Chem. Ed.* **2017**, *94*(10), 1458-1463.
- (13) **N. A. Calandra, Y. L. Cheng, K. A. Kocak**, and J. S. Miller. “Total Synthesis of Spiruchostatin A *via* Chemoselective Macrocyclization using an Accessible Enantiomerically Pure Latent Thioester.” *Org. Lett.* **2009**, *11*(9), 1971-1974.
- (12) R. J. Moreau, C. R. Schubert, K. A. Nasr, M. Török, J. S. Miller, R. J. Kennedy, and D. S. Kemp. “Context-Independent, Temperature-Dependent Helical Propensities for Amino Acid Residues.” *J. Am. Chem. Soc.* **2009**, *131*(36), 13107-13116.
- (11) V. Y. Dudkin, J. S. Miller, A. S. Dudkina, C. Antczak, D. A. Scheinberg, and S. J. Danishefsky. “Toward a Prostate Specific Antigen-Based Prostate Cancer Diagnostic Assay: Preparation of Keyhole Limpet Hemocyanin-Conjugated Normal and Transformed Prostate Specific Antigen Fragments.” *J. Am. Chem. Soc.* **2008**, *130*(41), 13598-13607.
- (10) G. E. Job, R. J. Kennedy, Heitmann, B., J. S. Miller, S. M. Walker, and D. S. Kemp. “Temperature- and Length-Dependent Energetics of Formation for Polyalanine Helices in Water: Assignment of  $w_{Ala}(n,T)$  and Temperature-Dependent CD Ellipticity Standards.” *J. Am. Chem. Soc.* **2006**, *128*(25), 8227-8233.

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- (9) J. D. Warren, J. S. Miller, S. J. Keding, and S. J. Danishefsky. "Toward Fully Synthetic Glycoproteins by Ultimately Convergent Routes: A Solution to a Long-Standing Problem." *J. Am. Chem. Soc.* **2004**, *126*, 6576-6578.
- (8) V. Y. Dudkin, J. S. Miller, and S. J. Danishefsky. "Chemical Synthesis of Normal and Transformed PSA Glycopeptides." *J. Am. Chem. Soc.* **2004**, *126*, 736-738.
- (7) J. S. Miller, V. Y. Dudkin, G. J. Lyon, T. W. Muir, and S. J. Danishefsky. "Toward Fully Synthetic N-Linked Glycoproteins." *Angew. Chem. Int. Ed.* **2003**, *42(4)*, 431-434.
- (6) V. Y. Dudkin, J. S. Miller, and S. J. Danishefsky. "A Concise Route to the Core Pentasaccharide of N-Linked Glycoproteins." *Tetrahedron Lett.* **2003**, *44(9)*, 1791-1793.
- (5) P. Wallimann, R. J. Kennedy, J. S. Miller, W. Shalongo, and D. S. Kemp. "Dual Wavelength Parametric Test of Two-State Models for Circular Dichroism Spectra of Helical Polypeptides: Anomalous Dichroic Properties of Alanine-Rich Peptides." *J. Am. Chem. Soc.* **2003**, *125(5)*, 1203-1220.
- (4) J. S. Miller, R. J. Kennedy, and D. S. Kemp. "Solubilized, Spaced Polyalanines: A Context-Free System for Determining Amino Acid  $\alpha$ -Helix Propensities." *J. Am. Chem. Soc.* **2002**, *124(6)*, 945-962.
- (3) W. Maison, R. J. Kennedy, J. S. Miller, and D. S. Kemp. "C-Terminal Helix Capping Propensities in a Polyalanine Context for Amino Acids Bearing Nonpolar Aliphatic Side Chains." *Tetrahedron Lett.* **2001**, *42(30)*, 4975-4977.
- (2) J. S. Miller, R. J. Kennedy, and D. S. Kemp. "Short, Solubilized Polyalanines Are Conformational Chameleons: Exceptionally Helical If N- and C-Capped with Helix Stabilizers, Weakly to Moderately Helical If Capped with Rigid Spacers." *Biochemistry*, **2001**, *40(2)*, 305-309.
- (1) J. M. Schmitt, G. X. Zhou, and J. Miller. "Measurement of blood hematocrit by dual-wavelength near-IR photoplethysmography." *Proc. SPIE-Int. Soc. Opt. Eng.* **1992**, *1641* (Physiol. Monit. Early Detect. Diagn. Methods), 150-61.

**PATENTS**

- (2) S. J. Danishefsky, V. Y. Dudkin, J. S. Miller, D. A. Scheinberg, and C. Antczak. "Preparation of normal and transformed PSA glycopeptide conjugates for diagnostic and therapeutic applications." *U.S. Pat. Appl. Publ.* **2006**, 124 pp. Patent application cont.-in-part of Appl. No. PCT/03US/38453.
- (1) S. J. Danishefsky, V. Y. Dudkin, and J. S. Miller. "Preparation of Prostate Specific Antigens and Conjugates of Diagnosis and Treatment of Cancer." *PCT Int. Appl.* **2004**, 257 pp. Patent application: WO 2003-US38453.

**PRESENTATIONS (undergraduate coauthors in bold)**

- (36) **J. H. Sherwood, M. N. Gad, H. Hartmann**, J. S. Miller, and E. M. S. Stennett. "Labeling Peptides with Fluorescein Derivatives Using an Optimized Solid-Phase Synthesis." Pittcon, Philadelphia, PA, March 17 – 21, **2019**.
- (35) J. S. Miller. "Eggcellent Science" *Keuka College Natural Sciences Seminar Series*, Keuka College, Penn Yan, NY, October 30, **2018**. (invited lecture)
- (34) J. S. Miller, G. L. Sacks, and D. Golden. "C<sup>4</sup> – Communicating Chemistry: Cooking Competitions (Cajun, California, Caribbean, and Creole)." 25<sup>th</sup> Biennial Conference on Chemical Education (BCCE), South Bend, IN, Jul 29 – Aug 2, **2018**. (oral)

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- (33) **S. S. Smilen, E. M. Smith, P. A. Banks, R. B. Fresco, C. T. Herr, R. T. Davison,** and J. S. Miller. "Potential anticancer depsipeptidic HDAC inhibitors accessed via an optimized solid-phase synthetic approach." 63<sup>rd</sup> Undergraduate Research Symposium, Rochester Section of the American Chemical Society, Rochester, NY, Apr 28, **2018**.
- (32) **S. S. Smilen, E. M. Smith, P. A. Banks, R. B. Fresco, C. T. Herr, R. T. Davison,** and J. S. Miller. "Potential anticancer depsipeptidic HDAC inhibitors accessed via an optimized solid-phase synthetic approach." Abstracts of Papers, 255<sup>th</sup> ACS National Meeting, New Orleans, LA, Mar 18-22, **2018**, ORGN-712.
- (31) J. S. Miller. "The Chemistry of Food" *HWS Speaker Series*, Wood Library, Canandaigua, NY, Jan 17, **2018**. (invited lecture)
- (30) J. S. Miller. "What's a Chemist, Anyway?" *Career Day*, Canandaigua (NY) Middle School, May 12, **2017**; repeated May 11, 2018. (invited lecture)
- (29) J. S. Miller. "Bonding...with Food: How One Course Became Three." 24<sup>th</sup> Biennial Conference on Chemical Education (BCCE), Greeley, CO, Jul 31 – Aug 3, **2016**. (invited lecture)
- (28) **A. A. Cruz** and J. S. Miller. "Solid-Phase Total Synthesis of Cysteine-Containing, Depsipeptidic Natural Products and Analogs." 2015 American Chemical Society Division of Organic Chemistry Summer Undergraduate Research Fellowships (ACS-DOC SURF), Rahway, NJ (Merck), Aug 31, **2015**.
- (27) **A. A. Cruz, M. K. Patterson, V. E. Lawson, G. E. Hutton, A. B. Sadkin,** and J. S. Miller. "Toward depsipeptidic potential anticancer compounds using latent thioester solid-phase synthesis." 2015 Northeast Regional Meeting of the American Chemical Society, Ithaca, NY, Jun 10-13, **2015**, NERM-161.
- (26) **C. Mitchell, S. Enos, X. Zang, D. Vallabhaneni, L. Peraro,** J. S. Miller, and S. A. Carle. "Testing Novel Depsipeptides for Histone Deacetylases Inhibitor Activity." **2015** Annual Meeting of the American Society for Biochemistry and Molecular Biology, Boston, MA, Mar 28 – Apr 1.
- (25) S. A. Carle, J. S. Miller, J. G. MaKinster, and P. Mowery. "Cross-Course Laboratory Collaboration in Cell Biology and Organic Chemistry II Leads to Increased Knowledge of Science Content and Process." **2015** Annual Meeting of the American Society for Biochemistry and Molecular Biology, Boston, MA, Mar 28 – Apr 1.
- (24) S. A. Carle, J. S. Miller, J. G. MaKinster, and P. Mowery. "Cross-Course Laboratory Collaboration in Cell Biology and Organic Chemistry II Leads to Increased Knowledge of Science Content and Process." 15<sup>th</sup> Annual Conference in Case Study Teaching in Science, Buffalo, NY, Sep 19-20, **2014**.
- (23) **G. E. Hutton, S. L. Cramer, J. N. Garofalo, G. B. Shelkey,** and J. S. Miller. "Spiruchostatin A and potential anticancer depsipeptidic analogs accessed *via* a latent thioester solid-phase route." Abstracts of Papers, 248<sup>th</sup> ACS National Meeting, San Francisco, CA, Aug 10-14, **2014**, ORGN-271.
- (22) **G. B. Shelkey, W. S. Perkins, X. Zang, L. Peraro, S. L. Cramer, J. N. Garofalo, T. R. Blum,** and J. S. Miller. "Cyclic, cysteine-containing depsipeptide synthesis *via* latent thioester key intermediates." 43<sup>rd</sup> ACS National Organic Chemistry Symposium, Seattle, WA, Jun 23-27, **2013**.
- (21) W. J. Bowyer, J. S. Miller, and C. Forbes. "Kitchen as laboratory: Two courses at two very different levels." Abstracts of Papers, 245<sup>th</sup> ACS National Meeting, New Orleans, LA, Apr 7-11, **2013**, CHED-1704. (oral)

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- (20) **L. Peraro** and J. S. Miller. "Incorporating original research into the organic teaching laboratory: The HDACi Cancer Therapeutic Laboratory Project." Abstracts of Papers, 245<sup>th</sup> ACS National Meeting, New Orleans, LA, Apr 7-11, **2013**, CHED-1614. (oral)
- (19) J. S. Miller and G. L. Sacks. "Chemistry of Cajun Cooking Competition." Abstracts of Papers, 245<sup>th</sup> ACS National Meeting, New Orleans, LA, Apr 7-11, **2013**, CHED-83.
- (18) **X. Zang, L. Peraro, H. K. Shah, G. B. Shelkey, M. A. Mahajan**, and J. S. Miller. "Solid-phase synthesis of depsipeptidic potential anticancer compounds using latent thioesters." Abstracts of Papers, 245<sup>th</sup> ACS National Meeting, New Orleans, LA, Apr 7-11, **2013**, ORGN-204.
- (17) **W. S. Perkins, X. Zang, L. Peraro, H. K. Shah, N. M. Zanghi**, and J. S. Miller. "Solid-Phase Synthesis of Depsipeptidic Anticancer Natural Products and Analogs *via* Improved Latent Thioester Mediated Solid-Phase Methodology." Abstracts of Papers, 243<sup>rd</sup> ACS National Meeting, San Diego, CA, Mar 25-29, **2012**, ORGN-610.
- (16) **D. M. Wholly, W. S. Perkins, H. K. Shah**, and J. S. Miller. "Solid-Phase Synthesis of Depsipeptidic Anticancer Natural Products and Analogs." Abstracts of Papers, 241<sup>st</sup> ACS National Meeting, Anaheim, CA, Mar 27-31, **2011**, ORGN-163.
- (15) **T. R. Blum, H. K. Shah, X. Zang, W. S. Perkins, A. R. Korn, D. M. Wholly**, and J. S. Miller. "Solution- and Solid-Phase Synthesis of Potential Anticancer HDAC Inhibitors." Abstracts of Papers, 240<sup>th</sup> ACS National Meeting, Boston, MA, Aug 22-26, **2010**, ORGN-937.
- (14) J. S. Miller. "Responsive Lecturing: Keeping the Tradition and Improving the Pedagogy." *HWS New Faculty Orientation*, Aug 25, **2009**. (invited lecture)
- (13) **D. M. Wholly, T. R. Blum, J. A. Walkley, K. A. Hlavac**, and J. S. Miller. "Total Synthesis of Cysteine-Containing, Depsipeptidic Natural Products in Solution and on the Solid Phase *via* Chemoselective Macrocyclization Using Latent Thioester Solid-Phase Linkers." Abstracts of Papers, 238<sup>th</sup> ACS National Meeting, Washington, D.C., Aug 16-20, **2009**, ORGN-785.
- (12) J. S. Miller. "Fighting Cancer One Molecule at a Time? A Total Synthesis of Spiruchostatin A." *Illinois Wesleyan University Natural Science Colloquium Series*, Apr 3, **2009**. (invited lecture)
- (11) J. S. Miller. "Lecturing Techniques that Engage Students." *HWS Faculty Institute: Teaching Practices in Context*, Jan 15, **2009**. (invited lecture)
- (10) J. S. Miller. "Fighting Cancer One Molecule at a Time? A Total Synthesis of Spiruchostatin A." *Ithaca College Chemistry Department Seminar*, Dec 9, **2008**. (invited lecture)
- (9) **K. A. Perri, N. A. Calandra, D. M. Wholly**, and J. S. Miller. "Key intermediate en route to the cyclic, cysteine-containing natural products Spiruchostatin A and B using a *thioester equivalent* ester functionality." Abstracts of Papers, 236<sup>th</sup> ACS National Meeting, Philadelphia, PA, Aug 17-21, **2008**, ORGN-467.
- (8) J. S. Miller. "What is an NMR, and why should anyone care that we got one?" *Faculty Lunch Seminar Series*, October, **2007**. (oral)
- (7) **N. D. Valente, K. A. Kocak, Y.-L. Cheng**, and J. S. Miller. "Toward the Fmoc Solid-Phase Synthesis of Native Chemical Ligation Precursors using *Thioester Equivalent* Ester Linkers." Abstracts of Papers, 234<sup>th</sup> ACS National Meeting, Boston, MA, Aug 19-23, **2007**, ORGN-904.
- (6) **K. A. Kocak, K. A. Perri, Y.-L. Cheng**, and J. S. Miller. "Efficient Synthetic Route Toward the Cyclic, Cysteine-Containing Natural Products FK228 and the Spiruchostatins." Abstracts of Papers, 234<sup>th</sup> ACS National Meeting, Boston, MA, Aug 19-23, **2007**, ORGN-840.

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- (5) **K. S. McMenaman, Y.-L. Cheng, S. M. Weinstein,** and J. S. Miller. “*Thioester Equivalent Linkers for the Fmoc Solid-Phase Synthesis of Native Chemical Ligation Precursors.*” Abstracts of Papers, 35<sup>th</sup> Northeast Regional Meeting of the American Chemical Society, Binghamton, NY, Oct 5-7, **2006**, NRM-447.
- (4) **Y.-L. Cheng, G. M. Lipka, Z. J. Schonfield, K. A. Kocak,** and J. S. Miller. “*Toward the Solid-Phase Synthesis of Cyclic, Cysteine-Containing, Depsipeptidic Natural Products FK228 and the Spiruchostatins.*” Abstracts, 35<sup>th</sup> Northeast Regional Meeting of the American Chemical Society, Binghamton, NY, Oct 5-7, **2006**, NRM-445.
- (3) J. D. Warren, J. S. Miller, and S. J. Danishefsky. “*Convergent Synthesis of Bifunctional Glycopeptides Bearing Differential Glycans.*” Abstracts of Papers, 228<sup>th</sup> ACS National Meeting, Philadelphia, PA, Aug. 22-26, **2004**, ORGN-301.
- (2) J. S. Miller. “(Glyco)Peptides: Synthesis, Structure, and Application.” *Columbia University Chemistry Department Seminar*, May, 2003. (Lecture)
- (1) J. S. Miller. “*Efforts Towards the Synthesis of CP-263,114, A Highly Oxygenated Natural Product.*” *Organic Chemistry Graduate Symposium*, May, 1999. (Lecture)

**CHEMICAL EDUCATION ACTIVITIES**

- (6) J. S. Miller, organizer; with D. Golden, and G. L. Sacks. *C<sup>d</sup>: Communicating Chemistry, Creole Cooking*, National Competition through the ACS, at the 255<sup>th</sup> ACS National Meeting, New Orleans, LA, Mar 20, **2018**.
- (5) *Ice Cream 101: Introduction to Frozen Desserts*, Penn State University, State College, PA, Jan 26 – 28, **2018**. (participant)
- (4) J. S. Miller, D. Golden, and G. L. Sacks, organizers. *C<sup>d</sup>: Communicating Chemistry, Caribbean Cuisine*, National Competition through the ACS, at the 251<sup>st</sup> ACS National Meeting, San Diego, CA, Mar 15, **2016**.
- (3) *cWCWS Food Chemistry workshop*, Clarke University, Dubuque, IA, Jul 12 – 17, **2015**. (participant)
- (2) J. S. Miller, D. Golden, and G. L. Sacks, organizers. *C<sup>d</sup>: Communicating Chemistry, California Cuisine*, National Competition through the ACS, at the 248<sup>th</sup> ACS National Meeting, San Francisco, CA, Aug 11, **2014**.
- (1) J. S. Miller and G. L. Sacks, creators and organizers. *C<sup>d</sup>: Communicating Chemistry, Cajun Cooking*, National Competition through the ACS, at the 245<sup>th</sup> ACS National Meeting, New Orleans, LA, Apr 9, **2013**.

**RESEARCH EXPERIENCE**

*Professor*, organic chemistry, HWS (*Assistant*, 2004 – 2010; *Associate*, 2010 – present)

- Synthesis of cysteine-containing natural products and analogues
- Design and construction of linkers for solid-phase peptide synthesis

*Postdoctoral Research* in bioorganic chemistry, SKI (2001 – 2004)

- Design of synthetic methodology for *N*-linked glycoprotein conjugates
- Synthesis of prostate specific antigen (PSA) glycopeptides
- Complex oligosaccharide synthesis

*Graduate Research* in organic and bioorganic chemistry, MIT (1995 – 2001)

- Design of a construct for studying the secondary structure of insoluble peptides
- Synthesis and characterization of solubilized polyalanines
- Determination of amino acid  $\alpha$ -helical propensities
- Total synthesis of naturally occurring fungal metabolites

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*Senior Thesis Research* in organometallic chemistry, Princeton (1994 – 1995)

- Mechanistic study of carbonyl reduction *via* metallocene borohydride reagents

*Undergraduate Research* in inorganic chemistry, Princeton (1994)

- Preliminary design and synthesis of potential chemotherapy drugs

*Summer Intern* at the National Institutes of Health (1991 – 1993)

- Techniques for diagnosis of cancer and Gaucher's disease
- Nuclear magnetic resonance (NMR) imaging techniques
- NMR circuitry design and construction
- Development of a practical medical device for measuring blood hemoglobin content

**SERVICE AND ADMINISTRATIVE EXPERIENCE**

HWS Center for Teaching and Learning (CTL) Teaching Fellows program (2007 – 2014; 2020)

- Chemistry department liaison
- Helped initiate the program

HWS Honors program (2005 – present)

- Honors advisor, Peter Banks (2018)
- Honors advisor, Sydney Smilen (2018)
- Honors advisor, Ryan Davison (2017)
- Honors advisor, Alysa Sadkin (2015)
- Honors advisor, Wade Perkins (2012)
- Honors advisor, Deirdre Wholly (2011)
- Honors advisor, Travis Blum (2010)
- Honors advisor, Kimberly Hlavac (2009)
- Honors advisor, Yim Ling Cheng (2007)
- Honors Faculty Examiner (Emily Perkins, Lindsey Haun)
- Honors Field Examiner (Mike Liquori, Deirdra Evers, Megan Rechin, Catherine Downey, Deborah Kwansare, Fernando Banales-Mejia, Sophia Melvin)

Instrument care, maintenance responsibilities (HWS)

- Departmental Waters (LC) and Advion (MS) ESI-LCMS
- Departmental SolvTek dry solvent purification system
- Varian MR 400 MHz spectrometer

Instrument care, maintenance responsibilities (Danishefsky Group Laboratory Manager, 2002 – 2004)

- Waters ZQ (and ZMD) with Micromass LCMS system
- PE Biosystems automated peptide synthesizer
- Labconco FreeZone 2.5 L lyophilizer
- Waters analytical and semiprep HPLC systems

HWS Committee on the Faculty (2019 – present; Chair 2020 – present)

HWS Salary and Compensation Subcommittee of CoFac (Chair 2019 – present)

HWS Committee on Standards (2009 – 2011; Chair 2010 – 2011)

HWS Health Professions Advisory Committee (2006 – present; Chair 2011 – present)

Health Professions Steering Committee (Chair, initiated in 2012 – present)

LGBT Studies Steering Committee (2013 – 2019)

Barry M. Goldwater Scholarship Committee (2008 – 2011)

Elizabeth Blackwell Scholarship Committee (2008 – 2017)

NSF reviewer (2007 – 2015)

Reviewer: *Organic Letters*, *Tetrahedron Letters*, *Mini Reviews in Organic Chemistry*, Norton Publishing Group, Wiley International, Fundação para a Ciência e a Tecnologia (FCT, Portuguese Foundation for Science) (2008 – present)

## *CURRICULUM VITAE* **DR. JUSTIN S. MILLER**

### HWS Club advising

- Ultimate Disc Club advisor (2010 – present)
- Chem Club advisor (2004 – 2007)
- Glassblowing Club advisor (2005 – 2006), assisted in forming the club

### Laboratory Safety

- New York City Fire Department Charge of Chemical Laboratory Fitness (2002 – 2004)
- MIT Chemistry Department Safety Committee (1999 – 2000)
- MIT Laboratory Group Safety Coordinator (1998 – 2001)

### PROFESSIONAL MEMBERSHIPS

American Chemical Society (ORGN: 1996 – present; AGFD: 2012 – present)  
Sigma Xi Scientific Research Society (2005 – 2009)

### UNDERGRADUATE RESEARCH STUDENTS

- (43) **James T. Monaco**, Hobart '20 (Jan 2020 – May 2020), “Potential Anticancer Depsipeptidic HDAC Inhibitors Accessed *via* an Optimized Solid-Phase Synthetic Approach”
- (42) **Lily G. Walker**, William Smith '22 (May 2019 – present), “Potential Anticancer Depsipeptidic HDAC Inhibitors Accessed *via* an Optimized Solid-Phase Synthetic Approach”
- (41) **Connor R. Cowie**, Hobart '22 (May 2019 – Dec 2019), “Potential Anticancer Depsipeptidic HDAC Inhibitors Accessed *via* an Optimized Solid-Phase Synthetic Approach”
- (40) **Sarah A. Lewicki**, William Smith '21 (Jan 2019 – present), “Optimizing the Solid-Phase Synthesis of Xyzidepsin”
- (39) **Chelsea T. Herr**, William Smith '20 (May 2017 – May 2020), “Optimizing the Solid-Phase Synthesis of Xyzidepsin and Characterization of Synthetic Intermediates *en route* to Xyzidepsin”
- (38) **Rabiah B. Fresco**, William Smith '19 (August 2017 – Dec 2018), “Optimizing the Solid-Phase Synthesis of Xyzidepsin”
- (37) **Peter A. Banks**, Hobart '18 (August 2017 – May 2018), “Development of the Synthesis and Purification of Precursors for Potential Anticancer Histone Deacetylase Inhibitors”
- (36) **Emily M. Smith**, William Smith '18 (May 2017 – May 2018), “A Semester-Long Solid-Phase Synthesis Laboratory that Complements Second-Semester Organic Coursework Targeting Novel, Potential Anticancer Molecules”
- (35) **Sydney H. Smilen**, William Smith '18 (May 2017 – May 2018), “Developing HPLC Purification Methods for Precursors of Potential Anticancer Histone Deacetylase Inhibitors”
- (34) **Ryan T. Davison**, Hobart '17 (November 2015 – May 2017), “Integrating LCMS Analysis and Purification into the Synthesis of Depsipeptidic Potential Anticancer Chemotherapeutics”
- (33) **Evan M. Howard**, Hobart '17 (October 2015 – May 2016), “An Important Intermediate for the Synthesis of Spiruchostatin A”
- (32) **Melanie K. Patterson**, William Smith '17 (May 2015 – July 2015), “Large-Scale Synthesis of Spiruchostatin A Building Blocks”
- (31) **Vernon E. Lawson**, Hobart '17 (May 2015 – December 2016), “Toward Depsipeptidic Potential Anticancer Compounds Using Latent Thioester Solid-Phase Synthesis”
- (30) **Adonis A. Cruz**, Hobart '17 (January 2015 – May 2016), “Purification and Analysis of FK228 Analogs by Column Chromatography and NMR Analysis”



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- (29) **Grace E. Hutton**, William Smith '16 (May 2014 – May 2016), “New Reaction Conditions for Latent Thioester Chemoselective Ligation”
- (28) **Alysa B. Sadkin**, William Smith '15 (August 2013 – May 2015), “(1) Purification of FK228 Analogs; (2) Toward the Total Synthesis of Spiruchostatin A by Solid Phase Peptide Synthesis”
- (27) **Amanda C. Rimsa**, William Smith '15 (August 2013 – December, 2013), “Purification and Analysis of FK228 analogs by Column Chromatography and NMR analysis”
- (26) **Janae N. Garofalo**, William Smith '15 (May 2013 – May 2015), “Toward a Solid-Phase Synthesis of HDAC Inhibitor Spiruchostatin A”
- (25) **Stephanie L. Cramer**, William Smith '15 (May 2013 – May 2015), “HDACi Cancer Therapeutic Laboratory Project: Depsipeptide Analog Synthesis”
- (24) **Melissa A. Mahajan**, William Smith '15 (May 2012 – December 2012), “Toward an Optimized Synthesis of HDAC Inhibitor Spiruchostatin A”
- (23) **Gregory B. Shelkey**, Hobart '14 (Sep 2011 – May, 2014), “New Reaction Conditions for Latent Thioester Chemoselective Ligation”
- (22) **Nicole M. Zanghi**, William Smith '14 (May 2011 – May 2012), “Solid-Phase Synthesis of Anticancer Agent FK228”
- (21) **Leila Peraro**, William Smith '13 (May 2011 – May 2013), “HDACi Cancer Therapeutic Laboratory Project: Depsipeptide Analog Synthesis”
- (20) **Heli K. Shah**, William Smith '13 (May 2010 – May 2013), “Attempted Synthesis of Depsipeptidic HDACi”
- (19) **Xiaoyu Zang**, William Smith '13 (May 2010 – May 2013), “Total Synthesis of Anticancer HDAC Inhibitor Natural Products and Analogs”
- (18) **Ariella R. Korn**, William Smith '12 (May 2010 – Aug 2010), “Synthesis of an Enantiomerically Pure Linker for Chemoselective Ligation”
- (17) **Wade S. Perkins**, Hobart '12 (May 2010 – May 2012), “Preparation of a Nagao-Functionalized Hydroxymercaptoheptanoate for Cyclic Depsipeptide Analog Synthesis” (2010) and “New Reaction Conditions for Unmasking Latent Thioesters” (2011)
- (16) **Travis R. Blum**, Hobart '10 (May 2009 – May 2010), “Synthesis of Cysteine-Containing, Depsipeptidic Natural Products and Analogs in Solution and on the Solid Phase *via* Chemoselective Macrocyclization using Latent Thioesters”
- (15) **Janelle A. Walkley**, William Smith '09 (May 2009 – Aug 2009), “Total Synthesis of Cysteine-Containing, Depsipeptidic Natural Products on the Solid Phase using Latent Thioester Linkers”
- (14) **Kimberly A. Hlavac**, William Smith '09 (Sep 2008 – May 2009), “Crucial Intermediates for the Solid-Phase Synthesis of FK228 and the Spiruchostatins”
- (13) **Yessica Baez-Sosa**, William Smith '09 (May 2008 – Jan 2009), “Crucial Intermediates for the Solid-Phase Synthesis of FK228 and the Spiruchostatins”
- (12) **Deirdre M. Wholly**, William Smith '11 (May 2008 – May 2011), “Linkers for the Solid-Phase Synthesis of Latent Peptide Thioesters” and “Toward the Total Synthesis of Anticancer Agent FK228”
- (11) **Nicole A. Calandra**, William Smith '09 (May 2008 – May 2009), “The Total Synthesis of Potential Anticancer Agent Spiruchostatin A”

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- (10) **Katherine A. Perri**, William Smith '10 (May 2007 – Aug 2008), “Toward the Total Synthesis of Cyclic, Cysteine-Containing Natural Products FK228 and the Spiruchostatins”
- (9) **Nicholas D. Valente**, Hobart '09 (May 2007 – Aug 2007), “Linkers for the Solid-Phase Synthesis of Cyclic, Cysteine-Containing Natural Products FK228 and the Spiruchostatins”
- (8) **Kimberly A. Kocak**, William Smith '08 (Jun 2005 – May 2008), “Toward the Solid-Phase Synthesis of Cyclic, Cysteine-Containing Natural Products FK228 and the Spiruchostatins”
- (7) **Zachary J. Schonfield**, Hobart '08 (Jun 2005 – Aug 2006), “Crucial Intermediates for the Solid-Phase Synthesis of FK228 and the Spiruchostatins”
- (6) **Yim Ling Cheng**, William Smith '07 (Jun 2005 – May 2007), “Toward the Total Synthesis of Potential Anticancer Agent Spiruchostatin A and Its Analogs”
- (5) **Kathryn S. McMenaman**, William Smith '07 (Sep 2005 – Jan 2006), “Completion of Two Resins for the Solid-Phase Synthesis of Potential Anticancer Agents FK228 and the Spiruchostatins”
- (4) **Geoffrey M. Lipka**, Hobart '07 (Jun 2005 – Jul 2006), “An Intermediate for the Solid-Phase Synthesis of Potential Anticancer Agents FK228 and Spiruchostatins A and B”
- (3) **Sarah M. Weinstein**, William Smith '07 (Jun 2005 – Jul 2005), “Potential Linkers for the Solid-Phase Synthesis of Native Chemical Ligation Precursors”
- (2) **Brooke A. Denslow-Chase**, William Smith '05 (Sep 2004 – May 2005), “Linkers for the Solid-Phase Synthesis of Peptide Thioester Equivalents”
- (1) **Gregory J. Sand**, Hobart '05 (Jul 2004 – May 2005), “Toward the Total Synthesis of Cyclic Peptidic Gene Expression Promoters”

**PERSONAL INTERESTS**

Ultimate disc, gardening, carpentry, travel/hiking, biking, cooking, arranging/performing vocal music