

# STEPHEN T. HELLER

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Department of Chemistry & Biochemistry  
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## EDUCATION

- 2009-2012      **Ph.D. Chemistry**      *University of California, Berkeley*  
Dissertation: Heterocycles Old and New: Carbonylazole Mediated Chemoselective Acylation and Benzindolizines as Scaffolds for the Total Synthesis of *Erythrina* Alkaloids.
- 2007-2009      **M.S. Chemistry**      *University of California, Berkeley*
- 2002-2005      **B.S. Chemistry, Sociology**      *University of Chicago*  
Departmental Honors in both disciplines  
Thesis in Chemistry: T-shaped Molecules and p-i-n Junctions: Application of Organic Chemistry to Materials Science  
Thesis in Sociology: Toward an Understanding of the Role of Teacher Quality in the Relationship between Class Size and Student Achievement

## PROFESSIONAL EXPERIENCE

- 2016-present      **Assistant Professor**      *Loyola Marymount University*  
Course and lab instruction and development, mentor undergraduate research, service to home department, College of Science and Engineering, and University
- 2012-2016      **Visiting Assistant Professor**      *Willamette University*  
Course and lab instruction and development, mentored undergraduate research
- 2005-2007      **Staff Chemist**      *Merck and Co., Inc.*  
Medicinal chemistry efforts toward development of anti-inflammatory drugs

## INDEPENDENT RESEARCH CAREER<sup>1</sup> (Undergraduate Authors Bolded)

### Publications (4)

- 2014      Heller, S.T.; **Nelson, H.** Allyl 1*H*-Imidazole Carbamate (2014), *Electronic Encyclopedia of Reagents for Organic Synthesis [Online]*, John Wiley & Sons Ltd.
- 2008      Heller, S.T.; Ross, R.; Irvine, N.M.; Renga, J.M.; Zettler, M.W.; Arndt, K.E. Process for the Preparation of 2-Substituted-5-(1-Alkylthio)alkylpyridines. K.E. PCT Int. Appl. 2008, WO 2008066558.

<sup>1</sup> Work published as corresponding author or principal inventor.

- This patent covers part of the manufacturing route for Isoclast (sulfoxaflor), a new pesticide sold by Dow Agrochemical.
- 2007 Heller, S.T.; Natarajan, S.R. Rapid Access to Pyrazolo[3,4-c]pyridines via Alkyne Annulation: Limitations of Steric Control in Nickel-Catalyzed Alkyne Insertions. *Organic Letters*, 2007, 9, 4947.
- 2006 Heller, S.T.; Natarajan, S.R. 1,3-Diketones from Acid Chlorides and Ketones: A Rapid and General One-Pot Synthesis of Pyrazoles. *Organic Letters*, 2006, 8, 2675.
- Highlighted in "Some Items of Interest to Process R&D Chemists and Engineers." *Organic Process Research & Development*, 2006, 10, 853.

### Invited Talks (2)

- 2006 Heller, S.T. Discovery of 1,2,4-Triazole Derivatives as Inhibitors of VAP-1. *Merck Rahway Associate Symposium*. Merck, Rahway, NJ, June 19, 2006.
- Heller, S.T. Discovery of 1,2,4-Triazole Derivatives as Inhibitors of VAP-1. Merck, West Point, PA, August 11, 2006.

### Posters (2)

- 2014 Heller, S.T. Schultz, E.E.; **Nelson, H.**; **Fu, T.**; Sarpong, R. Carbonylimidazoles as Versatile Reagents for Chemoselective Acylation. *248<sup>th</sup> ACS National Meeting*, San Francisco, CA, August 13, 2014.
- 2006 Heller, S.T.; Natarajan S.R.; O'Keefe, S.; Struthers, M. Internal Poster. *Merck Rahway Basic Research Symposium*. Rahway, NJ, June 19, 2006.

### Funded Grants (3/3)

- 2015 Hewlett Grant for Curricular Development (Co-PI)  
 2014 Hewlett Grant for Curricular Development (Co-PI)  
 2012 University of Arizona Research Support Outreach Program (Lead PI, renewed 2014)

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### MENTORED RESEARCH EXPERIENCE

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|-----------|---|---|
| 2007-2012 | <b>NSF Graduate Research Fellow</b>         | <i>University of California, Berkeley</i><br>Total synthesis of <i>Erythrina</i> alkaloids, method development<br>Advisor: Professor Richmond Sarpong       |
| 2003-2005 | <b>Undergraduate Researcher - Chemistry</b> | <i>University of Chicago</i><br>Synthesis and evaluation of photovoltaic organic polymers<br>Advisor: Professor Luping Yu                                   |
| 2004-2005 | <b>Undergraduate Researcher - Sociology</b> | <i>University of Chicago</i><br>Statistical investigation on mediating effect of class size on relationship between teacher quality and student achievement |

Advisor: Professor Larry Hedges

2002, 2003      **REU Participant**      *University of Washington*  
 Synthesis and evaluation of organic nonlinear optical materials  
 Advisor: Professor Larry Dalton

## MENTORED RESEARCH CAREER (Undergraduate Authors Bolded)

### Publications (11)

- 2015      Heller, S.T.; Newton, J.; **Fu, T.**; Sarpong, R. One-pot Unsymmetrical Ketone Synthesis Employing a Pyrrole-Bearing Formal Carbonyl Dication Linchpin Reagent. *Angewandte Chemie International Edition*, 2015, 54, 9839.
- The reagents described in this publication will be sold by Sigma-Aldrich
  - Highlighted in *SynFacts* (2015, 11, 977)
  - Highlighted in "Some Items of Interest to Process R&D Chemists and Engineers." *Organic Process Research & Development*, 2015, ASAP, DOI: 10.1021/acs.oprd.5b00266
- 2013      Heller, S.T.; Kiho, T.; Narayan, A.R.H.; Sarpong, R. Alcohol Mediated Cycloisomerizations of Quinoline Propargylic Alcohols: Total Syntheses of (±)-3-Demethoxyerythridinone and (-)-Cocculidine. *Angewandte Chemie International Edition*, 2013, 52, 11129.
- Corkey, B.K.; Heller, S.T.; Wang, Y.M.; Toste, F.D. Enantioselective Cyclization of Enamide-Ynes and Application to the Synthesis of the Kopsifoline Core. *Tetrahedron*, 2013, 69, 5640.
- 2012      Heller, S.T.; Schultz, E.E.; Sarpong, R. Chemoselective *N*-Acylation of Indoles and Oxazolidinones with Carbonylazoles. *Angewandte Chemie International Edition*, 2012, 51, 8304.
- Heller, S.T.; **Fu, T.**; Sarpong, R. Dual Brønsted Acid/Nucleophilic Activation of Carbonylimidazole Derivatives. *Organic Letters*, 2012, 14, 1970.
- Most read article in *Organic Letters*, April 2012 (pubs.acs.org)
  - 3<sup>rd</sup> most read article in *Organic Letters*, April-June 2012 (pubs.acs.org)
- 2011      Heller, S.T.; Sarpong, R. On the Reactivity of Imidazole Carbamates and Ureas and their Use as Esterification and Amidation Reagents. *Tetrahedron*, 2011, 67, 8851.
- 2010      Heller, S.T.; Sarpong, R. Chemoselective Esterification and Amidation of Carboxylic Acids with Imidazole Carbamates and Ureas. *Organic Letters*, 2010, 12, 4572.
- The reagents described in this publication are currently sold by Sigma-Aldrich.
- 2006      Natarajan, S.R.; Heller, S.T.; Nam, K.; Singh, S.B.; Scapin, G.; Patel, S.; Thompson, J.E.; Fitzgerald, C.E.; O'Keefe, S.J. p38 MAP kinase inhibitors. Part 6: 2-Arylpyridazin-3-ones as Templates for Inhibitor Design. *Bioorganic and Medicinal Chemistry Letters*, 2006, 16, 5809.
- Natarajan, S.R.; Chen, M.-H.; Heller, S.T.; Tynebor, R.M.; Crawford, E.M.; Minxiang, C.; Kaizheng, H.; Dong, J.; Hu, B.; Hao, W.; Chen, S.H. Synthesis of the 2*H*-Quinolizin-2-one

Scaffold via a Stepwise Acylation—Intramolecular Annulation Strategy. *Tetrahedron Letters*, 2006, 47, 5063.

2004 Lee, D.-C.; Chang, B.-J.; Morales, G.M.; Jang, Y.A.; Ng, K.-K.; **Heller, S.T.**; Yu, L. Functional Polymers for Layer-by-Layer Construction of Multilayers via Chemoselective Immobilization. *Macromolecules*, 2004, 37, 1849.

Casmier, D.M.; Sullivan, P.A.; Clot, O.; Firestone, K.; **Lee, S.**; **Heller, S.**; **Brumbaugh, A.**; **Millard, B.**; Dalton, L.R. New Paradigm in NLO Chromophore Design through a Gradient Bridge Concept. *Proc. SPIE 5351*, 2004, 243.

### Invited Talks (3)

2011 **Heller, S.T.** Carbonylimidazoles as Versatile Reagents for Organic Synthesis. *Sigma-Aldrich Graduate Innovation Award Symposium*. Milwaukee, WI, October 20, 2011.

2006 **Heller, S.T.** Discovery of 1,2,4-Triazole Derivatives as Inhibitors of VAP-1. *Site Visitation Symposium*. Merck, West Point, PA, August 11, 2006.

**Heller, S.T.** Discovery of 1,2,4-Triazole Derivatives as Inhibitors of VAP-1. *Merck Rahway Associate Symposium*. Merck, Rahway, NJ, June 19, 2006.

### Posters (5)

2012 **Fu, T.**; **Heller, S.T.**; Sarpong, R. Dual Brønsted Acid/Nucleophilic Activation of Carbonylimidazole Derivatives. *243<sup>rd</sup> ACS National Meeting*, Philadelphia, PA, August 20, 2012.

2011 **Heller, S.T.**; Sarpong, R. Metal-Free Synthesis of Benzannulated Indolizinones and Application to the Total Synthesis of *Erythrina* Alkaloids. *Gordon Research Conference: Heterocycles*, Newport, RI, June 28.

**Heller, S.T.**; Sarpong, R. Imidazole Carbamates and Ureas as Chemoselective Reagents for Esterification and Amidation. *241<sup>st</sup> ACS National Meeting*, Anaheim, CA, March 27, 2011.

2007 Tynebor, R.; Natarajan, S.R.; **Heller, S.T.**; Chen, M.-H.; Crawford, E.; Doherty, J.B. Synthesis of the 2H-Quinolizin-2-one Scaffold via a Stepwise Acylation-intramolecular Annulation strategy. *234<sup>th</sup> ACS National Meeting*, Boston, MA, August 19, 2007.

2004 Casmier, D.M.; Sullivan, P.A.; Clot, O.; Firestone, K.A.; Eichinger, B.E.; **Lee, S.**; **Heller, S.**; **Brumbaugh, A.**; **Millard, B.**; Dalton, L.R. New Paradigm in NLO Chromophore Design through a Gradient Bridge Concept. *Photonics West*, San Jose, CA, January 24, 2004.

## TEACHING EXPERIENCE

2016-present **Loyola Marymount University** (total semesters taught)

Organic Chemistry I	(1, current)
Organic Chemistry Laboratory I	(1, current)

2012-2016 **Willamette University** (total semesters taught)

Introductory Chemistry I	(3)
Introductory Chemistry II	(3)
Organic Chemistry I	(4)
Organic Chemistry II	(4)
Organic Chemistry Laboratory I	(8)
Organic Chemistry Laboratory II	(4)
Advanced Topics: Physical Organic Chemistry	(2)

2007-2012 **University of California, Berkeley**

Head TA, Organic Chemistry II  
 Discipline Cluster Leader, Campus-wide TA Training Workshop  
 Advanced Organic Chemistry Laboratory  
 Organic Chemistry I Laboratory

### MENTORED UNDERGRADUATE RESEARCH STUDENTS (12)

2016-present **Loyola Marymount University**

David Hollis  
 Jack Polerecky  
 Bryan Nguyen  
 Christina Light  
 William Richard  
 Alexander Arroyo

2012-2016 **Willamette University**

Till Kallem	<i>Volunteer</i>
Shelby Decker	<i>Thesis Student</i>
Colin Sievers	<i>Thesis Student</i>
Jeremy Sobocinski	<i>Thesis Student</i>
Kulananalu Tarnas	<i>Volunteer</i>
Erica Davis	<i>Thesis Student</i>
Garrett Davis	<i>Thesis Student</i>
Hope Nelson	<i>Thesis Student</i>
Kelsey Thompson	<i>Thesis Student</i>
Thomas Ritch	<i>Thesis Student</i>

2007-2012 **University of California, Berkeley**

Tingting Fu	<i>McNair Research Fellow</i>
Lisbeth Setyaningrum	<i>Volunteer</i>

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**AWARDS AND HONORS**

2011	Sigma-Aldrich Graduate Student Innovation Award
2010	UC Berkeley Outstanding Graduate Student Instructor
2008-2012	National Science Foundation Graduate Research Fellowship (NSF-GRF)
2006	Merck Award of Excellence
2005	Sigma Xi Excellence in Research

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**SERVICE****Department, Loyola Marymount University**

2016	Member: Curriculum Assessment Committee & TA Evaluation Committee Collaborate with Green Chemistry Committee
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**Department, Willamette University**

2016	Laboratory Coordinator, Organic Chemistry Laboratory II
2015	Peer-Led Tutoring Coordinator, Organic Chemistry I
2013-2014	Willamette Student Life Awards Committee
2013	Laboratory Coordinator, Organic Chemistry Laboratory I

**Professional**

2006-present	Peer Referee for <i>Organic Letters</i> , <i>Journal of Organic Chemistry</i> , <i>Tetrahedron</i> , and <i>Tetrahedron Letters</i>
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