HUBERT MUCHALSKI

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Appointments

Department of Chemistry and Biochemistry, Fresno State, Fresno, CA
Assistant Professor 2015–present

Department of Chemistry, Vanderbilt University, Nashville, TN
Postdoctoral Scholar (Advisor: Prof. Ned A. Porter) 2012–2015

Education

Vanderbilt University, Nashville, TN
Ph.D., Chemistry (Advisor: Prof. Jeffrey N. Johnston) 2012

Wroclaw University of Technology, Wrocław, Poland
Magister, Chemistry (Advisor: Prof. Mirosław Giurg) 2006

Publications

Refereed/Peer-Reviewed ([†]undergraduate, [‡]graduate)

1. Le, Q.[‡]; Dillon, C. C.[‡]; Lichtenstein, D. A.[†]; Pisor, J.[†]; Closser, K. D. **Muchalski, H.** Gold(I)–NHC-catalysed synthesis of benzofurans via migratory cyclization of 2-alkynylaryl benzyl ethers *Org. Biomol. Chem.* **2020**, *28*, 8186–8191 http://dx.doi.org/10.1039/d0ob01538e
2. Rajaram, P.[‡]; Rivera, A. M.[‡]; Muthima, K.[‡] Olveda, N.[‡]; **Muchalski, H.**; and Chen, Q.-C. Second-Generation Androgen Receptor Antagonists as Hormonal Therapeutics for Three Forms of Prostate Cancer *Molecules* **2020**, *20*, 2448. https://doi.org/10.3390/molecules25102448
3. Dillon, C. C.[†]; Keophimphone, B.[†]; Sanchez, M.[†]; Kaur, P[†].; **Muchalski, H.** Synthesis of 2-substituted benzo[b]thiophenes via gold(I)–NHC- catalyzed cyclization of 2-alkynyl thioanisoles *Org. Biomol. Chem.* **2018**, *16*, 9279–9284. https://doi.org/10.1039/C8OB02196A
   Award: Selected as Department's *Outstanding Publication* for 2018–2019 AY
4. Lamberson, C. R.; **Muchalski, H.**; McDuffee, K. B.[†]; Tallman, K. A.; Xu, L.; Porter, N. A.; Propagation rate constants for the peroxidation of sterols on the biosynthetic pathway to cholesterol *Chem. Phys, Lipids* **2017**, *207*, Part B, 51–58. http://dx.doi.org/10.1016/j.chemphyslip.2017.01.006
5. **Muchalski, H.**; Site-Specific Synthesis and Application of Deuterium-Labeled Sterols. *ARKIVOC* **2017** part ii, 507–533. https://doi.org/10.24820/ark.5550190.p009.755
6. **Muchalski, H.**.; Levonyak, A. J.[†]; Xu, L.; Ingold, K. U.; Porter, N. A. Competition H(D) Kinetic Isotope Effects in the Autoxidation of Hydrocarbons. *J. Am. Chem. Soc.* **2015**, *137*, 94–97. http://dx.doi.org/10.1021/ja511434j
7. **Muchalski, H.**.; Xu, L.; Porter, N. A. Tunneling in Tocopherol-Mediated Peroxidation of 7-Dehydrocholesterol. *Org. Biomol. Chem.* **2015**, *13*, 1249–1253. http://dx.doi.org/10.1039/C4OB02377C

8. Lamberson, C. R.; Xu, L.; **Muchalski, H.**.; Montenegro-Burke, J.R.; Shmanai, V. V.; Bekish, A. V.; McLean, J. A.; Clarke, C. F.; Shchepinov, M. S.; Porter, N. A. Unusual Kinetic Isotope Effects of Deuterium Reinforced Polyunsaturated Fatty Acids in Tocopherol-Mediated Free Radical Chain Oxidations. *J. Am. Chem. Soc.* **2014**, *136*, 838–841. http://dx.doi.org/10.1021/ja410569g
9. Giurg, M.; **Muchalski, H.**.; Kowal E. A. Oxofunctionalized *trans*-2-Carboxy-cinnamic Acids by Catalytic Domino Oxidation of Naphthols and Hydronaphthoquinones. *Synth. Commun.* **2012**, *42*, 2526–2539. http://dx.doi.org/10.1080/00397911.2011.561945
10. **Muchalski, H.**; Johnston, J. N. Aziridination. In *Science of Synthesis: Stereoselective Synthesis*; de Vries, J. G., Ed.; Thieme: Stuttgart, **2011**; Vol. 1, pp 155–184
11. Troyer, T. L.; **Muchalski, H.**.; Hong, K. B.; Johnston, J. N. Origins of Selectivity in Brønsted Acid Promoted Diazoalkane–Azomethine Reactions (The aza-Darzens Aziridine Synthesis). *Org. Lett.* **2011**, *13*, 1790–1792. http://dx.doi.org/10.1021/ol200313m
12. **Muchalski, H.**.; Hong, K. B.; Johnston, J. N. Brønsted acid-promoted azide-olefin [3 + 2] cycloadditions for the preparation of contiguous aminopolyols: the importance of disiloxane ring size to a diastereoselective, bidirectional approach to zwittermicin A. *Beilstein J. Org. Chem.* **2011**, *6*, 1206–1210. http://dx.doi.org/10.3762/bjoc.6.138
13. **Muchalski, H.**.; Troyer, T. L.; Doody, A. B.; Johnston, J. N. Preparation of isopropyl 2-diazoacetyl-(phenyl)carbamate. *Org. Synth.* **2011**, *Vol. 88*, 212–223.
14. Johnston, J. N.; Muchalski, H.; Troyer, T. L. Protonate or Alkylate: Stereoselective Brønsted Acid Catalysis of C–C Bond Formation Using Diazoalkanes. *Angew. Chem. Int. Ed.* **2010**, *49*, 2290–2298.
15. Troyer, T. L.; **Muchalski, H.**.; Johnston, J. N. Brønsted acid activation of α-diazo imide: a *syn*-glycolate Mannich reaction. *Chem. Commun.* **2009**, *32*, 6195–6197.
16. Giurg, M.; Kowal, E. A.; **Muchalski, H.**.; Syper, L.; Młochowski, J. Catalytic oxidative domino degradation of alkyl phenols towards 2- and 3-substituted muconolactones. *Synth. Commun.* **2009**, *39*, 251–266.
17. Adkins, C. T.; **Muchalski, H.**.; Harth, E. Nanoparticles with Individual Site-Isolated Semiconducting Polymers from Intramolecular Chain Collapse Processes. *Macromolecules* **2009**, *42*, 5786–5792.
18. Daniels, R. N.; Kim, K.; Lebois, E. P.; **Muchalski, H.**; Hughes, M.; Lindsley, C. W. Micro-wave-assisted protocols for the expedited synthesis of pyrazolo[1,5-a] and [3,4-d]pyrimi-dines. *Tetrahedron Lett.* **2008**, *49*, 305–310.
19. Niswender C. M.; Lebois E. P.; Luo Q.; Kim K.; **Muchalski, H.**; Yin H.; Conn P. J.; Lindsley C. W. Positive allosteric modulators of the metabotropic glutamate receptor subtype 4 (mGluR4): Part I. Discovery of pyrazolo[3,4-d]pyrimidines as novel mGluR4 positive allosteric modulators. *Bioorg. Med. Chem. Lett.* **2008**, *18*, 5626.
20. Croce, T. A.; Hamilton, S. K.; Chen, M. L.; **Muchalski, H.**.; Harth, E. M. Alternative *o*-Quinodimethane Cross-Linking Precursors for Intramolecular Chain Collapse Nano-particles. *Macromolecules* **2007**, *40*, 6028–6031.

Oral Presentations

Conference Talks (†undergraduate co-author)

Muchalski, H..; Lamberson, C. R.; Levonyak, A. J.; Xu, L.; Porter, N. A. *Does quantum mechanical tunneling make free radical peroxidation favorable?*, Abstracts of Papers, 248th ACS National Meeting, San Francisco, CA, August 10-14, 2014.

Muchalski, H.; Xu, L; Porter, N. A. *Kinetic isotope effect of deuterium-reinforced 7-dehydrocholesterol in tocopherol-mediated free radical chain oxidation*, Abstracts of Papers, 247th ACS National Meeting, Dallas, TX, March 16-20, 2014.

Invited Talks

San Jose State University, San Jose, CA (2/2019); University of Tulsa, Tulsa, OK (1/2015); Kent State University, Kent, OH (1/2015); California State University, Fresno, CA (1/2015); Murray State University, Murray, KY (11/2014); University of Tampa, Tampa, FL (12/2015); University of Lodz, Lodz, Poland (5/2012); Wroclaw University of Technology, Wroclaw, Poland (5/2012).

Posters

†undergraduate student; ‡graduate student

Lichtenstein, D. A.†; Dillon, C. C.‡; Le, Q.‡; Muchalski, H.; †; *Gold(I)–NHC-catalyzed synthesis of benzofurans via migratory cyclization of 2-alkynylaryl benzyl ethers*, College or Science and Mathematics Virtual Research Showcase, May 8–15, 2020.

Lichtenstein, D. A.†; Dillon, C. C.‡; Le, Q.‡; Muchalski, H.; *Gold(I)–NHC-catalyzed synthesis of benzofurans via migratory cyclization of 2-alkynylaryl benzyl ethers*, Abstracts of Papers, 259th ACS National Meeting & Exposition, Philadelphia, PA, March 22-26, 2020, CHED-1230

Lichtenstein, D. A.†; Dillon, C. C.‡; Le, Q.‡; Muchalski, H.; *Gold(I)–NHC-catalyzed synthesis of benzofurans via migratory cyclization of 2-alkynylaryl benzyl ethers*, 32nd CSU Annual Biotechnology Symposium, Santa Clara, CA, January 16–18, 2020.

Phasakda, A.†; Muchalski, H. *Studies of directed gold(I)-catalyzed hydrocarboxylation of usymmetrical alkynes* 40th Annual Central California Research Symposium, Fresno, CA, May 1, 2019.

Lichtenstein, D.A.†; Le, Q.‡ †; Muchalski, H. *Development of gold(I)-catalyzed synthesis of benzofurans via gold(I)-catalyzed cyclization of 2-alkynyl ethers* 40th Annual Central California Research Symposium, Fresno, CA, May 1, 2019.

Pisor, J.W.†; Avalos, D. †; Sanchez, M.†; Muchalski, H. *Development in the syntheses of isoquinolinones via gold(I)-catalyzed cyclization of 2-alkynyl Weinreb amides* 40th Annual Central California Research Symposium, Fresno, CA, May 1, 2019.

Waite, J.A.†; Bustos, K. †; Ewing, A.L.†; Muchalski, H. *Substrate scope studies of the gold(I)-catalyzed synthesis of 2,3-disubstituted benzofurans* 40th Annual Central California Research Symposium, Fresno, CA, May 1, 2019.
Award: Outstanding Poster Presentation in Chemistry (San Joaquin Valley Local Section of ACS)

Dillon, C.C.†; Keophimphone, B.†; Sanchez, M.†; Kaur, P.†; Muchalski, H. *Synthesis of 2-substituted benzo[b]thiophenes via gold(I)–IPr hydroxide- catalyzed cyclization of 2-alkynyl thioanisoles*, Abstracts of Papers, 257th ACS National Meeting & Exposition, Orlando, FL, Mar. 31-Apr. 4, 2019 (2019), ORGN-0099

Keophimphone, B.†; Sanchez, M.†; Muchalski, H. *Scope of the Gold(I)-IPr-OH-Catalyzed Synthesis of Benzo[b]thiophenes*, 31nd CSU Annual Biotechnology Symposium, Orange County, CA, January 3–5, 2019.

Sanchez, M.†; Phasakda, A.†; Muchalski, H. *Synthesis of Benzo[b]thiophenes Catalyzed by Gold(I)-IPr-Cl Complex* 39th Annual Central California Research Symposium, Fresno, CA, April 25, 2018.

Kaur, P.†; Dillon, C.C.†; Muchalski, H. *Optimization of Gold-Catalyzed Cyclization of 2-Alkynylthioanisole to 2-Phenylbenzo[b]thiophene* 39th Annual Central California Research Symposium, Fresno, CA, April 25, 2018.
Award: Outstanding Poster Presentation in Chemistry (College of Science and Mathematics)

Hedgpeth, H.†; Sanchez, M.†; Gomez, J.†; Muchalski, H.; Person, E.*Effective Treatment of Laboratory Mercury Waste Using Polymer Made From Sulfur and Canola Oil* 39th Annual Central California Research Symposium, Fresno, CA, April 25, 2018.

Le, Q.; Watters, R. R.†; Muchalski, H. *Synthesis of Solution Stable Sulfenic Acids*, 38th Annual Central California Research Symposium, Fresno, CA, April 18–19, 2017.
Award: Outstanding Oral or Poster Presentation in Chemistry (San Joaquin Section of the ACS)

Olvera, A.C.†; Ramos Flores, J.†; Muchalski, H. *Towards Understanding of Peroxidation of Mammalian Sterols: Microwave-Assisted Synthesis of 7-Dehydrocholesterol Isomers*, Abstracts of Papers, 253rd ACS National Meeting, San Francisco, CA, April 2-6, 2017 (2017), ORGN-521

Olvera, A.C.†; Ramos Flores, J.†; Muchalski, H. *Microwave-Assisted Synthesis of 7-Dehydrocholesterol Isomers for Structure–Oxidizability Relationship Studies*, SACNAS 2016

Muchalski, H. *Stereospecific Reactions of α-Amino-β-Diazonium Intermediates: Mechanistic Studies, New Reaction Discovery and Application to a Bidirectional Synthesis of (+)-Zwittermicin A*, Gordon Research Conferences: Organic Reactions & Processes, 2011

Please see my personal homepage for a complete list of conference presentations

GRANTS

Metal-catalyzed synthesis of enol esters for controlled release of pheromonones
CSUPERB New Investigator (awarded $15,000) 2018–2020

Synthesis and evaluation of the scope of cyclization of 2-alkynylthioanisoles to benzo[b]thiophenes catalyzed by gold(I)-N-heterocyclic carbene complexes
CSUPERB Presidents' Commission Scholar Program
(awarded to Bagieng Keophimphone, $8,000) 2018

RUI: Organogold chemistry involving siloxides and silanols
National Science Foundation (not awarded) 2017

Development of gold-catalyzed synthesis of *Z*-vinyl acetates
CSUPERB New Investigator (not awarded) 2017

RUI: Synthesis and characterization of stable sulfenic acids
National Science Foundation (not awarded) 2016

New Strategies for the Synthesis of Deuterium-Reinforced Fatty Acids
CSUPERB New Investigator (not awarded) 2016

Synthesis of sulfenic acid-based antioxidants
Undergraduate New Investigator Grant, ACS PRF (not awarded) 2016

Teaching Experience

Graduate Courses

Advanced Research Techniques Spring 2020
Strategies and Tactics in Organic Synthesis (CHEM 240T) Fall 2019
Seminar in Chemistry (CHEM 280) Fall 2018
Topics in Advanced Organic Chemistry (CHEM 240T) Fall 2015

Undergraduate Courses (H = Honors Course)

Research Techniques (CHEM 160H) Spring 2020
Seminar in Chemistry (CHEM 180H) Fall 2018
Organic Chemistry 1 (CHEM 128A) 2015-
Organic Chemistry 2 (CHEM 128B) 2015-
Organic Chemistry Laboratory 1 (CHEM 129A) 2015-
Organic Chemistry Laboratory 2 (CHEM 129B) 2015-

Advising

Graduate students (thesis chair): 4
Graduate students (thesis committee): 5
Undergraduate students (Honors research advising): 6
Undergraduate students (research advising): 12
High school students (ACS Project SEED): 2

Professional Development

Mastery Grading Virtual Conference June 5–6, 2020

Transforming STEM Teaching Faculty Learning Program
UC/CSU program supported by the NSF (DUE #1626624) 2018

New Faculty Workshop
ACS–Cottrell Scholars Collaborative, Washington, DC, August 3-5, 2017

Active Learning in Organic Chemistry
NSF cCWCS Mini-workshop, Atlanta, GA, June 12–15, 2017

Early Career Investigator Workshop
NSF Division of Chemistry, Arlington, VA, March 20-21, 2017

Certificate in College Teaching
Center for Teaching, Vanderbilt University 2014

Leadership and Service

San Joaquin Valley Section, American Chemical Society 2016–present
Councilor (2018–present); Treasurer (2016–2018); National Chemistry Week Outreach Coordinator (2018–present); Chemists Celebrate Earth Week Outreach Coordinator (2018–present)

CSU Fresno
Academic Senate 2018–present

Graduate Curriculum Subcommittee 2019–PRESENT
Advisor to the ACS Student Chapter 2017–present College Curriculum
Subcommittee 2017–2019

AFFILIATIONS

American Chemical Society
Member 2012-PRESENT
Department of Chemistry, Vanderbilt University, Nashville, TN
Visiting Scholar 2015–PRESENT