HUBERT MUCHALSKI

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Appointments

Department of Chemistry and Biochemistry, Fresno State, Fresno, CA
Associate Professor 2021–present
Assistant Professor 2015–2021

Department of Chemistry, Vanderbilt University, Nashville, TN
Visiting Scholar 2015–2021
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, [‡]MS student)

1. Pisor, J.W.[‡]; Garcia, I. C.[†]; Mamo, K.[†]; **Muchalski, H.** Synthesis of benzofurans from THP acetals of 2-alkynylphenols catalyzed by gold(I)-NHC complexes *In Preparation*

2. 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
3. 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
4. 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
5. 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
6. **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

7. **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
8. **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
9. 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
10. 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
11. **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
12. 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
13. **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
14. **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.
15. 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.
16. 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.
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. 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.* **2008**, *39*, 251–266.
19. 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.
20. 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.

21. 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

California State University, Fresno, CA (10/2022; sabbatical report); 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

1. Pisor, J.W.‡; Garcia, I.C.‡; Mamo, K.‡; Muchalski, H.; *Synthesis Of 2-Substituted Benzofurans From 2-Alkynyl Aryl Ethers Catalyzed By Gold(I)–N-Heterocyclic Carbene Complexes*, Annual Biomedical Research Conference for Minority Students (ABRCMS), Long Beach, CA, November 9-12, 2022.
2. Pisor, J.W.‡; Garcia, I.C.‡; Mamo, K.‡; Muchalski, H.; *Synthesis Of 2-Substituted Benzofurans From 2-Alkynyl Aryl Ethers Catalyzed By Gold(I)–N-Heterocyclic Carbene Complexes*, Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS), Puerto Rico, October 27-29, 2022.
3. 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.
4. 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
5. 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.
6. 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.

7. 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.
8. 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.
9. 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)
10. 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
11. 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.
12. 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.
13. 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)
14. 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.
15. 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)
16. 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
17. Olvera, A.C.[†]; Ramos Flores, J.[†]; Muchalski, H. *Microwave-Assisted Synthesis of 7-Dehydrocholesterol Isomers for Structure–Oxidizability Relationship Studies*, SACNAS 2016
18. 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

Awarded Grants

Efficient Synthesis of Benzofuran Heterocycles Catalyzed by Gold(I)-NHC Complexes
CSUPERB‡ Faculty–Graduate Student Research Collaboration
(awarded to Jeremy Pisor $10,000) 2022

New Methodologies for Free Radical Oxidation Kinetics and Synthesis of Silyl Enol Ethers
CSUPERB‡ COVID-19 Research Recovery Grant (awarded $1,067) 2021

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

‡California State University Program for Education and Research in Biotechnology

Applied, Not Awarded, Under Review

Development of Heteronuclear Quantitative NMR Assay for Direct Peroxyl Radical Clock Kinetics
ACS Petroleum Research Fund
(under review; requested budget: $70,000) 2022

RUI: Development of Peroxyl Radical Clock Methodology Using Quantitative Heteronuclear NMR
National Science Foundation CHE/CSDM-B
(under review; requested budget: $441,626) 2022

Synthesis NHC-Gold Complexes for Synthesis of Heterocycles in Water
CSUPERB‡ Graduate Student Research Restart Program (not awarded $6,500) 2021

Gold-Catalyzed Synthesis of Heterocycles
Dreyfus Teacher Scholar Award (not awarded) 2020

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
Sp22
Strategies and Tactics in Organic Synthesis (CHEM 240T)
Fa19, Fa22
Seminar in Chemistry (CHEM 280)
Fa18
Topics in Advanced Organic Chemistry (CHEM 240T)
Fa15

Undergraduate Courses (H = Honors Course; † = Virtual)
Organic Chemistry 1 (CHEM 128A)
Fa15, Fa16, Fa17, Fa18, Su19, Fa19, Fa20, Fa21,
Organic Chemistry 2 (CHEM 128B)
Sp16, Sp17, Sp19, Fa20†, Su21†, Su22
Organic Chemistry Laboratory 1 (CHEM 129A)
Sp16, Fa19 (2), Fa20† (2), Fa21
Organic Chemistry Laboratory 2 (CHEM 129B)
Fa16, Fa17, Sp18 (2), Su20†, Sp21†, Fa22,
Research Techniques (CHEM 160H)
Sp20
Seminar in Chemistry (CHEM 180H)
Fa18

Advising

Graduate students
Thesis Chair (7): Quang Le, Christopher C. Dillon, Karina Bustos, Jeremy W. Pisor, Michael D. Stevens, Kiersten Friesen, Jason Datsko.
Thesis Committee Member (9)

Undergraduate students
Honors Thesis Advisor (7): Parveen Kaur, Elizabeth Herren, Alexander Ewing, Montaser Ahmad, Isabella Garcia, Bagieng Keophimphone, Simrit Dhindsa
Independent Study Advisor (31)
ACS Project SEED High School Students (3)

Professional Development

ACS Green & Sustainable Chemistry Module Development	2021–present
HyFlex Course Institute (facilitator)	Summer 2021
Mastery Grading Conference (Virtual)	June 11–12, 2021
HyFlex Course Institute (participant)	Spring 2021
Advanced Quality Learning and Teaching (QLT)	Summer 2020
Introduction to Teaching Online Using (QLT)	Spring 2020
Mastery Grading Conference (Virtual)	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
University Campus Planning Committee Academic Senate 2018–2021
Graduate Curriculum Subcommittee 2019–present
Advisor to the ACS Student Chapter 2017–2021
College Curriculum Subcommittee 2017–2019

Affiliations

American Chemical Society
Member 2012-present

Department of Chemistry, Vanderbilt University, Nashville, TN
Visiting Scholar 2015–2021