

SIDNEY MALIK WILKERSON-HILL

1311 Venable Hall; Campus Box 3290
University of North Carolina at Chapel Hill
Chapel Hill, NC 27599
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EDUCATION

University of California Berkeley Ph.D. in Chemistry 2015
Dissertation Title – “Development and Applications of (Hetero)cycloisomerization Methodologies to Access Natural Product Scaffolds”
Research Adviser – Professor Richmond Sarpong
Cumulative GPA: 3.947

North Carolina State University B.S. in Chemistry *summa cum laude* 2010
B.S. in Polymer and Color Chemistry 2010

Cumulative GPA: 3.979
Phi Beta Kappa Honor Society
Deans List: August 2006 – May 2010

PROFESSIONAL EXPERIENCE

2018–Present Assistant Professor, Department of Chemistry, University of North Carolina, Chapel Hill

2015–2018 UNCF-Merck Postdoctoral Fellow, Emory University
Research Adviser: Prof. Huw M. L. Davies, Asa Griggs Candler Professor of Chemistry

HONORS AND AWARDS

2024 Camille Dreyfus Teacher Scholar Award (see support and funding section)
2024 Alfred P. Sloan Fellowship (see support and funding section)
2023 FMC Young Investigator Award (see support and funding section)
2023 UNC Tanner Award for Excellence in Undergraduate Teaching
2023 Eli Lilly ACC Grantee Award (see support and funding section)
2023 JSP Fellowship of the Bürgenstock Conference on Stereochemistry (Swiss Chemical Society)
2022 Science of Synthesis Early Career Advisory Board
2021 ACS Organic Letters Lectureship Award
2020 Cell Mentor 1000 Inspiring Black Scientists in America
2018 Thieme Chemistry Journals Award
2015 United Negro College Fund (UNCF) – Merck Fellowship Postdoctoral Fellowship
2013 UC Berkeley, Department of Chemistry’s Outstanding Graduate Student Instructor (GSI) Award
2011 NSF Graduate Research Fellowship Program
2010 UC Berkeley Chancellors Fellowship
2010 NCSU College of Physical and Mathematical Sciences Undergraduate Research Award
2009 US DOE’s Science and Energy Research Challenge (SERCh) 1st in Physical Science Division
2009 NCSU College of Textiles Henry A. Rutherford Award
2008 NCSU College of Textiles Wilson Whaley Award
2007 NCSU Caldwell Fellows Scholarship Program

BIBLIOGRAPHY AND PRODUCTS OF SCHOLARSHIP

Publications (*As Principal Investigator at UNC*). *Designates equal contribution. #indicates undergraduate researcher

1. Zahara, A. J.; Haines, B. M.; **Wilkerson-Hill, S. M.** Programed Heterocycle Synthesis using Dihalomucononitriles as Pyridinimine Precursors. *Org Lett.* **2024**. ASAP DOI: 10.1021/acs.orglett.4c00547. Previously submitted to ChemRxiv: Zahara, A. J.; Haines, B. M.; **Wilkerson-Hill, S. M.** Programed Heterocycle Synthesis using Dihalomucononitriles as Zincke Nitrile Precursors. *ChemRxiv.* **2022**. DOI:10.26434/chemrxiv-2022-9dftp. |
2. Ritchie, N. F. C.; Xiang, H.; Liu, P.; **Wilkerson-Hill, S. M.** Experimental and Computational Studies on the Generation and Fate of Cyclopropylcarbinyl Palladium Intermediates. **2024**. *in revision*.
3. Eckart-Frank, I. K.; **Wilkerson-Hill, S. M.** Palladium-Catalyzed *Trans*-Selective Synthesis of Spirocyclic Cyclobutanes using α,α -Dialkylcrotyl- and Allylhydrazones. *J. Am. Chem. Soc.* **2023**, *145*, 18591–18597.
4. Mancinelli, J. P.; **Wilkerson-Hill, S. M.** Catalytic C–F Bond Functionalization of *gem*-Dialkylcyclopropenes Enables the Synthesis of Orphaned *tert*-Alkyl Cyclopropanes. *J. Am. Chem. Soc.* **2023**, *145*, 17389–17397.
5. Johnson, D. J.; Teeple, C. R.; Akkawi, N. R.; **Wilkerson-Hill, S. M.** Efficient Synthesis of Orphaned Cyclopropanes using Sulfones as Carbene Equivalents. *J. Am. Chem. Soc.* **2022**, *144*, 14471–14476.
6. Mancinelli, J. P.; **Wilkerson-Hill, S. M.** Can Boron Enable Reactivity on Phosphorus? Relative Rates of B-Substituted Phosphines. *Org. Biomol. Chem.* **2022**, *20*, 6183–6187. (Invited contribution).
7. Ritchie, N. F. C., Zahara, A. J.; **Wilkerson-Hill, S. M.** Divergent Reactivity of α,α -Disubstituted Alkenyl Hydrazones: Bench Stable Cyclopropylcarbinyl Equivalents. *J. Am. Chem. Soc.* **2022**, *144*, 2101–2106. Highlighted in *JACS* Spotlights. *J. Am. Chem. Soc.* **2022**, *144*, 2397–2398.
8. Ackerman-Biegasiewicz, L. K. G.; Arias-Rotondo, D. M.; Biegasiewicz, K. F.; Elacqua, E.; Golder, M. R.; Kayser, L. V.; Lamb, J. R.; Le, C. M.; Romero, N. A.; **Wilkerson-Hill, S. M.**; Williams, D. A. Organic Chemistry: A Retrosynthetic Approach to a Diverse Field. *ACS. Cent. Sci.* **2020**, *6* 1845–1850.
9. Zahara, A. J.*; Hinds, E. M.*; Nguyen, A. L.*; **Wilkerson-Hill, S. M.** Programmed Sequential Additions to Halogenated Mucononitriles. *Org. Lett.* **2020**, *22*, 8065–8069.
10. Mancinelli, J. P.; **Wilkerson-Hill, S. M.** Tris(pentafluorophenyl)borane-Catalyzed Cyclopropanation of Styrenes with Aryldiazoacetates. *ACS Catal.* **2020**, *10*, 11171–11176.

Publications (Mentored)

8. Wei, B.*; Sharland, J. C.*; Lin, P.*; **Wilkerson-Hill, S. M.**; Fullilove, F. A.; McKinnon, S.; Blackmond, D. G.; Davies, H. M. L. In Situ Kinetic Studies of Rh (II)-Catalyzed Asymmetric Cyclopropanation with Low Catalyst Loadings. *ACS. Catal.* **2020**, *10*, 1161 – 1170.
9. **Wilkerson-Hill, S. M.**; Haines, B. E.; Musaev, D. G.; Davies, H. M. L. Synthesis of [3a,7a]-Dihydroindoles by a Tandem Arene Cyclopropanation/[3,5]-Sigmatropic Rearrangement Reaction. *J. Org. Chem.* **2018**, *83*, 7939 – 7949.
10. **Wilkerson-Hill, S. M.**; Yu, D.; Painter, P. P.; Fischer, E. L.; Tantillo, D. J.; Sarpong, R. S.; Hein, J. E. Mechanism of a No-metal-added Heterocycloisomerization of Alkynylcyclopropylhydrazones: A Mild Synthesis of Cycloheptane-fused Aminopyrroles Facilitated by Copper Salts at Trace Loadings. *J. Am. Chem. Soc.* **2017**, *139*, 10569 - 10577. Highlighted in *JACS* Spotlights. *J. Am. Chem. Soc.* **2017**, *139*, 11307 – 11308.
11. **Wilkerson-Hill, S. M.***; Sawano, S.*; Sarpong, R. S. Bis(1-cyanovinylacetate) is a Linear Precursor to 3-Oxidopyrylium Ions. *J. Org. Chem.* **2016**, *81*, 11132 – 11144.

12. Kubiak II, R. W.; Mighion, J. D.; **Wilkerson-Hill, S. M.**; Alford, J. S.; Yoshidomi, T.; Davies, H. M. L. Enantioselective Intermolecular C–H Functionalization of Allylic and Benzylic sp³ C–H Bonds using *N*-Sulfonyl-1,2,3-triazoles. *Org. Lett.* **2016**, *18*, 3118 – 3121.
13. **Wilkerson-Hill, S. M.**; Lavados, C. M.[#] Sarpong, R. S. The Diels – Alder Reactivity of 2-Vinylindenes. *Tetrahedron* **2016**, *72*, 3635 – 3640.
14. Beng, T. K.; **Wilkerson-Hill, S. M.**; Sarpong, R. S. Direct Access to Functionalized Azepanes by Cross-Coupling with α -Halo Eneformamides. *Org. Lett.* **2014**, *16*, 916-919.
15. Fisher, E. L.; **Wilkerson-Hill, S. M.**; Sarpong, R.S. Tungsten-Catalyzed Heterocycloisomerization Approach to 4,5-Dihydro-benzo[b]furans and –indoles. *J. Am. Chem. Soc.*, **2012**, *134*, 9946 – 9949.
16. Hooker, J. M.; Reibel, A. T.; **Hill, S. M.**; Schueller, M. J.; Fowler, J. S. One-Pot, Direct Incorporation of [¹³C]CO₂ into Carbamates. *Angew. Chem. Int. Ed.*, **2009**, *48*, 3482 – 3485.

Book Chapters (Mentored)

- 17) **Wilkerson-Hill, S. M.**; Davies, H. M. L. Rhodium(II) tetracarboxylate-Catalyzed Enantioselective C–H Functionalization Reactions. In *Rhodium Catalysis in Organic Synthesis: Methods and Reactions*, Tanaka, K., Ed.; Wiley: New York; **2018**, p 343 – 371.

Refereed Presentations

Wilkerson-Hill, S. M. “A Linchpin Strategy for Accessing Dimeric Natural Products.” Presented at the 71st Southeastern Regional Meeting of the American Chemical Society in Savannah, GA, October 20, 2019.; SERMACS 739 (oral).

Wilkerson-Hill, S. M.; Davies, H. M. L. “Intermolecular [3+2] Cycloaddition Reactions of 4-Phthalimido-*N*-sulfonyltriazoles and Substituted Arenes” Presented at the 253rd American Chemical Society National Meeting & Exposition in San Francisco, CA, April 02, 2017; ORG 45 (oral)

Wilkerson-Hill, S. M.; Sawano, S.; Sarpong, R. “Bis(1-cyanovinylacetate) is a Linear Precursor to 3-Oxidopyrylium Ions” Presented at the Northeastern Midwestern Regional NOBCCHE meeting in Pittsburgh, PA, March 17, 2017; (oral)

Wilkerson-Hill, S. M.; Davies, H. M. L.; “Enantioselective Rh(II)-catalyzed [3+2] Cycloaddition Reaction between *N*-Sulfonyl-1,2-3-triazoles and Mono-substituted Arenes” Presented at the 252nd American Chemical Society National Meeting & Exposition in Philadelphia, PA, Aug 22, 2016; ORG 239. (oral)

Wilkerson-Hill, S. M.; Lavados, C. M., Sarpong, R. “Diels–Alder Reactivity of 2-Vinylindenes” Presented at the 247th American Chemical Society National Meeting & Exposition Dallas, TX, March 19th, 2014; ORG 630. (poster)

INVITED RESEARCH SEMINARS

2025 Plenary Lecture – 100th Meeting of the National Organic Symposium (Scheduled December 2025)
2024 The Scripps Research Institute (La Jolla CA)
2024 Keynote Lecture – Genentech Graduate Student Symposium in Chemical Research
2024 Indiana University – Corteva Agriscience Lecturer
2024 University of Michigan – BMS Named Lecture
2023 Organic Reactions and Processes Gordon Research Conference
2023 American Chemical Society – Advances in Carbene Chemistry (Organized with Prof. Chris Uyeda)
2023 American Chemical Society - Role of Synthetic Innovation in Advancing Medicinal Chemistry
2023 Bristol Myers Squibb Summer Seminar Series

2024 Stanford University
2023 University of Missouri Organic Chemistry Day
2023 Heterocycles Gordon Research Conference
2023 University of California Berkeley, Gilead Sciences Lecture in Organic Chemistry
2022 International Society of Heterocyclic Chemistry Conference
2022 Eli Lilly Summer Seminar Series
2022 American Chemical Society *Chemistry Across Borders Symposium*
2022 Canadian Chemistry Conference and Exhibition *Chemistry Across Borders Symposium*
2022 Organic Syntheses Workshop
2021 The Ohio State University
2021 University of Michigan
2021 Andrew's College
2021 Pennsylvania State University
2020 Telluride Science Research Center– Accelerating Reaction Discovery (Virtual due to Covid)
2020 University of Richmond

TEACHING ACTIVITIES

<i>Graduate Level Courses (CHEM 466)</i>	<i>Undergraduate Courses (CHEM 262)</i>
Fall 2022 – 22 students	Spring 2023 – 183 students
Fall 2021 – 25 students	Spring 2022 – 202 students
Fall 2020 – 34 students	<i>Undergraduate Courses (CHEM 261H)</i>
Fall 2019 – 27 students	Spring 2020 – 17 students
Fall 2018 – 24 students	Spring 2019 – 13 students

FUNDING AND SUPPORT

Project Title: Development and Applications of Reactions to Enable Molecular Rigidification. Source of Support: National Institutes of Health. Total award amount \$1,856,855; Annual Direct Amount: \$250,000; Award Period Covered: 07/01/2024–06/30/2029.

Project Title: None. Source of Support: Camille Dreyfus Teacher-Scholar Award. Total award amount \$100,000; Annual Direct Amount: \$100,000 (dispersed as single payment); Award Period Covered: 07/01/2024–06/30/2029. (unrestricted funds).

Project Title: None. Source of Support: FMC Young Investigator Award. Total award amount \$50,000; Annual Direct Amount: \$25,000; Award Period Covered: 01/01/2024–12/31/2025. (unsolicited award; unrestricted funds).

Project Title: None. Source of Support: Eli Lilly ACC Grantee Award. Total award amount \$100,000; Annual Direct Amount: \$50,000; Award Period Covered: 05/01/2023–04/30/2025. (unsolicited award; unrestricted funds).

Project Title: CAREER: Synthesis and Applications of Multipurpose Halomucononitrile Linchpin Reagents. Source of Support: National Science Foundation. Total award amount \$777,000; Annual Direct Amount: \$50,000; Award Period Covered: 05/01/2023–04/30/2028.

Project Title: Strategies for the Synthesis of Pyrethroids. Source of Support: American Chemical Society Herman Frasch Foundation. Total award amount \$250,000; Annual Direct Amount: \$50,000; Award Period Covered: 08/05/2022–07/31/2027.

UNC Chapel Hill Junior Faculty Development Award – Title: Direct Synthesis of 2-Deoxyribosides using Rh(II)-Catalyzed C–H Insertion Reactions. Amount – \$10,000. Period: 01/01/2021 to 12/31/2021.

SERVICE AND ENGAGEMENT

NC Science Olympiad Keynote Speaker - 2024. Highlighted on the STEM Yard Podcast.

2010–Present American Chemical Society Member

- Fall 2023 - Organized “Advances in Carbene Chemistry” Symposium with Prof. Chris Uyeda.

2017–Present National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE)

- UNC Chapel Hill NOBCChE Chapter Faculty Advisor
- Professional Development Committee Member – National Meeting - 2017
- Technical Session Committee Member – National Meeting - 2017

Reviewer

Nature, ACS Catalysis, ACS Omega, Angewandte Chemie, International Edition, Journal of Organic Chemistry, Beilstein Journal of Organic Chemistry, Organic Letters, Tetrahedron.