

Erin E. Gray

Washington and Lee University, Department of Chemistry and Biochemistry
Science Addition A413, Lexington, VA 24450
egray@wlu.edu • (540) 458-4867

EDUCATION & TRAINING

- Stanford University**, Department of Chemistry, Stanford, CA 2017–2019
Postdoctoral Scholar
Research Advisor: Professor Justin Du Bois
- Princeton University**, Department of Chemistry, Princeton, NJ 2011–2017
Ph.D. in Organic Chemistry
Research Advisor: Professor Abigail G. Doyle
- Furman University**, Department of Chemistry, Greenville, SC 2007–2011
B. S. in Chemistry, magna cum laude
Research Advisor: Professor Brian C. Goess

PROFESSIONAL & ACADEMIC EXPERIENCE

- Assistant Professor of Chemistry**, Washington and Lee University July 2019–present
- Mentored 12 undergraduate research students
 - Established the Remote Supergroup for Chemistry Undergraduates, which brings together student and faculty scientists from 25 public and private primarily undergraduate institutions for research seminars, professional development panels, and discussions of equity and inclusion issues in science
 - Designing new catalytic transformations for the synthesis of heterocycles and the C–H functionalization of complex molecules
 - Investigating the mechanisms of nickel precatalyst activation
- Postdoctoral Scholar**, Stanford University January 2017–June 2019
- Stanford Neurosciences Institute Interdisciplinary Scholar and Stanford ChEM-H Postdocs at the Interface Seed Grant Awardee
 - In collaboration with the Zuchero group (Stanford University School of Medicine), interrogated the role of neuron-glia signaling in pain perception using whole-cell patch-clamp electrophysiology recordings
 - Assessed the affinity of (+)-saxitoxin analogs for voltage-gated sodium ion channel isoforms and single-point mutants to gain insight into the molecular interactions that influence toxin potency
 - Collaborated with a team of researchers to develop a potent, small molecule inhibitor of chloride channels
- Graduate Research Assistant**, Princeton University September 2011–December 2016
- National Science Foundation Graduate Research Fellow
 - Developed a novel copper-catalyzed H–F insertion reaction that uses abundant, inexpensive KF to effect a mild nucleophilic fluorination and enables the one-step ¹⁸F-labeling of biomolecules using [¹⁸F]KF
 - Discovered an air-stable nickel precatalyst and investigated the scope and mechanism of precatalyst activation
 - Mentored a visiting undergraduate student participating in the Summer Undergraduate Research Program for Diversity in Chemistry
- Undergraduate Research Assistant**, Furman University August 2008–July 2011
- Beckman Scholar and Howard Hughes Medical Institute Undergraduate Research Fellow
 - Identified a one-pot, *E*-selective method for the isomerization of stilbene derivatives and elucidated the scope of this reaction with an undergraduate mentee
 - Completed the shortest total synthesis to date of (±)-grandisol, a monoterpene natural product containing a cyclobutane ring

AWARDS & HONORS

- Stanford Neurosciences Institute Interdisciplinary Scholar, January 2018–June 2019
- National Science Foundation Graduate Research Fellow, April 2012–July 2015
- Pickering Teaching Award, Princeton University 2013
- Beckman Scholar at Furman University, May 2010–July 2011
- American Chemical Society Outstanding Senior Award, Furman University 2011
- Award for Achievement in Organic Chemistry, Furman University 2010

- Howard Hughes Medical Institute Undergraduate Research Fellow, August 2008–July 2009
- Phi Beta Kappa National Honor Society

TEACHING EXPERIENCE

Washington and Lee University, Department of Chemistry and Biochemistry (Fall 2019–present)

- CHEM 241: Organic Chemistry I
- CHEM 242: Organic Chemistry II
- CHEM 347: Advanced Organic Chemistry
- CHEM 401: Directed Individual Study
- CHEM 421: Directed Individual Research
- CHEM 432: Summer Directed Individual Research

Stanford University, Department of Chemistry

- Chemistry 2: Organic Chemistry of Carbonyl Containing Molecules Summer 2017

Princeton University, Department of Chemistry

- Course Advisor Fall 2015
 - Collaborated with Prof. Martin Semmelhack and Princeton's McGraw Center for Teaching and Learning to design and implement problem-based discussion sections for first-semester undergraduate organic chemistry course
 - Developed curriculum to promote active learning and mentored teaching assistants
- Assistant in Instruction
 - Pickering Teaching Award Spring 2013
 - Chemistry 304B: Organic Chemistry II: Biological Emphasis Spring 2013
 - Chemistry 303: Organic Chemistry I: Biological Emphasis Fall 2012

Princeton University, McGraw Center for Teaching and Learning

- Organic Chemistry Tutor September 2014–May 2016
- Organic Chemistry Review Session Instructor February 2014–May 2015

PUBLICATIONS

- 8) Kantarci, H.; Elvira, P. D.; Thottumkara, A. P.; Iyer, M.; Donovan, L. J.; Ambiel, N.; O'Connell, E. M.; Granados, A.; Zeng, H.; Saw, N. L.; Lutz, A. B.; Sloan, S. A.; **Gray, E. E.**; Tran, K. V.; Vichare, A.; Yeh, A. K.; Münch, A. E.; Huber, M.; Agrawal, A.; Morri, M.; Shamloo, M.; Tawfik, V. L.; Du Bois, J.; Zuchero, J. B. Schwann cells promote sensory neuron excitability during development. *bioRxiv*, 2022, DOI: 10.1101/2022.10.31.514415 (accessed 2022-11-01).
- 7) McMahon, C. M.; Choquette, K. A.; Stieber, S. C. E.; **Gray, E. E.** Remote Supergroup for Chemistry Undergraduates: An Inclusive Scientific Community for Primarily Undergraduate Institutions. *J. Chem. Educ.* **2022**, *99*, 3187.
- 6) Koster, A. K.; Reese, A. L.; Kuryshv, Y.; Wen, X.; McKiernan, K. A.; **Gray, E. E.**; Wu, C.; Huguenard, J. R.; Maduke, M.; Du Bois, J. Development and Validation of a Potent and Specific Inhibitor for the CLC-2 Chloride Channel. *Proc. Natl. Acad. Sci. U.S.A.* **2020**, *117*, 32711.
- 5) McMahon, C. M.; Choquette, K. A.; Stieber, S. C. E.; **Gray, E. E.** Remote Supergroup for Chemistry Undergraduates. *Scholarship and Practice of Undergraduate Research* **2020**, *4*, 72.
- 4) **Gray, E. E.**; Nielsen, M. K.; Choquette, K. A.; Kalow, J. A.; Graham, T. J. A.; Doyle, A. G. Nucleophilic (Radio)Fluorination of α -Diazocarbonyl Compounds Enabled by Copper-Catalyzed H-F Insertion. *J. Am. Chem. Soc.* **2016**, *138*, 10802.
- 3) Shields, J. D.; **Gray, E. E.**; Doyle, A. G. A Modular, Air-Stable Nickel Precatalyst. *Org. Lett.* **2015**, *17*, 2166.
- 2) **Gray, E. E.**; Rabenold, L. E.; Goess, B. C. *E*-Selective Isomerization of Stilbenes and Stilbenoids Through Reversible Hydroboration. *Tetrahedron Lett.* **2011**, *52*, 6177.
- 1) Graham, T. J. A.; **Gray, E. E.**; Burgess, J. M.; Goess, B. C. An Efficient Synthesis of (\pm)-Grandisol Featuring 1,5-Enyne Metathesis. *J. Org. Chem.* **2010**, *75*, 226.

PRESENTATIONS

- Gray, E. E.; Choquette, K. A.; McMahon, C. M.; Stieber, S. C. E. Remote Supergroup for Chemistry Undergraduates. American Chemical Society National Meeting and Exposition, Chicago, IL, August 24, 2022. (oral

presentation)

- Gray, E. E. Nobel Prize in Chemistry 2021: For the Development of Asymmetric Organocatalysis. Washington and Lee University Nobel Symposium, Lexington, VA, November 10, 2021. (oral presentation)
- Gray, E. E.; Kantarci, H.; Elvira, P. D.; Thottumkara, A. P.; Zuchero, J. B.; Du Bois, J. Examining the Role of Glia Signaling in Neuronal Excitability. Symposium of the Stanford Neurosciences Institute, Stanford, CA, October 11, 2018. (poster)
- Gray, E. E.; Nielsen, M. K.; Choquette, K. A.; Kalow, J. A.; Graham, T. J. A.; Doyle, A. G. Nucleophilic (Radio)Fluorination of α -Diazocarbonyl Compounds Enabled by Copper-Catalyzed H-F Insertion. Gordon Research Conference: Stereochemistry, Newport, RI, July 27, 2016. (poster)
- Gray, E. E.; Choquette, K. A.; Doyle, A. G. Copper-Catalyzed H-F Insertions. 251st American Chemical Society National Meeting and Exposition, San Diego, CA, March 15, 2016. (oral presentation)
- Gray, E. E.; Shields, J. D.; Doyle, A. G. A Modular, Air-Stable Nickel Precatalyst. 2015 American Chemical Society Division of Organic Chemistry Graduate Research Symposium, Austin, TX, July 24, 2015. (poster)
- Gray, E. E.; Graham, T. J. A.; Burgess, J. M.; Goess, B. C. An Efficient Synthesis of (\pm)-Grandisol Featuring 1,5-Enyne Metathesis. 2011 Beckman Scholars Symposium and Beckman Young Investigators Symposium, Irvine, CA, August 12, 2011. (poster)
- Gray, E. E.; Graham, T. J. A.; Burgess, J. M.; Goess, B. C. Efficient Synthesis of (\pm)-Grandisol Featuring 1,5-Enyne Metathesis. Joint 66th Southwest and 62nd Southeast Regional Meeting of the American Chemical Society, New Orleans, LA, December 4, 2010. (oral presentation)
- Gray, E. E.; Goess, B. C. One-Pot Dialkylation of Lactones. 61st Southeast Regional Meeting of the American Chemical Society, San Juan, Puerto Rico, October 22, 2009. (poster)

GRANTS FUNDED

- *Organic Syntheses* Summer Research Grant for Faculty at Principally Undergraduate Institutions, \$16,000 (2022–2023)
- Virginia Foundation for Independent Colleges Undergraduate Science Research Fellowship (VFIC New Market Program), \$2,500 (2021)
- Washington and Lee Summer Lenfest Grant, \$6,500 (2020, 2021, and 2022)
- Stanford ChEM-H Postdocs at the Interface Seed Grant, \$50,000 (2017–2019)

PROFESSIONAL ACTIVITIES

University Service Activities

- Faculty Co-Advisor for the W&L Chemistry Club (2022–present)
- Student Advising: First-Year Advisor (2020–present) and Major Advisor (2021–present)
- Houston H. Harte Center for Teaching and Learning Advisory Board (2019–2021)

Department Service Activities

- Visiting Assistant Professor of Organic Chemistry Search Committee (2019)
- Instrumentation Purchasing Committee, Nuclear Magnetic Resonance Spectrometer (2019)

National Affiliations and Activities

- Session Presider, CHED General Papers, Fall 2022 ACS National Meeting (2022)
- Founder of the Remote Supergroup for Chemistry Undergraduates (2020–present)
- Reviewer for American Chemical Society and Nature Publishing Group journals (2019–present)
- Member, American Chemical Society (2012–present)

Pedagogy and Professional Development Activities

- Participant, Harte Center for Teaching and Learning seminars and book clubs (2019–present)
- Participant, Empowering Women in Organic Chemistry Conference (2021)
- Participant, Process Oriented Guided Inquiry Learning (POGIL) Training Workshop (2020)
- Participant, American Chemical Society and Cottrell Scholars Collaborative New Faculty Workshop (2019)
- Participant, Pedagogy Journal Club, Stanford University's Office of Postdoctoral Affairs (2018–2019)
- Participant, Teagle Teaching Seminar, Princeton University's McGraw Center for Teaching and Learning (2014–2015)

Community Outreach

- Co-Teacher, Stanford University Splash (2017–2019)
- Volunteer, Bay Area Science Festival, Discovery Day at AT&T Park (2017)

- Student-Invited Lecture Series Co-Chair, Graduate Student Organization, Princeton University Department of Chemistry (2014–2016)
- Event Coordinator and Charter Member, Female Researchers in Chemistry, Princeton University Department of Chemistry (2013–2016)
- Volunteer, Super Science Saturday, Trenton Science Museum (2012–2016)
- Volunteer, National Chemistry Week, Princeton University Department of Chemistry (2011–2015)

RESEARCH STUDENTS SUPERVISED

Neissa Usanase (W&L '24)	2022–present	<i>Org. Syn.</i> Summer Scholar
Johnny Kaelber (W&L '24)	2021	
Holden Robinson (W&L '23)	2021–present	
Jensen Rocha (W&L '23)	2021–present	Goldwater Scholar
Hannah Spencer (W&L '23)	2021–2022	
Joanne Ko (W&L '23)	2020–present	
Joseph Lee (W&L '22)	2020–2022	
Janeth Sandoval (W&L '22)	2020–2022	
Eli Bradley (W&L '22)	2020–2021	
JD Davis (W&L '21)	2020–2021	now attending William & Mary graduate school
Ben Peeples (W&L '21)	2020–2021	
Grace Anne Holladay (W&L '21)	2020	now attending University of Tennessee medical school
Pablo Elvira (Stanford *22)	2017–2019	Boston Consulting Group
Ivanny Jácome Ottati (Millersville '17)	2015	now attending Portland State University graduate school