Alison E. Wendlandt

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Current Position

2018 – present Massachusetts Institute of Technology, *Cambridge, MA*
Assistant Professor
Department of Chemistry

Education and Training

2015-2018 Harvard University, *Cambridge, MA*
NIH Ruth L. Kirschstein Postdoctoral Fellow
Advisor: Eric N. Jacobsen

2010-2015 **Ph.D. Chemistry,** University of Wisconsin – Madison, *Madison, WI*
Advisor: Shannon S. Stahl

2007-2009 **M.S. Chemistry,** Yale University, *New Haven, CT*
Advisor: David A. Spiegel

2003-2007 **B.S. Chemistry; Biological Chemistry,** University of Chicago, *Chicago, IL*
Advisor: Sergey A. Kozmin

Awards and Fellowships

2022 Amgen Young Investigator Award
2022 Bürgenstock JSP Fellowship
2021-2026 NIH New Innovator Award (DP2)
2021-2025 Beckman Young Investigator Award
2020 Thieme Chemistry Journals Award
2019-2022 Cecil and Ida Green Career Development Chair
2016-2018 Ruth L. Kirschstein NIH NRSA Postdoctoral Fellowship
2016 Finalist, Reaxys PhD Prize
2015 GSFLC Mentor Award (peer-nominated), *Wisconsin*
2015 Leah Cohodas Berk Award for Excellence in Chemistry Research, *Wisconsin*
2014 Alfred R. Bader Award for Graduate Student Innovation, *Sigma-Aldrich*
2014 Charles and Martha Casey Excellence in Research Award, *Wisconsin*
2013 Goering Organic Chemistry Fellowship, *Wisconsin*
2013 63rd Lindau Nobel Laureate Meeting, *sponsored by U.S. Dept. of Energy*
2003-2007 Dean's List, *University of Chicago*
2003 Semi-Finalist, *Siemens-Westinghouse Science Competition*

Publications

(21) Zhang, Y.-A.§, Palani, V.§, Seim, A. E., Wang, Y., Wang, K. J., **Wendlandt, A.E**. "Stereochemical Editing Logic Powered by the Isomerization of Unactivated Tertiary Stereocenters" *Science,* **2022***, 378*, 383-390. §*these authors contributed equally*

- for a highlight of this work, see Halford, B. "Switching Up Tertiary Stereocenters" *Chemical and Engineering News*, **2022**, *100*, issue 38

(20) Palani, V. and **Wendlandt A. E.** "A Stable Alternative to an Explosive Synthetic Reaction" *Nature* **2022**, 610, 40-41. *(News & Views)*

(19) Carder, H. M., Wang, Y., **Wendlandt, A.E**. "Selective Axial-to-Equatorial Epimerization of Carbohydrates" *J. Am. Chem. Soc.*, **2022**, *144*, 11870-11877.

(18) Zhang, Y.-A.[§], Gu, X.[§], **Wendlandt, A.E**. "A Change from Kinetic to Thermodynamic Control Enables *trans*-Selective Stereochemical Editing of Vicinal Diols" *J. Am. Chem. Soc.*, **2022**, *144, 599-605.* [§]*these authors contributed equally*

(17) Occhialini, G. E., Palani, V., **Wendlandt, A.E**. "Catalytic, *contra*-Thermodynamic Positional Alkene Isomerization" *J. Am. Chem. Soc.,* **2022**, *144, 145-152. (Previously ChemRxiv preprint DOI: 10.26434/chemrxiv-2021-kwf6m)*

- for a highlight of this work, see Alektiar, S. N.; Williams, O. P.; Wickens, Z. K. "An alkene, a photon, and a catalyst walk into a bar; Zaitsev wasn't invited" *Trends in Chemistry*, **2022**, https://doi.org/10.1016/j.trechm.2022.02.003
- featured as a *Spotlight*, *J. Am. Chem. Soc.,* **2022**, *144, 3-4.*

(16) Carder, H. M., Suh, C. E., **Wendlandt, A.E**. "A Unified Strategy to Access 2- and 4-Deoxygenated Sugars Enabled by Manganese-Promoted 1,2-Radical Migration." *J. Am. Chem. Soc.*, **2021**, *143*, 13798-13805.

(15) Suh, C. E.[§], Carder, H. M.[§], **Wendlandt, A.E**. "Selective Transformations of Carbohydrates Inspired by Radical-Based Enzymatic Mechanisms." *ACS Chemical Biology*, **2021**, *16*, 1814-1828. [§]*these authors contributed equally.*

(14) Wang, Y., Carder, H. M., **Wendlandt, A.E.** "Synthesis of Rare Sugar Isomers through Site-Selective Epimerization" *Nature*, **2020**, 578, 403-408.

- for a highlight of this work, see Boerner, L. K. "Photocatalyst flips common sugars into rare ones" *Chemical and Engineering News*, **2020**, *98*, issue 3
- featured by Derek Lowe on *In The Pipeline,* "One sugar turns into another," *17 January 2020*

(13) **Wendlandt A. E.** "Photocatalytic Deracemization Fixes the Mix" *Science* **2019**, 366, 304-305. *(Perspective)*

Mentored publications:

(12) Li, Q.; Levi, S. M.; Wagen, C.; **Wendlandt, A. E**.; Jacobsen, E. N. Site-selective, Stereocontrolled Glycosylation of Minimally Protected Sugars *Nature* **2022**, *608*, 74-79.

(11) Li, B., **Wendlandt A. E.**, Stahl, S. S. "Replacement of Stoichiometric DDQ with a Low Potential *o*-Quinone Catalyst Enabling Aerobic Dehydrogenation of Tertiary Indolines in Pharmaceutical Intermediates" *Org. Lett.*, **2019**, *21*, 1176-1181.

(10) **Wendlandt A. E.**, Vangal, P., Jacobsen, E. N. "Quaternary Stereocentres via an Enantioconvergent Catalytic S_N1 Reaction" *Nature*, **2018**, *556*, 447-451.

- featured on the cover of *Nature*, issue 556
- for a highlight of this work, see: Tobias Morack and Ryan Gilmour, "Facial recognition for molecules" *Nature*, **2018**, *556*, 438-439
- for a highlight of this work, see: Halford, B. "Coaxing chiral products from an S_N1 reaction" *Chemical and Engineering News*, **2018**, *96*, issue 18

(9) Kwiatkowski, S., Sviripa, V. M., Zhang, Z., **Wendlandt, A. E.**, Hobartner, C., Watt, D. S., Stamm, S. "Synthesis of a Norcantharidin-Tethered Guanosine: Protein phosphatase-1 inhibitors that change alternative splicing" *Bioorg. Med. Chem. Lett.* **2016**, *26*, 965-968.

(8) **Wendlandt, A. E.,** Stahl, S. S. "Quinone-Catalyzed Selective Oxidation of Organic Molecules" *Angew. Chem. Int. Ed.* **2015**, *54*, 14638-14658.

(7) **Wendlandt, A. E.,** Stahl, S. S. "Modular *o*-Quinone Catalyst System for Dehydrogenation of Tetrahydroquinolines under Ambient Conditions" *J. Am. Chem. Soc.* **2014,** *136*, 11910-11913.

(6) **Wendlandt, A. E.,** Stahl, S. S. "Bioinspired Aerobic Oxidation of Secondary Amines and Nitrogen Heterocycles with a Bifunctional Quinone Catalyst" *J. Am. Chem. Soc.* **2014**, *136*, 506-512.

(5) **Wendlandt, A. E.,** Stahl, S. S. "Chemoselective Organocatalytic Aerobic Oxidation of Primary Amines to Secondary Imines" *Org. Lett.* **2012,** *14*, 2850-2853.

(4) **Wendlandt, A. E.**, Stahl, S.S. "Copper(II)-Mediated Oxidative Cyclization of Enamides to Oxazoles" *Org.*

Biomol. Chem. **2012**, *10*, 3866-3870.

(3) **Wendlandt, A. E.,** Suess, A. M., Stahl, S.S. "Copper-Catalyzed Aerobic Oxidative C-H Functionalizations: Trends and Mechanistic Insights" *Angew. Chem. Int. Ed.* **2011**, *50*, 11062-11087.

(2) Zhang, Z., Kelemen, O., van Santen, M. A., Yelton, S.M., **Wendlandt, A. E**., Sviripa, V. M., Bollen, M., Beullens, M., Urlaub, H., Lührmann, R. Watt, D.S., Stamm, S. "Synthesis and Characterization of Pseudocantharidins, Novel Phosphatase Modulators that Promote the Inclusion of Exon 7 into the SMN (Survival of Motorneuron) Pre-mRNA" *J. Biol. Chem.* **2011**, *286*, 10126-10136.

(1) **Wendlandt, A. E.,** Yelton, S. M., Lou, D., Watt, D.S., Noonan, D. J. "Synthesis and Functional Analysis of Novel Bivalent Estrogens" *Steroids* **2010**, *75*, 825-833.

Book Chapters

Wendlandt A. E. and Stahl, S. S. (2016) Quinones in Hydrogen Peroxide Synthesis and Catalytic Aerobic Oxidation Reactions, in *Liquid Phase Aerobic Oxidation Catalysis: Industrial Applications and Academic Perspectives* (eds S. S. Stahl and P. L. Alsters), Wiley-VCH Verlag, Weinheim, Germany.

Invited Seminars and Oral Presentations

2022 Tufts University, *Medford, MA*
Princeton ACS Fall Organic Chemistry Symposium, *New Brunswick, NJ*
Merck, *Rahway, NJ*
Padwa Lectureship, Emory University, *Atlanta, GA*
UW Madison, *Madison, WI*
UC Berkeley, *Berkeley, CA*
Eli Lilly, *virtual*
Organic Syntheses Workshop, *Steamboat Springs, CO*
Bertram Fraser-Reid Memorial Symposium, ACS National Meeting, *Chicago, IL*
Medicinal Chemistry GRC, Colby-Sawyer College, *New London, NH*
Stereochemistry GRC, Salve Regina University, *Newport, RI*
Empowering Women in Organic Chemistry (EWOC) Conference, *Cambridge, MA*
California Institute of Technology, *Los Angeles, CA (student invited)*
UC Los Angeles, *Los Angeles, CA*
Boehringer-Ingleheim, *Danbury, CT*
University of Pennsylvania, *Philadelphia, PA*
Vanderbilt University, *Nashville, TN*
University of Connecticut, *Storrs, CT*

2021 Université de Montréal, *virtual*
Sigma-Aldrich Chemistry Symposium, *hosted by UW Madison, virtual*
Firmenich, *virtual*
University of Massachusetts – Dartmouth, *Dartmouth, MA*
Janssen Young Investigator Symposium, *virtual*
2020 ACS Catalysis Lectureship Award Symposium, ACS National Meeting, *virtual*
Frontiers: Site Selective Catalysis Symposium, IUPAC | CCCE Conference, *virtual*
Center for C–H Functionalization (CCHF) Virtual Seminar Series, hosted by Emory University
ACS Carbohydrate Division Young Investigator Symposium, *virtual*

2020 Midwest Carbohydrate and Glycobiology Symposium, hosted by Univ of Michigan, *virtual*
Bristol-Myers Squibb, *virtual*
Division of Organic Chemistry Seminar Series, Emory University (virtual), *Cambridge, MA*
New England GlycoChemistry Meeting, Brandeis University (virtual), *Cambridge, MA*
Merck, *virtual*
Boston Glycobiology Discussion Group, Harvard University, *Cambridge, MA*

2019 NESACS Process Chemistry Meeting, *Cambridge, MA*
ACS National Meeting, *San Diego, CA*

(Graduate and Postdoctoral Research)

2018 Cornell University, Department of Chemistry*, Ithaca, NY*
University of Illinois, Department of Chemistry, *Urbana-Champaign, IL*

University of Texas –Austin, Department of Chemistry, *Austin, TX*
Stanford University, Department of Chemistry, *Palo Alto, CA*
University of Chicago, Department of Chemistry, *Chicago, IL*
New York University, Department of Chemistry, *New York, NY*
Princeton University, Department of Chemistry, *Princeton, NJ*

2017 University of Minnesota, Department of Chemistry, *Minneapolis, MN*
Massachusetts Institute of Technology, Department of Chemistry, *Cambridge, MA*
University of North Carolina – Chapel Hill, Department of Chemistry, *Chapel Hill, NC*
Rochester University, Department of Chemistry, *Rochester, NY*
Pennsylvania State University, Department of Chemistry, *State College, PA*
University of California – Riverside, Department of Chemistry, *Riverside CA*
Boston Symposium on Organic and Bioorganic Chemistry, *Boston, MA*
Gordon Research Conference – Organic Reactions & Processes, Stonehill College, *Easton, MA*

2016 Reaxys PhD Prize Symposium, *London, United Kingdom*

Selected Conference Posters

2018 Stereochemistry GRC, Salve Regina University, *Newport, RI*

2017 Organic Reactions & Processes GRC, Stonehill College, *Easton, MA*
Heterocycles GRC, Salve Regina University, *Newport, RI*
CaRLa Winter School, *Heidelberg, Germany*

2016 Boston Symposium on Organic and Bioorganic Chemistry, *Boston, MA*
Reaxys PhD Prize Symposium *London, United Kingdom*

2014 Stereochemistry GRC, Salve Regina University, *Newport, RI*

2013 ACS National Meeting, *Indianapolis, IN*
Lindau Meeting of Nobel Laureates, *Lindau, Germany*

Teaching

Massachusetts Institute of Technology
5.53 – Structure and Reactivity I (*fall 2018, 2019, 2020, 2021)*
5.47 – Organic Tutorial (*fall 2018, 2019, 2020, 2022)*
5.44 – Organometallic Chemistry (*spring 2020)*

Service and Professional Memberships

2018-2022 Department of Chemistry Graduate Admission and Recruiting
2020-2022 Department of Chemistry Quality of Life Committee

Peer Reviewer, *Science; Nature, Nature Chemistry; Journal of the American Chemical Society; Journal of Organic Chemistry; Organic Letters; ACS Catalysis; Angewandte Chemie; Advanced Synthesis and Catalysis; Accounts of Chemical Research*

Grant Reviewer, *ACS PRF (2019, 2020); NIH SBCA Study Section (ad hoc 2022)*

2010- **Member,** *American Chemical Society*