

Michael K. Hilinski, Ph.D.

Curriculum Vitae

Department of Chemistry, University of Virginia
McCormick Rd, Charlottesville, VA 22904-4319
Phone: 434-924-0159 • Email: hilinski@virginia.edu
Website: <http://www.hilinskilab.com>

Education

Ph.D. in Organic Chemistry, Stanford University, Stanford, CA 2001–2007
B.S. in Chemistry (summa cum laude), Tufts University, Medford, MA 1996–2000

Positions and Employment

Assistant Professor 2013–present
Department of Chemistry
University of Virginia, Charlottesville, VA
Other affiliations: Member, UVA Cancer Center (2014–present)

DOD Breast Cancer Research Program Postdoctoral Fellow 2009–2013
Department of Microbiology, Immunology, and Cancer Biology
University of Virginia, Charlottesville, VA
Advisor: Deborah A. Lannigan

Senior Research Scientist 2009–2009
Pinnacle Pharmaceuticals, Charlottesville, VA

Research Scientist 2007–2009
Metabasis Therapeutics, La Jolla, CA

Graduate Research Assistant 2001–2007
Department of Chemistry
Stanford University, Stanford, CA
Advisor: Paul A. Wender

Research Scientist 2000–2001
AMRI, Albany, NY

Undergraduate Research with Marc d'Alarcao 1999–2000
Department of Chemistry
Tufts University, Medford, MA

Honors and Awards

2015 Outstanding Continuous Contribution to Compound Screening Award, Lilly OIDD program
2011 Department of Defense Breast Cancer Research Program Postdoctoral Fellowship
2010 University of Virginia Cancer Biology Training Grant Postdoctoral Fellowship
2002 William Sloan Fellowship, Stanford University Department of Chemistry
2000 Durkee Scholarship, Tufts University Department of Chemistry
1999 Phi Beta Kappa, Tufts University
1999 Max Tishler Prize Scholarship in Chemistry
1999 Howard Sample Prize in Physics
1998 Golden Key National Honor Society, Tufts University

Peer-Reviewed Publications

Independent Publications (UVA graduate students and postdoctoral researchers underlined, UVA undergraduate students underlined and in italics, * indicates corresponding author):

12. Combee, L. A.; Raya, B.; Wang, D.; Hilinski, M. K.* "Organocatalytic Nitrenoid Transfer: Metal-Free Selective Intermolecular C(sp³)-H Amination Catalyzed by an Iminium Salt" *Chem. Sci.* **2018**, *9*, 935-939. (Highlighted in *Synfacts* **2018**, *14*, 195. and chosen as "Synfact of the Month")
11. Shuler, W. G.; Johnson, S. L.; Hilinski, M. K.* "Organocatalytic, Dioxirane-Mediated C–H Hydroxylation under Mild Conditions Using Oxone" *Org. Lett.* **2017**, *19*, 4790-4793.
10. Wang, D.; Shuler, W. G.; Pierce, C. J., Hilinski, M. K.* "An Iminium Salt Organocatalyst for Selective Aliphatic C–H Hydroxylation" *Org. Lett.* **2016**, *18*, 3826-3829.
9. Shuler, W. G.; Combee, L. A.; Falk, J. D.; Hilinski, M. K.* "Intermolecular Electrophilic Addition of Epoxides to Alkenes: [3+2] Cycloadditions Catalyzed by Lewis Acids" *Eur. J. Org. Chem.* **2016**, 3335–3338. (Highlighted in *Org. Chem. Highlights* **2017**, April 10.)
8. Pierce, C. J.; Hilinski, M. K.* "Chemoselective Hydroxylation of Aliphatic sp³ C–H Bonds Using a Ketone Catalyst and Aqueous H₂O₂" *Org. Lett.* **2014**, *16*, 6504–6507. (Top five most read paper in Organic Letters Dec 2014 – Jan 2015; Highlighted in *Synfacts* **2015**, *11*, 431.)

Graduate and Postdoctoral Publications:

7. Mrozowski, R. M.; Vemula, R.; Wu, B.; Zhang, Q.; Schroeder, B. R.; Hilinski, M. K.; Clark, D. E.; Hecht, S. M.; O'Doherty, G. A.; Lannigan, D. A. "Improving the Affinity of SL0101 for RSK Using Structure-Based Design" *ACS Med. Chem. Lett.* **2013**, *4*, 175–179.
6. Utebergenov, D.; Derewenda, U.; Olekhovich, N.; Szukalska, G.; Banerjee, B.; Hilinski, M. K.; Lannigan, D. A.; Stukenberg, P. T.; Derewenda, Z. S. "Insights into the Inhibition of the p90 Ribosomal S6 Kinase (RSK) by the Flavonol Glycoside SL0101 from the 1.5 Å Crystal Structure of the N-Terminal Domain of RSK2 with Bound Inhibitor" *Biochemistry* **2012**, *51*, 6499–6510.
5. Hilinski, M. K.*; Mrozowski, R. M.; Clark, D. E.; Lannigan, D. A. "Analogues of the RSK Inhibitor SL0101: Optimization of In Vitro Biological Stability" *Bioorg. Med. Chem. Lett.* **2012**, *22*, 3244–3247.
4. Mooberry, S. L.; Hilinski, M. K.; Clark, E. A.; Wender, P. A. "Function-Oriented Synthesis: Biological Evaluation of Laulimalide Analogues Derived from a Last Step Cross Metathesis Diversification Strategy" *Mol. Pharmaceutics* **2008**, *5*, 829–838.
3. Wender, P. A.; Hilinski, M. K.; Skaanderup, P. R.; Soldermann, N. G.; Mooberry, S. L. "Pharmacophore Mapping in the Laulimalide Series: Total Synthesis of a Vinylogue for a Late-Stage Metathesis Diversification Strategy" *Org. Lett.* **2006**, *8*, 4105–4108.
2. Wender, P. A.; Hilinski, M. K.; Soldermann, N.; Mooberry, S. L. "Total Synthesis and Biological Evaluation of 11-Desmethyllaulimalide, a Highly Potent Simplified Laulimalide Analogue" *Org. Lett.* **2006**, *8*, 1507–1510.

1. Wender, P. A.; **Hilinski, M. K.**; Mayweg, A. V. W. "Late-Stage Intermolecular CH Activation for Lead Diversification: A Highly Chemoselective Oxyfunctionalization of the C-9 Position of Potent Bryostatin Analogues" *Org. Lett.* **2005**, 7, 79–82.

Book Chapters

1. Wender, P. A.; Baryza, J. L.; **Hilinski, M. K.**; Horan, J. C.; Kan, C.; Verma, V. A. "Beyond Natural Products: Synthetic Analogs of Bryostatin 1" in *Drug Discovery Research: New Frontiers in the Post-Genomic Era*; Huang, Z., Ed.; John Wiley & Sons: New York, NY, **2007**.

Patents

2. **Hilinski, M. K.** An Iminium Salt Organocatalyst for Selective Aliphatic C–H Hydroxylation. U.S. Provisional Patent Application 62/353,157, filed 22 June 2016.
1. Hecht, S. M.; Lannigan-Macara, D. A.; Smith, J. A.; O'Doherty, G. O.; **Hilinski, M. K.** Synthesis and Identification of Novel RSK-Specific Inhibitors. US Patent 9,040,673, 26 May 2015.

Invited Talks

Independent Invited Talks:

9. "Recent Adventures in Catalytic Heteroatom Transfer" *Florida Heterocyclic and Synthetic Conference* **March, 2017**, University of Florida, Gainesville, FL
8. "Organocatalytic Approaches to Site Selective Functionalization" *Advances in Organic Synthesis (Invited Session), Southeastern Regional Meeting of the American Chemical Society* **November 8, 2017**, Charlotte, NC
7. "Selective Carbon-Hydrogen Bond Functionalization: An Enabling Synthetic Technology for Drug Discovery" *Longwood University Chichester Colloquium* **October 26, 2017**, Longwood University, Farmville, VA
6. "Organocatalytic Approaches to C-H Functionalization" *Gordon Research Conference: Organic Reactions & Processes* **July 27, 2017**, Stonehill College, Easton, MA, (selected to give a talk on the basis of poster abstract)
5. "Organocatalytic Approaches to C-H Functionalization" *Gordon Research Conference: Heterocyclic Compounds* **June 20, 2017**, Salve Regina University, Newport, RI, (selected to give a talk on the basis of poster abstract)
4. "Enzyme-Inspired Organocatalytic Approaches to the Selective Oxidation of Drug-Like Molecules" *Virginia Tech Highlands in Chemistry seminar series* **April 14, 2017**, Virginia Tech, Blacksburg, VA
3. "New Applications of Strained Heterocycles in Synthesis" *Florida Heterocyclic and Synthetic Conference* **February 29, 2016**, University of Florida, Gainesville, FL
2. "Selective Inhibitors of RSK as Anticancer Drug Leads: A Medicinal Chemistry Story" *University of Virginia Cancer Center Seminar Series* **November 14, 2014**, Charlottesville, VA.

Graduate and Postdoctoral Invited Talks:

1. "Design, Synthesis, and Biological Evaluation of RSK Inhibitors" *Mid-Atlantic Regional Meeting of the American Chemical Society* **May 21, 2011**, College Park, MD.

Oral and Poster Presentations

Independent Career Presentations (Presenter in Bold):

9. **Hilinski, M. K.**; Combee, L. A.; Dyer, R. M. B.; Hahn, P. L.; Johnson, S. L.; Pierce, C. J.; Raya, B.; Shuler, W. G.; Wang, D. "New Site Selective Organocatalytic Oxidation and Amination Reactions" *Gordon Research Conference: Organic Reactions & Processes*, **2017**, Stonehill College, Easton, MA; *poster*.
8. **Hilinski, M. K.**; Combee, L. A.; Dyer, R. M. B.; Hahn, P. L.; Johnson, S. L.; Pierce, C. J.; Raya, B.; Shuler, W. G.; Wang, D. "New Site Selective Organocatalytic Oxidation and Amination Reactions" *Gordon Research Conference: Heterocyclic Compounds*, **2017**, Salve Regina University, Newport, RI; *poster*.
7. **Hilinski, M. K.**; Wang, D.; Pierce, C. J.; Shuler, W. G.; Johnson, S. J.; Dyer, R. M. B.; Hahn, P. L. "Selective Oxidative Modification of Bioactive Compounds as a Tool for Drug Discovery" *Virginia CancerRx Symposium*, **2017**, University of Virginia, VA; *poster*.
6. **Hilinski, M. K.**; Wang, D.; Pierce, C. J.; Shuler, W. G. "Improving Site Selectivity and Functional Group Compatibility in C–H Hydroxylation Using Organocatalysis" *Gordon Research Conference: Organic Reactions & Processes*, **2016**, Stonehill College, MA; *poster*.
5. Pierce, C. J.; **Hilinski, M. K.** "Organocatalytic Methods for Aliphatic C–H Oxidation" *250th ACS National Meeting*, **2015**, Boston, MA; *oral presentation*.
4. Pierce, C. J.; **Hilinski, M. K.** "Organocatalytic Methods for Site-Selective Aliphatic C–H Oxidation" *Gordon Research Conference: Natural Products*, **2015**, Proctor Academy, NH; *poster*.
3. Pierce, C. J.; **Hilinski, M. K.** "Dioxirane-Mediated Catalytic Hydroxylation of Aliphatic C–H Bonds" *44th National Organic Symposium*, **2015**, University of Maryland, MD; *poster*.

Graduate and Postdoctoral Presentations:

2. Wender, P. A.; Mooberry, S. L.; Cardin, N. B.; Darmency, V.; **Hilinski, M. K.**; Paxton, T. J. "Improving on Nature's Leads Through Function-Oriented Synthesis: The Design, Synthesis and Biological Evaluation of Laulimalide-Inspired Microtubule-Stabilizing Agents" *22nd Annual William S. Johnson Symposium*, **2007**, Stanford University, CA; *poster*.
1. Wender, P. A.; Mooberry, S. L.; Hegde, S. G.; **Hilinski, M. K.**; Hubbard, R. D.; Leal, R. M.; Paxton, T. J.; Randall-Hlubek, D. A.; Soldermann, N.; Zhang, L. "Improving on Nature's Leads: The Design, Synthesis, and Biological Evaluation of Laulimalide Inspired Microtubule Binding Agents that Synergize with Taxol" *20th Annual William S. Johnson Symposium*, **2005**, Stanford University, CA; *poster*.

Current Research Support

R01GM124092

Hilinski (PI)

07/01/2017–06/30/2022

National Institutes of Health, National Institutes of General Medical Sciences

Award amount: \$1,469,183 (total)

"Organocatalytic Site-Selective C-H Bond Functionalization"

The major goal of this project is the development of new catalytic methods for the selective hydroxylation and amination of C(sp³)-H bonds.

56158-DNI1

Hilinski (PI)

07/01/2016–08/31/2018

American Chemical Society Petroleum Research Fund

Award amount: \$55,000/yr (direct)

"New Organocatalysts for Chemoselective Aliphatic C–H Hydroxylation"

The major goal of this project is the development of new organocatalysts that promote the selective hydroxylation of aliphatic C–H bonds.

Completed Research Support

W81XWH-11-1-0068

Hilinski (PI)

07/01/2011–06/30/2015

USAMRMC, Department of Defense

Award amount: \$100,000/yr (direct)

"Synthesis and Evaluation of Novel RSK Inhibitors in a Living Human Breast Model"

The major goal of this project was to identify a potent and biologically stable analog of the highly selective RSK inhibitor SL0101, and to evaluate its anticancer activity in a novel organoid model of breast cancer.

Courses Taught

Year	Semester	Course	Course Title	# of Students
2018	Spring	Chem 5120	Organic Chemistry IV	9
2017	Fall	Chem 5110	Organic Chemistry III	11
2016	Fall	Chem 5110	Organic Chemistry III	17
2016	Spring	Chem 2620	Introduction to Organic Chemistry	56
2015	Fall	Chem 5110	Organic Chemistry III	13
2015	Spring	Chem 2620	Introduction to Organic Chemistry	50
2014	Fall	Chem 5110	Organic Chemistry III	21
2014	Spring	Chem 2620	Introduction to Organic Chemistry	39

Postdoctoral Fellows Supervised

Name	Doctoral Program/Advisor	Dates Supervised	Current Employer
Dr. Johnathon Dooley	U. of Edinburgh/Lam	11/2017–present	N/A
Dr. Balaram Raya	Ohio State/Rajanbabu	1/2017–present	N/A
Dr. Daoyong Wang	Chin. Acad. of Sciences/Zheng	3/2015–10/2016	Formosa Plastics
Dr. Conor Pierce	U. of California, Riverside/Larsen	9/2013–11/2015	Nalco Champion

Graduate Supervised Research

Name	Undergraduate Institution	Years Supervised	Degree
Robert Dyer	University of Virginia	2016–present	Ph.D. expected 2021
Philip Hahn	Louisiana State University	2016–present	Ph.D. expected 2021
Freddie Johnson	McGill University	2016–present	Ph.D. expected 2021
Han Joong Kim	Virginia Commonwealth	2016–present	Ph.D. expected 2021
Julie Laudenschlager	Gettysburg College	2016–present	Ph.D. expected 2021
Teresa Rocha	UNC Asheville	2016–2017	M.A.

Michael Shoemaker	Elon University	2015–2017	M.A.
Logan Combee	College of Charleston	2014–present	Ph.D. expected 2019
William Shuler	College of Charleston	2013–present	Ph.D. expected 2018
Brandon Burnette	U. of West Florida	2013–2014	M.A.
Lauren Tisdale	Virginia Commonwealth U.	2013–2014	M.A.

Undergraduate Supervised Research

Name	Degree	Years Supervised
Robert Dyer	BS, Chemistry (Biochem specialization)	2015–2016
Abigail Cole	BS, Chemistry (Biochem specialization)	2015–2016
Isaac Falk	BS, Chemistry (Biochem specialization)	2015–2017
Sooraj Achar	BS, Chemistry (Biochem specialization)	2015–2017
Matthew Hrin	BS, Neuroscience	2014–2016
Dominic Delotto	BS, Chemistry (Biochem specialization)	2014–2016
Thomas Pender	BS, Chemistry	2013–2015

Summer Student Supervised Research (Underrepresented Minority Programs)

Name	Home Institution	Program	Year
Shantavia Edmonds	Clafin University	FYRE program	2017
Eddy Lontchi	Virginia Commonwealth	VA/NC Alliance	2016

Undergraduate Major Advising

Academic advisor to 33 Chemistry department undergraduate majors

Professional Service

Department

Organic Lecturer search committee, **2017**
 Ad hoc committee on Strategic Hires, **2017**
 ECE Review Committee (Laura Serbulea), **2016**
 Chemistry Department Graduate Recruiting Committee, **2013–present**
 Chemistry Department Seminar Committee, **2013–present**
 Chemistry Department Undergraduate Studies Committee, **2014–2015**
 Third-Year Review Committee (Laura Serbulea), **2015**
 Undergraduate Chemistry Major Advisor, **2014–present**
 Chemistry Department Bioorganic Search Committee, **2013–2014**

University

"Speaking of Research" Communication workshop organizing committee & facilitator, **2017-present**
 Chemistry Department Chair Selection Committee, **2015–2016**
 College Science Scholars Advisor, **2015–2016**
 Robert J. Huskey Graduate Research Exhibition Judge, **2014**
 Harrison Undergraduate Research Awards Reviewer, **2013–2014**

Commonwealth

ACS VA Section Undergraduate Poster Session judge, **2016**
 Virginia Drug Discovery Consortium steering committee, **2015–2016**

National

NSF Review Panel Member (Chemical Synthesis), **2015**
Reviewer for ACS Petroleum Research Fund, **2016, 2017**
Reviewed at least one manuscript for:

ACS Catalysis

Bioorganic & Medicinal Chemistry Letters

Chemical Science

Journal of the American Chemical Society

Letters in Organic Chemistry

Organic Letters

Science

Science Advances

Tetrahedron Letters

The Journal of Organic Chemistry