

Curriculum Vitae

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- **Education**

2002-2006 Harvard University, Cambridge, Massachusetts
Postdoctoral Fellow (Advisor: Prof. Gregory Verdine)
1997-2002 University of Virginia, Charlottesville, Virginia
Ph.D. (Advisor: Timothy Macdonald)
1993-1997 University of Virginia, Charlottesville, Virginia
B.S. (Advisor: Timothy Macdonald)

- **Positions and Employment**

2024-current Director, Virginia Tech Center for Drug Discovery
2018-current Professor, Department of Chemistry, VA Tech, Blacksburg, VA
2013-2018 Associate Professor, Department of Chemistry, VA Tech, Blacksburg, VA
2006-2013 Assistant Professor, Department of Chemistry, VA Tech, Blacksburg, VA
2004-2005 Teaching Fellow, Harvard University, Department of Chemistry, Cambridge, MA.
2002-2006 NIH Postdoctoral Fellow, Harvard University, Cambridge, MA.

- **Honors and Awards**

2023-2026 College of Science Faculty Fellowship
2023 Uncoupler Biosciences, Co-Founder and CEO
2023 Outstanding Undergraduate Research Faculty Mentor
2021 Outstanding Faculty Mentor, College of Science, Virginia Tech
2019-current Fellow of the Royal Society of Chemistry
2018-current S1P Therapeutics Inc., Co-founder, VP and Head of Medicinal Chemistry
2017-2020 Continuum Biosciences, Inc., Co-founder, VP and Head of Medicinal Chemistry
2015 ICAT Catalyst Faculty Fellow, Virginia Tech
2014 FLSI-ICTAS Innovators Award, Virginia Tech
2014 Cliff and Agnes Lilly Faculty Fellow of Drug Discovery, Virginia Tech
2014 John C. Schug Research Award, Dept. of Chemistry, Virginia Tech
2012 American Chemical Society Young Academic Investigator
2012- Core Faculty Member, Virginia Tech Center for Drug Discovery
2011 Chemical Communications Emerging Investigator
2010-2014 Blackwood Junior Faculty Fellow of Life Sciences
2010-2016 SphynKx Therapeutics, LLC, co-Founder and Vice-president of Medicinal Chemistry
2009 Molecular Biosystems Emerging Investigator
2002-2006 Ruth L. Kirschtein Postdoctoral Fellow (NRSA), Harvard University

2002 Third Prize Winner, Robert J. Huskey Graduate Research Symposium, University of Virginia
2000-2002 NIH NRSA Pre-doctoral Traineeship, University of Virginia
1998-1999 Outstanding Graduate Teaching Assistant Award, University of Virginia
1996-1997 Semi-finalist for Seven Society Teaching Fellowship, Secret Seven Society, University of Virginia

Service

2022-2025 NIH Chemical Biology and Probe Study Section, Standing member
2022 Chair of the Organizing Committee, Boron in the Americas XVII International Conference in Blacksburg, VA
2021-present Steering Committee, Virginia Tech Center for Drug Discovery
2021-present Executive Committee, Virginia Drug Discovery Consortium
2021-2022 NIH Synthetic and Biological Chemistry B Study Section, Standing member
2019- present Editorial Board, *Molecules, Medicinal Chemistry Section*
2017-present Editorial Board, *Medicinal Research Reviews*
2015-present Editorial Advisory Board, *Current Topics in Medicinal Chemistry*
2015-2018 Associate Committee on Science, American Chemical Society
2014-present Editorial Board, *Journal of Biochemistry and Molecular Biology Research*
2014-15 Associate Editor, *Diversity Oriented Synthesis*
2014-present Advisory board member for the Boron in the Americas Organization
2013-16 Alternate Councilor, Division of Biological Chemistry, American Chemical Society

• **Patents**

1. Lynch, K.R.; Macdonald, T. L.; Heise, C.H.; Santos, W. L. and Okusa, M.D. Novel Lysophosphatidic Acid Receptor Agonists and Antagonists. PCT Int. Appl. 2002 (US 7,169,818 B2 Issued January 30, 2007).
2. Santos, W.L. and Verdine, G.L. Oligonucleotide microarrays comprising nucleic acid analogs for hybridization with target RNA, including RNA in nucleoprotein complexes. PCT Int. Appl. 2005, 60 pp.
3. Santos, W.L. and Gao, M. Synthesis and uses of mixed diboron reagents. US Patent Appl. 61/225,032 July 2009.
4. Santos, W.L. Inhibition of proteases using N-terminal peptidic boronic acids. US Patent Appl. 61/234,399 August 2009.
5. Santos, W.L. Branched peptides as therapeutics for structured RNA targets. US Patent Appl. 61/269,571, June 2009
6. Santos, W.L. and Lynch K.R. Sphingosine kinase inhibitors and therapeutic use thereof. US Patent Appl. 61/375,478, Aug. 2010.
7. Santos, W.L.; Raje, M.R.; Lynch, K.R.; Macdonald, T.L.; Kennedy, A. and Kharel, Y. "Long Chain Base Sphingosine Kinase Inhibitors", US9,688,688 issued on June 27, 2017.

8. Santos, W.L.; Lynch, K.R. "Sphingosine Kinase Inhibitors", US Patent Appl. 62/058294, Priority filing date: October 1, 2014.
9. Santos, W.L.; Lynch, K.R.; Childress, E.; Kharel, Y. "Guanidine-Based Aminothiazole Inhibitors of Sphingosine Kinase", U.S. Patent Application No: 62/205,196, Priority filing date: August 14, 2015.
10. Santos, W.L.; Lynch, K.R. "Oxadiazoles as sphingosine kinase inhibitors and their preparation", PCT Int. Appl. (2016), WO 2016054261 A1 20160407.
11. Santos, W.L.; Childress, E.; Hoehn, K. "Compositions and Methods for Preparing and Using Mitochondrial Uncouplers", May 2017, U.S. Provisional Patent Application Serial No. 62/509,249. PCT/US2018/033901. Patent 11896591, issued February 13, 2024.
12. Thorpe, B. T.; Santos, W.L.; Lynch, K.R. "Sphingosine Kinase Inhibitor Prodrugs", March 2017, PCT/US2017/024852.
13. Santos, W.L.; Fritzemeier, R. "A process for making 3-substituted-1,2-oxaborol-2(5H)-ol", July 8, 2019, U.S. Patent Application Serial No.: 62/871,564
14. Santos, W.L.; Murray, J.; Dai, Y.; Santiago-Rivera, J. "Substituted imidazo[4,5-b]pyridines, imidazo[4,5-b]pyrazines, and oxazolo[4,5- b]pyrazines as mitochondrial uncouplers", US11708376, issued July 25, 2023.
15. Santos, W.L.; Salamoun, J.; Murray, J.; Garcia, J. "Oxadiazolopyrazines and Oxadiazolopyridines useful as Mitochondrial Uncouplers", April 22, 2019, PCT International Application No.: PCT/US2019/028544.
16. Santos, W.L.; Murray, J.; Nekkinda, J.; Burgio, A. "Aminopyrazines and Related Compounds Useful as Mitochondrial Uncouplers", April 22, 2019, PCT International Application No.: PCT/US2019/028560.
17. Santos, W.L.; Lynch, K.R., Kharel, Y.; Peralta, A.; Fritzemeier, R.; Foster, D. "Inhibitors of Spinster Homology 2 for Use in Therapy", January 22, 2020, PCT/US2020/014651.
18. Santos, W.L.; Lynch, K.R., Kharel, Y.; Peralta, A.; Fritzemeier, R.; Foster, D. "Inhibitors of Spinster Homology 2 for Use in Therapy", PCT Application No. PCT/US2021/049531, September 8, 2021.
19. Lynch, K.R.; Kharel, Y.; Santos, W.L.; Fritzemeier, R.; Burgio, A. L.; Shrader, C.; Foster, D. "Inhibitors of Spinster Homology 2 (SPNS2) for Use in Therapy" PCT/US2021/049534, September 8, 2021.
20. Santos, W.L.; Gaultier, A.; Bowen, J. "Compositions and Methods for Treating Multiple Sclerosis". United States Provisional Patent Application Serial No. 63/071,667, filed August 2020.
21. Santos, W.L.; Shrader, C.W.; Dunnavant, K.; Burgio, A.L.; Bage, A.D. Lynch, K.R., Kharel, Y.; Peralta, A.; Fritzemeier, R.; Foster, D. "Inhibitors of Spinster Homology 2 (SPNS2) for Use in Therapy," Provisional Patent Application, March 27, 2023.

- **Publications**

1. Santos, W. L.; Rossi, J. R.; Boggs, S. D. and Macdonald, T. L. The molecular pharmacology of lysophosphatidate signaling. *Ann. N. Y. Acad. Sci.* **2000**, *905*, 232-242. DOI: [10.1111/j.1749-6632.2000.tb06553](https://doi.org/10.1111/j.1749-6632.2000.tb06553) PMID: [10818457](https://pubmed.ncbi.nlm.nih.gov/10818457/)
2. Heise, C. E.; Santos, W. L.; Schreihofner, A. M.; Heasley, B. H.; Mukhin, Y. V.; Macdonald, T. L. and Lynch, K. R. Activity of 2-substituted lysophosphatidic acid (LPA) analogs at LPA receptors: discovery of a LPA₁/LPA₃ receptor antagonist. *Mol. Pharm.* **2001**, *60*, 1173-1180. DOI: [10.1124/mol.60.6.1173](https://doi.org/10.1124/mol.60.6.1173) PMID: [11723223](https://pubmed.ncbi.nlm.nih.gov/11723223/)
3. Hooks, S. B.; Santos, W. L.; Im, D-S., Heise, C. H.; Macdonald, T. L. and Lynch, K. R. Lysophosphatidic acid induced mitogenesis is regulated by lipid phosphate phosphatases and is Edg-receptor independent. *J. Biol. Chem.* **2001**, *276*, 4611-4621. DOI: [10.1074/jbc.M007782200](https://doi.org/10.1074/jbc.M007782200) PMID: [11042183](https://pubmed.ncbi.nlm.nih.gov/11042183/)
4. Dieckhaus, C. M.; Santos, W. L. and Macdonald, T. L. The chemistry, toxicology, and identification in rat and human urine of 4-hydroxy-5-phenyl-1,3-oxazaperhydroin-2-one: a reactive metabolite in felbamate bioactivation. *Chem. Res. Toxicol.* **2001**, *14*, 958-964. DOI: [10.1021/tx000139n](https://doi.org/10.1021/tx000139n) PMID: [11511169](https://pubmed.ncbi.nlm.nih.gov/11511169/)
5. Dieckhaus, C. M.; Roller, S.; Santos, W. L. and Macdonald, T. L. The role of glutathione s-transferases a1-1, p1-1 and m1-1 in the detoxification of 2-phenylpropenal, a reactive felbamate metabolite. *Chem. Res. Toxicol.* **2001**, *14*, 511-516. DOI: [10.1021/tx000141e](https://doi.org/10.1021/tx000141e) PMID: [11368548](https://pubmed.ncbi.nlm.nih.gov/11368548/)
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 14. Komazin-Meredith, G.; Santos, W.L., Filman, D.J.; Hogle, J.M.; Verdine, G.L. and Coen, D.M. The positively charged surface of herpes simplex virus UL42 mediates DNA binding. *J. Biol. Chem.* **2008**, *283*, 6154. DOI: [10.1074/jbc.M708691200](https://doi.org/10.1074/jbc.M708691200) PMID: 18178550
 15. Komazin-Meredith, G.; Petrella, R.J.; Santos, W. L.; Filman, D. J.; Hogle, J. M.; Verdine, G. L.; Karplus, M. and Coen, D. M. The Human Cytomegalovirus UL44 C Clamp Wraps Around DNA. *Structure* **2008**, *16*, 1214. DOI: [10.1016/j.str.2008.05.008](https://doi.org/10.1016/j.str.2008.05.008) PMID: 18682223
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- **Active Research Support**

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|--|-----------|-----------------------|
| S1P Therapeutics, Inc Drug-like Spns2 Inhibitors The goal of this project is to perform scale reactions of lead compounds as spns2 inhibitors to aid in de-risking studies. | \$382,263 | 08/15/2023-08/14/2024 |
| 1R41DK136371 Santos (PI) NIH/NIDDK SPNS2 inhibitors as renal fibrosis therapy This project will validate S1P transporter (spns2) inhibitors as therapeutics for renal fibrosis. | \$301,000 | 09/08/2023-08/31/2024 |
| Virginia Catalyst Santos (PI) VBHRC Blocking the S1P Pathway for Chronic Kidney Disease Therapeutics | \$500,000 | 10/01/2023-09/31/2024 |

The goal of this project is to develop lead Spns2 inhibitor towards investigational new drug enabling studies.

PPP-DA Santos, Rajagopalan (MPI) \$60,000 01/01/2024-06/30/2024
VT Destination Area Seed Grant
This project will investigate the effect of sphingosine kinase inhibitors as anti-viral agents in liver organoids. Investigating the Anti-Viral Activity of Sphingosine Kinase Inhibitors in Normal and Inflamed Liver Organoids

Commonwealth Health Research Board \$200,000 07/01/2023-06/30/2025
Yang (PI), Santos (co-PI)
New weapons against old foes: antivirulence approach against antibiotic resistant bacteria with small molecules targeting bacterial type IV pilus
The goal of this project is to develop small molecule inhibitors of bacterial type IV pilus.

LINK+LAUNCH+LICENSE Santos (PI) \$49,000 07/15/2023-07/14/2024
S1P Modulation for treating chronic kidney disease
The goal of this project is to translate spns2 inhibitors towards the clinic for treating CKD.

Takeda Pharmaceuticals Santos (PI) \$ 259,272 02/25/2022-02/24/2024
NMR Reaction Monitoring
The goal of this project is to develop NMR methods to understand reaction mechanisms and catalysis.

R21NS124168 Santos, Gaultier (MPI) \$440,030 08/01/2021 - 01/31/2024
NIH/NINDS
Discovering new therapies to promote myelin repair
The goal of this project is to develop compounds that promote myelin repair as therapeutics for MS.

1R01DK128612-01 Santos, Hoehn MPI \$2,200,000 04/01/2021 - 04/30/2025
NIH/NIDDK
Therapeutic mitochondrial uncouplers
The goal of this project is to develop mitochondrial uncouplers for the potential treatment of non-alcoholic steatohepatitis (NASH).

R01AI144026 Santos, Lynch MPI \$3,500,000 01/01/2019-12/31/2024
NIH/NIAID
Controlling the flux of sphingosine-1-phosphate in vivo
The goal of this project is to develop small molecule inhibitors of sphingosine-1-phosphate transporters and validate them as therapeutics in mouse models of multiple sclerosis. This work is performed in collaboration with Profs. Kevin Lynch (University of Virginia, Pharmacology, Charlottesville, VA) & Alban Gaultier (University of Virginia, Neuroscience, Charlottesville, VA).

DMR 1905527 Robinson PI, Santos co-PI \$390,000 09/01/2019-08/31/2024
NSF
Lithography on a nanosphere--an optical approach to arbitrarily patterned patchy particles
The goal of this project is to develop a new paradigm for patchy particle synthesis and perform self-assembly with patchy particles.

1R01HL141855-01 Gourdie, Poelzing MPI 07/01/2018-04/30/2026
NIH/NHLBI (\$15k/year is Santos portion)

The role of the sodium channel beta subunit in cardiac conduction
This project will test a new idea for how “ephaptic coupling” electrically triggers the heartbeat and develop new drugs to treat deadly arrhythmias based on this idea.
Role: Co-investigator

- **Pending**

1R01DK137181-01A1 Santos, Lynch (MPI) \$2,800,000 04/01/2024-3/31/2028

Blockade of S1P pathway for renal fibrosis therapy
This project will validate whether inhibition of spns2 and sphingosine kinase 2 inhibitors are therapeutically viable against kidney fibrosis.

1R01AI185758-01 Santos, Lynch MPI \$3,575,319 07/01/2024-06/30/2029
NIH/NIAID

Chemical Probes for Investigating S1P Transport
The goal of this project is to develop chemical probes for Mfsd2b and spns2, which are transporters of sphingosine-1-phosphate. Our studies will utilize proteomic analysis to identify the biological target of STIs and define their mechanism of action. This work is performed in collaboration with Prof. Kevin Lynch (University of Virginia, Pharmacology, Charlottesville, VA).

- **Completed Research Support**

R01GM121075-04S1 Santos, Lynch MPI \$90,940 09/01/2016-08/31/2021
NIH/NIGMS

Controlling sphingosine 1-phosphate synthesis and trafficking
This grant was for acquisition of a helium recovery system for Virginia Tech’s NMR facility.

5R01GM121075 Santos, Lynch MPI \$2,100,000 09/01/2016-08/31/2021
NIH/NIGMS

Controlling sphingosine 1-phosphate synthesis and trafficking
The goal of this project is to develop inhibitors of sphingosine kinases and S1P transporter SPNS2. Molecular docking as well as X-ray crystal structures of inhibitors bound to sphingosine kinases will be determined. This work is performed in collaboration with Prof. Kevin Lynch (University of Virginia, Pharmacology, Charlottesville, VA).

Continuum Biosciences, Inc. Santos, PI \$1,066,312 05/01/2018-08/31/2020
Mitochondrial Uncoupler Drug Discovery

The goal of this project is to develop small molecule mitochondrial uncouplers into preclinical drug candidates for the treatment of diseases associated with mitochondrial dysfunction.

LINK+LAUNCH+LICENSE Santos (PI) \$47,000 08/15/2020-08/14/2021

S1P Modulation and Multiple Sclerosis
The goal of this project is to determine whether spns2 inhibition is a therapeutic for multiple sclerosis.

4-VA Santos (PI), Gaultier \$25,000 (Santos portion) 03/01/2020-02/27/2021

A novel mechanism of action for treating multiple sclerosis
The goal of this project is to develop novel molecules that will promote the re-myelination for the potential treatment of multiple sclerosis.

Virginia Catalyst Santos, PI \$400,000 07/01/2018-12/31/2019
Safe Mitochondrial Uncouplers for the Treatment of Human Disease
The goal of the proposed research is to develop BAM15 derivatives into drug-like leads for testing in non-alcoholic steatohepatitis (NASH) mouse models. This work is performed in collaboration with Prof. Kyle Hoehn (University of Virginia, Pharmacology, Charlottesville, VA).

MPI: Santos, Lynch, Gaultier \$75,000 01/01/2017-12/31/2017
UVA-VTC neuroscience seed fund
Sphingosine Kinase Inhibitors and Multiple Sclerosis.
The goal of this project is to determine the efficacy of sphingosine kinase inhibitors in mouse model of multiple sclerosis.

Alzheimer's & Related Diseases Research Award Fund (ARDRAF)
ARDRAF Santos, PI \$45,000 07/01/2018-06/31/2019
Safe Mitochondrial Uncouplers for the treatment of Parkinson's Disease
The goal of this project is to determine whether mitochondrial uncouplers decrease reactive oxygen species in neurons and protect neurons against inflammatory insults.

1R01GM093834 Santos (PI) \$1,580,000 09/13/2010-01/31/2017
NIGMS
RNA as a therapeutic target
The major goals of this project are to develop cell permeable ligands for target RNA structures associated with HIV.

R01 GM104366-01A1 (Santos PI) \$1,150,955 10/01/2013-09/30/2017
NIH/NIGMS
In Vivo Probes of Sphingosine Kinase Function
The goal of the proposed research is to improve, through iterative chemical synthesis and pharmacological testing, lead lipid kinase (e.g. sphingosine kinase-1) inhibitors so as to make them drug-like, i.e. suitable for use in vivo. This project is a collaborative effort with the laboratory of Dr. Kevin R. Lynch as MPI (University of Virginia, Pharmacology, Charlottesville, VA).

CHE-1414458 Santos (PI) \$950,000 01/15/2014-12/31/2016
NSF/IUPAC
Earth Abundant Metal Catalyzed Borylations
This international collaboration with Todd Marder (Universitat Wurzburg, Germany, funded by DFG) and Yao Fu (University of Science and Technology, China, funded by NSFC) aims to develop efficient, environmentally friendly, and simple copper-catalyzed transformations for the formation and subsequent reactions of aryl, heteroaryl, vinyl, allyl and alkyl boronates.

Alzheimer's & Related Diseases Research Award Fund (ARDRAF)
16-6 Santos (PI), Valdez \$45,000 07/1/2015-6/30/2016
Controlling neuronal sphingosine-1-phosphate as Alzheimer's disease therapy
The goal of this project is to determine whether varying levels of S1P have therapeutic benefit towards AD.

VBHRC Santos (PI) \$400,000 04/01/2014-3/31/2015

Virginia Biosciences Health Research Corporation

Lead Optimization of a SphK2 Inhibitor for the Treatment of CKD

The goal of this project is to make drug-like sphingosine kinase 2 inhibitors and subject them to animal models of chronic kidney disease. This work is performed in collaboration between Kevin Lynch (UVA) and Brandon Thorpe (SphynKx Therapeutics).

DMR 1006753 Santos (co-PI) \$500,001 08/16/2010-08/15/2013

National Science Foundation

A nonlinear optical approach to patchy particles

The major goals of this project are to develop methods of assembling complex nanostructures using nanoparticles made of silver and gold.

PRF 50806-ND3 Santos (PI) \$100,000 01/01/2011-08/13/2013

ACS Petroleum Research Fund

Development of unsymmetrical diboron compounds for regioselective diboration and chemoselective cross-coupling reactions

The major goals of this project are to develop diboron reagents for the mild boration of activated carbon-carbon bonds.

RAP Grant VT-Carillion Institute Santos (co-PI) \$25,000 06/01/2010-05/31/2011

Inhibition of miR21 RNA with peptides

ICTAS Santos (PI) \$100,000 07/2009-06/2011

Institute for Critical Technology and Applied Science

Inhibiting HIV-1 TAR RNA function using nanoparticle-delivered branched peptides

This study aims to discover and develop strategies for selectively inhibiting highly structured RNA.

J-892 Santos (PI) \$40,000 01/01/2008-12/31/2011

Jeffress Memorial Trust

Synthesis of Borinic and N-terminal Boronic Acids as Inhibitors of the Malarial Protease Falcilysin

This study will develop inhibitors for malarial protease, Falcilysin.

“CHE-0722638 Deck (PI) 09/01/2007-08/31/2010

National Science Foundation

“Acquisition of an LC-ESI-MS for Open Access Use in Support of Chemical Synthesis and Education at Virginia Tech”

Role: Co-PI

DGE-0333378 Duncan (PI) (\$73,500) 6/01/2008-2/27/2010

NSF

“Macromolecular Interfaces with Life Sciences”

This program is to prepare doctoral-level candidates in chemistry, engineering, and life sciences to work in multidisciplinary research. The program provided salary support, tuition and benefits for David Bryson for two years.

- **Theses Supervised**

1. “Diastereoselective alpha-Alkylation of Chiral beta-Borylated Esters” Michael T. Perfetti, December 9, 2009 (Master’s Thesis).

2. "Synthesis and Application of Boronic Acid Derivatives" Jing Sun, May 5, 2010 (Master's Thesis).
3. "Borylations and Silylations of Alkenyl and Alkynyl Carbonyl Compounds Employing a Mild and Environmentally Friendly Cu(II) Catalyst" Joseph A. Calderone, III, April 4, 2014 (Master's Thesis).
4. "Structure-activity relationship studies and biological evaluation of selective sphingosine kinase inhibitors" Emily A. Morris, April 20, 2015 (Master's Thesis).
5. "Facile route to air and moisture stable β -difluoroboryl acrylamides" Eric J. Medici, September 18, 2019 (Master's Thesis).

- **Dissertations Supervised**

1. "Targeting RNA Structures with Multivalent Branched Peptide Libraries" David I. Bryson, Jr. March 19, 2012. (Ph.D. Thesis)
2. "Activation of Diboron Reagents: The Development of Mild Conditions for the Synthesis of Unique Organoboron Compounds" S. Brandon Thorpe, March 23, 2012. (Ph.D. Thesis)
3. Design, synthesis and biological evaluation of selective sphingosine kinase inhibitors", Mithun R. Raje, April 13, 2012. (Ph.D. Thesis)
4. "Click Chemistry on DNA and Targeting RNA structure with Peptide Boronic Acids" Jason B. Crumpton, April 20, 2012. (Ph.D. Thesis)
5. "Targeting HIV-1 RNAs with Medium Sized Branched Peptides Featuring Boron and Acridine. Branched Peptide Library Design, Synthesis, High-Throughput Screening and Validation", Wenyu Zhang, March 31, 2014. (Ph.D. Thesis)
6. "Development and Applications of Unsymmetrical Diboron Compounds", Xi Guo, November 6, 2014. (Ph.D. Thesis)
7. "Functionalizing Branched Peptides with Unnatural Amino Acids Toward Targeting HIV-1 RRE RNA and Microbials", Jessica Wynn, July 14, 2016. (Ph.D. Thesis)
8. "Structure-Activity Relationship Studies and Molecular Modeling of Sphingosine Kinase 2 Inhibitors", Molly D. Congdon, July 18, 2016. (Ph.D. Thesis)
9. "Metal-Catalyzed Formation and Transformations of Carbon-Boron Bonds", Amanda K. Nelson, October 27, 2016. (Ph.D. Thesis)
10. "Structure-Activity Relationship Studies of Sphingosine Kinase Inhibitors and Mitochondrial Uncouplers", Elizabeth S. Childress, June 22, 2017. (Ph.D. Thesis)
11. "Development of Transition Metal-Catalyzed Borylation Protocols using Symmetrical and Unsymmetrical Diboron Reagents", Cheryl L. Peck, September 7, 2017. (Ph.D. Thesis)

12. "Development of Novel, Regioselective Borylation Protocols", Russell Snead, July 27, 2018. (Ph.D. Thesis)
13. "Design, Synthesis, and Structure-Activity Relationship Investigation of Selective Sphingosine Kinase Inhibitors", Hao Li, December 3, 2018. (Ph.D. Thesis)
14. "Development of Methods for Boron Reagents", Ashley Gates, February 14, 2020. (Ph.D. Thesis)
15. "Trans Addition of B-X Reagents Across Polarized Triple Bonds and Development of Sphingosine-1-Phosphate Transport Inhibitors", Russell Fritzscheier, March 17, 2020. (Ph.D. Thesis)
16. "Branched Peptides Targeting HIV-1 RRE RNA and Structure-Activity Relationship Studies of a Spinster Homolog 2 Transport Inhibitor", Ashley Peralta, April 8, 2020. (Ph.D. Thesis)
17. "Design and Synthesis of Orally Bioavailable Sphingosine Kinase 2 Selective Inhibitors", Christopher Sibley, June 15, 2020. (Ph.D. Thesis)
18. "Complex Heterocycles as Mitochondrial Uncouplers", Jacob Hadley Murray, March 25, 2021. (Ph.D. Thesis)
19. "Mitochondrial Uncouplers: Development as Therapeutics for Metabolic Diseases", Christopher James Garcia, April 15, 2021. (Ph.D. Thesis)
20. "Boron-Mediated Semireduction of Alkynoic Acid Derivatives", Robert Justin Grams, April 13, 2021. (Ph.D. Thesis)
21. "Structure-Activity Relationship Studies of Imidazo[4,5-b]pyrazin-5,6-diamines as Mitochondrial Uncouplers and their Potential in the Treatment of Obesity", Jose Antonio Santiago-Rivera, October 19, 2021. (Ph.D. Thesis)
22. "Selective Borylations of Carbon-carbon pi-Bonds", Connor D. Szwetkowski, April 19, 2022. (Ph.D. Thesis)
23. "Development of Potent Inhibitors of the Sphingosine-1-Phosphate Transporter Spns2 for the Treatment of Multiple Sclerosis", Daniel J. Foster, May 4, 2022. (Ph.D. Thesis)
24. "Development of Novel Methods for the Installation of CF₃/Boron and 1,2,4-oxadiazoles", Swetha Jos, November 16, 2022. (Ph.D. Thesis)
25. "Regio- and stereoselective methods for the borylation of substituted alkynes", Joh athan Bowen, January 31, 2023. (Ph.D. Thesis)
26. "Fused Heterocycles as Spinster Homolog 2 Inhibitors and and Regio- and Stereoselective Copper-Catalyzed Borylation-Protodeboration of 1,3-Diynes: Access to (Z)-1,3-Enynes", Ariel L Burgio, April 25, 2023. (Ph.D. Thesis)

Postdoctoral Fellows

| Student Name | University Affiliation | Duration | Current Position |
|---------------------------|--|-----------------------|--|
| 1. Dr. Ming Gao | Chinese Academy of Science, Peking, PRC | 2008-09, 2011-2012 | Senior Research Chemist, Merieux NutriSciences |
| 2. Dr. Philippe Bissel | University Louis Pasteur, Strasbourg, France | 2007-08 | Instructor, Hollins College |
| 3. Dr. Neeraj Patwardhan | Virginia Tech | 05/2012-06/2014 | Scientist, Beam Therapeutics |
| 4. Dr. Srinath Pashikanti | University of Kansas | 04/01/2014-7/01/2016 | Assistant Prof at Idaho State University |
| 5. Dr. Astha Verma | Virginia Tech | 08/01/2014-06/01/2016 | Scientist at KBI Pharma |
| 6. Dr. Yumin Dai | Virginia Tech | 02/1/2015-02/2019 | Takeda Pharmaceuticals |
| 7. Dr. Daniel Hoagland | St. Jude's Children's Hospital | 07/2016-08/31/2020 | Scientist at Alcami Corporation |
| 8. Dr. Joseph Salamoun | University of Pittsburg | 09/01/2017-10/2019 | FDA |
| 9. Jan Nekvinda | Charles University, Prague | 10/01/2018-08/31/2020 | Czech Academy of Sciences |
| 10. Andrew Bage | University of Edinburgh | 01/01/2023 | University of Warwick |
| 11. Hao Li | Virginia Tech | 02/2021-11/23 | Takeda Pharmaceuticals |
| 12. Ramkrishna Laha | Rutgers University | current | |
| 13. Shikha Kumari | Yale University | current | |

- Current Graduate Students

| Student Name | University Affiliation | Year Entered | Graduation |
|------------------------|----------------------------------|--------------|-------------|
| 1. Christopher Shrader | Virginia Commonwealth University | 2019 | Spring 2024 |
| 2. Kyle Dunnavant | Northern Ohio University | 2019 | Spring 2024 |
| 3. Mary Olson | Old Dominion University | 2020 | Spring 2025 |
| 4. Joseph Quinlan | Montclair State University | 2020 | Spring 2025 |
| 5. Emily Krinos | Westminster College | 2021 | Spring 2026 |
| 6. Nicklas Buchbinder | University of Louisville | 2021 | Spring 2026 |
| 7. Justin Rodgers | Newberry College | 2023 | Spring 2028 |
| 8. Mario Hernandez | North Carolina State University | 2023 | Spring 2028 |
| 9. Mai Khoi | University of Science, Vietnam | 2023 | Spring 2028 |
| 10. Matthew Dupuis | Mount Allison University Canada | 2023 | Spring 2028 |

- Previous Graduate Students

| Student Name | Year Graduated | Degree | Current Position |
|-----------------|----------------|--------|--|
| 1. Ariel Burgio | 2023 | Ph.D. | R&D Scientist at Sterling Pharma Solutions |

| | | | | |
|-----|----------------------|------|-------|--|
| 2. | Johnathan Bowen | 2023 | Ph.D. | Lecturer at Virginia Tech |
| 3. | Swetha Jos | 2022 | Ph.D. | Principal Scientist, Curia |
| 4. | Daniel Foster | 2022 | Ph.D. | Principal Scientist, Johnson Matthey |
| 5. | Connor Szwetkowski | 2022 | Ph.D. | Med Chemist, Fischer Scientific |
| 6. | Jose Santiago-Rivera | 2021 | Ph.D. | Principal Scientist, Boehringer Ingelheim |
| 7. | Robert Justin Grams | 2021 | Ph.D. | Postdoc, UVA Ken Hsu |
| 8. | Jacob Murray | 2021 | Ph.D. | Scientist I at Andluca Technologies |
| 9. | Christopher Garcia | 2021 | Ph.D. | Law School, U Colorado (Denver) |
| 10. | Christopher Sibley | 2020 | Ph.D. | Postdoc, NIH w/ Jay Schneekloth |
| 11. | Ashley Peralta | 2020 | Ph.D. | Staff Scientist, Los Alamos Nat'l Labs |
| 12. | Russell Fritzemeier | 2020 | Ph.D. | Scientist I, Alexion Pharmaceuticals |
| 13. | Ashley Gates | 2020 | Ph.D. | New River Law |
| 14. | Eric Medici | 2019 | MS | R&D Chemist, Chattem Chemical |
| 15. | Hao Li | 2018 | Ph.D. | Takeda Pharmaceuticals |
| 16. | Russell Snead | 2018 | Ph.D. | Analyst, Geico |
| 17. | Cheryl Peck | 2017 | Ph.D. | Process Scientist II at AMPAC Fine Chemicals |
| 18. | Elizabeth Childress | 2017 | Ph.D. | Assist Director MedChem at Vanderbilt U |
| 19. | Molly Congdon | 2016 | Ph.D. | Formulation Scientist, NCATS |
| 20. | Amanda Nelson | 2016 | Ph.D. | Librarian at Stanford Chemistry |
| 21. | Jessica Wynn | 2016 | Ph.D. | Principal Scientist at Merck Inc. |
| 22. | Kenneth Knott | 2015 | MS | Analytical Services, Virginia Tech |
| 23. | Emily Morris | 2015 | MS | Teacher at Manassas High School |
| 24. | Xi Guo | 2014 | Ph.D. | Associate Director, Bayer Pharmaceuticals |
| 25. | Joseph Calderone | 2014 | MS | Senior Development Scientist, Haleon |
| 26. | Wenyu Zhang | 2014 | Ph.D. | Research Associate, Thomas Jefferson Univ |
| 27. | Mithun Raje | 2012 | Ph.D. | Scientist I, Crinetics Pharmaceuticals |
| 28. | David Bryson | 2012 | Ph.D. | Director, Beam Therapeutics |
| 29. | Jason Crumpton | 2012 | Ph.D. | Associate Professor at Lynchburg College |
| 30. | Brandon Thorpe | 2012 | Ph.D. | Analytical Chemist, Sativa Testing Labs |
| 31. | Jing Sun | 2010 | MS | Scientist at Boeing |
| 32. | Michael Perfetti | 2009 | MS | Dendreon |

- **Visiting Scholars**

| | Student Name | Year | University Affiliation | Country |
|----|-------------------|------|------------------------|-------------|
| 1. | Analyn Carreon | 2013 | Ateneo de Manila | Philippines |
| 2. | Antonius Eichhorn | 2015 | Wurzburg University | Germany |

- **Current Undergraduate Students**

| | Student Name | Degree | Expected Graduation |
|----|-----------------|---------------------|---------------------|
| 1. | Long Nguyen | Chemistry | 2024 |
| 2. | Isabella DeLuca | Chemistry | 2024 |
| 3. | Ethan Duerre | Medicinal Chemistry | 2024 |
| 4. | Abigail Agner | Chemistry | 2024 |

- **Previous Undergraduate Students**

| | Student Name | Degree | Year | Current Position |
|----|--------------|-----------|------|------------------|
| 5. | Taylor Yates | Chemistry | 2023 | |

| | | | |
|-------------------------------|---|-------------|--|
| 6. Christine Tan | Chemistry | 2023 | |
| 7. Sarah Seay | Chemistry | 2023 | |
| 8. Analize Pham | Neuroscience | 2021 | |
| 9. Carol Ann Rosenblum | Chemistry | 2021 | Grad Student, U Pittsburg |
| 10. Laura Wonilowicz | Biochemistry | 2019 | Grad Student UCLA |
| 11. Greg Traverse | Chemistry | 2019 | Grad Student, U Penn |
| 12. Jonathan Roof | Chemistry | 2019 | unknown |
| 13. Brett Rastatter | Integrated Science Curriculum | 2017 | unknown |
| 14. Zach Powers | Chemistry | 2017 | Unknown |
| 15. Sean M. Rafferty | Chemistry | 2015 | Grad Student Ohio State |
| 16. Christopher Sibley | Biochemistry | 2015 | Grad Student VT |
| 17. Michael Lazear | Biochemistry | 2015 | Grad Student Scripps, CA |
| 18. Matthew Nguyen | BS, Biochemistry 2 nd Place Winner, Undergrad Research Poster Arthur Meakin Scholar, 2013 McKnight Prize in Chemistry, James Lewis Howe Award | 2014 | VCU School of Medicine |
| 19. Joseph Hirst | Biochemistry | 2014 | 1 yr break before Med School |
| 20. Kris Manino | BS, ChemEng | 2013 | Unknown |
| 21. Julie Ta | BS, Biochemistry 1 st Place Winner, Undergrad Research Poster | 2011- 12 | Medical School |
| 22. Valerie Rojas | BS, Chemistry NIH PREP Scholar | 2012 | Grad student at Duke University, Cancer Center |
| 23. Joseph Calderone | BS, Chemistry | 2011 | Grad Student at VA Tech Academic Excellence Awardee, Outstanding Undergrad Research Award, 1 st Place Winner: Undergrad Poster Session |
| 24. Leah Heist | BS, Chemistry | 2011 | Grad Student at UNC, Chapel Hill Arthur Meakin Scholar, Academic Excellence Awardee |
| 25. Marietou Paye | BS, Biochemistry NIH PREP Scholar | 2010 | Grad Student at Georgia Tech |
| 26. Evan Gilius | BS, Biochemistry | 2009 | Unknown |
| 27. Allison Pagano | BS, Biochemistry | 2009 | Medical School |
| 28. Ryan Stephens | BS, Biochemistry Arthur Meakin Scholar | 2009 | UNC Medical School |
| 29. Wes Morris | BS, Chemistry | 2009 | Grad Student at Cornell University James L. Howe Awardee, HyperCube Scholar |
| 30. Brandon Thorpe | BS, Biochemistry | 2009 | Senior Research Scientist, Sphynknx Therapeutics, LLC |
| 31. Caitlyn Criss | BS, Biochemistry | 2008 | WVU School of Osteopathic Medicine |

- **Invited Lectures/Seminars**

1. "RNA Interacting Polynucleotides (RIPTides): Targeting Hepatitis C Virus RNA with Small Molecules and Proteins," Edward Via Virginia College of Osteopathic Medicine, February 20, 2007, Blacksburg, VA.
2. "Chemical Biology Approaches to Disease States," College of William and Mary, October 5, 2007, Williamsburg, VA.
3. "Chemical Biology Approaches to Disease States," University of Mary Washington, November 30, 2007, Fredericksburg, VA.
4. "Targeting RNA with Small Molecules," The 10th Eurasia Conference on Chemical Sciences (EuAs C₂S-10), January 9, 2008, Manila, Philippines.
5. "Developing Small Molecule RNA Ligands," 1st Frontier Seminar in Materials Science Creation of Function by Molecular Design, Nagoya University, January 12, 2008, Nagoya, Japan
6. "RNA: A Drug Discovery Challenge," Eisai Co. Ltd., January 15, 2008, Tsukuba, Japan.
7. "RNA as a Therapeutic Target," NIH Workshop, May 4, 2008, Dallas, Texas, Organizers: Dr. John Schwab and Prof. Michael Doyle.
8. "Development of Catalytic Stereoselective Synthesis of α -substituted, β -boronic Esters," NSF Workshop on Physical Organic Chemistry, Lake Tahoe, CA, September 16, 2008.
9. "Boron and Branched-Peptides in the Chemical Biology Approach of Targeting Diseases," University of Texas, Arlington, Texas, March 27, 2009.
10. "Thinking Outside the Box: Targeting RNA Structures with Branched Peptides," State University of New York, Binghamton, NY, October 23, 2009.
11. "Boron at the Interface of Chemistry and Biology," Virginia Commonwealth University, Richmond, VA, November 6, 2009.
12. "Mixed diboron as boration reagent and borono-branched peptides as HIV-1 RNA ligands," Lafayette College, Easton, PA, November 13, 2009.
13. "Mixed diboron as boration reagent and borono-branched peptides as HIV-1 RNA ligands," Muhlenberg College, Allentown, PA, November 13, 2009.
14. "Targeting HIV-1 RNA with branched peptides and new tricks," James Madison University, Harrisonburg, VA, February 19, 2010.
15. "N-terminal peptidic boronic acids selectively inhibit ClpXP," Virginia Tech, Blacksburg, VA, April 7, 2010, Protein Structure and Function Symposium.

16. "Selective targeting of RNA structures," Federation of American Societies for Experimental Biology (FASEB), Nucleic Acids, Saxtons River, VT, June 11, 2010.
17. "Boron chemistry: addition to activated C-C bonds and applications in chemical biology," University of North Carolina, Charlotte, NC, September 27, 2010.
18. "Organoboron chemistry: synthesis and applications in infectious diseases," University of Richmond, Richmond, VA, October 29, 2010.
19. "Drugging the undruggable: Targeting RNA structures," Virginia Tech, Department of Chemistry Alumni Council (DCAC), November 6, 2010.
20. "Organoboron chemistry: synthesis and applications in infectious diseases, and Structure-activity relationships of sphingosine kinase inhibitors," Case Western Reserve University, Cleveland, OH, November 18, 2010.
21. "Molecular pharmacology of sphingosine kinase inhibitors and branched peptide libraries to disrupt Tat/TAR RNA interactions," European Molecular Biology Laboratory (EMBL), Heidelberg, Germany, January 11, 2011.
22. "Branched peptide libraries to disrupt Tat/TAR RNA interactions, and Chemical genetic approach to understanding sphingosine kinase function," University of Southampton, United Kingdom, January 15, 2011.
23. "Organoboron: Synthesis and Application in Disrupting RNA/Protein Interactions in HIV-1," Dartmouth College, February 23, 2011.
24. "Organoboron: Synthesis and Application in Disrupting RNA/Protein Interactions in HIV-1," University of Vermont, February 25, 2011.
25. "Disrupting RNA-protein interactions with branched peptides, and Chemical genetic approach to understanding sphingosine kinase function," Michigan State University, East Lansing, MI, March 11, 2011.
26. "Disrupting RNA-protein interactions with branched peptides, and Chemical genetic approach to understanding sphingosine kinase function," Virginia Tech, Blacksburg, VA, March 25, 2011.
27. "Targeting RNA structures with branched peptides," Molecular BioSystems Award Symposium: Emerging Investigators, ACS National Meeting, Anaheim, CA, March 29, 2011.
28. "Disrupting RNA-protein interactions with branched peptides, and Chemical genetic approach to understanding sphingosine kinase function," Georgia State University, April 15, 2011.
29. "Disrupting RNA-protein interactions with branched peptides," Bioorganic Gordon Research Conference, June 16, 2011, Proctor Academy, Andover, New Hampshire.

30. "Copper-catalyzed regioselective boration of α,β -unsaturated carbonyl compounds with unsymmetrical, preactivated diboron reagent," CNRS, Laboratoire de Chimie de Coordination, Toulouse, France, July 12, 2011.
31. "The old problem of targeting RNA: Are peptide boronic acids the solution?" Universidad de Alcalá de Henares, Madrid, Spain, July 18, 2011.
32. "Multivalent branched peptide boronic acids inhibit RNA-protein interactions" University of Nottingham, Nottingham, United Kingdom, July 20, 2011.
33. "Copper-catalyzed regioselective boration of α,β -unsaturated carbonyl compounds with unsymmetrical, preactivated diboron reagent," Durham University, Durham, United Kingdom, July 21, 2011.
34. "Disrupting RNA-protein interactions with branched peptide boronic acids," University of Cambridge, Cambridge, United Kingdom, July 27, 2011.
35. "Copper-catalyzed regioselective boration of α, β -unsaturated carbonyl compounds with unsymmetrical, preactivated diboron reagent," IME Boron XIV, Niagara Falls, Canada, September 11-15, 2011.
36. "Disrupting RNA-protein interactions with branched peptide boronic acids," Clemson University, Clemson, South Carolina, September 22, 2011.
37. "Copper-catalyzed borylation and inhibition of protein-RNA interactions" University of Virginia, Charlottesville, VA, September 30, 2011.
38. "Copper-catalyzed borylation and inhibition of protein-RNA interactions" Wayne State University, Detroit, MI, October 5, 2011.
39. "Copper-catalyzed borylation and inhibition of protein-RNA interactions" University of North Carolina, Chapel Hill, NC, October 13, 2011.
40. "Copper-catalyzed borylation and inhibition of protein-RNA interactions" North Carolina State University, Raleigh, NC, October 14, 2011.
41. "Copper-catalyzed borylation and inhibition of protein-RNA interactions" University of Pennsylvania, Philadelphia, PA, October 17, 2011.
42. "Copper-catalyzed borylation and inhibition of protein-RNA interactions" New York University, NY, October 25, 2011.
43. "Copper-catalyzed borylation and inhibition of protein-RNA interactions" Hunter College, New York, October 26, 2011.
44. "Copper-catalyzed borylation and inhibition of protein-RNA interactions" State University of New York, Stony Brook, October 28, 2011.

45. "The chemical biology of targeting sphingosine kinase and HIV-1 RNAs" Virginia Tech, Life Science Seminar, Blacksburg, VA January 20, 2012.
46. "The chemical biology of targeting sphingosine kinase and HIV-1 RNAs" University of Kansas, Medicinal Chemistry Department, Lawrence, Kansas, February 9, 2012.
47. "The chemical biology of targeting sphingosine kinase and HIV-1 RNAs" Virginia Tech, GBCB Seminar, February 23, 2012.
48. "Copper-catalyzed borylation and chemical biology of targeting HIV-1 RNA", University of British Columbia, Vancouver, Canada, March, 30, 2012.
49. "Lewis Base-Assisted Nucleophilic Boron: Borylation of Electrophilic Alkenes", University of Virginia, Symposium in honor of Prof. Timothy Macdonald, Charlottesville, VA, April 28, 2012.
50. "Lewis base activation of boron: Catalytic copper-catalyzed borylation and silylation of electrophilic alkenes", Ateneo de Manila, Manila, Philippines, June 21, 2012.
51. "Branched peptide boronic acids: Novel RNA ligands as anti-HIV therapy" University of the Philippines, Diliman, Philippines, June 22, 2012.
52. "Boronic acids: Synthetic methods and application towards RNA structures", University of California, San Diego, La Jolla, CA, October 22, 2012.
53. "Boronic acids: Synthetic methods and application towards RNA structures", Scripps Research Institute, La Jolla, CA, October 23, 2012.
54. "Sphingosine Kinase Drug Discovery: The Search for Disease Targets", Virginia Tech Center for Drug Discovery, Blacksburg, VA, January 21, 2013.
55. "Lewis base assisted copper catalyzed borylation and silylation of electrophilic alkenes", 14th Florida Heterocyclic and Synthetic Chemistry IUPAC Sponsored Conference, University of Florida, Gainesville, FL, March 3-6, 2013.
56. "Boron vs Silicon: Addition to Carbon-Carbon Multiple Bonds", College of William and Mary, Williamsburg, VA, October 4, 2013.
57. "Copper Catalysis: B/Si Addition to C-C Bonds & Chemical Biology of Targeting RNA Structures", University of Virginia, Charlottesville, VA, November 4, 2013.
58. "Modulating In Vivo Sphingosine-1-phosphate Levels with Sphingosine Kinase Inhibitors", University of Virginia, Charlottesville, VA, November 5, 2013.
59. "Drugging RNA: Targeting Structured HIV-1 RNA with Branched Peptide Boronic Acids", Frontiers in Nucleic Acids, 2013 Southeastern Regional Meeting, Atlanta, GA, November 13-14, 2013.
60. "Combating Human Immunodeficiency Virus: Inhibiting RNA Function Using Chemistry", Virginia State University, Petersburg, VA, January 24, 2014.

61. "Chemical Tools to Study RNA In Vitro and Sphingosine Kinase In Vivo", The University of Mississippi, Oxford, MS, April 17, 2014.
62. "Pt- and Cu-catalyzed Mono- and Diboration of C=C bonds", BORAM XIV, Rutgers University, Newark, NJ, June 18, 2014.
63. "Metal-catalyzed borylation electrophilic alkenes and allenes", IME Boron XV, Prague, Czech Republic, August 28, 2014.
64. "*In vivo* Probes of Sphingosine Kinase Function", Kings College, London, England UK, November 18, 2014.
65. "Borylation and Silylation of Activated C-C Bonds", University of Manchester, England UK, November 25, 2014.
66. "Drugging Sphingosine Kinases and Environmentally Friendly Borylation/Silylation Reactions", Alcala de Henares, Madrid, Spain, December 3, 2014.
67. "Nanoassembly of Nanoparticles", Alcala de Henares, Madrid, Spain, December 3, 2014.
68. "Transition Metal-Catalyzed Borylation and Silylation of C-C Bonds", Universitat Rovira i Virgili, Tarragona, Spain, December 5, 2014.
69. "Sphingosine Kinase as a Drug Target", Virginia Tech Center for Drug Discovery, Blacksburg, Virginia, January 14, 2015.
70. "A Step Closer to Green Reactions: Copper-catalyzed Borylation/silylation Reactions in Water", Saint Louis University, St. Louis, MO, April 10, 2015.
71. "The Complexity of Controlling Sphingosine-1-phosphate Levels via Sphingosine Kinases", Dongguk University, Seoul, South Korea, August 10, 2015.
72. "The Complexity of Controlling Sphingosine-1-phosphate Levels via Sphingosine Kinases", Pusan National University, Busan, South Korea, August 11, 2015.
73. "Sphingosine Kinase Drug Discovery: Treatment Towards Kidney Injury", University of the Philippines, Laguna, Philippines, August 17, 2015.
74. "B-X bond: Chemoselective Transfer of Boron or Silicon into C-C Bonds", Shanghai Institute of Organic Chemistry, Shanghai, China, October 19, 2015.
75. "B-X bond: Chemoselective Transfer of Boron or Silicon into C-C Bonds", University of Science and Technology, Hefei, China, October 21, 2015.

76. "B-X bond: Chemoselective Transfer of Boron or Silicon into C-C Bonds", Peking University, Beijing, China, October 23, 2015.
77. "Copper-Catalyzed Borylation: Towards Sustainable Chemistry", Universitat Wurzburg, Wurzburg, Germany, Nov. 16, 2015.
78. "Drugging Sphingosine Kinase: Medicinal Chemistry and Animal Studies", North Carolina A&T, Greensboro, North Carolina. February 23, 2017.
79. "The Sphingosine-1-phosphate pathway: Sphingosine kinase as a drug target", George Mason University, Manassas, Virginia, September 15, 2017.
80. "Faculty Entrepreneurship in Drug Discovery: Challenges and Opportunities", Virginia Tech Center for Drug Discovery, Virginia Tech, Blacksburg, Virginia, January 11, 2018.
81. "Stereoselective Borylation Reactions & Sphingosine Kinase Medicinal Chemistry", West Virginia University, Morgantown, West Virginia, February 28, 2018.
82. "Controlling sphingosine-1-phosphate levels as a therapeutic strategy", Virginia Drug DiscoveryRx Symposium, George Mason University, Arlington, VA, June 26, 2018.
83. "Towards Sustainable Stereoselective Borylation Chemistry", University of Edinburgh, Edinburgh, Scotland, September 10, 2018.
84. "Towards Sustainable Stereoselective Borylation Chemistry", University of St. Andrews, St. Andrews, Scotland, September 12, 2018.
85. "Controlling Sphingosine-1-Phosphate Levels as a Therapeutic Strategy", Durham University, Durham, England, September 15, 2018.
86. "Inhibiting Sphingosine Kinases as a Therapeutic Strategy", George Washington University, Washington, D.C., October 1, 2018.
87. "Treating Fatty Liver Disease", Virginia Tech, Celebration of Chemistry, Blacksburg, VA, October 20, 2018.
88. "Academic Drug Discovery: MedChem Strategies Toward Treating Fatty Liver Disease and Multiple Sclerosis", Rensselaer Polytechnic Institute, Troy, New York, February 5, 2019.
89. "Academic Drug Discovery: MedChem Strategies Toward Treating Fatty Liver Disease and Multiple Sclerosis", Monash University, Victoria, Australia, February 12, 2019.
90. "Academic Drug Discovery: MedChem Strategies Toward Treating Fatty Liver Disease and Multiple Sclerosis", Wake Forrest University, Winston-Salem, North Carolina, February 20, 2019.

91. "Addition of B-X reagents across C-C multiple bonds & Mitochondrial uncouplers for the treatment of fatty liver disease", University of California, Los Angeles, November 6, 2019.
92. "Addition of B-X reagents across C-C multiple bonds & Mitochondrial uncouplers for the treatment of fatty liver disease", University of California, Riverside, November 8, 2019.
93. "Academic Drug Discovery: Toward Treating Fatty Liver Disease and Multiple Sclerosis", University of the Philippines, Diliman, Quezon City, Philippines, November 11, 2019.
94. "Academic Drug Discovery: Toward Treating Fatty Liver Disease and Multiple Sclerosis", Ateneo de Manila University, Quezon City, Philippines, November 12, 2019.
95. "S1P transport inhibitors: the new frontier in sphingolipid biology", Virginia Tech, VT Center for Drug Discovery, Blacksburg, Virginia, January 10, 2020.
96. "trans Selective Borylation Reactions & Drug Discovery Strategies", University of Rochester, Rochester, New York, January 15, 2020.
97. "trans Selective Borylation Reactions & Exercise Pill—a Chemist Approach", University of Alberta, Edmonton, Canada, January 29, 2020.
98. "Stereoselective Borylation Reactions", Wurzburg University, Wurzburg, Germany, February 19, 2020.
99. "trans Selective Borylation Reactions & Drug Discovery Strategies", University of Freiburg, Freiburg, Germany, February 21, 2020.
100. "Stereoselective Borylation Reactions & Exercise Pill—a Chemist Approach", University of New England, Biddeford, Maine, September 15, 2021.
101. "Transition Metal-Free Stereoselective Borylation Reactions", Old Dominion University, Norfolk, Virginia, March 4, 2022.
102. "Drugging the Sphingosine-1-Phosphate Pathway and others", Virginia Commonwealth University, Medicinal Chemistry Dept., Richmond, Virginia, April 8, 2022.
103. "Exercise Pill—a Chemist Approach", University of Virginia, Pharmacology, Charlottesville, Virginia, April 29, 2022.
104. "Small molecule mitochondrial uncouplers as anti-obesity agents", Virginia Drug DiscoveryRx 2022, Richmond, Virginia, May 25, 2022.
105. "Boron, Exercise in a Pill, & Sphingolipid Drugs", University of Mary Washington, Fredericksburg, Virginia, October 23, 2022.
106. "Boron, Exercise in a Pill, & Sphingolipid Drugs", University of Mary Washington, Fredericksburg, Virginia, October 23, 2022.

107. "Boron, Exercise in a Pill, & Sphingolipid Drugs", Virginia Commonwealth University, Chemistry Dept., Richmond, Virginia, November 10, 2022.
108. "Exercise in a Pill: A Chemist Approach & Drugging the S1P Pathway & Virginia Tech Center for Drug Discovery", Fralin Biomedical Research Institute, Roanoke, Virginia, November 22, 2023.
109. "Exercise Pill—a Chemist Approach", University of Virginia, Charlottesville, Virginia, March 1, 2023.
110. "Exercise in a Pill: A Chemist Approach & Drugging the S1P Pathway", University of Missouri, Columbia, Missouri, April 21, 2023.
111. "To B or not to be: Stereoselective methods for the installation of Boron, Silicon and Phosphorus", University of Missouri, Columbia, Missouri, April 22, 2023.
112. "Exercise in a Pill: A Chemist Approach & Drugging the S1P Pathway", University of Illinois, Chicago, Illinois, May 3, 2023.
113. "Exercise in a Pill: A Chemist Approach & Drugging the S1P Pathway", High Point University, High Point, North Carolina, September 15, 2023.
114. "Exercise in a Pill: A Chemist Approach & Drugging the S1P Pathway", Baylor University, Waco, Texas, September 29, 2023.
115. "Copper- and Phosphine-catalyzed Stereoselective Borylation Methods for Sustainable Chemistry", Adam Mickiewicz University, Poznan, Poland, October 17, 2023.
116. "Exercise in a Pill: A Chemist Approach & Drugging the S1P Pathway", Adam Mickiewicz University, Poznan, Poland, October 18, 2023.
117. "Academic Drug Discovery: Putting Exercise in a Pill & Drugging the S1P Pathway", Purdue University, West Lafayette, Indiana, November 2, 2023.

Professional/Scientific Presentations

1. Santos, W.L.; Dunnavant, K. ; Shrader, C. ; Burgio, A. ; Huang, T. ; Kharel, Y. ; Lynch, K.R. Molecular pharmacology of S1P Transport Inhibition, FEBS International Meeting, Funchal, Portugal, October 8-13, 2023.
2. Santos, W.L. Consequences of S1P Transporter and Kinase Inhibition, The Lysophospholipid and Related Mediators Conference: From Bench to Clinic FASEB Conference, Melbourne FL, July 11, 2023. (Invited oral)
3. Santos, W.L. Borylation reactions using the Westcott Reagent, Canadian Chemistry Conference and Exhibition 2023, Vancouver, British Columbia, June 6, 2023. (Invited oral)

4. Santos, W.L. Small molecule mitochondrial uncouplers as anti-obesity agents. Canadian Chemistry Conference and Exhibition 2023, Vancouver, British Columbia, June 6, 2023. (Invited oral)
5. Santos, W.L. Stereoselective copper-catalyzed borylation and trifluoromethylation reactions. 265th ACS National Meeting, Indianapolis, IN, March 28, 2023. (Invited oral)
6. Santos, W.L. Stereoselective Hydroboration, Hydrophosphination, and Phosphinoboration of Alkynes, International meeting on phosphorus, boron, and silicon. Berlin, Germany, March 24, 2023. (Invited Oral)
7. Santos, W.L. Structure-activity relationship study of disubstituted benzoxazoles as inhibitors of sphingosine-1-phosphate transporter Spns2. Southeastern Regional Meeting of the American Chemical Society, San Juan, Puerto Rico, October 2022. (Invited oral)
8. Santos, W.L. Structure-activity relationship studies and in vivo activity of sphingosine-1-phosphate transporter spns2 264th ACS National Meeting, Chicago, IL, August 20-24, 2022. (Contributed oral)
9. Santos, W.L.; Bowen, J.; Szwetkowski, C.; Slobodnick, C. *trans* Hydroboration of 3-substituted-propionitriles and allenates. 264th ACS National Meeting, Chicago, IL, August 20-24, 2022. (Contributed oral)
10. Santos, W.L. Transition metal-free trans semireduction/phosphinoboration of alkynes. 263rd ACS National Meeting, San Diego, CA, March 20-24, 2022. (Contributed oral)
11. Santos, W.L. Small molecule mitochondrial uncouplers as anti-obesity agents. 263rd ACS National Meeting, San Diego, CA, March 20-24, 2022. (Contributed oral)
12. Santos, Webster, L. Stereoselective addition of B-X reagents to activated carbon-carbon bonds. 102nd Canadian Chemistry Conference and Exhibition, Quebec, Canada, June 7, 2019. (Invited oral)
13. Santos, Webster, L. Small molecule mitochondrial uncouplers for the treatment of NASH, Integrated Pathways of Disease in NASH and NAFLD, Keystone Conference, Santa Fe, New Mexico, January 20-25, 2019.
14. Santos, Webster L. Controlling Sphingosine-1-Phosphate Levels as a Therapeutic Strategy. XXV EFMC International Symposium on Medicinal Chemistry, Ljubljana, Slovenia, September 5, 2018. (Invited oral)
15. Santos, Webster L. In vivo chemical probes of sphingosine kinase function. Abstracts of Papers, 256th ACS National Meeting & Exposition, Boston, MA, USA, August 1-23, 2018 (2018), BIOL 275. (Invited oral)
16. Santos, Webster L. Molecular Recognition and in vitro Activity of Branched Peptide Boronic Acids against HIV-1 Rev Response Element RNA, BORAM XVI, Boston College, Boston, MA, June 27, 2018. (Invited oral)

17. Santos, Webster L. Controlling sphingosine-1-phosphate levels as a therapeutic strategy, Virginia Drug DiscoveryRx Symposium, George Mason University, Arlington, VA, June 26, 2018. (Invited oral)
18. Santos, Webster L. Targeting HIV-1 Rev response element with branched peptides. Abstracts of Papers, 255th ACS National Meeting & Exposition, New Orleans, LA, USA, March 18-22, 2018 (2018), ORGN 365. (Invited oral)
19. Santos, Webster L. Stereoselective borylation reactions. 69th Southeastern Regional Meeting of the American Chemical Society, Charlotte, NC, United States, November 7-11 (2017), SERMACS-138. (Invited oral)
20. Santos, Webster L.; Snead, Russell; Astha, Fnu; Dai, Yumin. "Transition metal-free activation and intramolecular trans diboration of propargylamides using unsymmetrical diboron" 253rd ACS National Meeting & Exposition, San Francisco, CA, United States, April 2-6, 2017 (2017), ORGN-438. (oral)
21. Santos, Webster L.; Dai, Yumin; Wynn, Jessica; Peralta, Ashley; Rekosh, David; Hammarskjold, Marie-Louise. "Targeting RNA with branched peptide boronic acids: Unnatural amino acids, molecular recognition, and in vitro activity against HIV-1 RRE RNA" 253rd ACS National Meeting & Exposition, San Francisco, CA, United States, April 2-6, 2017 (2017), BIOL-336. (oral)
22. Santos, W. L. "*trans* Diboration/Silaboration Reaction and Branched Peptide Boronic Acids as HIV-1 RNA Inhibitors", IME Boron XVI. Hongkong, China. July 15, 2017. (Invited oral)
23. Santos, W.L. "Transition Metal-free trans Diboration of Alkynamides", FACS XVI, University of California, Santa Barbara, Santa Barbara, CA July 29, 2016. (Invited oral)
24. Santos, W.L. "Boron Activation in B-(B/Si) Bonds: Addition to C-C Multiple Bonds", BORAM XV, Queens University, Kingston, Ontario, Canada, June 26, 2016. (Invited oral)
25. Santos, W.L. "Toward Borylation Reactions in Aqueous Medium", Dalton 2016, University of Warwick, Coventry, UK, March 29, 2016. (Invited oral)
26. Santos, W.L. "Branched peptide boronic acids: molecular recognition of folded HIV-1 RNA structures", Pacificchem, Honolulu, Hawaii, December 17, 2015 (invited oral)
27. Santos, W.L. "Copper-catalyzed Borylation and Silylation Reactions in Water", Pacificchem, Honolulu, Hawaii, December 18, 2015. (invited oral)
28. Santos, W.L. "Copper-Catalyzed Borylation: Towards Sustainable Chemistry", Todd Marder Symposium, Wurzburg, Germany, Nov. 16, 2015. (invited oral)
29. Santos, W.L. "Progress Toward Borylation Reactions in Water", IUPAC Sustainable Catalysis, Busan, South Korea, August 13, 2015 (invited oral)

30. Santos, W.L., Patwardhan, N.; Morris, E.; Congdon, M.; Kharel, Y.; Lynch, K.R. "Structure-Activity Relationship Studies and In Vivo Activity of Guanidine-Based Sphingosine Kinase Inhibitors", Medicinal Chemistry Gordon Research Conference, Colby-Sawyer College, New London, NH. (Poster Contribution)
31. Santos, W.L., Calderone, J.A.; Guo, X.; Nelson, A.; Peck, C.; Thorpe, S.B. "Metal-catalyzed Borylation/Silylation Reactions", Organic Reactions and Processes Gordon Research Conference, July 19-24, 2015, Bates College, Lewiston, ME. (Poster Contribution)
32. Santos, W.L., Patwardhan, N.; Congdon, M.; Morris, E.; Kharel, Y.; Lynch, K.R. "In Vivo Chemical Probes to Understand Sphingosine Kinase Function", Bioorganic Chemistry Gordon Research Conference, June 8-13, 2014, Proctor Academy, Andover, NH. (Poster Contribution)
33. Santos, W.L., Patwardhan, N.; Congdon, M.; Morris, E.; Kharel, Y.; Lynch, K.R. "Modulating In Vivo Sphingosine-1-Phosphate Levels with Sphingosine Kinase Inhibitors", Bioorganic Chemistry Gordon Research Conference, June 9-14, 2013, Proctor Academy, Andover, NH. (Poster Contribution)
34. Santos, W.L. "Lewis base assisted copper catalyzed borylation and silylation of electrophilic alkenes", 14th Florida Heterocyclic and Synthetic IUPAC Sponsored Conference, University of Florida, Gainesville, FL, March 3-6, 2013. (Oral Contribution, Invited)
35. Santos, W.L. "Activation of diboron reagents: Catalytic copper-catalyzed borylation of electrophilic alkenes", 244th ACS National Meeting, Philadelphia, PA, Aug. 21, 2012. Young Academic Investigator Symposium, Organic Division. (Oral Contribution, Invited).
36. Santos, W.L.; Bryson, D.I.; Zhang, W.; Crumpton, J.B.; and Rekosh, D.R. "Inhibiting RNA-Protein Interactions: Cell Permeable Branched Peptide Boronic Acids Inhibit Tat-TAR and Rev-RRE Interactions," Keystone Symposia: Frontiers in HIV Pathogenesis, Therapy and Eradication, Whistler, British Columbia, Canada, March 28, 2012. (Oral Contribution, Invited)
37. Santos, W.L.; Thorpe, S.B.; Gao, M. and Guo, X. "Copper-catalyzed regioselective boration of α,β -unsaturated carbonyl compounds with unsymmetrical, preactivated diboron reagent," IME Boron XIV, Niagara Falls, Canada, September 12, 2011. (Oral Contribution, Invited)
38. Santos, W.L. "Disrupting RNA-protein interactions with branched peptides," Bioorganic Gordon Research Conference, June 16, 2011, Proctor Academy, Andover, NH. (Oral Contribution, Invited)
39. Santos, WL; Thorpe, SB; Gao, M. Novel diboron reagent: Regioselective β -boration of activated carbon-carbon bonds. 241st ACS National Meeting, Anaheim, CA, March 27-31, 2011. (Oral Contribution)
40. Santos, WL; Bryson, D.; Zhang, W.; Crumpton, JB. Targeting RNA structures with branched peptide libraries. 241st ACS National Meeting, Anaheim, CA, March 27-31, 2011. (Oral Contribution, Invited)

41. Santos, WL; Gao, M; Thorpe, SB. Preactivated unsymmetrical diboron: Catalytic regioselective boration of α,β -unsaturated conjugated compounds. 240th ACS National Meeting, Boston, MA, August 22-26, 2010. (Oral Contribution)
42. Santos, W.L. "Inhibiting TAR RNA with Branched Peptides," Chemistry and Biology of Peptides Gordon Conference, Ventura, CA, February 2010. (Poster Contribution)
43. Santos, W.L. "Targeting RNA Structures with Branched Peptides," 2nd Biennial Chemical Insights into Biological Processes, NIH/NCI, Hood College, Frederick, MD, August 9-10, 2010. (Poster Contribution)
44. Santos, WL; Gao, M; Thorpe, SB. sp^2 - sp^3 Mixed diboron reagent: copper-catalyzed beta boration of alpha, beta-unsaturated carbonyl compounds. 238th ACS National Meeting, Washington, DC, August 16-20, 2009. (Oral Contribution)
45. Santos, W.L. "Targeting RNA with Branched Peptide Libraries," Bioorganic Chemistry Gordon Conference, Proctor Academy, Andover, NH, June 2010. (Poster Contribution)
46. Santos, W.L. Targeting HIV-1 TAR with Branched Peptides. Nucleosides, Nucleotides and Oligonucleotides Gordon Research Conference, Salve Regina University, Newport, RI, June 2009. (Poster Contribution)
47. Santos, W.L. sp^2 - sp^3 hybridized mixed diboron reagent: synthesis, characterization and copper-catalyzed β -boration of α,β -unsaturated carbonyl compounds. Organic Reactions and Processes Gordon Research Conference, Bryant University, Smithfield, RI, July 2009. (Poster Contribution)
48. Santos, WL; Bryson, DI; Pagano, A. Targeting HIV-1 TAR with Branched Peptides. 237th ACS National Meeting, Salt Lake City, UT, March 2009. (Oral Contribution)
49. Santos, W.L. "Developing New RNA Ligands," Bioorganic Chemistry Gordon Conference, Procter Academy, Andover, NH, June 15-20, 2008. (Poster Contribution)
50. Santos, WL. Targeting RNA with small molecules. 10th Eurasia Conference on Chemical Sciences. Jan 2008, Manila, Philippines. (Oral Contribution)
51. Santos, WL. New RNA Selective Ligands. 236th ACS National Meeting, Philadelphia, PA, USA, August 2008. (Poster Contribution)
52. Santos, W.L. "RNA as a Therapeutic Target," Bioorganic Gordon Conference, June 10-15, 2007, Procter Academy, Andover, NH. (Poster Contribution)

Courses Taught

| Year | Session | Course | Course Title | # of Students | SPOT |
|-------|---------|------------|---------------------------------|---------------|------|
| 2006* | Fall | Chem 5505 | Advanced Organic Chemistry | 24 | n/a |
| 2007 | Spring | Chem 2566 | Principles of Organic Chemistry | 50 | 2.9 |
| | | Chem 2566H | Principles of Organic Chemistry | 10 | 3 |

| | | | | | |
|--|----------|------------|----------------------------------|-----|------|
| 2008 | Spring | Chem 2566 | Principles of Organic Chemistry | 67 | 3.3 |
| | | Chem 2566H | Principles of Organic Chemistry | 7 | 3.3 |
| | Fall | Chem 5505 | Advanced Organic Chemistry | 23 | 3.6 |
| 2009 | Spring | Chem 2566 | Principles of Organic Chemistry | 75 | 3.1 |
| | | Chem 2566H | Principles of Organic Chemistry | 2 | 3.5 |
| | Fall | Chem 5505 | Advanced Organic Chemistry | 19 | 3.6 |
| 2010 | Spring | Chem 5535 | Synthetic Organic Chemistry | 8 | 3.6 |
| | Summer | Chem 2536 | Organic Chemistry | 113 | 3.3 |
| | Fall | Chem 2535 | Organic Chemistry | 131 | 3.0 |
| 2011 | Spring | Chem 5535 | Synthetic Organic Chemistry | 13 | 3.4 |
| Starting 2012 SPOT scores are out of 6.0 instead of 4.0 scale | | | | | |
| 2012 | Spring | Chem 5535 | Synthetic Organic Chemistry | 9 | 4.5 |
| | Spring** | Chem 2984 | Drugs, Bugs and Entrepreneurship | 18 | 5.0 |
| | Fall | Chem 5505 | Advanced Organic Chemistry | 20 | 5.67 |
| 2013 | Spring | Chem 5535 | Synthetic Organic Chemistry | 8 | 5.57 |
| | Fall | Chem 2984 | Drugs, Bugs and Entrepreneurship | 8 | 6.0 |
| 2014 | Spring | Chem 6564 | Special Topics: Chemical Biology | 4 | 6.0 |
| | Fall | -- | On sabbatical | | |
| 2015 | Spring | Chem 5506 | Advanced Organic Chemistry II | 12 | 5.67 |
| | Fall | Chem 2535 | Organic Chemistry | 140 | 3.49 |
| 2016 | Spring | Chem 6564 | Chemical Biology | 3 | 5.67 |
| | Fall | Chem 2565 | Organic Chemistry | 60 | 3.87 |
| 2017 | Spring | | Teaching buy-out | -- | -- |
| | Fall | | Teaching buy-out | | |
| 2018 | Spring | | Teaching buy-out | | |
| | Fall | | Teaching buy-out | | |
| 2019 | Spring | | Teaching buy-out | | |
| | Fall | | Teaching buy-out | | |
| 2020 | Spring | | Teaching buy-out | | |
| | Fall | Chem 6564 | Bioorganic Principles of MedChem | 11 | 5.3 |
| 2021 | Spring | Chem 2565 | Organic Chemistry | 44 | 4.78 |
| | Fall | | Teaching buy-out | | |
| 2022 | Spring | Chem 2565 | Organic Chemistry | 40 | 5.5 |

*Co-taught with Prof. David Kingston; **Co-taught with Prof. Joseph Falkinham and Tim Howland
CHEM 2566: Principles of Organic Chemistry: 2nd semester course in organic chemistry for majors, using Bruice "Organic Chemistry" 5thEd.
CHEM 2535: Organic Chemistry: 1st semester course in organic chemistry for non-majors, using Bruice "Organic Chemistry" 6th Ed.
CHEM 5505: Advanced Organic Chemistry: Graduate course in organic chemistry, using Carey & Sundberg "Advanced Organic Chemistry, Part A" 4th/5th Ed.

CHEM 5535: Synthetic Organic Chemistry: Graduate course in synthetic organic chemistry using Carey & Sundberg's "Advanced Organic Chemistry, Part B" 5th Ed and "Strategic Applications of Named Reactions in Organic Synthesis" by Kurti and Czako.

- **Departmental Service**

Organic Chemistry Faculty Search Chair, **2021, 2022**
Analytical Services and Facilities Advisory Group Chair, **2022**
Analytical Services and Facilities Advisory Group, **2019-2022**
Organic Chemistry Faculty Search Chair, **2017**
Personnel Committee, **2015-2016, 2018-2020, 2021-2024**
Executive Committee, **2008, 2012, 2014-2015, 2017-2019**
Graduate Education Committee Chair, **2013-2018**
Colloquium Committee Chair, **2016-2023**
Biochemistry Faculty Search Committee, **2015**
Drug Discovery Faculty Search Committee, **2012**
Bioanalytical Chemistry Faculty Search Committee, **2011**
Organic Chemistry Division Coordinator, **2011-2014**
Chemistry Department Graduate Recruiting Committee, **2006-2010**
Organic Chemistry Division Representative for the Davidson Renovation, **2010**
Chemistry Graduate Advising (1st week of class), **2009, 2010**
Hokie Focus, research presentation to incoming first year undergraduates majoring
in chemistry; ~50 attendees, **April 17, 2010**
Chemistry Faculty Search Committee, **2010-2011**
"Chemistry Magic Show", yearly AXE fundraising chemistry demo, **2006-present**
Hosted Jennifer Rodriguez (high school, minority) in the "Agricultural Scholars Program", **Summer 2009**
"Chemistry Magic Show", Tall Oaks Elementary, **March 16, 2011**
Thesis/Dissertation Graduate Advisory Committee, 30 students for AY**2011**

- **University Service**

Search Committee: Conflict of Interest Director, **Spring 2019**
SGA: Innovation and Entrepreneurship, **Dec 2016-present**
Faculty Advisory Board, Apex Systems Center for Innovation and Entrepreneurship, **2015-present**
Virginia Tech Center for Drug Discovery Member, **2012-present**
Mass Spectrometry Incubator Advisory Committee, **2008**
Macromolecular Interfaces with Life Science, NSF-IGERT, Core faculty member, **2007-2010**
Filipino Student Association, Advisor, **2007-present**
Initiative for Maximizing Student Development (VT-IMSD), Faculty Mentor, **2010-present**
Post Baccalaureate Research & Education Program (VT-PREP), Faculty Mentor, **2010-present**
Bringing Science to Market (BS2M) committee, **2010-15**
ICTAS Proposal Review Panel, **2012-present**
ICTAS Doctoral Scholar Review Panel, **Spring 2011, Spring 2012, Spring 2016**
1st Cancer Research Symposium at Virginia Tech, Poster Session Judge, **March 29, 2011**
Session chair, ACC Interdisciplinary Forum for Discovery in Life Science at VT, **Oct. 6, 2010**

- **Professional Activities**

- Referee for the *Proceedings of the National Academy of Sciences*, *Journal of the American Chemical Society*, *Accounts of Chemical Research*, *ACS Chemical Biology*, *Bioorganic and Medicinal*

Chemistry Letters, Bioorganic and Medicinal Chemistry, Journal of Organic Chemistry, Chemical Communications, Angewandte Chemie International Edition, European Journal of Organic Chemistry, Molecular Biosystems, Analytical Chemistry, Organic and Biomolecular Chemistry, Chemical Reviews, ACS Medicinal Chemistry Letters, ACS Chemical Neuroscience, Tetrahedron Letters, Organometallics, Synthesis, Current Organic Chemistry, Mini-reviews in Medicinal Chemistry, Monatshefte für Chemie, Organic Letters, Advanced Synthesis and Catalysis, ACS Catalysis, Synthesis, ChemBioChem, ChemMedChem, and Amino Acids.

- Proposal Reviewer:
 - (1) *Jeffress Memorial Trust*
 - (2) *ACS Petroleum Research Fund*
 - (3) *National Institutes of Health Study Sections:* (i) ZRG1 MDCN-C 58, Drug discovery for the nervous system (DDNS), (ii) ZRG1 OTC-X(80) Oncological Sciences AREA Grant Applications), (iii) F04A-W(20)L fellowship panel, Synthetic and biological chemistry, (iv) Synthetic and Biological Chemistry B (SBCB), Synthetic and Biological Chemistry A (SBCA)
 - (4) *Netherlands Organisation for Scientific Research*
 - (5) *Cottrell Scholar Awards*
 - (6) *National Science Foundation*
 - (7) Engineering and Physical Sciences Research Council (EPSRC)
 - (8) NIH SBCB study section standing member
- Served as a panel speaker at VirginiaDrugDiscoveryRx: Emerging Targets, Technologies, and Therapeutics for Cancer and Neuroscience. The topic was “Key Success Factors for Early Stage Companies” held at Hotel Roanoke on May 2019.
- Organized a symposium (April 28, 2012) with Prof. Jetze Tepe in honor of Prof. Timothy Macdonald that involved invitation of speakers, solicitation of funds and coordination of manuscript submissions to Bioorg. Med. Chem. Lett. The number of attendees from academia and industry was approximately 60.
- Alternate Councilor for the Division of Biological Chemistry of the American Chemical Society (2013-2016)
- Member of the American Chemical Society, Biological and Organic Chemistry Divisions
- Member of International Union of Applied Chemists (IUPAC)
- Discussion Leader at the IME Boron XIV Conference, Niagara Falls, Canada, Sept. 13, 2011
- Discussion Leader at the Bioorganic Chemistry Gordon Research Conference (Frontiers in Bioorganic and Medicinal Chemistry), Proctor Academy, Andover, NH, June 2010.
- Discussion Leader at the Nucleosides, Nucleotides, and Oligonucleotides GRC Conference, Salve Regina, June 23-28, 2019.
- Host and Chair of the Boron in the Americas XVIII Conference at Virginia Tech Inn & Conference Center, June 20-24, 2022. This is an international meeting of boron chemists that meets every

two years. The week-long meeting brings together world leaders to discuss and disseminate the forefront of science dealing with boron.