

Andrew N. Lowell, Ph. D.

Department of Chemistry
Hahn Hall South, Virginia Tech
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Academic History

2018-present Assistant Professor, Department of Chemistry, Virginia Polytechnic Institute and State University, Blacksburg, VA
2012-2018 Postdoctoral Research Fellow and Research Investigator with Professor David H. Sherman, University of Michigan, Ann Arbor, MI
2009-2012 Visiting Scholar with Professor Yoko Yamakoshi, University of Pennsylvania, Philadelphia, PA
2003-2008 Ph. D., Organic Chemistry with Professor Marisa C. Kozlowski, University of Pennsylvania, Philadelphia, PA
1998-2003 B. S., *cum laude*, Chemistry (ACS certified), minor in Philosophy, Faculty Mentor Professor Robert C. Ronald, Washington State University, Pullman, WA

Professional Affiliations

American Chemical Society, Member (2002-present)
American Society of Pharmacognosy, Member (2018-present)
Society for Laboratory Automation and Screening, Member (2018-present)
Virginia Tech Center for Drug Development, Member (2018-present)
Adaptive Brain and Behavior Destination Area at Virginia Tech, Member (2018-present)
Center for Emerging, Zoonotic, and Arthropod-borne Diseases, Member (2020-present)
Faculty of Health Sciences, Translational Biology, Medicine, & Health Graduate Program at Virginia Tech (2022-present)
University of Michigan Postdoctoral Association, Member (2012-present), Co-Chair (2013-2014), Secretary (2015-2018)

Honors, Awards, and Recognition

Ad hoc study section member, Chemical Synthesis & Biosynthesis – CSB (2023)
Virginia Tech Selectee, ACS Academic Young Investigator’s Symposium (2023)
Virginia Tech College of Science Video Highlight, Medicinal Chemistry Capstone Lab (2022)
Virginia Tech Competition Selectee, Edward Mallinckrodt Jr. Foundation Scholar (2021)
Speaker Selection for Virginia Tech Life Science Seminar (2021)
Speaker Selection for Center for Emerging, Zoonotic, and Arthropod-borne Pathogens Seminar (2021)
Travel Award, Future of Bioscience Graduate and Postdoctoral Training 2 (2017)
University of Michigan Outstanding Postdoctoral Award, (2014-2015)
Gardner Stacey Research Endowment, Washington State University (2002-2003)
Alfred J. Suksdorf Memorial Scholarship, Washington State University (1998-2000)
President’s Honor Roll, Washington State University, (1998-1999, 2002-2003)

Publications:

Shuvo, S. I., Breiner, L. M., Briganti, A., Brown, A. M., Lowell, A. N., “Synthesis and antibiotic activity of aromatic chloramphenicol amides” *Manuscript in Preparation*.
Kohanov, Z. A., Shuvo, S. I., Lowell, A. N., “Regioselective use of pyrones as dienophiles in annulation reactions” *Manuscript in Preparation*.

- Schmidt, J. J., Lowell, A. N., DeMars II, M. D., Khatri, Y., Espinoza, R. V., Koch, A. A., Haskin, N. T., Tripathi, A., Sherman, D. H. "Redirecting biocatalytic assembly of macrolide by inter-pathway diversification" *Under revision*.
27. Singh, S., King, K., Gannett, C., Chuong, C., Joshi, S., Plate, C., Farzeen, P., Webb, E., Kunche, L. K., Weger-Lucarelli, J., Lowell, A. N., Brown, A. M., Deshmukh, S. "Data Driven Computational Design and Experimental Validation of Drugs for Accelerated Mitigation of Pandemic-Like Scenarios". *J. Phys. Chem. Lett.* **2023**, *Accepted for Publication*.
26. Gannett, C., Banks, P., Chuong, C., Weger-Lucarelli, J., Mevers, E., Lowell, A. N. "Semisynthetic blasticidin S ester derivatives show enhanced antibiotic activity" *RSC Med. Chem.* **2023**, *14*, 782-789. DOI: [10.1039/D2MD00412G](https://doi.org/10.1039/D2MD00412G)
25. Breiner, L. M., Briganti, A., McCord, J. P., Heifitz, M., Philbrook, S., Slebodnick, C., Brown, A. M., Lowell, A. N. "Triazoles as pharmacophores to explore sidechain functionalization for expanded pleuromutilin derivatives" *Tetrahedron Chem.* **2022**, *4*, 100034. DOI: [10.1016/j.tchem.2022.100034](https://doi.org/10.1016/j.tchem.2022.100034)
24. McCord, J. P., Kohanov, Z. A., Lowell, A. N. "Thermorubin biosynthesis initiated by a salicylate synthase suggests an unusual conversion of phenols to pyrones." *ACS Chem. Biol.* **2022**, *17*(11), 3169-3177. DOI: [10.1021/acscchembio.2c00606](https://doi.org/10.1021/acscchembio.2c00606)
23. Breiner-Goldstein, E., Eyal, Z., Matzov, D., Halfon, Y., Cimicata, G., Baum, M., Ezernitchi, A., Lowell, A., Schmidt, J., Rokney, A., Zimmerman, E., Rozenberg, H., Bashan, A. Valinsky, L., Anzai, Y., Sherman, D. H., Yonath, A. "Ribosome-binding and anti-microbial studies of the mycinamicins, 16-membered macrolide antibiotics from *Micromonospora griseorubida*" *Nucleic Acids Res.* **2021**, *49*(16), 9560-9573. DOI: [10.1093/nar/gkab684](https://doi.org/10.1093/nar/gkab684)
22. Hohlman, R. M., Newmister, S. A., Sanders, J. N., Khatri, Y. Li, S., Keramati, N. R., Lowell, A. N., Houk, K. N., Sherman, D. H. "Structural diversification of hapalindole and fischerindole natural products via cascade biocatalysis" *ACS Catal.* **2021**, *11*(8), 4670-4681. DOI: [10.1021/acscatal.0c05656](https://doi.org/10.1021/acscatal.0c05656)
21. Kalkreuter, E., Bingham, K. S., Keeler, A. M., Lowell, A. N., Schmidt, J. J., Sherman, D. H., Williams, G. J. "Computationally-guided exchange of substrate selectivity motifs in a modular polyketide synthase acyltransferase" *Nat. Commun.* **2021**, *12*(2193) DOI: [10.1038/s41467-021-22497-2](https://doi.org/10.1038/s41467-021-22497-2) and as a Preprint: [biorxiv/2020.04.23.058214](https://doi.org/10.1101/2020.04.23.058214)
20. Koch, A. A., Schmidt, J. J., Lowell, A. N., Hansen, D. A., Coburn, K., Chemler, J. A., Sherman, D. H. "Probing Selectivity and Creating Structural Diversity Through Hybrid Polyketide Synthases" *Angew. Chem. Int. Ed.* **2020**, *59*(32), 13575-13580. DOI: [10.1002/anie.202004991](https://doi.org/10.1002/anie.202004991)
19. Khatri, Y., Hohlman, R., Mendoza, J., Li, S., Lowell, A. N., Asahara, H., Sherman, D. "Multicomponent microscale biosynthesis of unnatural cyanobacterial indole alkaloids" *ACS Synth. Biol.* **2020**, *9*(6), 1349-1360. DOI: [10.1021/acssynbio.0c00038](https://doi.org/10.1021/acssynbio.0c00038)
18. Li, S., Newmister, S. A., Lowell, A. N., Zi, J., Chappell, C. R., Yu, F., Hohlman, R. M., Orjala, J., Williams, R. M., Sherman, D. H. "Control of stereoselectivity in diverse hapalindole metabolites is mediated by cofactor-induced combinatorial pairing of Stig cyclases" *Angew. Chem. Int. Ed.*, **2020**, *59*(21), 8166-8172. DOI: [10.1002/anie.201913686](https://doi.org/10.1002/anie.201913686) and as Preprint: [chemrxiv/10032260](https://doi.org/10.26434/chemrxiv-2020-10032260)
17. Kalkreuter, E., CroweTipton, J. M., Lowell, A. N., Sherman, D. H., Williams, G. J. "Engineering the Substrate Specificity of a Molecular Polyketide Synthase for Installation of Consecutive Non-Natural Extender Units" *J. Am. Chem. Soc.* **2019**, *141*(5), 1961-1969. DOI: [10.1021/jacs.8b10521](https://doi.org/10.1021/jacs.8b10521)
16. Aroua, S., Lowell, A. N., Ray, A., Trapp, N., Schweizer, W., Ebert, M., Yamakoshi, Y. "Larger Substituents on Amide Cavitands Induce Bigger Cavities" *Org. Lett.* **2019**, *21*(1), 201-205. DOI: [10.1021/acs.orglett.8b03660](https://doi.org/10.1021/acs.orglett.8b03660)
15. Skiba, M. A., Sikkema, A. P., Moss, N. A., Lowell, A. N., Su, M., Sturgis, R. M., Gerwick, L., Gerwick, W. H., Sherman, D. H., Smith, J. L. "Biosynthesis of *t*-Butyl in Apratoxin A: Functional Analysis and Architecture of a PKS Loading Module" *ACS Chem. Biol.* **2018**, *13*(6), 1640-1650. DOI: [10.1021/acscchembio.8b00252](https://doi.org/10.1021/acscchembio.8b00252)

14. Slocum, S. T., [Lowell, A. N.](#), Tripathi, A., Smith, J. L., Sherman, D. H. "Chemoenzymatic dissection of polyketide beta-branching in the bryostatin pathway" *Meth. Enzymol.* **2018**, *604*, 207-236. [DOI: 10.1016/bs.mie.2018.01.034](#)
13. Newmister, S. A., Li, S., Garcia-Borras, M., Sanders, J. N., Yang, S., [Lowell, A. N.](#), Yu, F., Smith, J. L., Williams, R. M., Houk, K. N., Sherman, D. H. "Structural basis of the Cope rearrangement and C-C bond-forming cascade in hapalindole/fischerindole biogenesis" *Nature Chem. Biol.* **2018**, *14*, 345-351. [DOI: 10.1038/s41589-018-0003-x](#) and as Preprint: [biorxiv/173674](#)
12. [Lowell, A. N.](#), DeMars II, M. D., Slocum, S. T., Yu, F., Anand, K., Chemler, J. A., Korakavi, N., Priessnitz, J. K., Hansen, D. A., Koch, A. A., Schultz, P. J., Sherman, D. H. "Chemoenzymatic diversification through late-stage polyketide assembly, tailoring, and C-H functionalization: The total synthesis of tylactone-based macrolide antibiotics" *J. Am. Chem. Soc.* **2017**, *139*(23), 7913-7920. [DOI: 10.1021/jacs.7b02875](#)
11. Li, S., [Lowell, A. N.](#), Newmister, S. A., Yu, F., Williams, R. M., Sherman, D. H. "Decoding cyclase-dependent assembly of hapalindole and fischerindole alkaloids" *Nature Chem. Biol.* **2017**, *13*(5), 467-469. [DOI: 10.1038/nchembio.2327](#)
10. Koryakina, I., Kasey, C., McArthur, J. B., [Lowell, A. N.](#), Chemler, J. A., Li, S., Hansen, D. A., Sherman, D. H., Williams, G. J. "Inversion of extender unit selectivity in the erythromycin polyketide synthase by acyltransferase domain engineering" *ACS Chem. Biol.* **2017**, *12*(1) 114-123. [DOI: 10.1021/acscchembio.6b00732](#)
9. DeMars II, M. D., Sheng, F., Park, S. R., [Lowell, A. N.](#), Podust, L. M., Sherman, D. H. "Biochemical and Structural Characterization of MycCI, a Versatile P450 Biocatalyst from the Mycinamicin Biosynthetic Pathway" *ACS Chem. Biol.* **2016**, *11*(9), 2642-2654. [DOI: 10.1021/acscchembio.6b00479](#)
8. [Lowell, A. N.](#), Santoro, N., Swaney, S. M., McQuade, T. J., Schultz, P. J., Larsen, M. J., Sherman, D. H. "Microscale Adaptation of *in vitro* Transcription/Translation for High Throughput screening of Natural Product Extract Libraries" *Chem. Biol. Drug Des.* **2015**, *86*(6), 1331-1338. **Editor's choice and cover story.** [DOI: 10.1111/cbdd.12614](#)
7. Li, S., [Lowell, A. N.](#), Yu, F., Raveh, A., Newmister, S. A., Bair, N., Schaub, J. M., Williams, R. M., Sherman, D. H. "Hapalindole/Ambiguine Biogenesis is Mediated by a Cope Rearrangement, C-C Bond-Forming Cascade" *J. Am. Chem. Soc.* **2015**, *137*(49), 15366-15369. [DOI: 10.1021/jacs.5b10136](#)
6. [Lowell, A. N.](#), Qiao, H., Liu, T., Ishikawa, T., Zhang, H., Oriana, S., Wang, M., Ricciotti, E., FitzGerald, G. A., Zhou, R., Yamakoshi, Y. "Functionalized Low-Density Lipoprotein Nanoparticles for *in Vivo* Enhancement of Atherosclerosis on Magnetic Resonance Images" *Bioconjugate Chem.* **2012**, *23*(11), 2313-2319. [DOI: 10.1021/bc300561e](#)
5. Yamakoshi, Y., Qiao, H., [Lowell, A. N.](#), Woods, M., Paulose, B., Nakao, Y., Zhang, H., Liu, T., Lund-Katz, S., Zhou, R. "LDL-based Nanoparticles for Contrast Enhanced MRI of Atheroplaques in Mouse Models" *Chem. Comm.* **2011**, *47*(31), 8835-8837. [DOI: 10.1039/C1CC10924C](#)
4. [Lowell, A. N.](#), Fennie, M. W., Kozlowski, M. C. "Alternative Spiroketalization Methods Toward Purpuromycin: A Diketone Approach to Prevent Benzofuran Formation" *J. Org. Chem.* **2011**, *76*(16), 6488-6502. [DOI: 10.1021/jo200399z](#)
3. Bandichhor, R., [Lowell, A. N.](#), Kozlowski, M. C. "Alternative Spiroketalization Methods Toward Purpuromycin: A Hemiketal Conjugate Addition Strategy and Use of an Electron Rich Isocoumarin Precursor" *J. Org. Chem.* **2011**, *76*(16), 6475-6487. [DOI: 10.1021/jo200398v](#)
2. [Lowell, A. N.](#), Wall, P. D., Waters, S. P., Kozlowski, M. C. "Synthesis of Differentially Protected Isocoumarins" *Tetrahedron*, **2010**, *66*(30), 5574-5582. [DOI: 10.1016/j.tet.2010.05.077](#)
1. [Lowell, A. N.](#), Fennie, M. W., Kozlowski, M. C. "A Concise Synthesis of the Naphthalene Portion of Purpuromycin" *J. Org. Chem.* **2008**, *73*(5), 1911-1918. [DOI: 10.1021/jo7024114](#)

Selected Professional Presentations:

- Enhanced Enzyme Stability: Extremophile Biosynthesis of Thermorubin.* Andrew N. Lowell, Jennifer P. McCord, Max Rivers, and Zachary A. Kohanov. **2023 ASP Annual Meeting, Innovation Through Interaction**, Invited Oral Presentation, Rockville, MD. July 2023.
- A Semisynthetic Approach of Chloramphenicol Derivatization.* Suzzudul I. Shuvo, Logan M. Breiner, Andrew N. Lowell. **2023 ASP Annual Meeting, Innovation Through Interaction**, Poster Presentation, Rockville, MD. July 2023.
- Current Progress on the Total Synthesis of Thermorubin.* Zachary A. Kohanov, Suzzudul I. Shuvo, Andrew N. Lowell. **2023 ASP Annual Meeting, Innovation Through Interaction**, Poster Presentation, Rockville, MD. July 2023.
- 1,2,3-Triazole Derivatives of the Antibiotic Natural Product Pleuromutilin.* Logan M. Breiner, Roman Slowinski, Anthony J. Briganti, Anne M. Brown, Andrew N. Lowell. **2023 ASP Annual Meeting, Innovation Through Interaction**, Poster Presentation, Rockville, MD. July 2023.
- Derivatives of Antimicrobial Natural Product Blasticidin S Enhance the Antibiotic Activity.* Cole Gannett, Paige Banks, Christina Chuong, James Weger-Lucarelli, Emily Mevers, Andrew N. Lowell. **2023 ASP Annual Meeting, Innovation Through Interaction**, Oral Presentation, Rockville, MD. July 2023.
- Making old drugs new: Development of thermorubin and other neglected antibiotics.* Andrew N. Lowell, Jennifer McCord, Zachary Kohanov, Cole Gannett. **2022 CEZAP Infectious Diseases Symposium**, Invited Oral Presentation, Center for Emerging, Zoonotic, and Arthropod-borne Pathogens, Virginia Tech, Blacksburg, VA. October 2022.
- New Approaches to AMR: Development of Thermorubin and Bidentate Antibiotics.* Andrew N. Lowell. **Translational Biology, Medicine, & Health Virginia Tech**, Oral Presentation, Fralin Biomedical Research Center, Roanoke, VA. September 2022.
- New Approaches to AMR: Development of Thermorubin and Bidentate Antibiotics.* Andrew N. Lowell. **CCHF Alumni Symposium**, Invited Oral Presentation, CCHF Sunset Meeting: Frontiers in C-H Functionalization, Emory University, Atlanta, GA. July 2022.
- Structure-Activity Relationship of Pleuromutilin Triazolyl Derivatives.* Logan Breiner, Anthony Briganti, Roman Slowinski, Anne M. Brown, Andrew N. Lowell. **2022 ASP Annual Meeting Natural Product Solutions to Global Challenges**. Poster Presentation, American Society of Pharmacognosy, North Charleston, SC. July 2022.
- Structure Activity Relationship of Esters of Blasticidin S.* Cole Gannett, Margaret Banks, Emily E. Mevers, Andrew N. Lowell. **2022 ASP Annual Meeting Natural Product Solutions to Global Challenges**. Poster Presentation, American Society of Pharmacognosy, North Charleston, SC. July 2022.
- Lowell Group Research.* Andrew N. Lowell, Jacob Chappell, Zak Kohanov, Jen McCord, Cole Gannett, Logan Breiner, Austin Lowry, Suzzudul Shuvo. **5th Interdisciplinary Course on Antibiotics and Resistance**, Poster Presentation, Les Pensières, Annecy, France. October 2021.
- Next-generation antibiotics through semisynthesis and biocatalysis.* Andrew N. Lowell. **Chemistry Department Seminar and Recruiting Visit**, Invited Oral Presentation, Eastern Tennessee State University, Johnson City, TN. October 2021.
- Structural diversification of hapalindole and fischerindole natural products via cascade biocatalysis.* Robert Hohlman, Sean Newmister, Jacob Sanders, Yogan Khatri, Shasha Li, Nikki Keramati, Andrew N. Lowell, Kendall Houk, David Sherman, **262nd ACS National Meeting & Exposition**, Atlanta, GA, United States, August 2021.
- Pioneering new routes for antibiotic development.* Andrew N. Lowell. **CCHF Alumni Symposium**, Invited Oral Presentation, Center for C-H Functionalization, Virtual. June 2021
- In silico discovery and design of drug leads for SARS-CoV-2 main protease (Mpro) using a hybrid evolutionary algorithm approach.* Samrendra Singh, Kelsie King, Soumil Joshi, Emily Webb, Cole Gannett, James Weger-Lucarelli, Andrew N. Lowell, Sanket Deshmukh, Anne Brown. **261st ACS National Meeting & Exposition**, Online, March 2021.

- The chemoenzymatic synthesis of macrolide antibiotics and biocatalysis as an emerging tool for drug development.* Andrew N. Lowell. **Chemistry Department Seminar and Recruiting Visit**, Invited Oral Presentation, Radford University, Radford, VA. October 2020.
- Toward the development of bidentate antibiotics: A Two-pronged approach to overcome resistance.* Andrew N. Lowell, Jennifer P. McCord, Jacob C. Chappell, Harrison O. Miller, Zachary A. Kohanov, Cole C. Gannet, Logan Breiner. **Virginia Tech Center for Drug Discovery Annual Workshop**. Invited Lecture, The Inn at Virginia Tech, January 2020.
- The chemoenzymatic synthesis of macrolide antibiotics and biocatalysis as an emerging tool for drug development.* Andrew N. Lowell. **Chemistry Department Seminar and Recruiting Visit**, Invited Oral Presentation, University of North Carolina-Ashville, Ashville, NC. October 2019.
- The chemoenzymatic synthesis of macrolide antibiotics and biocatalysis as an emerging tool for drug development.* Andrew N. Lowell. **Biological Systems Engineering Departmental Seminar**, Invited Oral Presentation, Virginia Tech, Blacksburg, VA. October 2019.
- Other Options to Overcome Resistant Bacteria: Bidentate Antibiotics and Screens for Antibiotic Adjuvants.* Andrew N. Lowell, Zachary A. Kohanov, Harrison O. Miller, Jacob C. Chappell. **2019 American Society of Pharmacognosy Annual Meeting**, Poster Presentation, Monona Terrace, Madison, WI. July 2019.
- Discovery and synthesis: New natural products and biocatalysis to overcome antibiotic resistance.* Andrew N. Lowell.* **Department of Chemistry Advisory Council Annual Meeting**, Invited Oral Presentation, Hahn Hall North, Virginia Tech, May 2019.
- Chemoenzymatic diversification: The total synthesis of macrolide antibiotics and future use in drug development.* Andrew N. Lowell. **Biochemistry Departmental Seminar**, Invited Oral Presentation, Virginia Tech, Blacksburg, VA, February 2019.
- Reinvigorating old medicines: Discovering adjuvants that rescue antibiotic activity against resistant pathogens.* Andrew N. Lowell.* **Society for Laboratory Automation and Screening, SLAS 2019**. Invited Scientific Podium Presentation, Walter E. Washington Convention Center, Washington, DC, February 2019.
- Discovery and synthesis: New natural products and biocatalysis to overcome antibiotic resistance.* Andrew N. Lowell.* **Virginia Tech Center for Drug Discovery Annual Workshop**. Short Keynote Lecture, The Inn at Virginia Tech, January 2019.
- Discovery and synthesis: New natural products and biocatalysis to overcome antibiotic resistance.* Andrew N. Lowell.* **Virginia Tech Center for Drug Discovery Seminar**. Invited Oral Presentation, Biocomplexity Institute, November 2018.
- Antibiotic discovery: New approaches to reinvigorate established medicines.* Andrew N. Lowell.* **Virginia Tech Center for Drug Discovery**, Poster Presentation, Hahn Hall South Atrium, November 2018.
- Developing new approaches to bacterial resistance.* Andrew N. Lowell.* **Celebration of Chemistry**, Poster Presentation, Davidson Hall, October 2018.
- Alternative approaches to combat antibiotic resistance.* Andrew N. Lowell.* **College of Science Undergraduate Research Mixer**, Poster Presentation, Hahn Hall South Atrium, October 2018.
- Chemoenzymatic methods in the total synthesis of macrolide antibiotics: The 16-membered macrolactone core of tylosin/rosamicin/juvenimicin.* Andrew N. Lowell, Samuel Slocum, Aaron A. Koch, Matthew D. DeMars, Nisha Korakavi, Joseph A. Chemler, Doug Hansen, Krithika Anand, Fengyan Yu, David H. Sherman.* **252nd ACS National Meeting**, Oral Presentation, Philadelphia Convention Center, Philadelphia, PA, August 2016.
- Microscale screening adaptations for the detection of effective antimicrobials in natural product extract libraries.* Andrew N. Lowell, Lyanne Gómez Rodríguez, Ashootosh Tripathi, Nicholas Santoro, Steven Swaney, Thomas McQuade, Pamela Schultz, Martha Larsen, David H. Sherman.* **252nd ACS National Meeting**, Poster Presentation, Philadelphia Convention Center, Philadelphia, PA, August 2016.

- Orthogonal protein synthesis inhibitors: The discovery and development of new ribosome-targeting antibiotics via high-throughput screening and natural products chemistry.* Andrew N. Lowell, Lyanne Gómez Rodríguez, Nicholas Santoro, Steven M. Swaney, Thomas J. McQuade, Pamela J. Schultz, Ashootosh Tripathi, Martha J. Larsen, David H. Sherman.* **5th Annual U-M Israel Partnership for Research and Education Symposium**, Ross School of Business, Ann Arbor, MI, May 2016.
- New ribosome-targeting antibiotics: identification via high-throughput screening and natural products chemistry.* Andrew N. Lowell, Lyanne Gómez- Rodríguez, Nicholas Santoro, Steven M. Swaney, Thomas J. McQuade, Pamela J. Schultz, Ashootosh Tripathi, Martha J. Larsen, and David H. Sherman.* **Chemical Biology Interface Annual Symposium**, Poster, University of Michigan, Ann Arbor, MI, May 2015.
- Inhibition of the bacterial ribosome: identifying new antibiotics with high throughput screening.* Andrew N. Lowell, Nicholas Santoro, Steven Swaney, Pamela J. Schultz, Ashootosh Tripathi, Martha Larsen, and David H. Sherman.* **LSI Scientific Poster Session**, Poster, University of Michigan, Ann Arbor, MI, November 2014.
- Expression and use of tylosin polyketide synthase modules TylGIV and TylGV.* Andrew N. Lowell, Douglas A. Hansen, Joseph A. Chemler, and David H. Sherman.* **LSI Scientific Poster Session**, Poster, University of Michigan, Ann Arbor, MI, November 2012.
- Expression and use of tylosin polyketide synthase modules TylGIV and TylGV.* Andrew N. Lowell, Douglas A. Hansen, Joseph A. Chemler, and David H. Sherman.* **Michigan Postdoc Poster Symposium**, Poster, University of Michigan, Ann Arbor, MI, October 2012.
- Toward the total synthesis of purpuromycin.* Andrew N. Lowell, Marisa C. Kozlowski.* **ACS National Meeting**, Oral Presentation, Philadelphia Convention Center, Philadelphia, PA, August 2008.
- Synthesis of dissymmetric BINOL derivatives using solid phase organic chemistry.* Andrew N. Lowell, J. Brian Hewgley, Rajesh Kamble, and Marisa C. Kozlowski.* **Middle Atlantic Regional Meeting**, Poster, Ursinus College, Collegeville, PA, May 2007.

Teaching Experience:

Lecturer:

Advanced Organic Chemistry I, Chem5505, Virginia Tech, Fall 2021
Medicinal Chemistry Capstone Laboratory, Chem 4544, Virginia Tech, Spring 2021
Advanced Organic Chemistry I, Chem5505, Virginia Tech, Fall 2020
Majors Organic Chemistry II, Chem2566, Virginia Tech, Spring 2020
Advanced Organic Chemistry I, Chem5505, Virginia Tech, Fall 2019
Advanced Organic Chemistry I, Chem5505, Virginia Tech, Fall 2018
General Chemistry I, University of Pennsylvania SABIC and KAUST program, Spring 2011
Chemistry TA Training for International Students, University of Pennsylvania, Summer 2009

Supervision:

General Chemistry Laboratory Supervisor, University of Pennsylvania, Fall 2010. Oversaw 30 TAs and 600 students, prepared student experiment materials, managed laboratory equipment and resources, Fall 2010

Independent Mentoring Experience:

Student Awards:

Skiles Graduate Fellowship, Cole Gannett, October 2022
Graduate School Doctoral Assistantship Award in Chemistry, Logan Breiner, Fall 2022
Undergraduate Student Summer Fellowship, Bruna Leong, Summer 2021
ID IGEP Summer I Graduate Fellowship, Logan Breiner, Summer 2021
Teaching Award, Cole Gannett, May 2021

Postdoc Advisor to:

Dr. Jennifer McCord

Graduate Research Advisor to:

Austin Lowry, Matriculated 2020, non-thesis Masters graduate, 2022
Jacob Chappell, Matriculated 2018, non-thesis Masters graduate, 2022
Harrison Miller, Matriculated 2018, non-thesis Masters graduate, 2021
Zachary Kohanov, Matriculated 2018
Cole Gannett, Matriculated 2019
Logan Breiner, Matriculated 2019
Suzzudul Shuvo, Matriculated 2020
Max Rivers, Matriculated 2022
Timilehin Adegboyega, Matriculated 2022

Committee Member of:

Hao Li (Webster Santos), PhD, 2018
Christine DuChane (Joseph Merola), PhD, 2019
Ashley Peralta (Webster Santos), PhD, 2020
Ashley Gates (Webster Santos), PhD, 2020
Justin Grams (Webster Santos), PhD 2020
Christopher Garcia (Webster Santos), PhD 2021
Ophelia Wadsworth (Michael Schulz), Matriculated 2017
Scot Barry (Paul Carlier), Matriculated 2018
Hanan AlMolhim (Paul Carlier), PhD 2023
Swetha Jos (Webster Santos), PhD 2022
Ariel Burgio (Webster Santos), PhD 2023
Kyle Dunnivant (Webster Santos), Matriculated 2019
Michael Payette (Webster Santos), Matriculated 2019
Nathan Price (Jim Tanko), Matriculated 2019
Chris Schrader (Webster Santos), Matriculated 2019
Mary Olson (Webster Santos), Matriculated 2020
Paige Banks (Emily Mevers), Matriculated 2020
Rusha Pal (Mohamed Seleem), PhD 2022
Rudraneel Roy Chowdhury (Paul Carlier), Matriculated 2021
James Chapman (Jim Tanko), Matriculated 2021
Zhen Shi (Michael Schulz), Matriculated 2021
Ian Anderson (Adrian Figg), Matriculated 2021
Anthony Briganti (Anne Brown), Matriculated 2022
Maxwell Brooks (Wei Sun), Matriculated 2022
Nadim Mahmud (Joshua Worch), Matriculated 2020
Babatomwa Kikiowo (Mohamed Seleem), Matriculated 2022

Undergraduates Supervised:

Tanner Spicer, Class of 2021
Dylan Reil, Class of 2023
Moriah Heifetz, Class of 2021
Bruna Leong, Class of 2023
Sophia Philbrook, Class of 2022
Ayah Kuwafi, Class of 2023
Roman Slowinski, Class of 2023

Owen Beck, Class of 2024
Abigail Agner, Class of 2024
Stephen Mageot, Class of 2024
Allen Mageot, Class of 2024
Jack Goddard, Class of 2024
Spencer Kearns, Class of 2026

Previous Mentoring Experience:

Postdoctoral researchers:

Zachary Litman, PhD (University of Michigan)
Kinshuk Srivastava, PhD (University of Michigan)

Graduate students:

Samuel Slocum (PhD, University of Michigan, (Program in Biological Science))
Jorge Sandoval (University of Michigan, PhD Student, Chemical Biology)
Stephanie Chun (University of Michigan, PhD Student, Chemistry)
Jennifer Schmidt (PhD, University of Michigan, Medicinal Chemistry)
Shasha Li (PhD, University of Michigan, Medicinal Chemistry)
Jarrett Johnson (University of Michigan, PhD Candidate, Chemical Biology)
Michael Wentzel (University of Pennsylvania, MS. PhD, University of Minnesota, Chemistry)
Christine Skibinski (University of Pennsylvania)

Undergraduate Students:

Alexander Hadd (University of Michigan, Perrigo Fellow)
Jennifer Priessnitz (University of Michigan, Medical Student, Wayne State University)
Matthew Oppenlander (University of Michigan)
Nisha Korikavi (University of Michigan, Medical Student, Michigan State University)
Tashina Robinson (University of Michigan Summer Research Opportunity Program)
Jingxian "Russell" Li (University of Pennsylvania, BA, Ph. D. candidate at Stanford)
Dominique Ingato (University of Pennsylvania)
Chukuemeka Oje (University of Pennsylvania)

Service:

Organic Search Committee, Department of Chemistry

Member, Virginia Tech (2021-2022)

Executive Committee, Department of Chemistry

Elected Member, Virginia Tech (2021)

Graduate Recruiting and Admissions Committee, Department of Chemistry

Member, Virginia Tech (2018-present)

Chemistry Department Safety Committee

Member, Virginia Tech (2018-present)

Dean and Vice Provost Search Advisory Committee, Rackham School of Graduate Studies

Member, University of Michigan (2017-2018)

Outstanding Postdoctoral Fellow Award (OPFA)

Award Committee Chair, University of Michigan (2015-2016)

Award Committee Co-Chair, University of Michigan (2016-2017)

Poster Judge, Undergraduate Research Opportunity Program (UROP)

Spring Research Symposium (2017)

President's Advisory Council for Women's Issues (PACWI)

Member, University of Michigan (2013-2015)

University of Michigan Postdoctoral Association

Secretary (2015-2017), Co-Chair (2013-2014), Member (2012-2018)

- Assisted in fund-raising, organizing, and hosting the Regional Meeting for the National Postdoctoral Association (2013)
- Designed the annual Outstanding Post-Doctoral Award (2015)

Future of Bioscience Graduate and Postdoctoral Training

Rackham Graduate School, University of Michigan, May 3rd – 5th, 2015.

Served as a scribe to preserve the ideas and approaches generated during this forum

Future of Bioscience Graduate and Postdoctoral Training 2

University of Colorado, Denver-Anschutz Medical Campus, June 8th – 10th, 2017

Scientific Paper Review

2006-present, individually and with Prof. Marisa C. Kozlowski and Prof. David H. Sherman. Reviewed or helped to review >20 manuscripts.

Writing and Editing:

Proposal Development Institute, Office of Sponsored Programs, Virginia Tech

Proposal Writing Group, College of Science, Virginia Tech

Master Course in Professional Program Development and Funding Certification

Science Editing, Manuscript Assistance for Non-native English Speakers

Electronic Notebooks

Grants and Programs:

Pioneering new routes for antibiotic development: Using computational modeling and medicinal chemistry to reconfigure cytotoxins as bacteria-selective antibiotics.

Commonwealth Health Research Board. Commonwealth of Virginia, 2023-2025. \$200,000. Co-PI: Anne M. Brown, PhD.

SAR Studies on Pleuromutilin Antibiotic Derivatives as Covalent Inhibitors. **VTCDD.** Virginia Tech, 2023. \$10,000.

Potential of the bitter melon Momordica charantia as a source of anthelmintics. **NIAID.** 2023-2025. \$275,000. PI: John Hawdon, PhD (GWU). Co-PIs: Cynthia Dowd, PhD (GWU).

Identification of Novel Anti-obesity and Anti-diabetic Small Molecular Compound.

Ritchey Fund. Virginia Tech, 2023-2024. \$30,192. PI: Dongmin Liu, PhD. Co-PIs: Elizabeth Gilbert, PhD, Mark Cline, PhD.

Pioneering new routes for antibiotic development: Specializing and rationally pairing drugs. **Lay Nam Chang Dean's Discovery Fund.** Virginia Tech, 2022-2023. \$38,069. Co-PI: Anne M. Brown, PhD.

Accelerating Late-Stage Drug Functionalization for RNA Viruses. **ICTAS Junior**

Faculty Grant. Virginia Tech, 2022-2024. \$80,000. PI: Anne M. Brown, PhD. CoPIs: Sanket Deshmukh, PhD; James Weger-Lucarelli, PhD.

*Pioneering new routes for antibiotic development: Using computational modeling and medicinal chemistry to reconfigure chemotherapeutics as selective antibiotics. **CeZAP Interdisciplinary Team-building Pilot Grant.*** Virginia Tech, 2021-2022. \$20,000. Co-PI: Anne M. Brown, PhD.

*Lab Planning Grant **Office of Undergraduate Education.*** Virginia Tech, 2021-2022. \$2,000.

*Integrating Computational and Wet-Lab Research Techniques into a Comprehensive, Flexible Research Training Environment. **Undergraduate Research Faculty Mini Grant.*** Virginia Tech, 2021. \$3,500. Co-PI: Anne M. Brown, PhD.

*A hybrid evolutionary algorithm to accelerate late-stage functionalization: Validation and improving drug leads utilizing SARS-CoV-2 Mpro as a target. Co-PI. **Data & Decisions Destination Area Concept Grant.*** Virginia Tech, 2021-2022. \$10,000. PI: Anne M. Brown, PhD.

*Mentoring Project Grant, **Virginia Tech Office of the Executive Vice President and Provost.*** Virginia Tech, 2019-2021. \$1,500.

*Alternative Approaches for Overcoming Drug-resistant Bacteria: Screening for Adjuvants that Reinvigorate Antiquated Antibiotics **Virginia Tech Center for Drug Discovery Seed Grant.*** Virginia Tech, 2018-2019. \$5,000. Co-PI: Pablo Sobrado, PhD.

*Structural studies of the juvenimicin polyketide synthases. **Life Sciences Institute Cubed Grant.*** University of Michigan, 2016-2018. \$10,000. Co-PIs: Meredith Skiba, Kinshuk Srivastava

Training and Certifications:

Bruker Service and Maintenance Certified
Beckmann Centrifuge Certified
Responsible Conduct in Research Training
General Laboratory Safety Training
Bloodborne Pathogens Training
Biosafety Level 2 Training
NAUI Basic and Advanced SCUBA Diving Certified

Other Experience:

NMR Facility Manager, Life Sciences Institute, University of Michigan, 2014-2015.
Maintained Varian 600 and Varian 400 magnets and assisted in hiring a permanent staff member.
PharmaForensics Laboratories, Contract Consultant, conducted experiments and subsequently testified as an expert witness in a patent trial, 2013-2016