Bo Li, Ph.D.

A) PERSONAL

Genome Sciences Building 3256
Department of Chemistry
The University of North Carolina, Chapel Hill, NC 27599-3290
Phone: 919-843-4436
Email: boli@email.unc.edu
Website: http://www.chem.unc.edu/people/faculty/li/group/index.html

B) EDUCATION

Ph.D. Biochemistry, University of Illinois at Urbana-Champaign — 2004 – 2009
Advisor: Wilfred A. van der Donk — Urbana, IL
Thesis title: Mechanistic studies of lantibiotic biosynthetic enzymes and discovery of novel lanthionine-containing peptides

B.S. Biological Sciences, Beijing University — 2000 – 2004
Advisors: Yuxian Zhu and Hong Cai — Beijing, China
Thesis title: Novel DNA vaccines against *Mycobacterium tuberculosis*

C) PROFESSIONAL EXPERIENCE

Associate Professor, The University of North Carolina at Chapel Hill — 2019 – present
Department of Chemistry, Department of Microbiology and Immunology — Chapel Hill, NC

Assistant Professor, The University of North Carolina at Chapel Hill — 2013 – 2019
Department of Chemistry, Carolina Center for Genome Sciences — Chapel Hill, NC

Postdoctoral Fellow, Harvard Medical School — 2009 – 2013
Department of Biological Chemistry and Molecular Pharmacology — Boston, MA
Advisor: Christopher T. Walsh

Visiting Scholar, University of California, San Francisco — Oct, 2012
Department of Microbiology and Immunology — San Francisco, CA
Collaborator: Carol A. Gross

Visiting Scholar, John Innes Centre, UK — Summer, 2011
Department of Molecular Microbiology — Norwich, UK
Collaborator: Mervyn Bibb

D) HONORS

National Institutes of Health Director's New Innovator Award — 2017
National Science Foundation CAREER Award — 2017
Packard Fellowship for Science and Engineering — 2016
Rita Allen Foundation Scholars — 2016
NIH Pathway to Independence Award (K99/R00) — 2012

Postdoctoral Travel Award (Harvard Medical School) 2012
Jane Coffin Childs Postdoctoral Fellowship (Howard Hughes Medical Institute) 2011
Biochemistry Trust of Urbana Ph.D. Thesis Award (UIUC) 2010
Guanghua Scholarship for Academic Excellence (Beijing University) 2002

E) BIBLIOGRAPHY

**denotes corresponding author*

Refereed Publications from Independent Research at UNC-Chapel Hill

30. Morgan, G.L., Li, K., Crawford, D.M., Aube, J., **Li, B.*** "Enzymatic synthesis of diverse heterocycles by a noncanonical nonribosomal peptide synthetase." ***ACS Chem. Biol.***, 16, 2776-2786 (2021).

29. Patteson, J.B., Putz, A.T., Tao, L., Simke, W.C., Bryant, L.H.III, Britt, R.D., **Li, B.*** "Biosynthesis of fluopsin C, a copper-containing antibiotic from *Pseudomonas aeruginosa*," ***Science,*** 374, 1005-1009 (2021).

28. Johnson, R.A., Chan, A.N., Ward, R.D., McGlade, C.A., Hatfield, B.M., Peters, J.M., **Li, B.*** **"**Inhibition of isoleucyl-tRNA synthetase by the hybrid antibiotic thiomarinol." ***J. Am. Chem. Soc.,*** 31, 12003-12013 (2021).

27. Kretsch, A.M., Morgan, G.L., Acken, K.A., Barr, S.A., **Li, B.*** "Pseudomonas virulence factor pathway synthesizes autoinducers that regulate the secretome of a pathogen." ***ACS Chem. Biol.***, 16, 501–509 (2021).

26. Morgan, G.L., **Li, B.*** "*In vitro* reconstitution reveals a central role for the N-oxygenase PvfB in (dihydro)pyrazine-*N*-oxide and valdiazen biosynthesis," ***Angew. Chem. Int. Ed.***, 59, 21387–21391 (2020).

25. Morgan, G.L., Kretsch, A. M, Santa Maria, K.C., Weeks, S.J., **Li, B.*** "Specificity of nonribosomal peptide synthetases in the biosynthesis of the *Pseudomonas virulence factor*," ***Biochemistry***, 58, 5249–5254 (2019).

    Published in the "***Current Topics in Mechanistic Enzymology 2019***" Special Issue

24. Patteson, J.B., Lescallette, A.R., **Li, B.*** "Discovery and biosynthesis of azabicyclene, a conserved nonribosomal peptide in *Pseudomonas aeruginosa*," ***Org. Lett.***, 21, 4955–4959 (2019)

23. Santa Maria, K.C., Chan, A.N., O'Neill, E.M., **Li, B*** "Targeted rediscovery and biosynthesis of the farnesyl-transferase inhibitor pepticinnamin E," ***ChemBioChem***, 20, 1387–1393 (2019).

    Published in the "***CHEMBIOTALENTS***" Special Issue
    Selected as *Very Important Paper*

22. Chan, A.N., Wever, W.J., Massolo, E., Allen, S.E., **Li, B.*** "Reducing the holomycin thiosulfonate to its disulfide with thiols," ***Chem. Res. Toxicol.***, 32, 400–404 (2019).

21. Pellock, S.J., Walton, W.G., Ervin, S.M, Torres-Rivera, D., Creekmore, B.C., Bergan, G., Dunn, Z.D., **Li, B.**, Tripathy, A., Redinbo, M.R. "Discovery and characterization of FMN-Binding β-glucuronidases in the human gut microbiome," ***J. Mol. Biol.***, 431, 970–980 (2019).

20. O'Neill, E.M., Mucyn, T.S., Patteson, J.B., Finkel, O.M., Chung, E-H., Baccile, J.A., Massolo, E., Schroeder, F.C., Dangl, J.L., **Li, B.*** "A new bacterial small molecule suppresses plant immune response," ***Proc. Nat. Acad. Sci. U.S.A.***, 115, E9514–E9522 (2018).

19. Kretsch, A.M., Morgan, G.L., Tyrrell, J., Mevers, E., Vallet-Gély, E., **Li, B.*** "Discovery of

(dihydro)pyrazine *N*-oxides via genome-mining in *Pseudomonas*," ***Org. Lett.***, 20, 4791–4795 (2018).

18. Pellock, S., Creekmore, B., Walton, W., Mehta, N., Biernat, K., Cesmat, A., Ariyarathna, Y., Dunn, Z.D., **Li, B.**, Jin, J., James, L., Redinbo, M. "Piperazine-containing inhibitors intercept the catalytic cycle of gut microbial β-glucuronidases," ***ACS Cent. Sci.***, 4, 868–879 (2018).

17. Patteson, J.B., Dunn, Z.D., **Li, B.*** "*In vitro* biosynthesis of the nonproteinogenic amino acid methoxyvinylglycine," ***Angew. Chem. Int. Ed.***, 57, 6780–6785 (2018).

16. Biernat, K.A., **Li, B.**, Redinbo, M.R.* "Microbial unmasking of plant glycosides," ***mBio***, 9, e02433–17 (2018). (*Invited Commentary*)

15. Patteson, J.B., Cai, W., Johnson, R.A., Santa Maria, K.C., **Li, B.*** "Identification of the biosynthetic pathway for the antibiotic bicyclomycin," ***Biochemistry***, 57, 61–65 (2018).

    Published in the "***Future of Biochemistry***" Special Issue
    Highlighted in *Viewpoint* article: Chekan J.R., Moore B.S. "Biosynthesis of the antibiotic bicyclomycin in soil and pathogenic bacteria," ***Biochemistry***, 57, 897–898 (2018).

14. Chan, A.N.**,** Shiver, A.L., Weaver, W.J., Razi, S.Z.A., Traxler, M.F., **Li, B.*** "Role for dithiolopyrrolones in disrupting bacterial metal homeostasis," ***Proc. Nat. Acad. Sci. U.S.A.,*** 10, 2717–2722 (2017).

    Highlighted in ***Chemical & Engineering News*** "Mode of action for unusual antibiotic found," 95, 10 (2017).

13. Shiver, A.L., Osadnik, H., Kritikos, G., **Li, B.**, Krogan, N., Typas, A., Gross, C.A.* "A chemical-genomic screen of neglected antibiotics reveals illicit transport of kasugamycin and blasticidin S," ***PLoS Genet.***, 12, e1006124 (2016).

12. Chan, A.N., Santa Maria, K.C., **Li**, **B.*** "Direct capture technologies for genomics-guided discovery of new natural products," ***Curr. Top. Med. Chem.,*** 16, 1695–1704 (2016). (*Invited Review*)

11. Dunn, Z.D., Weaver, W.J., Economou, N.J., Bowers, A.A., **Li, B.*** "Enzymatic basis of 'hybridity' in thiomarinol biosynthesis," ***Angew. Chem. Int. Ed.***, 54, 5137–5141(2015).

10. **Li, B.***, Weaver, W.J., Walsh, C.T., Bowers, A.A. "Dithiolopyrrolones: biosynthesis, synthesis, and activity of a unique class of disulfide-containing antibiotics," ***Nat. Prod. Rep.***, 31, 905–923 (2014). (*Invited Review*)

Refereed Publications Prior to UNC-Chapel Hill

9. Ortega, M.A., Cogan, D.P., Mukherjee, S., Garg, N., **Li, B.**, Maffioli, S., Donadio, S., Sosio, M., Escano, J., Smith, J.L., Nair, S.K., van der Donk, W.A. "Two flavoenzymes install 5-chlorotryptophan and 2-aminovinyl cysteine during the biosynthesis of the lantibiotic NAI-107," ***ACS Chem. Biol.*** 12, 548–557 (2017).

8. **Li, B.**, Forseth, R.R., Bowers, A.A., Schroeder, F.C., Walsh, C.T. "A backup plan for self-protection: S-methylation of holomycin biosynthetic intermediates in *Streptomyces clavuligerus,*" ***ChemBioChem***, 13, 2521–2526 (2012).

    Highlighted in *Chem. Eur. J.,* 18, 15904 (2012).

7. **Li, B.**, Walsh, C.T. "*Streptomyces clavuligerus* HlmI is an intramolecular disulfide-forming dithiol oxidase in holomycin biosynthesis," ***Biochemistry***, 50, 4615**–**4622 (2011).

6. **Li, B.**, Walsh, C.T. "Identification of the gene cluster for the dithiolopyrrolone antibiotic holomycin in *Streptomyces clavuligerus,*" ***Proc. Natl. Acad. Sci. U.S.A.***, 107, 19731–19735 (2010).

5. **Li, B.**, Sher, D., Kelly, L., Shi, Y., Huang, K., Knerr, P.J., Joewono, I., Rusch, D. Chisholm, S.W., van der Donk, W.A. "Catalytic promiscuity in the biosynthesis of cyclic peptide secondary metabolites in planktonic marine cyanobacteria," ***Proc. Natl. Acad. Sci. U.S.A.***, 107, 10430–10435 (2010).

   Highlighted in "A most versatile enzyme," ***Chemical and Engineering News*****,** 88, 56 (2010). **Also listed as the 5th most-read paper online at *Proc. Natl. Acad. Sci. U.S.A.* in June, 2010**

4. Goto, Y., **Li, B.**, Claesen, J., Shi, Y., Bibb, M.J., van der Donk, W.A. "Discovery of unique lanthionine synthetases reveals new mechanistic and evolutionary insights," ***PLoS Biol.***, 8, e1000339 (2010).

3. **Li, B.**, Cooper, L.E., van der Donk, W.A. "Chapter 21. *In vitro* studies of lantibiotic biosynthesis," ***Methods Enzymol.***, 458, 533–558 (2009). (*Review*)

2. **Li, B.**, van der Donk, W.A. "Identification of essential catalytic residues of the cyclase NisC involved in the biosynthesis of nisin," ***J. Biol. Chem.***, 282, 21169–21175 (2007).

1. **Li, B.**, Yu, J.P., Brunzelle, J.S., Moll, G.N., van der Donk, W.A., Nair, S.K. "Structure and mechanism of the lantibiotic cyclase involved in nisin biosynthesis," ***Science***, 311, 1464–1467 (2006).

   Highlighted in perspective "Five golden rings," ***Science***, 311, 1382–3 (2006); "Antimicrobials: A ringing success," ***Nature Reviews Microbiol.***, 4, 322–3 (2006); "Resisting the resistance," ***ACS Chem. Biol.*****,** 1, 119 (2006); "Nisin engineered in test tube," ***Chemical and Engineering News*****,** 84, 9 (2006).

Book Chapter

1. Cooper, L.E., **Li, B.**, van der Donk, W.A. "Biosynthesis and mode of action of lantibiotics," In ***Comprehensive Natural Products Chemistry II***, Eds. Mander, L., Liu, H-w., (May 2010).

Invited Meeting and Conference Oral Presentations

Scheduled

25. Society for Industrial Microbiology and Biotechnology Annual Meeting, San Francisco, CA (Aug 7–10, 2022)
24. 2022 American Society of Pharmacognosy Annual Meeting, Charleston, SC (Jul 23–28, 2022)
23. Biocatalysis Gordon Research Conference, Manchester, NH (Jul 10–15, 2022)

Completed

22. "Biosynthesis of fluopsin C, a copper-containing antibiotic from *Pseudomonas aeruginosa*", 27th Enzyme Mechanisms Conference, Tucson, AZ (Jan 2–6, 2022)
21. "Biosynthesis of fluopsin C, a copper-containing antibiotic from *Pseudomonas aeruginosa*", The International Chemical Congress of Pacific Basin Societies (Pacifichem) 2021, Honolulu, HI (Dec 16–21, 2021)
20. "Biosynthesis of nonproteinogenic amino acids", The International Chemical Congress of Pacific Basin Societies (Pacifichem) 2021, Honolulu, HI (Dec 16–21, 2021)
19. "Mighty chemistry of bacterial small molecules as antibiotics", American Chemical Society National Meeting, Atlanta, GA (Aug 22–26, 2021)
18. "Mighty chemistry of bacterial small molecules as antibiotics", Natural Products: From Discovery to Therapeutic Applications Symposium, New York Academy of Sciences (Mar 18, 2020)

17. “Mighty chemistry of bacterial small molecules,” 3rd International Conference on Natural Products Discovery and Development in the Genomic Era, San Diego, CA (Jan 12–16, 2020)
16. “Mighty chemistry of bacterial small molecules,” 30th Quebec/Ontario Mini-symposium for Synthetic and Bioorganic Chemistry Plenary Lecture, Ottawa, Canada (Nov 8–10, 2019)
15. “Novel natural products from pseudomonads,” Society for Industrial Microbiology and Biotechnology Annual Meeting, Washington, D.C. (July 21–24, 2019)
14. “Metals and mechanism of dithiolopyrrolones,” Metals in Biology Gordon Research Conference, Ventura, CA (Jan 27–Feb 1, 2019)
13. “Targeting metalloenzymes for antimicrobial therapy,” The 70th Southeastern Regional Meeting of American Chemical Society, Augusta, GA (Oct 31–Nov 3, 2018)
12. “A new bacterial small molecule suppresses plant immune response,” Society for Industrial Microbiology and Biotechnology Annual Meeting, Chicago, IL (Aug 12–16, 2018)
11. “Metal-chelating antibiotics and natural products,” Metals in Medicine Gordon Research Conference, Andover, NH (June 24–29, 2018)
10. “Biosynthesis of nonproteinogenic amino acids,” American Society for Biochemistry and Molecular Biology Annual Meeting, San Diego, CA (Apr 21–25, 2018)
9. “Mighty chemistry of bacterial small molecules,” American Chemical Society National Meeting, New Orleans, LA (Mar 18–22, 2018) *ACS Chemical Biology* Lectureship Symposium
8. “Biosynthesis of nonproteinogenic amino acids,” The Southeastern Regional Meeting of the American Chemical Society, Charlotte, NC (Nov 8–10, 2017)
7. “Biosynthesis of nonproteinogenic amino acids,” Enzymes, Coenzymes, and Metabolic Pathways Gordon Research Conference, Waterville, NH (July 16–21, 2017)
6. “Dithiolopyrrolones as antibiotics and organocatalysts for protein oxidation,” Bioorganic Chemistry Gordon Research Conference, Andover, NH (June 11–16, 2017)
5. “Chemistry and Social Life of Bacteria,” 9th US-Japan Seminar on the Biosynthesis of Natural Products, Lake Arrowhead Conference Center, University of California at Los Angeles, Los Angeles, CA (May 30–June 4, 2017)
4. “Deciphering the logic of natural product biosynthesis,” American Society for Biochemistry and Molecular Biology Annual Meeting, Chicago, IL (Apr 22–26, 2017)
3. “Mining genomes for antibiotics and signaling molecules,” Directing Biosynthesis V, Warwick, UK (Mar 22–24, 2017)
2. “From amide forming enzymes to discovery and engineering of bioactive molecules,” The International Chemical Congress of Pacific Basin Societies (Pacifichem) 2015, Honolulu, HI (Dec 15–20, 2015)
1. “Discovering and deciphering natural product biosynthetic pathways in the era of synthetic biology,” Society for Industrial Microbiology and Biotechnology Annual Meeting, St. Louis, MO (July 20–24, 2014)

Invited University and Institution Lectures

Scheduled

24. University of Nebraska-Lincoln, Department of Chemistry, Lincoln, NE (Sep 2, 2022)

Completed

23. University of Wisconsin-Madison, Pharmaceutical Sciences Division, School of Pharmacy, Madison, WI (Apr 15, 2022)
22. Northwestern University Chemistry Colloquium, Department of Chemistry, Evanston, IL (Oct 2, 2019)
21. College of Charleston, Charleston, SC (Oct 18, 2018)
20. Memorial Sloan Kettering Cancer Center, Chemical Biology Program, New York, NY (Oct, 9, 2018)
19. University of Minnesota, Department of Medicinal Chemistry, Chemical Biology Initiative, Minneapolis, MN (Oct 1, 2018)
18. The University of North Carolina at Chapel Hill, Department of Microbiology and Immunology, Chapel Hill, NC (Sep 18, 2018)
17. University of California, San Francisco, Department of Pharmaceutical Chemistry, San Francisco, CA (May 17, 2018)
16. Stanford University, Department of Chemical Engineering, Palo Alto, CA (May 16, 2018)
15. Harvard University, Chemistry and Chemical Biology, Cambridge, MA (May 11, 2018)
14. University of California, San Diego, Scripps Institute of Oceanography, San Diego, CA (Apr 26, 2018)
13. Cornell University, Department of Chemistry, Ithaca, NY (Mar 12, 2018)
12. Texas Agricultural and Mechanical University, Department of Chemistry, College Station, TX (Feb 23, 2018)
11. Yale University, Department of Chemistry, New Haven, CT (Feb 15, 2018)
10. University of Texas at Austin, Department of Chemistry, Austin, TX (Feb 9, 2018)
9. University of Chicago, Department of Chemistry, Chicago, IL (Oct 17, 2017)
8. The University of Illinois at Urbana-Champaign, Department of Chemistry, Urbana, IL (Oct 16, 2017)
7. University of Manchester, Manchester Institute of Biotechnology, Manchester, UK (Mar 27, 2017)
6. John Innes Centre, Molecular Microbiology, Norwich, UK (Mar 20, 2017)
5. Oxford University, Department of Chemistry, Oxford, UK (Mar 17, 2017)
4. University of Wisconsin-Madison, Distinguished Lecture in Microbiology, Madison, WI (Oct 20, 2016)
3. Marshall University, Department of Chemistry, Huntington, WV (Nov 3, 2015)
2. The University of North Carolina at Chapel Hill, Department of Cell Biology and Physiology, Chapel Hill, NC (Nov 17, 2014)
1. Wake Forest University, Departments of Chemistry and Biochemistry, Wake Forest, NC (Oct 23, 2013)

Conference abstracts (poster presentations)

8. “Identification of the biosynthetic pathway for the antibiotic bicyclomycin,” Enzymes, Coenzymes, and Metabolic Pathways Gordon Research Conference, Waterville, NH (July 22–27, 2018)
7. “A new bacterial small molecule suppresses plant immune response,” Bioorganic Gordon Research Conference, Andover, NH (June 10–15, 2018)
6. “A new bacterial small molecule suppresses plant immune response,” American Society for Biochemistry and Molecular Biology Annual Meeting, San Diego, CA (Apr 21–25, 2018)
5. “Reactivity and antimicrobial mechanism of dithiolopyrrolones,” Enzymes, Coenzymes, and Metabolic Pathways Gordon Research Conference, Waterville, NH (July 24–29, 2016)

4. “Reactivity and antimicrobial mechanism of dithiolopyrrolones,” Bioorganic Chemistry Gordon Research Conference, Andover, NH (June 5–10, 2016)
3. “Microbial small molecules in plant infection and biocontrol,” Microbial and Plant Systems Modulated by Secondary Metabolites Meeting, Walnut Creek, CA (May 2–4, 2016)
2. “From amide forming enzymes to discovery and engineering of bioactive molecules,” Enzymes, Coenzymes, and Metabolic Pathways Gordon Research Conference, Waterville, NH (July 12–17, 2015)
1. “Mapping the biosynthesis and reactivity of dithiolopyrrolone antibiotics,” Enzymes, Coenzymes, and Metabolic Pathways Gordon Research Conference, Waterville, NH (July 13–17, 2014)

F) TEACHING ACTIVITIES

Courses Taught at UNC-Chapel Hill

2022 Spring	Chemical Biology (CHEM 730) Enrollment: 9 graduate students (3 credit hours)
2021 Spring	Chemical Biology (CHEM 730) Enrollment: 17 graduate students (3 credit hours)
2020 Spring	Chemical Biology (CHEM 730) Enrollment: 12 graduate students (3 credit hours)
2019 Spring	Metabolic Chemistry and Cellular Regulatory Networks (CHEM 432) Enrollment: 46 undergraduate students (3 credit hours)
2018 Spring	Metabolic Chemistry and Cellular Regulatory Networks (CHEM 432) Enrollment: 58 undergraduate students (3 credit hours)
2017 Spring	Metabolic Chemistry and Cellular Regulatory Networks (CHEM 432) Enrollment: 71 undergraduate students (3 credit hours)
2017 Spring	Seminar in Biological Chemistry (CHEM 731) Enrollment: 18 Ph.D. students (2 credit hours)
2016 Spring	Metabolic Chemistry and Cellular Regulatory Networks (CHEM 432) Enrollment: 65 undergraduate students (3 credit hours)
2016 Spring	Seminar in Biological and Biomedical Sciences (BBSP 902) Enrollment: 15 Ph.D. students (2 credit hours)
2015 Fall	Seminar in Biological and Biomedical Sciences (BBSP 902) Enrollment: 15 Ph.D. students (2 credit hours)
2014 Fall	Macromolecular Structure and Function (CHEM 732) Enrollment: 9 Ph.D. students (3 credit hours)
2014 Spring	Chemical Biology (CHEM 730) Enrollment: 15 Ph.D. students and 1 undergraduate student (3 credit hours)
2013 Fall	Macromolecular Structure and Function (CHEM 732) Enrollment: 15 Ph.D. students and 1 undergraduate student (3 credit hours)

Research courses (1 undergraduate student and 6 graduate students mentored on average per year)

2013–current	Research in Chemistry for Undergraduates (CHEM 395 and 692) Enrollment: 4 undergraduate students (3 credit hours)
2013–current	Master’s and Doctoral Research in Chemistry (CHEM 992, 993, 994) Enrollment: 17 chemistry thesis students (3 credit hours)

2013–current Research in Biological and Biomedical Sciences (BBSP 903)
Enrollment: 11 BBSP rotation students (1.5 credit hours)

Graduate students supervised

17. Caitlin Vitro 2022 – present
    B.S. Binghamton University, State University of New York
16. Olivia Steiner 2022 – present
    B.S. Tufts University
15. Torhera Durand 2021 – present
    B.S. University of the Virgin Islands, U.S. Virgin Islands
14. Will Simke 2020 – present
    M.S. University of Maine, Orono, ME
13. Drake Crawford 2020 – present
    B.S. University of Tennessee, Knoxville, TN
12. Xiaoyan Chen 2018 – present
    B.S. Sun Yat-sen University, Guangzhou, China
11. Rachel M. Johnson 2018 – present
    B.S. Miami University, Miami, FL
10. Adam Lescallette 2017 – present
    B.S. Juniata College, Huntingdon, PA
9. Katie Acken 2017 – present
    B.S. North Carolina State University
8. Rachel A. Johnson 2016 – present
    M.S. East Carolina University
7. Jonathan Patteson 2015 – 2021 (Ph.D. Aug. 2021)
    B.S. University of Richmond
    Thesis: Biosynthesis of *Pseudomonas aeruginosa* natural products
6. Gina Morgan 2015 – 2020 (Ph.D. Oct. 2020)
    B.S. Regis University, Denver, CO
    Thesis: Biosynthesis of small molecules produced by the Pseudomonas virulence factor
5. Andrew Chan 2013 – 2019 (Ph.D. Apr. 2019)
    B.S. The University of North Carolina Chapel Hill
    Thesis: Mode of action of dithiolopyrrolone antibiotics
4. Ashley Kretsch 2013 – 2019 (Ph.D. Mar. 2019)
    Thesis: Mining the *Pseudomonas virulence factor* pathway for novel small molecules
    B.S. Harvey Mudd College
3. Kevin Santa Maria 2013 – 2019 (M.S. 2021)
    B.S. University of Connecticut
2. Erinn O'Neill 2013 – 2019 (Ph.D. Jan. 2019)
    Thesis: Connecting genes to molecules: identifying small molecules from phytopathogenic bacteria
    B.S. Drew University
1. Zachary Dunn 2013 – 2018 (Ph.D. May 2018)
    Thesis: Characterization of biosynthetic enzymes of thiomarinol and oxyvinylglycines
    B.S. Wheaton College

Postdoctoral fellows supervised

5. Ryan Mull 1/2022 – present
   Ph.D. University of Nevada, Reno (Advisor: Yftah Tal-Gan)
4. Qiang Guo 4/2020 – present
   Ph.D. Michigan State University (Advisor: Gregg Howe)
3. Elissabetta Massolo 1/2017 – 12/2017
   Ph.D. University of Milan, Italy (Advisor: Maurizio Benaglia)
   Current position: Flamma SpA, Italy
2. Wenlong Cai 10/2015 – 10/2016
   Ph.D. University of Kentucky (Advisor: Steven van Lanen)
   Current position: Zymergen, Emeryville, CA
1. Jillian Tyrrell 7/2013 – 4/2015
   Ph.D. The University of North Carolina Chapel Hill (Advisor: Gary Pielak)
   Current position: Illumina, San Diego, CA

Undergraduate students supervised

10. Jack Roche 5/2022 – present
9. Henry Bryant 1/2019 – 5/2022
   Honors Thesis: Fluopsin C mode of action and *Pseudomonas aeruginosa* self-resistance mechanism
8. Martina Knechel 6/2016 – 5/2018
   Honors Thesis: Characterizing a novel signaling pathway in *Pseudomonas entomophila*: elucidation of the signal cascade initiated by *Pseudomonas virulence factor* through transposon mutagenesis
   Current Position: Medical student at the University of Virginia School of Medicine
7. Savannah Weeks 6/2015 – 5/2018
   Current Position: PhD student at the University of Florida
6. Evan Xu 1/2016 – 9/2016
5. Kiera Brigh Turner 1/2015 – 12/2015
4. Emily Batchelor 8/2015 – 11/2015
3. Holly Ozgun 1/2015 – 5/2015
2. Courtney Whitaker 5/2013 – 5/2014
1. Peter Fan 5/2013 – 8/2013

G) GRANTS

Current Support as PI

Packard Summer Research Fellowship
Title: Enhancing Retention and Success of URG Students through STEM Summer Research
Role: Principal Investigator
Support (total): $50,000 *Direct amount*: $43,476
Dates: 1/1/2022–12/31/2023

National Institutes of Health Director's New Innovator Award (DP2)
Title: Mining Genomes for Synergistic Antibiotics
Role: Principal Investigator
Support (total): $2,332,500 *Direct amount*: $1,500,000

Dates: 9/30/2017–6/30/2022
Overall goal: Mine bacterial genomes for synergistic combinations of antibiotics with potentially novel synergistic mechanisms that will combat antibiotic resistance

National Science Foundation CAREER Award
Title: CAREER: Combining Chemistry with Bioinformatics to Discover Novel Transformations of Nonproteinogenic Amino Acids
Role: Principal Investigator
Support (total): $800,000 *Direct amount*: $561,784
Dates: 7/15/2017–6/30/2023
Overall goal: Characterize the transformations in the biosynthesis of oxyvinylglycines

Packard Fellowship for Science and Engineering
Title: Natural Antibiotic Cocktails for Combination Therapy
Role: Principal Investigator
Support (total): $875,000 *Direct amount*: $787,500
Dates: 11/15/2016–11/14/2023
Overall goal: Characterize the biosynthetic chemistry of naturally occurring hybrid antibiotics and engineer new antibiotic hybrids

Rita Allen Foundation Scholars Award
Title: Discovering Neuroactive Metabolites at the Gut-Brain Axis
Role: Principal Investigator
Support (total): $500,000 *Direct amount*: $500,000
Dates: 9/1/2016–8/31/2023
Overall goals: Identify novel bioactive small molecules from the gut microbiota that affect brain activity; examine the roles of these bioactive small molecules in neurological signaling

Completed Support as PI

National Institutes of Health Pathway to Independence Award
Title: Dithiolopyrrolone Antibiotics: Biosynthesis, Mode of Action and Cellular Function
Role: Principal Investigator
Support (total): $750,000 *Direct amount*: $503,665
Dates: 8/12/2013–6/30/2017
Overall goals: Investigate the unusual redox chemistry in the biological synthesis and antimicrobial mode of action of dithiolopyrrolone antibiotics

Support as Co-PI

National Science Foundation Major Research Instrumentation Program
Title: MRI: Upgrade of a 600 MHz Spectrometer for high-sensitivity Nuclear Magnetic Resonance
Role: Co-investigator (other Co-PIs: Jeff Johnson, Gary Pielak, Jillian Dempsey, Alex Miller)
Support: $444,750
Dates: 10/1/2018–9/30/2021
Overall goals: Replace console and add cryoprobe on the 600 MHz NMR spectrometer at the Chemistry Core Facilities

H) PROFESSIONAL SERVICE

Service to Chemical Biology Discipline

Memberships

American Chemical Society	2010 – current
Society for Industrial Microbiology and Biotechnology	2013 – current

Reviewers for journals

ACS Catalysis, ACS Chemical Biology, Biochemistry, Cell, Cell Chemical Biology, Chemical Science, Journal of American Chemical Society, Journal of Biological Chemistry, *Nature, Nature Biotechnology, Nature Chemical Biology, Natural Product Report*, *Organic Letters, PLoS One, PLoS Pathogens, Science*

Reviewer for grant proposals

National Science Foundation (2015, 2020)
National Institutes of Health (2020)

Conference discussion leader

Enzymes, Coenzymes, and Metabolic Pathways Gordon Research Conference, Waterville, NH (July 22–27, 2018)

Professional Service within UNC-Chapel Hill

Department of Chemistry Committees

Chemistry Faculty Search Committee	2021
Graduate Studies Educational Committee	2021 – present
Chemistry/Pharmacology/Integrative Program for Biological and Genome Sciences (iBGS) Faculty Search Committee	2018, 2019
Graduate recruiting Committee	2018 – 2021
Undergraduate Studies Committee	2017 – 2021
Bioorganic Chemistry Faculty Search Committee	2016, 2017
Departmental Library Liaison	2014 – present
Graduate Studies and Admissions Committee	2013 – 2014

Graduate Student Dissertation Committees

Ph.D. Dissertation Committees: Matthew Campbell, Kevin Philip Schultze, Kaitlin Fague, Amy Rydeen, Rachel Cohen, Joshua Gober, Danielle Slomberg, Stephanie Moore, Christina Marvin, Lei Yang, Christine Kirkpatrick, Annelise Gorensek, Stefanie Baril, Blane Zavesky, Lauren St. Louis, Katherine Simpson, Julie Mcintosh, Samuel Pellock (chair), Kristen Biernat, Christina Na, Jennifer Fulton, James Keating, Joshua Mcmanus, Nicole Parsley, Matthew Horton, Samantha Stadmiller (chair), Adam Sowers, Shannon Speer, Brianna Vickerman (chair), Samantha Ervin, Catherine Giannetti (chair), Claire Stewart (chair), Joey Thole, Josh Simpson (chair), Morgan Gibbs, Parth Jariwala, Ju-Sung Kim, Julia Brom, I-Te Chu (chair), Christopher Travis (chair), Benjamin Allen (chair), Caylie McGlade (chair), Kevin Coghlan, Emily Beard (chair)

Master's Dissertation Committees: Richard Watkins, Adrienne Snyder, Hailey Taylor

Undergraduate Honors Thesis Committees

Larry Zhou, Sam Reed, Meredith Park, Luke Soliman, Gerardo Perez-goncalves (chair), Sidney Lisanza (chair), Josh Gray (chair), Kaiyun Guan (chair), Jerry Wei (chair), Maggie Fogle (chair), Benjamin Carry (chair), Owen Warmuth (chair), Jarett Story (chair), Sophia Hazlett, Victor Ilevbare

University Committee

Packard Fellows Selection Committee (2019)
Rita Allen Scholars Selection Committee (2016)

Professional Service to Community

Laboratory Tours: Girls Advancing in STEM Conference (2016)

Outreach: NC Science Expo (2016, 2017, 2018, 2019, 2022)

Panelist: Women in Science (WinS) and Women In Science and Engineering (WISE) Meet Your Match: Scientific Speed Networking (2015)