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A. RESEARCH INTEREST

My research program primarily focuses on developing and synergistically combining diverse sets of approaches to discover and develop small molecules and biologics as new therapeutic leads that address significant unmet medical needs, particularly those for obesity, cardiovascular, cancer, diabetic, and infectious diseases. Researchers in the lab gain broad training spanning medicinal chemistry, organic chemistry, natural products, biochemistry, microbiology, molecular biology, cell biology, mechanistic enzymology, protein engineering, and synthetic biology.

B. EDUCATION AND RESEARCH EXPERIENCE

- 2022-present Associate Director **Center for Natural Products, Drug Discovery and Development, College of Pharmacy, University of Florida, Gainesville, FL**
- 2020-present Associate Professor **Department of Medicinal Chemistry, College of Pharmacy, University of Florida, Gainesville, FL**
- 2013-2020 Assistant Professor **Department of Medicinal Chemistry, College of Pharmacy, University of Florida, Gainesville, FL**
- 2012-2013 Principal Scientist **Bioprocess Development Group, Pfizer, Kalamazoo, MI**
Led an interdisciplinary research team to develop bio-route for cost-efficient production of one best-selling blockbuster drug and to design novel route for significant reduction of cost and environmental contamination in production of a steroid-based drug. Principles of medicinal chemistry, protein engineering, and synthetic chemistry have been integrated in these studies.
- 2010-2012 Postdoctoral Fellow **California Institute of Technology, Pasadena, CA**
Advisor: Prof. Frances H. Arnold, Division of Chemistry and Chemical Engineering
Integrated protein engineering and synthetic biology for the production of biofuel and high-value chemicals.
- 2004-2010 Ph.D. in Medicinal Chemistry, **University of Michigan, Ann Arbor, MI**
Advisor: Prof. David H. Sherman, Medicinal Chemistry, Chemistry, Microbiology
Thesis: Characterization and analysis of biosynthetic systems from *Nostoc* sp. ATCC 53789 and selected fungal natural product pathways
- 2001-2004 M.S. Chemistry, **University of Nebraska, Lincoln, NE**
Advisor: Prof. Liangcheng Du, Chemistry
Thesis: Overexpression and characterization of three enzymes involved in fumonisin biosynthesis
- 1996-2000 B.S. Applied Chemistry, **Beijing University, China**
Advisor: Hongfang Sun, Technological Physics
Thesis: Syntheses of several biological micro-molecules for nicotine-DNA complex study

C. FINANCIAL SUPPORT

Current Support

10/1/21 – 9/30/2026 NIH NCI U01
“Engineering Native *E. coli* to Detect, Report, and Treat Colorectal Cancer”
Role: Co-Investigator

Total Award: \$570,930

7/1/21 – 6/30/2024 NSF CLP
“Novel Imine Formation by ATP Grasp Enzymes”
Role: Principal Investigator

Total Award: \$480,000

7/1/23 – 6/30/2028	NIH NIGMS R35	
“Accessing and expanding microbial chemical diversity by synthetic biology and new enzymology”		
Role: Principal Investigator		Total Award: \$1,840,241
08/1/22 – 7/31/2027	NIH NIGMS RM1	
“Integrative Multidisciplinary Discovery Platform to Unlock Marine Natural Products Therapeutic Opportunities”		
Role: M-Principal Investigator		Total Award: \$0 (as part of R35 grant commitment)
05/31/23-12/31/2024	DARPA	
“Efficient and Resilient Biomanufacturing in Variable Gravity”		
Role: Co-Principal Investigator		Total Award: \$ 318,117
01/01/24-12/31/2024	UF Strategic Fund InSpa Bio	
“Advancing therapeutic biomanufacturing in space using engineered yeast”		
Role: Principal Investigator		Total Award: \$ 100,000

Select Completed Support

1/15/22 – 1/14/2023	Florida Space Grant	
“Characterizing Resistance Evolution of Azole-treated Opportunistic Fungal Pathogen <i>Candida albicans</i> under Simulated Microgravity”		
Role: Principal Investigator		Total Award: \$86,143
5/1/17 –4/30/20	National High Magnetic Field Laboratory User Program	
“Discovery of bioactive microbial metabolites via synthetic biology approaches”		
Role: Principal Investigator		Total Award: \$15,000
5/14/16 – 5/13/19	Air Force Office of Scientific Research Young Investigator Award	
“Engineering biosystems for aromatic nitration”		
Role: Principal Investigator		Total Award: \$360,000
6/1/16 – 5/31/18	Research Opportunity Fund, University of Florida	
“Developing synthetic biology approaches for the production of nitroaromatics”		
Role: Principal Investigator; Co-I: Steven Bruner; Rosemary Loria		Total Award: \$90,000
5/1/17 –4/30/18	National High Magnetic Field Laboratory User Program	
“Discovery of bioactive microbial metabolites via synthetic biology approaches”		
Role: Principal Investigator		Total Award: \$5,000
7/1/17-6/30/18	UF Synthetic Biology Pilot Program	
“Developing alternative biosynthetic routes of thiamine”		
Role: Co-I		Total Award: \$42,000
7/1/15 – 12/31/17	Department of Defense Discovery Award	
“Engineering irisin for understanding its benefits to obesity”		
Role: Principal Investigator; Co-I: Li-jun Yang		Total Award: \$224,390
12/1/15 – 11/30/16	UF Emerging Pathogen Institute Seed Fund	
“Targeting microbial branched-chain amino acids metabolism for the development of new antimicrobials”		
Role: Principal Investigator; Co-I: Steven Bruner		Total Award: \$61,130
6/1/15 – 5/31/16	PROSPER Award, College of Pharmacy, University of Florida	
“Identifying the receptor of a newly discovered anti-obesity hormone via site-specific cross-linking”		
Role: Principal Investigator		Total Award: \$40,000
5/1/15 – 4/30/16	ORAU Ralph E. Powe Junior Faculty Enhancement Award	
“Developing biotechnological approaches for producing novel anti-infective nitroaromatic compounds”		
Role: Principal Investigator		Total Award: \$5,000
8/1/14 – 7/31/15	America Cancer Society-Institutional Research Grant, UF	
“Discovering and producing novel serine protease inhibitors as anticancer therapeutics”		
Role: Principal Investigator		Total Award: \$30,000

8/1/14 – 9/30/14

ORAU Travel Award

"Developing nitro-indole derivatives as novel antibiotics for peri-implantitis prevention and treatment"

Role: Principal Investigator

Total Award: \$800

D. AWARDS:

2024	Teacher Service Incentive Award of UF College of Pharmacy
2023	Outstanding Doctoral Dissertation Mentoring Award, UF College of Pharmacy
2023	Teacher Service Incentive Award of UF College of Pharmacy
2021	Teacher Service Incentive Award of UF College of Pharmacy
2019	Outstanding Publication in Basic Science Research Award of UF College of Pharmacy
2018	Teacher Service Incentive Award of UF College of Pharmacy
2018	NIH NIGMS Maximizing Investigators' Research Award for Early Stage Investigator
2018	Outstanding Basic Research Award of UF College of Pharmacy
2018	Leroy B. Townsend Lectureship of the Department of Medicinal Chemistry, University of Michigan
2017	Selected Early Career Investigator Speaker in Biological Chemistry Division by American Chemical Society, Washington DC (August, 2017)
2016	Air Force Office of Scientific Research Young Investigator
2015	DoD Discovery Award
2015	Ralph E. Powe Junior Faculty Enhancement Award of Oak Ridge Associated Universities
2014	Oak Ridge Associated Universities Travel Award
2012	Pfizer GMS Mission Award
2009-2010	Rackham Predoctoral Fellowship, University of Michigan
2000	Excellent BS Degree Thesis of Peking University

E. PUBLICATIONS AT UF

1. Liu K, Xiao T, Yang H, Chen M, Gao Q, Brummel BR, **Ding Y**, Huigens RW 3rd. Design, synthesis and evaluation of halogenated phenazine antibacterial prodrugs targeting nitroreductase enzymes for activation **RSC Med Chem.** 2023, 14: 1472-1481.
2. Ushijima B, Gunasekera SP, Meyer JL, Tittl J, Pitts KA, Thompson S, Sneed JM, **Ding Y**, Chen M, Jay Houk L, Aeby GS, Häse CC, Paul VJ. Chemical and genomic characterization of a potential probiotic treatment for stony coral tissue loss disease **Commun Biol.** 2023, 6: 248. doi: 10.1038/s42003-023-04590-y.
3. Dhakal D, Kallifidas D, Chen M, Kokkaliari S, Chen QY, Paul VJ, **Ding Y**,* Luesch H*. Heterologous production of the C33-C45 polyketide fragment of anticancer apratoxins in a cyanobacterial host **Org Lett.** 2023, 25: 2238-2242.
4. Chen M, Petriti V, Mondal A, Jiang Y, **Ding Y**. Direct aromatic nitration by bacterial P450 enzymes **Methods Enzymol.** 2023, 693: 307-337.
5. Chen M, Jiang Y, **Ding Y**. Recent progress in unraveling the biosynthesis of natural sunscreens mycosporine-like amino acids **J Ind Microbiol Biotechnol.** 2023, 50: kuad038.
6. Schultz DC, Pan L, Wang T, Booker C, Hyder I, Hanold L, Rubin G, **Ding Y**, Lin J, Li C. Carbohydrate-small molecule hybrids as lead compounds targeting IL-6 signaling. **Molecules.** 2023, 28: 677. doi: 10.3390/molecules28020677.
7. Meyer JL, Gunasekera SP, Brown AL, **Ding Y**, Miller S, Teplitski M, Paul VJ. Cryptic diversity of black band disease cyanobacteria in *Siderastrea siderea* corals revealed by chemical ecology and comparative genome-resolved metagenomics. **Mar Drugs.** 2023, 21: 76. doi: 10.3390/md21020076.
8. Xiao T, Liu K, Gao Q, Chen M, Kim YS, Jin S, **Ding Y**, Huigens RW 3rd. Design, synthesis, and evaluation of carbonate-linked halogenated phenazine-quinone prodrugs with improved water-solubility and potent antibacterial profiles. **ACS Infect Dis.** 2023 Mar 3. doi: 10.1021/acsinfecdis.2c00558.
9. Dhakal D, Kokkaliari S, Rubin GM, Paul VJ, **Ding Y**,* Luesch H*. Biosynthesis of lymbgystatins 1 and 3, cytotoxic depsipeptides from an *Okeania* sp. marine cyanobacterium. **J Nat Prod.** 2023, 86: 85-93.
Note: Cover art

10. Fan Y, Ma Z, Zhang Y, Wang Y, **Ding Y**, Wang C, Cao S. Sulfur-containing compounds from endophytic fungi: Sources, structures and bioactivities. *J Fungi*. 2022, 8:628. doi: 10.3390/jof8060628.
11. Li G, Patel K, Zhang Y, Pugmire JK, **Ding Y**, Bruner SD. Structural and biochemical studies of an iterative ribosomal peptide macrocyclase. *Proteins*. 2022, 90: 670-679.
12. de Crécy-Lagard V,**Ding Y**,.....Xu J. A roadmap for the functional annotation of protein families: a community perspective. *Database*. 2022, 2022:baac062. doi: 10.1093/database/baac062.
13. Liu D, Siguenza NE, Zarrinpar A, **Ding Y*** Methods of DNA introduction for the engineering of commensal microbes. *Engineering Microbiol*. 2022, 2: 100048.
14. Liu D, Wanniarachchi TN, Jiang G, Seabra G, Cao S, Bruner SD,* **Ding Y.*** Biochemical and structural characterization of *Haemophilus influenzae* nitroreductase in metabolizing nitroimidazoles. *RSC Chem Biol*. 2022, 3: 436-446.

Note: Cover art

15. Askey BC, Liu D, Rubin GM, Kunik A R, Song YH, **Ding Y,*** Kim J.* Metabolite profiling reveals organ-specific flavone accumulation in *Scutellaria* and identifies a scutellarin isomer isoscutellarein 8-O- β -glucuronopyranoside. *Plant Direct*. 2021, 5(12):e372. doi: 10.1002/pld3.372.
- Note:** The selected paper of *Plant Direct* highlighted by the American Society of Plant Biologists on Jan 20, 2022.
16. Li H, Donelan W, Wang F, Zhang P, Yang Y, **Ding Y,*** Tang D,* Li S.* GLP-1 induces the expression of FNDC5 derivatives that execute lipolytic actions. *Front. Cell Dev. Biol*. 2021, 9: 777026.
17. Dhakal D, Chen M, Luesch H,* **Ding Y.*** Heterologous production of cyanobacterial compounds. *J. Ind. Microbiol. Biotechnol*. 2021, 48(3-4):kuab003.
18. Liu D, Rubin GM, Dhakal D, Chen M, **Ding Y**. Biocatalytic synthesis of peptidic natural products and related analogues. *iScience*. 2021, 24: 102512.

Note: Cover art

19. Jiang G, Zhang P, Ratnayake R, Yang G, Zhang Y, Zuo R, Powell M, Huguet-Tapia JC, Abboud KA, Dang LH, Teplitski M, Paul V, Xiao R, Ahammad KH, Zaman U, Hu Z, Cao S, Luesch H, **Ding Y**. Fungal epithiodiketopiperazines carrying α,β -polysulfide bridges from *Penicillium steckii* YE, and their chemical interconversion. *Chembiochem*. 2021, 22: 416-422.
20. Chen M, Rubin GM, Jiang G, Raad Z, **Ding Y**. Biosynthesis and heterologous production of mycosporine-like amino acid palythines. *J. Org. Chem*. 2021, 86: 11160-11168.
21. Perez VC, Dai R, Bai B, Tomiczek B, Askey BC, Zhang Y, Rubin GM, **Ding Y**, Grenning A, Block AK, Kim J. Aldoximes are precursors of auxins in *Arabidopsis* and maize. *New Phytol*. 2021, 231: 1449-1461.
22. Vargas-Rodriguez O, Badran AH, Hoffman KS, Chen M, Crnković A, **Ding Y**, Krieger JR, Westhof E, Söll D, Melnikov S. Bacterial translation machinery for deliberate mistranslation of the genetic code. *Proc. Natl. Acad. Sci. USA*. 2021, 118: e2110797118.
23. Li G, Patel K, Zhang Y, Pugmire JK, **Ding Y**, Bruner SD. Structural and biochemical studies of an iterative ribosomal peptide macrocyclase. *Proteins*. 2021, doi: 10.1002/prot.26264.
24. Martin CP, Chen M, Martinez MF, **Ding Y,*** Caranto JD.* The ferric-superoxo intermediate of the TxtE nitration pathway resists reduction, facilitating its reaction with nitric oxide. *Biochemistry*. 2021, 60: 2436-2446.
25. Yang H, Kundra S, Chojnacki M, Liu K, Fuse MA, Abouelhassan Y, Kallifidas D, Zhang P, Huang G, Jin S, **Ding Y**, Luesch H, Rohde KH, Dunman PM, Lemos JA, Huigens RW 3rd. A modular synthetic route involving *N*-aryl-2-nitrosoaniline intermediates leads to a new series of 3-substituted halogenated phenazine antibacterial agents. *J. Med. Chem*. 2021, 64: 7275-7295.
26. Rubin GM, **Ding Y**. Recent advances in the biosynthesis of RiPPs from multicore-containing precursor peptides. *J. Ind. Microbiol. Biotechnol*. 2020, 47: 659-674.
27. Zhang P, MacTavish BS, Yang G, Chen M, Roh J, Newsome KR, Bruner SD,* **Ding Y.*** Cyanobacterial dihydroxyacid dehydratases are a promising growth inhibition target. *ACS Chem. Biol*. 2020, 15: 2281-2288.

Note: Cover art, highlighted in UF News; highlighted by local NPR radio station; highlighted by local television.

28. Wang F, Sarotti AM, Jiang G, Huguet-Tapia JC, Zheng SL, Wu X, Li C, **Ding Y**,* Cao S.* Waikikiamides A-C: Complex diketopiperazine dimer and diketopiperazine-polyketide hybrids from a Hawaiian marine fungal strain *Aspergillus* sp. FM242. **Org. Lett.** 2020, 22: 4408-4412.
29. Li H, Zhang Y, Wang F, Donelan W, Zona MC, Li S, Reeves W, **Ding Y**, Tang D, Yang L. Effects of irisin on the differentiation and browning of human visceral white adipocytes. **Am. J. Transl. Res.** 2019, 11: 7410-7421.
30. Jiang G, Zhang Y, Powell MM, Hylton SM, Hiller NW, Loria R, and **Ding Y**. A promiscuous cytochrome P450 hydroxylates aliphatic and aromatic C-H bonds of aromatic 2,5-diketopiperazines. **Chembiochem.** 2019, 20/8: 1068-1077.
Note: Selected as "Very Important Paper". Pressed with a Front Cover Art.
31. Gunasekera SP, Meyer JL, **Ding Y**, Abboud KA, Luo D, Campbell JE, Angerhofer A, Goodsell JL, Raymundo LJ, Liu J, Ye T, Luesch H, Teplitski M, and **Paul VJ**. Chemical and metagenomic studies of the lethal black band disease of corals reveal two broadly distributed, redox-sensitive mixed polyketide/peptide macrocycles. **J Nat Prod.** 2019, 82: 111-121.
32. Zuo R, and **Ding Y**. Direct aromatic nitration system for synthesis of nitrotryptophans in *Escherichia coli*. **ACS Synth Biol.** 2019, 8: 857-865.
33. Abouelhassan Y, Zhang P, **Ding Y**, and **Huigens RW**. Rapid kill assessment of an N-arylated NH125 analogue against drug-resistant microorganisms. **Med Chem Commun.** 2019, 10, 712-716.
34. Jiang G, Zuo R, Zhang Y, Powell MM, Zhang P, Hylton SM, Loria R, and **Ding Y**. One-pot biocombinatorial synthesis of herbicidal thaxtomins. **ACS Catal.** 2018, 8: 10761-10768.
35. Zhang Y, Chen M, Bruner SD, **Ding Y**. Heterologous production of microbial ribosomally synthesized and post-translationally modified peptides. **Front Microbiol.** 2018, 9: 1801. <https://doi.org/10.3389/fmicb.2018.01801>
36. Hanson A, Amthor J, Sun J, Niehaus T, Gregory J, Bruner SD, **Ding Y**. Redesigning thiamin synthesis: Prospects and potential payoffs, **Plant Sci.** 2018, 273: 92-99.
37. Kallifidas D, Jiang G, **Ding Y**, Luesch H. Rational engineering of *Streptomyces albus* J1074 for the overexpression of secondary metabolite gene clusters, **Microb. Cell Fact.** 2018, 17: 25. <https://doi.org/10.1186/s12934-018-0874-2>
38. Jiang G, Zhang Y, Powell M, Zhang P, Zuo R, Zhang Y, Kallifidas D, Tieu A, Luesch H, Loria R*, **Ding Y***. Overproduction of herbicidal thaxtomins and analogs in a nonpathogenic *Streptomyces* strain, **Appl. Environ. Microbiol.** 2018, 84. pii: e00164-18. doi: 10.1128/AEM.00164-18.
39. Zhang Y, Li K, Yang G, McBride JL, Bruner SD, **Ding Y**. A distributive peptide cyclase processes multiple microviridin core peptides within a single polypeptide substrate, **Nat. Commun.** 2018, 9(1):1780. doi: 10.1038/s41467-018-04154-3.
40. Yang G, Cozad M, Holland D, Zhang Y, Luesch H, **Ding Y**. Photosynthetic production of sunscreen shinorine using an engineered cyanobacterium, **ACS Syn. Biol.** 2018, 7: 664-671.
Note: Selected as one of six papers from all 59 ACS journals for Presspac on Jan 31st, 2018; highlighted in UF News; highlighted by local NPR radio station; highlighted by Fox New; highlighted by Chemical & Engineering News.
41. Zhang Y, Jiang G, **Ding Y***, Loria R*. Genetic background affects pathogenicity island function and pathogen emergence in *Streptomyces*, **Mol. Plant Pathol.** 2018, 19: 1733-1741.
42. Yang G, Zhang Y, Lee NK, Cozad MA, Kearney SE, Luesch H, **Ding Y**. Cyanobacterial Sfp-type phosphopantetheinyl transferases functionalize carrier proteins of diverse biosynthetic pathways, **Sci. Rep.** 2017, 7: 11888. doi: 10.1038/s41598-017-12244-3.
43. Zhang P, Li K, Yang G, Xia C, Polston JE, Li G, Li S, Lin Z, Yang LJ, Bruner SD*, **Ding Y***. Cytotoxic protein from the mushroom *Coprinus comatus* possesses a unique mode for glycan binding and specificity, **Proc. Natl. Acad. Sci. U. S. A.** 2017, 114: 8980-8985.
44. Basak A, Abouelhassan Y, Zuo R, Yousaf H, **Ding Y**, **Huigens RW**. Antimicrobial peptide-inspired NH125 analogues: bacterial and fungal biofilm-eradicating agents and rapid killers of MRSA persists, **Org. Biomol. Chem.** 2017, 15: 5503-5512.
45. Zuo R, Zhang Y, Jiang C, Hackett JC, Loria R, Bruner SD, **Ding Y**. Engineered P450 biocatalysts show improved activity and regio-promiscuity in aromatic nitration, **Sci. Rep.** 2017, 7: 842. doi: 10.1038/s41598-017-00897-z.

46. Li K, Condurso H, Li G, **Ding Y**, Bruner, SD. Precursor protein-directed peptide macrocyclization in ribosomal peptide biosynthetic pathways, *Nat. Chem. Biol.* **2016**, 12: 973-979.
47. Zhang Y, Bignell DR, Zuo R, Fan Q, Huguet-Tapia JC, **Ding Y**, Loria R. Promiscuous pathogenicity islands and phylogeny of pathogenic *Streptomyces*, *Mol. Plant. Microbe Interact.* **2016**, 29: 640-650.
48. Zhang Y, Xie C, Wang H, Foss RM, Clare M, George EV, Li S, Katz A, Cheng H, **Ding Y**, Tang D, Reeves WH, Yang LJ. Irisin exerts dual effects on browning and adipogenesis of human white adipocytes. *Am. J. Physiol. Endocrinol. Metab.* **2016**, 311: E530-541.
49. Tu D, Cheng X, Gao Y, Yang P, **Ding Y***, Jiang C*. Palladium-catalysed direct C-2 methylation of indoles. *Org. Biomol. Chem.* **2016**, 14: 7443-7446.
50. Zuo R, Garrison AT, Basak A, Zhang P, Huigens RW*, **Ding Y***. In vitro antifungal and antibiofilm activities of halogenated quinoline analogues against *Candida albicans* and *Cryptococcus neoformans*. *Int. J. Antimicrob. Agents.* **2016**, 48: 208-211.
51. Le J, Gao Y, **Ding Y***, Jiang C*. Cu-mediated C2-dehydrogenative homocoupling of indoles via C-H activation assisted by a removable *N*-pyrimidyl group. *Tetrahedron Lett.* **2016**, 57, 1728-1731.
52. Zuo R, Zhang Y, Huguet-Tapia JC, Mehta M, Dedic E, Bruner SD, Loria R, **Ding Y**. An artificial self-sufficient cytochrome P450 directly nitrates fluorinated tryptophan analogs with different regio-selectivity. *Biotechnol. J.* **2016**, 11, 624-632.
53. Zhang Y, Loria R, **Ding Y**. Applications of natural products from soil microbes. *Soil Ecosystem Services* (book chapter) doi:10.2136/2015.soilecosystemsservices.2015.0023
54. Xie C, Zhang Y, Tran TD, Wang H, Li S, George EV, Zhuang H, Zhang P, Kandel A, Lai Y, Tang D, Reeves WH, Cheng H, **Ding Y***, Yang LJ*. Irisin controls growth, intracellular Ca²⁺ signals, and mitochondrial thermogenesis in cardiomyoblasts. *Plos One* **2015**, 10: e0136816.
55. Yang G, **Ding Y**. Recent advances in biocatalyst discovery, development and their applications. *Bioorg. Med. Chem.* **2014**, 22: 5604-5612.

Note: * indicates co-corresponding author.

F. ORAL PRESENTATIONS

Presentation by myself

1. Synthetic biology and enzymology in natural product research Chinese-American Chemistry & Chemical Biology Professors Association Winter Symposium, Tampa, FL Dec 20, 2023
2. Resistance Evolution of Azole-treated *Candida albicans* under Simulated Microgravity American Society for Gravitational and Space Research Annual Meeting Capital Hilton, Washington, D.C. November 14-18, 2023
3. Macrolactonization and macrolactamization of graspetides by ATP-grasp enzymes Southeastern Regional Meeting American Chemical Society, Oct 25-28, 2023 Durham, NC.
4. Synthetic biology and enzymology in natural product research Department of Chemistry and Chemical Biology University of Central Florida, Orlando, FL Sept 8, 2023
5. Discovery and Production of Marine Bioactive Molecules 2023 American Society of Pharmacognosy Annual Meeting Bethesda North Marriott Hotel & Conference Center July 22 - 26, 2023 (poster)
6. Engineering native *E. coli* to activate the anticancer prodrug 5-fluorocytosine for treating colon cancer Cell Symposium Infection Biology In the Age of the Microbiome Jun 7-9, 2023, Paris, France
7. The discovery and production of bioactive microbial secondary metabolites Department of Microbiology, Ohio State University, Columbus, OH Feb 22, 2023
8. Discovery and production of bioactive marine natural products and analogs through genome-based and synthetic biology approaches 4th International Conference on Natural Product Discovery and Development in the Genomic Era Jan 8-12, 2023 San Diego, CA
9. Discovery and production of bioactive marine natural products through genome-based and synthetic biology approaches Southeastern Regional Meeting American Chemical Society, Oct 18-22, 2022 San Juan, PR.
10. Genome-aided discovery of new enzymes 2022 American Society of Pharmacognosy Annual Meeting, Charleston, SC July 23-28, 2022
11. An integrated pipeline for discovery and production of bioactive marine natural products Fusion

- 3rd Synthetic Biology of Natural Products Conference, Cancun, Mexico May 19, 2022
12. Nature-inspired strategies to address societal challenges Department of Chemistry, University of Nebraska, Lincoln (virtual). Sept 25, 2020.
 13. Molecular Mechanisms Linking the Microbiome and Human health. 2020 Miami Winter Symposium. Miami, FL. Jan 26, 2020 - Jan 29, 2020.
 14. Nature-inspired discovery of new enzymology, chemicals and strategies Biochemistry Seminar Series. Department of Chemistry, Indiana University. Bloomington, IN. Nov 15, 2019 - Nov 15, 2019.
 15. Exploiting microbial genomes to access new enzymology and chemicals Pharmaceutical Sciences Division. College of Pharmacy, University of Kentucky. Lexington, KY. Sep 24, 2019 - Sep 24, 2019.
 16. The production of herbicidal cyclic dipeptides via synthetic biology approaches New Frontiers in Natural Product Discovery. Corteva Agriscience. Indianapolis, IN. Aug 9, 2019 - Aug 9, 2019.
 17. Dissecting biosynthetic logic of modular production of tricyclic peptides possessing anti-serine protease activity. 2019 Society for Industrial Microbiology and Biotechnology Annual Meeting. Washington DC. Jul 22, 2019 - Jul 22, 2019.
 18. Nature-inspired discovery of new enzymology, chemicals and strategies. Department of Plant Pathology, University of Florida. Gainesville, FL. Oct 15, 2019 - Oct 15, 2019.
 19. Dihydroxyacid dehydratases containing the [2Fe-2S] cluster are a promising antimicrobial target. 71st Southeastern Regional Meeting of the American Chemical Society. Savannah, GA. Oct 2, 2019 - Oct 2, 2019.
 20. *In vivo and In vitro synthetic biology approaches to the production of herbicidal cyclic peptides.* FUSION conference: 2nd Synthetic Biology for Natural Products Conference. Puerto Vallarta, Mexico. Jun 2, 2019 - Jun 5, 2019.
 21. *From microbial genomes to chemicals via synthetic biology approaches.* The 95th Florida Annual Meeting and Exposition (FAME) conference. Palm Harbor, FL. May 9, 2019 - May 11, 2019.
 22. *Synthetic biology approaches for translating microbial genomes into chemicals.* 2019 UF Drug Discovery Symposium. Gainesville, FL. Apr 25, 2019 - Apr 26, 2019.
 23. *Exploiting microbial genomes to discover new bioactive proteins and enzymology.* Department of Chemistry, Rutgers University. New Brunswick, NJ. Apr 9, 2019.
 24. *Production of bioherbicides by in vivo and in vitro synthetic biology approaches.* Spring 2019 ACS National Meeting in Orlando, FL. Orlando, FL. Mar 31, 2019 - Apr 2, 2019.
 25. *Exploiting microbial genomes to discover new bioactive proteins and enzymology.* Medicinal Chemistry, Virginia Commonwealth University. Richmond, VA. Mar 22, 2019.
 26. *Exploiting microbial genomes to discover new bioactive proteins and enzymology.* Department of Chemistry, Purdue University. West Lafayette, IN. Feb 19, 2019.
 27. *Exploiting microbial genomes to discover new bioactive proteins and enzymology.* Department of Chemistry, Vanderbilt University. Nashville, TN. Jan 14, 2019.
 28. *Exploiting microbial genomes to access new enzymology and valuable chemicals.* Division of Chemical Biology & Medicinal Chemistry, College of Pharmacy, University of North Carolina at Chapel Hill. Chapel Hill, NC. Jan 9, 2019.
 29. *Engineering biosystems for aromatic nitration.* AFOSR NMSE Annual Review. Doolittle Institute, Niceville, FL. Dec 3, 2018 - Dec 6, 2018.
 30. *Functional characterization of one fungal small protein with potent and selective anticancer activity.* The 70th Southeastern Regional Meeting of American Chemical Society. Augusta, GA. Nov 1, 2018.
 31. *Exploiting microbial genomes to access new enzymology and valuable chemicals.* Department of Pharmaceutical Sciences at the University of Maryland, Baltimore. Baltimore, MD. Oct 31, 2018.
 32. *Exploiting microbial genomes to access new enzymology, valuable chemicals.* Department of Chemistry and Biochemistry, University of Maryland. College Park, MD. Oct 18, 2018.
 33. *Discovery of a new family of fungal glycan binding proteins possessing useful biological functions.* University of Florida Health Cancer Center Exchange Seminar, the University of Florida, Gainesville, FL. Sept 21st, 2018.
 34. *Exploiting microbial genomes to access new enzymology and valuable chemicals.* The Department of Chemical and Biomolecular Engineering, Rice University, Houston, TX. Sept 13th, 2018.
 35. *Production of herbicidal natural products by synthetic biology approaches.* The 8th Symposium of Science, Engineering & Biomedicine & The 4th Symposium of Humanities and Social Science. Clearwater Beach, FL. Sept 1st, 2018.

36. *Macrocyclization of microviridin core peptides by ATP-grasp ligases*. College of Pharmacy, the University of Illinois at Chicago. Chicago, IL. August 17th, 2018.
37. *The production of bacterial natural products and their analogs by synthetic biology approaches*. Society for Industrial Microbiology and Biotechnology annual meeting. Chicago, IL. August 13th, 2018.
38. *Functional characterization of therapeutically relevant small proteins*. The 1st Sherman alumni symposium, the University of Michigan, Ann Arbor, MI. July 27th, 2018.
39. *Discovery and production of bioactive microbial natural products and their analogs*. Bioprocess Development Group, Pfizer, Kalamazoo, MI. July 26th, 2018.
40. *Discovery and production of bioactive microbial natural products and their analogs*. The Department of Pharmaceutical Sciences, the University of Hawaii, Hilo, HI. June 25th, 2018.
41. *Exploiting microbial genomes to access new enzymology and valuable chemicals*. The Department of Medicinal Chemistry, the University of Michigan, Ann Arbor, MI. May 17th, 2018.
42. *Exploiting microbial genomes to discover new bioactive proteins and enzymology*. The Department of Chemistry, Michigan State University, East Lansing, MI. May 16th, 2018.
43. *Exploiting cyanobacterial genomes to access new enzymology and chemicals*. The Department of Chemistry, North Carolina State University, Raleigh, NC. Feb 26th, 2018.
44. *A cytotoxic protein from the mushroom *Coprinus comatus* possesses a unique glycan binding fold and specificity*. The 6th International Chemical Biology Society Meeting. Shanghai, China. October 19th, 2017.
45. *Multiple microviridin core peptides are processed by an ATP grasp ligase in a distributive and directional manner*. The 254th ACS national meeting. Washington, DC. August 22nd, 2017 (Selected Early Career Investigator Speaker in Biological Chemistry Division)
46. *A cytotoxic protein from the mushroom *Coprinus comatus* possesses a unique glycan binding fold and specificity*. Society for Industrial Microbiology and Biotechnology annual meeting. Denver, CO. July 31st, 2017.
47. *A distributive ATP grasp ligase macrolactonizes multiple microviridin core peptides within a single substrate*. Novartis. Changshu, Jiangsu Province, China. June 1st, 2017.
48. *A distributive ATP grasp ligase macrolactonizes multiple microviridin core peptides within a single substrate*. Nanjing University of Science & Technology. Nanjing, Jiangsu Province, China. May 31st, 2017.
49. *Develop synthetic biology approaches to produce nitro-compounds*. The 18th International Symposium on the Biology of Actinomycetes. Jeju Island, Korea. May 23rd to 27th, 2017.
50. *A distributive ATP grasp ligase macrolactonizes multiple microviridin core peptides within a single substrate*. ACS, Florida section. Tampa, FL. May 4, 2017 - May 6, 2017.
51. *Interdisciplinary Approaches in Drug Research*. ACS chemistry club at UF. Gainesville, FL. Jan 26, 2017.
52. *Engineering Biosystems for Aromatic Nitration*. Air Force Office of Scientific Research. Fort Walton Beach FL. Dec 7, 2016.
53. *Developing bio-systems to produce fine chemicals*. UF Genetic Institute. Dec 1, 2016.
54. *A novel type of lectins from a mushroom exhibits antiviral and anticancer activities*. Florida Chinese Faculty Association. Jacksonville, FL. Sep 4, 2016.
55. *Developing biocatalysts for the production of nitroaromatics*. Society for Industrial Microbiology and Biotechnology annual meeting. New Orleans, LA. Jul 25, 2016.
56. *Beneficial Effects of Irisin on Human Health*. American Chemical Society Florida Section. Palm Harbor, FL. May 6, 2016 - May 7, 2016
57. *Exploring the Biosynthetic Potential of Microbes and Beyond*. UF CNPD3. Gainesville, FL Apr 29, 2016.
58. *Exploring biosynthetic potential of a marine *Streptomyces* strain*. Gordon Conference. Ventura, CA. Mar 6, 2016 - Mar 11, 2016 (poster).
59. *Drugs, Engineering, and Evolution for Better*. UF ACS Chemistry Club. Gainesville, FL, Feb 4, 2016.
60. *Discovering and Producing Bioactive Natural Products Using Synthetic Biology Approaches*. UF Cancer Center. Gainesville, FL, Jan 29, 2016.
61. *Drugs, Engineering, and Evolution for Better*. UF Science for Life. UF campus. Gainesville, FL, Nov 11, 2015.
62. *New approaches toward producing bioactive nitroaromatics*. Chemistry Department, University of Florida, Gainesville, FL October 3rd, 2014.

63. *New approaches toward producing bioactive nitroaromatics*. Virginia Commonwealth University, Richmond, VA September 26th, 2014.

Presentations by Graduate Students

Manyun Chen:

02/08/2022 Biosynthesis and heterologous production of mycosporine-like amino acid palythines. The 35th UF CoP Annual Research Showcase. Gainesville, FL. (poster)

10/20/2021 Biocatalytic Synthesis of Natural Anti-UV Agents: Mycosporine-like Amino Acids. UF SynBio Student/Postdoc Seminar Series. Gainesville, FL. (virtual, oral)

08/09/2021 Biosynthesis and heterologous production of mycosporine-like amino acid palythines. Society for Industrial Microbiology and Biotechnology-SIMB 71th Annual Meeting. Austin, TX. (poster)

04/22/2021. Biocatalytic synthesis of natural anti-UV agents: mycosporine-like amino acids. The 3rd UF Drug Discovery Symposium. Gainesville, FL. (virtual, poster).

04/13/2021. Biocatalytic synthesis of natural anti-UV agents: mycosporine-like amino acids. The 34th UF CoP Annual Research Showcase. Gainesville, FL. (oral)

08/09/2019 Photosynthetic production of sunscreen shinorine by an engineered cyanobacterium. New Frontiers in Natural Product Discovery. Corteva Agriscience. Indianapolis, IN. (poster)

Dake Liu

03/21/2022. Novel metabolism of 5-nitroimidazole antibiotics by a human pathogen nitroreductase. 2022 Spring ACS Annual Meeting. San Diego, CA. (poster)

02/08/2022. Characterization of a pathogen nitroreductase in metabolizing nitroimidazoles. The 35th UF CoP Annual Research Showcase. Gainesville, FL. (oral).

04/22/2021. Novel metabolism of 5-nitroimidazole antibiotics by a pathogen nitroreductase. The 3rd UF Drug Discovery Symposium. Gainesville, FL. (virtual, oral).

04/13/2021. Novel metabolism of 5-nitroimidazole antibiotics by a pathogen nitroreductase. The 34th UF CoP Annual Research Showcase. Gainesville, FL. (virtual, poster).

02/11/2020. Enzymatic inactivation of tetracycline in human gut microbiota. The 33rd UF CoP Annual Research Showcase. Gainesville, FL. (poster).

Garret Rubin

02/08/2022. Discovery of Novel Streptomyces Graspetides. The 35th UF CoP Annual Research Showcase. Gainesville, FL. (poster).

04/22/2021 Biochemical Characterization of ATP-Grasp Ligase in Modifying Proteins. The 3rd UF Drug Discovery Symposium. Gainesville, FL. (virtual, poster).

04/13/2021 Biochemical Characterization of ATP-Grasp Ligase in Modifying Proteins. The 34th UF CoP Annual Research Showcase. Gainesville, FL. (virtual, poster).

02/11/2020 Biochemical Characterization of ATP-Grasp Ligase in Modifying Proteins. The 33rd UF CoP Annual Research Showcase. Gainesville, FL. (poster).

Guangde Jiang

08/09/2019 Enzymatic synthesis of hydroxylated aromatic diketopiperazines. New Frontiers in Natural Product Discovery. Corteva Agriscience. Indianapolis, IN. (poster)

05/11/2019 One-pot biocombinatorial synthesis of herbicidal thaxtomins and substituted aromatic 2,5-diketopiperazines. The 95th Florida Annual Meeting and Exposition (FAME 2019), Tampa, FL. (oral)

08/13/2018 High-yield production of herbicidal thaxtomins and analogs in a nonpathogenic *Streptomyces* host. Society for Industrial Microbiology and Biotechnology annual meeting. Chicago, IL. (oral and poster)

03/5/2018 High-yield production of herbicidal thaxtomins and analogs in a nonpathogenic *Streptomyces* host. The Florida Heterocyclic and Synthetic Chemistry Conference. Gainesville, FL. (poster)

01/22/2018 High-yield production of herbicidal thaxtomins and analogs in a nonpathogenic *Streptomyces* host. Society for Industrial Microbiology and Biotechnology 2nd International Conference on Natural Product Discovery and Development in the Genomic Era. Clearwater beach, FL. (poster)

07/31/2017 Interconversion of epithiodiketopiperazines with polysulfide α,β -bridge from a marine-derived fungus *Penicillium steckii* YE. Society for Industrial Microbiology and Biotechnology Annual Meeting. Denver, CO. (poster).

02/17/2017 Interconversion of epithiodiketopiperazines with polysulfide α,β -bridge from a marine-derived fungus *Penicillium steckii* YE. The 30th UF CoP Annual Research Showcase. Gainesville, FL. (poster).

Yi Zhang

05/11/2019 Reconstitution of the modular biosynthesis of microviridins produces potent serine protease inhibitors. The 95th Florida Annual Meeting and Exposition (FAME 2019), Tampa, FL. (poster)

04/26/2019 Dissecting biosynthetic logic of modular production of tricyclic peptides possessing anti-serine protease activity. The 2nd UF Drug Discovery Symposium. Gainesville, FL. (oral)

08/13/2018 Dissecting biosynthetic logic of modular production of tricyclic peptides possessing anti-serine protease activity. Society for Industrial Microbiology and Biotechnology annual meeting. Chicago, IL. (poster)

02/12/2018 Dissecting biosynthetic logic of modular production of tricyclic peptides possessing anti-serine protease activity. The 31st UF CoP Annual Research Showcase. Gainesville, FL. (oral).

02/17/2017 Macrocyclization of Multiple Tricyclic Peptidic Microviridins by A Single Distributive ATP Grasp Ligase. The 30th UF CoP Annual Research Showcase. Gainesville, FL. (poster).

02/08/2016 Biochemical characterization of cryptic microviridin biosynthesis in *Anabaena* sp. PCC 7120. The 29th UF CoP Annual Research Showcase. Gainesville, FL. (poster).

Peilan Zhang

02/10/2020 Dihydroxyacid Dehydratases (DHADs) Are a Novel Target for Microbial Growth Control. The 33rd UF CoP Annual Research Showcase. Gainesville, FL. (oral).

02/12/2018 A Cytotoxic Protein from the Mushroom *Coprinus comatus* Possesses an Unique Mode for Glycan Binding and Specificity. The 31st UF CoP Annual Research Showcase. Gainesville, FL. (oral).

05/13/2017 A cytotoxic protein from the mushroom *Coprinus comatus* possesses a unique glycan binding fold and specificity. The 93rd Florida Annual Meeting and Exposition (FAME 2019), Tampa, FL. (poster)

02/17/2017 Biochemical and structural characterization of a key biosynthetic enzyme of branched chain amino acids from cyanobacteria. The 30th UF CoP Annual Research Showcase. Gainesville, FL. (poster).

02/08/2017 Dihydroxy-acid dehydratase as a novel target of antibiotics. UF Emerging Pathogen Institutes Annual Meeting. Gainesville, FL. (poster).

02/08/2016 Dihydroxy-acid dehydratase, a novel target for developing antibiotics. The 29th UF CoP Annual Research Showcase. Gainesville, FL. (poster).

Ran Zuo

04/29/2016 Engineering a self-sufficient cytochrome P450 for direct nitration of L-tryptophan analogs. The 1st UF Drug Discovery Symposium. Gainesville, FL. (poster)

02/11/2015 Direct nitration of fluorinated tryptophan analogs by engineering a unique cytochrome P450. The 28th UF CoP Annual Research Showcase. Gainesville, FL. (poster).

02/19/2014 Novel Biocatalyst Development: Creation of Self-sufficient P450 Monooxygenases for Aromatic Nitration Reactions. The 27th UF CoP Annual Research Showcase. Gainesville, FL. (poster).

G. LABORATORY PERSONNEL ADVISING

Postdoctoral Fellow Advising

1. Guang Yang	2014-2017	Research Assistant (UF)
2. Dipesh Dhakal	2020-present	
3. Amit Mondal	2022-present	
4. Dake Liu	2022-present	
5. Manyun Chen	2022-2023	Assistant Scientist (UF)
6. Jeanne Combes	2022-2024	Postdoc Associate (ParisAgroTech)

Visiting Scholar Advising

1. Chao Jiang	2016-2017	Associate Professor, Nanjing University of Science and Technology, China
2. Yu Sha	2014-2015	Associate Professor, Shenyang Pharmaceutical University, China
3. Tariq Ismail	2015	Ph.D. student candidate, COMSAT Institute of information Technology, Pakistan
4. Hongfen Yang	2014-2015	Graduate student, Medicinal Chemistry, UF
5. Stefan Schug	2018-2019	PharmD student, University of Regensburg, Germany

Graduate Student Advising

1. Ran Zuo	2013-2018	Assistant Scientist (UF)
2. Guangde Jiang	2014-2019	Assistant Professor, Wayne State University
3. Peilan Zhang	2014-2020	
4. Yi Zhang	2014-2019	AbbiSci
5. Manyun Chen	2017-2022	Assistant Scientist (UF)
6. Dake Liu	2017-2022	Postdoc (UF)
7. Garret Rubin	2019-2023	
8. Vanisa Petriti (comentoring)	2021-present	
9. Yujia Jiang	2022-present	
10. Meng-Lun Hsieh	2022-present	
11. Hsin-Ying Tsai	2023-present	

PharmD Student Advising

1. Julian Rashid	Summer, 2014
2. Joshua L McBride	Summer, 2015
3. XiaoBin Chen	2015-2016
4. Jaehyeok Roh	Fall, 2017-present
5. Deniella T. Chin-Quee	Summer, 2018
6. Nicholas W. Hiller	Summer, 2018
7. Stephen Fotopoulos	Fall, 2018

Undergraduate Student Advising

1. Evelina Dedic	2013-2015	Medical School, Nova Southeastern University
2. Mishal P Mehta	2013-2015	PharmD, University of Florida
3. Erica Christenson	2014-2015	Medical School, University of Massachusetts
4. Harrison J Bonilla	2013-2014	Medical Masters Program, Boston University School of Medicine
5. Kimberly Loudermilk	2015	
6. Sunny Aroda	2015	

7. Wesley Dickerson	2015
8. Nina Jovic	2015
9. Nicholas Lee	2016-2017
10. Nilay S Dharma	2016-2017
11. Kyle Volland	2016-2017
12. Albert Tieu	2016-2017
13. Sara Kearny	Summer, 2016
14. Jada Brooks	Summer, 2016
15. Ariana E. Santiago	Summer, 2017
16. Steven Crichton	2016-2017
17. Ashley Womer	2017-2018
18. Magan Powell	2015-2019
19. Monica Cozad	2016-2018
20. Destin Holland	2017-2018
21. Michael Guo	2017-2021
22. Michael Patterson	2018-2019
23. Sarah M. Hylton	2017-2020
24. Caitlin Cain	Summer, 2018
25. Olufunmilayo A Daudu	Summer, 2018
26. Zachary Raad	2018-2021
27. Malhar A Patel	2019-2022
28. Christian H. Velez	Summer, 2019
29. Alivia Ishee	2019-2023
30. Gautham A Amaravadi	2020-present
31. Kristina J Lee	2021-2021
32. Campbell Eckhardt	Summer, 2023
33. Qi Zheng	2022-2023
34. Phuong Ton	2022-present
35. Ellie Wolpert	2023-present

High School Student Advising

1. Julius Chai	Summer, 2015
2. Padmavathi Reddy	Summer, 2016
3. Kathryn Wulber	Summer, 2017
4. Alley Lee	Summer, 2018
5. Ryan Chen	Summer, 2018
6. Vincent Huang	Summer, 2019
7. Angela Chen	Summer, 2022
8. Rachel Young	2021-2022
9. Chloe Zeng	Summer, 2023
10. Zoha Haider	Summer, 2023
11. Emily Liu	Aug to Dec, 2023
12. Joyce Huang	Dec 2023-present

Medical School at Auburn University

PharmD, University of Florida
University Emerging Scholar, 1st PD of UF COP
Wheaton College, graduate student in UF Chemistry
Bethune-Cookman University
REU of HMFL, University of Puerto Rico

University Emerging Scholar and University
Research Scholar
MS student in Microbiology

REU of HMFL, Virginia Commonwealth University
ReTOOL, Florida A&M University

REU of HMFL, University of Puerto Rico

SURF student, University of Tulsa

Undergraduate student in Georgia Tech
Undergraduate student at Johns Hopkins University
Undergraduate student at UF
Undergraduate student at UC-Berkeley
Undergraduate student at UC-Berkeley
Undergraduate student at Duke University
Undergraduate student at MIT
Undergraduate student at UF