

Curriculum Vitae - Xuejun Zhu

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PROFESSIONAL EXPERIENCE

Faculty of Interdisciplinary Graduate Program in Genetics and Genomics, Texas A&M University 2020-present
Assistant Professor, Dept. of Chemical Engineering, Texas A&M University 2019-present
Postdoctoral Associate, Institute for Medical Engineering and Science, MIT (Adviser: James Collins) 2017-2019
Visiting Postdoctoral, Wyss Institute (Adviser: James Collins) 2017-2019

EDUCATION

Ph.D., Chemical Engineering, University of California, Berkeley (Adviser: Wenjun Zhang) 2012-2017
B.S., Biosciences, Nanjing University, China 2008-2012

AWARDS

The Artie McFerrin Department of Chemical Engineering Outstanding Junior Faculty Award, 2022
Maximizing Investigators' Research Award for Early Stage Investigators, NIGMS, NIH 2022

RESEARCH INTERESTS

Natural product biosynthesis, drug metabolism in the gut microbiome, antimicrobial discovery and development, enzymology, protein engineering, metabolic engineering, synthetic biology.

PUBLICATIONS

1. Qian, L., Ouyang, H., Gordils-Valentin, L., Hong, J., Jayaraman, A.*, Zhu, X.* "Identification of Gut Bacterial Enzymes for Keto-Reductive Metabolism of Xenobiotics" *ACS Chem. Biol.*, **2022**, 17(7), 1665–1671.
2. Ouyang, H., Hong, J., Malroy, J., Zhu, X.* "An *E. coli*-Based Biosynthetic Platform Expands the Structural Diversity of Natural Benzoxazoles" *ACS Synth. Biol.*, **2021**, 10(9), 2151–2158.
3. Li, J., Barber, C., Herman, N., Cai, W., Zafir, E., Du, Y., Zhu, X., Skyrud, W., Zhang, W. "Investigation of secondary metabolism in the industrial butanol hyper-producer *Clostridium saccharoperbutylacetonicum* N1-4", *J. Ind. Microbiol. & Biot.* **2020**, 47, 319–328
4. Zhang, B., Rajakovich, L., Cura, D., Blaes, E., Mitchell, A., Tysoe, C., Zhu, X., Streit, B., Rui, Z., Zhang, W., Boal, A., Krebs, C., Bollinger, J. M. "Substrate-Triggered Formation of a Peroxo-Fe₂(III/III) Intermediate during Fatty Acid Decarboxylation by UndA" *J. Am. Chem. Soc.* **2019**, 141, 14510-14514.
5. Seidel, J., Miao, Y., Porterfield, W., Cai, W., Zhu, X., Kim, S., Hu, F., Bhattarai-Kline, S., Min, W., Zhang, W. "Structure–activity–distribution relationship study of anti-cancer antimycin-type depsipeptides" *Chem. Commun.* **2019**, 55, 9379-9382.

6. Su, M., Zhu, X., Zhang, W. "Probing the Acyl Carrier Protein-Enzyme Interactions Within Terminal Alkyne Biosynthetic Machinery" *AIChE J.* **2018**. (tribute to founders: Jay Bailey)
7. Zhu, X., Zhang, W. "Terminal Alkyne Biosynthesis in Marine Microbes" *Methods Enzymol.* **2018**, 604, 89-112
8. Harris, N. C., Sato, M., Herman, N. A., Twigg, F., Cai, W., Liu, J., Zhu, X., Downey, J., Khalaf, R., Martin, J., Koshino, H., Zhang, W. "Biosynthesis of isonitrile lipopeptides by conserved non-ribosomal peptide synthetase gene clusters in *Actinobacteria*" *Proc. Natl. Acad. Sci. U. S. A.* **2017**, 114, 7025-7030.
9. Zhu, X., Shieh, P., Su, M., Bertozzi, C. R., Zhang, W. "A fluorogenic screening platform enables directed evolution of an alkyne biosynthetic tool." *Chem. Commun.* **2016**, 52, 11239-11242.
10. Liu, J., Zhu, X., Kim, S., Zhang, W. "Antimycin-type depsipeptides: discovery, biosynthesis, chemical synthesis, and bioactivities." *Nat. Prod. Rep.* **2016**, 33, 1146-1165.
11. Rui, Z., Harris, N. C., Zhu, X., Huang, W., Zhang, W. "Discovery of a family of desaturase-like enzymes for 1-alkene biosynthesis." *ACS Catal.* **2015**, 5, 7091-7094.
12. Liu, J., Zhu, X., Zhang, W. "Identifying the minimal enzymes required for biosynthesis of epoxyketone proteasome inhibitors." *ChemBioChem.* **2015**, 16, 2585-2589.
13. Zhu, X., Su, M., Manickam, K., Zhang, W. "Bacterial genome mining of enzymatic tools for alkyne biosynthesis." *ACS Chem. Biol.* **2015**, 10, 2785-2793.
14. Zhu, X., Zhang, W. "Tagging polyketides/non-ribosomal peptides with a clickable functionality and applications." *Front. Chem.* **2015**, 3: 11.
15. Zhu, X., Liu, J., Zhang, W. "De novo biosynthesis of terminal alkyne-labeled natural products." *Nat. Chem. Biol.* **2015**, 11, 115-120. (selected as NCB's greatest hit)
16. Liu, J., Zhu, X., Seipke, R. F., Zhang, W. "Biosynthesis of antimycins with a reconstituted 3-formamidosalicylate pharmacophore in *Escherichia coli*." *ACS Synth. Biol.* **2015**, 4, 559-565.
17. Rui, Z., Li, X., Zhu, X., Liu, J., Domigan, B., Barr, I., Cate, J., Zhang, W. "Microbial biosynthesis of medium-chain 1-alkenes by a non-heme iron oxidase." *Proc. Natl. Acad. Sci. U. S. A.* **2014**, 111, 18237-18242.
18. Sandy, M., Zhu, X., Rui, Z., Zhang, W. "Characterization of AntB, a promiscuous acyltransferase involved in antimycin biosynthesis." *Org. Lett.* **2013**, 15, 3396-3399.
19. Bo, B., Zhu, X., Miao, P., Pei, D., Jiang, B., Lou, Y., Shu, Y., Li, G. "An electrochemical biosensor for clenbuterol detection and pharmacokinetics investigation." *Talanta* **2013**, 113, 36-40.
20. Zheng, D., Zhu, X., Zhu, X., Bo, B., Yin, Y., Li, G. "An electrochemical biosensor for the direct detection of oxytetracycline in mouse blood serum and urine". *Analyst* **2013**, 13, 1886-1890.
21. Zheng, D., Zhu, X., Ding, X., Zhu, X., Yin, Y., Li, G. "Sensitive detection of CD147/EMMPRIN and its expression on cancer cells with electrochemical technique." *Talanta* **2013**, 105, 187-191.
22. Cao, Y., Zhu, S., Yu, J., Zhu, X., Yin, Y., Li, G. "Protein detection based on small molecule-linked DNA." *Anal. Chem.* **2012**, 84, 4314-4320.
23. Yang, N., Cao, Y., Han, P., Zhu, X., Sun, L., Li, G. "Tools for investigation of the RNA endonuclease activity of mammalian Argonaute2 protein". *Anal. Chem.* **2012**, 84, 2492-2497.
24. Chen, G., Chen, Y., Yang, N., Zhu, X., Sun, L., Li, G. "Interaction between curcumin and mimetic biomembrane." *Sci. China. Life Sci.* **2012**, 55, 527-32.
25. Hua, B., Wang, J., Wang, K., Li, X., Zhu, X., Xia, X. "Greatly improved catalytic activity and direct electron transfer rate of cytochrome C due to the confinement effect in a layered self-assembly structure." *Chem. Commun.* **2012**, 48, 2316-2318.

PRESENTATIONS

1. Biological Division Seminar, Department of Chemistry, Texas A&M University, College Station, TX, 03/2023.
2. PLPM seminar, Department of Plant Pathology and Microbiology, Texas A&M University, College Station, TX, 02/2023.
3. Gamma Delta chapter of the Omega Chi Epsilon (OXE) Honor Society, Texas A&M University at Qatar, virtual, 03/2022.
4. Bio-Group Seminar, Department of Electrical and Computer Engineering, Texas A&M University, College Station, TX, virtual, 10/2020.
5. Genetics and Genomics (G2) Seminar, Texas A&M Institute for Genome Sciences and Society (TIGSS), College Station, TX, virtual, 09/2020
6. MBIOT, Texas A&M University, College Station, TX, 11/2019
7. CHEN EH event, Chemical Engineering, Texas A&M University, College Station, TX, 10/2019
8. School of Chemistry and Chemical Engineering, The Huazhong University of Science and Technology, Wuhan, China, 12/2018
9. International Conference on Biomolecular Engineering (ICBE), San Diego, CA, 01/2017
10. AIChE Annual Meeting, San Francisco, CA, 11/2016.
11. Chemical and Biomolecular Engineering Department Colloquium, UC Berkeley, Berkeley, CA, 11/2016.
12. 2016 Gordon Research Conference – Enzymes, Coenzymes & Metabolic Pathways, Waterville Valley, NH, 07/2016.
13. Pacificchem 2015, Honolulu, HI, 12/2015.
14. EBI Seminar Series, Berkeley, CA, 02/2015.
15. AIChE Annual Meeting, Atlanta, GA, 11/2014.

TEACHING EXPERIENCE

Spring 2022 to Spring 2023

Chemical Engineering Heat Transfer Operations (CHEN 323) Texas A&M University *Instructor*

Fall 2019, 2020, 2021

Fluid Mechanics for Chemical Engineers (CHEN 304) Texas A&M University *Instructor*

Spring 2021

Special Topics in Metabolic Engineering and Synthetic Biology (CHEN 489/689)
Texas A&M University *Instructor*

EXTERNAL PROFESSIONAL SERVICE

Conference Organizing

1. 08/2023 (Scheduled), Session co-convenor for “Modern Natural Product Discovery” in the topic of natural products, SIMB Annual Meeting.
2. 08/2021, Session co-president for “Protein Engineering Advances in Protein Engineering 1”, ACS Division of Biochemical Technology (BIOT).
3. 08/2021, Session co-convenor for “New Natural Products and New Sources” in the topic of natural products, SIMB Annual Meeting.

Grant Review Panel

03/2023, NIH study section of Drug Discovery and Molecular Pharmacology A (DMPA)

Grant Proposal Review

01/2022, Ad hoc review for NSF SCH (Smart & Connected Health) Program

Peer Reviewer for Journals

Microbial Biotechnology, RSC Chemical Biology, Journal of Bacteriology, Chemical Communications, Marine Drugs, Frontiers in Molecular Biosciences, Biochemical Engineering Journal, Analytica Chimica Acta, Molecules, Sensors, Applied Sciences, Nutrients, Fermentations.

Member of the Reviewer Board of “*Microorganisms*”.

Review editor of the editorial board of “*Frontiers in Natural Products*”.