Zhiwei Zhou, Ph. D.

Department of Pathology, Stanford University
269 Campus Drive, Palo Alto, CA 94305
Email: zhouzw@stanford.edu   Telephone: +1-628-488-3020

PROFESSIONAL EXPERIENCE

- Postdoctoral Scholar, Stanford University, Palo Alto, United States   Jan. 2023 - Now
    Metabolomics; Microbiome; Bioinformatics
    Advisor: Prof. Dylan Dodd

- Research Scientist, Shanghai Institute of Organic Chemistry, Shanghai   Apr. 2021 - Sep. 2022
    Interdisciplinary Research Center on Biology and Chemistry (IRCBC), SIOC, CAS
    Metabolomics; Metabolite annotation; Bioinformatics
    Advisor: Prof. Zheng-Jiang Zhu

EDUCATION

- Ph.D., Chinese Academy of Science, Shanghai, China   Sep. 2015 - Jan. 2021
    Interdisciplinary Research Center on Biology and Chemistry (IRCBC), SIOC, CAS
    Dissertation: Ion Mobility-Mass Spectrometry based Metabolomics and Lipidomics
    Advisor: Prof. Zheng-Jiang Zhu

- B.S., Inner Mongolia University, Hohhot, China   Sep. 2011 - Jun. 2015

AWARDS AND HONORS

- Dean's Postdoctoral Fellowship, School of Medicine, Stanford University, 2024
- Basic Research Award, Stanford Pathology Research Retreat, Palo Alto, 2023
- Outstanding Poster Presentation Award, The 2nd Annual Conference for the Chinese Society of Metabolomics and International Symposium on Metabolomics, Shanghai, 2021
- Outstanding Graduate Student Award (Top 5%), University of Chinese Academy of Sciences, 2021
- China National Scholarship (Top 0.2%), China Government, 2019
- Outstanding Young Scientist Presentation Award, The 1st Annual Conference for the Chinese Society of Metabolomics and International Symposium on Metabolomics, Shanghai, 2019
- Chinese Academy of Sciences (CAS) President's Scholarship (Top 1%), University of Chinese Academy of Sciences, 2018
- Merit Student Award, University of Chinese Academy of Sciences, 2018
- Outstanding Young Scientist Presentation Award, The 3rd China Mass Spectrometry Conference, Xiamen, 2017
- Inner Mongolia Outstanding Undergraduate Award, Inner Mongolia Autonomous Region, 2015

PUBLICATIONS

First author publications:

1. **Z. Zhou**†, M. Luo†, H. Zhang, Y. Yin, Y. Cai, and Z.-J. Zhu*, Metabolite Annotation from Knowns to

Unknowns through Knowledge-guided Multi-layer Metabolic Networking, **Nature Communications,** 2022, 13: 6656.

2. **Z. Zhou**, M. Luo, X. Chen, Y. Yin, X. Xiong, R. Wang, and Z.-J. Zhu*, Ion Mobility Collision Cross-Section Atlas for Known and Unknown Metabolite Annotation in Untargeted Metabolomics，**Nature Communications**, 2020, 11: 4334.

3. J. Tu, **Z. Zhou (Co-first author)**, T. Li, and Z-J. Zhu*, The Emerging Role of Ion Mobility-Mass Spectrometry in Lipidomics to Facilitate Lipid Separation and Identification, **Trends in Analytical Chemistry**, 2019, 116, 332-339.

4. **Z. Zhou**, X. Shen, X. Chen, J. Tu, X. Xiong, and Z.-J. Zhu*, LipidIMMS Analyzer: Integrating Multi-dimensional Information to Support Lipid Identification in Ion Mobility–Mass Spectrometry based Lipidomics, *Bioinformatics*, 2019, 35, 698-700.

5. **Z. Zhou**, J. Tu, and Z.-J. Zhu*, Advancing the Large-Scale CCS Database for Metabolomics and Lipidomics at the Machine-Learning Era, *Current Opinion in Chemical Biology*, 2018, 42, 34-41.

6. **Z. Zhou**, J. Tu, X. Xiong, X. Shen, and Z.-J. Zhu*, LipidCCS: Prediction of Collision Cross-Section Values for Lipids with High Precision to Support Ion Mobility-Mass Spectrometry based Lipidomics, *Analytical Chemistry*, 2017, 89, 9559–9566.

7. **Z. Zhou**, X. Xiong, and Z.-J. Zhu*, MetCCS Predictor: a web server for predicting collision cross-section values of metabolites in ion mobility-mass spectrometry based metabolomics, *Bioinformatics*, 2017, 33, 2235-2237.

8. **Z. Zhou**, X. Shen, J. Tu, and Z.-J. Zhu*, Large-Scale Prediction of Collision Cross-Section Values for Metabolites in Ion Mobility - Mass Spectrometry, *Analytical Chemistry*, 2016, 88, 11084-11091.

Collaborative publications:

9. Y. Liu, J. Jarman, Y.Low, H. Augustijn, S. Huang, H. Chen, M. DeFeo, K. Sekiba, B. Hou, X. Meng, A. Weakley, A. Cabrera, **Z. Zhou**, G. Wezel, M. Medema, C. Ganesan, A. Pao, S. Gombar, D. Dodd*, A widely distributed gene cluster compensates for uricase loss in hominids, **Cell**, 2023, 186: 16

10. M. Luo, Y. Yin, **Z. Zhou**, H. Zhang, X. Chen, H. Wang, and Z.-J. Zhu*, A Mass Spectrum-oriented Computational Method for Ion Mobility-resolved Untargeted Metabolomics, **Nature Communications**, 2023, 14: 1813.

11. Y. Cai, **Z. Zhou**, and Z.-J. Zhu*, Advanced Analytical and Informatic Strategies for Metabolite Annotation in Untargeted Metabolomics, **Trends in Analytical Chemistry**, 2023, 158: 116903.

12. W. Liu, W. Zhang*, T. Li, **Z. Zhou**, M. Luo, X. Chen, Y. Cai*, and Z.-J. Zhu*, Four-dimensional Untargeted Profiling of N-acylethanolamine Lipids in the Mouse Brain Using Ion Mobility-Mass Spectrometry, **Analytical Chemistry**, 2022, 94, 12472-12480.

13. R. Wang, Y. Yin, J. Li, H. Wang, W. Lv, Y. Gao, T. Wang, Y. Zhong, **Z. Zhou**, Y. Cai, X. Su, N. Liu*, and Z.-J. Zhu*, Global Stable-isotope Tracing Metabolomics Reveals System-wide Metabolic Alternations in Aging Drosophila, **Nature Communications**, 2022, 13: 3518.

14. X. Chen†, Y. Yin†, M. Luo, **Z. Zhou**, Y. Cai*, and Z.-J. Zhu*, Trapped Ion Mobility Spectrometry-Mass Spectrometry Improves the Coverage and Accuracy of Four-dimensional Untargeted Lipidomics, **Analytica Chimica Acta**, 2022, 1210: 339886.

15. T. Li, Y. Yin, **Z. Zhou**, J. Qiu, W. Liu, X. Zhang, K. He, Y. Cai, and Z.-J. Zhu*, Ion Mobility-based Sterolomics Reveals Spatially and Temporally Distinctive Sterol Lipids in the Mouse Brain, **Nature Communications**, 2021, 12: 4343.

16. H. Tsugawa , K. Ikeda, M. Takahashi , A. Satoh, Y. Mori, H. Uchino, N. Okahashi, Y. Yamada, I. Tada, P. Bonini, Y. Higashi, Y. Okazaki, **Z. Zhou**, Z.-J. Zhu, J. Koelmel, T. Cajka , O. Fiehn, K. Saito, M. Arita, and M. Arita*, A lipidome atlas in MS-DIAL 4, **Nature Biotechnology**, 2020, 38, 1159-1163.

17. X. Chen†, Y. Yin†, **Z. Zhou**, T. Li, and Z.-J. Zhu*, Development of A Combined Strategy for Accurate Lipid Structural Identification and Quantification in Ion-Mobility Mass Spectrometry based Untargeted Lipidomics, **Analytica Chimica Acta**, 2020, 1136, 115-124.

18. M. Luo, **Z. Zhou**, and Z.-J. Zhu*, The Application of Ion Mobility-Mass Spectrometry in Untargeted Metabolomics: from Separation to Identification, **Journal of Analysis and Testing**, 2020, 4, 163-174.

PRESENTATIONS

Oral presentations:

- **Z. Zhou**, Z.-J. Zhu, Metabolic Reaction Network-based Metabolite Annotation for Untargeted Metabolomics: from Knowns to Unknowns, **Early-Career Members Network of Metabolomics Society**, March 29, 2022, Online

- **Z. Zhou,** Ion Mobility Collision Cross-Section Atlas for Known and Unknown Metabolite Annotation**, QM working group (QMWG) meeting,** October 12, 2021, Online

- **Z. Zhou,** Ion Mobility Collision Cross-Section Atlas for Known and Unknown Metabolite Annotation in Untargeted Metabolomics, **The 16th Annual Conference of the Metabolomics Society (Virtual conference),** October 28, 2020, Online

- **Z. Zhou**, Ion mobility – Mass Spectrometry based Multi-dimensional Metabolite Annotation, **The 15th Annual Conference of the Metabolomics Society**, June, 2019, Hague, Netherlands

- **Z. Zhou**, Ion mobility – Mass Spectrometry based Metabolomics, **The 1st Annual Conference for the Chinese Society of Metabolomics**, April, 2019, Shanghai, China

- **Z. Zhou**, LipidIMMS Analyzer: A Tutorial for Lipid Identification in Ion Mobility-Mass Spectrometry, **Agilent 6560 IM-MS Training Workshop**, October, 2018, Shanghai, China

- **Z. Zhou,** Z.-J. Zhu*, The Generation of Large-Scale CCS Database to Support Metabolomics and Lipidomics, **The 4th Annual ASMS Agilent Ion Mobility Reception**, June, 2018, San Diego, US

- **Z. Zhou,** Z.-J. Zhu*, Ion mobility – Mass Spectrometry for metabolomics and lipidomics, **World Federation of Chinese Medicine Societies**, June, 2018, Nanchang, China

- **Z. Zhou,** M. Xu, and Z.-J. Zhu*, Ion mobility–mass spectrometry based high-throughput metabolomics facilitates metabolite biomarker discovery in colorectal cancer. **The 13th International Conference of the Metabolomics Society**, June, 2017, Brisbane, Australia

- **Z. Zhou,** J. Tu and Z.-J. Zhu*, LipidIMMS: Ion Mobility – Mass Spectrometry based Multiple-dimensional Lipidomics. **The 3rd China Mass Spectrometry Conference**, December, 2017, Xiamen, China

Poster presentations:

- **Z. Zhou**, Y. Liu, H., R. Colman, M. Rosen, M. Fischbach, D. Dodd*, Plasma metabolomics uncovers characteristic metabolic aberrancies in early-onset Crohn's Disease, **Stanford Pathology Research Retreat**, Nov 2023, Palo Alto, US

- **Z. Zhou,** Z.-J. Zhu*, Ion Mobility Collision Cross-Section Atlas for Known and Unknown Metabolite Annotation in Untargeted Metabolomics, **The 2nd Annual Conference for the Chinese Society of Metabolomics and International Symposium on Metabolomics**, Sep 2021, Shanghai, China

- **Z. Zhou,** Z.-J. Zhu*, LipidIMMS Analyzer: Integration of Multi-Dimensional Information to Support Ambiguous Lipid Identification for Ion Mobility-Mass Spectrometry based Lipidomics. **The 66th ASMS Conference on Mass Spectrometry and Allied Topics**, June 2018, San Diego, US

- **Z. Zhou,** Z.-J. Zhu*, The Generation of Large-Scale CCS Database to Support Ion Mobility – Mass Spectrometry based Metabolomics and Lipidomics. **The 66th ASMS Conference on Mass Spectrometry and Allied Topics**, June 2018, San Diego, US

- **Z. Zhou,** Z.-J. Zhu*, Large-Scale Generation of CCS Values to Support Unambiguous Identification of Metabolites in Untargeted Metabolomics and Lipidomics. **The 13th International Conference of the Metabolomics Society,** June 2017, Brisbane, Australia

DEVELOPED ALGORITHMS AND TOOLS

- **MetDNA2**: an algorithm integrates knowledge-guided multi-layer networks for known and unknown metabolite annotation (available at http://metdna.zhulab.cn/, completed >17,000 projects).

- **AllCCS**: the largest CCS atlas covers >5000 experimental CCS and >13 million predicted CCS for >2 million small molecules (available at http://allccs.zhulab.cn/, 560 users with ~3 million visits).

- **LipidIMMS Analyzer**: a novel tool to integrate multi-dimensional information for lipid identification in IM-MS based lipidomics (available at http://imms.zhulab.cn/LipidIMMS/, completed >2500 projects).

- **LipidCCS**: an algorithm and user-friendly webserver to predict collision cross section (CCS) values for lipids (available at http://www.zhulab.cn/LipidCCS/)

- **MetCCS**: an algorithm and user-friendly webserver to predict collision cross section (CCS) values for metabolites (available at http://www.zhulab.cn/MetCCS/)

Journal Referee

- **Nature Communications**

- **Food Chemistry**

- **Communications Biology**

- **Journal of Chromatography A**

- **Journal of Chromatography B**

- **Medical Science Monitor**