Global metabolomics and lipidomics approaches to probe virus-host interactions

Zhang, Z.

Curriculum vitae

Zhengzheng Zhang was born on March 09th, 1990 in the city of Changzhi, Shanxi province, China. After graduating from Changzhi No.9 Senior High School in 2009, she got admitted to the major of Chemistry at Shanxi University (SXU) in Shanxi, China. During her bachelor's study, she was awarded university scholarships. In 2013, she obtained her bachelor's degree and did her masters in Herbal Biology in the same university.

During her master's study, she focused on NMR-based plant metabolomics analysis of Traditional Chinese medicines (TCM) where she established quality control and drug efficacy evaluation of Danggui and *Farfarae Flos*. The relevant research results were published in the journal JPBA as well as a patent in isolating the bioactive compound (Z)-*Ligustilide* from Danggui. She was awarded the China National Scholarship due to her exceptional contributions.

In October 2016, she started her PhD project under the supervision of Prof. Dr. Thomas Hankemeier, at Leiden Academic Centre for Drug Research (LACDR) of Leiden University in the Netherlands. Between 2016 and 2020, under the supervision of Dr. Amy Harms and Dr. Ahmed Ali, and with support of Dr. Peter Linderburg, and Dr. Isabelle Kohler, she evaluated and developed lipidomics platforms for infectious diseases. With these platforms, she looked into the role of metabolome and lipidome in virus-host interactions. Since Oct 2020, she has been continuously supported by the Metabolomics and Analytics Centre to continue her research in COVID-19 related projects. Relevant research results were published in the journals Chromatography A, AIDS and Biomolecules. In 2022, she gave a poster presentation at the Metabolomics Conference 2022 in Valencia, Spain. In 2023, she was invited to present her work at a webinar with SCIEX.

List of publications

Part of this thesis:

1. J.C. Schoeman*, **Z. Zhang***, A. Kindt, L. Meyer, A. Harms, M.L. Newell, T. Hankemeier, M.J. Bunders. Characterization of neonatal metabolism in low-birth-weight infants born to HIV suppressed mothers receiving cART. In preparation

2. **Z. Zhang***, K. Duri*****, K.L.W. Duisters*****, J.C. Schoeman, P. Chandiwana, P. Lindenburg, J. Jaeger, S. Ziegler, M. Altfeld, I. Kohler, A. Harms, F.Z. Gumbo, T. Hankemeier, M.J. Bunders, (2023). Altered methionine-sulfone levels are associated with impaired growth in HIV-exposed-uninfected children. AIDS, 37(9), 1367-1376.

3. **Z. Zhang***, M. Singh*****, A. Kindt, A.B. Wegrzyn, M.J. Pearson, A.M.A.M. Ali, A.C. Harms, P. Baker, T. Hankemeier, (2023). Development of a targeted hydrophilic interaction liquid chromatography-tandem mass spectrometry based lipidomics platform applied to a coronavirus disease severity study. Journal of chromatography. A, 1708, 464342.

4**. Z. Zhang**, K. Naama, A. Kindt, M. Singh, L. Lamont, A.J. van Gammeren, A.A.M. Ermens, A.M.A.M. Ali, A.C. Harms, L. Portengen, R.C.H. Vermeulen, W.A. Dik, A.W. Langerak, V.H. J. van der Velden, T. Hankemeier. Altered plasma lipidome is associated with disease severity in COVID-19 patients. Biomolecules. Under revision

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Not Part of this thesis:

5. L.M. de Jong, **Z. Zhang,** Y. den Hartog, *et al*, (2022). PRMT3 inhibitor SGC707 reduces triglyceride levels and induces pruritus in Western-type diet-fed LDL receptor knockout mice. Sci Rep 12, 483.

6. M. Hoekstra, **Z. Zhang,** P.W. Lindenburg, M. Van Eck, (2023). Scavenger Receptor BI Deficiency in Mice Is Associated With Plasma Ceramide and Sphingomyelin Accumulation and a Reduced Cholesteryl Ester Fatty Acid Length and Unsaturation Degree. J Lipid Atheroscler. Nov;13:e5.

7. **Z. Zhang**, M. Fan, X. Hao, X. Qin, Z. Li (2016). Integrative drug efficacy assessment of Danggui and European Danggui using NMR-based metabolomics. Journal of Pharmaceutical and Biomedical Analysis, 120, 1-9.

8. Z. Li, **Z. Zhang**, G. Du, X. Hao, X. Qin, (2015). Comparative analysis of Danggui and European Danggui using nuclearmagnetic resonance-based metabolic fingerprinting. Journal of Pharmaceutical and Biomedical Analysis, 103, 44-51.

9. **Z. Zhang**, D. Tian, Z. Li, X. Qin, (2015). Evaluation of the Water-Soluble Extractive of Astragali Radix with Different Growth Patterns Using 1H NMR Spectroscopy. Zeitschrift fuer Naturforschung C, 70(9-10)c: 257-263.

10. Z. Li, **Z. Zhang**, L. Zhang, S. Zhang, X. Qin, (2014). A method for Z-ligustilide extraction from European Danggui. Patent No. 201410218763.3

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