

Multilayer cancer glycomics

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Citation

Wang, D. (2023, May 17). *Multilayer cancer glycomics*. Retrieved from https://hdl.handle.net/1887/3618440

Version:	Publisher's Version
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Note: To cite this publication please use the final published version (if applicable).

Curriculum vitae

Di Wang was born on June 10th 1991 in Xinxiang, China. After she finished her high school education, she enrolled in the bachelor Biological Engineering at the Life Science and Technology Institute at Xinxiang Medical University in 2011. After successfully obtaining her bachelor's degree, she started her masters' Biological Engineering at the National Glycoengineering Research Center at Shandong University from 2015 to 2018. During this time, she set her first step into the world of glycosylation under the supervision of Associate Prof. Yikang Shi, where she investigated the role of *O*-GlcNAcylation of proteins in the antitumor activity of platinum drugs *in vitro* and *in vivo*. Meantime, she studied the expression and location of p62 in *Escherichia coli* Origami2(DE3). She mastered various experimental skills including cell culturing, cell transfection, reverse transcription-PCR, western blotting, immunoprecipitation, flow cytometry and construction of a nude mouse tumor model.

After finishing her masters', she applied and was rewarded a scholarship of the Chinese Scholarship Council in 2018 to pursue a Ph.D. under the supervision of Prof. Manfred Wuhrer, Dr. Guinevere S.M. Lageveen-Kammeijer and Dr. Tao Zhang at the Center for Proteomics and Metabolomics (CPM) at Leiden University Medical Center (LUMC), the Netherlands. Her main topic focused on characterizing the glycomic profiles of colorectal cancer (CRC) and acute myeloid leukemia (AML) with the application of porous graphitized carbon (PGC) nano–liquid chromatography (LC) electrospray ionization tandem mass spectrometry (MS). The majority of this work is presented in this thesis.

Ph.D. portfolio

Disciplinary courses

- Ph.D. Introductory Meeting
- BROK Course- regulations for conducting clinical research in the Netherlands (BROK[®])
- Basic Methods and Reasoning in Biostatistics
- Advanced Biomolecular Mass Spectrometry Course
- 13th Mass Spectrometry School in Biotechnology and Medicine (MSBM)
- Academic Writing for PhDs
- Data stewardship: handling data in all phases of research

Scientific contribution to conferences

Oral presentations

 Combined PGC LC-MS/MS and mRNA expression analyses in acute myeloid leukemia cells delineates differential GSL glycans signatures. 37th International Symposium on Microscale Separation and Bioanalysis (2021)

Poster presentations

- The study of glycosphingolipid-glycans signatures in different human acute myeloid leukemia cell lines using PGC LC-MS/MS in negative mode. 13th Mass Spectrometry School in Biotechnology and Medicine (MSBM), Dubrovnik, Croatia (2019)
- *Glycosphingolipid-glycan signatures of acute myeloid leukemia cell lines reflect hematopoietic differentiation*. NVMS Fall Meeting, Leiden, The Netherlands (2019)
- *Glycosphingolipid-glycans signatures of different human acute myeloid leukemia cell lines explored by PGC LC-MS/MS.* Society for Glycobiology Virtual Annual Meeting conference (2020)
- *High Diversity of Glycosphingolipid Glycans of Colorectal Cancer Cell Lines Reflects the Cellular Differentiation Phenotype*. International Mass Spectrometry Conference (IMSC). Maastricht, The Netherlands (2022)

Congress attendance

- Global CESI-MS Symposium, Leiden, The Netherlands (2018)
- 29th Joint Glycobiology, 2018, Ghent, Belgium (2018)
- Symposium: 'Glyco-science and its medical implications', Amsterdam, The Netherlands (2019)
- e-NVMS Meeting Part I (2021)
- e-NVMS meeting on Covid-19 Research Part II (2021)

List of publications

1. In-depth analysis of the *N*-glycome of colorectal cancer cell lines

<u>Di Wang</u>[#], Valeriia Kuzyk[#], Katarina Madunić, Tao Zhang, Oleg A. Mayboroda, Manfred Wuhrer, Guinevere S.M. Lageveen-Kammeijer [#] contributed equally *Int J Mol Sci, 2023. 24(5)* (Chapter 2)

2. High diversity of glycosphingolipid glycans of colorectal cancer cell lines reflects the cellular differentiation phenotype

<u>Di Wang</u>, Katarina Madunić, Tao Zhang, Oleg A Mayboroda, Guinevere S M Lageveen-Kammeijer, Manfred Wuhrer *Mol Cell Proteomics*, 2022. 21(6): p. 100239 (Chapter 3)

3. Transcriptional signature of (sialyl)Lewis expression across *N*-, *O*- and GSL glycans in differentiated colorectal cancer cell lines

<u>Di Wang</u>, Katarina Madunić, Oleg A. Mayboroda, Guinevere S.M. Lageveen-Kammeijer, and Manfred Wuhrer Manuscript submitted (Chapter 4)

4. Profound Diversity of the *N*-Glycome from Microdissected Regions of Colorectal Cancer, Stroma, and Normal Colon Mucosa

<u>Di Wang</u>[#], Katarina Madunić[#], Tao Zhang, Guinevere SM LageveenKammeijer, Manfred Wuhrer [#] contributed equally *Engineering*, 2022 (Chapter 5)

5. Glycosphingolipid-glycan signatures of acute myeloid leukemia cell lines reflect hematopoietic differentiation

<u>Di Wang</u>, Tao Zhang, Katarina Madunić, Antonius A. de Waard, Constantin Blöchl, Oleg A. Mayboroda, Marieke Griffioen, Robbert M. Spaapen, Christian G. Huber, Guinevere S.M. Lageveen-Kammeijer, and Manfred Wuhrer

J Proteome Res, 2022. 21(4): p. 1029-1040 (Chapter 6)

6. Transcriptionally imprinted glycomic signatures of acute myeloid leukemia

Constantin Blöchl[#], <u>Di Wang</u>[#], Oleg A. Mayboroda, Guinevere S.M. Lageveen-Kammeijer, and Manfred Wuhrer [#] contributed equally *Cell Biosci, 2023. 13(1): p. 31* (Chapter 7) 7. Cisplatin enhances protein *O*-GlcNAcylation by altering the activity of OGT, OGA and AMPK in human nonsmall cell lung cancer cells

<u>Di Wang</u>[#], Jiaan Wu[#], Dandan Wang, Xiaoyan Huang, Naining Zhang and Yikang Shi [#] contributed equally *Int J Oncol*, 2021. 58(6)

- 8. Integrated *N* and *O*-glycomics of acute myeloid leukemia (AML) cell lines Constantin Blöchl, <u>Di Wang</u>, Katarina Madunić, Guinevere S. M. Lageveen-Kammeijer, Christian G. Huber, Manfred Wuhrer and Tao Zhang *Cells*, 2021. **10**(11)
- 9. Tunicamycin potentiates paclitaxel-induced apoptosis through inhibition of PI3K/AKT and MAPK pathways in breast cancer

Shengshi Huang, <u>Di Wang</u>, Shu Zhang, Xiaoyan Huang, Dandan Wang, Muhammad Ijaz, Yikang Shi

Cancer Chemother Pharmacol, 2017. 80(4): p. 685-696

Acknowledgments

First, I would like to sincerely thank my promotor, Prof. Dr. Manfred Wuhrer for providing me with an opportunity to conduct my Ph.D. research and thank you for always being there to support me and giving me confidence in my work. I am so lucky to have you as my supervisor. I would also like to thank Prof. Peter ten Dijke who introduced me to Manfred and always provided me with great support, kindness and encouragement during my Ph.D. journey.

A big thank you to my co-promotor, my unbelievably amazing super G, Guinevere. Thank you so much for your valuable time and always being there to support me, for believing in me and for the great suggestions on my work. I would like to thank my co-promotor Tao for introducing me to the world of glycobiology, thank you for teaching me so many technical skills, for your patience and great support in my work.

Many thanks to my dear Katarina, even though you are not my formal supervisor, you helped me a lot. Thank you so much for always being there to support me, not only at work but also in daily life to make me feel confident, safe and happier. I am really happy that I met you during my stay here Katy. Big thanks to Oleg, thank you for your great help to my work. I always enjoyed talking with you. Your knowledgeable and humor always inspires me. Many thanks to my great collaborators, Antonius A. de Waard, Marieke Griffioen, Robbert M. Spaapen, Christian G. Huber. It was a great pleasure to work with you.

Great thanks to my amazing friends, my paranymphs, Wei and Christoph. My dear Wei, as I told you, there were so many first times we experienced together, and there were so many good memories during our journey here which were priceless for me. Thank you so much for your company, your support and your patience, I appreciate it a lot. My dear friend, Christoph, I admire you for your energy and enthusiasm. You made my life here more colorful. Thank you for organizing so many interesting activities and cooking delicious German food. I really enjoyed the time we spend together.

Many thanks to Elena, Constantin, Steffen, Guusje, Willem, Yue and Adam, there were so many great moments we had together. Beach time, fishing, trips to Texel

and Germany, celebrating Halloween, New Years and Chinese new year, cooking together and so on. You really made my life here more bright. Thank you so much, guys. I believe there will be many more memories to come.

I would like to thank my colleagues, Tamas, Leriia, Elham, Sander, Fanny, Martina, Ana, Alan, Iwona, Daniel, Osmond and Alessio. It was great to meet and work with you at the CPM. Big thanks to Carolien, Agnes, Wenjun, Lisa, Jan, Irina and Arnoud for all your help in regard to troubleshooting and organizing enjoyable activities. Many thanks to Suzanne and Riemke for always being so nice to help me whenever I encountered problems. Big thanks to Yuri and Paul for helping with me my Dutch summary. Big thank Noortje, Marco, David, Bram, Peter and Martin for the nice suggestions, discussion and their help in my work.

Special thanks to my greatest friend, Xueying, it is my biggest honor to have you as my friend. Your creativity, your enthusiasm and your special thoughts always make me think in different ways. Great thank you for your support and accompany. My dear Huilin, it is my big luck to meet you here, you are always caring, sharing and supporting which really makes my life brighter and happier. Many thanks to Yujing, Da, Yixin, Yijing, Xuhan, Chenwei and Zhihan. We had so much fun together, playing Mahjong, poker and cooking delicious food together. I enjoyed your company a lot. I sincerely wish you all the best in the future.

最后, 我要衷心地感谢我亲爱的老爸老妈, 感谢你们一路以来无怨无悔的爱护 和支持, 感谢你们无条件的信任. 感谢我亲爱的老妹妹夫和老弟, 你们永远是我 的骄傲. 特别感谢老弟设计的好看又有创意的封面. 感谢我的家人们, 你们是我 坚强的后盾. 最后感谢我最敬爱的导师师以康老师, 衷心地感谢您的栽培和鼓励, 让我变成更好的自己.