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## Metabolic risk and cardiovascular disease: insights from large biobanks with genetic epidemiological approaches

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## PhD Portfolio

Education and Courses	Years	Hours
PhD Introduction Meeting	2022	5
Basic Methods and Reasoning in Biostatistics	2022	42
Study designs and applications	2022	84
Statistical Aspects of Clinical Trials	2022	28
Meta Analysis	2022	28
Prediction modelling and Intervention research	2022	84
Scientific Conduct for PhD	2023	5
Causal Inference	2023	84
Responsible Research - CSB LUMC	2024	-
Responsible Research - Code management with Git	2024	14
Conference and meetings	Years	Hours
The 29 <sup>th</sup> annual Scandinavian atherosclerosis conference	2023	24
EAS Congress	2023	24
2023 MGC PhD workshop	2023	21
The 30 <sup>th</sup> annual Scandinavian atherosclerosis conference	2024	24
EAS Congress	2024	24
6 <sup>th</sup> International Mendelian Randomization Conference	2024	14
Student supervision and Teaching assistant	Years	Hours
Lex van den Berg (master thesis)	2024	42
Mendelian Randomization Workshop	2024	2
Traineeship abroad		
Visiting PhD at Novo Nordisk Foundation Center for Basic Metabolic Research, University of Copenhagen	2025	-

# List of publications

## Published articles included in this thesis

1. **Ao L**, van Heemst D, Jukema JW, Rensen PCN, Willems van Dijk K, Noordam R. Potential causal evidence for an ApoB-independent and HDL-related risk profile associated with coronary artery disease. *J Lipid Res.* 2025;66(4):100778.
2. **Ao L**, Noordam R, Jukema JW, van Heemst D, Willems van Dijk K. The interactions of Lipoprotein(a) with common cardiovascular risk factors in cardiovascular disease risk: evidence based on the UK Biobank. *American Journal of Preventive Cardiology.* 2025;22:101008.
3. **Ao L**, van Heemst D, Luo J, Teder-Laving M, Magi R, Frikke-Schmidt R, Willems van Dijk K, Noordam, R. Large-scale genome-wide interaction analyses on multiple cardiometabolic risk factors to identify age-specific genetic risk factors. *Geroscience.* 2024.
4. **Ao L**, Noordam R, Rensen PCN, van Heemst D, Willems van Dijk K. The role of genetically-influenced phospholipid transfer protein activity in lipoprotein metabolism and coronary artery disease. *Journal of Clinical Lipidology.* 2024;18(4):e579-e87.
5. **Ao L**, Willems van Dijk K, van Heemst D, Noordam R. Differential and sex- and age-specific risks of cardiometabolic diseases with unrelated metabolic syndrome dimensions. *Obesity.* 2023;31(7):1933-41.

## Manuscript in preparation

**Ao L**, Noordam R., et al. Sex- and Depression-specific Effects of Non-pathogenic CAG Repeats in *HTT*, *ATXN3* and *CACNA1A* on Sleep. Under submission.

**Ao L**, Noordam R., et al. Levothyroxine treatment response of cardiometabolic biomarkers in older adults with subclinical hypothyroidism: A pooled analysis of two randomized controlled trials. Under submission.

## Curriculum Vitae

Linjun Ao was born July 1996 in Chongqing, China. After completing senior high school in 2014, she enrolled in the Shanghai Medical College, Fudan University (China), where she earned her Bachelor's degree in 2018. She then studied health statistics at the West China School of Public Health, Sichuan University, and obtained a Master of Medicine in 2021.

Afterwards, she continued her education as a PhD student at the Department of Human Genetics, Leiden University Medical Center, under the supervision of Prof.dr. Ko Willems van Dijk, Dr. Diana van Heemst and Dr. Raymond Noordam. As part of her PhD journey, she conducted a research stay at the Novo Nordisk Foundation Center for Basic Metabolic Research, University of Copenhagen, under the supervision of Dr. Roelof Adriaan Johan Smit and Prof. dr. Ruth Loos. In addition, she gained industry experience through an internship as a biostatistician at a pharmaceutical company in Shanghai, China.

In the future, she aims to further explore and contribute to the fields of statistics and genetic epidemiology, building upon the knowledge and experience gained throughout her study and academic journey.

# Acknowledgements

As this journey draws to its close, it all comes down to this: my deepest gratitude to everyone who has ever helped and supported me along the way.

First and foremost, I would like to express my sincere gratitude to my supervisors for their continues guidance, advice, and support throughout my PhD journey.

To my promotor, Prof. dr. Ko Willems van Dijk, you have taught me invaluable lessons about biological mechanisms and scientific writing. I would like to express my heartfelt gratitude for your unwavering scientific guidance and for always encouraging me whenever I felt discouraged or lacked confidence.

To my co-promotor, Dr. Diana van Heemst, your expertise in biology and aging has been truly invaluable. You have always been patient in listening to my detailed ideas, and I am grateful for your support in each of my projects.

To my co-promotor, Dr. Raymond Noordam, thank you for your daily supervision and for always being there whenever I needed help. You have always been responsible in every detail of my projects, which has been essential for the progress of my PhD.

In addition, I would like to express my heartfelt gratitude to my supervisors abroad, Prof. dr. Ruth Loos and Dr. Roelof Adriaan Johan Smit. Thank you for hosting me in your research group and giving me the opportunity to explore a project together. Roelof, I deeply appreciate your insightful advice, not only on my project there but also on my thesis writing. Thank you for always being available whenever I had something to discuss. Additionally, I would like to express my sincere thanks to my colleagues in the Loos Group and the 7<sup>th</sup> floor at CBMR. I am truly grateful for your kindness and help during my stay.

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