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## **Metabolic regulation of differentiation and maturation: from induced pluripotent stem cell to endothelial cell**

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# Chapter 8

## **Curriculum Vitae List of Publications Acknowledgments**

Gesa L. Tiemeier

## Curriculum Vitae

Gesa Luise van Es-Tiemeier was born on the second of June 1993 in Bonn, Germany. She grew up in Amersfoort, Roosendaal and mostly in Rotterdam, The Netherlands, where she graduated with distinction from Marnix Gymnasium in Rotterdam in 2011. During the last two years of secondary school, she participated in Pre-University College, an extracurricular University program at Leiden University for talented students.

She commenced studying Medicine in Leiden and during her Bachelor, she joined the group of Professor Ton Rabelink for research on *Endothelial Cells and Induced Pluripotent Stem Cells* as part of the MD/PhD program. Furthermore, she participated in various courses of the Department of Epidemiology.

After obtaining her Bachelor of Science in Medicine, she continued her Medical degree in Leiden and joined the Leiden Leadership Program in 2014 and 2015. During the final year of her Master of Science in Medicine, in 2017, she had the opportunity to study for 2 terms at the University of Oxford and was part of the Lincoln College Middle Common Room. This year was a wonderful combination of (academic) clinical experience in Medical Oncology in the Oxford University Hospitals, basic research at the Sir William Dunn School of Pathology and one-to-one tutoring by Professor Bass Hassan.

After graduation with distinction, she continued her research as a PhD candidate in 2017 at the Leiden University Medical Center (LUMC) with support of a scholarship granted by the LUMC. During the following years she continued studying the role of metabolism in differentiation and maturation of induced pluripotent stem cell derived endothelial cells under supervision of prof. T.J. Rabelink, dr. B.M. van den Berg and dr. C.W. van den Berg.

The results of her research are published in peer-reviewed international scientific journals and presented in this thesis. Besides, she has presented her research at several (inter)national conferences such as the annual meetings of the International Society of Stem Cell Research (ISSCR), the Rembrandt Symposium of Cardiovascular Science and European Society for Microcirculation – European Vascular Biology Organization. Next to working on her thesis, she enjoyed teaching and supervising students. She successfully supervised the master thesis of three biomedical and biochemical students. Moreover, with supervision of prof. dr. A.J. van Zonneveld and prof. dr. D. Atsma, she has coordinated the Half-Minor Heart & Blood vessels for third

year (bio)medical students. This also provided the opportunity to obtain professional teaching and coaching resulting in a University Teaching Certificate (*BKO*).

Although directly working with patients and clinical teams is her passion, she thrives in an academic environment. It is therefore her ambition to continue working in an academic hospital combining research, teaching and patient work.

Due to foreseen limitation to the lab work and unforeseen clinical opportunities during the SARS-COVID-19 pandemic in 2020, she decided to leave the lab slightly earlier than expected to start the Internal Medicine Training Program at Imperial College London Healthcare NHS Trust in the United Kingdom.

## List of publications

Naban N, **Tiemeier G**, Kocache A, Taylor R, Keogh G, Hennah L, Sarwar N, Seckl M, and Gonzalez M. Phase 2 analysis on Covid-19-adopted etoposide (E) and cisplatin (P) regimens for patients (pts) with an advanced germ cell tumor (GCT): The CovGCT study. *Journal of Clinical Oncology* 2021 39:15\_suppl, e17013-e17013

**Tiemeier GL**, de Koning R, Wang G, et al. Lowering the increased intracellular pH of human-induced pluripotent stem cell-derived endothelial cells induces formation of mature Weibel-Palade bodies. *STEM CELLS Transl Med.* 2020; 1– 14.

Wang G, Kostidis S, **Tiemeier GL**, Sol WMPJ, de Vries MR, Giera M, Carmeliet P, van den Berg BM, Rabelink TJ. Shear Stress Regulation of Endothelial Glycocalyx Structure Is Determined by Glucobiosynthesis. *Arterioscler Thromb Vasc Biol.* 2020 ;40(2):350-364.

Wang G, **Tiemeier GL**, van den Berg BM, Rabelink TJ. Endothelial glycocalyx hyaluronan: regulation and role in prevention of diabetic complications. *Am J Pathol.* 2020. pii: S0002-9440(20)30070-5.

**Tiemeier GL**, Wang G, Dumas SJ, Sol WMPJ, Avramut MC, Karakach T, Orlova VV, van den Berg CW, Mummery CL, Carmeliet P, van den Berg BM, Rabelink TJ. Closing the Mitochondrial Permeability Transition Pore in hiPSC-Derived Endothelial Cells Induces Glycocalyx Formation and Functional Maturation. *Stem Cell Reports.* 2019;13(5):803-816.

**Tiemeier GL**, Brown JM, Pratap SE, McCarthy C, Kastrenopoulou A, Bradley K, Wilson S, Orosz Z, Gibbons CLMH, Oppermann U, and Athanasou NA. Pleomorphic liposarcoma of bone: a rare primary malignant bone tumour. *Clin Sarcoma Res.* 2018;8:2.

Hudziak JJ, **Tiemeier GL**. Neuroscience-Inspired, Behavioral Change Program for University Students. *Child Adolesc Psychiatr Clin N Am.* 2017 Apr; 26(2): 381-394.

Dane MJ, van den Berg BM, Lee DH, Boels MG, **Tiemeier GL**, Avramut MC, van Zonneveld AJ, van der Vlag J, Vink H, Rabelink TJ. A microscopic view on the renal endothelial glycocalyx. *Am J Physiol Renal Physiol.* 2015 May 1; 308(9): F956-66.

## Acknowledgments

With this note I would like to show my gratitude to everyone who supported, inspired and guided me during my research. This work and the people involved have shaped me as a person and have formed the foundation of my thinking and my (academic) career.

My academic journey started when I was very little, when my dad told me stories on the findings of his cohort studies. Until today he quizzes my epidemiological knowledge and trains me to recognize bias. He planted a seed that has flourished my curiosity today.

However, after several Epidemiology courses at the Leiden University Medical Center, I am very thankful that Prof. Hogendoorn critically challenged my motivation for epidemiology and advised me to start my MD/PhD trajectory in cell biology under the supervision of Prof. Rabelink. Later, he also opened the doors to my transition to the UK, by supporting my studies in Oxford.

I feel very honored to have had the extraordinary mentorship of prof. Rabelink; one of the best doctors, researchers and managers the Netherlands has to offer. Throughout my medical school and my PhD, Ton has guided me professionally and personally. Not only have I enjoyed our academic discussions, I highly appreciated his so called “vaderlijke advies”.

Bernard had the difficult task to teach a medical graduate biochemistry, microscopy and cell biology. He always did this with extreme patience and passion. Your thorough way of designing experiments and approachability have made a huge difference. Cathelijne introduced me to the stem cell field and facilitated inspiring collaborations. More importantly she was my companion on conferences and garden walks.

Although a PhD seem to be a very individualistic program, I enjoyed the teamwork the most.

I would like to thank Gangqi for our wonderful discussions, on science, politics and history. You taught me nearly everything in the lab, without your help and advice, I would have been nowhere. In addition, I would like to thank the great IPSC-girl gang, our better known as Tons Angels, Marije, Franca, Loes and Lonneke. How lucky we were to have such a great crew, with amazing memories of our ISSCR trips to Los Angeles and Melbourne.

My thesis would not have existed without the enormous effort of Wendy, Cristina, Annemarie and Ellen. Incredible supportive, never losing your nerves and providing the right prospective on experiments and life. Such a pleasure to work with you. Many thanks to Manon Zuurmond for transforming my drawing into beautiful illustrations, without doubt, this was my favourite part of the PhD.

As you might have noticed, half of my PhD is written by my amazing master students, Rosalie, Rozemarijn and Dominique. All three very talented, extremely motivated and hard working. It was wonderful to see you all of you grow during your internship, both professionally as personally

A special thanks for the whole Eindhoven Lab and to Anton-Jan for providing me the opportunity to develop my teaching skills and contribute to the minor Heart & Blood vessels.

Lastly, but most importantly, I would like to thank my beloved husband, Marius, for encouraging me, supporting me mentally and loving me unconditionally.

Although many thought it was insane to finish the PhD early to start medical training in the middle of the COVID-19 pandemic in London (one of the world's worst hit cities) I think this challenge has opened up many opportunities.

During a year where most labs were shut, research materials were short and conferences cancelled, I was able to experience some of the memorable and unprecedented times in internal medicine. Now that vaccinations are bringing life back to normal, it is time to pick up the pipet and look into the microscope again. There is so much still to be explored.