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Advancing cardiac safety and drug discovery screening using human stem cell-derived cardiomyocytes

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Curriculum Vitae

Tessa de Korte was born on May 29th, 1991, in Marktredwitz, Germany. After graduating from Winkler Prins Secondary School in Veendam in 2009, she pursued a Bachelor's degree in Bio-Pharmaceutical Sciences at Leiden University, The Netherlands. During her studies, she developed a strong interest in preclinical drug development, gaining hands-on experience with *in vitro*, *ex vivo*, and *in vivo* experimental models. For her Bachelor's internship, she joined the Division of Biopharmaceutics at the Leiden Academic Centre for Drug Research (LACDR) under the supervision of Dr. Amanda Foks. Her research focused on modulating T cell responses to investigate potential synergy among costimulatory molecules—a promising approach to reduce atherosclerosis development.

After earning her bachelor's degree, Tessa served as President of the study association L.P.S.V. „Aesculapius“ (2012–2013). A key achievement during her tenure was initiating a policy change that allowed students to pursue research internships beyond LACDR, which led to her own research internship at the Centre for Human Drug Research (CHDR) under the guidance of Prof. Dr. Robert Rissmann. There, she developed novel methods to quantify skin lesions in a Phase II clinical trial for moderate to severe psoriasis. Alongside, she worked as a laboratory employee at Good Biomarker Sciences (GBS) and assisted biochemistry lab courses as a student research assistant.

Tessa completed her master's program with a graduation internship at Ncardia (formerly Pluriomics), where she delved into the fascinating and rapidly evolving field of stem cells. Under the guidance of Fleur Stevenhagen and Dr. Marijn Vlaming, she explored the characteristics of human-induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs) and their application in drug development. She graduated *cum laude* in 2015 and joined Ncardia as an Application Specialist where she played a pivotal role in R&D programs and customer services for drug safety and efficacy testing. She was awarded the Jr. Investigator Travel Award by the Safety Pharmacology Society (SPS) and her contributions were recognized with invitations for presentations at various scientific conferences and events.

In 2019, Tessa began her PhD as part of a collaborative project between the LUMC and Ncardia, under the supervision of Prof. Dr. Christine Mummery, Dr. Richard Davis, and Dr. Stefan Braam. Her research, detailed in this thesis, was presented at various (online) conferences. During her PhD, she co-founded the Early Career Researcher (ECR) committee for both local and international members of the reNEW consortium (Novo Nordisk Foundation Center for Stem Cell Medicine). Tessa's involvement with the SPS, which began in 2015, also grew: she actively contributed to and chaired several committees. In 2022, she was elected to the SPS Board of Directors, and upon completing her term in 2024, joined the Program Committee to help shape future annual meetings.

Appendices

In 2022, Tessa joined Sync Biosystems (part of the Demcon group) in its earliest stages, working alongside Dr. Ir. Berend van Meer, Ir. Jasmijn Büskens, and Dr. Michiel Jannink to establish the company and its lab in Leiden. As Director of Biology she oversees the development and implementation of applications and client projects. Sync Biosystems specializes in developing innovative microfluidic technology to bring precise fluidic control and kinetics to sensitive cell culture systems, driving advancements in biotechnology.

List of Publications

1. **De Korte T**, Johnson BB, Kosmidis G, Samson-Couterie B, Mol MPH, van Helden RWJ, François L, Meraviglia V, Yiangou L, Kuipers T, Mei H, Bellin M, Braam SR, Jain S, Mummery CL, Davis RP. Industrialization of three-dimensional hiPSC-cardiac microtissues for high-throughput cardiac safety and drug discovery screening. *Manuscript under revision (Preprint available at bioRxiv: <https://doi.org/10.1101/2024.11.29.626032>)*.
2. **De Korte T**, Dannenberg M, Maass C, Snippert D, Schwach V, Brescia M, Braam SR, Passier R, Mummery CL, Davis RP. An integrated *in vitro* and *in silico* approach to assess cardiac safety of antivirals using hiPSC-derived cardiomyocytes. *Manuscript in preparation*.
3. Van Helden RWJ, **de Korte T**, Kostidis S, Mei H, Sliker RC, Knoops K, Mulder AA, Davis RP, Giera M, de Coo RI. Disrupted energetics and contraction in cardiomyocytes with infantile mitochondrial cardiomyopathy. *Manuscript in preparation*.
4. Nahon DM, Vila Cuenca M, van den Hil FE, Hu M, **de Korte T**, Frimat JP, van den Maagdenberg AMJM, Mummery CL, Orlova VV. Self-assembling 3D vessel-on-chip model with hiPSC-derived astrocytes. *Stem Cell Reports*. 2024 Jul 9;19(7):946-956.
5. Blanch-Asensio A, Grandela C, Brandão KO, **de Korte T**, Mei H, Ariyurek Y, Yiangou L, Mol MPH, van Meer BJ, Kloet SL, Mummery CL, Davis RP. STRAIGHT-IN enables high-throughput targeting of large DNA payloads in human pluripotent stem cells. *Cell Rep Methods*. 2022 Sep 22;2(10):100300.
6. Pugsley MK, Koshman YE, **de Korte T**, Authier S, Winters BR, Curtis MJ. Safety pharmacology in 2022: Taking one small step for cardiovascular safety assay development but one giant leap for regulatory drug safety assessment. *J Pharmacol Toxicol Methods*. 2022 Sep-Oct;117:107206.
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8. Pugsley MK, Koshman Y, **de Korte T**, Authier S, Curtis MJ. Safety pharmacology during the COVID pandemic. *J Pharmacol Toxicol Methods*. 2021 Sep-Oct;111:107089.
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11. Raphael F*, **de Korte T***, Lombardi D, Braam S, Gerbeau JF. A greedy classifier optimization strategy to assess ion channel blocking activity and pro-arrhythmia in hiPSC-cardiomyocytes. *PLoS Comput Biol*. 2020 Sep 25;16(9):e1008203. *These authors contributed equally to this work.
12. Pugsley MK, Bekele B, Griessel H, **de Korte T**, Authier S, Grobler AF, Markgraf CG, Curtis MJ. Twenty years of safety pharmacology model validation and the wider implications of this to drug discovery. *J Pharmacol Toxicol Methods*. 2020 Sep;105:106912.
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Appendices

15. **de Korte T**, Katili PA, Mohd Yusof NAN, van Meer BJ, Saleem U, Burton FL, Smith GL, Clements P, Mummery CL, Eschenhagen T, Hansen A, Denning C. Unlocking Personalized Biomedicine and Drug Discovery with Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes: Fit for Purpose or Forever Elusive? *Annu Rev Pharmacol Toxicol*. 2020 Jan 6;60:529-551.
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17. Pugsley MK, **de Korte T**, Udupa V, Authier S, Curtis MJ. Methodological and technological advances in safety pharmacology - New or simply nuanced? *J Pharmacol Toxicol Methods*. 2019 Sep-Oct;99:106604.
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19. Mulder P, **de Korte T**, Dragicevic E, Kraushaar U, Printemps R, Vlaming MLH, Braam SR, Valentin JP. Predicting cardiac safety using human induced pluripotent stem cell-derived cardiomyocytes combined with multi-electrode array (MEA) technology: A conference report. *J Pharmacol Toxicol Methods*. 2018 May-Jun;91:36-42.
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