Universiteit Leiden
The Netherlands

Mapping the unseen to uncover the unknown: spatial analysis of neuromuscular disorders

Heezen, L.G.M.

List of publications

Heezen, L. G. M., Abdelaal, T., Van Putten, M., Aartsma-Rus, A., Mahfouz, A., & Spitali, P. J. N. C. (2023). Spatial transcriptomics reveal markers of histopathological changes in Duchenne muscular dystrophy mouse models. Nature Communications, 14(1), 4909.

Cameron, D., Abbassi-Daloii, T., **Heezen, L. G.M.**, van de Velde, N. M., Koeks, Z., Veeger, T. T., ... & Kan, H. E. (2023). Diffusion-tensor magnetic resonance imaging captures increased skeletal muscle fibre diameters in Becker muscular dystrophy. Journal of cachexia, sarcopenia and muscle, 14(3), 1546-1557.

Heezen, L. G.M., Mao, Q., Nicolau, S., Rausell, C. N., van der Weerd, J., Kueckelhaus, J., ... & Spitali, P. (2025). Unraveling the spatial landscape of Dystrophinopathies: a transcriptomic approach to Becker and Duchenne muscular dystrophies. medRxiv, 2025-05.

Mao, Q., Ahmadi, A., de Vries, S., **Heezen, L. G.M.**, Vacca, O., Doisy, M., ... & Spitali, P. (2025). Evaluating exon-skipping therapies targeting the central nervous system in Duchenne muscular dystrophy using high-resolution spatial transcriptomics. bioRxiv, 2025-10.

Born on the 13th of May 1995 in Gouda, the Netherlands, Laura's academic journey has been driven by a strong interest in understanding human health and disease, with a particular focus on the brain and genetic mechanisms. This trajectory began in 2013, after finishing her pre-university education (VWO), with a Bachelor's degree in Health & Life Sciences at the Vrije Universiteit Amsterdam. During this period, Laura gained early research experience through internships at the Cancer Center Amsterdam and the Department of Anatomy and Neurosciences at VU Medical Center.

Hereafter, Laura pursued a Master's degree in Neuroscience & Cognition at Utrecht University (2017–2019). As part of the MSc training, research internships were completed at the Brain Center of Utrecht Medical Center and at the Department of Neuroscience of the Karolinska Institutet in Stockholm, Sweden, providing valuable international research exposure and strengthening an interest in translational neuroscience.

In 2020, Laura commenced a PhD in Human Genetics at Leiden University Medical Center, which was completed in 2026. In parallel, Laura completed additional training in Sports Psychology (2020–2021), reflecting a broader interest in human performance and behavior. Her doctoral research focused on the use of a new technique spatial transcriptomics in neuromuscular disorders. During this period, Laura presented her work at multiple national and international conferences, including meetings of the European Society of Human Genetics (2022, Vienna and 2024, Berlin) and the World Muscle Society (2024, Prague) as well as LUMC Top Research Seminar (2021), Translational Neuroscience Symposium (2022) and the NL-NMD meeting (2024). Moreover, in 2022, she undertook a research visit to the laboratory of Prof. Dr. Kevin Flanigan in Columbus, Ohio, USA.

Laura's work has been recognized with several awards, including the NanoString Installation Award (2020), Best Speaker at the Translational Neuroscience Symposium at LUMC (2022), the Gertjan van Ommen Best Article Prize (2024), an Early Career Researcher Fellowship from the World Muscle Society (2024), and the President's Prize for Best Presentation by a First-Time Presenter at the World Muscle Society meeting (2024). In addition, Laura was co-applicant on a Trampoline grant from the Association Française contre les Myopathies (AFM) in 2021.

Alongside her research activities, Laura contributed to the academic community by organizing weekly departmental meetings within the Human Genetics department (2023–2024) and serving on the organizing committee of the Spierfonds Young Talent Symposium in 2024.

In 2026, Laura transitioned to a position as Impact Manager Research at Alzheimer Nederland, continuing to bridge scientific research with societal impact, aiming to translate knowledge into meaningful progress for patients and the broader community.

Curriculum vitae

13th of May, 1995 Born in Gouda, the Netherlands

Education

2013 - 2016	BSc Health & Life Sciences, Vrije Universiteit, Amsterdam, the Netherlands
2017 - 2019	MSc Neuroscience & Cognition, Utrecht University, the Netherlands
2020 - 2021	Sports Psychology level 3, Oxbridge learning, Oxford and Cambridge University
2020 - 2026	PhD in Human Genetics, Leiden University Medical Center, the Netherlands

Professional experiences

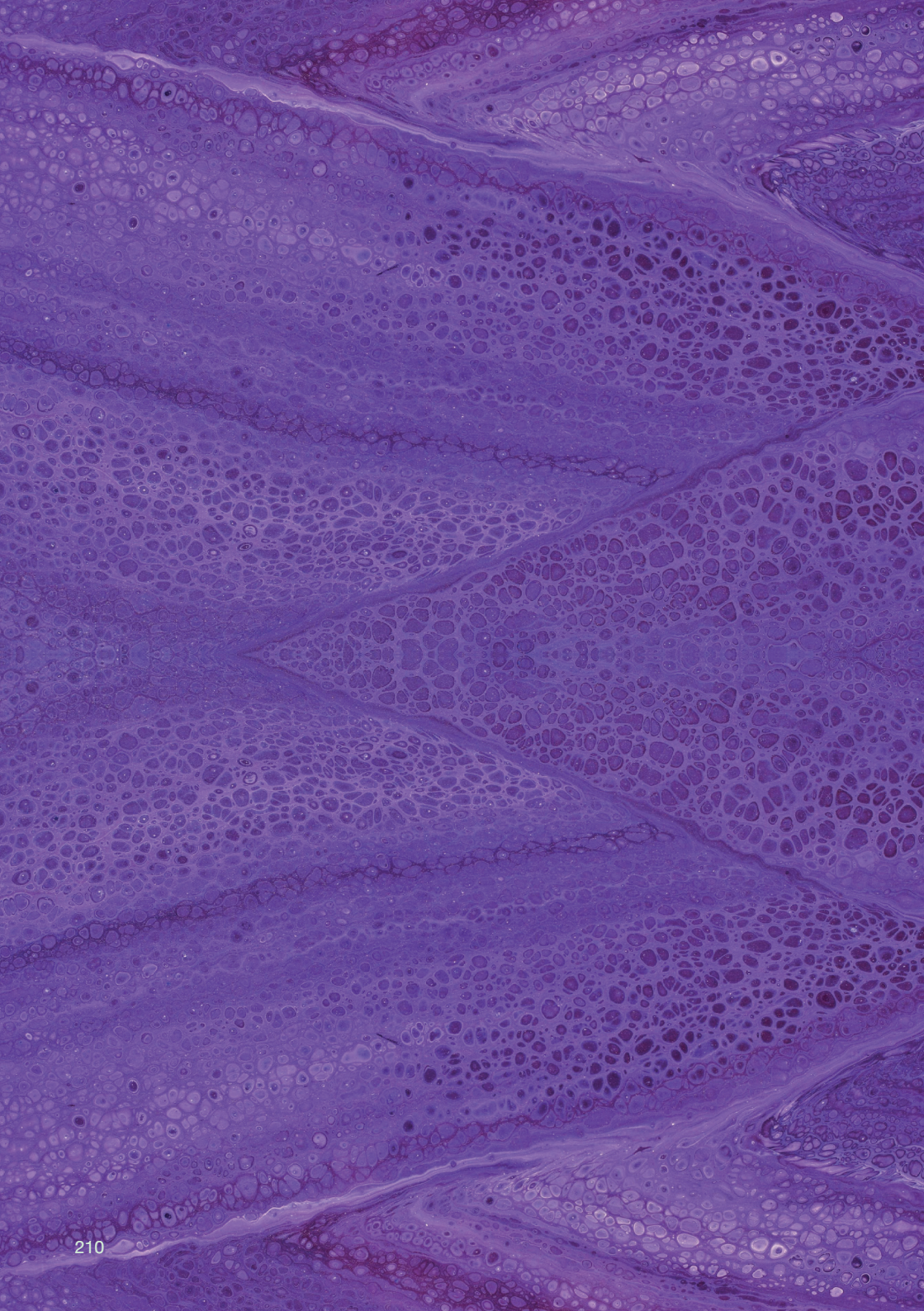
2016 - 2016	Intern, Cancer Center Amsterdam, the Netherlands
2016 - 2017	Intern, dept. of Anatomy and Neurosciences, VU Medical Center, the Netherlands
2017 - 2018	Intern, Brain Center, Utrecht Medical Center, the Netherlands
2019 - 2019	Intern, dept. of Neuroscience, Karolinska Institutet, Sweden
2022	Research visit, lab of Prof. Dr. Kevin Flanigan, Columbus, Ohio, United States
2023 - 2024	Organization committee of weekly Human Genetics departmental meeting
2024	Organization committee of the Spierfonds Young Talent Symposium
2026 - current	Impactmanager Research, Alzheimer Nederland, the Netherlands

Oral presentations at (inter)national meetings

2021	LUMC Top Research Seminar, Leiden University Medical Center, the Netherlands
2022	Translational Neuroscience Symposium, Leiden University Medical Center, the Netherlands
2022	European Society of Human Genetics, Vienna, Austria
2024	NL-NMD meeting 2024, Amsterdam, the Netherlands
2024	European Society of Human Genetics, Berlin, Germany
2024	World Muscle Society 2024, Prague, Czech Republic

Awards

2020	NanoString Installation Award
2021	Co-applicant on Trampoline grant from the Association francaise contre les myopathies (AFM)
2022	Best speaker at Translational Neuroscience Symposium, Leiden University Medical Center
2024	Gertjan van Ommen Best Article Prize 2024, Leiden University Medical Center
2024	Early career researcher fellowship 2024, World Muscle Society
2024	Presidents Prize for Best Presentation by a First Timer, World Muscle Society



It always seems impossible until it's done.

- Nelson Mandela

Acknowledgements

This thesis concludes a journey that has been personally and academically transformative, shaped by the remarkable individuals I have been fortunate to meet along the way. I am deeply grateful to all who supported me, even if I cannot name everyone.

To my promotor, Annemieke, thank you for being the warm, supportive supervisor that encompasses the same type of wonder about the world and all the beauty that can be found in nature. It is refreshing and encouraging to see your type of leadership in this academic world. Ahmed, thank you for creating a space where questions were always encouraged, for the coffees, conversations, for your infectious enthusiasm and for guiding me in developing skills I once thought beyond my reach. Pietro, your daily supervision has shaped me to the scientist I have become, for which I am eternally grateful. Thank you for your trust, the real talks, the harder decisions we had to make and mostly the inspiring brainstorm sessions where we would end up with 24 new research ideas. I will never forget the nerves I had on the day you were my assistant in the lab doing our first Visium experiment.

Remko, the first I met on this journey and I wouldn't have it any other way. Thanks for being the wise, funny, messy, honest buddy with cute cats. Flowie, you have been the best PhD buddy one can wish for and the strongest girl I've met. Onto many more memories that include mountains, glitter, drinking doves and weird adventures. Lieke, Laikie, thanks for all the memories, sport chats, hikes, laughs and support during this PhD journey. I know you will do great things in your personal life and career and I can't wait to see it. Lola, I am so glad you walked into our office and enlightened the room with all types of facts about music, food, animals, plants and more food. Happy to call such a strong woman a dear friend, I can't wait to see what's ahead for you. Solee, thanks for always being real. It's fun sharing passions (science and CrossFit) with friends, you and your perseverance keep on inspiring me. Roy, thanks for all the coffee chats, keep on being that awesome person and start running faster, you know you can do that.

To 'my' students, Rian, Lisa, Julia and Benedetta, thank you for your help, time, energy and for allowing me to spread enthusiasm about science while becoming a better supervisor. It was so fun, please never stop asking questions!

To the ExonSkip group, you have always been up for fun and terrible Christmas playlists in the lab, that's awesome. To the Mahfouz lab, thanks for appreciating my 'weird' questions and providing me with answers on all the topics I had so little knowledge on. The rösti tösti office, thank you for the fun times with colored weeks and pubquizzes, the venting and always handling my ADHD outbursts, dance breaks, crazy music playlists and a desk full of dishes.

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