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The effects of triglycerides and fatty acids on T cells: role in atherosclerosis

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List of publications

1. **Reilly, N. A.**, Dekkers, K. F., Molenaar, J. M., Arumugam, S., Kuipers, T. B., Ariyurek, Y., Hoeksema, M. A., Jukema, J. W., & Heijmans, B. T. Eicosapentaenoic acid induces an anti-inflammatory transcriptomic landscape in T cells implicating a pathway independent of triglyceride lowering in cardiovascular risk reduction. *BioRxiv,* (2024).

2. **Reilly, N. A.**, Sonnet, F., Dekkers, K. F., Kwekkeboom, J. C., Sinke, L., Hilt, S., Suleiman, H. M., Hoeksema, M. A., Mei, H., van Zwet, E. W., Everts, B., Ioan-Facsinay, A., Jukema, J. W., & Heijmans, B. T. Oleic acid triggers metabolic rewiring of T cells poising them for T helper 9 differentiation. *iScience* 27, 109496, (2024).

3. **Reilly, N. A.**, Lutgens, E., Kuiper, J., Heijmans, B. T. & Jukema, J. W. Effects of fatty acids on T cell function: role in atherosclerosis. *Nat. Rev. Cardiol.* 18, 824–837, (2021).

4. Lu, M., Krutovsky, K. V., Nelson, C. D., West, J. B., **Reilly, N. A.**, & Loopstra, C. A., Association genetics of growth and adaptive traits in loblolly pine (Pinus taeda L.) using whole-exome-discovered polymorphisms. *Tree Genetics & Genomes* 13, (2017).

Curriculum Vitae

Nathalie Reilly was born on the 25th of August, 1992 in Amsterdam, The Netherlands. She moved to the United States of America when she was 12 and completed her secondary school cum laude in 2011 in Chapel Hill, North Carolina.

She then moved to Wilmington, North Carolina to obtain her bachelor's degree in Biology with a minor in Chemistry at the University of North Carolina Wilmington. During this time, she interned three times, twice in Wilmington firstly studying the genetics of bird evolution in the group of Dr. Marcel van Tuinen and secondly investigating the gut microbiome of beached whales in the group of Dr. Ryan Rhodes. She also interned as part of the PINEMAP program in College Station, Texas helping to investigate how pine forest genetics could be modified to make them more resistant to global warming in the group of Dr. Carol Loopstra. As part of this program she also taught biology to local middle school and high school students in Wilmington, North Carolina. She completed her bachelor's degree cum laude at the University of North Carolina Wilmington in 2015.

Nathalie then moved back to Amsterdam, The Netherlands to continue her education with a master's degree in Biomolecular Sciences at the Vrije Universiteit Amsterdam. As part of her training she completed two internships. First, she worked at the company BioDetection Systems researching the anti-inflammatory properties of shiitake mushroom extracts on adipocyte development. Second, her master's thesis was executed under the supervision of Dr. Jack van Loon of the Academisch Centrum Tandheelkunde Amsterdam (ACTA) and the European Space Agency (ESA) and Dr. Jessica Legradi of the Department of Environment and Health at the Vrije Universiteit Amsterdam. This internship focused on how different levels of gravity, ranging from microgravity (approaching 0g's) to hypergravity (2, 4, and 6g's) influence adipocyte metabolism in 3 different animal models (*Daphnia magna*, *Folsomia candida*, and *Nasonia vitripennis*). She completed her master's degree at the Vrije Universiteit Amsterdam in 2018.

After obtaining her Master's degree in 2018, Nathalie started her PhD at the Leiden University Medical Center at the Department of Biomedical Data Sciences, Molecular Epidemiology and the Department of Cardiology under the supervision of Prof. dr. Bas Heijmans and Prof. dr. Wouter Jukema. Here, she focused on how triglycerides and fatty acids could influence the transcriptome and epigenome of circulating T cells, in the context of atherosclerosis. The results of this research are outlined in this thesis. During her PhD, Nathalie collaborated with several research groups in The Netherlands and presented her work at national and international conferences, including

the Dutch National Lipid Day, the Rembrandt Symposium, the International Conference on ImmunoMetabolism, and Epigenomics of Common Diseases. At the Rembrandt Symposium and the Dutch National Lipid Day she won awards for her poster and oral presentations, respectively. Nathalie also received two grants during her PhD, one awarded to hire a promising master student for 6 months to start developing an exciting new project and a second one to travel to attend an international conference.

Currently, Nathalie is employed at the nuclear medicines company Curium as a Research Scientist in the Research and Development team. Here, she is working on discovering and developing cutting-edge radiopharmaceuticals to diagnose and treat diseases such as cancer.

Acknowledgements

After more than 5 years, my adventure as a PhD student has come to an end. This trajectory has taught me resilience, perseverance, and the art of navigating unexpected detours. I have learned so much and grown into the scientist I am today thanks to all the wild and wonderful experiences. So, a big shout out to myself for staying ridiculously positive, dedicated, and determined through every caffeine-fueled late night! Of course, I wouldn't be where I am today without the support of my amazing family, friends, and colleagues. Thank you all for always being there for me and encouraging me throughout this journey.

Als eerste wil ik graag mijn supervisors Prof. dr. Bas Heijmans en Prof. dr. Wouter Jukema bedanken voor de gelegenheid om mijn promotietraject binnen jullie groepen te kunnen doen en voor jullie eeuwige enthousiasme in ons onderzoeksonderwerp. Bas, jou passie voor wetenschap is aanstekelijk en ik neem die passie graag mee in mijn verdere leven. Wouter, ondanks jou drukke schema heb je altijd tijd voor mij gemaakt om bij te praten over ons onderzoek, artikelen, en leven, en dat waardeer ik ontzettend.

Next, I want to thank all my colleagues at MOLEPI and within the Epigenetics group for their support. Lucy, Jazmin, Mahnoor, Laura, Thomas, Yunfeng, and Tom you all made our group feel warm and welcome. Ilja en Pia, zoals beschreven in ons gedicht, we zijn drie erwten in een peul, Pia een zonnestraal zo helder en Ilja met een glimlach zo breed. Door jullie voelde onze kantoor als een tweede thuis, we hebben samen gelachen, gehuild, gejuicht, en gekreund, en ik zal eeuwig dankbaar zijn voor jullie vriendschap. Dani Bizzari, thanks for being my friend inside and outside of work and always being ready to go on random adventures to trampoline parks with me.

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Reflecting on this journey, I know that the lessons I've learned and the people I've met will stay with me and inspire me in all my coming endeavors. I'm looking towards the sunshine and I can't wait to see what the future will bring.