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

Reilly, N.A.

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.

I would also like to thank all my great collaborators along the way. Andreea Ioan-Facsinay, Bart Everts, Marten Hoeksema, Joanneke Kwekkeboom, and Jeanine Roeters van Lennep, without you this research would not have been possible. Koen, je stond door de jaren heen altijd voor mijn velen vragen gereed, en je geduld en deskundigheid hebben mij en dit project enorm geholpen. Janneke, het was een plezier om samen met jou te kunnen werken aan ons hypertriglyceredemie project, we zijn samen een sterk team en dat heeft geleid naar een schitterend artikel. Rike, you jumped right into helping me even while finishing your own PhD. Your enthusiasm and expertise made you a joy to work with and I'm glad we had this opportunity to get to know each other. Prof. dr. Ingrid Meulenbelt, bedankt voor je steun en bereidbaarheid om mij te coachen, ik heb jou hulp ontzettend gewaardeerd.

Aan mijn stagiaires, Stan, Jeroen, en Sinthuja, ik vond het een ontzettende eer om zo'n leuke studenten als jullie te hebben kunnen begeleid. Ik vond het heel fijn om met jullie samen te hebben gewerkt en dat jullie erbij zijn gebleven door alle lange experimenten die ik jullie kant op gooide.

To my friends, Fernando, Vanessa, Jose, Lisette, Hester, Frédérique, Juliette, Jackie, Maddie, Onur, Sandra, Nick Stauble, and Tes thank you for always encouraging me to be the best, most nerdy version of myself.

Lieve Papa, je hebt mij geleerd dat het leven bestaat uit een beetje cultuur en een beetje plezier, en die houding heb ik mee genomen tijdens mijn PhD. Uit jouw eigen verhaal heb ik geleerd dat ik alles kan bereiken wat ik wil met een beetje moed en toewijding, dankjewel. Dear Mom, thank you for showing and teaching me what strong independent women can achieve. You've always had the remarkable ability to help people see how much they have to offer the world and for that I am endlessly grateful. Dear Brendan, your creativity motivates me to see the world in different technicolor lights. You remind me that normal is boring and that adding a little flare (or a lot) of attitude is the best way to make every day feel like a party. Dear Dani, the moon to my sun, your tireless dedication to running your own companies is immensely inspiring. You never fail to brighten my day with your ceaseless enthusiasm and empathy, thank you for walking through this life with me. Dear Oli, dear Guapo, your dedication to becoming a better version of yourself always inspires me. Thank you for rescuing me in the middle of the night when I missed the last train home because my experiments ran long and for always reminding me to go out and exercise.

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.