



Universiteit
Leiden

The Netherlands

Role of metabolic pathways and sensors in regulation of dendritic cell-driven T cell responses

Pelgrom, L.R.

Citation

Pelgrom, L. R. (2022, February 23). *Role of metabolic pathways and sensors in regulation of dendritic cell-driven T cell responses*. Retrieved from <https://hdl.handle.net/1887/3275848>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/3275848>

Note: To cite this publication please use the final published version (if applicable).

Curriculum vitae

Leonard Reinier Pelgrom was born in Haarlem, the Netherlands on May 27th 1988. He graduated from the Ichtus College (Driehuis, The Netherlands) in 2006 and started the bachelor Biomedical Sciences at Leiden University Medical Center in the same year. During his bachelor he took a one-year sabbatical to work as a board member of a student rowing club (Asopos de Vliet, Leiderdorp, The Netherlands) before obtaining his bachelor diploma in 2012. He obtained his master diploma in with distinction at the same university in 2015.

During his master he used molecular biology techniques to help study how blockade of the endocannabinoid system can activate brown fat tissue and diminish obesity at the laboratory of Prof. Rensen (LUMC, department of Endocrinology). For his contribution to this research, he was awarded the LUMC Student Research Award Biomedical Sciences in 2014. During his next internship, at the group of Dr. Guigas (LUMC, department of Molecular Cell Biology & department of Parasitology), he used flow cytometry techniques to help investigate how the generation of white fat cells can be influenced by immunogenic parasite-derived molecules. A growing fascination for this interplay between metabolic and immunological systems led him to pursue a PhD at the LUMC department of Parasitology, under the supervision of Dr. Everts. Here he researched how specific metabolic states of dendritic cells are linked to their ability to prime diverse antigen-specific T cell responses.

He gave presentations at the Keystone Symposia Conferences in 2016 and 2017, for which he was awarded a Seahorse Travel Award and a Keystone Symposium Scholarship respectively. He also gave oral presentations at the Dutch Society of Immunology (NNVI) in 2015 and 2017, the Dutch Society of Parasitology (NVP) in 2016, the European Macrophage and Dendritic Cell Society (EMDS) in 2016, the International Symposium on Dendritic Cells in 2018 and the European Congress of Immunology in 2018. He won the presentation prize at the EMDS.

From 2019-2021 he worked at the group of Dr. Finlay (Trinity Biomedical Sciences Institute, Trinity College Dublin, Dublin, Ireland), where he took his interests in a new direction by researching the potential of bioorthogonal click chemistry to interrogate metabolic states of cells.

Currently he is working at the group of Dr. van Kasteren (Leiden Institute of Chemistry, Leiden University), with whom he wrote a Leiden University Fund (LUF) Impulse Grant - in collaboration with Dr. Kooijman (LUMC, department of Endocrinology) - to investigate the initiation events in atherosclerosis with clickable lipids, a grant which has been accepted in October 2021.

List of publications

1. van der Zande, H.J.P., M.A. Gonzalez, K. de Ruiter, R.H.P. Wilbers, N. García-Tardón, M. van Huizen, K. van Noort, **L.R. Pelgrom**, J.M. Lambooi, A. Zawistowska-Deniziak, F. Otto, A. Ozir-Fazalalikhhan, D. van Willigen, M. Welling, J. Poles, F. van Leeuwen, C.H. Hokke, A. Schots, M. Yazdanbakhsh, P. Loke, and B. Guigas, *The helminth glycoprotein omega-1 improves metabolic homeostasis in obese mice through type 2 immunity-independent inhibition of food intake*. *Faseb j*, 2021. **35**(2): p. e21331.
2. Embgenbroich, M., H.J.P. van der Zande, L. Husaarts, J. Schulte-Schrepping, **L.R. Pelgrom**, N. García-Tardón, L. Schlautmann, I. Stoetzel, K. Händler, J.M. Lambooi, A. Zawistowska-Deniziak, L. Hoving, K. de Ruiter, M. Wijngaarden, H. Pijl, K. Willems van Dijk, B. Everts, V. van Harmelen, M. Yazdanbakhsh, J.L. Schultze, B. Guigas, and S. Burgdorf, *Soluble mannose receptor induces proinflammatory macrophage activation and metaflammation*. *Proc Natl Acad Sci U S A*, 2021. **118**(31).
3. Winkel, B.M.F., **L.R. Pelgrom**, R. van Schuijlenburg, E. Baalbergen, M.S. Ganesh, H. Gerritsma, C.M. de Korne, N. Duszenko, M.C.C. Langenberg, S.C. Chevalley-Maurel, H.H. Smits, E.C. de Jong, B. Everts, B. Franke-Fayard, and M. Roestenberg, *Plasmodium sporozoites induce regulatory macrophages*. *PLoS Pathog*, 2020. **16**(9): p. e1008799.
4. **Pelgrom, L.R.**, T.A. Patente, A. Sergushichev, E. Esaulova, F. Otto, A. Ozir-Fazalalikhhan, H.J.P. van der Zande, A.J. van der Ham, S. van der Stel, M.N. Artyomov, and B. Everts, *LKB1 expressed in dendritic cells governs the development and expansion of thymus-derived regulatory T cells*. *Cell Res*, 2019. **29**(5): p. 406-419.
5. Patente, T.A., **L.R. Pelgrom**, and B. Everts, *Dendritic cells are what they eat: how their metabolism shapes T helper cell polarization*. *Curr Opin Immunol*, 2019. **58**: p. 16-23.
6. Winkel, B.M.F., M.R. Dalenberg, C.M. de Korne, C. Feijt, M.C.C. Langenberg, **L. Pelgrom**, M.S. Ganesh, M. Yazdanbakhsh, H.H. Smits, E.C. de Jong, B. Everts, F.W.B. van Leeuwen, C.H. Hokke, and M. Roestenberg, *Early Induction of Human Regulatory Dermal Antigen Presenting Cells by Skin-Penetrating Schistosoma Mansoni Cercariae*. *Front Immunol*, 2018. **9**: p. 2510.

7. Kaiser, M.M.M., M. Ritter, C. Del Fresno, H.S. Jónasdóttir, A.J. van der Ham, **L.R. Pelgrom**, G. Schramm, L.E. Layland, D. Sancho, C. Prazeres da Costa, M. Giera, M. Yazdanbakhsh, and B. Everts, *Dectin-1/2-induced autocrine PGE2 signaling licenses dendritic cells to prime Th2 responses*. PLoS Biol, 2018. **16**(4): p. e2005504.
8. Thwe, P.M., **L.R. Pelgrom**, R. Cooper, S. Beauchamp, J.A. Reisz, A. D'Alessandro, B. Everts, and E. Amiel, *Cell-Intrinsic Glycogen Metabolism Supports Early Glycolytic Reprogramming Required for Dendritic Cell Immune Responses*. Cell Metab, 2017. **26**(3): p. 558-567.e5.
9. **Pelgrom, L.R.** and B. Everts, *Metabolic control of type 2 immunity*. Eur J Immunol, 2017. **47**(8): p. 1266-1275.
10. Kaiser, M.M.M., **L.R. Pelgrom**, A.J. van der Ham, M. Yazdanbakhsh, and B. Everts, *Butyrate Conditions Human Dendritic Cells to Prime Type 1 Regulatory T Cells via both Histone Deacetylase Inhibition and G Protein-Coupled Receptor 109A Signaling*. Front Immunol, 2017. **8**: p. 1429.
11. **Pelgrom, L.R.**, A.J. van der Ham, and B. Everts, *Analysis of TLR-Induced Metabolic Changes in Dendritic Cells Using the Seahorse XF(e)96 Extracellular Flux Analyzer*. Methods Mol Biol, 2016. **1390**: p. 273-85.
12. Boon, M.R., S. Kooijman, A.D. van Dam, **L.R. Pelgrom**, J.F. Berbée, C.A. Visseren, R.C. van Aggele, A.M. van den Hoek, H.C. Sips, M. Lombès, L.M. Havekes, J.T. Tamsma, B. Guigas, O.C. Meijer, J.W. Jukema, and P.C. Rensen, *Peripheral cannabinoid 1 receptor blockade activates brown adipose tissue and diminishes dyslipidemia and obesity*. Faseb j, 2014. **28**(12): p. 5361-75.

Acknowledgements

Thank you, **Bart Everts**, for giving me the opportunity to work with you and thereby allowing me to combine my interests in metabolism and immunology. I have learned a lot from you and I appreciate that your door is always open for discussion. However, I am most grateful for things that were not in the job description. Your invitation to join you and your friends on a cycling holiday - an invitation you extended to my friends as well - has had a profound impact on me. Cycling on Mont Ventoux has been one of the most joyous, even spiritual, moments of my life. Another such happening occurred on the top of Mount Grouse. An event which would not have happened without your invitation to accompany you to the Keystone Symposium in Banff. Thank you especially for allowing these experiences to happen.

Thank you, **Maria Yazdanbakhsh**, for bringing together such a special group of people we call the PARA. They play key roles in some of my fondest memories and their friendship has transformed me. Thank you, Ron, for it was your enthusiasm that got me hooked (pun intended) on the department of Parasitology when I was a master student. Thank you, Bruno, for supervising me during my master research project. Without that project I would not have met Bart and I would have missed out on these people that are so important to me today.

Thank you, Beatrice and Patrick vd Z, my paranymphs, and Thiago, my scientific brother from another mother. Crying, cursing, and laughing about mistakes that messed up experiments that took hours, days or even weeks to plan and perform. Followed by the high of finally getting a crucial experiment to work. This is what that first come to mind when I think back on my PhD.

Thank you, Alwin, Arifa and Frank, for teaching me the ways of the lab and providing much needed hands during experiments. Thank you, Beatrice, Michelle and Sanne, for joining me in the first PARA borrel committee. Thank you, Karin and Marijke, for bringing back the PARA lab outing committee with me and Beatrice. Thank you, Lisa, Lonneke en Stefan, for being my students and helping me with my research. Thank you, Abena, Alice, Amke, Angela, Astrid, Catherin, Chris, Clarize, Corrie, Dian, Dicky, Eddy, Eline, Erliyani, Eric, Eunice, Fabrizio, Fiona, Firdaus, Gerdien, Graham, Hans, Hermelijn, Jacqueline, Jai, Jan-Pieter, Jantien, Jeroen, Joost, Katja, Koen, Kyra, Laudine, Linh, Lisette, Łucja, Luis, Maria K, Marie-Astrid, Marije, Marion, Marjolein, Mathilde, Meta, Mikhael, Miriam, Mirjam, Moses, Nathalia, Nicole, Nikolas, Rike, Roos, Séverine, Shahid, Simone, Suzanne, Tom, Yianne, Yolanda, Yvonne, Wouter and all other PARA

colleagues that I have missed here. Science is a group effort, if not a team survival expedition.

Thank you, Eileen, Eline, Ingmar, Paul and Tessa, my Biomedical Sciences master buddies.

Thank you, Amke, Amy, Annemieke, Boudewijn, Brigitte, Guido, Iris, Jocelyn, Koen, Laura, Leonie, Marije, Michiel, Nikolas, Ruud, Thomas, Ward, Wouter d G, Wouter v I and Desiree. Some of you have been my closest friends for 15 years, while others have come into my life more recently. However, all of you have been instrumental - through small and large actions - in helping me navigate challenging times and coming out improved.

Thank you, Dave and Sander, for showing me patience and kindness when you did not have to. Without you this thesis would not have been completed. You are the kind of person I aspire to be.

Thank you, most importantly, mom and dad. You supported me through a master and long bachelor, where I was trying to find myself. You accepted my workaholic attitude during my master and PhD, where I was trying to prove myself. You gave me a home when the adventure in Dublin stopped and a workplace to finish my PhD during the Corona lockdown. Without you this thesis would not have been completed and your love has shaped me into the man I am today.