



Universiteit
Leiden
The Netherlands

Advancing helminth glycomics: structural specificity and immunogenicity of schistosomal and filarial glycans

Petralia, L.M.C.

Citation

Petralia, L. M. C. (2025, April 16). *Advancing helminth glycomics: structural specificity and immunogenicity of schistosomal and filarial glycans*. Retrieved from <https://hdl.handle.net/1887/4212211>

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/1887/4212211>

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

Curriculum Vitae

Laudine Maëlle Célestine Petralia was born on July 4th, 1993, in Échirolles (near Grenoble), France and grew up in Ardèche. After a two-year program in Saint-Étienne, preparing for the competitive national exam to enter sciences & engineering higher education schools, she joined the Biotechnology graduate school of Bordeaux (ENSTBB). During her studies, she conducted her first research internship in the group of Prof. Dr. Alberto Boffi part of the Pasteur Institute at the Sapienza University of Rome, Italy. There, she worked on enzymatic biosynthesis of tetrahydroisoquinoline derivatives, compounds of therapeutic interest. In July 2015, she joined the research group of Dr. Jeremy Foster at New England Biolabs (NEB), Ipswich, MA, USA, for an 8-month internship during which she first got acquainted with parasite glycobiology. In collaboration with the Taron lab at NEB, she studied changes in dog serum *N*-glycosylation during canine filariasis. She received her Master of Science (M.Sc.) in Biotechnology from the ENSTBB in 2016, and shortly after, in January 2017, she started a collaborative PhD program between the Foster lab at NEB and the Department of Parasitology of the Leiden University Medical Center (LUMC), in the Netherlands. During her PhD, she spent her time equally between both places. Under the supervision of Prof. Dr. Cornelis Hokke, Dr. Jeremy Foster and Dr. Angela van Diepen, she investigated various aspects of glycosylation in two major parasitic diseases of humans, schistosomiasis and filariasis. Her research resulted in the present thesis. Laudine is now a post-doctoral researcher in the Foster lab at NEB where she keeps exploring parasite glycobiology.

List of publications

1. Fossa, S. L., Anton, B. P., Kneller, D. W., **Petralia, L. M. C.**, Ganatra, M. B., Boisvert, M. L., Vainauskas, S., Chan, S. H., Hokke, C. H., Foster, J. M., & Taron, C. H. A novel family of sugar-specific phosphodiesterases that remove zwitterionic modifications of GlcNAc. *Journal of Biological Chemistry*, 2023 Dec;299(12), 1–14.
2. **Petralia, L. M. C.**, van Diepen, A., Nguyen, D.-L., Lokker, L. A., Sartono, E., Bennuru, S., Nutman, T. B., Pfarr, K., Hoerauf, A., Wanji, S., Foster, J. M., & Hokke, C. H. Unraveling cross-reactivity of anti-glycan IgG responses in filarial nematode infections. *Frontiers in Immunology*, 2023 Mar;14, 1–16.
3. **Petralia, L. M. C.**, Santha, E., Behrens, A. J., Nguyen, D. L., Ganatra, M. B., Taron, C. H., Khatri, V., Kalyanasundaram, R., van Diepen, A., Hokke, C. H., & Foster, J. M. Alteration of rhesus macaque serum *N*-glycome during infection with the human parasitic filarial nematode *Brugia malayi*. *Scientific Reports*, 2022 Sep;12(1), 1–16.
4. **Petralia, L. M. C.**, van Diepen, A., Lokker, L. A., Nguyen, D. L., Sartono, E., Khatri, V., Kalyanasundaram, R., Taron, C. H., Foster, J. M., & Hokke, C. H. Mass spectrometric and glycan microarray-based characterization of the filarial nematode *Brugia malayi* glycome reveals anionic and zwitterionic glycan antigens. *Molecular & Cellular Proteomics*, 2022 May;21(5), 1–22.
5. Behrens, A., Duke, R. M., **Petralia, L. M. C.**, Lehoux, S., Carlow, C. K. S., Taron, C. H., & Foster, J. M. Changes in canine serum *N*-glycosylation as a result of infection with the heartworm parasite *Dirofilaria immitis*. *Scientific Reports*, 2018 Nov;8(1), 1–9.
6. Behrens, A., Duke, R. M., **Petralia, L. M. C.**, Harvey, D. J., Lehoux, S., Magnelli, P. E., Taron, C. H., & Foster, J. M. Glycosylation profiling of dog serum reveals differences compared to human serum. *Analytical Glycobiology*, 2018 Nov;28(11), 825–831.
7. Vainauskas, S., Kirk, C. H., **Petralia, L.M.C.**, Ellen, P. G., Mcleod, E., Bielik, A., Luebbers, A., Foster, J. M., Hokke, C. H., Rudd, P. M., Shi, X., & Taron, C. H. A novel broad specificity fucosidase capable of core α 1-6 fucose release from *N*-glycans labeled with urea-linked fluorescent dyes. *Scientific Reports*, 2018 Jun;8(1), 1–8.

Acknowledgements

My greatest gratitude goes to my PhD supervisors, my promotor, Ron, and my co-promotors, Jeremy and Angela. Besides being incredibly smart and knowledgeable scientists, you master the perfect blend of kindness, humility, scientific rigor, efficiency, and sheer fun.

Jeremy, thank you for welcoming me to your lab when I was just a Masters intern and for introducing me to parasitology and glycobiology. I owe you my *passion in science*. Thank you for sharing as much fascinating knowledge as hilarious stories and infuriatingly to-the-point “Jeremy questions” – unrivaled, except, of course, by Angela. Angela, your notorious perceptivity is only proportionate to your patience and generosity. Ron, being part of your team was a privilege. I am immensely grateful for your support and mentoring.

Completing my PhD between New England Biolabs (NEB) and the Leiden University Medical Center (LUMC) has been an exceptional opportunity. Thank you to the NEB leadership, CEO Salvatore Russello; his predecessor, Jim Ellard; Chief Scientific Officer, Sir Richard Roberts and Executive Director of Research, Tom Evans for perpetuating NEB’s founder Don Comb’s vision by supporting parasitology and glycobiology research. Thank you to NEB division heads Lana Saleh and Chris Taron. Chris, your support and mentorship have been pivotal. Thank you to the head of the Department of Parasitology at LUMC (PARA), Maria Yazdanbakhsh, for allowing me to be part of this stimulating research environment.

I would like to thank all the Leiden Parasite Glycobiology Group members I overlapped with, especially Michelle & Linh, for the warm welcome; Linh, for also teaching me virtually every protocol performed in this thesis; Fabrizio, my first LUMC officemate, for the passionate glyco-talks and wise Mediterranean advice; my dedicated student Lianne for your contribution to this work; Anna K., for your help, friendship and outstanding scientific enthusiasm; Tom, for helping with microarray screening and package fetching; and Noor, for the social lunchbreaks.

A general thank you to my LUMC co-workers. Special mention to my collaborators at the Center for Proteomics and Metabolomics, to the PARA diagnostic team, to Alice, Mirjam, Emma, Jan Pieter, Leonard, Mathilde – for your kindness and sharing our writing donjon, Anna Z-D. – for your generosity and the fabulous Dutch and Polish memories, and, of course, to my dear Miriam, a wonderful person and a true friend. I deeply cherish all the quality times spent with you (and Erik). Thank you also to the best Leiden crew: Nik, Rike, Thiago & Tamires, and the legendary French connection: Alex, Cdk, Chloé, Lino, Léa. I miss having you around.

Thank you to the current – Lindsey, Julia – and former Foster lab members. Fana, Silvia, Anna, I am grateful to have crossed the paths of the wonderful scientists you are.

Esrath, thank you for your diligence and help with chapter 5. A heartfelt thank you to the Taron/Chuzel labs: Rebecca, my first glyco-teacher, Maddie, Mehul, Samantha, Saulius and Winnie for the help, collaborations and for being the kindest lab neighbors. Special thanks to Saulius for your patience and UPLC technical support, and to Winnie for the beautiful drawings.

To my past/current NEB colleagues and Massachusetts friends*: Barton, Edwin, Andy, Joan, Minyong, Jim, Brad, Paula, Peter, Liz, Amit, Tilde, Carine, Vanessa, Karen, Ece, Burçu, Dave, Brad, Peter, Will, the Pradhan lab, NEB postdocs and students (shout-out to Marine, Katell, Augusto & Seff), and the Heiter family (Sam, Jason, Dan & Sally)...; thank you for inspiring scientific discussions, valuable insights, collaborations, lunchbreaks, help, outdoor activities, running sessions, hospitality and/or Ipswich fun – you know which applies.

**non-exhaustive list*

Finally, all my gratitude to my supportive friends and family.

To Léa and Chloé, thank you for the unforgettable adventures from rollercoaster rides to Boston GPS drawing. Having you as my friends today is the best gift.

To Lise, my very first NEB friend, and to Gaétan, for the always beautiful encounters on either side of the Atlantic.

To the wonderful reminders of my Bordeaux years: Diane, Anne-So, Justine, Maud, not to forget my absolute favorite Canadians, Hélène chérie & Thomas Fauquignon.

To my dearest friends, blurring the lines between friendship and family, *mes ardéchoises*, Audrey, Fanny, Mat, and Mathou. I am so proud of the women you have become and deeply grateful to have you in my life.

To the best *in laws*, François, Zohra and Morgane.

To the most talented thesis designer and beautiful soul, Oumy. I am so glad you joined the family.

To my best friend and partner in crime since (his) day one, my (not so little) brother, Adrien. I love you.

To my beloved parents, *Maman, Papa*, I owe you everything and I don't have a clue what I would do without you. You are my world.

To my partner and favorite person, Jordy. For your unfailing support throughout this journey, for the love we have built, thank you. You are everything to me.