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The aging B cell landscape in atherosclerosis

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SCIENTIFIC PUBLICATIONS

Mulholland M., Chalou A., Andersson S., Depuydt M., Yu Y., Lin S., Tallbäck K., Ericsson A., Jakobsson G., **Mol J. de**, Lichtman A.H., Foks A.C., Schiopu A., Björkbacka H., Slütter B., Gisterå A., Engelbertsen D. Progenitor exhausted PD1^{+} T-cells are cellular targets of immune checkpoint inhibition in atherosclerosis. *Nat Cardiovasc Res.* Accepted for publication (2025).

Mol J. de, Smit V., Bernabé Kleijn M.N.A., Santbrink P.J. van, Bot I., Foks A.C. Immunosenescence accelerates atherosclerosis development in AAV-PCSK9 mouse model. *GeroScience.* In press (2025).

Schaftenaar F.H., Dam A.D. van, Bruin G. de, Depuydt M.A.C., **Mol J. de**, Amersfoort J., Douna H., Meijer M., Kröner M.J., Santbrink P.J. van, Bernabé Kleijn M.N.A., Puijvelde G.H.M. van, Florea B.I., Slütter B., Foks A.C., Bot I., Rensen P.C.N., Kuiper J. Immunoproteasomal Inhibition with ONX-0914 Attenuates Atherosclerosis and Reduces White Adipose Tissue Mass and Metabolic Syndrome in Mice, *Arteriosclerosis, Thrombosis, and Vascular Biology* 44(6):1346-1364 (2024).

Smit V., **Mol J. de**, Bernabé Kleijn M.N.A., Depuydt M.A.C., Winther M.P.J. de, Bot I., Kuiper J., Foks A.C. Sexual dimorphism in atherosclerotic plaques of aged *Ldlr*$^{-/-}$ mice. *Immunity & Ageing* 21 (1):27 (2024).

Smit V., **Mol J. de**, Schaftenaar F.H., Depuydt M.A.C., Postel R.J., Smeets D., Verheijen F.W.M., Bogers L., Duijn J. van, Verwilligen R.A.F., Grievink H.W., Bernabé Kleijn M.N.A., Ingen E. van, Jong M.J.M. de, Goncalves L., Peeters J.A.H.M., Smeets H.J., Wezel A., Polansky J.K., Winther M.P.J. de, Binder C.J., Tsiantoulas D., Bot I., Kuiper J., Foks A.C. Single-cell profiling reveals age-associated immunity in atherosclerosis. *Cardiovascular Research* 119(15):2508-2521 (2023).

Depuydt M.A.C., Schaftenaar F.H., Prange K.H.M., Boltjes A., Hemme E., Delfos L., **Mol J. de**, Jong M.J.M. de, Bernabé Kleijn M.N.A., Peeters A.H.M., Goncalves L., Wezel A., Smeets H.J., Borst G.J. de, Foks A.C., Pasterkamp G., Winther M.P.J. de, Kuiper J., Bot I., Slütter B. Single-cell T-cell receptor sequencing of paired human atherosclerotic plaques and blood reveals autoimmune-like features of expanded effector T-cells. *Nature Cardiovascular Research* 2:112-125 (2023).

Mol J. de, Douna H., Amersfoort J., Schaftenaar F.H., Kiss M.G., Suur B.E., Kroner M.J., Binder C.J., Bot I., van Puijvelde G.H.M., Kuiper J., Foks A.C. IFNγ-stimulated B-cells inhibit T follicular helper cells and protect against atherosclerosis. *Frontiers in Cardiovascular Medicine* 9:781436 (2022).

Mol J. de, Kuiper J., Tsiantoulas D., Foks A.C. The dynamics of B-cell aging in health and disease. *Frontiers in Immunology* 12:73356 (2021).

CURRICULUM VITAE

Jill de Mol werd geboren op 29 september 1997 te Voorburg. In 2015 behaalde zij haar atheneumdiploma aan het Zandvlietcollege in Den Haag. Datzelfde jaar begon zij aan de bacheloropleiding Bio-Farmaceutische Wetenschappen aan de Universiteit Leiden. Daar liep zij haar eerste stage onder begeleiding van drs. Olga Snip in de groep van prof. dr. Miranda van Eck. In 2018 behaalde Jill haar Bachelor of Science diploma, waarna ze begon aan de masteropleiding Bio-Pharmaceutical Sciences aan de Universiteit Leiden. Tijdens haar eerste wetenschappelijke masterstage aan de divisie BioTherapeutics van het LACDR deed Jill onderzoek naar het therapeutisch potentieel van anionische rapamycine liposomen tegen de behandeling van atherosclerose onder begeleiding van dr. Naomi Benne en dr. Bram Slütter. Jill heeft haar tweede wetenschappelijke stage uitgevoerd onder begeleiding van dr. Eva Kritikou en prof. dr. Andrew Lichtman aan Harvard Medical School in Boston (VS), waar ze onderzoek deed naar de bijwerkingen van het remmen van immuuncheckpoints op atherosclerose ontwikkeling. In 2020 behaalde zij haar Master of Science diploma, *cum laude*.

Van september 2020 tot en met december 2024 was Jill werkzaam als promovenda binnen de Aging & Immunity groep bij de divisie BioTherapeutics van het LACDR onder begeleiding van dr. Amanda Foks, dr. Bram Slütter en prof. dr. Johan Kuiper, op het internationale ERA-CVD project ‘The role of B-cell immunity in accelerated atherosclerosis (B-eat-ATHERO)’ dat gefinancierd werd door de Hartstichting. Voor het onderzoek uit dit proefschrift ontving Jill een beste posterpresentatie prijs bij de 6e Graz Expert Meeting (2024) betreffende single-cell RNA sequencing technologieën in het cardiovasculaire veld. Daarnaast ontving zij een prijs voor haar presentatie bij de Dutch Atherosclerosis Society (DAS) meeting in 2024. Sinds december 2024 werkt Jill als post-doctoraal onderzoeker bij de divisie BioTherapeutics van het LACDR onder leiding van dr. Amanda Foks om het onderzoek naar verouderde B-cellen in atherosclerose en hartinfarcten voort te zetten binnen het ERA4Health MARGINALIZE-MI consortium.

PHD PORTFOLIO

Courses

2020 Scientific conduct (Universiteit Leiden)
2020 Animal handling course (Universiteit Leiden)
2021 LACDR PhD introductory course (Universiteit Leiden)
2021 Data management course (Universiteit Leiden)
2021 Communication in science (Universiteit Leiden)
2021 Vascular biology and pathology (Hartstichting)
2022 Teaching and supervision (Universiteit Leiden)
2022 ULLA summerschool (Uppsala University)
2023 Venture academy (PLNT Leiden)
2025 Career Café CV & Motivation Letter (Universiteit Leiden)

Presentations

2021 LACDR Spring Symposium – poster presentation
2021 NVVI (Dutch Society for Immunology) Annual Meeting – oral presentation
2021 Rembrandt Symposium – poster presentation
2022 LACDR Spring Symposium – poster presentation
2022 Frontiers in Cardiovascular Biomedicine – poster presentation
2022 DUSRA (Dutch Society for Research on Aging) – oral presentation
2022 ERA CVD Symposium – poster presentation
2022 Rembrandt Symposium – oral presentation
2022 NVVI (Dutch Society for Immunology) Annual Meeting – poster presentation
2023 LACDR Spring Symposium – poster presentation
2023 Dutch Atherosclerosis Society – poster presentation
2023 European Atherosclerosis Society – short oral presentation
2023 NVVI (Dutch Society for Immunology) Annual Meeting – poster presentation
2024 Cardiovasculair NL-BE_DE young PI annual meeting – oral presentation
2024 Danish Cardiovascular Academy – oral presentation
2024 Frontiers in Cardiovascular Biomedicine – poster presentation
2024 LACDR Spring Symposium – oral presentation
2024 Dutch Atherosclerosis Society – oral presentation (award)
2024 European Atherosclerosis Society – poster presentation
2024 Dutch CardioVascular Alliance Symposium – oral presentation
2024 6th Graz Expert Meeting on Single-cell Technologies – poster presentation (award)
2025 Leiden CardioVascularMedicine meeting – oral presentation
2025 Atherosclerosis Gordon Research Seminar – poster presentation
2025 Atherosclerosis Gordon Research Conference – poster presentation