University of Groningen

Monocyte and macrophage heterogeneity in Giant Cell Arteritis and Polymyalgia Rheumatica van Sleen, Yannick

DOI:
[10.33612/diss.113443254](https://doi.org/10.33612/diss.113443254)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2020

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):
van Sleen, Y. (2020). *Monocyte and macrophage heterogeneity in Giant Cell Arteritis and Polymyalgia Rheumatica: central in Pathology and a Source of Clinically Relevant Biomarkers*. [Thesis fully internal (DIV), University of Groningen]. Rijksuniversiteit Groningen. <https://doi.org/10.33612/diss.113443254>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

MONOCYTE AND MACROPHAGE HETEROGENEITY IN GIANT CELL ARTERITIS AND POLYMYALGIA RHEUMATICA

Central in Pathology and
a Source of Clinically Relevant Biomarkers

Yannick van Sleen

Monocyte and Macrophage Heterogeneity in Giant Cell Arteritis and Polymyalgia Rheumatica

Central in Pathology and
 a Source of Clinically Relevant Biomarkers

Proefschrift

Printing of this thesis was kindly supported by:

The research presented in this thesis was supported by Reuma Nederland and de Stichting De Cock –Hadders

978-94-034-2415-6 (printed version)

978-94-034-2414-9 (e-book)

© Yannick van Sleen, Groningen, 2020.

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, without permission of the author.

Cover: Sieben Medical Art

Layout & printing: Off Page, Amsterdam

ter verkrijging van de graad van doctor aan de
 Rijksuniversiteit Groningen
 op gezag van de
 rector magnificus prof. dr. C. Wijmenga
 en volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op

woensdag 26 februari 2020 om 14.30 uur

door

Yannick van Sleen

geboren op 9 augustus 1990
 te Smilde

Promotor
Prof. dr. A.M.H. Boots

Copromotores
Dr. E. Brouwer
Dr. W.H. Abdulahad
Dr. K.S.M. van der Geest

Beoordelingscommissie
Prof. dr. C.A.H.H. Daemen
Prof. dr. E.M. Hauge
Prof. dr. J.M. Van Laar

TABLE OF CONTENTS

Chapter 1	Thesis introduction	7
Chapter 2	Leukocyte Dynamics Reveal a Persistent Myeloid Dominance in Giant Cell Arteritis and Polymyalgia Rheumatica	21
Chapter 3	Involvement of Monocyte Subsets in the Immunopathology of Giant Cell Arteritis	45
Chapter 4	Numerical Decline of Circulating Myeloid Dendritic Cells with High Toll-Like Receptor 2 Expression in Treatment-Naive Giant Cell Arteritis and Polymyalgia Rheumatica	73
Chapter 5	Distinct Macrophage Subsets Dictated by Local GM-CSF and M-CSF Expression are Associated with Tissue Destruction and Intimal Hyperplasia in Giant Cell Arteritis	95
Chapter 6	Macrophages Skewed by GM-CSF Produce YKL-40, Instigating Angiogenesis in Giant Cell Arteritis	125
Chapter 7	Markers of Angiogenesis and Macrophage Products for Predicting Disease Course and Monitoring Vascular Inflammation in Giant Cell Arteritis	135
Chapter 8	High Angiopoietin-2 Levels Associate with Arterial Inflammation and Long-Term Glucocorticoid Requirement in Polymyalgia Rheumatica	161
Chapter 9	Thesis summary and discussion	179
Appendix	Nederlandse samenvatting	207
	Publications	213
	Dankwoord	214
	About the author	219