



Universiteit  
Leiden  
The Netherlands

## **T and NK cell immunity after hematopoietic stem cell transplantation**

Lugthart, G.

### **Citation**

Lugthart, G. (2018, March 27). *T and NK cell immunity after hematopoietic stem cell transplantation*. Retrieved from <https://hdl.handle.net/1887/61077>

Version: Not Applicable (or Unknown)

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

Downloaded from: <https://hdl.handle.net/1887/61077>

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

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/61077> holds various files of this Leiden University dissertation.

**Author:** Lugthart, G.

**Title:** T and NK cell immunity after hematopoietic stem cell transplantation

**Issue Date:** 2018-03-27

**T and NK cell Immunity  
after  
Hematopoietic Stem Cell Transplantation**

**Afweer door T- en NK cellen na  
Hematopoïetische Stamcel Transplantatie**

G. Lugthart

T and NK cell Immunity after Hematopoietic Stem Cell Transplantation.

© 2018 G. Lugthart, Leiden, The Netherlands

ISBN: 978-94-6361-070-4

No part of this thesis may be reproduced, stored in a retrieval system or transmitted in any form or by any means without permission from the author or, when appropriate, from the publishers of the published chapters.

The research described in this thesis was performed at the Laboratory of Pediatric Immunology at the Leiden University Medical Center Willem-Alexander Children's Hospital, Leiden, The Netherlands (Chapters 2, 4, 5, 6 & 7) and the Laboratory of Molecular and Cellular Immunology at the University College London Great Ormond Street Hospital Institute of Child Health, London, UK (Chapter 3).

The work described in this thesis was partially supported by a grant from the Dutch Cancer Society (grant UL-2011-5133). Gertjan Lugthart received a Leiden University Medical Center MD/PhD fellowship to perform this work. The printing of this thesis was financially supported by the LUMC department of pediatrics, ITK diagnostics and Greiner Bio-One.

Cover design: Atze de Vries

Lay-out: Gertjan Lugthart

Printing: Optima Grafische Communicatie, Rotterdam

**T and NK cell Immunity  
after  
Hematopoietic Stem Cell Transplantation**

**Afweer door T- en NK cellen na  
Hematopoïetische Stamcel Transplantatie**

**Proefschrift**

ter verkrijging van de graad van  
Doctor aan de Universiteit Leiden  
op gezag van Rector Magnificus prof. mr. C.J.J.M. Stolker,  
volgens het besluit van het College voor Promoties  
te verdedigen op dinsdag 27 maart 2018 klokke 16:15 uur

door

**Gerrit Lugthart**  
geboren te Gorinchem  
in 1987



Promotor: Prof. dr. A.C. Lankester

Co-promotores: Dr. M.W. Schilham  
Dr. M.J.D. van Tol

Promotiecommissie: Prof. dr. F.Koning  
Prof. dr. J.H.F. Falkenburg  
Prof. dr. R.A.W. van Lier, University of Amsterdam  
Dr. J.N. Samsom, Erasmus University Rotterdam





# Table of contents

Chapter 1	General introduction	9
Chapter 2	Early CMV reactivation leaves a specific and dynamic imprint on the reconstituting T cell compartment long term post hematopoietic stem cell transplantation	31
Chapter 3	Simultaneous generation of multivirus-specific and regulatory T cells for adoptive immunotherapy	51
Chapter 4	The effect of cidofovir on adenovirus plasma DNA levels in stem cell transplantation recipients without T cell reconstitution	73
Chapter 5	CD56 <sup>dim</sup> CD16 <sup>-</sup> NK cell phenotype can be induced by cryopreservation	91
Chapter 6	Expansion of cytotoxic CD56 <sup>bright</sup> NK cells during T cell deficiency after allogeneic hematopoietic stem cell transplantation	97
Chapter 7	Human lymphoid tissues harbor a distinct CD69 <sup>+</sup> CXCR6 <sup>+</sup> natural killer cell population	119
Chapter 8	Summary	139
Chapter 9	General discussion and future perspectives	143
	References	157
	Dutch summary / Nederlandse samenvatting	173
	List of publications	181
	Curriculum vitae	185
	Acknowledgements / Dankwoord	189