



Universiteit
Leiden
The Netherlands

Chimerism in health, transplantation and autoimmunity

Koopmans, M.; Kremer Hovinga, I.C.L.

Citation

Koopmans, M., & Kremer Hovinga, I. C. L. (2009, March 24). *Chimerism in health, transplantation and autoimmunity*. Retrieved from <https://hdl.handle.net/1887/13697>

Version: Corrected 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/1887/13697>

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

CHIMERISM IN HEALTH,
TRANSPLANTATION
AND AUTOIMMUNITY

CHIMERISM IN HEALTH,
TRANSPLANTATION AND AUTOIMMUNITY

Thesis, University of Leiden, The Netherlands

The studies described in this thesis were performed at the Department of Pathology of the Leiden University Medical Center, Leiden, The Netherlands

© M. Koopmans, I.C.L. Kremer Hovinga, 2008, Leiden, The Netherlands

Used with permission: Chapter 2 © American Society of Transplant Surgeons and American Society of Transplantation; Chapter 3 © Elsevier; Chapter 4 © Lippincott Williams and Wilkins; Chapter 6 © American College of Rheumatology; Chapter 7 © Oxford University Press; Chapter 9 © SAGE publications.

No part of this thesis may be reproduced, stored or transmitted in any form or by any means, without prior written permission of the authors

Lay-out and printing: Gildeprint Drukkerijen - Enschede, The Netherlands
Cover figure by : E.J. Mulder. Detail from a series of 17 drawings on chimerism
ISBN: 978-90-713-8289-5

CHIMERISM IN HEALTH,
TRANSPLANTATION
AND AUTOIMMUNITY

Proefschrift

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus prof. mr. P.F. van der Heijden,
volgens besluit van het College voor Promoties
te verdedigen op dinsdag 24 maart 2009

klokke 13.45 uur
door Marije Koopmans
geboren te Rotterdam in 1982

klokke 15.00 uur
door Idske Cornelia Lydia Kremer Hovinga
geboren te Leiden in 1982

PROMOTIECOMMISSIE

Promotor Prof.dr. J.A. Bruijn

Co-promotor Dr. I.M. Bajema

Overige leden Dr. R. Goldschmeding
Universitair Medisch Centrum Utrecht
Prof.dr. J.H.J.M. van Krieken
Universitair Medisch Centrum St Radboud Nijmegen
Prof.dr. J.J. van Rood

De promovendi, Marije Koopmans en Idske Kremer Hovinga, nemen beiden afzonderlijk de verantwoording op zich, zowel voor een als zodanig aangegeven onderdeel van het proefschrift als voor de samenhang van het geheel. De hoofdstukken 1, 2, 3, 4, 5, 10 en 12 worden door Marije Koopmans verdedigd. De hoofdstukken 1, 6, 7, 8, 9, 11 en 12 worden door Idske Kremer Hovinga verdedigd.

Financial support for the publication of this thesis by the Matty Brand Stichting is gratefully acknowledged. The printing of this thesis was also financially supported by the Dutch Arthritis Association, Gambro-Hospal B.V., ABBOTT B.V., Baxter B.V., Astellas Pharma B.V., Roche Nederland B.V. and Novartis Pharma B.V.

— |

| —

— |

| —

CONTENTS

Chapter 1	General introduction and outline of the thesis	9
-----------	--	---

PART I CHIMERISM IN HEALTHY INDIVIDUALS

Chapter 2	Chimerism in kidneys, livers and hearts of normal women: implications for transplantation studies <i>American Journal of Transplantation 2005; 5: 1495-1502</i>	61
-----------	--	----

Chapter 3	Chimerism in thyroid, lung, skin and lymph nodes of women with sons <i>Journal of Reproductive Immunology 2008; 78: 68-75</i>	83
-----------	--	----

PART II CHIMERISM IN TRANSPLANTATION

Chapter 4	Endothelial chimerism in transplantation: looking for needles in a haystack <i>Transplantation 2006; 82: S25-S29</i>	103
-----------	---	-----

Chapter 5	Origin of squamous and basal cell carcinomas in recipients of a kidney allograft <i>Submitted</i>	119
-----------	--	-----

PART III CHIMERISM IN AUTOIMMUNE DISEASE

Chapter 6	Chimerism occurs twice as often in lupus nephritis as in normal kidneys <i>Arthritis and Rheumatism 2006; 54: 2944-2950</i>	133
-----------	--	-----

Chapter 7	Chimerism in systemic lupus erythematosus: three hypotheses <i>Rheumatology (Oxford) 2006; 46: 200-208</i>	151
-----------	---	-----

Chapter 8	Tissue chimerism in systemic lupus erythematosus is related to injury <i>Annals of the Rheumatic Diseases 2007; 66: 1568-1573</i>	179
Chapter 9	Pregnancy, chimerism and lupus nephritis: a multi-center study <i>Lupus 2008; 17: 541-547</i>	199
Chapter 10	Male chimeric cells in female reproductive organs <i>Submitted</i>	217
Chapter 11	Chimerism in childhood lupus nephritis <i>Submitted</i>	233
PART IV SUMMARY, GENERAL DISCUSSION AND CONCLUSION		
Chapter 12	Summary, general discussion and conclusion	251
Chapter 13	Samenvatting, algemene discussie en conclusie	275
PART V APPENDICES		
	List of abbreviations	293
	Authors and affiliations	297
	Curricula Vitae	301
	List of publications	305
	Woord van dank	309

