



Universiteit  
Leiden  
The Netherlands

## HLA epitopes in kidney transplantation: from basic science to clinical application

Bezstarosti, S.

### Citation

Bezstarosti, S. (2023, October 5). *HLA epitopes in kidney transplantation: from basic science to clinical application*. Retrieved from <https://hdl.handle.net/1887/3642858>

Version: Publisher's Version

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

Downloaded from: <https://hdl.handle.net/1887/3642858>

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

# **HLA epitopes in kidney transplantation: from basic science to clinical application**

**Suzanne Bezstarostí**

HLA epitopes in kidney transplantation: from basic science to clinical application  
© 2023 S. Bezstarosti, Leiden, the Netherlands

The research described in this thesis was performed at the department of Immunology and the department of Internal Medicine (nephrology) at the Leiden University Medical Center, Leiden, the Netherlands.

No part of this thesis may be reproduced or transmitted in any form, by any means, electronic or mechanical, without prior written permission of the author.

ISBN: 978-94-6483-300-3

Printing: Ridderprint

Layout and design: Hans Schaapherder, persoonlijkproefschrift.nl

Financial support for the printing of this thesis was kindly provided by Immucor, National Reference Center for Histocompatibility Testing, GenDx, Pure Protein, de Nederlandse Transplantatie Vereniging and Chiesi.

# **HLA epitopes in kidney transplantation: from basic science to clinical application**

Proefschrift

ter verkrijging van  
de graad van doctor aan de Universiteit Leiden,  
op gezag van rector magnificus prof.dr.ir. H. Bijl,  
volgens besluit van het college voor promoties  
te verdedigen op donderdag 5 oktober 2023

klokke 13:45 uur

door

**Suzanne Bezstarosti**



“There is no perfection,  
only life”

*Milan Kundera,*  
*The Unbearable Lightness of Being*

**Promotores**

Prof. dr. J.W. de Fijter

Prof. dr M.E.J. Reinders

**Co-promotor**

Dr. S Heidt

**Leden promotiecommisie**

Prof. dr. C van Kooten

Prof. dr. S.P. Berger (UMC Groningen)

Prof. dr. M. Naesens (KU Leuven)

Prof. dr A.R. Tambur (Northwestern University, Chicago)

## TABLE OF CONTENTS

Chapter 1	General introduction	9
<b>Part I</b>	<b>Basic science of HLA epitopes</b>	21
Chapter 2	<b>Implementation of molecular matching in transplantation requires further characterization of both immunogenicity and antigenicity of individual HLA epitopes</b> (Hum Immunol. 2022 Mar;83(3):256-263)	23
Chapter 3	<b>HLA-DQ-Specific Recombinant Human Monoclonal Antibodies Allow for In-Depth Analysis of HLA-DQ Epitopes</b> (Front Immunol. 2022 Jan 7;12:761893)	41
Chapter 4	<b>A Comprehensive Evaluation of the Antibody-Verified Status of Eplets Listed in the HLA Epitope Registry</b> (Front Immunol. 2022 Jan 28;12:800946)	71
Chapter 5	<b>Site-directed mutagenesis of HLA molecules reveals the functional epitope of a human HLA-A1/A36-specific monoclonal antibody</b> (HLA. 2023 Feb;101(2):138-142)	139
<b>Part II</b>	<b>Clinical application of HLA epitopes in transplantation</b>	149
Chapter 6	<b>HLA solvent-accessible amino acid mismatch loads are associated with donor-specific antibody formation and graft failure after kidney transplantation</b>	151
Chapter 7	<b>HLA-DQ eplet mismatch load may identify kidney transplant patients eligible for tacrolimus withdrawal without donor-specific antibody formation after mesenchymal stromal cell therapy</b> (HLA. 2023 Jul;102(1):3-12)	163
Chapter 8	<b>Allogeneic mesenchymal stromal cell therapy in kidney transplantation: should repeated HLA mismatches be avoided?</b>	185
Chapter 9	General discussion and future perspectives	203
Appendices	Nederlandse samenvatting	216
	Abbreviations	225
	Publications	226
	Curriculum vitae	228
	Dankwoord	229