



## UvA-DARE (Digital Academic Repository)

### Tuning the show

*Genetic engineering to unravel antigen presentation by the human leukocyte antigen class I*  
de Waard, A.A.

**Publication date**  
2021

[Link to publication](#)

### **Citation for published version (APA):**

de Waard, A. A. (2021). *Tuning the show: Genetic engineering to unravel antigen presentation by the human leukocyte antigen class I*. [Thesis, externally prepared, Universiteit van Amsterdam].

### **General rights**

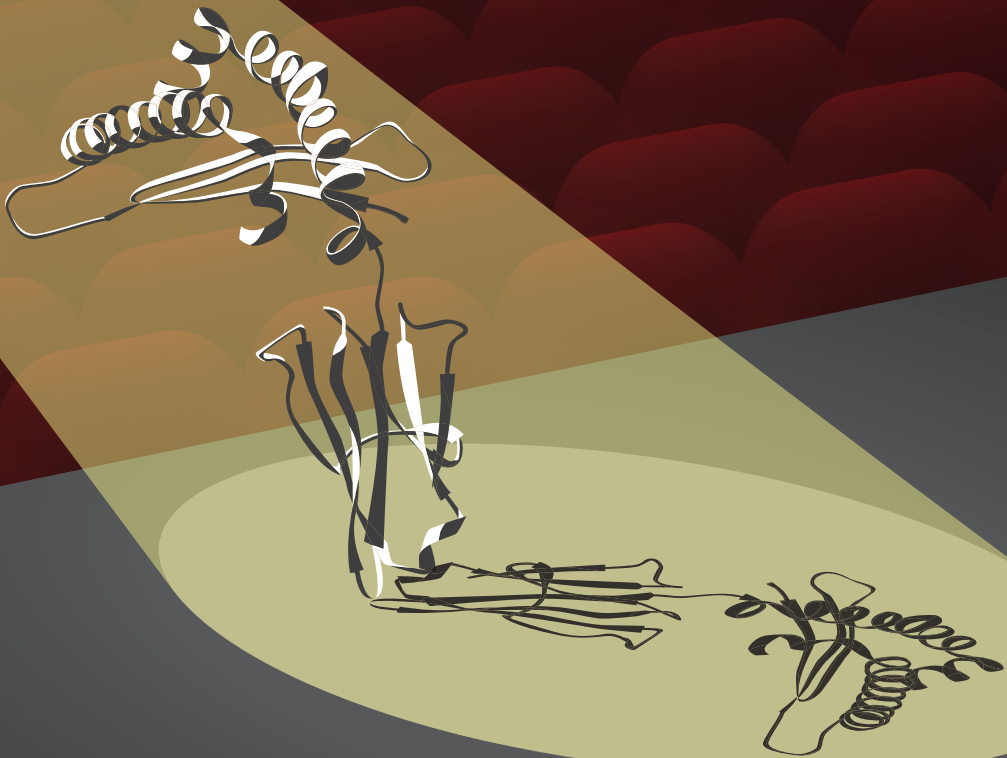
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

### **Disclaimer/Complaints regulations**

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

# Tuning the Show:

Genetic engineering to unravel antigen presentation  
by the Human Leukocyte Antigen class I



Antonius A. de Waard

## **TUNING THE SHOW:**

Genetic engineering to unravel antigen presentation  
by the Human Leukocyte Antigen class I

**Antonius Amadeus de Waard**

## TUNING THE SHOW:

# Genetic engineering to unravel antigen presentation by the Human Leukocyte Antigen class I

### ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor  
aan de Universiteit van Amsterdam  
op gezag van de Rector Magnificus  
prof. dr. ir. K.I.J. Maex

ten overstaan van een door het College voor Promoties ingestelde commissie,  
in het openbaar te verdedigen in de Agnietenkapel  
op woensdag 19 mei 2021, te 10.00 uur

door

**Antonius Amadeus de Waard**

geboren te Pijnacker

The research described in this thesis was performed at the Department of Immunopathology of Sanquin Research (Amsterdam, The Netherlands) and financially supported by KWF (Alpe d'HuZes Bas Mulder Award 2015-7982).

Printing of this thesis was financially supported by Sanquin Research.

Copyright © 2021 Antonius A. de Waard

ISBN: 978-94-6416-440-4

Cover design and layout by Malouk M. Franck and Antonius A. de Waard

Printed by Ridderprint | [www.Ridderprint.nl](http://www.Ridderprint.nl)



## PROMOTIECOMMISSIE

Promotor:	Prof. dr. S.M. van Ham	Universiteit van Amsterdam
Copromotor:	Dr. R.M. Spaapen	Sanquin Research
Overige leden:	Dr. M.D. Hazenberg	Universiteit van Amsterdam
	Prof. dr. J.J.C. Neefjes	Universiteit Leiden
	Prof. dr. E.A.J. Reits	Universiteit van Amsterdam
	Prof. dr. S. Springer	Jacobs University, Bremen
	Dr. ing. S.J. van Vliet	VU Medisch Centrum
	Dr. ir. J. Goedhart	Universiteit van Amsterdam
	Prof. dr. H.V. Westerhoff	Universiteit van Amsterdam

Faculteit der Natuurwetenschappen, Wiskunde en Informatica

## TABLE OF CONTENTS

<b>CHAPTER 1</b>	General introduction and scope of this thesis	<b>7</b>
<b>CHAPTER 2</b>	PAKC: A novel panel of HLA class I antigen presentation machinery knockout cells from the same genetic origin	<b>35</b>
<b>CHAPTER 3</b>	Healthy cells functionally present TAP-independent SSR1 peptides: implications for selection of clinically relevant antigens	<b>59</b>
<b>CHAPTER 4</b>	HLA-I allelic dependencies on components of the peptide-loading complex	<b>91</b>
<b>CHAPTER 5</b>	The role of glycosphingolipids in immune cell functions	<b>125</b>
<b>CHAPTER 6</b>	The SPPL3-defined glycosphingolipid repertoire orchestrates HLA class I-mediated immune responses	<b>171</b>
<b>CHAPTER 7</b>	Summarizing discussion	<b>237</b>
<b>APPENDIX</b>	English summary	<b>266</b>
	Nederlandse samenvatting	<b>270</b>
	List of publications	<b>274</b>
	Author contributions	<b>275</b>
	PhD portfolio	<b>278</b>
	Curriculum vitae	<b>281</b>
	Dankwoord	<b>282</b>