



Universiteit
Leiden
The Netherlands

Immunochemical approaches to monitor and modulate the adaptive immune system

Luimstra, J.J.

Citation

Luimstra, J. J. (2020, February 12). *Immunochemical approaches to monitor and modulate the adaptive immune system*. Retrieved from <https://hdl.handle.net/1887/85320>

Version: 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/1887/85320>

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

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/85320> holds various files of this Leiden University dissertation.

Author: Luimstra, J.J.

Title: Immunochemical approaches to monitor and modulate the adaptive immune system

Issue Date: 2020-02-12

**Immunochemical approaches to
monitor and modulate
the adaptive immune system**

Jolien Johanna Luimstra

The research described in this thesis was performed at the Department of Cell Biology at the Netherlands Cancer Institute in Amsterdam, The Netherlands, as well as at the Department of Chemical Immunology and the Department of Cell and Chemical Biology at Leiden University Medical Center in Leiden, The Netherlands. The work was financially supported by the Institute for Chemical Immunology and Oncode Institute.

ISBN: 978-94-640-2036-6

Cover: Veerle Luimstra

Layout: Valken Hout en Design

Support and catering: Robert van den Brink

Financial support: The Netherlands Cancer Institute and Leiden University

Printed by: Gildeprint

Copyright © 2020 by J.J. Luimstra. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without prior written permission of the author, or where appropriate, of the publisher of the articles.

Immunochemical approaches to monitor and modulate the adaptive immune system

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 besluit van het College voor Promoties
te verdedigen op woensdag 12 februari 2020
klokke 15:00 uur

door

Jolien Johanna Luimstra

Geboren te Amsterdam
op 18 september 1987

Promotores

Prof. dr. H. Ovaa

Prof. dr. J.J.C. Neefjes

Leden promotiecommissie

Prof. dr. J.G. Borst

Prof. dr. T.J. Elliott - *University of Southampton*

Prof. dr. F.A. Ossendorp

Dr. I. Berlin

Dr. S.I. van Kasteren

*“Just keep swimming, just keep swimming,
just keep swimming, swimming, swimming...”*

- Dory in 'Finding Nemo' (Disney • Pixar)

Table of contents

Chapter 1	General introduction and scope of this dissertation	9
Chapter 2	Altered peptide ligands revisited: vaccine design through chemically modified HLA-A2-restricted T cell epitopes <i>Journal of Immunology (2014)</i>	39
Chapter 3	Chemical modification of influenza CD8 ⁺ T cell epitopes enhances their immunogenicity regardless of immunodominance <i>PLoS One (2016)</i>	65
Chapter 4	The future of cancer immunotherapy: opportunities for small molecules <i>Manuscript under revision</i>	95
Chapter 5	A flexible MHC class I multimer loading system for large-scale detection of antigen-specific T cells <i>Journal of Experimental Medicine (2018)</i>	115
Chapter 6	Production and thermal exchange of conditional peptide-MHC I multimers <i>Current Protocols in Immunology (2019)</i>	139
Chapter 7	Screening for neoantigen-specific CD8 ⁺ T cells using thermally-exchanged pMHCI multimers	163
Chapter 8	Summary and future perspectives	191
Appendices	Nederlandse samenvatting List of publications Curriculum vitae Acknowledgements	203