



Universiteit
Leiden

The Netherlands

Manipulations of the ubiquitin proteasome system and their effects on antigen presentation

Groothuis, T.A.M.

Citation

Groothuis, T. A. M. (2006, November 1). *Manipulations of the ubiquitin proteasome system and their effects on antigen presentation*. Retrieved from <https://hdl.handle.net/1887/4956>

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/1887/4956>

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

Manipulations of the Ubiquitin Proteasome System and Their Effects on Antigen Presentation

Tom Alphonsus Maria Groothuis

Cover: Mosaic of the proteasome, made up of ubiquitin molecules. By Tom Groothuis

Manipulations of the Ubiquitin Proteasome System and Their Effects on Antigen Presentation

Proefschrift

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van de Rector Magnificus Dr. D.D. Breimer,
hoogleraar in de faculteit der Wiskunde en
Natuurwetenschappen en die der Geneeskunde,
volgens besluit van het College voor Promoties
te verdedigen op woensdag 1 november 2006
klokke 13.45 uur

door

Tom Alphonsus Maria Groothuis

geboren te Almelo
in 1977

Promotiecommissie:

Promotor: Prof. Dr. J.J. Neefjes

Referent: Prof. Dr. P.J. Peters
Vrije Universiteit, Amsterdam

Overige Leden: Prof. Dr. E.J.H.J. Wiertz

Prof. Dr. T.H.M. Ottenhoff

Prof. Dr. W.H. Moolenaar

Dr. E.A.J. Reits
Universiteit van Amsterdam, Amsterdam

Dr. N.P. Dantuma
Karolinska Instituut, Stockholm, Zweden

Printed by Ponsen & Looijen, Wageningen, The Netherlands

ISBN-10: 90-6464-040-8

ISBN-13: 978-90-6464-040-7

The work described in this thesis was performed at the Division of Tumor Biology of the Netherlands Cancer Institute, Amsterdam, The Netherlands. This work was supported by grants from The Netherlands Organization for Scientific Research (NWO) and the Dutch Cancer Society (KWF). Publication of this thesis was financially supported by the Dutch Cancer Society (KWF)

"It never hurts to help!"

Eek the Cat

*Aan pa en ma,
aan Henriëke*

Contents:

	<i>Page</i>
Scope of the thesis	9
Chapter 1	<i>Introduction</i>
	The ins and outs of intracellular peptides and antigen presentation by MHC class I molecules.
	<i>Current Topics in Microbiology and Immunology</i>
Chapter 2	<i>Introduction</i>
	MHC class I alleles and their exploration of the antigen-processing machinery.
	<i>Immunological Reviews</i>
Chapter 3	The many roads to cross-presentation
	<i>Journal of Experimental Medicine</i>
Chapter 4	A dynamic ubiquitin equilibrium couples proteasomal activity to chromatin remodeling
	<i>Journal of Cell Biology</i>
Chapter 5	Ubiquitin crosstalk connecting cellular processes
	<i>Submitted</i>
Chapter 6	Radiation modulates the peptide repertoire, enhances MHC class I expression, and induces successful antitumor immunotherapy
	<i>Journal of Experimental Medicine</i>
Summary and discussion	99
Nederlandse Samenvatting & Addendum	103
Curriculum Vitae	115
List of Publications	117