



Universiteit
Leiden
The Netherlands

Cancer vaccine strategies to improve immunotherapy: many roads lead to Rome

Tondini, E.

Citation

Tondini, E. (2021, October 21). *Cancer vaccine strategies to improve immunotherapy: many roads lead to Rome*. Retrieved from <https://hdl.handle.net/1887/3217801>

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/1887/3217801>

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

Cancer vaccine strategies to improve immunotherapy

Many roads lead to Rome

Elena Tondini

Cancer vaccine strategies to improve immunotherapy

Many roads lead to Rome

Elena Tondini

The research performed in this thesis was performed at the department of Immunology, formerly known as Immunohematology and Blood Transfusion, of the Leiden University Medical Center. This work was supported by the Leiden University Profiling Area Bioscience: the Science Base of Health grant.

Layout: Elena Tondini

Cover design: adapted from the illustration "Immunological Synapse" by David S. Goodsell, RCSB Protein Data Bank (doi: 10.2210/rcsb_pdb/goodsell-gallery-022). Use was granted under the CC-BY-4.0 license.

Thesis printing: Legodigit S.r.l.

ISBN 978-90-9035-041-7

All rights reserved. Nothing from this thesis may be reproduced in any form without permission from the author.

Copyright © 2021 Elena Tondini

Cancer vaccine strategies to improve immunotherapy

Many roads lead to Rome

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 21 oktober 2021
klokke 11.15 uur

door

Elena Tondini

geboren te Trento, Italië in 1990

PROMOTOR:

Prof. Dr. F.A. Ossendorp

CO-PROMOTOR:

Dr. D.Filippov

LEDEN PROMOTIECOMMISSIE:

Prof. dr. A. Geluk

Prof. dr. M. Barz

Dr. S. van Kasteren

Dr. M. Verdoes (*Radboudumc*)

Table of contents

Chapter 1	7
Introduction	
Chapter 2	25
Self-adjuvanting cancer vaccines from conjugation-ready lipid A analogues and synthetic long peptides	
Chapter 3	49
Synthetic peptide conjugated to the lipid A analogue CRX-527 enhances vaccine efficacy and T cell mediated-tumor control	
Chapter 4	75
Multivalent, stabilized mannose-6-phosphates for the targeted delivery of Toll-like receptor ligands and peptide antigens	
Chapter 5	89
Dual peptide conjugates simultaneously triggering of TLR2 and TLR7 for cancer vaccination	
Chapter 6	103
Cationic synthetic long peptides-loaded nanogels: an efficient therapeutic vaccine formulation for induction of T-cell responses	
Chapter 7	131
A poly-neoantigen DNA vaccine synergizes with PD-1 blockade to induce T cell-mediated tumor control	
Chapter 8	155
General discussion	
Appendices	
Nederlandse Samenvatting	168
Riassunto in italiano	170
English summary	172
Acknowledgments	174
Curriculum vitae	176
List of publications	177

