



Universiteit
Leiden
The Netherlands

Integrating cellular and tissue dynamics with cell fate decisions through computational modeling

Heldring, M.M.

Citation

Heldring, M. M. (2023, December 12). *Integrating cellular and tissue dynamics with cell fate decisions through computational modeling*. Retrieved from <https://hdl.handle.net/1887/3666239>

Version: Publisher's Version

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

License: <https://hdl.handle.net/1887/3666239>

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

Integrating cellular and tissue dynamics with cell fate decisions through computational modeling

Muriel M. Heldring

Cover design: Francesco Russo
Thesis lay-out: Muriel M. Heldring
Printing: Groenprint

© Copyright, Muriel M. Heldring, 2023
ISBN: 978-90-9037917-3

All rights reserved. No part of this book may be reproduced in any form or by any means without permission of the author.

Integrating cellular and tissue dynamics with cell fate decisions through computational modeling

Proefschrift

ter verkrijging van
de graad van doctor aan de Universiteit van Leiden,
op gezag van rector magnificus prof.dr.ir. H. Bijl,
volgens besluit van het college voor promoties
te verdedigen op dinsdag 12 december 2023
klokke 13:45 uur

door

Muriel M. Heldring
geboren te Amsterdam
in 1990

Promotores:

Dr. J.B. Beltman
Prof.dr. B. van de Water

Promotiecommissie:

Prof.dr. H. Irth
Prof.dr. E.C.M. de Lange
Prof.dr. V. Rottschäfer
Prof.dr. F.J. Bruggeman (Vrije Universiteit Amsterdam)
Prof.dr. M.T. Figge (Friedrich Schiller University Jena)
Prof.dr. A. Loewer (Technical University Darmstadt)

The research described in this thesis was performed at the division Drug Discovery and Safety of the Leiden Academic Centre for Drug Research (LACDR), Leiden University (Leiden, The Netherlands).

Table of Contents

Chapter 1		
Introduction		9
Chapter 2		
Model-based translation of DNA damage signaling dynamics across cell types		21
Chapter 3		
Data-driven kinetic modeling of p53 signaling linked to cell cycle progression		65
Chapter 4		
Interdependency of estradiol-mediated ER α activation and subsequent PR and GREB1 induction to control cell cycle progression		97
Chapter 5		
Unraveling the effect of intra- and intercellular processes on acetaminophen-induced liver injury		135
Chapter 6		
General Discussion		179
English Summary		189
Nederlandse Samenvatting		193
About the Author		197
List of Publications		198

