University of Groningen

The potential of in vitro and ex vivo models to predict the efficacy of antifibrotic drugs

Puerta Cavanzo, Nataly

DOI:
[10.33612/diss.190707273](https://doi.org/10.33612/diss.190707273)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2021

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):
Puerta Cavanzo, N. (2021). *The potential of in vitro and ex vivo models to predict the efficacy of antifibrotic drugs*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen.
<https://doi.org/10.33612/diss.190707273>

Copyright

Other than for strictly personal use, 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), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

THE POTENTIAL OF *IN VITRO*
AND *EX VIVO* MODELS TO
PREDICT THE EFFICACY OF
ANTIFIBROTIC DRUGS

Nataly Puerta Cavanzo

The research described in this thesis was financially supported by Prof. Dr. H.W. Frijlink (Groningen research Institute of Pharmacy)

The PhD research described in this thesis was performed the department of Pathology & Medical Biology, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands and the department of Pharmaceutical Technology and Biopharmacy, University of Groningen, Groningen, The Netherlands

Printing of this thesis was supported by the Graduate School of Medical Sciences of the University of Groningen.

Dissertation of the University of Groningen

Cover photo: Nataly Puerta Cavanzo

Printed: Ipskamp Printing | proefschriften.net

Layout and design: Yasmin Katlich, persoonlijkproefschrift.nl

ISBN: 978-94-6421-514-4

Copyright © Nataly Puerta Cavanzo, 2021. All rights reserved. No part of this thesis may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, without prior written permission of the author.

university of
 groningen

The potential of *in vitro* and *ex vivo* models to predict the efficacy of antifibrotic drugs

PhD thesis

to obtain the degree of PhD at the
University of Groningen
on the authority of the
Rector Magnificus Prof. C. Wijmenga
and in accordance with
the decision by the College of Deans.

This thesis will be defended in public on

Friday 19 November 2021 at 12.45 hours

by

Nataly Puerta Cavanzo

born on 25 June 1977
in Bogotá, Colombia

Supervisors

Prof. P. Olinga

Prof. R.A. Bank

Assessment Committee

Prof. B.N. Melgert

Prof. M. Kruithof-de Julio

Prof. J.K. Burgess

Paranymphs

Dr. B. Piersma

Dr. R. Cadena Hid

Contents

CHAPTER 1	9
<i>General introduction</i>	
CHAPTER 2	35
<i>Macromolecular crowding as a tool to screen anti-fibrotic drugs: the scar-in-a-jar system revisited</i>	
CHAPTER 3	59
<i>Predictive value of precision-cut kidney slices as an ex vivo screening platform of anti-fibrotic therapies for human renal fibrosis</i>	
CHAPTER 4	109
<i>Verteporfin improves fibrotic aspects of Dupuytren's disease nodular fibroblasts, irrespective of activation state</i>	
CHAPTER 5	135
<i>A pilot study: ex vivo culture and TGF-β1 stimulation of precision-cut Dupuytren slices compared to Dupuytren fibroblast cultures</i>	
CHAPTER 6	153
<i>Targeting of the YAP/SMAD molecular circuit inhibits a TGF-β1-induced myofibroblast phenotype</i>	
CHAPTER 7	185
<i>Summary and general discussion</i>	
CHAPTER 8	209
<i>Summary (Dutch, English and Spanish)</i>	
APPENDICES	219
<i>Acknowledgments</i>	
<i>Biography</i>	
<i>List of publications</i>	