University of Groningen

Strategies to improve donation after circulatory death kidneys for transplantation

Venema, Leonie

DOI:
[10.33612/diss.177790594](https://doi.org/10.33612/diss.177790594)

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):
Venema, L. (2021). *Strategies to improve donation after circulatory death kidneys for transplantation*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen.
<https://doi.org/10.33612/diss.177790594>

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.

**Strategies to improve donation after
circulatory death kidneys
for transplantation**

Leonie Venema

The printing of this thesis was kindly supported by:
Organ Assist, part of XVIVO perfusion
Graduate school of medical sciences (GSMS)
Nederlandse transplantatie vereniging (NTV)
University medical center groningen (UMCG)
Kroon vlees, Groningen

Lay-out and design Daniëlle Balk | www.persoonlijkproefschrift.nl
Printing Ridderprint | www.ridderprint.nl

© Leonie Venema 2021

All rights are reserved. No part of this thesis may be reproduced, distributed, stored in a retrieval system, or transmitted in any form or by any means, without prior written permission of the author.

**rijksuniversiteit
groningen**

Strategies to improve donation after circulatory death kidneys for transplantation

Proefschrift

ter verkrijging van de graad van doctor aan de
Rijksuniversiteit Groningen
op gezag van de
rector magnificus prof. dr. C. Wijmenga
en volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op

woensdag 25 augustus 2021 om 16:15 uur

door

Leonie Harmina Venema
geboren op 29 februari 1988
te Groningen

Promotores

Prof. dr. H.G.D. Leuvenink

Prof. Dr R.J. Ploeg

Beoordelingscommissie

Prof. Dr. Bente Jespersen

Prof. Dr. Ina Jochmans

Prof. Dr. Jan-Luuk Hillebrands

Paranimfen

Evelien Eenjes

Rosa Lammerts

TABLE OF CONTENTS

Chapter 1	General Introduction and aim	9
PART A	Unexpected donation after circulatory death (uDCD) donors	
Chapter 2	Factors that complicated the implementation of a program of donation after unexpected circulatory death (uDCD) of lungs and kidneys. Lessons learned from a regional trial In the Netherlands. <i>Transplantation 2019</i>	35
Chapter 3	Potential of unexpected donation after circulatory death programs defined by their demographic characteristics. <i>In preparation</i>	55
PART B	Improving and testing renal function with machine perfusion	
Chapter 4	Development of a porcine slaughterhouse kidney perfusion model.	79
Chapter 5	Effects of oxygen during long-term hypothermic machine perfusion in a porcine model of kidney donation after circulatory death. <i>Transplantation 2019</i>	105
Chapter 6	Impact of red blood cells on function and metabolism of porcine donation after circulatory death kidneys during normothermic machine perfusion. <i>In submission</i>	125
Chapter 7	The addition of 6-chromanol SUL-138 during hypothermic machine perfusion does not affect short-term renal function and injury of porcine donation after circulatory death kidneys. <i>In preparation</i>	149
Chapter 8	Metformin pre- and postconditioning to reduce ischemia reperfusion injury in an isolated <i>ex vivo</i> rat and porcine kidney normothermic machine perfusion model. <i>Clinical Transl Science 2020</i>	167
Chapter 9	Increasing metformin concentrations lowers its own secretion in both a rat and porcine <i>ex vivo</i> normothermic kidney perfusion model. <i>BMJ Open Diabetes Res Care 2020</i>	191
Chapter 10	General discussion and future perspectives	217
Chapter 11	Summary	240
	Samenvatting	244
	List of contributing authors	249
	Dankwoord	253
	List of publications	263
	Over de auteur	264