



Universiteit
Leiden
The Netherlands

Novel insights in thrombosis pathophysiology using Mice with Impaired anticoagulation

Heestermans, M.

Citation

Heestermans, M. (2018, September 25). *Novel insights in thrombosis pathophysiology using Mice with Impaired anticoagulation*. Retrieved from <https://hdl.handle.net/1887/66034>

Version: Not Applicable (or Unknown)

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

Downloaded from: <https://hdl.handle.net/1887/66034>

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

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/66034> holds various files of this Leiden University dissertation.

Author: Heestermans, M.

Title: Novel insights in thrombosis pathophysiology using Mice with Impaired anticoagulation

Issue Date: 2018-09-25

**Novel Insights in Thrombosis
Pathophysiology using Mice with
Impaired Anticoagulation**

Marco Heestermans

**Novel Insights in Thrombosis Pathophysiology
using Mice with Impaired Anticoagulation**

Proefschrift

ter verkrijging van

de graad van doctor aan de Universiteit Leiden,

op gezag van Rector Magnificus Prof. mr. C.J.J.M. Stolker

volgens besluit van het College voor Promoties

te verdedigen op dinsdag 25 september 2018

klokke 16.15 uur

door

Marco Heestermans

geboren te Waalre, Nederland

in 1987

Novel Insights in Thrombosis Pathophysiology using Mice with Impaired Anticoagulation

ISBN: 978-94-6299-987-9

Copyright © 2018 by Marco Heestermans

All rights reserved. No part of this thesis may be reproduced, stored or transmitted in any way or by any means without the prior permission of the author, or when applicable, of the publishers of the scientific papers

Cover design and layout by Joska Sesink, persoonlijkproefschrift.nl

Printed by Ridderprint BV, www.ridderprint.nl

Cover image: Sergey Granev, <https://www.shutterstock.com/>

The research for this thesis was performed at the Leiden University Medical Center (Leiden, The Netherlands), at the department of Internal Medicine, division of Thrombosis and Hemostasis, and the Einthoven Laboratory for Vascular and Regenerative Medicine.

Promoteren

Prof. Dr. P.H. Reitsma

Prof. Dr. H.H. Versteeg

Copromotor

Dr. B.J.M. van Vlijmen

Leden promotiecommissie

Prof. Dr. H.J.C. Eikenboom

Prof. Dr. L.M. Havekes

Prof. Dr. E. Lutgens (University of Amsterdam)

Prof. Dr. H. ten Cate (Maastricht University)

Dr. D. Salvatori

TABLE OF CONTENTS

Chapter 1	General Introduction and Outline	7
Chapter 2	Oligonucleotides Targeting Coagulation Factor mRNAs: Use in Thrombosis and Hemophilia Research and Therapy	23
Chapter 3	Role of Platelets, Neutrophils, and Factor XII in Spontaneous Venous Thrombosis in Mice	43
Chapter 4	Coagulation Factor XII Does Not Contribute to Mouse Venous Thrombosis Induced By Silencing of Antithrombin and Protein C	71
Chapter 5	Circulating Nucleosomes and Elastase α 1-Antitrypsin Complexes and the Novel Thrombosis Susceptibility Locus <i>SLC44A2</i>	83
Chapter 6	Silencing of Anticoagulant Protein C Evokes Low Incident but Spontaneous Atherothrombosis in Apolipoprotein E Deficient Mice	91
Chapter 7	Predilection of Low Protein C-induced Spontaneous Atherothrombosis for the Right Coronary Sinus in Apolipoprotein E deficient mice	107
Chapter 8	General Discussion and Perspectives	133
Chapter 9	Nederlandse Samenvatting	151
	Curriculum Vitae	159
	Publications	161
	Dankwoord	163