

University of Groningen

The role of endogenous H₂S production during hibernation and forced hypothermia

Dugbartey, George Johnson

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:

2015

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

Citation for published version (APA):

Dugbartey, G. J. (2015). *The role of endogenous H₂S production during hibernation and forced hypothermia: towards safe cooling and rewarming in clinical practice*. University of Groningen.

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).

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 role of endogenous H₂S production during hibernation and forced hypothermia:

towards safe cooling and rewarming in clinical practice

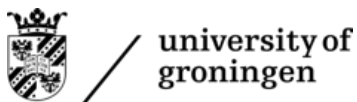
George Johnson Dugbartey

Studies presented in this thesis were financially supported by

Groningen University Institute for Drug Exploration (GUIDE)
University Medical Centre Groningen (UMCG)

Printing of this thesis was financially supported by

University of Groningen



University Medical Centre Groningen (UMCG)



Groningen University Institute for Drug Exploration (GUIDE)



Cover Design and thesis lay out

MidasMentink.nl

Printed by Gildeprint – Enschede, The Netherlands

www.gildeprint.nl

ISBN (printed): 978-90-367-7741-4

ISBN (digital): 978-90-367-7740-7

Copyright © 2015 by George Dugbartey

All rights reserved. No part of this book 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 role of endogenous H₂S production during hibernation and forced hypothermia:

towards safe cooling and rewarming in clinical practice

PhD thesis

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

This thesis will be defended in public on

Wednesday 1 July 2015 at 11.00 hours

By

George Johnson Dugbartey

born on 3 April 1982

in Tema, Ghana

Supervisor:

Prof. R.H. Henning

Co-supervisor:

Dr. H.R. Bouma

Assessment committee:

Prof. H. van Goor

Prof. B.A. Yard

Prof. E.A. van der Zee

Paranymphs:

M.N. Tolouee

V.A. Reitsema

This book is lovingly dedicated to

the man and woman who gave me life (Jonathan and Hannah)
the man and woman who kept my feet on the path of knowledge (Ray and Joycelyn)
my twin sister with whom I came into this world (Georgina)
my brother who has always been there for me (Hayford)

CONTENTS

Chapter 1	Introduction and aims of the thesis	9
Chapter 2	Reduction of body temperature governs neutrophil retention in hibernating and non-hibernating animals by margination	27
Chapter 3	Endogenous H ₂ S production is crucial in maintaining torpor-arousal cycles and preserving renal integrity in the hibernating Syrian hamster	45
Chapter 4	Induction of a torpor-like state by 5'-AMP: a role for endogenous H ₂ S production?	65
Chapter 5	Dopamine treatment attenuates renal injury via production of H ₂ S in a rat model of deep hypothermia and rewarming	79
Chapter 6	General discussion	101
Chapter 7	Nederlandse samenvatting	113
Acknowledgements		121
Bibliography		127

