

University of Groningen

## New avenues in PET imaging of multiple sclerosis

Paula Faria, Daniele de

**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:*

2014

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

*Citation for published version (APA):*

Paula Faria, D. D. (2014). *New avenues in PET imaging of multiple sclerosis*. s.n.

### 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.*

# **New avenues in PET imaging of multiple sclerosis**

Daniele de Paula Faria

© Copyright 2013 D. de Paula Faria. All rights are reserved. No parts of this book may be reproduced or transmitted in any form or by any means, without permission of the author.

The printing of this thesis was financially supported by: University of Groningen, University Medical Center Groningen (UMCG), Graduate School of Drug Exploration (GUIDE), Eckert & Ziegler, Grace, IBA, Von Gahlen and Stichting Ina Veenstra-Rademaker.

Cover design: ARTEFINAL, Lta, Portugal

Printed by: WÖHRMANN PRINT SERVICE

ISBN: 978-90-367-6681-4 (printed version)

978-90-367-6680-7 (electronic version)



university of  
 groningen

# **New avenues in PET imaging of multiple sclerosis**

## **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

Monday 13 January 2014 at 11:00 am

by

**Daniele de Paula Faria**

born on 6 January 1982  
in Centenário do Sul, Brazil

**Supervisors:**

Prof. R.A.J.O. Dierckx

Prof. C.A. Buchpiguel

**Co-supervisors:**

Dr. E.F.J. de Vries

Dr. J.C.V.M. Copray

**Assessment committee:**

Prof. H.W.G.M. Boddeke

Prof. P.P. de Deyn

Prof. J. Booij

# Contents

<b>Chapter 1</b>	General introduction	7
<b>Chapter 2</b>	PET imaging in multiple sclerosis: Present and Future (Submitted)	23
<b>Chapter 3</b>	PET imaging of demyelination and remyelination in the cuprizone mouse model for multiple sclerosis: a comparison between [ <sup>11</sup> C]CIC and [ <sup>11</sup> C]MeDAS (Accepted for publication in NeuroImage)	81
<b>Chapter 4</b>	PET imaging of glucose metabolism, neuroinflammation and demyelination in the lysolecithin rat model for multiple sclerosis (Submitted)	107
<b>Chapter 5</b>	PET imaging of focal demyelination and remyelination in a rat model for multiple sclerosis: comparison of [ <sup>11</sup> C]MeDAS, [ <sup>11</sup> C]CIC and [ <sup>11</sup> C]PIB (Submitted)	131
<b>Chapter 6</b>	PET imaging of disease progression and treatment effects in the experimental autoimmune encephalomyelitis rat model (Submitted)	153
<b>Chapter 7</b>	Concluding remarks and future perspectives	189
<b>Chapter 8</b>	Summary	197
<b>Chapter 9</b>	Samenvatting/Resumo	205

**Acknowledgments**

221

**Abbreviations**

229