

University of Groningen

## Exploring new molecular imaging concepts of prostate cancer

Wondergem, Maurits

**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:*

2017

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

*Citation for published version (APA):*

Wondergem, M. (2017). Exploring new molecular imaging concepts of prostate cancer [Groningen]: 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.

# **Exploring new Molecular Imaging concepts of Prostate Cancer**

**Maurits Wondergem**

**Exploring new Molecular Imaging concepts of Prostate Cancer**

PhD thesis, University of Groningen – with a summary in Dutch

© M. Wondergem, Amsterdam, 2017

M.Wondergem@NWZ.nl

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without permission in writing from the author. The copyright of the articles that have been published or have been accepted for publication has been transferred to the respective journals.

**ISBN:** 978-94-034-0160-7

**Cover design:** Wondergem&Wondergem

**Lay-out:** Tara Kinneging, PersoonlijkProefschrift.nl

**Printing:** Ipskamp Printing, [www.proefschriften.net](http://www.proefschriften.net)



rijksuniversiteit  
groningen

# Exploring new Molecular Imaging concepts of Prostate Cancer

## Proefschrift

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

De openbare verdediging zal plaatsvinden op  
maandag 20 november 2017 om 16.15 uur

door

**Maurits Wondergem**

geboren op 8 oktober 1982  
te Mariekerke

**Promotores**

Prof. dr. I.J. de Jong  
Prof. dr. J. Pruim

**Copromotor**

Dr. F.M. van der Zant

**Beoordelingscommissie**

Prof. dr. R.A.J.O. Dierckx  
Prof. dr. R.J.A. van Moorselaar  
Prof. dr. A. Chiti

*Voor mijn moeder en vader*

## CONTENTS

<b>Chapter 1</b>	<b>Introduction and outline</b>	<b>11</b>
<b>Chapter 2</b>	<b>A literature review of <sup>18</sup>F-sodiumfluoride PET/CT and <sup>18</sup>F-choline or <sup>11</sup>C-choline PET/CT for detection of bone metastases in patients with prostate cancer</b> Maurits Wondergem, Friso M. van der Zant, Tjeerd van der Ploeg, Remco J.J. Knol <i>Nucl Med Comm. 2013; 34: 935</i>	<b>33</b>
<b>Chapter 3</b>	<b><sup>99m</sup>Tc-HDP Bone scintigraphy and <sup>18</sup>F-sodiumfluoride PET/CT in primary staging of patients with prostate cancer</b> Maurits Wondergem, Friso M. van der Zant, Remco J.J. Knol, Anne Marij G. Burgers, Siebe D. Bos, Igle J. de Jong, Jan Pruijm <i>Submitted</i>	<b>59</b>
<b>Chapter 4</b>	<b>Kinetic study of <sup>18</sup>F-fluorocholine uptake to differentiate malignant and physiologic uptake of <sup>18</sup>F-fluorocholine in prostate cancer metastases</b> Maurits Wondergem, Remco J.J. Knol, Friso M. van der Zant, Tjeerd van der Ploeg, Jan Pruijm, Igle J. de Jong <i>Submitted</i>	<b>77</b>
<b>Chapter 5</b>	<b>Impact of fasting on <sup>18</sup>F-fluorocholine gastrointestinal uptake and detection of lymph node metastases in patients with prostate cancer</b> Maurits Wondergem, Friso M. van der Zant, Remco J.J. Knol, Jan Pruijm, Igle J. de Jong <i>EJNMMI Res. 2016; 6: 2</i>	<b>101</b>
<b>Chapter 6</b>	<b>Focal <sup>18</sup>F-fluorocholine uptake on early dynamic PET/CT imaging of the prostatic region; What does it mean?</b> Maurits Wondergem, Friso M. van der Zant, Remco J.J. Knol, Jan Pruijm, Igle J. de Jong <i>Submitted</i>	<b>113</b>
<b>Chapter 7</b>	<b><sup>18</sup>F-DCFPyL PET/CT in the detection of prostate cancer at 60 and 120 minutes; detection rate, image quality, activity kinetics and biodistribution</b> Maurits Wondergem, Friso M. van der Zant, Remco J.J. Knol, Sergiy V. Lazarenko, Jan Pruijm, Igle J. de Jong <i>J Nucl Med. Accepted for publication April 2017</i>	<b>131</b>

<b>Intermezzo 1</b>	<b>High <sup>18</sup>F-DCFPyL uptake in adrenal adenomas</b>	<b>155</b>
	Johannes G.K. Peper, Sandra Srbljin, Friso M. van der Zant, Remco J.J. Knol, Maurits Wondergem <i>Clin Nucl Med. Accepted for publication July 2017</i>	
<b>Chapter 8</b>	<b>Conclusions and future perspectives</b>	<b>163</b>
<b>Chapter 9</b>	<b>Summary</b>	<b>175</b>
<b>Addenda</b>	<b>Dutch summary – Nederlandse Samenvatting</b>	<b>192</b>
	<b>List of abbreviations</b>	<b>198</b>
	<b>List of publications</b>	<b>200</b>
	<b>Acknowledgements – Dankwoord</b>	<b>202</b>
	<b>Curriculum vitae</b>	<b>206</b>



