

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/19081> holds various files of this Leiden University dissertation.

Author: Snoeks, Thomas Jan Adriaan

Title: Imaging in pre-clinical cancer research : applied to bone metastases

Date: 2012-06-13

Imaging in Pre-Clinical Cancer Research

applied to bone metastases

T.J.A. Snoeks

Cover art by T.J.A. Snoeks, based on Figure 2.3.

This thesis was typeset using L^AT_EX 2_ε

Printed by GVO drukkers & vormgevers B.V. Amsterdam, The Netherlands.

ISBN 978-94-6190-845-2

© 2012, T.J.A. Snoeks, 's Gravenhage, The Netherlands. All rights reserved. No parts of this thesis may be reproduced or transmitted in any form, by any means, electronic or mechanical, without prior written permission of the author.

Imaging in Pre-Clinical Cancer Research

applied to bone metastases

Proefschrift

ter verkrijging van de graad van Doctor aan de
Universiteit Leiden, op gezag van Rector Magnificus
prof. mr. P.F. van der Heijden, volgens besluit van het
College voor Promoties te verdedigen op woensdag 13
juni 2012 klokke 16:15 door

Thomas Jan Adriaan Snoeks
geboren te Naarden in 1981

Promotiecommissie

Promotores	Prof. dr. C.W.G.M. Löwik Prof. dr. B.P.F. Lelieveldt
Co-promotores	Dr. E.L. Kaijzel Dr. J. Dijkstra
Overige Leden	Prof. dr. M. Hoehn, Max Planck Instituut, Keulen, Duitsland Prof. dr. F. Ossendorp Prof. dr. S.E. Papapoulos

The studies presented in this thesis have been financially supported by the Dutch Cancer Society, Koningin Wilhelmina Fonds (grant UL2007-3801) and the 6th FP EU grants EMIL (LSH-CT-2004-503569) and DiMI (LSBH-CT-2005-512146) and ctmm project misis.

Financial support for the costs associated with the publication of this thesis was received from the European Society for Molecular Imaging, Caliper Life Sciences, Bontius Stichting Doelfonds Beeldverwerking, J.E. Jurriaanse Stichting and Li-Cor Biosciences.



But there is another alchemy, operative and practical, which teaches how to make the noble metals and colours and many other things better and more abundantly by art than they are made in nature. And science of this kind is greater than all those preceding because it produces greater utilities. For not only can it yield wealth and very many other things for the public welfare, but it also teaches how to discover such things as are capable of prolonging human life for much longer periods than can be accomplished by nature . . . Therefore this science has special utilities of that nature, while nevertheless it confirms theoretical alchemy through its works.

Roger Bacon

Opus Tertium (1266-1268), Chapter 12

Contents

1	General Introduction	9
	Contribution and Outline of this Thesis	16
2	Normalized Volume of Interest Selection and Measurement of Bone Volume in μCT Scans	23
3	Automated Bone Volume and Thickness Measurements in Small Animal Whole-Body μCT Data	41
4	Towards an Integrated Approach for Whole-Body Multimodality Imaging of Bone Metastases	65
5	An <i>in vitro</i> Model That Can Distinguish Between Effects on Angiogenesis and on Established Vasculature: Actions of TNP-470, Marimastat and the Tubulin-Binding Agent Ang-510	83
6	2-Methoxyestradiol Analogue ENMD-1198 Reduces Breast Cancer Induced Osteolysis and Tumor Burden both <i>In Vitro</i> and <i>In Vivo</i>	97
7	Summary & Conclusions and a Future Perspective	119
8	Miscellaneous	133
	Nederlandse Samenvatting	135
	List of Abbreviations	141
	Dankwoord	143
	Curriculum Vitae	145
	List of Publications	147

