



Universiteit
Leiden
The Netherlands

New neuroimaging approaches in Parkinson's disease

Schipper, L.J. de

Citation

Schipper, L. J. de. (2020, February 18). *New neuroimaging approaches in Parkinson's disease*. Retrieved from <https://hdl.handle.net/1887/85511>

Version: Publisher's Version

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

Downloaded from: <https://hdl.handle.net/1887/85511>

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

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/85511> holds various files of this Leiden University dissertation.

Author: Schipper L.J. de

Title: New neuroimaging approaches in Parkinson's disease

Issue Date: 2020-02-18

New neuroimaging approaches in Parkinson's disease

Design & layout: L.J. de Schipper
Printed by: ProefschriftMaken | Proefschriftmaken.nl

The research presented in this thesis was performed at the Department of Neurology and
the Department of Radiology of the Leiden University Medical Center, Leiden, the
Netherlands and was funded by 'Stichting ParkinsonFonds'.

ISBN: 978-94-6380-662-6
© L.J. de Schipper, 2020

No part of this thesis may be reproduced in any form without permission of the author or,
when appropriate, of the publishers of the publications.

The printing of this thesis was financially supported by the Parkinson Vereniging, the
Alkemade-Keuls foundation and UCB Pharma B.V.

New neuroimaging approaches in Parkinson's disease

Proefschrift

Ter verkrijging van de graad van Doctor
aan de Universiteit Leiden,
op gezag van de Rector Magnificus prof.mr. C.J.J.M. Stolkers,
volgens besluit van het College voor promoties
te verdedigen op dinsdag 18 februari 2020
klokke 15:00 uur

door

Laura Jansje de Schipper
geboren te Knokke-Heist, België
in 1988

Promotor

Prof. dr. J.J. van Hilten

Copromotoren

Dr. J. Marinus

Dr. J. van der Grond

Promotiecommissie

Prof. dr. R.A.C. Roos

Prof. dr. O.A. van den Heuvel, Amsterdam Universitaire Medische Centra,
Amsterdam, the Netherlands

Prof. dr. A. van der Lugt, Erasmus Medisch Centrum, Rotterdam, the Netherlands

Table of contents

CHAPTER 1	General introduction	7
CHAPTER 2	Loss of integrity and atrophy in cingulate structural covariance networks in Parkinson's disease	15
CHAPTER 3	Regional structural hippocampal differences between dementia with Lewy bodies and Parkinson's disease	31
CHAPTER 4	Age- and disease-related cerebral white matter changes in patients with Parkinson's disease	47
CHAPTER 5	Altered whole-brain and network-based functional connectivity in Parkinson's disease	63
CHAPTER 6	Classification of Parkinson's disease status based on resting-state functional connectivity data	81
CHAPTER 7	Summary, concluding remarks and future perspectives	95
CHAPTER 8	Nederlandse samenvatting	105
APPENDICES		115
	Abbreviations	116
	References	118
	List of publications	135
	Dankwoord	137
	Curriculum vitae	139