



Universiteit
Leiden
The Netherlands

Genetic causes of growth disorders

Duyvenvoorde, H.A. van

Citation

Duyvenvoorde, H. A. van. (2013, June 25). *Genetic causes of growth disorders*. Retrieved from <https://hdl.handle.net/1887/21013>

Version: Corrected 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/1887/21013>

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

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/21013> holds various files of this Leiden University dissertation.

Author: Duyvenvoorde, Hermine van

Title: Genetic causes of growth disorders

Issue Date: 2013-06-25

Genetic causes of growth disorders

Hermine van Duyvenvoorde

ISBN: 978-94-6203-382-5

Cover design, lay-out: Esther Beekman (www.estherontwerpt.nl)

Cover image: iStockphoto.com

Printed by: CPI - Koninklijke Wöhrmann BV, Zutphen, The Netherlands

For publication of this thesis financial support from the Department of Pediatrics, the Department of Endocrinology and Metabolic Diseases, and the Department of Clinical Genetics of the Leiden University Medical Center, Ipsen Farmaceutica B.V. and the 'Nederlandse Vereniging voor Calcium- en Botstofwisseling' (NVCB) is gratefully acknowledged.

© 2013 H.A. van Duyvenvoorde, Rijnsburg, the Netherlands.

All rights reserved. No part of this publication may be reproduced in any form or by any means without prior permission of the author.

Genetic causes of growth disorders

Proefschrift

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus prof.mr. C.J.J.M. Stolker,
volgens besluit van het College voor Promoties
te verdedigen op dinsdag 25 juni 2013
klokke 13.45 uur

door

Hermine Agatha van Duyvenvoorde
geboren te Katwijk
in 1981

Promotiecommissie

Promotores: Prof. dr. J.M. Wit
Prof. dr. H.B.J. Karperien (Universiteit van Twente)
Prof. dr. A.M. Pereira Arias

Copromotor: Dr. M. Losekoot

Overige leden: Prof. dr. E. Bakker
Prof. dr. M.H. Breuning
Prof. dr. J.A. Romijn (Universiteit van Amsterdam)



Table of contents

Chapter 1	General introduction	9
Part A	Candidate gene approach	27
Chapter 2	Short stature associated with a novel heterozygous mutation in the insulin-like growth factor 1 gene <i>The Journal of Clinical Endocrinology & Metabolism 2010;95(11):E363-367</i>	29
Chapter 3	The severe short stature in two siblings with a heterozygous IGF1 mutation is not caused by a dominant negative effect of the putative truncated protein <i>Growth Hormone & IGF Research 2011;21(1):44-50</i>	45
Chapter 4	Homozygous and heterozygous expression of a novel mutation of the acid-labile subunit <i>European Journal of Endocrinology 2008;159(2):113-120</i>	67
Part B	Combined candidate gene and whole genome approach	91
Chapter 5	Two short children born small for gestational age with insulin-like growth factor 1 receptor haploinsufficiency illustrate the heterogeneity of its phenotype <i>The Journal of Clinical Endocrinology & Metabolism 2009;94(12):4717-4727</i>	93
Chapter 6	Genetic analysis of short children with apparent growth hormone insensitivity <i>Hormone Research in Paediatrics 2012;77(5):320-333</i>	121
Part C	Whole genome approach	151
Chapter 7	Copy number variants in patients with short stature <i>Submitted</i>	153
Part D	Combined whole genome approach and functional studies	183
Chapter 8	A novel activating mutation in the kinase homology domain of natriuretic peptide receptor-2 causes extremely tall stature without skeletal deformities <i>Submitted</i>	185
Chapter 9	General discussion	215
Chapter 10	Summary Samenvatting	226 232
Chapter 11	Curriculum Vitae List of publications	240 242