



UvA-DARE (Digital Academic Repository)

Epigenetic control of hippocampal stem cells: modulation by hyperactivation, glucocorticoids and aging

Schouten, M.

Publication date

2015

Document Version

Final published version

[Link to publication](#)

Citation for published version (APA):

Schouten, M. (2015). *Epigenetic control of hippocampal stem cells: modulation by hyperactivation, glucocorticoids and aging*.

General rights

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), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.



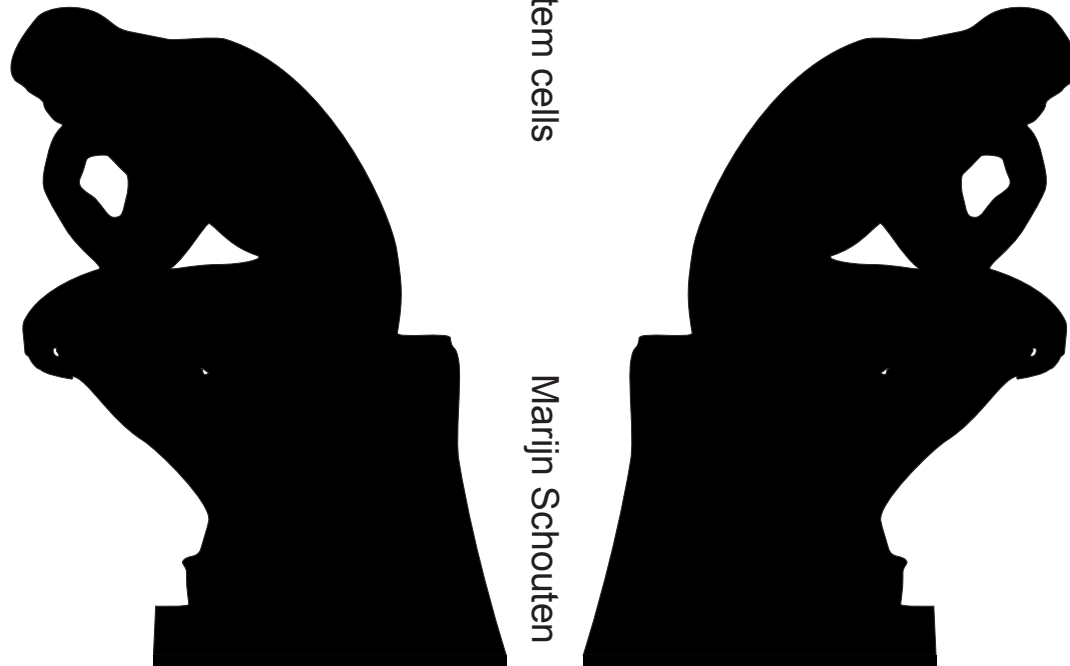
Epigenetic control of hippocampal stem cells:

modulation by hyperactivation, glucocorticoids and aging

Marijn Schouten

Epigenetic control of hippocampal stem cells

Marijn Schouten



Epigenetic control of hippocampal stem cells:

modulation by hyperactivation, glucocorticoids and aging

Marijn Schouten

The studies described in this thesis were performed at the department of Structural and Functional Plasticity of the Nervous System, Center for Neurosciences, University of Amsterdam (Chapter 1-7), the Oncoproteomics Laboratory, Cancer Center, Free University (Chapter 3) and the Division of Medical Pharmacology of the Leiden/Amsterdam Center for Drug Research (Chapter 3) and was funded by an NWO *vidi* grant. The printing of this thesis was kindly supported by Swammerdam Institute for Life Sciences and Carlos P. Fitzsimons.

ISBN: 978-94-6233-147-1

Printed by: Gildeprint drukkerijen

Carpe diem

Epigenetic control of hippocampal stem cells:
modulation by hyperactivation, glucocorticoids and aging

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor
aan de Universiteit van Amsterdam
op gezag van de Rector Magnificus
prof. dr. D.C. van den Boom
ten overstaan van een door het College voor Promoties ingestelde commissie,
in het openbaar te verdedigen in de Agnietenkapel
op dinsdag 24 november 2015, te 14:00 uur

door

Marijn Schouten
geboren te Dongeradeel

Promotiecommissie:

Promotor:	Prof. dr. P.J. Lucassen	Universiteit van Amsterdam
Copromotor:	Dr. C.P. Fitzsimons	Universiteit van Amsterdam
Overige leden:	Dr. T.M. Breit	Universiteit van Amsterdam
	Prof. dr. J.M. Encinas	Achucarro Basque Center for Neuroscience
	Prof. dr. M.P. Smidt	Universiteit van Amsterdam
	Dr. P.J. Verschure	Universiteit van Amsterdam
	Prof. dr. J. Verhaagen	Vrije Universiteit / NIN
Faculteit:	Faculteit der Natuurwetenschappen, Wiskunde en Informatica	

Contents

Preface	9
Epigenetic control of hippocampal stem cells	
Chapter 1	13
New neurons in aging brains: molecular control by small non-coding RNAs	
Chapter 2	33
microRNAs and the regulation of neuronal plasticity under stress conditions	
Chapter 3	57
MicroRNA-124 and -137 cooperativity controls caspase-3 activity through BCL2L13 in hippocampal neural stem cells	
Chapter 4	97
Imaging Dendritic Spines of Rat Primary Hippocampal Neurons Using Structured Illumination Microscopy	
Chapter 5	113
Ultradian glucocorticoid oscillations control epigenetic programming of cell quiescence in hippocampal neural stem cells	
Chapter 6	143
Age-related decline of hippocampal neural precursor cell populations is associated with expression of the glucocorticoid receptor	
Chapter 7	157
Summary and general discussion	
Addenda	179
Addendum I	181
Nederlandse samenvatting	
Addendum II	185
About the author and list of publications	
Addendum III	189
Dankwoord	