

Cerebellar Impact on Thalamocortical Networks in Epilepsy

Oscar Eelkman Rooda

Colofon

The research described in this thesis was performed at the Department of Neuroscience, Erasmus Medical Center Rotterdam and the Gladstone Institute of Neurological Disease, San Francisco.

The research in this thesis was financially supported by the Netherlands Organisation for Scientific Research (NWO-VIDI grant #016.121.346) and internal grant program of the Erasmus Medical Center (mRace).

ISBN: 978-94-6299-899-5

Lay-out: Nikki Vermeulen - Ridderprint BV

Printing: Ridderprint BV - www.ridderprint.nl

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Cerebellar Impact on Thalamocortical Networks in Epilepsy

Cerebellaire impact op thalamocorticale netwerken

Proefschrift

ter verkrijging van de graad van doctor aan de
Erasmus Universiteit Rotterdam
op gezag van de rector magnificus

prof.dr. H.A.P. Pols

en volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op

Woensdag 28 maart 2018
om 13.30 uur

door

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geboren op 03 oktober 1988
te Rotterdam

Erasmus University Rotterdam

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*Een beetje zeiler wordt niet
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Preface

The communication between cerebellum and cerebrum in non-motor forms of neurological disease is poorly understood. One of these diseases is epilepsy and still lacks understanding and control. Epileptic attacks typically originate in thalamocortical pathways, which are influenced by cerebellar output. This output is particularly known during various forms of motor behavior and coordination, but has also been implicated in (daily) cognitive functioning. This thesis primarily focuses on how cerebellar output contributes to thalamocortical communication and the potential therapeutic benefits of manipulation of cerebellar output in disease. I used epileptic mouse models and their wild type littermates which are well characterized and perfectly suited to study cerebellar impact on (epileptic) processes in a preclinical setting. To do so I have made use of multiple techniques, including optogenetics, (single-unit) electrophysiology, neuro-anatomical tracing and imaging, both in freely moving and head-fixed animals. Overlooking all the results I do believe my thesis fuels further research of cerebellar impact on thalamocortical networks but also revealed new questions and (pre)clinical possibilities.

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