



UvA-DARE (Digital Academic Repository)

Brain circuitries in control of feeding behaviors

Focus on Neuropeptide Y

Gumbs, M.C.R.

Publication date

2020

Document Version

Other version

License

Other

[Link to publication](#)

Citation for published version (APA):

Gumbs, M. C. R. (2020). *Brain circuitries in control of feeding behaviors: Focus on Neuropeptide Y*.

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.

Brain circuitries in control of feeding behaviors: focus on Neuropeptide Y

Myrtille C.R. Gumbs

**Brain circuitries in control of feeding behaviors:
focus on Neuropeptide Y**

Myrtille C.R. Gumbs

Colophon:

Brain circuitries in control of feeding behaviors: focus on Neuropeptide Y

Academic thesis, University of Amsterdam, Amsterdam, The Netherlands

ISBN: 978-94-028-1878-9

Author: Myrtille C.R. Gumbs

Layout and printing: Ipskamp printing

© M.C.R. Gumbs, 2020

All right reserved. No part of this publication may be reproduced or transmitted in any form by any means, without written permission of the author.

Publication of this thesis was financially supported by the Amsterdam UMC – location AMC.

Brain circuitries in control of feeding behaviors: focus on Neuropeptide Y

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor

aan de Universiteit van Amsterdam

op gezag van de Rector Magnificus

prof. dr. ir. K.I.J. Maex

ten overstaan van een door het College voor Promoties ingestelde commissie,

in het openbaar te verdedigen in de Agnietenkapel

op woensdag 5 februari 2020, te 14.00 uur

door Myrtille Cannelle Rojani Gumbs

geboren te Sint Maarten

PROMOTIECOMMISSIE

Promotores:	prof. dr. J. Booij	AMC-UvA
	prof. dr. S.E. la Fleur	AMC-UvA
Copromotor:	dr. J.D. Mul	AMC-UvA
Overige leden:	prof. dr. D.F. Swaab	AMC-UvA
	prof. dr. A. Kalsbeek	AMC-UvA
	dr. C. Yi	AMC-UvA
	dr. F.J. Meye	Universiteit Utrecht
	prof. dr. R.A.H. Adan	Universiteit Utrecht
	dr. ing. J.D.A. Olivier	Rijksuniversiteit Groningen
	prof. dr. P.J. Lucassen	Universiteit van Amsterdam

Faculteit der Geneeskunde

TABLE OF CONTENTS

Chapter I	Introduction	7
Chapter II	The effect of obesogenic diets on the NPY system	23
Chapter III	Long-term consumption of a free choice high-fat high-sugar diet affects NPY-related gene expression in a brain region-specific manner	47
Chapter IV	Effects of a 24-hour acute fast on NPY-related gene expression in hypothalamic and mesolimbic brain regions	67
Chapter V	Neuropeptide Y activity in the nucleus accumbens modulates feeding behavior and neuronal activity	83
Chapter VI	Neuropeptide Y signaling in the lateral hypothalamus modulates diet component selection and is dysregulated in a model of diet-induced obesity	105
Chapter VII	Dietary choice and composition modulate the orexigenic effects of Neuropeptide Y in the lateral hypothalamus of the male Wistar rat	125
Chapter VIII	Afferent Neuropeptide Y projections to the ventral tegmental area in normal-weight male Wistar rats	143
Chapter IX	A 24 hour fast differentially affects dopaminergic and opioid gene expression	169
Chapter X	Pilot study: Predicting striatal DRD _{2/3} availability from the inhibitory effect of dexamphetamine on feeding	193
Chapter XI	Summary and General discussion	211
References		226
Appendices	I. Dutch summary / Nederlandse samenvatting	260
	II. Dose response for NP1R- and NPY5R antagonist doses	265
	III. PhD portfolio, publications, author affiliations	274
Acknowledgements - Dankwoord		279
About the author		282