

CURRICULUM VITAE

Personal Data

Name: Mattias Rickhag
Born: 1978.03.13 in Sävsjö, Sweden
Civil state: Married
Children: 2 boys (born 2012 and 2015)
Nationality: Swedish
Address: Vendelvägen 18, 23661 Höllviken, Sverige

Education

2003-2007: PhD in Experimental Brain Research, Medical Faculty, Lund University (PhD degree 24th February, 2007)
1998-2002: MSc Biomedicine, Medical Faculty, Lund University (MSc degree 6th of June, 2002)

Positions held at universities/research institutions in or outside Denmark

2021- Senior Researcher, Danish Research Centre for Magnetic Resonance, Copenhagen University Hospital Hvidovre

2020-2021: Associate Professor of Neuropharmacology, Molecular Neuropharmacology Laboratory, Department of Neuroscience, Univ. of Copenhagen

2015-2020: Assistant Professor of Neuropharmacology, Molecular Neuropharmacology Laboratory, Department of Neuroscience, Univ. of Copenhagen (**Weimann Fellowship for Promising Junior Researcher** at Univ. of Copenhagen supported position from 2016-2018)

2011-2015: Post-doctoral fellow at Molecular Neuropharmacology Laboratory, Department of Neuroscience, Univ. of Copenhagen (grant from the Lundbeck Foundation)

2008-2010: Post-doctoral fellow at Molecular Neuropharmacology Laboratory, Department of Neuroscience, Univ. of Copenhagen (grant from the Danish Research Council)

2003-2007: PhD student, Medical Faculty, Lund University, Sweden

Grants received as principal investigator

2020 Research grant from Parkinsonforeningen (200.000 DKK)
2020 Research grant from Foundation for Neurological Science (25.000 DKK)
2020 Research grant from Lundbeck A/S, industrial PhD (600.000 DKK)
2019 Research grant from Parkinsonforeningen (235.000 DKK)
2018 Research grant from Parkinsonforeningen (250.000 DKK)
2018 Research grant from A.P. Møller Foundation (50.000 DKK)
2017 Research grant from Parkinsonforeningen (150.000 DKK)
2017 Scholarship from NovoNordisk Foundation (150.000 DKK)
2016 Research grant from Parkinsonforeningen (200.000 DKK)
2016 **Research Fellowship from Weimann Foundation** (787.500 DKK)

2015 **Investigator Grant from the Lundbeck Foundation** (500.000 DKK)
2011 Post-doctoral fellowship from Lundbeck Foundation (1.770.200 DKK)
2008 Post-doctoral fellowship from the Danish Research Council (2.387.700 DKK)

Research supervision

- 1) Co-supervisor of industrial PhD student Søren Emil-Nørr (2019-
- 2) Co-supervisor of PhD student Mia Apuschkin (2016-2021)
- 3) Co-supervisor of PhD student Annika Runegaard (2014-2017)
- 4) Co-supervisor of PhD student Kathrine Louise Jensen (2014-2017)
- 5) Co-supervisor of PhD student Marta de Luca (2014-2017)

All PhD students were enrolled at Molecular Neuropharmacology Laboratory, Department of Neuroscience at University of Copenhagen.

6) Main supervisor for master student Chiara Ciriachi Biology-Biotechnology program, Faculty of Science, University of Copenhagen (submission date 25/08/2017).

7) Main supervisor for David Svane-Petersen, Medical Bachelor project at University of Copenhagen (submission date 9/08/2017).

8) Main supervisor for master student Maria Christensen, SUND, University of Copenhagen (submission date 30/08/2019).

9) Supervisor of guest researcher David Svane-Petersen (July 2018-June 2019)

I have furthermore been co-supervisor for a number of both master and bachelor students at Molecular Neuropharmacology Laboratory, Department of Neuroscience.

Other responsibilities include daily supervision of laboratory technicians.

List of publications

22 publications accepted in peer-reviewed journals. Important contributions to high impact journals (Nature Communications, Brain, Journal of Neuroscience, Journal of Cerebral Blood Flow and Metabolism). **H-index = 14 with 555 citations** in total (Web of Science). ORCID-ID: 0000-0002-9452-6120

Seven original peer-reviewed papers as senior last author.

Scientific focus areas/platforms

Platforms: Neuronal circuit interrogation using viral-genetic tools (chemogenetic platforms, genetic biosensors *in vitro/in vivo*), genetically modified mouse models, brain lesion models, behavioral and molecular pharmacology, G-protein coupled receptor signaling

Research Theme: Parkinson's disease, neurodegeneration, basal ganglia circuit, dopaminergic signaling, addiction

Commissions of trust

Previous department manager for laboratory animal usage and currently holds animal license for genetically modified mouse lines at Molecular Neuropharmacology Laboratory, Department of Neuroscience (2016-2021). This work is composed of experimental protocols, continuous dialogue with Danish Animal Inspectorate authorities regarding experimental animal work and ethical considerations.

A description of international network, relations and activities

1) I have established a solid and focused national/international network in the field of neuropsychiatric/neurodegenerative diseases and include collaboration with Professor Louis-Eric Trudeau at *Université de Montréal, Canada*, a leading expert in dopamine

biology and basic dopamine disease mechanisms. Together we have mapped the whole the G-protein coupled receptor (GPCR) repertoire in striatal neurons by combining fluorescence-activated cell sorting (FACS) of striatal neurons using transgenic reporter mice and quantitative GPCR arrays. This collaboration was initiated after my research stay at Trudeau laboratory acquiring the fluorescent cell sorting technique (FACS) in 2014. Characterization of novel GPCRs from this array are currently being validated in human striatal cells through a recent collaboration with Assoc. Prof Suzanna Aznar at *Department of Neurology, Bispebjerg Hospital, Copenhagen*. This will validate potential GPCR targets relevant for neuropsychiatric diseases. My research plan will focus on these identified novel striatal GPCRs as potential targets to modulate striatal circuit activity in disease paradigms.

2) Another collaboration involves Professor Hartwig Siebner, Head of Department at the *Danish Research Centre for Magnetic Resonance, Hvidovre Hospital, Copenhagen*. Jointly, we propose to combine chemogenetics in rodents with functional neuroimaging to bridge the gap between neurochemical activity changes in distinct cell types with system adaptations in neurodegenerative diseases and pursue circuit-based biology using a translational approach.

3) In order to bridge between academia and industry, I have recently established collaboration with research scientist Gunnar Sørensen and Director Benjamin Hall at the *Department of Circuit Biology, Lundbeck A/S* with the ambition to perform joint-research activities focusing on unraveling neurotransmitter dynamics using genetically-encoded biosensors upon basal ganglia circuit modulation in models of neuropsychiatric/neurodegenerative diseases. An industrial PhD student has been employed (Søren Emil Nørr) to carry out neuronal circuit interrogation by use of advanced viral-genetic tools.

4) Important collaborators at University of Copenhagen include Prof. Ulrik Gether. Our collaboration focuses on GPCR signal transduction pathways using fluorescent biosensors in both heterologous systems and in animal systems. Furthermore, collaboration with Prof. U Gether has focused on the dopamine system using both genetic mouse models and viral-genetic tools.

Outreach activities

Annual presentation at the Danish Parkinson Association to convey recent experimental findings from Parkinson research carried out in Denmark. Importantly, this annual meeting organized by Dansk Parkinsonforening gathers numerous affected individuals as well as relatives suffering from Parkinson's disease. Thus, the general public will be updated on recent progress in basic research carried out in Denmark.

Patents

Co-inventor for the rights to "Sigma ligands for neuronal regeneration and functional recovery (Filed patent to US Patent and Trademark Office) January 27th, 2005