

Press release

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Basic information

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Department of: Biomedicine

Main supervisor: Simon Glerup

Title of dissertation: Molecular studies of the synaptic receptors LAR, SorCS2 and NRXN1 β

Date for defence: May 24th, 2024 at (time of day): 14:00 Place: Lille Anatomisk Auditorium

Press release (Danish)

Molekylære studier af de synaptiske receptorer LAR, SorCS2 og NRXN1 β

Nerveceller kommunikerer primært via synaptiske forbindelser. Dynamiske forandringer af synapsernes molekulære opbygning er grundlæggende for indlæring og hukommelse mens dysregulering af disse processer kan forårsage psykiatriske og neurologiske sygdomme. Denne PhD afhandling undersøgte de synaptiske receptorer LAR, SorCS2 og NRXN1 β der alle er vigtige for dannelsen af synaptiske forbindelser. Ved brug af genetisk data fra psykiatriske patienter viser vi, at nøglefunktioner af den synaptiske adhesionsreceptor LAR bliver kompromitterede af missense mutationer fra psykiatriske patienter. Desuden viser vi, at SorCS2 interagerer med alle tre NRXN1 β varianter og kortlægger bindingsmekanismen ved brug af computationelle struktur modeller og eksperimentielle bindingsforsøg. Disse studier har bidraget med ny viden om funktionelle og patologiske roller af synaptiske receptorer og deres mulige rolle i udviklingen af psykiatriske sygdomme.

Projektet er gennemført af Mathias Kaas Ollendorff, der forsvare det d. 24/05-2024

Forsvaret af ph.d.-projektet er offentligt og finder sted den 24/05-2024 kl. 14 i Lille Anatomisk Auditorium, Aarhus Universitet, Universitetsparken 231, 8000 Aarhus. Titlen på projektet er "Molecular studies of the synaptic receptors LAR, SorCS2 and NRXN1 β ".

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Press release (English)

Molecular studies of the synaptic receptors LAR, SorCS2 and NRXN1 β

Synapses are the primary site of communication between neurons and dynamic changes in their molecular machinery is responsible for learning and memory and their dysregulation can cause development of psychiatric and neurological disorders.

This PhD thesis studied the synaptic receptors LAR, SorCS2 and NRXN1 β that are strongly associated to psychiatric disorders. Using genetic insights from patients diagnosed with such disorders, we show that key functions of the synaptic adhesion receptor LAR are perturbed by missense variation. Additionally, screening of a library of synaptic receptors revealed that SorCS2 preferentially interacts with NRXN β s and by using computational structural biology and biophysical assays, we determine the NRXN1 β -SorCS2 interaction site. The thesis has provided novel insights to the functional roles of these synaptic receptors as well as their potential role in the molecular basis of psychiatric disorders.

The project was carried out by Mathias Kaas Ollendorff, who is defending his dissertation on May 24th, 2024.

The defence is public and takes place on May 24th at 2 pm in Lille Anatomisk Auditorium, Aarhus University, Universitetsparken 231, 8000 Aarhus. The title of the project is "Molecular studies of the synaptic receptors LAR, SorCS2 and NRXN1 β ".

For more information, please contact
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