AARHUS UNIVERSITY

Press release

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Basic information

Name: Casper Larsen Email: casl@mbg.au.dk Phone: +45 2012 0663

Department of: Biomedicine

Main supervisor: Christian Brix Folsted Andersen

Title of dissertation: Structural and Functional Studies of Cobalamin Uptake and Transport

Date for defence: Thursday 25th January 2018 at (time of day): 2.00 pm Place: Auditorium 6, Building 1170, Aarhus University, Ole Worms Allé 3, Aarhus C

Press release (Danish)

Fremskridt i forståelsen af vitamin B12 optagelse og transport

Struktur og funktion af proteiner involveret i optagelse og transport af vitamin B12 undersøges i et nyt ph.d.-projekt fra Aarhus Universitet, Health. Projektet er gennemført af Casper Larsen, der forsvarer det d. 25/1-2018.

Vitamin B12 spiller en vigtig rolle i metabolismen og mangel kan føre til alvorlige skader på nervesystemet samt blodmangel, hvis tilstanden ikke behandles. Mennesket er ude af stand til at producere vitaminet selv og må skaffe det gennem kosten. Som resultat heraf, har kroppen udviklet et fascinerende optagelses- og transport system fra føden til kroppens celler. Selvom meget forskning har bidraget til forståelsen af dette system er der stadig meget at lære.

Fokus i dette ph.d. projekt har været at opnå yderligere viden om vitamin B12 optagelse og transport ved at give en detaljeret strukturel karakterisering af proteiner der er involveret i dette. Ved hjælp af forskellige aktuelle metoder til karakterisering af protein struktur og funktion, har projektet gjort det muligt at beskrive i atomare detaljer hvordan optagelse af vitaminet fra både tarmen og de øvrige væv er mulig.

Overordnet giver projektet ny og vigtig indsigt i forståelsen af vitamin B12 optagelse og transport og har tilmed gjort det muligt at forklare årsagen til vitamin mangelsygdomme såsom Imerslund-Gräsbeck syndromet. Med denne nye viden er der potentiale for udvikling af nye og bedre behandlingsformer.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 25/1 kl. 14.00 i Auditorium 6 (1170-347), Aarhus Universitet, Ole Worms Allé, Aarhus. Titlen på projektet er "Structural and Functional Studies of Cobalamin Uptake and Transport". Yderligere oplysninger: Ph.d.-studerende Casper Larsen, e-mail: casl@mbg.au.dk, tlf. +45 2012 0663.

Bedømmelsesudvalg:

Guillermo Montoya, Forskningsleder, Professor, Novo Nordisk Foundation Center for Protein Researh, Københavns Universitet, DK

John Fyfe, Lektor, Laboratory of Comparative Medical Genetics, Biomedical Physical Sciences, Michigan State University, USA

Thomas Vorup-Jensen, Professor, Institut for Biomedicin, Aarhus Universitet, DK

Press release (English)

Advances in the understanding of vitamin B12 uptake and transport

Structure and function of proteins involved in uptake and transport of vitamin B12 is investigated in a new project from Aarhus University, Health. The project was carried out by Casper Larsen, who is defending his dissertation on January 25th 2018.

Vitamin B12 plays a key role in the metabolism and deficiency can lead to severe damages on the nervous system and anaemia, if left untreated. Humans are unable to synthesize the vitamin themselves and must obtain it through dietary sources. As a result of this, the body has evolved a fascinating uptake- and transport system from the food to the body's cells. Even though a lot of research has contributed to the understanding of this system there is still much to learn.

The focus of this ph.d. project has been to obtain further knowledge of vitamin B12 uptake and transport by providing a detailed structural characterization of proteins that are involved in this. Through different methods currently used to characterize protein structure and function, the project has made it possible to describe in atomic detail how uptake of the vitamin from both the intestine and other tissues is possible.

Overall, the project provides new and important insight into the understanding of vitamin B12 uptake and transport and has moreover made it possible to describe the cause of vitamin deficiency diseases such as the Imerslund-Gräsbeck syndrome. With this knowledge there is potential for development of new and better treatment.

The defence is public and takes place on January 25th at 2.00 pm in Auditorium 6 (1170-347), Aarhus University, Ole Worms Allé, Aarhus. The title of the project is "Structural and Functional Studies of Cobalamin Uptake and Transport. For more information, please contact PhD student Casper Larsen, email: casl@mbg.au.dk, Phone +45 2012 0663.

Assessment committee:

Guillermo Montoya, Research director, Professor, Novo Nordisk Foundation Center for Protein Researh, University of Copenhagen, DK

John Fyfe, Associate Professor, Laboratory of Comparative Medical Genetics, Biomedical Physical Sciences, Michigan State University, USA

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