Press release

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Basic information

Name: Cagla Cömert Email: cagla.comert@clin.au.dk Phone: +4581930737

Department of: Clinical Medicine

Main supervisor: Assoc. Prof. Peter Bross

Title of dissertation: The Molecular Aspects of the Mitochondrial Chaperone HSP60 Dysfunction

Date for defence: 25.11.2021 at (time of day): 15.15 Place: Auditorium J116-113, Indgang J, Aarhus Universitetshospital, Palle Juul-Jensens Boulevard 99, Aarhus N and online

Press release (Danish)

De molykælere aspekter af den mitokondrielle chaperone HSP60 dysfunktion

Foruden produktion af cellulær ATP er mitokondrier involveret i et væld af cellulære funktioner. De er også centrale for cellulær stresssignalering. Det mitokondrielle HSP60/HSP10 chaperone kompleks, interagerer med mitokondrielle matrix proteiner og faciliterer foldning samt vedligeholdelse af disse. På grund af dets unikke rolle fører mangel af HSP60/HSP10 komplekset til mitokondriel dysfunktion. Desuden kan sjældne genetiske defekter i HSP60 føre til både mild og meget alvorlig sygdom i patienter. Fælles for disse genetiske defekter i HSP60 er at de alle forårsger hypomyelinering, dvs. mangelfuld isolering af nervefibre.

Cagla Cömert har i sit ph.d. projekt arbejdet med en kombination af transcriptomics, proteomics, metabolomics og funktionelle analyser for at dissekere de molekylære mekanismer som forårsages af HSP60 mangel og undersøge hvordan de er sygdomsfremkaldende. Til dette formål har hun etableret og brugt I) en cellulær model, II) en CRISPR/Cas9 genereret hspd1 knockout zebrafisk dyremodel, samt III) en fibroblast celle linje genereret fra en patient, der bærer en HSP60 variant associeret med hypomyelinering.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 25/11 kl. 15.15 i Auditorium J116-113, Indgang J, Aarhus Universitetshospital, Palle Juul-Jensens Boulevard 99, Aarhus. Titlen på projektet er " De molykælere aspekter af den mitokondrielle chaperone HSP60 dysfunktion". Det er også muligt at overvære forsvaret online. Yderligere oplysninger: Ph.d.-studerende Cagla Cömert, e-mail: cagla.comert@clin.au.dk.

Bedømmelsesudvalg:

Professor Poul Henning Jensen, MD, Dr. Med. Sci. (Chairman of the committee)
Dandrite, Department of Biomedicine, Aarhus University

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ReMedy International Research Agenda Unit University of Warsaw, Poland

Press release (English)

The Molecular Aspects of the Mitochondrial Chaperone HSP60 Dysfunction

Besides providing the majority of ATP production in cells, mitochondria are involved in many other cellular functions and central for cellular stress signaling. As mitochondrial molecular chaperones, the HSP60/HSP10 complex interacts with mitochondrial matrix proteins to facilitate their folding and maintenance; thus, the impairment of the HSP60/HSP10 complex causes mitochondrial dysfunctions due to the extreme dependence of some mitochondrial proteins for their folding on the complex. Furthermore, HSP60 deficiency is observed as rare monogenic diseases in patients. These rare diseases show that different variations and types of inheritance are associated with different phenotypes and disease severity; however, hypomyelination, i.e defective isolation of nerve fibers, are the commonly observed phenotype.

In this PhD project, Cagla Cömert has investigated the molecular mechanisms triggered by HSP60 deficiency and their contribution to disease in I) a model cell line, II) a CRISPR/Cas9 generated hspd1 knockout zebrafish animal model, III) a patient-derived fibroblast cell line generated from a patient carrying a hypomyelination-associated HSP60 variation, combining transcriptomics, proteomics, metabolomics, and functional analyses.

The defense is public and takes place on 25/11 at 15.15 in Auditorium J116-113, Indgang J, Aarhus University Hospital, Palle Juul-Jensens Boulevard 99, Aarhus and online. The title of the project is "The Molecular Aspects of the Mitochondrial Chaperone HSP60 Dysfunction". For more information, please contact PhD student Cagla Cömert, email: cagla.comert@clin.au.dk.

Assessment committee:

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