

Press release

Please fill in this form and return it to graduateschoolhealth@au.dk in Word format along with a portrait photo in JPEG format, if you would like it to accompany your press release, no later than three weeks prior to your defence.

Basic information

Name: Kasper Lisager Jønsson

Email: kalj@biomed.au.dk Phone: (+45)23297990

Department of: Biomedicine

Main supervisor: Martin Roelsgaard Jakobsen

Title of dissertation: Innate viral sensing and immune modulation by IFI16 and STING

Novel insights on sensing and modulatory mechanisms of the innate immune system

Date for defence: 27-11-2017 at (time of day): 14:00 Place: The lecture theatre Eduard Biermann, Lakeside Lecture Theatres, Aarhus University, 8000 Aarhus C

Press release (Danish)

Medfødt viral sensing og immunmodulering af IFI16 og STING. Ny indsigt i sensing og modulatoriske mekanismer i det medfødte immunforsvar.

Et nyt ph.d.-projekt på Aarhus Universitet, Health, bidrager til ny forståelse af det medfødte immunforsvar i mennesker i sundhed og sygdom. Bag projektet står cand. scient. Kasper Lisager Jønsson, som forsvare sin afhandling d. 27 november 2017.

Aktivering og skrap regulering af det medfødte immunforsvar er kritisk for værtsens evne til at forsvare sig mod infektioner og forhindre sygdomme som kræft og autoimmune lidelser. Makrofagen, en nøglecelle i aktiveringen af vores medfødte immunforsvar, genkender fremmed eller fejlplaceret endogen-DNA og inducerer en kraftig produktion af interferon og cytokiner, centrale signalstoffer der er vigtige for værtsens overlevelse. Genkendelsen af fremmed DNA i makrofagen sker via DNA-sensoren, cyklisk GMP-AMP synthase (cGAS) og adapterproteinet Stimulator of interferon genes (STING). Dog antages Interferon-gamma inducérbar faktor 16 (IFI16), en anden værtsfaktor, at have en rolle i aktiveringen af det medfødte immunforsvar. Artiklen og patentet inkluderet i denne PhD-afhandling omhandler IFI16s rolle i to kontekster: Den ene som en kritisk komponent i virusgenkendelse og immunsignalering og den anden som en formodet regulator af STING i et kræft-miljø.

I løbet af dette Ph.d.-projekt har Kasper Lisager Jønsson bidraget med signifikant viden indenfor cytosolisk DNA-genkendelse. Specifikt har Kasper Lisager Jønsson vist, at IFI16 virker ved at styrke cGAS enzymatisk aktivitet og STING funktion, hvilket fører til øget immunsignalering i makrofager.

Forsvaret af ph.d.-projektet er offentligt og finder sted d. 27 november kl. 14:00 i Eduard Biermann Auditoriet (bygning 1252, lokale 204), Søauditorierne, Aarhus Universitet, 8000 Aarhus C. Titlen på projektet er "Innate viral sensing and immune modulation by IFI16 and STING - Novel insights on sensing and modulatory mechanisms of the innate immune system ". For yderligere information, kontakt ph.d.-studerende Kasper Lisager Jønsson, e-mail: kalj@biomed.au.dk, tlf.: 23297990

Bedømmelsesudvalg:

Andrew Bowie, Professor, Trinity College, School of Biochemistry and Immunology, Dublin, Ireland

Andreas Pichlmair, Professor, Max Planck Institute of Biochemistry, Munich, Germany

Claus Johansen (Chairman), Associate Professor, Department of Clinical Medicine - The Department of Dermatology and Venereology, Aarhus University, Aarhus, Denmark

Press release (English)

Innate viral sensing and immune modulation by IFI16 and STING

Novel insights on sensing and modulatory mechanisms of the innate immune system

A new PhD project from Health, Aarhus University, contributes to a new understanding of the innate immune system in humans in health and disease. The project has been carried out by MSc Kasper Lisager Jønsson, who is defending his dissertation on November 27th, 2017.

Activation and tight regulation of the innate immune system is critical for the host to defend itself against infections and to prohibit diseases such as cancer and auto-inflammatory conditions. Macrophages, a key cell in innate immune system, recognize foreign or mislocalized self-DNA by inducing the production of interferons and cytokines, central signaling molecules important for host survival. Generally, sensing of cytosolic DNA in macrophages is mediated by the DNA sensor cyclic GMP-AMP synthase (cGAS) and adaptor molecule Stimulator of interferon genes (STING). However, Interferon-gamma inducible factor 16 (IFI16), another host factor, has been suggested to play part in controlling the level of immune activation. The study and patent included in this PhD-thesis deal with IFI16 in two different settings: One as a critical component for viral sensing and immune signaling and the other as a STING-regulator capable of triggering immune responses in a tumor setting.

In summary, Kasper Lisager Jønsson has made significant contributions to the understanding of cytosolic DNA sensing. Specifically, Kasper Lisager Jønsson has shown that IFI16 works by enhancing cGAS enzymatic activity and STING function, leading to enhanced immune signaling in macrophages.

The defense is public and takes place on 27-11-2017 at 14 pm in the Eduard Biermann Auditorium (building 1252, room 204), Lakeside Lecture Theatres, Aarhus University, 8000 Aarhus C. The title of the project is "Innate viral sensing and immune modulation by IFI16 and STING - Novel insights on sensing and modulatory mechanisms of the innate immune system". For more information, please contact PhD student Kasper Lisager Jønsson, e-mail: kalj@biomed.au.dk, phone: (+45) 23297990

Assessment committee:

Andrew Bowie, Professor, Trinity College, School of Biochemistry and Immunology, Dublin, Ireland

Andreas Pichlmair, Professor, Max Planck Institute of Biochemistry, Munich, Germany

Claus Johansen (Chairman), Associate Professor, Department of Clinical Medicine - The Department of Dermatology and Venereology, Aarhus University, Aarhus, Denmark

Permission

By sending in this form:

- I hereby grant permission to publish the above Danish and English press releases as well as any submitted photo.
- I confirm that I have been informed that any applicable inventions shall be treated confidentially and shall under no circumstances whatsoever be published, presented or mentioned prior to submission of a patent application, and that I have an obligation to inform my head of department and the university's Patents Committee if I believe I have made an invention in connection with my work. I also confirm that I am not aware that publication violates any other possible holders of a copyright.