AARHUS UNIVERSITY

Press release

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Basic information

Name: Camilla Gunderstofte Nielsen Email: gunderstofte@biomed.au.dk Phone: 29247468

Department of: Biomedicine

Main supervisor: Associate Professor Christian K. Holm

Title of dissertation: Nrf2/Keap1 axis in the control of HSV pathophysiology; friend or foe?

Date for defence: 30/06-2020 at (time of day): 11:00 Place: via Zoom

Press release (Danish)

Nrf2/Keap1 aksen og HSV sygdomsmanifestationer; ven eller fjende?

Immunsystemet er menneskets forsvar imod fremmede molekyler og via forskellige receptorer kan systemet opfange tilstedeværelsen af virus. Receptoren kaldet cGAS genkender og binder til dobbelt-strenget virus DNA. Genkendelsen medfører en aktivering af molekylet kaldet STING, som medfører dannelsen af såkaldte interferoner, som udgør en del af vores primære forsvarsmekanisme. Udover interferoner dannes der også reaktive iltarter, hvis niveau kan kontrolleres af proteinet Nrf2. Hvordan Nrf2 påvirker dobbelt-strenget virus DNA er endnu ikke undersøgt. Projektet viser at Nrf2 påvirker viralt DNA ved at regulere STING i humane celler og at denne regulering er kraftig nok til at svække dannelsen af interferoner. I for høje mængder er interferoner farlige og sygdomsfremkaldende. Børnesygdommen SAVI (STING-associated vasculopathy with onset in infancy) har et højt interferon niveau. Projektet har vist at det metaboliske stof 4-OI aktiverer Nrf2 tilstrækkeligt til at hæmme interferoner i SAVI patientprøver. Nrf2 er en attraktiv mulighed for behandling af STING-associerede inflammatoriske sygdomme, viser et nyt Ph.d.-projekt fra Aarhus Universitet, Health. Projektet er gennemført af Camilla Gunderstofte Nielsen, der forsvarer det d. 30/06-2020.

Forsvaret af Ph.d.-projektet er offentligt og finder sted den 30/06-2020 kl. 11:00 via Zoom. Titlen på projektet er ”Nrf2/Keap1 aksen og HSV sygdomsmanifestationer; ven eller fjende?”. Yderligere oplysninger: Ph.d.-studerende Camilla Gunderstofte Nielsen, e-mail gunderstofte@biomed.au.dk, tlf. 29247468.

Bedømmelsesudvalg:

Associate Professor Christian Vægter, Department of Biomedicine, Aarhus University, Aarhus, DK.

Professor John Hayes, Division of Cellular Medicine, Unversity of Dundee, Dundee, Scotland, UK.

Professor Allan Randrup Thomsen, Department of Immunology and Microbiology, University of Copenhagen, DK.

Press release (English)

Nrf2/Keap1 axis in the control of HSV pathophysiology; friend or foe?

The immune system is our defence against pathogens and it can detect virus through different receptors. The receptor called cGAS recognizes and binds to viral double-stranded DNA. This interaction causes the activation of STING which in turn causes the production of interferons, a part of our primary immune response. Also, reactive oxygen species are produced and their level is controlled by the protein Nrf2. How Nrf2 affects viral double-stranded is unknown. This project shows

that Nrf2 in humane cells affects viral DNA through STING regulation which is sufficient to dampen the production of interferon. A high level of interferon is dangerous and can cause inflammatory diseases. STING-associated vasculopathy with onset in infancy (SAVI) has high interferon level. The project shows that the metabolic compound 4-OI activates Nrf2 and the activation is sufficient to dampen the interferon level in SAVI patient samples. Nrf2 is a possible target in STING-associated inflammatory diseases. The project was carried out by Camilla Gunderstofte Nielsen, who is defending her dissertation on 30/06-2020.

The defence is public and takes place on 30/06-2020 via Zoom. The title of the project is "Nrf2/Keap1 axis in the control of HSV pathophysiology; friend or foe?". For more information, please contact PhD student Camilla Gunderstofte Nielsen, email: gunderstofte@biomed.au.dk, Phone +45 2924 7468.

Assessment committee: Associate Professor Christian Vægter, Department of Biomedicine, Aarhus University, Aarhus, DK.

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Professor Allan Randrup Thomsen, Department of Immunology and Microbiology, University of Copenhagen, DK

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