AARHUS UNIVERSITY

Media release

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Basic information

Name: Rasmus Offersen Email: rasoff@rm.dk Phone: +45 22423533

Department of: Clinical Medicine

Main supervisor: Professor Lars J. Østergaard

Title of dissertation: HIV latency: cellular and humoral immunomodulation

Date for defence: February 9, 2017 at (time of day): 14.00 Place: Aarhus University Hospital Skejby

Media release (Danish)

Immunterapi kan hæmme HIV-inficerede celler

Et nyt ph.d.-projekt fra Aarhus Universitet, Health viser, at man ved at stimulere immunforsvaret kan hæmme og potentielt dræbe HIV virus. Projektet er gennemført af læge og ph.d.-studerende Rasmus Offersen, som forsvarer sin afhandling torsdag d. 9. februar 2017.

Udviklingen af en kur mod HIV er besværliggjort af at HIV virus kan optræde i en såkaldt "latent" form. Den latent inficerede celle er i en slags dvaletilstand og er derfor ikke synlig for immunforsvaret. Igennem de seneste år er det forsøgt at reaktivere latent HIV, således at HIV bliver synlig for immunsystemet som efterfølgende har en større chance for at eliminere den inficerede celle.

I projektet er det undersøgt hvorvidt immunterapi med et nyt lægemiddel, en såkaldt TLR9 agonist (MGN1703), har potentiale til både at aktivere latent HIV og samtidig forstærke det medfødte immunforsvar, herunder specielle dræber celler (NK celler). Ved at stimulere celler fra HIV-smittede donorer fandt man, at lægemidlet både aktiverede NK-celler samt øgede deres evne til at hæmme spredningen af HIV til raske celler.

Forsvaret af ph.d.-afhandlingen er offentligt og finder sted den 9. februar 2017 kl. 14 i lokale 28 (indgang D3, krydspunkt E303), Afdeling for Infektionssygdomme, Aarhus Universitetshospital Skejby, Palle Juul-Jensens Boulevard 99, 8200 Aarhus N. Titlen på projektet er ”HIV latency: cellular and humoral immunomodulation”. Yderligere oplysninger: Ph.d.-studerende Rasmus Offersen, e-mail: rasoff@rm.dk, tlf. 22423533.

Media release (English)

Immunotherapy can potentially inhibit HIV

A new PhD study shows that immunotherapy potentially can activate latent HIV and at the same time inhibit or kill HIV-infected cells. The project was carried out by Rasmus Offersen, MD, who is defending his dissertation on February 9, 2017.

A major obstacle for HIV “cure” strategies is the natural development and persistence of a latent HIV reservoir, which can avoid immune-mediated eradication while being transcriptionally silent. Over the last couple of years, several novel approaches have been proposed, in order to “shock” and reactivate the latent reservoir, thereby theoretically exposing the latently infected CD4+ T cells to the immune system in order to be eliminated. Among these reservoir "shock" strategies, histone deacetylase (HDAC) inhibitors have been used in recent clinical trials to initiate and drive viral transcription in the latently infected cells - however, the effects on reducing the amount of the viral reservoir have been variable as well as insufficient. Therefore, the identification of new compounds that can both reactivate latent HIV and boost or re-direct specific parts of the immune system is highly needed.

We assessed the capability of a novel TLR9 agonist, MGN1703, as a dual enhancer of innate immunity as well as HIV transcription. We found that MGN1703 activates NK cells and inhibits HIV-1 production in CD4+ T cells. In addition, MGN1703 was in able to induce low levels of HIV-transcription. The results points towards immunomodulation as a promising approach in future HIV eradication trials.

The defence is public and takes place on February 9, 2017 at room 28 (entrance D3, crosspoint E303), Dept, of Infectious Diseases, Aarhus Universitetshospital Skejby, Palle Juul-Jensens Boulevard 99, 8200 Aarhus N. The title of the project is "HIV latency: cellular and humoral immunomodulation". For more information, please contact PhD student Rasmus Offersen, email: rasoff@rm.dk, Phone +45 22423533

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