# Press release

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**Basic information**

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Department of: Clinical Medicine

Main supervisor: Ole Schmeltz Søgaard

Title of dissertation: The role of monoclonal antibodies and latency-reversing agents in HIV-1 curative strategies

Date for defence: 19th of March 2021 at (time of day): 14:00 (GMT+1) Place: Online on https://aarhusuniversity.zoom.us/j/64286506563 or Auditorium A (G206-145), entrance G, G206, AUH [NB. COVID-19 restrictions].

Press release (Danish)

## Hvorfor kan HIV ikke kureres?

I dag er HIV en kronisk infektion. HIV virus formerer sig ved, at det indsætter sig i cellernes arvemateriale og derefter kapre cellers maskineri til egenproduktion. I nogle celler forbliver HIV virus inaktivt. Immunsystemet kan ikke 'se' inaktivt HIV virus, og derfor ikke angribe det. Produktion af HIV virus fra cellerne kan forhindres med HIV-behandling, således at nysmitte af andre celler undgåes. HIV-behandling har dog ingen effekt på inaktivt HIV virus. Hvis HIV-behandling stoppes, blusser produktionen af HIV virus op igen fra inaktivt HIV virus efter få uger. Inaktivt HIV virus 'gemmer' sig i nogle celler livslangt.

I et nyt ph.d.-projekt fra Aarhus Universitet, Health undersøges i 2 kliniske lægemiddel forsøg muligheden for at give små doser af et latensreverterende lægemiddel, som kan re-aktivere inaktivt HIV virus i celler og dermed 'sparke' HIV virus ud fra 'gemmerne' i cellerne - således at det inaktive HIV virus kan fjernes. Hvis HIV-inficerede individer gives latensreverterende lægemiddel samtidig med deres HIV-behandling - undgås nysmitte af andre celler. Yderligere suppleres med neutraliserende antistoffer mod HIV virus, hvilket vil kunne forstærke individets eget immunsystem og dermed dræbe celler med HIV virus. Projektet er gennemført af Jesper Damsgaard Gunst, der forsvarer det d. 19/03 - 2021.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 19/03 - 2021 kl. 14 online via https://aarhusuniversity.zoom.us/j/64286506563 eller i Auditorum A (G206-145), Indg. G, G206, AUH [OBS. COVID-19 restriktioner]. Titlen på projektet er "The role of monoclonal antibodies and latency-reversing agents in HIV-1 curative strategies". Yderligere oplysninger: Ph.d.-studerende Jesper Damsgaard Gunst, e-mail: jesper@gunst.dk, tlf. 2388 6636.

Bedømmelsesudvalg:

Katharine J. Bar, associate professor.
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Javier Martinez-Picado, professor.
IrsiCaixa, ICREA and UVic-UCC. Hospital Germans Trias in Pujal, Badalona (Barcelona), Spain.

Line Reinert, associate professor.
Department of Biomedicine, Aarhus University, Aarhus, Denmark.

Press release (English)

# The role of monoclonal antibodies and latency-reversing agents in HIV-1 curative strategies

Antitretroviral therapy (ART) has transformed HIV-1 infection from a fatal disease into a chronic condition, but ART is not curative. HIV-1 mostly infects and replicates in activated CD4+ T cells, but a proportion of these infected CD4+ T cells will transit into resting memory state with replication-competent provirus integrated. These latently infected resting CD4+ T cells represent the HIV-1 reservoir. HIV-1 infection can be controlled by ART, but in most virally suppressed HIV-1-infected individuals, viral rebound occurs 4 weeks following ART interruption.

In the “shock and kill” approach a latency-reversing agent (LRA) is used to (re)active viral transcription in the latently infected cells, exposing these cells to killing by either viral cytopathic effects or immune-mediated clearance while on ART in order to prevent infection of new cells. Preclinical studies have shown that HIV-1-specific cellular immunity needs to be augmented prior to efficient killing of latently infected cells (re)activated with LRA. One approach to enhance immune-medicated clearance of the latency infected cells is by broadly neutralizing anti-HIV antibodies (bNAbs) followed by latency reversal with histone deacetylases inhibitors (HDACi). In two clincal trials this approach was tested using the bNAb 3BNC117 and HDACi romidepsin. The project was carried out by Jesper Damsgaard Gunst, who is defending his dissertation on 19/03 - 2021.

The defence is public and takes place on 19/03 - 2021 online at 14 (GMT+1) on https://aarhusuniversity.zoom.us/j/64286506563 or Auditorium A (G206-145), Entrance G, G206, AUH [NB. COVID-19 restrictions]. The title of the project is "The role of monoclonal antibodies and latency-reversing agents in HIV-1 curative strategies". For more information, please contact PhD student Jesper Damsgaard Gunst, email: jesper@gunst.dk, Phone +45 2388 6636.

Assessment committee:
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