Press release

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Basic information

Name: Xiangning Ding Email: xiangningding@biomed.au.dk Phone: 50121914

Department of: Biomedicine

Main supervisor: Søren Paludan

Title of dissertation: Deciphering protective and pathological CNS responses to HSV-1 infection through single-cell transcriptomics analysis

Date for defence: 15 January at (time of day): 13:00 Place: 1162-013 Auditorium A

Press release (Danish)

Overskrift

Ph.d.-forsvar om hjernens immunrespons ved herpesvirusinfektion

Manchet

Infektion med herpes simplex-virus type 1 (HSV-1) kan i sjældne tilfælde føre til alvorlige neurologiske komplikationer. De sygdomsfremkaldende mekanismer er endnu ikke fuldt klarlagt. Et ph.d.-projekt på Aarhus Universitet undersøger, hvordan værtsceller i centralnervesystemet reagerer på virusinfektion. Projektet er udført af Xiangning Ding, som forsvarer sin afhandling den 15. januar 2026.

Pressemeddelelsen

Ding og kolleger afdækker, hvordan immunresponser i centralnervesystemet bliver reguleret under infektion med HSV-1. Virussen kan i sjældne tilfælde forårsage herpes simplex-encefalitis, en alvorlig og potentielt dødelig hjernesygdom. Projektet bruger avancerede metoder som enkeltcelletranskriptomik og rumlig transkriptomik. Analysen kortlægger den dynamiske respons i hjernens celler på celle-niveau. Resultaterne peger på, at bestemte immuncellepopulationer, især mikroglia, både bidrager til antiviral beskyttelse og kan udløse skadelig inflammation. Forskningen viser også, at den antivirale signaleringsfaktor IRF3 er afgørende for at begrænse virusspredning og dæmpe neuroinflammation i hjernen. Samlet set giver resultaterne ny viden om balancen mellem beskyttelse og skade under infektion i hjernen. Studiet peger på mulige terapeutiske mål for fremtidig behandling og forebyggelse af virusrelaterede neurologiske sygdomme.

Forsvaret er offentligt og finder sted den 15. januar 2026 kl. 13.00 i Auditorium A, Building 1162-013, Aarhus Universitet, Ole Worms Allé 4, 8000 Aarhus C. For mere information kontakt ph.d.-studerende Xiangning Ding på xiangningding@biomed.au.dk.

Bedømmelsesudvalg:

Søren E. Degn, lektor, Department of Biomedicine, Aarhus University
Daniel Depledge, professor, Medizinische Hochschule Hannover, Institute of Virology, Hannover, Germany
Konstantin Khodosevich, professor, Københavns Universitet, BRIC, Copenhagen, Denmark

Press release (English)

Headline

PhD defence on immune responses in the brain during herpes virus infection

Lead paragraph
While herpes simplex virus type 1 infection can lead to serious neurological complications, its pathogenic mechanisms remain incompletely understood. A doctoral project at Aarhus University explores how host cells in the central nervous system respond to viral infection. The project was carried out by Xiangning Ding, who is defending her dissertation on January 15, 2026.

The press release

Ding and colleagues investigate how immune responses in the central nervous system are regulated during infection with herpes simplex virus type 1 (HSV-1), a virus that in rare cases can cause herpes simplex encephalitis, a severe and potentially fatal brain disease. Using advanced techniques such as single-cell transcriptomics and spatial transcriptomics, the project maps how brain cells respond dynamically to viral infection at cellular resolution. The results demonstrate that specific immune cell populations, particularly microglia, play a dual role by contributing to both antiviral protection and harmful inflammation. The research further shows that the antiviral signaling factor IRF3 is crucial for controlling viral spread and limiting neuroinflammation in the brain. Overall, the findings provide new insights into how immune balance is maintained in the brain during infection and identify potential therapeutic targets for the treatment and prevention of virus-induced neurological diseases.

The defence is public and takes place on January 15, 2026, at 1 p.m. in Auditorium A, Building 1162-013, Aarhus University, Ole Worms Allé 4, 8000 Aarhus C. For more information, please contact PhD student Xiangning Ding, email:xiangningding@biomed.au.dk.

Assessment committee:
Søren E. Degn, Associate Professor, Department of Biomedicine, Aarhus University, Denmark
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