

SPECIAL RESEARCH SEMINAR

Presented by the Center for Neurobiology Research at the Fralin Biomedical Research Institute at VTC



FRALIN BIOMEDICAL RESEARCH INSTITUTE AT VTC
CENTER FOR
NEUROBIOLOGY RESEARCH
VIRGINIA TECH.



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University of Copenhagen

A Genetic Toolset for Investigating Glio-vascular Interactions

Studying blood microcirculation is crucial for understanding vascular diseases. Current blood flow imaging relies on invasive fluorescent dyes that fade within an hour. Dr. Hirase and his team developed three new molecular genetic approaches for the longitudinal study of vasculature. They developed liver-targeting adeno-associated viral vectors (AAVs) expressing fluorescent protein-tagged albumin, allowing visualization of blood plasma in mice after a single injection. However, in rapidly growing infant livers, the dilution of the episomal AAV genome precludes chronic neonatal imaging. To address this, they have established a virally induced CRISPR/Cas9-based knock-in of fluorescent albumin. In 3-day-old mice, they constructed and injected an AAV which resulted in two-photon visualization of the cerebral cortex vasculature within ten days and persistent expression of Alb-mNeonGreen for at least the next three months. They have also used CRISPR/Cas9 genome editing to generate a mouse line equipped with signal amplification mechanisms allowing for investigations in glio-vascular interactions. These three new plasma labeling approaches are expected to provide powerful means for micro- and macroscopic imaging of murine vasculature.

THURSDAY, OCT. 10, at 11 a.m.

Room G101 A/B, 4 Riverside Circle
Or watch via Zoom: <https://virginiatech.zoom.us/j/89757110859>



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