

Abstract Submitted
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Direct observation of cerebrospinal fluid bulk flow in the brain¹ HUMBERTO MESTRE, University of Rochester Medical Center, JEFFREY TITHOF, JOHN THOMAS, DOUGLAS KELLEY, University of Rochester, MAIKEN NEDERGAARD, University of Rochester Medical Center — Cerebrospinal fluid (CSF) serves a vital role in normal brain function. Its adequate flow and exchange with interstitial fluid through perivascular spaces (PVS) has been shown to be important in the clearance of toxic metabolites like amyloid- β , and its disturbance can cause severe neurological diseases. It has long been suspected that bulk flow may transport CSF, but limitations in imaging techniques have prevented direct observation of such flows in the PVS. In this talk, we describe a novel approach using high speed two photon laser scanning microscopy which has allowed for the first ever direct observation of CSF flow in the PVS of a mouse brain. By performing particle tracking velocimetry, we quantify the CSF bulk flow speeds and PVS geometry. This technique enables future studies of CSF flow disturbances on a new scale and will pave the way for evaluating the role of these fluxes in neurodegenerative disease.

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