

The Biology of Aging and Age-Related Diseases Seminar Series

Maiken Nedergaard, MD, DMSc

Professor of Neurology, Neurosurgery, Pharmacology and Physiology
Center for Translational Neuromedicine, University of Rochester Medical Center
Rochester, New York

The Glymphatic System



The glymphatic system is a brain-wide clearance pathway that facilitates the exchange of cerebrospinal fluid and interstitial fluid to remove metabolic waste. Glymphatic transport is driven by vascular pulsatility and is strongly regulated by brain state. During sleep, infraslow norepinephrine oscillations coordinate vasomotion, expanding interstitial space and enhancing fluid exchange. Disruption of these oscillations impairs clearance and links sleep disturbance to neuroinflammation and neurodegeneration. Recent work reveals that glymphatic function is highly sensitive to neuromodulatory tone, aging, and disease states such as chronic pain and Alzheimer's disease. Advances in imaging and quantitative clearance assays now allow direct measurement of glymphatic efflux across brain states. These findings position the glymphatic system as a key integrator of sleep physiology, vascular dynamics, and brain health. Understanding how glymphatic clearance fails offers new therapeutic opportunities. Targeting sleep-dependent neuromodulation may restore brain waste removal. The glymphatic system thus represents a fundamental, state-dependent mechanism supporting long-term brain function.

Date: January 21st, 2026

Time: 12:00pm

Virtual on Zoom:

[Direct Link](#) or

Meeting ID: 913 7678 4143

Passcode: 046799

Please direct any questions/requests to Eric Schafer: eeschafer@medicine.wisc.edu



Geriatrics and Gerontology
Department of Medicine
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

Supported by the NIH/NIAT32 & the University of Wisconsin-Madison
School of Medicine & Public Health Department of Medicine