Monthly Neuro Seminar Series

Fall 2026

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Glymphatic Dysfunction in Neurodegenerative Disease and Traumatic Brain Injury

The glymphatic system is a brain-wide network of perivascular pathways and astrocytic aquaporin-4 (AQP4) water channels that facilitates cerebrospinal fluid exchange and metabolic waste clearance. Glymphatic dysfunction is increasingly recognized as a feature of normal aging, traumatic brain injury (TBI), Alzheimer's disease (AD), and other neurodegenerative disorders. AQP4 mislocalization from perivascular astrocytic endfeet impairs glymphatic transport and is associated with the accumulation of pathological proteins, including amyloid-β, tau, and α-synuclein. Emerging evidence also implicates neuroimmune mechanisms in glymphatic dysfunction. Recent studies from our laboratory demonstrate that neutrophil extracellular traps (NETs) impair glymphatic function, exacerbate amyloid pathology, and worsen cognitive outcomes in a mouse model of AD. This presentation will discuss AQP4 mislocalization as a shared mechanism of glymphatic dysfunction across neurodegenerative disease and TBI and highlight NETs as a potential therapeutic target for restoring brain clearance pathways.

Thursday, August 13
3:00 p.m.
Coverdell S175

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