



Department of Biomedical Engineering  
Graduate Seminar

Date

Friday, February 21<sup>st</sup>

Location

Central King Building (CKB 217)

Time

11:30 AM



**Allison Andrews, Ph.D**

Assistant Professor (Research),  
Department of Pathology,  
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**Subject-** Brain Endothelial Extracellular Vesicles (EVs): Biomarkers, Immune Regulators and Pathological Contributors.

**Abstract:** Extracellular vesicles (EVs) range from 50- 1000 nm in diameter and encompass microparticles, ectosomes, microvesicles and multivesicular bodies (exosomes). EVs are thought to be produced by all cell types including endothelial cells, platelets, and leukocytes. Furthermore, elevated levels are released or secreted in response to stimuli, injury or activation. The blood-brain barrier serves as the gatekeeper for entry into the central nervous system. Additionally, vasculature homeostasis is tightly regulated to protect the delicate neuronal environment. We have found that brain microvascular endothelial cells release EVs in response to nearly every insult that results in hyperpermeability (inflammatory cytokines, HIV viroproteins, drugs of abuse, mechanical injury/traumatic brain injury (TBI) etc.). Thus, we have hypothesized that brain endothelial-EVs can be used as a biomarker for vascular remodeling and an indicator of cerebral vascular integrity. This talk will address our efforts to use brain-EVs as a biomarker as well as potential underlying mechanisms governing EV release. Finally, evidence will be presented for biological functions of brain-EVs regarding their contribution to pathology and inter-cellular signaling.

Light refreshments will be served.