Hunter College of the City University of New York
Department of Biological Sciences
Fall 2023 Inga Richter Seminar Series

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β-catenin determines blood-brain barrier permeability in cerebral malaria

Cerebral malaria (CM) is a severe neurological complication caused by Plasmodium falciparum infection and is characterized by the cytoadhesion of Plasmodium falciparum-infected red blood cells (Pf-iRBCs) to endothelial cells in the brain. This leads to the disruption of the blood-brain barrier and the occurrence of cerebral microhemorrhages and edema. Although antimalarial drugs are effective in clearing the parasite, the mortality rate due to CM remains high, with 20% of cases resulting in death. We have demonstrated that activation of β-catenin leads to disruption of inter-endothelial cell junctions in human brain microvascular endothelial cells (HBMECs). Inhibition of β-catenin-induced TCF/LEF transcription in HBMECs prevented the disruption of endothelial junctions, confirming that β-catenin is a crucial mediator of P. falciparum adverse effects on endothelial integrity. Indeed, several biomarkers of endothelial activation have been associated with CM severity and mortality, making the brain vascular endothelium a potential target for adjunctive therapies.

Monday, Oct. 16, 2023 @12:30pm
Hunter North Room 926
Host: Jayne Raper