Neuroprotective agents for cerebral malaria

PROJECT DESCRIPTION
Malaria is a leading cause of child morbidity and mortality globally, causing 1.24 million deaths annually. The majority of these deaths occur in children under 5 years of age in sub-Saharan Africa, where malaria accounts for approximately 1 in 6 childhood deaths. The pathologic processes leading to convulsions, coma and death in cerebral malaria (CM) are not yet fully elucidated. Nonetheless, parasite sequestration, inflammation, and hemostasis leading to dysfunction of the neurovascular unit are widely accepted mechanisms. The endothelium plays a central role in these processes as the site of pleural effusion parasitized erythrocyte (PE) sequestration as well as the mediator of fluid extravasation into the central nervous system (CNS). Modulating endothelial barrier function at the blood-brain barrier (BBB) may suggest new therapeutic approaches to improve outcomes in CM. Recently licenced pharmaceuticals (e.g., fingolimod, imatinib) are known to modulate endothelial permeability and are neuroprotective in non-infectious causes of BBB dysfunction (auto-immune encephalitis, stroke, malignancy), but their role in parasitic infection has not been described. We hypothesize that novel newer licenced neuroprotective pharmacologic agents will be neuroprotective in model systems of cerebral malaria in vitro. The student will perform in vitro studies with these newer pharmacologic agents using a BBB model.

FACULTY-DEPARTMENT
Pediatrics

OPEN TO STUDENTS FROM THE FOLLOWING INSTITUTIONS
All/No Preference

DESIRED FIELD OF STUDENT STUDY
Biological sciences, previous laboratory experience preferred.

INTERNSHIP LOCATION
North Campus

NUMBER OF INTERNSHIP POSITIONS
1

INTERNSHIP START AND END DATE
May 1; length 12 weeks

ARE THE DATES FLEXIBLE?
Yes