

Summer Student Research Program
Project Description

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PROJECT TITLE (200 Characters max):

Testing the effect of kynurenine pathway inhibition on murine cerebral malaria

HYPOTHESIS:

Inhibition of the kynurenine pathway reduces inflammation in the central nervous system and therefore the lethality associated with cerebral malaria.

PROJECT DESCRIPTION (Include design, methodology, data collection, techniques, data analysis to be employed and evaluation and interpretation methodology)

Malaria causes about 2 million deaths a year. A majority of the deaths are due to cerebral malaria, which is characterized by a severe inflammation of the central nervous system. Our study will test the effects of a potent and highly specific inhibitor of a key enzyme in the kynurenine pathway on the outcome of cerebral malaria. The kynurenine pathway is required for tryptophan metabolism. Several of its byproducts cause inflammation in the central nervous system. Using a mouse model for cerebral malaria, we will determine if inhibiting the kynurenine pathway protects mice from cerebral malaria. First, mice will be infected with cerebral malaria-causing parasites. Then, they will be treated with either different doses of the inhibitor or saline. The survival of mice in each group will be monitored daily. The efficacy of drug treatment in preventing or delaying mortality from cerebral malaria will be determined.

SPONSOR'S MOST RECENT PUBLICATIONS RELEVANT TO THIS RESEARCH:

IS THIS PROJECT SUPPORTED BY EXTRAMURAL FUNDS?

Yes or No

(IF YES, PLEASE SUPPLY THE GRANTING AGENCY'S NAME)

THIS PROJECT IS: Clinical Laboratory Behavioral
Other

THIS PROJECT IS CANCER-RELATED

Please explain Cancer relevance

THIS PROJECT IS HEART, LUNG & BLOOD- RELATED

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Please explain Heart, Lung, Blood relevance: Malaria is caused by parasites that infect red blood cells. Parasitized red-blood cells adhere to each other and the endothelium of the brain vasculature, contributing to cerebral malaria.

THIS PROJECT EMPLOYS RADIOISOTOPES

THIS PROJECT INVOLVES THE USE OF ANIMALS

PENDING **APPROVED** **IACUC** **PROTOCOL**
#

THIS PROJECT INVOLVES THE USE OF HUMAN SUBJECTS

PENDING **APPROVED** **IRB PROTOCOL # M**

THIS PROJECT IS SUITABLE FOR: First-year medical students

UNDERGRADUATE STUDENTS **ENTERING FRESHMAN**
SOPHOMORES **ALL STUDENTS**

THIS PROJECT IS WORK-STUDY: **Yes** **or** **No**

THIS PROJECT WILL BE POSTED DURING ACADEMIC YEAR

FOR INTERESTED VOLUNTEERS?: **Yes** **or** **No**

WHAT WILL THE STUDENT LEARN FROM THIS EXPERIENCE?

The medical student will have hands-on exposure to research in an infectious disease that kills about 2 million people a year, and for which new drugs are sorely needed.