

Summer Research Fellowship Proposal for 2020

FACULTY INFORMATION:

NAME: Tiffany Weinkopff

DEPARTMENT: Microbiology and Immunology

LOCATION: UAMS 5th floor Biomed Bldg 1

PROJECT INFORMATION:

TITLE: The effect of VEGF-A on immune cell populations during *Leishmania* infection

LOCATION OF THE PROJECT: UAMS

BRIEF DESCRIPTION OF THE PROJECT:

Cutaneous leishmaniasis is characterized by vascular remodeling. Following infection with *Leishmania* parasites, the VEGF-A/VEGFR-2 signaling pathway mediates lymphangiogenesis which is critical for lesion resolution. Therefore, we are investigating the cellular and molecular mediators involved in VEGF-A/VEGFR-2 signaling using a murine model of *Leishmania* infection. We have found that macrophages are the predominant cell type expressing VEGF-A during *Leishmania major* infection. As a result, we hypothesize that macrophages drive vascular changes through VEGF-A production. However, macrophages also express VEGFR-2 which is the receptor for VEGF-A during infection. In addition to the well characterized role of VEGF-A acting on endothelial cells, these data suggest VEGF-A at the lesion site may also be acting on macrophages and other immune cells in a autocrine or paracrine manner. Therefore, this project we will examine the effects of VEGF-A on immune cell populations like macrophages and dendritic cells that are known to be found at the site of infection. The data generated will help us to further understand the role of VEGF-A/VEGFR-2 signaling in parasite control and pathology during leishmaniasis.

STUDENT'S RESPONSIBILITIES-DUTIES IN THE PROPOSED PROJECT:

During this project the student will provide support for research projects within the Department of Microbiology and Immunology. The student will be punctual and honest, and perform general laboratory tasks including: cleaning and sterilization of laboratory materials, general laboratory cleaning, preparation of cell culture media and chemical solutions using aseptic technique. The student will have the opportunity to carry out basic biological and immunological techniques such in vitro cell culturing, ELISAs, and real-time PCR. The student will also be responsible for assembling and analyzing the data to put into a presentation that will be shared with the scientific community through a poster session.

ESTIMATED TIME FOR PROJECT COMPLETION: ___8-10___ weeks

DOES THE WORK INVOLVE ANIMAL RESEARCH? YES