Subject: Dissertation Defense - Nazli Azodi, PhD in Bioinformatics & Computational Biology
Date: Friday, April 10, 2026 at 11:12:15 AM Eastern Daylight Time
From: SSB Faculty List on behalf of Diane St. Germain
To: SSB-FACULTY-LIST-L@LISTSERV.GMU.EDU

Dissertation Defense Announcement
To: The George Mason University Community

Candidate: Nazli Azodi

Program: PhD in Bioinformatics and Computational Biology

Date: April 24, 2026

Time: 10:00 A.M. Eastern Time (US and Canada)

Location: via Zoom

Join Zoom Meeting

https://gmu.zoom.us/j/95816086778?pwd=6MbA5ObxxuGil3xwgi6TS4HbGOb754.1

Meeting ID: 958 1608 6778
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One tap mobile
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Dial by your location
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Committee Chair: Dr. Donald Seto

Committee Co-Chair: Dr. Sreenivas Gannavaram

Committee members: Dr. Lance Liotta, Dr. Aman Ullah

Title: Examining the Role of Metabolomic and Hematopoietic

Reprogramming Underlying the Immune Protection Provided by a Vaccine Candidate for Leishmaniasis

Abstract:

Leishmaniasis is a neglected tropical disease that is prevalent in approximately 90 countries worldwide, and yet no FDA-approved vaccine currently exists against it. Towards the control of leishmaniasis, our lab has developed a Centrin-deficient strain of Leishmania major (LmCen-/-) as a live attenuated vaccine candidate against the disease, which has shown safety and efficacy in pre-clinical trials. While it has been observed that the protection provided by the vaccine is mediated by elevated IFN-γ levels, the immune mechanisms underlying this protection have not been fully elucidated. In this study, we utilized a combination of Liquid Chromatograph Mass Spectrometry (LC-MS) and Dual-Single-Cell RNA Sequencing (scRNAseq) to identify immune mechanisms of early and established vaccine-mediated protection.

Analysis of data from untargeted mass spectrometry identified that inoculation with LmCen-/- parasites induced significant metabolic changes in murine ear tissue in comparison to infection with wildtype L.majorparasites (LmWT) 7 days post-infection, allowing for the identification of tryptophan metabolism as a potential metabolic biomarker underlying early vaccine-mediated protection. On the other hand, dual scRNAseq analysis detected parasitized cells in the murine bone marrow 28 days post-infection following intradermal inoculation with virulent LmWT or LmCen-/- strains, pointing towards the potential differential reprogramming of hematopoietic stem cells induced by the LmCen-/- strain as a mediator of immune protection.

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