**Subject:** Dissertation Defense - Telly Sepahpour, PHD Biosciences
**Date:** Tuesday, April 22, 2025 at 2:07:13 PM 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: Telly Sepahpour**

**Program: PhD in Biosciences**

**Date: Wednesday May 7, 2025**

**Time: 11:00 a.m. (US and Canada)**

**Location:**
In Person, Conference Room 1004
Institute for Advanced Biomedical Research (IABR)
10920 George Mason Cir, Manassas, VA 20109

And Virtual via Zoom
Join Zoom Meeting
https://gmu.zoom.us/j/97909065675?pwd=mMmaeQQWl5Xr7gmYPOGB6niaq4oPbg.1
**Meeting ID: 979 0906 5675**
**Passcode: 870821**

**Committee Chair:** Dr. Alessandra Luchini

**Committee members:** Dr. Ranadhir Dey, Dr. Lance Liotta, Dr. Ancha Baranova

**Title:** Molecular Signatures of Immune Response and Markers of Immunogenicity Upon Immunization with LmCen-/- Parasites Against Leishmaniasis

**Abstract:**
Leishmaniasis is a vector-borne, neglected tropical disease which mainly exists in developing countries. Across the world, 350 million people are affected by this disease with 70,000 deaths annually. Leishmaniasis is also becoming an emerging threat to public health in the United States due to autochthonous infections reported in southern United States. Several therapeutics exist, mostly drugs, however, they are often expensive, highly toxic, and require hospitalization. The successful vaccination against leishmaniasis termed “Leishmanization”, where deliberate inoculation with a low dose of virulent parasites

confers protection, has been discontinued due to safety concerns. Currently there are no approved anti- *Leishmania* vaccines for humans.

Recently, our lab developed a genetically modified, live attenuated dermotropic *Leishmania* vaccine candidate using CRISPS-Cas9 mediated gene-deletion of centrin gene, *LmCen-/-*. Preclinical studies evaluating the safety and efficacy of this vaccine candidate have shown robust protection from challenge infections in mouse and hamster models. However, the mechanism and pathway leading to protection are not well understood, resulting in a gap of knowledge of how protection is attained, and which markers can identify them. In this work, transcriptomics is used to evaluate the molecular mechanisms of the immune response following inoculation with *LmCen-/-*. and LmWT. Additionally, an integrated bioinformatics approach is used to identify signature biomarkers of immunogenicity. Finally, the role of type I IFN response in protection following immunization with live attenuated *Leishmania* parasites is elucidated.

These findings could address the progress of disease and potentially be used for evaluation of *Leishmania* vaccine candidates in upcoming clinical trials. Finally, these studies will advance the regulatory path related to the assessment of safety and efficacy characteristics of live attenuated parasitic vaccines.

###