Subject: NOTE In-Person meeting added - Dissertation Defense - Linda Chilin-Hernández, PhD Biosciences
Date: Wednesday, July 8, 2026 at 11:20:09 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: Linda Chilin-Hernández

Program: PhD in Biosciences

Date: July 14, 2026

Time: 10:30 AM Eastern Time (US and Canada)

Location: In Person - IABR Conference room 1004, Science & Tech Campus, Manassas Va.

and via Zoom
Join Zoom Meeting
https://gmu.zoom.us/j/94511429979?pwd=ChkwZMao3VoQAdUnKr4fDKyObT4zU0.1

Meeting ID: 945 1142 9979
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Committee Chair: Dr. Yuntao Wu

Committee members: Dr. Ramin Hakami, Dr. Mikell Paige, Dr. Ali Andalibi

Title: Identification Galpha1 (GαI1) as a Candidate Intracellular Immune Checkpoint Protein for Naïve T CD4+ Cells

Abstract: Heterotrimeric G proteins are membrane-associated molecular binary switch that transduce extracellular signals from G protein-coupled receptors (GCPRs) to intracellular effector proteins. G proteins regulate nearly all primary human physiological functions, acting as the master translation system for the nervous, endocrine, sensory, and immune networks. G proteins are diverse, consisting of multiple families of the α,β, and γ subunits. While there are 5 b subunits and 12 g subunits, there are more than 20 functional distinct subtypes of a subunits identified. Theoretically, over 1000 distinct combinations of heterotrimeric G protein can exist in humans to regulate various biological functions. However, the exact and specific expression of various G protein isoforms in human tissues remain largely unknown. In the past several years, our laboratory has developed a multiplex reverse transcriptase-PCR based rapid assay system for simultaneous profiling of over 32 G proteins subunits. In my thesis research, I used this system to profile the human immune system for the first time to identify unique G proteins associated with T cell activation. G proteins serve as important regulators of the immune system and act as critical molecular switch in the canonical TCR signaling cascade. My G protein profiling study has revealed several G protein subunits that are uniquely induced during T cell activation. Among them, GαI1 (Guanine nucleotide protein G(i) subunit alpha-1) is found to be uniquely induced following T cell activation. GαI1 is 40.5kD protein that forms a subunit of the G-protein heterotrimer. GαI1, along with GαI2 and GαI3, serves the main function of inhibiting adenylate cyclase. My further studies demonstrated that GNAI1 expression is induced following T cell activation, both in CD4+ and CD8+ T-cells. However, in CD4+ T cells, GαI1 induction occurs only in naïve CD4 T cells but not in memory CD4+ T cells. I also demonstrated that its induction in naïve CD4+T-cells is dependent on both CD3/CD28 signaling. Functionally, overexpression of GαI1 in human CD4 T cell line inhibits T cell chemotaxis. Based on my study, I propose that GαI1 may serve as an immune checkpoint protein in naïve CD4 T cells. Future studies are needed to test this hypothesis.

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