Subject: Dissertation Defense - Anastasia Williams, PHD Biosciences
Date: Monday, November 10, 2025 at 12:10:07 PM Eastern Standard 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: Anastasia Williams

Program: PhD in Biosciences

Date: Friday November 21, 2025

Time: 2:00 PM Eastern Time (US and Canada)

Location:
In person
IABR Room 1004
GMU Science & Tech Campus
10920 George Mason Cir, Manassas, VA 20110
Virtual:
Join Zoom Meeting
https://gmu.zoom.us/j/98991442358?pwd=1OIly53GE2YpiqG3WDjqC9mjHpNAb8.1

Meeting ID: 989 9144 2358
Passcode: 689227
One tap mobile
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Passcode: 689227
Find your local number: https://gmu.zoom.us/u/ac26xqZQvI

Committee Chair: Dr. Fatah Kashanchi

Committee members: Dr. Alessandra Luchini, Dr. Farhang Alem, Dr. Cecilia Costiniuk

Title: Cannabinoid Regulation of Viral Transcription and Release of Extracellular Vesicles From cART Treated HIV-1-Infected Monocytes

Abstract:

Currently, there is no cure for human immunodeficiency virus type 1 (HIV-1) infection. However, combined antiretroviral therapy (cART) aids in viral latency and prevents the progression of HIV-1 infection into acquired immunodeficiency syndrome (AIDS). cART has extended many lives, but people living with HIV-1 (PLWH) face lifelong ailments such as HIV-associated neurocognitive disorders (HAND) that range from asymptomatic HAND to HIV-1-associated dementia. HAND has been attributed to chronic inflammation and low-level infection within the central nervous system (CNS) caused by proinflammatory cytokines and viral products. These molecules are shuttled into the CNS within extracellular vesicles (EVs), lipid bound nanoparticles and are released from cells as a form of intercellular communication. Here we explore the use of cannabidiol (CBD), as a promising and potential therapeutic for HAND patients, and a similar synthetic molecule, HU308. The data shows that both CBD and HU308 decrease non-coding and coding viral RNA (TAR and env) as well as proinflammatory cytokines as IL-1β and TNF-α mRNA. This decrease in viral RNA occurs in vitro differentiated primary macrophages, in EVs released from HIV-1-infected cells monocytes, and infected neurospheres, and in vivo, a humanized mouse model of HIV-1 infection demonstrated a decrease in circulating viral RNA with HU308 treatment. Overall, CBD or HU308 may be a viable option to decrease EV release and associated cytokines which would dampen the virus spread and may be used in effective treatment of HAND in combination with cART.

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