Subject: Re: Dissertation Defense-Samiksha A. Borkar, PhD Bioinformatics & Computation Biology
Date: Friday, May 24, 2024 at 11:45:07 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: Samiksha A. Borkar

Program: PhD Bioinformatics & Computational Biology

Date: Tuesday, June 11, 2024

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

Location: Via Zoom

All are invited to attend the defense.

Join Zoom Meeting
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Committee Chair: Dr. Donald Seto
Committee Co-chair: Dr. Maureen M. Goodenow
Committee Members: Dr. Ancha Baranova, Dr. Li Yin, Dr. John W. Sleasman

Title: "Consequence of Recreational Marijuana Use on Inflammatory Pathways in Youth with

HIV”

Abstract:
In 2022, nearly one-third of the approximately 32,000 newly diagnosed HIV infections in the United States occurred among youth aged 18 to 25 years. Despite effective viral suppression through combination antiretroviral therapy (ART), youth with HIV still face heightened risks of developing non-AIDS related comorbidities due to chronic inflammation stemming from persistent immune activation. Medical marijuana (cannabis) as an immunomodulatory agent is one strategy to alleviate chronic inflammation. While a significant portion of youth with HIV use recreational marijuana, the effects of marijuana or its derivatives on their overall health remain poorly understood.
Our study aimed to investigate how recreational marijuana used alone or in combination with tobacco affects inflammatory pathways in virally suppressed youth with HIV compared to youth without HIV who used no substance. We applied genome-wide transcriptome profiling to examine the effects of recreational marijuana on peripheral blood cell populations and in-silico cellular deconvolution with machine learning algorithms to analyze genes and pathways specific to immune cell subsets.
We found that youth with HIV displayed unique transcriptome bioprofiles influenced by viral suppression and substance use. When compared to youth without HIV, marijuana use alone normalized the expression of inflammation-related genes and pathways, indicating an anti-inflammatory effect. In contrast, marijuana used with tobacco resulted in a distinct pro-inflammatory profile.
Our findings provide insights into the practical use of recreational marijuana among youth with HIV. With the increasing legalization of both recreational and medical marijuana across multiple states, this study offers crucial evidence-based assessments of the effects of marijuana on people with HIV, particularly regarding its impact on inflammatory pathways.
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