CONFERENCE ABSTRACT BOOK OPEN ACCESS

The University of Ottawa Healthcare Symposium (UOHS) 2022 Pitch-O-Rama: Undergraduate Elevator Pitch Research Competition

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Abstract
The University of Ottawa Healthcare Symposium (UOHS) is a one-day undergraduate health conference that aims to increase awareness of the interdisciplinary field of health. This conference engages students' interest in health through seminars, interactive panel discussions, and a research-based elevator pitch competition. UOHS was created twelve years ago by undergraduate students and has grown to become the University of Ottawa's largest healthcare conference. Every year, UOHS hosts an event called the Pitch-O-Rama, during one of the conference's seminar blocks. This event is an elevator pitch competition where individuals have the opportunity to present their health care-related research to an audience and panel of judges in a clear and engaging way. The goal of the Pitch-O-Rama is to have students communicate and share their scientific research to the community. The written submissions of the top 3 winners are highlighted in this abstract book. More details about UOHS can be found on our website: https://www.uohs-csuo.com/.

Keywords: healthcare research; undergraduate research; elevator pitch competition; research conference; immunology; vaccination; Pitch-O-Rama; psychology

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Conference Abstracts
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Top Three UOHS 2022 Pitch-O-Rama Abstracts

Investigating the role of LAG3 expression in NK cells

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Introduction: Natural killer cells are effector lymphocytes that protect the body from infections and tumors by secreting inflammatory mediators and cytotoxic molecules. Under chronic stimulation in cancer and viral infections, NK cells experience a decrease in these functions, a phenomenon called exhaustion. Exhausted NK cells often upregulate immune checkpoint receptors, including LAG3. LAG3 is known to inhibit T cell function, but its role in NK cells is unknown. We hypothesize that LAG3 is driving NK cell exhaustion, and we are interested in discovering the underlying mechanisms.
Methods: Using flow cytometry, we analyze the differences in functionality, signaling and metabolic pathways between NK cells expressing or not LAG3 in murine models of infection and cancer.

Results: As expected, LAG3+ NK cells were less functional. However, when we performed the mechanistic studies, surprisingly, we observed that LAG3+ NK cells displayed increased activity of these pathways. This may suggest that LAG3+ NK cells are not undergoing exhaustion, or another mechanism is at play. Our next steps are to test the effects of deleting the LAG3 gene from NK cells.
Conclusion: NK cells expressing LAG3 show decreased functionality and increased metabolic and signaling activity. Understanding the role of LAG3 can ultimately contribute to immune checkpoint blockade therapies that are currently undergoing clinical trials for the treatment of cancer.

Influenza vaccination blunts the systemic inflammatory response in patients undergoing cardiopulmonary bypass: A randomized controlled trial

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Introduction: Despite improvement in cardioprotective strategies, myocardial dysfunction after cardiac surgery remains problematic. Cardiac surgery with cardiopulmonary bypass (CPB) induces an acute inflammatory reaction that is associated with postoperative complications. Studies show associations between the influenza virus and increases in proinflammatory reactions. However, influenza vaccination in patients with coronary disease has been associated with a decrease in cardiovascular morbidity. Interestingly, this association has been attributed to possible anti-inflammatory properties of the vaccine. We hypothesize that influenza vaccination would attenuate the systemic inflammatory reaction after CPB.
Methods: This is a prospective, double-blind trial of 30 patients who presented for cardiac surgery and were randomized to receive the influenza vaccine or placebo preoperatively. Blood samples of proinflammatory markers (TNFα, IL-8, IL-6) and anti-inflammatory cytokines (IL-10) were collected intra-and postoperatively. Assessment of myocardial protection was investigated by measuring hemodynamic and echocardiographic data, lactate, and troponin levels.
Results: Significantly lower levels of proinflammatory markers such as IL-8 (65.03 vs 118.56 pg/mL, $p<0.03$), and TNFα (12.05 vs 20.8 pg/mL, $p<0.05$) were observed in group 1. Interestingly, levels of the anti-inflammatory cytokine IL-10 was significantly higher in group 1 (83.3 vs 15.15 pg/mL, $p<0.01$). A clear trend of improved myocardial protection in group 1 was also reflected by decreased troponin levels (6.02 vs 12.1 ng/mL, $p<0.03$).
Conclusion: Influenza vaccination blunts the systemic inflammatory reaction following CPB as reflected by a decrease in proinflammatory markers IL-8, TNFα and increased levels of anti-inflammatory cytokine IL-10. Trends toward improved myocardial protection and early metabolic recovery in group 1 were also recognized.

Efficacy of different psychotherapeutic approaches in treating depression in mixed-race youth: A research study

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Introduction: Depression is observed at disproportionately high levels in mixed-race youth. As there is a lack of mental healthcare centred around mixed-race identity, this study will compare the impact and efficacy of different therapies on the alleviation of depressive symptoms experienced by mixed-race youth.
Methods: The study will employ a mixed-methods longitudinal design, over the course of a sixth month period. Music therapy (using music from the participants' cultural backgrounds), group acceptance and commitment therapy (with other mixed-race youth), and individual cognitive behavioural therapy (with respect to cultural self-image) will each be administered weekly to three separate groups of participants. The study will recruit mixed-race youth (aged 18-24) who have experienced persistent symptoms of depression and have not started any new medications in the past three months. Since mixed-race youth are more likely to identify with other mixed-race youth, regardless of ethnic differences, this study will recruit participants from many different backgrounds. Prior to therapeutic intervention, participants will fill out a demographic questionnaire and a PHQ-9 assessment. Over the course of treatment, participants will be administered a PHQ-9

assessment after the first, third, and sixth month of therapy, in addition to weekly journaling on the efficacy of therapy in dealing with their depressive symptoms.
Conclusion: Overall, this study will offer insight with respect to the most effective therapeutic modality for mixed-race youth, a rapidly growing demographic that is underrepresented in mental health research.

Conflicts of Interest
The author(s) declare that they have no conflict of interests.

Authors' Contributions
TB: directed communication between the judges and elevator pitch competition competitors, served as a planning committee for the conference, and gave final approval of the version to be published.
JF: directed communications between promoters and journal editors, served as a planning committee for the conference drafted the conference abstract booklet, assisted authors with their abstract submissions, and gave final approval of the version to be published.
MS: directed the planning committee for the conference as co-president, reviewed the abstract submissions and ensured that they adhered to correct formatting standards, and gave final approval of the version to be published.
TY: directed the planning committee for the conference as co-president, reviewed the abstract submissions and ensured that they adhered to correct formatting standards, and gave final approval of the version to be published.

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