
February 22, 2019
Taylor Institute for Teaching and Learning

www.gsa.ucalgary.ca/events/peerbeyondsymposium
# Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 - 9:30</td>
<td>Registration</td>
</tr>
<tr>
<td>9:30 - 9:35</td>
<td>Introductions</td>
</tr>
<tr>
<td>9:35 - 10:00</td>
<td>Keynote</td>
</tr>
<tr>
<td>10:00 - 10:20</td>
<td>Break</td>
</tr>
<tr>
<td>10:40 - 10:55</td>
<td>Mohamed Shawky: GIS for Delineating Stream Network (Geomatics Engineering)</td>
</tr>
<tr>
<td>11:10 - 11:25</td>
<td>Levi C Frehlich: Development and Assessment of a Neighbourhood International Physical Activity Questionnaire (N-IPAQ) (Epidemiology)</td>
</tr>
<tr>
<td>11:25 - 11:40</td>
<td>Alexandra Ostaszewski: Adapt and resist: Bacterial gene networks that defend against antimicrobial silver (Biology)</td>
</tr>
<tr>
<td>11:40 - 12:00</td>
<td>Posters</td>
</tr>
<tr>
<td>12:00 - 13:00</td>
<td>Posters/Lunch</td>
</tr>
<tr>
<td>13:00 - 13:15</td>
<td>Chelsea Christie: The temporal association between the built environment and walking: A longitudinal residential relocation study (Community Health Services)</td>
</tr>
<tr>
<td>13:15 - 13:30</td>
<td>Chanin Seeger: Claims-making Around Police Body-Worn Cameras (Sociology)</td>
</tr>
<tr>
<td>13:30 - 13:45</td>
<td>Christina White: Learning for Change - An Inmate’s Journey (Adult Learning)</td>
</tr>
<tr>
<td>13:45 - 14:00</td>
<td>Lauro Pecktor de Oliveira: The study of creative processes as a method for composing (Music)</td>
</tr>
<tr>
<td>14:00 - 14:15</td>
<td>Rachel Kratofil: Staphylococcus aureus facilitates monocyte conversion in skin leading to a persistent infection (Immunology)</td>
</tr>
<tr>
<td>14:15 - 14:30</td>
<td>Break</td>
</tr>
<tr>
<td>14:35 - 14:50</td>
<td>Danni Chen: How do International Students Reconstruct their Identity as Readers when they Transition into Canadian Post-Secondary Education? (Educational Research)</td>
</tr>
<tr>
<td>14:50 - 15:05</td>
<td>Olivia Cullen: Ethical Issues in Participatory Research with Youth (Social Work)</td>
</tr>
<tr>
<td>15:05 - 15:20</td>
<td>Hannah Allawi: Augmenting Architectural Heritage (Environmental Design)</td>
</tr>
<tr>
<td>15:20 - 15:35</td>
<td>Harrison Campbell: Literacy Through the Arts: A Phenomenological Inquiry into what it is Like to Experience Literacy within a Theatrical Space (Education)</td>
</tr>
<tr>
<td>15:35 - 15:55</td>
<td>Judges Conference</td>
</tr>
<tr>
<td>15:55 - 16:15</td>
<td>Announcement of Presentation Awards and Closing Remarks</td>
</tr>
</tbody>
</table>
**ORAL PRESENTATION ABSTRACTS**

Abstracts are listed in the order of appearance

---

**It Runs in the Family! ‘Glowing’ Report Card in Metal-Sensitivity for Three Organic Molecules**

Presenter’s name: David T. Hogan  
Supervisor: Dr. Todd C. Sutherland  
Presenter’s field of study: Chemistry  
Presenter’s program: M.Sc. Student

**Abstract:** The technology, manufacturing, and pharmaceutical industries have dramatically improved our quality of life, but they are each responsible for tremendous amounts of pollution in the form of metal-tainted water. These dissolved metallic impurities are typically removed from waste streams, but regulatory oversight is lacking in some regions of the globe. Detecting these toxic dissolved metals is important to diagnose industrial malpractice and identify clean-up sites. Organic indicators that change visible colour or glow in response to metal contaminants are simple to measure and easy to bring into the field. Our lab has investigated three structurally-related indicators in the same molecular family that change from colourless to yellow & red and emit green & orange light in the presence of dissolved aluminium and indium. The colourful response was in fact much more sensitive than competitor molecules in the scientific literature. This discussion will demonstrate that this molecular family truly deserves a ‘glowing’ report card!

---

**GIS for Delineating Stream Network**

Presenter’s name: Mohamed Shawky  
Supervisor: Dr. Naser ElSheimy  
Presenter’s field of study: Geomatics Engineering  
Presenter’s program: Ph.D. Candidate

**Abstract:** A Geographic Information System (GIS) is a set of computer-based techniques and methods that are used to collect, manage, analyze, and visualize geospatial data. Remote sensing-based Digital Elevation Models (DEMs) are considered one of the major sources of geospatial information, particularly for delineating stream networks. The computed geomorphometric parameters using drainage network (e.g., drainage density, texture ratio, length of overland flow, and ruggedness number) are known to be the primary inputs for many hydrological studies. The steps required to extract the networks from DEMs are filling pits, deriving flow direction, specifying flow accumulation area threshold, and assigning orders of channels. In this study, the Shuttle Radar Topography Mission (SRTM) DEM with a spatial resolution of 30 m has been used to extract the drainage networks. The eight-direction (D8), multi-flow direction (MFD), and D-infinity (DINF) algorithms have been used in the extraction of the drainage networks. The effect of using different flow path algorithms on computing different geomorphometric parameters has been explored. The initial results showed similarity between the elongation and circularity ratios computed from D8- and MFD-based drainage networks. The findings of this study will help to improve the accuracy of different hydrological and geomorphological models.
Modeling of Cyclic Solvent Assisted SAGD

Presenter's name: Diego Manfre Jaimes
Supervisor: Dr. Matthew Clarke
Presenter's field of study: Petroleum Engineering
Presenter's program: M.Sc. Student

Abstract: Most of the activities that are performed by millions of people around the world everyday are highly dependable on a stable source of energy. This energy source has come mainly from oil. For the particular case of the Canadian heavy oil sands, thermal processes, such as Steam Assisted Gravity Drainage (SAGD), have been used extensively as a production method while numerous studies have been conducted in order to optimize their performance. In SAGD, the injection of the steam into the reservoir reduces the viscosity of the oil, which moves downward to a production well by the effect of gravity. This research presents an alternative way of using SAGD in an efficient and profitable manner. A variation of SAGD that has shown positive results is the co-injection of a solvent to improve the effect of the reduction in the oil viscosity by the diffusion of this solvent in the oil. The amount and type of solvent as well as the amount that is recovered are key parameters in the performance of this process, particularly because these solvents are more expensive than oil.

This work studied the co-injection of the solvent with the steam periodically. Some of the aspects that were analyzed are the type of solvent, its concentration and the length of each of the solvent injection cycles. This method showed similar results to the solvent co-injection with less amount of solvent usage. This would considerably benefit the profitability of the process and the general performance of SAGD.

Development and Assessment of a Neighbourhood International Physical Activity Questionnaire (N-IPAQ)

Presenter's name: Levi Colt Frehlich
Supervisor: Dr. Gavin McCormack
Presenter's field of study: Epidemiology
Presenter's program: Ph.D. Student

Abstract: Introduction: Physical activity is a cornerstone for health. Moreover, physical inactivity is independently associated with poor health outcomes. The neighbourhood built environment provides a unique opportunity to address both physical activity and inactivity. Higher walkable neighbourhoods have consistently shown increases in active transportation; however, many of these outcomes have been supported using non-context specific tools (i.e., measures of general physical activity).

Objective: This project addresses this research gap by developing and testing a neighbourhood specific physical activity questionnaire (N-IPAQ). Two separate study samples were recruited to assess an online and a paper version of the N-IPAQ. To assess the reliability, construct, and concurrent validity of the N-IPAQ we used correlation and agreement statistics.

Results: The N-IPAQ demonstrated reliability through self-administered paper and online formats. Moreover, the N-IPAQ demonstrated construct and concurrent validity using objective measures of neighbourhood (i.e., GPS and GIS linked neighbourhood definitions) and physical
activity (i.e., accelerometer output). The N-IPAQ was also able to distinguish physical activity differences between high and low walkable neighbourhoods.

Conclusion: The use of the N-IPAQ in larger population-based research could, therefore, better elucidate the specific built environment characteristics that foster or hinder physical activity.

Adapt and resist: Bacterial gene networks that defend against antimicrobial silver

Presenter's name: Alexandra Ostaszewski
Supervisor: Dr. Joe J. Harrison
Presenter's field of study: Biology
Presenter's program: Ph.D. Student

Abstract: Silver-impregnated bandages are used to decrease infection and promote healing of chronic wounds. Nonetheless, Pseudomonas aeruginosa often colonizes silver-treated wounds and yet little is known about how it withstands silver toxicity. Here, we used RNA-sequencing of P. aeruginosa grown in simulated human wound fluid to identify 176 genes as differentially expressed by toxic silver exposure. Using transposon mutant libraries, engineered strains and genetic complementation, we identified that 57 of these genes were bona fide silver resistance determinants; a prevalent group of these genes encoded putative functions for membrane structure and function. Corresponding with this observation, we found that the P. aeruginosa orthologue of the CpxR membrane stress response pathway was a key determinant of silver resistance. Computational and molecular genetic approaches revealed that CpxR binds to a consensus regulatory element controlling expression of a putative periplasmic metal binding protein (pmbA). Transcription of pmbA was upregulated 18-fold in silver-treated cells. Heterologously expressed pmbA conferred silver resistance in strains lacking this gene. Finally, isothermal titration calorimetry indicated that purified, recombinant PmbA bound to silver with an affinity constant of 18.9 µM. Overall, our data suggests the cell membrane is a target of silver toxicity and CpxR regulates PmbA.

The temporal association between the built environment and walking: A longitudinal residential relocation study

Presenter's name: Chelsea Christie
Supervisor: Dr. Gavin McCormack
Presenter's field of study: Community Health Sciences
Presenter's program: Ph.D. Student

Abstract: Background: Low physical activity rates are a public health concern. Cross-sectional evidence suggests that neighbourhood built characteristics are associated with physical activity. Cross-sectional studies, however, are unable to assess temporality. Residential relocation studies address this limitation by monitoring people’s physical activity before and after they change neighbourhoods.

Objectives: To examine the extent to which changes in neighbourhood built characteristics, due to residential relocation, impact walking undertaken for different purposes.
Methods: The study uses data from two waves of the Alberta’s Tomorrow Project. We will also use geographical information systems (GIS) to estimate environmental variables including residential density and street connectivity for each participant’s neighbourhood. These variables will be combined to create a “walkability index” in order to classify the walkability of all the neighbourhoods included in the study. Participants will be categorized into four groups (i.e., increased walkability, decreased walkability, no change in walkability, or no relocation).

Expected Results: We anticipate the following two results: Transportation and recreational walking will increase among those who relocated to a more walkable neighbourhood and will decrease among those who relocated to less walkable neighbourhoods.

Claims-making Around Police Body-Worn Cameras

Presenter’s name: Chanin Seeger
Supervisor: Dr. Michael Adorjan
Presenter’s field of study: Sociology
Presenter’s program: M.A. Student

Abstract: Instances of alleged police brutality or excessive use of force have been frequent news stories for decades, but recent prominent cases of Black individuals killed by the police in the United States have prompted a renewed firestorm of debate around perceived issues with police brutality and racial bias. Police wearing portable cameras that can be attached to an officer’s uniform has been proposed as a potential solution to the perceived problem of police brutality, misconduct and racial bias in the U.S. Using a social constructionist framework, this thesis investigates the claims-making activities around police Body Worn Cameras (BWCs) through a qualitative content analysis of online news articles and the reader comments attached to those news articles. This research examines media discourses around police BWCs and how those discourses have been received by online news media audiences.

Learning for Change – An Inmate’s Journey

Presenter’s name: Christina White
Supervisor: Dr. Roswita Dressler
Presenter’s field of study: Adult Learning
Presenter’s program: Ed.D Student

Abstract: A significant number of offenders serve their time only to reoffend and serve additional time. This repeating cycle is termed recidivism in the correctional system. Despite serving their time in a para-militaristic and hegemonic environment, having access to counselling, and various programming as recommended by the provincial court system or parole officers, many offenders continue to reoffend. The measure of success for a correctional centre is the recognition and acknowledgement of past unacceptable behaviour and the need to change future behaviour. This type of reflective change is transformational change. There is compelling data to support the relationship between correctional education and recidivism. Recidivism is
currently the most commonly used measure of effective offender rehabilitation. The success of these centres is measured by the number of released inmates that do not offend again. Studies have shown that “inmates who participated in correctional education programs had a 43% lower odds of recidivating than inmates who did not” (Davis et al., 2014, p. 14). The purpose of this study is to explore factors that contribute to released offender’s decision-making processes; more specifically, the behaviours that support the development of employability and life skills acquisition.

References:
Davis, L., Steele J., Bozick R., Williams, M., Turner, S., Miles, J., Saunders, L., & Steinberg, P., (2014), How effective is correctional education, and where do we go from here?

The study of creative processes as a method for composing

Presenter's name: Lauro Pecktor de Oliveira
Supervisor: Dr. Laurie Radford
Presenter's field of study: Music
Presenter's program: Ph.D. Candidate

Abstract: This ongoing research aims to explore the ways in which the study of another composer’s creative process can inform and stimulate one's own creative process. Due to its nature, this research draws from theories and models that involve both the study of the creative process a posteriori and in real-time. The idiosyncratic approach to music composition of the 20th and 21st centuries justifies a closer examination of individual works rather than forcing a general theory on how composers wrote/write their music. Considering the ever-growing research on the creative process in music, an inevitable question arises: how can composers benefit from this? This research proposes that composers take a didactical (also dialogical) approach to the study of creative processes. In this regard, the developed theories and models can also function as tools for composers to better develop and understand their own compositional activities. The current results suggest that studying another composer’s creative process may facilitate one’s own creative process by: observing problem-solving situations; reducing self-criticism and the sense of isolation (often establishing an impression of a dialogical relation); experiencing another composer’s universe of possibilities through the evidence of her or his thought process (especially when compared with one’s own creative process).

Staphylococcus aureus facilitates monocyte conversion in skin leading to a persistent infection

Presenter's name: Rachel Kratofil
Supervisor: Dr. Paul Kubes
Presenter's field of study: Immunology
Presenter's program: Ph.D. Candidate
Abstract: Understanding the proper host response to bacterial skin infections has been neglected due to a lack of physiologically relevant models. Most use the approach of injecting $10^7$ bacteria in skin; however, people don’t get infected with millions of bacteria. Bacteria often enter the skin attached to a foreign object in tiny numbers. I have developed a novel agar bead infection model, a reproducible foreign object, contaminated with tiny numbers of Staphylococcus aureus (S.aureus). This allows me to study the immune response to a proper skin infection where bacteria can form a biofilm.

I use a powerful imaging technique called intravital microscopy to visualize the immune response in vivo. Imaging the S.aureus skin infection revealed that monocytes are recruited to the site. Monocytes are immune cells that can convert from inflammatory to repair functions at sites of inflammation, but nobody has studied monocyte conversion during a S.aureus biofilm infection. Given that monocyte conversion is required for healing in sterile injury, the consequence of conversion during infection may be detrimental and allow bacterial persistence. I hypothesize that monocyte conversion in skin is driven by S.aureus biofilm which facilitates local persistence of bacteria. My preliminary data shows that monocyte conversion occurs during infection and blocking this conversion through Nr4a1, a transcription factor required for conversion, improved bacterial clearance. Currently, I am targeting specific bacterial factors that may influence monocyte conversion in situ, including biofilm formation.

References:

How do International Students Reconstruct their Identity as Readers when they Transition into Canadian Post-Secondary Education?

Presenter’s name: Danni Chen
Supervisor: Dr. Aubrey Jean Hanson
Presenter’s field of study: Educational Research
Presenter’s program: M.A. Student

Abstract: With increased numbers of Chinese international students in the Canadian higher education system and their growing needs to transition into a new cultural reading environment, this study endeavors to explore the difficulties that four Chinese students encountered, and figure out how they experienced, responded to, and transformed to a new cultural reading environment. With data from semi-structured interviews and journaling, this study brings each individual participants’ experiences, perceptions, and feelings of reading in English to the fore. I analyzed participants’ unique experiences in order to understand their reading difficulties and reader’s identity. Through these examinations, this study shows that participants’ identities as readers are reconstructed in a new cultural reading environment, based upon their Chinese
culture, academic fields, a new English cultural background, and their personalities. Moreover, data analysis reveals that, while reading in English, participants constructed meaning of different language reading materials through the different lenses of their identities as readers. Based on my findings, second language reading is discussed in terms of the second language reader’s cultures and identities. The present study highlights the importance of social dimensions in second language reading. It concludes that readers’ identities reflect readers’ different cultural memberships. As Chinese international student cross cultural boundaries, their identities

Ethical Issues in Participatory Research with Youth

Presenter’s name: Olivia Cullen  
Supervisor: Dr. Gina Dimitropoulos  
Presenter’s field of study: Social Work  
Presenter’s program: Ph.D. Student

Abstract: Youth participatory action research (YPAR) is a methodology focused on emancipatory ideologies and empowerment of individuals and communities. YPAR has been heralded as useful to empower young people and to engage them in the research process. Although benefits have been outlined, ethical issues have arisen regarding young people’s involvement in research generally and YPAR specifically. This presentation provides a review of the literature regarding ethical issues in participatory research with youth. Through an examination of the literature, six broad categories of ethical issues emerged: power, consent, risk/benefit ratio, confidentiality and anonymity, remuneration, and empowerment. While researchers offered varied opinions as to the utility of YPAR as well as how ethical issues should be addressed, most conclude that YPAR is a beneficial approach. Researchers are also cautioned to be reflexive and critical in using YPAR. In addition to presenting the literature, this presentation will also discuss the benefits, challenges, and practicalities of implementing YPAR within dissertation research.

Augmenting Architectural Heritage

Presenter’s name: Hannah Allawi  
Supervisor: Dr. Thomas P. Keenan  
Presenter’s field of study: Environmental Design  
Presenter’s program: Ph.D. Candidate

Abstract: Abu Dhabi (UAE) has grown within a period of only 50 years. With fast paced demolition and construction efforts, the city’s past architectural projects almost have no record of their existence although they played a pivotal role in the societal and urban changes that have evolved in the city over time. Augmented Reality (the ability to view 3D computer generated models via a smartphone) is an evolving technology within the world of Architecture and Design and its use in reviving lost architectural and urban spaces for a city like Abu Dhabi can help maintain the city’s diminishing building history and create a new form of ‘smart’ tourism that caters to history, cultural identity as well as architectural heritage.
The research focuses on reviving Abu Dhabi’s lost Souk, demolished in 2003 and replaced with a massive mall (New Central Market) with two high-rise towers. Using the mobile application, Augment, integrated with reconstructed 3D models of Abu Dhabi’s lost Souk using the program SketchUp, a proposal will be showcased as a precedent of how the research will be designed and measured on the site of the current New Central Market using participants that include UAE nationals, expatriate residents and tourists. The proposal will also contain details of how participants will potentially interact with the mobile application during their site visit.

**Literacy Through the Arts: A Phenomenological Inquiry into what it is Like to Experience Literacy within a Theatrical Space**

Presenter’s name: Harrison Campbell  
Supervisor: Dr. Gabriela Alonso-Yanez and Dr. Jo Towers  
Presenter’s field of study: Curriculum and Learning  
Presenter’s program: M.A. Student

**Abstract:** Literacy, according to Lindquist and Seitz (2009), “is one of those words, like love, that people use commonly and confidently, as if its meaning were transparent and stable” (p. 8). My MA research challenges this assumption by examining how literacy was experienced within an arts school and using dramatic inquiry to recognize student agency, authorship, and identity within literacy’s definition. Speaking to expanding the scope of literacy through contextual responsiveness to the learning environment (New London Group, 1994), I used process drama having students interview, journal, write a monologue, and perform in order to reach the phenomenological essence of their unique literacy experiences.

The performances showed literacy as freedom, connection, ambition, and hope including monologues, original song/dance, and painting. The findings illustrated that literacy was enriched through arts immersion and that students’ practices of identification and embodiment of literacy experiences could refine educational policy (Macro, 2015).

**References:**  
The Experiences of Postpartum Nurses Following a Change in a Newborn Emergency Response Process

Presenter's name: Jasmeet Dhadda  
Supervisor: Dr. Cynthia Mannion  
Presenter's field of study: Nursing Education  
Presenter's program: M.Sc. Student

Abstract: Introduction: Although nurses rarely resuscitate newborns on postpartum units, they are trained in resuscitation processes. At a tertiary care centre, changes were made to the Newborn Emergency Response Process (NERP). One change required nurses to transport resuscitation equipment to the bedside rather than transporting newborns to the nursery where equipment was set up. Anecdotally, this change led to nurses identifying concerns regarding additional process steps, increased setup and travel time, limited space for resuscitation, and other contextual concerns. This qualitative descriptive study was thus developed to identify and understand the experiences of postpartum nurses in following the new NERP.

Methods: The researcher will use a qualitative descriptive study to explore and document the nurses' experiences with the new NERP. A purposeful sample of nurses (n= 4-8) will be obtained. Participants will be invited to participate in one-on-one, semi-structured interviews to gain an understanding of their interpretation of the new NERP. Interviews will be audiotaped and transcribed verbatim. The researcher will use Braun and Clarke’s (2006) six-step thematic analysis to uncover themes.

Conclusion: The adoption of a new process should meet the same standard of evidence-based practice associated with any life-threatening event. A change in a rare process can result in nurses questioning their performance. Any conclusions necessarily pertain to this tertiary care centre.

A Novel Hybrid Algorithm for the Optimization of Product Development Projects

Presenter's name: Akposeiyifa Joseph Ebufegha  
Supervisor: Dr. Simon Li  
Presenter’s field of study: Mechanical and Manufacturing Engineering  
Presenter’s program: Ph.D. Student

Abstract: Iteration between design tasks is the primary cause of complexity in product development (PD) processes. It leads to increases in project duration and cost. This paper presents a model for estimating iteration time in PD projects along with an algorithm for determining the sequence that results in the least iteration. We propose using a hybrid of a traditional genetic algorithm (GA) and clustering algorithm to solve the problem. Cluster analysis is used to reduce the solution search space by identifying clusters of tasks that should occur close together in the optimal sequence. The clustering process also serves as a means to determine a sequence within each cluster that results in the overall sequence trending towards
the optimal sequence. Each cluster is then fed into the GA after which the solutions from each search are combined to form the overall near optimal sequence. To illustrate the efficacy of the hybrid algorithm, we conducted a series of numerical experiments to compare the performance of our proposed algorithm to that of a conventional GA. The comparisons were based on two performance metrics; the predicted project completion time and CPU run time. These experiments were conducted using self generated examples in order to allow for control of problem size and complexity. The results of the experiments show that the hybrid algorithm yields similar or better quality solutions to conventional algorithms but in significantly shorter CPU run times.

Osteogenic Differentiation: to Notch or not to Notch?
Presenter's name: Summer Helmi
Supervisor: Dr. Derrick Rancourt
Presenter's field of study: Biochemistry and Molecular Biology
Presenter's program: Ph.D. Candidate

Abstract: Bone healing is a complex well organized process. This process is regulated by multiple factors including growth factors, hormones, cytokines, mechanical stimulation and aging. Various signalling pathways regulate the expression of specific genes to determine the bone cell fate. One of the most important signalling pathways that affects bone healing is the Notch signalling pathway. It has a major role in controlling the differentiation of bone mesenchymal stem cells and the formation of new bone. Notch signalling also controls the formation of osteoclasts and the process of bone resorption. In some cases, where a bone defect might be caused by trauma, tumor excision, infection or osteoporosis, the defect will not heal properly on its own and interventions to enhance the healing process then become a necessity. AIMS: This study aims to investigate the role of Notch signalling inhibition in the osteogenic differentiation of embryonic and induced pluripotent stem cells. Methods: DAPT Notch inhibitor was added to osteogenic culture media and the differentiation of embryonic and induced pluripotent cells was assessed using qPCR, Immunostaining and Alizarin red staining. RESULTS: Our data showed that Notch inhibition greatly enhanced the differentiation of both embryonic and induced pluripotent stem cells.

Hormonal contraceptive use, arterial stiffness and renin angiotensin system activity in women
Presenter's name: Cindy Kalenga
Supervisor: Dr. Sofia Ahmed
Presenter's field of study: Medical Science
Presenter's program: M.Sc. Student

Abstract: Oral contraceptive use is associated with increased cardiovascular risk. Whether non-oral hormonal contraceptive use poses a similar risk is unclear. To evaluate the association between oral and non-oral hormonal and arterial stiffness and renin-angiotensin system (RAS) activity in premenopausal women. Healthy premenopausal women using non-oral hormonal contraception (NOHC), oral hormonal contraception (OC) and controls were studied in a fasting, high-salt state. Arterial stiffness [aortic augmentation index (Alx)] and pulse wave velocity
(PWV)] were measured at baseline and in response to Angiotensin II (AngII) challenge (a validated marker of arterial RAS activity). Results from the 3 groups were compared using ANOVA and presented as mean and standard error. Fifty-six women (6 OC, 8 NOHC, 42 controls) were studied. Women were similar in age (OC 29±7y vs NOHC 28±4y vs controls 32±2y, p=0.52) and BMI (OC 26.7±1 vs NOHC 22.3±2 vs controls 25.3±4, p=0.12). No differences were observed with regards to baseline arterial stiffness measures. In response to AngII challenge, NOHC users had a greater change in Alx compared to controls (NOHC 17.06±3%; controls 9.7 9.76±1%; p=0.048). No significant changes in PWV were observed. Arterial RAS is lower in non-oral hormonal contraceptive users, suggesting this may be a safer contraception option in women at high risk of cardiovascular disease.

“If someone told me to migrate again, I would do it tomorrow”: Exploring Discourses of Rejected Asylum Seekers from Kosovo

Presenter’s name: Kaltrina Kusari
Presenter’s field of study: Social Work
Presenter’s program: Ph.D. Student

Abstract: In 2015, the European Union experienced a 51% increase in asylum requests. Kosovars constituted the fourth largest group of these asylum seekers, yet only 2.3% were granted asylum. Rejected applicants continue to be forcefully returned to Kosovo partly because repatriation, or the right to return to one’s country of origin, is the EU’s preferred solution to migration crisis, despite a significant body of research which substantiates that repatriation is not a durable solution. To address the discrepancy between existing evidence and the adoption of repatriation as a sustainable solution, my study employed Critical Discourses Analysis to explore the involuntary repatriation of rejected asylum seekers from Kosovo. Findings from semi-structured interviews with rejected asylum seekers suggest that this population uses discourses which construct EU countries as superior to Kosova and migration to these countries as an opportunity for a better life. These discourses uphold the Global North superiority and shape participants’ identity and perception of various cultures. To this end, despite the multiple challenges that participants faced while in EU countries, they consider remigration, not repatriation, as a solution to their current challenges. This presentation highlights the cross-cultural nature of migration and, although centered on Kosovo, has implications of global importance to shape policy, given the escalating rates of global migration.

Nutrition, gut health, and inflammation in anorexia nervosa and obsessive-compulsive disorder: A proposed investigation

Presenter’s name: Emily Carmen Margaret Macphail
Supervisor: Dr. Raylene Reimer and Dr. Paul Arnold
Presenter’s program: MD/MSc. Student

Abstract: BACKGROUND: Anorexia nervosa (AN) and obsessive-compulsive disorder (OCD) are cognitive rigidity-associated illnesses, often beginning in adolescence and negatively impacting long term quality-of-life/health. Young females have increased risk of developing these conditions. With their similarly increased zinc deficiency risk, the overlap amongst these
conditions’ risk factors and symptoms becomes interesting. Zinc deficient animals have altered gut microbiota. Both zinc deficiency and gut dysbiosis are associated with systemic inflammation. Neural zinc levels affect neuroplasticity (and hence, cognitive flexibility), and zinc supplementation can improve mental health.

PURPOSE: To investigate, in young women with AN/OCD, compared to healthy controls, associations amongst zinc status, gut microbiota, inflammation, cognitive flexibility, and mental illness symptoms.

HYPOTHESIS: It is expected that individuals with AN and OCD will be more likely to be zinc deficient than healthy control peers, and that lower zinc levels will be associated with reduced gut microbiota diversity and greater inflammation, and subsequently with increased cognitive rigidity/symptom severity.

KEY METHODS: Zinc status will be analyzed via intake, serum, and hair. Data includes interview and self-report symptom measures, cognitive flexibility testing, inflammatory marker levels, and stool sample analysis.

New Thinking
Presenter's name: Kapilan Panchendrabose
Supervisor: Dr. Alim Mitha
Presenter's field of study: Biomedical Engineering
Presenter's program: M.Sc. Student

Abstract: This is a novel poem created to be showcased as an art piece for the symposium. It ties in to this year’s theme of the symposium and visualizes another way art can be represented. This piece is to provoke thought among delegates as to what new thinking may be.

Development of Polymer Nanocomposites for Highly Stretchable Strain Sensors
Presenter's name: Shaghayegh Shajari
Supervisor: Dr. Les Jozef Sudak and Dr. Uttandaraman Sundararaj
Presenter's field of study: Mechanical and Manufacturing Engineering
Presenter's program: Ph.D. Student

Abstract: The use of smart devices in the next generation of wearable electronics has risen considerably in recent years. Particularly, there is significant effort to develop flexible and stretchable strain sensors that can be broadly used in personalized health monitoring, human motion detection, human-machine interfaces, and soft robotics. The recent strain sensors proposed based on polymer nanocomposites have gained tremendous attention in these approaches due to their low cost and simplicity in process. Despite the significant progress has been made so far, strain sensors with high stretchability (≥ 100%) and high sensitivity (gauge factor GFs ≥ 50), are practically hard to synthesize as a result of the trade-off between these two factors. Thus, development of a thin nanocomposite material to address these challenges could be a breakthrough and compelling interest in this field. Herein, we developed an ultra-low percolated film of nanocomposite endowed Fluoropolymer FKM/ carbon nanotube (CNT) with a unique conductive structure. The carbon nanotubes are embedded in the Fluoroelastomer polymer via the melt-mixing process to disperse CNTs inside the polymer matrix. The robust carbon nanotube-FKM based
strain sensor possesses high stretchability (~400% strain), high sensitivity for GF up to 1736 for 230% deformations which covers human body motion detections.

**CO₂ Emissions**

Presenter's name: Nedal Marei  
Supervisor: Dr. George Shimizu  
Presenter's field of study: Chemical Engineering  
Presenter's program: Ph.D. Candidate

**Abstract:** There is no doubt that CO₂ emissions and its proportion in the atmosphere are rising sharply due to natural world population growth and as a result of fossil fuel production processes and consumption outcomes[1]. This is significant motivation for the scientific community to focus on CO₂ utilization, such as CO₂ capture and conversion into useful products. Emerging research into organic and inorganic hybrids and Metal-Organic-Frameworks “MOF” have shown promise as a new class of porous materials with micropores or mesopores. Because recent MOF research has shown high capacity and selectivity towards CO₂ capture even at ambient temperature, it appears promising as a possible material to serve as a catalyst for CO₂ conversion[2].

In this study, ZnO nanoparticles were synthesized and combined with different MOFs, at different ratios, conditions, and different combination techniques. The prepared ZnO/MOF particles were fully characterized and tested towards CO₂ capture and conversion to produce useful products such as CH₄ and CH₃OH.


**Wettability Alteration Using Nanopyroxene-Based Nanofluids for Enhanced Oil Recovery in Sandstone Cores at Reservoir**

Presenter's name: Farad Sagala  
Supervisor: Dr. Nasshat N. Nassar  
Presenter's field of study: Chemical and Petroleum Engineering  
Presenter's program: Ph.D. Student

**Abstract:** Nanoparticles (NPs) have recently gained great attention as effective agents for enhanced oil recovery (EOR) applications, especially at ambient temperatures. Nevertheless, harsh conditions are needed to synthesize them, and many tend to lack stability, exhibiting strong limitations in EOR application. As a solution, many researchers have used silica nanomaterials and grafted them with various agents to enhance their stability and alter their functionality. However, altering their overall functionality via coating could limit their stability in an aqueous media. Thus, partially coated nanoparticles should be used, such that the functionalizing agent is bonded to certain active groups on the nanoparticle surface. Herein, environmentally-safe and tunable silicate-based nanoparticles, nano-pyroxene, were synthesized at mild conditions. Nanopyroxene consists of two forms of binding sites on the
surface made from the structural framework iron imparting a negative charge on the surface which is compensated by sodium ions and the hydroxyl groups present on the surface of the silicate framework, that is responsible for its hydrophilicity. In this study, we partially altered the functionality of the nanopyroxene by anchoring a hydrophobic functionalizing agent of triethoxy (octyl) silane (TOS) to the hydroxylated binding sites, generating half and totally hydroxyl-functionalized nano-pyroxene, namely: HPNPs and JPNPs, respectively. Characterization techniques, such as SEM, FTIR, X

Preliminary evaluations of anti-cancer activities of fig (Ficus carica) leaf extracts on different cancer cell lines

Presenter’s name: Eman Moustafa Salama
Supervisor: Dr. Dae-Kyun Ro
Presenter’s program: Ph.D. Student (visiting)

Abstract: Fig (Ficus carica) is a member of the mulberry family (Moraceae) native in the Middle East, but it has become a commercial fruit-plant worldwide including California. While its fresh fruits are consumed in diet, extracts from various fig tissues have been used as traditional medicines. For example, extracts of fig root have been used in the treatment of leukoderma and ringworms. Some phytochemicals in fig extracts, such as phenolics, phytosterols, and anthocyanin, are likely to bring about the medicinal activities. However, the exact active ingredients of fig remain unknown. Here, the preliminary experiments were performed to assess general toxicity and anti-cancer activities of the either methanol or chloroform extracts from fig leaves. When the general toxicity of fig extract was examined using normal cells, the half maximal inhibitory concentration (IC50) of fig methanol extract was 0.002 mg/mL, whereas IC50 of chloroform extract was 5 mg/mL, a 2,500-fold less toxicity than methanol extract. The chloroform extract was further examined for the anti-cancer activities against colon cancer cells (CaCo-2), laryngeal carcinoma (Hep-2), Hepatocellular carcinoma (HpG2). In these assays, proliferation of Hep-2 cells were more sensitively inhibited than CaCo-2 and HpG2 cells. These results suggested a potential anti-cancer activities in the fig extracts.