
# Inquiry@Queen's

## 14th Annual Undergraduate Research Conference

# Program

March 12 & 13, 2020
Queen's Learning Commons
Stauffer Library

**queensu.ca/iatq**

## TABLE OF CONTENTS

March 2020

We are now in our 14th year of celebrating the discoveries of a new generation of scholars at the Annual Inquiry@Queen's Undergraduate Research Conference. We have two full days to share, discuss, think, learn and feel excited about the research of our undergraduate students. The work they will present comes from many avenues - course work, theses, design projects, and summer research opportunities; some came simply from an interest in a topic, and a desire to know more and think more. We are excited to have student researchers from Carleton University this year.

Inquiry@Queen's is more than a conference; it is an approach to learning where the teacher and the learner reside in the same person. It is a natural extension of a university that prides itself on the quality of undergraduate education and its scholarship and research.

We invite you to attend the oral presentations, to view the posters and talk to the presenters, to ask questions, to attend the opening ceremonies and the special events, but most certainly to enjoy the breadth of undergraduate student scholarship. Drop by for an hour, an afternoon, a day or two days! To all those who have supported us in many ways over the last fourteen years…we thank you! Congratulations to all participants!

On behalf of Inquiry@Queen's,

Vicki Remenda
Head, Department of Geological Sciences & Geological Engineering
Faculty of Arts and Science

Jackie Druery
Head Humanities & Social Sciences Librarian
Queen's University Library

Corinne Laverty
Research Librarian
Information Services, Queen's University Library

Patrick Patterson
Reference Assistant
William Lederman Law Library/Information Services

Catherine DeNoble
Reference Assistant
Education Library/Information Services

We recognize that Queen's University is situated on traditional Anishinaabe and Haudenosaunee Territory.

## CONFERENCE AGENDA

**Thursday, March 12, 2020**

9:15-9:30 Coffee (Speaker's Corner, Stauffer Library)

9:30 Session I: Seeing the Light (Speaker's Corner)

9:30 Session II: Is Resistance Futile? (Seminar Room,Stauffer Library, Room 121)

11:30-1:00 Session III: Pizza with Poster Presenters (Seminar Room) All Welcome!

1:00 Session IV: Identity & Becoming (Speaker's Corner)

1:30 Session V: Folklore & Fairytales (Seminar Room)

**Friday, March 13, 2020**

9:15-9:30 Coffee (Speaker's Corner, Stauffer Library)

9:30 Session VI: Voice & Authenticity (Speaker' Corner)

12:00-1:30 Session VII: It's All About the Drama! (Speaker's Corner)

1:30 Session VIII: Detection, Diagnosis, & Dodging (Seminar Room, Stauffer Library, Room 121)

2:00 Session IX: Youth & Wellbeing (Speaker's Corner)

## ORAL PRESENTATIONS

**Session I: Seeing the Light**

**Speaker's Corner, Stauffer Library**

**Thursday, March 12, 9:30-11:10**

**Moderator: Dr. George Bevan, Geography & Planning**

### Exploratory Data Analysis: Connecting X-Ray Diffraction and Lithogeochemical Data

Presenter: Stephanie Bringeland, Geological Sciences and Engineering

Faculty Supporter: Dr. Georgia Fotopoulos and Dr. Gema Olivo

The Vazante Group is a district in east-central Brazil that consists of a carbonate-dominated marine platform sequence of Late Mesoproterozoic age. The district is home to a north-south belt that contains several zinc mines, but the petrogenesis of the ore body is not yet fully understood. Samples from this district were analyzed using both X-Ray Diffraction (XRD) and lithogeochemical assay techniques by Dr. Neil Fernandes in 2016. An analysis was conducted in order to explore the statistical correlations between the XRD and lithogeochemical test results. The purpose of the analysis was to determine whether the raw (uninterpreted) XRD data alone could be used to identify the samples enriched in zinc and other elements indicative of economic mineralization. The results showed very subtle trends that were not significant enough to make conclusions about the possibility of using XRD data without accompanying lithogeochemical data. The higher-than-average correlation of the intensity of pyrite peaks in the XRD data with elements associated with mineralization suggests that there are potentially more robust and significant trends that were not fully uncovered by this analysis, as pyrite has already been associated with mineralized zones. The analysis process itself could be valuable in future projects, and future work on this technique is proposed that uses machine learning to cluster the data and detect trends that may not be obvious using conventional techniques.

### Using the Rock Art Stability Index to facilitate management of rock art in Wadi Rum, Jordan

Presenter: Zainab Gharib, Geography & Planning

Faculty Supporter: Dr. George Bevan

The Wadi Rum Protected Area (WRPA) in Jordan, inscribed as a UNESCO World Heritage Site, is an iconic desert landscape and significant for both its natural and cultural heritage. The most notable form of cultural heritage in the Wadi are the thousands of petroglyphs on the local Umm Ishrin sandstone. Tourist activity, however, poses a threat and potentially accelerates the decay of this resource beyond natural rock decay rates. Therefore, in an effort to better manage this cultural resource, a large sample of these rock-art panels have been examined by an international team funded under the USAID/SCHEP program, and scored based on the degree of decay they have undergone using the Rock Art Stability Index (RASI). RASI has five general categories that rate geological stability, rock decay processes - past, present and impending - and rock-coatings; the variables within each category are scored on a scale of zero to three, corresponding to "Not Present", "Present", "Obvious," and "Dominant". This method of scoring is suitable for use by experts and non-experts alike, and data collection can be conveniently accomplished using ESRI's Survey123, a form-centric and field-friendly mobile application. Through the use of a Geographic Information System (GIS) such as ArcGIS Online, these data can then easily be organized, analyzed, represented, and shared. In an effort to better direct attention to those panels that need the most immediate care, and to validate the RASI methodology, my research focuses on using statistical analyses of correlation to highlight any relationships between processes of decay.

## Single Qubit Quantum Gates Implemented with Silicon Micro Ring Resonators

Presenter: Matteo Pennacchietti, Physics, Engineering Physics and Astronomy
Faculty Supporter: Dr. Bhavin Shastri

Quantum computers offer a new way of doing information processing by harnessing the unique properties of quantum mechanics, opening new possibilities for solving computationally difficult but useful problems more efficiently than a traditional classical computer (such as simulating molecular interactions). There are several ways of physically implementing a quantum computer, each with its own advantages and disadvantages. An approach which uses photons (i.e., particles of light), known as Linear Optical Quantum Computing (LOQC), has gained traction in the last decade. This approach uses integrated photonic technologies to design chips that can manipulate bits of quantum information – known as qubits – which are encoded in light. My undergraduate thesis research has focused on the investigation of new implementations of single qubit quantum gates – the physical structures which manipulate single qubits to do computation. Using a nano-scale silicon photonic device known as a micro-ring resonator, I have developed a novel configuration which in theory, should be able to implement any single qubit operation. Realizing single qubit gates using micro ring resonators could prove to provide a large improvement in the scalability of an integrated photonic quantum computer. My research has shown an almost 200 times increase in the on-chip density of single qubit gates over the current state of the art in the literature can be achieved by using a ring resonator architecture. This research may lay the foundation for future work on a new scalable implementation of quantum computer that uses light to solve the world's most difficult problems.

## Exploring the Phenomena of a Quantum Eraser in Young's Double Slit Experiment

Presenters: Alexander Shaw, Trevor Vrckovnik, Billy Thorpe, and Christian Sprang, Engineering Physics

This experiment explores the quantum phenomenon known as the Quantum Eraser, using a variation of Young's Double Slit experiment. Young's Double Slit experiment demonstrates that light acts as a wave by creating an interference pattern when diffracted through two slits. If one measures which of the two slits the photons pass through, then the interference pattern is replaced by a single bright spot, as would be expected for particle-like behaviour. The "Quantum Eraser" eliminates the measurement on the photons, thereby reintroducing the interference pattern observed in Young's original experiment. The experiment's first stage saw Young's Double Slit experiment recreated and an interference pattern was observed. Upon adding two orthogonally polarized filters, the photon's path was measured, and the interference pattern was removed. By then adding a third filter which was polarized $45^{O}$ relative to both other polarisers, the interference pattern was somewhat restored. For each experiment, the heights of the peaks in the interference patterns were compared to each other to examine the quality of the reproduced interference pattern based on the original double slit interference pattern. This comparison gave a quantitative result that demonstrated that the Quantum Eraser was able to restore the interference pattern to within 5 standard errors, thereby exemplifying the effect that changing the measurement conditions affects the final measurement.

## "Greenness" in Chemistry Education – Look into Textbook Reaction Examples

Presenter: Huilin (Galen) Yang, Department of Chemistry
Faculty Supporter: Dr. Amanda Bongers

Chemistry has played a dual role in the unfolding picture of global development.[1] The chemical sciences have significantly improved overall quality of life but have also caused several severe environmental problems. To alter the public perception of chemistry from a "troublemaker" to a positive field necessary for

global advancement, the United Nations sustainable development goals (SDGs) must be used to reposition chemistry in a broader context.[2] The SDGs are just beginning to be incorporated into post-secondary chemistry education, creating the essential foundation for teaching students about the role of chemistry as the central sustainability science.[3]

We are investigating how sustainability has been incorporated into chemistry education. The work was carried out by analyzing the organic reactions used as examples in a widely adopted organic chemistry textbook (Organic Chemistry, 2nd edition, Oxford Press). These reactions were examined using a sustainability framework consisting of several existing mass- and energy- based "green chemistry" metrics. The idea of "green chemistry" was formulated in the 1990s to address the environmental crises caused by expanding urbanization, and provides a direction chemistry must take to ensure its development is sustainable. The results of our textbook analysis create a quantitative indicator of the overall "greenness" of the content used as the basis for chemistry courses in Canada.

1. Anastas, P.; Zimmerman, J. B., *Chem* **2016,** *1* (1), 10-12.
2. Matlin, S.; Mehta, G.; Hopf, H.; Krief, A., *Nature Chemistry* **2015,** *7*, 941.
3. Armstrong, L. B.; Rivas, M. C.; Douskey, M. C.; Baranger, A. M., *Current Opinion in Green and Sustainable Chemistry* **2018,** *13*, 61-67.

## Session II: Is Resistance Futile?

**Seminar Room, Stauffer Library, Room 121**
**Thursday, March 12, 9:30-10:50**
**Moderator: Dr. Jonathan Rose, Political Studies**

### Raising a Pacific Anti-Nuclear Consciousness in Canada

Presenter: Julia Aguiar, Department of History, Carleton University
Faculty Supporter: Dr. Laura Madokoro

The capability to enact devastation that defied borders of the nation-state begged larger ethical and existential questions of nuclear power. Iterations of these moral questions found a place at the epicentre of the anti-nuclear movement in Canada from the 1950s-1990s. The South Pacific People's Foundation (SPPF) was established in 1975 in Victoria, British Columbia in response to the growing presence of nuclear violence in the Pacific world. It propagated tenets of Indigenous sovereignty, solidarity, anti-colonialism, and peace within the Pacific. While anti-nuclear activism was already well established in Canada, it was limited in its focus on the potential threat that nuclear power posed to Canadians and neglected to confront Canadian participation in nuclear testing throughout the world. In 1982, the SPPF began publishing the journal *Tok Blong* (talk belongs). This paper argues that the SPPF brought an acutely Pacific perspective to the anti-nuclear movement in Canada as demonstrated through their work in *Tok Blong.* Particular attention is given to the SPPF's coverage of Canadian shelling of the sacred Hawaiian island, Kaho'olawe, and representations of the Nuclear Free and Independent Pacific movement. The paper is situated within post-colonial scholarship on Kaho'olawe as well as secondary literature on the anti-nuclear movement within Canada drawing particular parallels with the movement to make Canada a Nuclear-Weapon-Free-Zone. The paper will disrupt the associations of youth, whiteness, and Canadian passivity that often get assigned to anti-nuclear activism in Canada and counterculture more broadly.

## Blitzkrieg – An Army Fueled by Drugs

Presenter: Xavier Heckert, History

Pervitin is a drug developed in Nazi Germany by the pharmaceutical company Temmler, before the start of World War II. Originally sold without prescription to the population, it was claimed to suppress fatigue, make one more alert, reduce hunger, and help fight depression. The main ingredient of this wonder drug was methamphetamine, the primary component of what we now call crystal meth. This miracle drug's effectiveness against fatigue caught the attention of the director of the Research Institute of Defense Physiology of the German forces, Dr. Otto Ranke, who considered that fatigue was enemy number one of a soldier during battle. An order of thirty five million Pervitin tablets were purchased for the Wehrmacht's invasion of France in May 1940 to increase effectivity of the campaign that relied especially on speed for success. History will claim that the use of mobile warfare over positional warfare with Germany's motorized army, French high command mistakes, and an equipment disadvantage led to the ultimate defeat. My research aims to show that Pervitin was a crucial factor in the iron force of the blitzkrieg by the Wehrmacht and Luftwaffe, and that it did not as much come from its tactics, inferiority of the Allies, and employment of mobile warfare but from an army that was blitzed on Pervitin to turn it into a steamroller of a machine that could not be stopped, day or night.

## Grabbing Life by the Ballot: Creating an Effective Ballot through Design

Presenter: Katharine McCoy, Political Studies and Art History
Faculty Supporter: Dr. Jonathan Rose

This presentation, reflecting a politics undergraduate thesis, will explore the design process behind the ballots that voters use in democratic elections around the world. Ballots are an inherently political objects, and in many cases, the most direct line of communication a citizen has to the government of their country. As such, the design of the ballot affects the legitimacy of higher level electoral and democratic institutions. This project argues that by co-opting the language of product design, a universal ballot design process would make more efficient ballots across the globe.

Product design starts with a brainstorming stage that explores at the user, the goal of the object, and the context of its use to create an effective design. By applying these observations to the process of designing a ballot, each electoral commission can produce a more effective ballot. Currently there is no standardization for ballot design other than ensuring that electoral commissions tried to make it "friendly." By examining cases of bad ballot design, it is possible to see what element of the design process was missed or misused to create a process that corrects for these mistakes. This project examines poorly designed ballots in Florida, Scotland, and Colombia to explore the large-scale effects these small design choices make, and how to fix them.

## Fashioning Enemies of the State: Investigating Sartorial Subversion in Soviet States

Presenter: Ben Pulver, Art History and Philosophy
Faculty Supporter: Dr. Johanna Amos

As far back as 1867, early-modern fashion has been the subject of harsh criticism. In his *Critique of Political Economy*, Marx referred to fashion as "murderous" and as having "meaningless caprices" (Marx and Engels 1967). The Soviet states certainly recognized the importance of clothing to reflect and inform its citizens of the preferred modest lifestyle. The main purpose of this study is to analyze two specific cases of sartorial resistance in two Soviet societies. Specifically, I will be examining the case of *Allerleirauh* (1980-89) in East Germany, and the *Stilyagi* (1940s-1960s) in Soviet Russia. In order to test the differences and similarities in the sartorial subversions, I will analyze a number of primary and secondary documents. There are four

forms of primary documents that I will analyze: state-run magazines, periodicals, and photographs (both state-sponsored, and fringe), from the GDR and Soviet Russia. My interpretation— of the visual and textual responses to the youth groups who subverted the sartorial codes of the GDR and in Soviet Russia— has led me to propose two main speculative-conclusions. First, the responses by the government, such as the satirical cartoons of the Stilyagi, reveal the extent to which government officials recognized, and felt threatened by, the potential potency of dress to cause political disturbance. Second, the reactions of condemnation towards the fashionably-dissident makes salient the recognition that visual culture and semiotics in fashion, particularly when the body (as a sort of canvas) is implicated, can yield politically-threatening influence.

## Session III: Pizza with Posters

**Atrium, Stauffer Library**
**Thursday, March 12, 11:30-1:00**
**See poster abstracts beginning on page 21**

## Session IV: Identity & Becoming

**Speaker's Corner, Stauffer Library**
**Thursday, March 12, 1:00-2:20**
**Moderator: Dr. Petra Fachinger, English**

### Renaissance Humanist Reinterpretations of Eve; The Writings of Christine De Pizan and Isotta Nogarolla

Presenter: Isobel Gibson, History

The purpose of my research is to explore the ways that intellectuals reinterpreted Eve using the Humanistic method during the Renaissance, questioning the naturalized relationship between women and sin. Humanism, a growing movement during the 15th century, placed emphasis on ascertaining meaning through analyzing works for their intended meaning and considering the context, while also revering God and antiquity alongside attention to the individual. Christine De Pizan and Isotta Nogarola use the Humanistic method of analysis in different ways to argue that Eve, and womankind, do not deserve a devious reputation and it is not justified by God. I will use historical artworks and writings to show how Eve was depicted prior to and during Renaissance Humanism. For example, Michelangelo's Sistine Chapel depiction of the Fall fundamentally differs from other previous works by redistributing the culpability of Adam and Eve; no longer is Eve a sensual being, nor entirely to blame for the Fall. Additionally, as is necessary with any historical analysis, I will examine the contextual factors that allowed for the reinterpretation of Eve, especially by women, including the ways that both were a product and yet also ahead of their time. Whether the reinterpretations are pro-feminine or not is irrelevant in many respects, for the significance stems from women taking back a piece of historiography of the prototype woman, Eve.

### Ecofeminism and Post-Apocalyptic Environments in Roanhorse's Trail of Lightning

Presenter: Talia Gukert, English
Faculty Supporter: Dr. Petra Fachinger

This paper examines the significance of post-apocalyptic narratives as a means of expressing deep-seated anxieties about colonialism, capitalism, and cultural erasure in Rebecca Roanhorse's *Trail of Lightning.* By viewing the novel through an ecofeminist lens, I seek to illuminate and explain the political changes

Roanhorse's post-apocalyptic world, and how this new environment allows for the transformation of social and gender structures of power. The theory of ecofeminism relies upon the belief that both women and nature are equally compromised and exploited by the patriarchy, constrained by the masculine forces of colonialization and capitalism. By situating her novel in a post-apocalyptic environment, Roanhorse implies that just as the earth has asserted its power over the effects of unrestricted capitalism through the consequences of global warming, Indigenous women have similarly taken back their powers of autonomy, liberating themselves from traditional gender roles. This paper shows how the connection between women and nature is most evident in the novel's female protagonist, Maggie, who has been able to aggressively deviate from traditional gender norms and expectations due to the apocalypse. Through this complete reversal of common gender tropes in post-apocalyptic literature, Roanhorse demonstrates that the apocalypse has proven to be instrumental in freeing women from the constraints of gender roles, advocating the ecofeminist view that cooperation between women and nature is necessary for the liberation of both.

## Sisterhood and Solidarity: An Exploration of the Role of Women in the Development of Chinese-Indigenous Relations in Disappearing Moon Cafe and "Yin Chin"

Presenter: Sarenna Lalani, English Literature
Faculty Supporter: Dr. Petra Fachinger

History class tells us a narrative of first contact between Indigenous people and colonizers that is very narrow in scope. The discussion is often limited to accounts of European colonizers; the brutal assimilation tactics that destroyed the culture of the first peoples of this land are often excluded. Also forgotten are the other stories of first contact that existed synchronously – the stories that do not revolve around dominant society. Sky Lee's *Disappearing Moon Café* provocatively spotlights the instances of connection between Chinese and Indigenous communities both historically and in modern day. Lee cautiously manoeuvres around issues of love, miscegenation, intergenerational trauma and cultural norms, particularly focusing on the relationships that exist between both Chinese and Indigenous characters and communities. Lee Maracle focalizes these Chinese-Indigenous relationships from an Indigenous perspective in her piece "Yin Chin." Together, the texts highlight female strength and emphasize the importance of women in bridging together the two communities. Through the narratives they tell that surpass temporal boundaries and implicitly through their writing as two female authors, the texts suggest that women are society's mechanism of resistance to social barriers.

## "Not just somebody's mother": University Campus Daycare Co-operatives in Ontario and British Columbia, 1960s to 1970s

Presenter: Katherine Clare Simon, History
Faculty Supporter: Dr. Lisa Pasolli

Daycare is now a common sight on university campuses, but this was not always the case. Using the case studies of Simon Fraser University, the University of Toronto, and Queen's University, this project examines the creation of daycare co-operatives on university campuses. The research makes clear that the formation of the co-operatives stemmed from the New Left and Women's Liberation Movements. The radical ideology that the co-operatives took from these movements frequently caused friction and conflict with the liberal university and provincial administration. The co-operatives challenged and adapted to these pressures. They also challenged the nuclear family and the gendered division of care work. In the end, however, the projects were co-opted by university administration. Despite their inability to continue as co-operatives, these experiments in accessible and affordable daycare laid the groundwork for the recognition of the importance of childcare on university campuses and the responsibility of institutions to provide it.

## Session V: Folklore & Fairytales

**Seminar Room, Stauffer Library, Room 121**
**Thursday, March 12, 1:30 -3:10**
**Moderator: Dr. Stephanie Lind, Dan School of Drama & Music**

### Pluralities of History: Carrying Folklore Across Languages and Cultures

Presenter: Manahil Bandukwala, English, Carleton University
Faculty Supporter: Dr. Brenda Carr-Vellino

If history is a distilled collection of stories that was handpicked by colonisers, victors, and those in power, then folklore is a pool of abundant and overlapping remembered pasts from the common person. My research considers the possibility of folklore being a truer, more relevant version of history by analyzing written and oral stories from the province of Sindh. Research took place in two simultaneous phases: 1) Interviews in Karachi with people in the cultural sector, such as a literary scholar, author, musician, dancer, and archeologist to investigate the relationship between folklore and artistic and cultural practices; 2) Field visits to archaeological sites, shrines, and historic monuments that involve talking to locals about the presence of folk stories in their communities. Methods of carrying on folklore are interdisciplinary and overlapping. They include singing verses that detail stories at shrines, incorporating stories into new music, interpreting stories through dance and theatrical performance, and preserving archaeological sites. Folk stories are allowed to be multiple, overlapping, and contradicting, as the reality that they present is of a plural, collective memory. They belong in literature as much as they belong in anthropology, music, performance, and other disciplines. These pluralities are present in the interviews and field research, which will be shared and discussed, showing how the version told by an expert in the field of literature was just as valid as the story shared by a villager in interior Sindh.

### Dungeons & Dragons & Drama

Presenter: Darby Huk, Drama and English
Faculty Supporters: Dr. Stephanie Lind and Dr. Jenn Stephenson

Players sit around a table. A group of adventurers pause in their pursuit of escape. Stunned, they stare at the die that just rolled poorly, resulting in the loss of a dear friend, his throat ripped out because they could not save him. The players mourn the death of a fictional character who only ever existed within the game. Dungeons & Dragons (D&D) is a popular role-playing game illustrating the interconnectedness of drama, performance, and games. My presentation will examine this relationship, identifying factors from gameplay that suggest how performance fosters success in D&D for both actual players and fictional characters. Research into dramatic theory and game theory reveals how interdisciplinary concepts such as the "magic circle", the "lusory attitude", and uncertainty can apply to elements of D&D (Salen and Zimmerman, Suits, Costikyan). Data collected from in-person observation of D&D sessions, coding participants' behaviour, and watching for instances of performance (e.g. voice change, pronoun switches, or mimetic gesture), has been combined with theoretical research to determine elements that better facilitate success in the game/campaign. These elements range from emotional situations that provoke players, to forms of invitations encouraging participation (Isbister, White). I have discovered that while in theatre performance acts as a vehicle for story, in D&D the story acts as a vehicle for performance. The in-game performance often facilitates fun between players, as well as leading them to success in the game, so a campaign that maximizes theatricality will not only result in more fun, but also more success.

**Works Cited**

Costikyan, Greg. *Uncertainty in Games*. MIT Press, 2013.
Isbister, Katherine. *How Games Move Us: Emotion by Design*. MIT Press, 2016.
Salen, Katie, and Eric Zimmerman. *Rules of Play: Game Design Fundamentals*. The MIT Press, 2004.

Suits, Bernard Herbert. *The Grasshopper: Games, Life, and Utopia*. Broadview Press, 2014.
White, Gareth. *Audience Participation in Theatre: Aesthetics of the Invitation*. Springer, 2013.

## Village life and Concert Hall: Is There a Connection?

Presenter: Diana Lawryshyn, Con Ed Music
Faculty Supporter: Dr. Ireneus Zuk

Ukrainian folk music has been embedded into much of the classical music we hear. Mykola Leontovych and Peter Wilhousky are credited for the ever-famous piece *Carol of the Bells*, an arrangement of a Ukrainian Epiphany carol called *Shchedryk (Щедрик).* Despite the applicability of Ukrainian folk-inspired music in our society, people are generally unaware of its origin. In fact, researcher Yakov Soroker provides evidence of Ukrainian folk inspiration in various classical pieces being misclassified as Russian, Polish, and/or Hungarian. Ukrainian classical music, for many reasons pertaining to its unstable history, is not well known outside Ukraine and, therefore, is rarely discussed. This has limited potential insights it might bring to those who have interest in its place in Western music. My research explores the influence that Ukrainian folk traditions have had on contemporary classical music. My research has come from gathering and sifting through historical literature about the origins of classical, Ukrainian classical, Ukrainian folk, and other folk music works. I have also listened to selected works and examined the critiques of experts to form conclusions about how composers today have been influenced, knowingly or otherwise, by Ukrainian folk music. Going one step further, in order to provide a deeper, practical insight into the creative process of composers who have been influenced by Ukrainian folk music, I have composed a piece of my own influenced by Ukrainian folklore.

## The Celtic Otherworld in Patrick Rothfuss's *Kingkiller Chronicle*

Presenter: Cameron MacDonald, English
Faculty Supporter: Dr. Ruth Wehlau

As readers of fantasy literature, we look for clues in the stories we read, familiar landmarks whose shapes we unconsciously know. These landmarks ensure that, while the stories we read may be new to us, we know (or think we know) where it leads. One legend commonly adapted as a landmark for modern fantasy is the Otherworld, a parallel dimension of supernatural creatures that has featured in Celtic stories for thousands of years. It is a magical place that inspires both fear and wonder. Patrick Rothfuss adapts this legend for his Kingkiller Chronicle. He calls his version of the Otherworld the Fae Realm, and the supernatural creatures who inhabit it Fae Creatures. In this paper I attempt to show that Rothfuss's strikingly Celtic Fae Realm functions as a unique sort of landmark; since stories of the Celtic Otherworld are multifarious and often contradictory, and encounters with the Otherworld and its people often have diverse impacts on heroes, its presence in the Kingkiller Chronicle acts as an unsettling force, raising questions about the capacity of the initially invincible Kvothe to overcome the effects of this unpredictable obstacle.

## Utter Pandemonium: Devil-Narratives in the First Edition of the Grimms' Fairy Tales

Presenter: Jack Williams, Department of English
Faculty Supporter: Dr. Leslie Ritchie

This paper examines how depictions of the devil in the first edition of the Grimm Brothers' Folk and Fairy Tales function to mitigate the spiritual anxieties which arose from the decentralization of religious authority in post-Reformation Germany. It centres upon three tales: "The Devil and his Grandmother", "the Devil with the Three Golden Hairs", and "The Blacksmith and the Devil". Beginning with a brief overview of the religious climate of post-Reformation Germany and the function of devil's-pact narratives during the

Medieval period, it proceeds to examine how the Grimm tales subvert the moralizing function of their Medieval precursors. It illustrates how the tales use absurd humour to humanize the devil, making him an object of mockery rather than terror. From there, it demonstrates that, in all three tales, the protagonists' dealing with the devil does not place their souls in jeopardy, disrupting the orthodox potential of the devil-narrative by allowing the protagonists to attain earthly rewards without the supposedly requisite spiritual punishment. Moreover, it observes that almost every instance of reward without punishment is situated within a broader narrative of the protagonists' securing social advancement despite an oppressive social structure. Having illustrated these features, it posits that the tales' valourization of wit and resourcefulness over moral virtue serves to both reflect and manage the existential uncertainty of a society which had rejected church authority but not religion itself. It concludes by suggesting that these tales' depictions of the human-devil relationship offer a fascinating addition to the Miltonic and Faustian traditions.

## Session VI: Voice & Authenticity

**Speaker's Corner, Stauffer Library**
**Friday, March 13, 9:30-11:10**
**Moderator: Dr. Colleen Renihan, Dan School of Drama and Music**

### Sounding the Forgotten Voices of Contemporary Chant

Presenter: Emily Helferty, Dan School of Drama and Music
Faculty Supporter: Dr. Margaret Walker

Although created more than 1000 years ago, medieval Christian chant and polyphony is still used in concert halls and churches. Questions remain, however, about whether 21st century performances should attempt to replicate earlier practices or reflect the creativity of the present day. This project focuses on the tension between evolutionist and preservationist mindsets that pervade Early Music, exploring the contrasting views that chant is an evolving and living tradition or that chant should be learned and performed as close to its original use as possible. Through a combination of bibliographic and ethnographic research I studied the views of Early Music scholars and conductors/directors on the current use of chant in and outside of the context of worship. From this research, I uncovered a fascinating paradox regarding authenticity in performance practice. It appears that scholars are overwhelmingly motivated by a desire for authenticity in their arguments for preservation or evolution, whereas the two church pastors and four contemporary directors and performers of chant in Eastern Ontario that were interviewed in this project expressed far more varied opinions. These were rarely attached to a desire for authenticity, despite being among few who use chant in its most "authentic" context of worship. This project draws attention to the absence of scholarship on chant performers and their motivations, giving a voice to the singers of chant in the contemporary world.

### Categorizing Identity: Literary, Performative, and Legal Languages in Oscar Wilde's Libel Trial vs the Marquess of Queensberry

Presenter: Fred Hook, English
Faculty Supporter: Dr. Shannon Smith

Wilde has been generally accepted as one of the first figures of the queer man that is now known, however, how he came to represent this identity has not been much discussed. While his criminal trials, which led to his eventual conviction of 'gross indecency,' undoubtedly played a strong part on his emerging portrayal as a gay man, his first trial involving a libel suit against the Marquess of Queensberry is little discussed in relation to the start of his downfall and portrayal as a gay man. Thus, this project looks at Oscar Wilde's libel trial and its effects on the identity of the homosexual man. By looking at the language used in the libel trial and its use of *The Picture of Dorian Gray* as evidence, the project concludes that by using the interpretations

of Wilde's novel during the trial, the law created a concrete image of what 'gross indecency between men' was, and of the type of person who participated in it, using Wilde as a representative for this identity. The way that his identity was forged allows us to see that while homosexuality as a way of being began to take shape thanks to Wilde's trial, it was still imbued with negative connotations and seen as pederastic, tying it to anxieties around child prostitution and trafficking of the 1800s. The development of this new identity and its portrayal betters the understanding of the vilification of Wilde during his downfall and his novel's role in this.

## Rooting Intergeneration Conflict in Racism: An Examination of *Disappearing Moon Cafe* and *The Jade Peony*

Presenter: Wendy Li, English
Faculty Supporter: Dr. Petra Fachinger

A recurring theme in Canadian diaspora literature is the problematization of cultural identity in the children of immigrants as they navigate between Western influences and their cultural heritage. My paper examines the different portrayals of second generation Chineseness in SKY Lee's *Disappearing Moon Cafe* (1990) and Wayson Choy's *The Jade Peony* (1995) through close reading. Although both these texts depict diaspora-matured Chinese Canadians as incorporating Western values into Chinese tradition, the elder generation's response to this hybridity is configured differently. Through opposing representations of second generation characters' use of the English language, Lee depicts early Chinese-Canadian Vancouver as more accommodating to amalgamated culture, while Choy's Chinatown is hostile to Western influence. Linguistic proficiency is central to the plot of *Disappearing Moon Cafe*, where "Westernized" Chinese youth are depicted as masters of the English language and Western politics. This enables them to fight against repressive laws and ultimately gains them the approval of the elders, whereas the same bilingualism and biculturalism is condemned as dangerous in *The Jade Peony*. My paper analyzes white xenophobia in each text as the root cause of this difference in treatment; in an era where anti-Chinese sentiment is again rising, it is valuable to be aware of the far-ranging impacts of this hostility.

## The Pieces We Leave Behind: A Tale of Two Artists and a Desk

Presenter: Hannah Mostert, Art History
Faculty Supporter: Dr. Joan M. Schwartz

How do objects gather value and bear the weight of history? This research project addresses this question through research into an old wooden desk stored in the corner of an office at Queen's University. It has six drawers coloured with a black cherry stain and decorative wooden handles. Adhered onto the desktop surface is a thin overlay of dark leather, to which is affixed a brass plaque that reads, "This desk was used by two famous Canadian artists, J.W. Beatty (1869-1941) and A.Y. Jackson (1882-1974). It was presented to Queen's University in 1980 by Dr. Naomi Jackson Groves, niece of A.Y. Jackson." J.W. Beatty and A.Y. Jackson were influential Canadian painters, whose stylistic focus on Canadian landscapes underpinned the formation of the Group of Seven; the desk was a non-sentient observer of their contributions to Canadian art and art history until 1968, when the desk left Jackson's possession. Beyond the desk's immediate story, there is a larger research question: "how does the social biography of an object reveal the dynamics of its meaning, affect its value as a physical object, increase its significance in the art world, and determine where it is best preserved?" Using information uncovered during the summer of 2019, this presentation will reveal the importance of the desk's provenance in relation to the stories of two influential Canadian artists, as well as share the process of investigating the biography of the desk through archival research methods.

## Extending Vocal Pedagogy: Extended Vocal Techniques in North American Post-Secondary Music Education

Presenter: Vanessa Romao, Dan School of Drama and Music
Faculty Supporter: Dr. Colleen Renihan

In North America, post-secondary music education is heavily focused on (and limited to) the repertoire and techniques of the Western Art Music canon. Vocal training at these institutions is no exception: vocalists are trained in the bel canto technique whose lineage reaches back to seventeenth-century Italy. This conservatory-based curriculum supports a categorical vocal pedagogy, one that seeks to produce a particular type of singer with a very specific kind of sound. Instead of embracing what each individual singer is capable of, this model focuses on what singers should be capable of from the perspective of repertoire and technical mastery in the operatic tradition. In this paper I will argue that this model risks our losing sight of what the singer has to say in favour of what the composer has to say. Recently there has been discussion and research around a more inclusionary model of vocal pedagogy that would incorporate other techniques alongside bel canto. However, these discussions have been focused on inclusion of musical theatre and belt techniques, with very little discourse on the inclusion of extended vocal techniques. By drawing on the scholarly discourse on the limits and extensions of technical training in post-secondary vocal performance, as well as interviews with several women working in the performance and teaching of extended vocal techniques in Canada, I will explore the potential for extended vocal techniques to contribute to a more inclusive model of vocal pedagogy.

## Session VII: It's All About the Drama!

**Speaker's Corner, Stauffer Library**
**Friday, March 13, 12:00 to 1:30**
**Moderator: Dr. Craig Walker, Dan School of Drama and Music**

Students from the Dan School of Drama and Music will present their research and provide a perspective on their work that involves modes of communication, including the silent aspects of visual or musical performance, how the research has made them think outside their chosen discipline or how the research begins to mediate between them and their listeners.

## Scaling-Down the Grandiose: Opera Design Experimentation

Presenter: Carly Altberg, Drama
Faculty Supporters: Dr. Natalie Rewa and Dr. Kelsey Jacobson

The purpose of the study is to explore if and how high-budget and large-scale stage designs can translate to smaller stages with lower budgets. By examining the works of successful opera designers Es Devlin, Vicky Mortimer and Nicky Gillibrand, clear patterns emerged from each: Es Devlin often has an over-exaggerated use of perspective in her designs; Vicky Mortimer plays with contrast in scale, colour and texture; Nicky Gillibrand explores colour palettes and textures. Each of these specific design elements were translated from their original large-scale setting into a small 15 by 15 foot scale model. After asking audience members to engage with the models, their responses suggested that playing with perspective is a very successful method to make small designs feel grand. These findings can be applied to theatre, opera and performing art companies who are looking to increase the perceived production value of their performances without increasing budgets. Further, by applying the traditional scientific method to practice-based research in the arts, this project demonstrates that theatrical ideas can be made easily accessible to wider communities, and that such methods can contribute to potentially inventive interdisciplinary methodology.

## Designing for Opera in the Scramble: Duality in Sound and Experience

Presenter: Emily Helferty, Dan School of Drama and Music
Faculty Supporter: Dr. Natalie Rewa

There are few art forms as comprehensive and encompassing as opera. Since its conception, opera has been used to express the deepest emotions of the human experience and it has been adapted by designers in a variety of methods and degrees to speak to each generation. In this project, I have proposed the re-imagining of public spaces as opera performance spaces and studied the resulting duality of sound and experience. To explore this topic, I looked to the public spaces on Queen's University campus for inspiration and found it where Union and University meet. The familiar "scramble" is a central location that students cross on their way to classes many times throughout the day. It is a public space, regimented by the design of traffic lights which prioritize pedestrian crossing on a dependable and predictable circuit. I propose that this location provides an opportunity for the twenty-first century opera designer to use its existing cycle to create a dynamic and unique performance space for opera. While the idea of performing opera outside of the opera house is not new, few have designed opera in a simultaneously public and dynamic space as I am proposing. This fresh approach to opera for the twenty-first century creates an experience for passer-bys and performers that is twofold: the scramble remains a public and utilitarian space meant for getting from one place to another, but it also becomes a performance space in which spectators and performers alike "play their parts". In short, the resulting experience of sound is hearing the city and the opera simultaneously, transforming the perception of the scramble as a public space into a heightened and transcended experience.

## The Guide: An Emerging Role in Participatory Theatre

Presenter: Derek Manderson, Drama
Faculty Supporter: Dr. Jenn Stephenson

As Canadian culture continues to grow an obsession with individualism in the era of the selfie, theatre has similarly found a new focus in shifting the spotlight from the stage to the audience. The result of such interests is participatory theatre, which reimagines the audience as players in a shared experience. In an evolving form of performance, audience members abandon the darkened theatre seats and the comfort of passivity in favour of agency. While thrilling, this radical shift in perspective is often accompanied by intense feelings of fear and insecurity. How can anyone be a "good" participant without knowing what to do? What if something goes wrong? To combat apprehension in would-be players, a new role has begun to appear in contemporary participatory theatre: the guide. Existing both in the reality of the performance and the world of the audience, the guide provides a safe space for participation. This role establishes the rules, and eases discomfort when necessary to ensure players can confidently contribute. By applying dramatic theory to a series of case studies, this presentation will highlight where the guide appears in contemporary Canadian theatre, and the critical function it plays in each performance's success. Not only does it ensure that audience members embrace the attitude of a player, it allows the participant to feel comfortable enough to reflect on the purpose of their newfound activity. Ultimately, the guide will prevent the average theatregoer from dreading participation by facilitating meaningful play that is equal parts entertaining and aesthetically satisfying.

## Ein(Stein) on the Beach (in Egypt): 'Syncopated Time' and the Formation of a 'Continuous Present' in Philip Glass' *Akhnaten*

Presenter: Lorenzo Sivilotti, Dan School of Drama and Music
Faculty Supporter: Dr. Natalie Rewa

In her 1935 lecture *Plays*, Gertrude Stein identifies a problem at the heart of the theatrical experience, that "your emotion concerning [the] play is always either behind or ahead of the play at which you are looking and to which you are listening" (Stein 58), creating an emotive and cognitive asynchronicity between the audience and the work, which she terms "syncopated time" (Stein 58). At the heart of this disconnect is her observation that "plays are either read or heard or seen" (Stein 59); the audience's difficulty navigating this trialectic relationship is largely responsible for their desyncing from the emotional time-sense of the work. As the theatrical medium involving perhaps the most complex interplay of reading, hearing, and seeing, opera is an excellent subject for the application of Stein's theories.

This paper applies Stein's questions of cognitive perception and emotional time to *Akhnaten*, Philip Glass' third opera (which recently received its Metropolitan Opera premiere), in order to explore how the work navigates the problems which Stein identifies. This paper will argue that Glass' iterative and 'minimalist' compositional style creates a synthesis of reading, hearing, and seeing to create a 'continuous present,' allowing the audience to remain in emotive and cognitive synchronicity with the work, and thus preventing them from falling into 'syncopated time.' In this way, contemporary opera offers novel approaches to the performative relationship between a work and its audience.

**Works Cited**

Stein, Gertrude. "Plays." *Writings and Lectures 1911-1945*, edited by Patricia Meyerowitz, Peter Owen, 1967, pp. 58-81.

## Session VIII: Detection, Diagnosis, & Dodging

**Seminar Room, Stauffer Library, Room 121**
**Friday, March 13, 1:30 – 2:10**
**Moderator: Dr. Karalyn McRae, Centre for Teaching and Learning**

## The Effect of the Immunosuppressant Drug, Tacrolimus, on Nitric Oxide Production in the Immortalized First Trimester Extra-Villous Trophoblast Cells

Presenter: Kassandra Coyle, Life Science
Faculty Supporter: Dr. Frederick W.K. Kan

The remodeling of uterine spiral arteries and subsequent placental formation are crucial for normal growth and development of the fetus. These processes are heavily dependent on the functioning of the extra-villous trophoblast cells and their ability to invade into the maternal decidual blood vessels. Reduced trophoblast invasion and shallow spiral artery remodeling can lead to a number of gestational complications including intrauterine growth restriction (IUGR). Therapeutic intervention with low dose immunosuppressant tacrolimus was able to prevent implantation failure and IUGR in obese and diabetic mice. Treatment with tacrolimus successfully aided in spiral artery modification that was conducive to a successful pregnancy. Further, tacrolimus has shown promise in restoring trophoblast cell functioning in the immortalized first trimester HTR8/SVneo extra-villous trophoblast cells cultured under preeclampsia-like conditions in vitro. However, the mode of action of tacrolimus has yet to be elucidated. Here we attempt to uncover the mode of action of tacrolimus by examining its effects on eNOS activity within the trophoblast cells. Cells were treated with tacrolimus (10 ng/mL), L-NAME (40 nM/mL) or a combination of both and subjected to analysis by several functional assays. The data obtained in this study is suggesting that L-NAME treatment has

inhibitory effects on the levels of the pPGR, pSTAT3 and NO within the HTR8/SVneo cells. The use of low-dose tacrolimus abrogated the suppressive effect of L-NAME and restored the levels of the pPGR, pSTAT3, and NO within the cells.

### The Combined Effects of Recombinant Human Oviductin (rHuOVGP1) and Progesterone on Tyrosine Phosphorylation of Sperm Proteins

Presenter: Sydney Vanderkooi, Biomedical and Molecular Sciences
Faculty Supporter: Dr. Frederick W.K. Kan

Worldwide, around 15% of couples who seek to conceive suffer from infertility. Assisted reproductive technology (ART) would have never been possible without research endeavors. However, to further improve the fertilization rates of ART procedures, there is still more to be done. The mammalian oviductal cells synthesize and secrete a major glycoprotein know as oviductin, or oviduct-specific glycoprotein (OVGP1). This protein has been implicated in enhancing sperm capacitation, sperm motility, sperm penetration and fertilization. Our lab has successfully produced recombinant human oviductin (rHuOVGP1), which has been shown to enhance tyrosine phosphorylation of sperm proteins, a biochemical hallmark of capacitation that takes place in the sperm tail. Additionally, the sex hormone progesterone ($P_4$) has been implicated in increasing the influx of calcium ions through the CatSper channel which is similarly located in the sperm tail and is an important aspect of capacitation. Here we performed a study in the hope of gaining a better understanding of the mechanism of sperm capacitation by examining if rHuOVGP1 works synergistically with $P_4$ to regulate tyrosine phosphorylation of sperm proteins during capacitation. Fresh sperm samples were processed and capacitated at different time points in the absence or presence of rHuOVGP1 (50 μg/mL) with or without $P_4$. The results obtained indicate that both rHuOVGP1 and $P_4$ can enhance tyrosine phosphorylation of sperm proteins, however, the best result was obtained when rHuOVGP1 was used in combination with $P_4$. The addition of rHuOVGP1 with $P_4$ to the capacitation medium may improve the fertilization rates of ART procedures.

## Session IX: Youth & Well-Being

**Speaker's Corner, Stauffer Library**
**Friday, March 13, 2:00 – 3:00**
**Moderator: Dr. Alexandra Pedersen, Physics**

### Educational Epidemic: A Study of the Academic Underachievement of Luso-Canadians

Presenter: Carley Alves, Sociology

The Luso-Canadian community has been subject to a multitude of unfortunate social injustices since the initial waves of mass migration between the 1950's and 1970's. A community which has historically contributed greatly to Canadian society, has been marginalized intergenerationally in both the academic and professional realms of Canadian society. The Luso-Canadian community, specifically in Toronto where the highest concentration resides, has historically been marked by high drop-out rates, overrepresentation in special education and remedial reading programs, and extremely low rates of post-secondary education. These barriers early in life have been identified by numerous sources as being the cause for various subsequent issues the Luso-Canadian community has faced including vast underrepresentation in other professional spheres of Canadian life. While numerous causes can be identified to explain the reasoning for these injustices, it is clear that legislative actions by the school boards and board of education must be taken to battle this issue and ensure that Luso-Canadians fulfill their full potential.

## MUSE pilot study

Presenter: Chloe Coulson, Caitlin Ma, Azra Jeraj, and Anastasia Lichmanova, School of Nursing
Faculty Supporter: Dr. Marian Luctkar-Flude

Increased levels of stress and anxiety have negative impacts on nursing students' mental health and education. The purpose of the MUSE pilot study is to assess the feasibility and impact of two methods of technology-assisted meditation on stress and anxiety: the MUSE headband and the Headspace meditation application. These forms of meditation have been shown in the literature to decrease levels of stress and anxiety and improve mental wellbeing.

This pragmatic randomized control trial (RCT) occurred over a five-week time frame during fall 2019. In order to test the effectiveness of these interventions, eight nursing students at Queen's University were recruited, three of whom withdrew. Individuals were eligible for this study if they were 2nd, 3rd, or 4th year Queen's nursing students in the four-year stream or advanced standing track (AST) program. The study intervention consisted of two 10 to 15 minute meditation sessions per week for five weeks, which were conducted at Queen's University School of Nursing. Participants completed validated self-reported pre- and post-surveys to evaluate stress and anxiety levels before and after the study. After the participants completed 10 mediation sessions, qualitative data was collected in order to gather feedback on participant experience.

In this presentation the study purpose, procedures and outcomes will be discussed, while additionally highlighting the experience and perspective of novice undergraduate researchers. Future directions for data analysis and hopes of sharing the findings within the School of Nursing will be addressed.

## Do Canadian Youth Use Alcohol and Cannabis as Compliments or as Substitutes?

Presenter: Ian Goodall-Halliwell, Life Sciences
Faculty Supporter: Dr. Russel Callaghan, UBC

It remains unclear as to whether cannabis and alcohol are used as substitutes or complements by Canadian adolescents. Since co-use of these two drugs can have a high economic and personal cost, and because of the recent legalization of recreational cannabis, it is essential to determine whether adolescents are using these drugs as compliments or substitutes. Using data from the Canadian Institute for Health Information's National Ambulatory Care Reporting System, a quasi-experimental design was created to track hospital admissions marked with either alcohol or cannabis-related codes around the minimum legal drinking age (MLDA). There was a strong increase in alcohol admissions and a weak decrease in cannabis admissions after the MLDA. This is indicative of a weak substitution effect between cannabis and alcohol. The findings of this study mimic those of similar quasi-experimental studies done in the United States, but there is now a need to apply the same quasi-experimental design in the more liberal Canadian cannabis environment.

## Session III: Poster Presentations

**Queen's Learning Commons, Stauffer Library**
**Presenters will be present at posters Thursday, March 12, 11:30-1:00**
**Posters will be on view March 12 & 13**

### 1. Tyrosine-protein kinase Src regulates Kv1.5 channel activity and membrane expression through interaction with the N-terminus of the channel

Presenter: Taylore Dodd, Life Sciences
Co-authors: Tingzhong Wang and Shetuan Zhang

Kv1.5 is a voltage-gated potassium channel that generates the ultra-rapid delayed rectifier potassium current ($I_{Kur}$) important in the repolarization of the atrial action potential. Malfunction of the Kv1.5 channel often results in atrial fibrillation (AFib). A reduction in Kv1.5 current ($I_{Kv1.5}$) occurs upon activation of the endogenous tyrosine-protein kinase Src. The Src $SH_3$ domain binds to proline-rich motifs located within the N-terminus of Kv1.5. Disruption of these binding motifs has been involved in the development of familial AFib. The mechanism underlying the reduction of $I_{Kv1.5}$ upon Src activation has not yet been established and the relationship between Kv1.5 and Src is poorly understood. Therefore, the present study aims to further elucidate the mechanism behind $I_{Kv1.5}$ reduction. The hypothesis that Src regulates Kv1.5 activity by altering the density of mature membrane-localized channels was tested using whole-cell voltage clamp and Western blot analysis. We demonstrate that Src tonically inhibits Kv1.5 activity and decreases the density of mature membrane-localized channels. Kv1.5 channels possessing mutations within the Src binding motifs were also investigated and it was determined that each binding motif contributes to the Kv1.5-Src relationship, however, the binding of Src to an individual motif is sufficiently effective. Our findings indicate that Src regulates Kv1.5 through an interaction with the N-terminal binding motifs and suggests that the inhibition of forward trafficking may be involved in the underlying mechanism. (Supported by the Heart and Stroke foundation of Canada and The Canadian Institutes of Health Research).

### 2. Prosody of Ojibwe Discourse Markers

Presenter: Sonja Frazier, Department of Languages, Literatures, and Cultures
Faculty Supporter: Dr. Monique Dufresne, French Studies, and Dr. Rose-Marie Déchaine, UBC

Discourse markers (DMs) are optional, sequentially dependent sentence-initial items (Schiffrin, 1987) that are used to bracket units of talk (e.g. *oh, well, because, y'know, now* ). This research aims to better understand Ojibwe DMs which typically occur as the first or second element of a sentence (Fairbanks, 2016). The proposed analysis seeks to understand the prosody of Ojibwe DMs broadly and specifically their use in narrative structure. The data is drawn from *Gakina Dibaajimowin Gwayakwaawan* ( *All Teachings are Correct* ) by Nancy Jones, 2013. The analysis was done by using the programs *Audacity* and *PRAAT* to identify individual sentences and their pitch prominences. Through careful listening and pitch tracking, prosodic properties of DMs were found to indicate the following:

1. DMs attract the most prominent pitch in the sentence.
2. DMs are used by the speaker to attract the hearer's attention; in this sense they are interactional (Franks-Job, 2006).
3. DMs are used by the speaker to structure the narration; as such they interact with topic changes and emphasis (Lenk, 1998)

This study creates a more complex picture of Ojibwe DMs and adds to our understanding of the language.

**References:**

Fairbanks, B. 2016. Ojibwe Discourse Markers. University of Nebraska Press.

Franks-Job, B. 2006. A dynamic-interactional approach to discourse markers. In *Approaches to discourse particles,* K. Fischer (ed.) pp. 395–413. Amsterdam: Elsevier.
Lenk, U. 1998. Discourse markers and global coherence in conversation. *Journal of Pragmatics* 30(2):246-257
Ogimaawigwaebiik [Nancy Jones] 2013. Gakina Dibaajimowin Gwayakwaawan. In *Dibaajimowinaan; Anishinaabe Stories of Culture and respect* ; Nigaanigiizhig [Jim Saint-Arnold] (ed.), Great Lakes Indian Fish & Wildlife Commission, 9-10.
Raso, Tommaso. 1996. Prosodic constraints for discourse markers. Spoken Corpora and Linguistic Studies. In *Spoken Corpora and Linguistics Studies* , T. Raso & H. Mello (eds.) 411-467. Benjamins: Amsterdam.
Schiffrin, D. 1987. Discourse Markers. doi: 10.1017/cbo9780511611841.

## 3. Investigating the toxicity of naphthenic acid fraction components from oil sands process-affected water to developing fathead minnow (*Pimephales promelas*)

Presenter: Brianna Jackson, School of Environmental Studies
Faculty Supporter: Dr. Diane Orihel

The extraction of bitumen from Alberta's oil sands region generates large volumes of oil sands process-affected water (OSPW) that is stored in tailings ponds. Toxic constituents present in OSPW such as naphthenic acid fraction components (NAFCs) can cause adverse effects to aquatic life. Recent research has focused on the toxicity of NAFCs to highly vulnerable early life stages of fish. Here we examined the embryotoxicity of NAFCs (0-54 mg/L) extracted from OSPW to native fathead minnow (*Pimephales promelas*) from 1-day post-fertilization to hatch in a semi-natural setting at Queen's University's Biological Station. Embryo heart rate, mortality, prevalence and severity of malformations at hatch, post-hatch mass, and basal activity at hatch was examined. Embryo heart rates declined with increasing NAFC concentration, preceding pronounced exposure-response patterns of mortality and non-viable hatches. Visible malformations included cardiovascular (pericardial edema; present in 81.51% of non-viable hatches), craniofacial (reduced jaw and head size; 68.96%), myoskeletal (spinal curvatures; 60.90%), and peritoneal (yolk sac edema; 26.44%) malformations, that significantly increased in severity with increasing NAFC concentration. Fish that survived lethal concentrations displayed evidence of nervous system impairment including elevated patterns of erratic twitching. Post-hatch mass generally increased with increasing NAFC exposure, potentially as a compensatory-like response. Results of this work are the first to be reported in a semi-natural exposure setting and provide important toxicological information that will aid future policy directives for the management of OSPW in Alberta, Canada.

## 4. Women at the Operatic Helm

Presenter: Maia Journeau, Dan School of Drama and Music
Faculty Supporter: Dr. Colleen Renihan

The representation of women in opera, both on and off stage, has been an issue for all of opera's 400-year history. In her now famous book *Opera, or, the Undoing of Women* (1979), Catherine Clement was one of the first to bring feminist theory to bear on opera scholarship, revealing true problems in the representation of operatic women on the stage in opera's canon. But as I explore in this project, the same can be said for opera's women *behind* the scenes. According to 2018 stats from OPERA America, out of the 786 total leadership positions held in North American houses, only 34.5% of administrative roles were occupied by women.

In this proposed poster presentation, I will analyze the data from 1990 to the present with respect to the lack of gender parity in the opera industry in North America. I will also report on a series of interviews I conducted with several prominent female-identifying leaders in the opera industry, revealing currents in their narratives, and lessons for future women in this field. I will use this data to outline possible steps towards a more equitable opera industry. As Francesca Zambello, the most distinguished female director/general director in North America today, shared in a recent speech: "Opera needs truly excellent leadership to thrive,

and when women are discouraged, it halves our pool of possibilities. We need leadership that is representative of the diverse audience we have and hope to grow."

## 5. The Future of Fracking: Zeolites

Presenter: Ambre Lambert, Shanwa Lee, and Rachel Miller, Biochemistry
Faculty Supporter: Dr. Brown

Hydraulic fracturing has become a very popular method of extracting natural gas. Even though there has been an increase in fracking activity, fugitive emissions like methane and hydrogen sulfide are escaping more frequently, creating health hazards. This application will focus on an effective method of reducing these fugitive emissions based on a very unique proposal: using molecular sieves or zeolites to capture methane and hydrogen sulfide molecules. We propose running laboratory trials with zeolites that have an affinity for methane and hydrogen sulfide molecules, to examine their effectiveness.

## 6. Identifying the repellent genes in Cannabis (*C. sativa*) through CRISPR screening. The hidden use of Marijuana

Presenter: Ambre Lambert, Shanwa Lee, and Rachel Miller, Biochemistry
Faculty Supporter: Dr. Mark Ormiston

Chemical pesticides have caused numerous deaths of people, animals, and plants. As a result, alternative pesticides which are health beneficial and ecological are needed. *Cannabis sativa*, known for its psychoactive effects, can be the solution to this problem. It has excellent repellent characteristics as seen through its use as a companion plant, as well as in-vitro studies. However it has its drawbacks due its controversial nature and lack of research. To solve this problem, our paper aims to locate the non-vital genes in *C.sativa* that cause its repellent effects (R-genes) through CRISPR screening. To optimally identify the R-genes, the random knocked out genes of *C.sativa* were compared to the percentage of alive root-knot nematodes ( *M.incognita*) in the plant's soil. In our experiment, four plants were established per sample: Plant A which is a normal *Cannabis sativa*, Plant B which is a normal *Cannabis* sativa being infected by *M.incognita*, Plant C which is a genetically modified *Cannabis sativa*, and Plant D which is the same as Plant C except it is being infected by *M.incognita*. Then the percentage of alive nematodes will be compared in Plant B and D to identify the R genes. The discovery of R-genes is important as it can be used to discover a new class of repellent molecules. They can also be inserted into crops or household plants, giving them *Cannabis sativa*'s repellent effects, and benefiting agricultural and health fields.

## 7. Automatic and manual extraction of speech and language characteristics associated with depression

Presenter: Ross Langley, Life Sciences

Early and accurate diagnosis and intervention of depression is important to facilitate timely, direct, and appropriate interventions with potential for improved clinical outcomes. Delays in the diagnosis of patients with depression may be reduced if simple tools were available to indicate probability of diagnosis. Clinicians use speech and language characteristics to establish current mental state and diagnosis. The use of automatic acoustic feature extraction allows leveraging pitch, power, and variability and can provide an unbiased evaluation of speech.

This study examined speech samples from a youth at-risk cohort, aged 9-25, and developed a manual rating system of speech and language characteristics, which involved rating short segments of audio and transcript on emotion, sentiment, affect, and richness. This competed against an automated model of extracting zero-crossing rate, energy, the entropy of energy, and Mel-frequency cepstral coefficients to identify speech characteristics associated with major depressive disorder.

The results showed that the automatic feature extraction outcompeted the manual rating system in explaining the difference in speech between participants with and without major depressive disorder through speech and language characteristics. While the extraction of audio features is not a substitute for the clinical interview, the ability to provide an unbiased prediction of vulnerability to depression from speech may assist clinicians in early diagnosis.

## 8. Association between physical activity and subsequent changes in disease activity in people living with rheumatoid arthritis

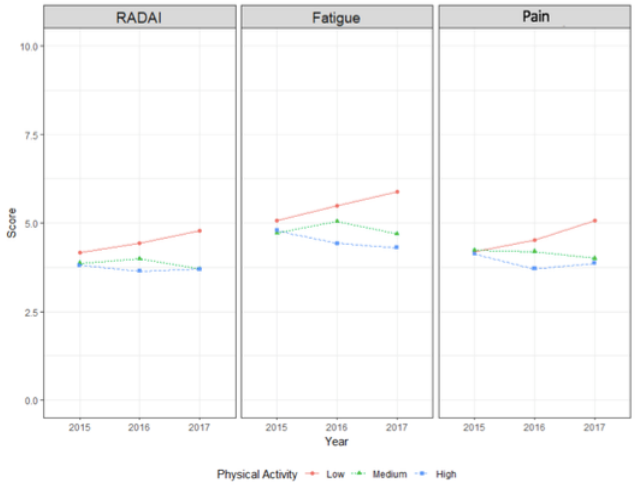
Presenter: Kiera Lee-Pii, Life Sciences
Co-Authors: Hui Xie, Yufei Zheng, Linda Li, Diane Lacaille

Various studies have demonstrated how rheumatoid arthritis (RA) patients perform less physical activity than the general population, likely due to joint pain and impaired physical function. However, physical activity (PA) may have beneficial effects on reducing inflammation and RA disease activity. The objective of this study was to evaluate the association between baseline PA levels and self-reported changes in measures of RA disease activity.

We conducted a longitudinal study using 2015-2017 data from an annual survey administered to an RA cohort in BC. Subjects were grouped into three levels (Low, Medium and High) of PA at the baseline year (2015) according to the specifications of the International Physical Activity Questionnaire. Subsequently, we examined whether baseline PA was associated with changes in RA disease activity outcomes over 2015 to 2017, using fitted linear mixed models for each measure and adjusting for age, sex and other covariates.

Of the 169 patients who responded to the 2015 survey, 29.6%, 42.0%, and 28.4% were grouped into Low, Medium, and High levels of PA, respectively. Our results demonstrated that the Low PA group experienced significant worsening of disease activity outcomes over the three years, including those of the Rheumatoid Arthritis Disease Activity Index (RADAI) (p=0.007), Fatigue (p=0.007), and Pain (p=0.007). Those in the Medium and High PA groups at baseline experienced either a decrease or no change in their disease activity outcomes over time. These results add to the accumulating evidence that physical activity may reduce disease activity and is essential to RA management.

**Figure 1. Time Trends for Mean RADAI, Fatigue, and Pain by Baseline Physical Activity Level**



## 9. Physical activity in people living with rheumatoid arthritis compared to general population controls

Presenter: Kiera Lee-Pii, Life Sciences
Co-Authors: Hui Xie, Yufei Zheng, Linda Li, Diane Lacaille

The health benefits of regular physical activity have been well established. The Canadian Physical Activity Guidelines (CPAG) specify that adults should accumulate at least 150 minutes of moderate-to-vigorous intensity physical activity (MVPA) per week. Our study objectives were to: 1) determine the proportion of RA patients in British Columbia (BC) who meet the CPAG, 2) identify the determinants of meeting the recommendations, and 3) compare the duration of time spent in MVPA relative to general population controls using self-reported data.

A cross-sectional study was conducted using 2015 data from an annual survey administered to an RA cohort in BC. Normative physical activity data was obtained from the Canadian Community Health Survey. Adjusting for age and sex, the proportion of RA patients who met the guidelines was compared to the general population. Multivariable logistic regression analysis was used to identify significant determinants of meeting these guidelines and an ordinary least squares (OLS) model evaluated differences in average MVPA time. A two-part model evaluated the overall amount of MVPA performed by both the RA sample and the general population.

After standardization, the sample of 169 RA patients was 21% less likely to meet the CPAG than controls ($p=0.028$). Individuals who were Caucasian ($p=0.019$), had better physical function ($p=0.003$), were an ex-smoker ($p=0.022$), and had more pain ($p=0.018$) were more likely to meet guidelines. Although, overall, RA patients spent significantly ($p<0.001$) less time in MVPA per week than controls, there was no significant difference between the groups among those who exercised weekly.

## 10. The Celtic Otherworld in Patrick Rothfuss's Kingkiller Chronicle

Presenter: Cameron MacDonald, English
Faculty Supporter: Dr. Ruth Wehlau

As readers of fantasy literature, we look for clues in the stories we read, familiar landmarks whose shapes we unconsciously know. These landmarks ensure that, while the stories we read may be new to us, we know (or think we know) where it leads. One legend commonly adapted as a landmark for modern fantasy is the Otherworld, a parallel dimension of supernatural creatures that has featured in Celtic stories for thousands of years. It is a magical place that inspires both fear and wonder. Patrick Rothfuss adapts this legend for his Kingkiller Chronicle. He calls his version of the Otherworld the Fae Realm, and the supernatural creatures who inhabit it Fae Creatures. In this paper I attempt to show that Rothfuss's strikingly Celtic Fae Realm functions as a unique sort of landmark; since stories of the Celtic Otherworld are multifarious and often contradictory, and encounters with the Otherworld and its people often have diverse impacts on heroes, its presence in the Kingkiller Chronicle acts as an unsettling force, raising questions about the capacity of the initially invincible Kvothe to overcome the effects of this unpredictable obstacle.

## 11. Oral feeding outcomes of infants with neonatal abstinence syndrome

Presenter: Stephanie Nagy, School of Nursing
Faculty Supporters: Dr. Kim Dow and Dr. Sandra Fucile

The Government of Canada in 2016 officially declared the opioid crisis as a national public health emergency. [1]As the opioid crisis continues to prevail, the number of expecting mother's using opioids during their pregnancy is increasing, as well as complications associated with the infant's health. Neonatal abstinence syndrome (NAS) occurs when the infant experiences withdrawal symptoms, such as hyperirritability, excessive crying and tremors after birth due to the in-utero drug exposure. These

withdrawal symptoms often interfere with infant's ability to engage in oral feeds, and thus they receive their nutrients via tube feedings. [2] However, infants who are in the NICU must have achieve independent oral feeds before being discharged from the hospital. The concept of NAS infants having longer feeding times compared to other NICU infants has been a common assumption, but no research has sought out to quantitively prove this. This study will be conducted by a retrospective chart review and the participants will be infants with NAS who are in the NICU and require pharmacological interventions. This study group will be matched with a control group of infants, with respiratory distress syndrome, for birth age (1-week difference) and birth weight (≤500 g difference). Independent group t-tests will be conducted to determine if there is a statistically significant difference between the two groups in time to reach independent oral feeds and a Chi square test will be used to compare baseline demographics.

**References**

1. University of Wisconsin. (2015). *Canada: Opioid consumption in morphine equivalence (ME), mg per person*. Retrieved from http://www.painpolicy.wisc.edu/sites/www.painpolicy.wisc.edu/files/country_files/morphine_equivalence/canada_me_methadone.pdf
2. Velez, M., & Jansson, L.M. (2008). The opioid dependent mother and newborn dyad: non-pharmacologic care. *Journal of Addiction Medicine, 2(3),* 113-120. DOI: 10.1097/ADM.0b013e31817e6105

## 12. It's a date! But why are men still expected to pick up the check?

Presenter: Ines Nannsen, Life Sciences

After years of treacherous efforts to break out of traditional gender roles, one seems to remain across different ages, education levels, and income groups. 82% of men and 58% of women, agree that men should pay for common expenses. Additionally, two-fifths of women reported being bothered if the man didn't offer to pick up the tab. If we expect gender equality in all other aspects of society, how come "dating" is immune to the concept?

In this study, the underlying preferences for partner selection are explored, exploring the evolutionary drive to find a mate who is financially stable and can provide security for a future offspring. Sexual selection has evolved over generations and led to psychological mechanisms used to assess the viability of a mate in order to increase reproductive success. This study shows that, ancestral women evolved to select men that show signs of power, status and stability to ensure that he can provide for their offspring in the future; what to cavewomen was prey from a hunt, to the modern woman is a credit card. While this might be considered a regression of equality, the evolutionary psychology of mating selection can explain how this display of economic stability and power, attracts the female.

Thanks to ancestral women's mating choices and sexual selection, it seems as though chivalry is not dead, after all.

## 13. Marfan Syndrome: Using genetic maps to lead the way to new diagnostics and treatments

Presenter: Ines Nannsen, Life Sciences

Marfan Syndrome is a heritable disorder of connective tissue caused by a mutated extracellular matrix glycoprotein protein, affecting 1 in 5,000 people worldwide. This protein is responsible for support and elasticity meaning that people affected by this disorder manifest with weakened tendons, ligaments and other connective tissues. Patients exhibit a wide variety of symptoms including, scoliosis, abnormally slender digits, vision problems and enlarged blood vessels. Marfan's follows an autosomal dominant pattern of inheritance and has a penetrance of 100%, meaning that anyone inheriting the gene will be affected by

the disease. This study focuses on the developments in the field of DNA mapping and how these advancements have improved the diagnostic tools and treatments for this disease. After exploring the methodology of DNA mapping, the LOD scores for Marfan Syndrome are discussed and compared in order to conclude which chromosome carried the mutation; it was found that chromosome 15 carries. Additionally, the results compare and contrast different genetic markers and identifies a link between markers D15529 and D15545. Although this technology is fairly recent and has thus not been studied as extensively as traditional methods, the information gathered in this research illustrates the methodology of DNA mapping and how; by understanding the gene expression and mutation at a biochemical level, diagnostics and treatments for patients can be tailored specifically to the disease and not just management of the symptoms.

## 14. Exploring the needs of parents at post-secondary institutions: Findings from a cross-sectional survey capturing parenting-related experiences on campus

Presenters: Tessa Ogilvie and Daria Okonski, School of Nursing
Faculty Supporter: Dr. C.L. Goldie and A. Papanicolaou

**Problem/Issue**
Student parents attending and working within post-secondary institutions have low visibility and high needs, as they balance scholarly and parenthood responsibilities. The Queen's University Child Friendly Campus initiative (QUCFC) was established in 2015 to improve access to resources, as well as cultivate a sense of community for parents at Queen's University. The initiative is multi-faceted and targets three key pillars: community, advocacy, and sustainability.

**Methods**
A needs assessment survey was conducted from May to December 2017. Its aim was to capture parenting-related experiences on campus by posing the research question, "How can Queen's University become a child friendly campus?". Students, faculty and staff who self-identified as parents of dependent pre-school aged children were invited to participate in a cross-sectional survey delivered through Qualtrics. Participants were recruited through convenience sampling, descriptive statistics and thematic analysis were used to analyze quantitative and qualitative data. Ethical compliance was obtained from the Health Sciences Research Ethics Board of Queen's University.

**Results**
Fifty-five responses were obtained from the survey (n=50 female, n=5 male). The median age of respondents was 34 years, students consisted of 53% of the sample and the majority reported having one or two children (68%). Those who felt unsupported (n=21) provided qualitative recommendations for increasing inclusivity. The themes included physical infrastructure resources, accessible childcare, and financial benefits.

**Conclusions**
These findings can inform future interventions offered to student parents on Queen's campus and be shared with the larger academic community to promote dialogue about the unique needs of student parents.

## 15. The Museum That Queen's Gave Away: Rediscovering the Queen's Museum of Near Eastern Archaeology

Presenter: J. Elyse Richardson, Classical Studies
Faculty Supporter: Dr. M. Barbara Reeves

On October 26th 1954, a Museum of Near Eastern Archaeology opened in the Old Arts Building (modern Theological Hall), the home of Queen's Theological College. The Museum had been conceived of and executed by Dr. A. Douglas Tushingham, a Biblical Archaeologist and scholar of Old Testament criticism, who came to work at the College as professor. The Museum only remained open for a little over one year,

until Dr. Tushingham, who had left Queen's to accept a job with the Royal Ontario Museum (ROM), requested the items. Both Theological College and Queen's University subsequently agreed to dismantle the museum and transfer the materials to the ROM, where the items remain today. This project reveals how the Museum came into being, what its function at Queen's was, and the context surrounding the sudden and tragic loss of such a culturally and educationally significant collection. The research collected has come from a variety of news sources, online publications, and archival material provided by Queen's Archives and the ROM Registration Department. As a result of this study, I and my professor (Dr. Barbara Reeves) are establishing through Queen's Library an online exhibit featuring items from the original museum, as a way of amending the past and providing the educational resources initially intended through the museum's establishment. The story of this museum, and the journey its collections took, raises important questions in the field of Museum Studies such as the responsibility cultural institutions have to promote cultural heritage, and the importance of modernizing 21st century collections to include online databases.

## 16. "Not just somebody's mother": University Campus Daycare Co-operatives in Ontario and British Columbia, 1960s to 1970s

Presenter: Katherine Clare Simon, History
Faculty Supporter: Dr. Lisa Pasolli

Daycare is now a common sight on university campuses, but this was not always the case. Using the case studies of Simon Fraser University, the University of Toronto, and Queen's University, this project examines the creation of daycare co-operatives on university campuses. The research makes clear that the formation of the co-operatives stemmed from the New Left and Women's Liberation Movements. The radical ideology that the co-operatives took from these movements frequently caused friction and conflict with the liberal university and provincial administration. The co-operatives challenged and adapted to these pressures. They also challenged the nuclear family and the gendered division of care work. In the end, however, the projects were co-opted by university administration. Despite their inability to continue as co-operatives, these experiments in accessible and affordable daycare laid the groundwork for the recognition of the importance of childcare on university campuses and the responsibility of institutions to provide it.

## 17. Remote spatial memory processing in the juvenile brain and contribution of the hippocampus

Presenter: Tanisse Teale, Neuroscience, Carleton University
Faculty Supporter: Dr. Matthew Holahan

A majority of research into memory formation and consolidation is commonly focused on adult brains and organisms. Our work focuses on the mechanisms of memory within the developing, juvenile brain in an attempt to provide a more full understanding of the underlying neural mechanisms of memory formation, consolidation and storage. During juvenile development, the brain undergoes important remodeling and synaptic pruning towards shaping the adult brain. Thus, during this time, memories may be lost through the remodeling of hippocampal-neocortical connections. The significance of comparing juvenile and adult memory processes is critical in understanding the structural changes that occur within memory-specific circuits associated with long-term memory formation. To provide a comparison of the neurobehavioral aspects of long-term memory formation in juveniles and adults, we trained Long Evan's rats on a spatial task on postnatal days 16, 18, 20, 25, 30 or 50 (adults). Each age group was then tested for memory recall 24 hours or 3 weeks later. We noted that memory recall showed a dramatic change at postnatal day 20 such that memory recall at postnatal day 25 was similar to adult levels. We then used immunohistochemistry to quantify and analyze neural activity patterns in brain regions thought to underlie the short- and long-term storage of spatial memories. Identification of these regional activity changes during juvenile periods and comparison with adults allows us to explore the function and organization of interacting brain regions in long-term spatial memory storage during development.

## 18. Possible ore-controlling structures for the Woxi Au/Sb/W deposit in Tanghuping Mining Section, Hunan Province, South China

Presenter: Xi Wang, Geological Sciences and Geological Engineering
Co-authors: Laurent Godin, Jinjun Yang, Kai Zou
Faculty Supporter: Dr. Victoria Remenda

The Woxi Mining District in Hunan Province, South China, hosts numerous high tonnage gold, stibnite, and tungsten strata-bound deposits. Our research focuses on the geological characteristics of the Tanghuping and Xintianwan faults in the Tanghuping Mining Section, within the Woxi Mining District. The Woxi Mining District exposes mainly slate, with interbedded quartz sandstone and clastic rocks, cut by three faults: the Tanghuping, Xintianwan, and Woxi faults. We test the hypothesis that the mineralization in this district is structurally controlled, related to motion along these faults. While the presence of Tanghuping and Xintianwan faults in the Tanghuping Mining Section has not been confirmed, the proposed faults are interpreted to be intimately related to mineralization. The results of previous field works have corroborated the location of the Tanghuping and Xintianwan faults and suggest that zones of high strain coincide with these faults. However, recent core logging data do not show evidence of fracture zones at the expected depth. It is therefore still unclear if the high strain is related to the presence of the faults or if it is the result of fold-related interlayer flexural slip. Microstructural analysis is used to further characterize strain-induced recrystallization textures and sense of shear near and within the interpreted fault zones. Understanding this relationship is important to assist exploration in detecting ore systems on a regional scale and identify the most profitable areas.

## 19. Streamlining the Testing Process of Photonic Chips

Presenter: Anne Xie, Physics, Engineering Physics and Astrophysics
Faculty Supporter: Dr. Bhavin Shastri

The Shastri lab focuses on generating advanced photonic chips for signal processing and computing by combining artificial intelligence (AI) and photonics. These chips are utilized in neuromorphic silicon photonics which has various applications such as improving computational efficiency in AI and neuromorphic computing hardware. One of our advanced chips can be divided into three physical components: receiving a light signal, modulating the signal, and lastly detecting the signal with a photodetector on chip. Prior to utilizing these chips for experiments, it is vital to ensure that all components are functioning correctly.

My work focused on streamlining the testing process of the photodetector by improving the signals used within the process. In order to test the photodetector, the light entering must be modulated externally using a Mach-Zehner Modulator (MZM). The MZM takes in a light signal and splits it into two where they experience a phase shift and when the two are recombined create a modulated signal. The signal's modulation is determined by changing the radio frequency (RF) signal sent from a driver into the modulator.

Another aspect of my work was enhancing the control of the RF signal produced by the driver. The driver requires specific positive and negative voltages to generate ideal frequencies which are supplied by a unique power source. The voltage source was designed to ensure that the driver never received a damaging current or voltage and had a user-friendly interface to control the modulation of the signal.

## Alphabetical List of Presenters

| Presenter | Session |
|---|---|
| Aguiar, Julia | Session II |
| Altberg, Carly | Session VII |
| Alves, Carley | Session IX |
| Bandukwala, Manahil | Session V |
| Bringeland, Stephanie | Session I |
| Coulson, Chloe* | Session IX |
| Coyle, Kassandra | Session VIII |
| Dodd, Taylore* | Session III |
| Frazier, Sonja | Session III |
| Gharib, Zainab | Session I |
| Gibson, Isobel | Session IV |
| Godin, Laurent* | Session III |
| Goodall-Halliwell, Ian | Session IX |
| Gukert, Talia | Session IV |
| Heckert, Xavier | Session II |
| Helferty, Emily | Session VI & VII |
| Hook, Fred | Session VI |
| Huk, Darby | Session V |
| Jackson, Brianna | Session III |
| Jeraj, Azra* | Session VIII |
| Journeau, Maia | Session III |
| Lacaille, Diane* | Session III |
| Lalani, Sarenna | Session IV |
| Lambert, Ambre* | Session III |
| Langley, Ross | Session III |
| Lawryshyn, Diana | Session V |
| Lee, Shanwa* | Session III |
| Lee-Pii, Kiera* | Session III |
| Li, Linda* | Session III |
| Li, Wendy | Session VI |
| Lichmanova, Anastasia* | Session VIII |
| Ma, Caitlin* | Session VIII |
| MacDonald, Cameron | Session III & V |
| Manderson, Derek | Session VII |
| McCoy, Katharine | Session II |
| Miller, Rachel* | Session III |
| Mostert, Hannah | Session VI |
| Nagy, Stephanie | Session III |
| Nannsen, Ines | Session III |
| Ogilvie, Tessa* | Session III |
| Okonski, Daria* | Session III |

| | |
|---|---|
| Pennacchietti, Matteo | Session I |
| Pulver, Ben | Session II |
| Richardson, J. Elyse | Session III |
| Romao, Vanessa | Session VI |
| Shaw, Alexander* | Session I |
| Simon, Katherine Clare | Session III & IV |
| Sivilotti, Lorenzo | Session VII |
| Sprang, Christian* | Session I |
| Teale, Tanisse | Session III |
| Thorpe, Billy* | Session I |
| Vanderkooi, Sydney | Session VIII |
| Vrckovnik, Trevor* | Session I |
| Wang, Tingzhong* | Session III |
| Wang, Xi | Session III |
| Williams, Jack | Session V |
| Xie, Anne | Session III |
| Xie, Hui* | Session III |
| Yang, Huilin (Galen) | Session I |
| Yang, Jinjun* | Session III |
| Zhang, Shetuan* | Session III |
| Zheng, Yufei* | Session III |
| Zou, Kai | Session III |

**SESSION III** are Poster Sessions.
Asterisk (*) signifies a group presentation.

## Acknowledgments

Inquiry@Queen's acknowledges the Office of the Vice Provost and University Librarian for financial support.

Inquiry@Queen's thanks all the staff and faculty in Queen's University Library who support the conference in many ways, and our faculty moderators who share their expertise, knowledge, and time to make the sessions a valuable learning experience for our undergraduate students.

## I@Q Steering Committee

Jackie Druery, Head Humanities & Social Sciences Librarian, Queen's University Library

Corinne Laverty, Research Librarian, Information Services, Queen's University Library

Vicki Remenda, Head, Department of Geological Sciences & Geological Engineering, Faculty of Arts & Science

Patrick Patterson, Reference Assistant, Law Library/Information Services, Queen's University Library

Catherine DeNoble, Reference Assistant, Education Library/Information Services, Queen's University Library