

Excellence *in* Graduate Research Symposium

*Presented by the UVic Graduate Students' Society
in partnership with the Faculty of Graduate Studies,
and the UVic Libraries.*

November 4 & 5, 2026

Thank you to all our partners, participants, & supporters
who made this event possible.

*Abstracts are listed alphabetically.
Please find within all the abstracts for the **PRESENTATION** sessions.
Poster session abstracts may be found in the separate corresponding
booklet.*

*A detailed timetable of presentators, topics, and timeslots will be
available separately.*

*The GSS respectfully acknowledges and thanks the many generations of stewards
of the unceded land on which we are situated that gives us life, and the air
we breathe, from the Ləkʷəŋən-speaking peoples, the Songhees, Xʷsepsəm/
Esquimalt, and W̱SÁNEĆ nations. We commit ourselves to truth, reconciliation
and decolonization.*

Presentations

Morgan Begg

Counselling Psychology

Co-Captains of the Hardship: International Students and Accompanying Partners' Experiences Overcoming Shared Challenges in Adjustment

Introduction: International students (IS) and their accompanying partners (APIS) represent an often-invisible partnership within Canadian communities, as research has focused primarily on IS. IS/APIS couples can experience significant adjustment difficulties that impact their well-being (e.g. culture shock, marginalization), and studies have shown that each partner's successful adjustment has reciprocal effects on the other's. However, no research has taken a strengths-based approach to explore how this process promotes successful adjustment. It is important to understand how IS/APIS couples ascribe meaning to their lived experience as a unique pair and collaboratively overcome challenges. This can be explored using Common Dyadic Coping (CDC), where partners face a shared stressor and engage in shared problem-solving and emotional regulation.

Purpose: As a portion of a larger study on IS/APIS couples' career decision-making processes in Canada, this study qualitatively explored IS/APIS understandings of how they co-navigate and overcome adjustment challenges as a pair.

Method: Interpretive Phenomenological Analysis was used to gather insights into couples' meaning-making process. Interviews focused on how couples make sense of their shared challenges, shifting roles and relationship dynamics, and collective coping efforts since transitioning to Canada as it relates to the CDC model.

Results: Preliminary results suggest three primary themes across couples that reflect key tenets of the CDC model: (1) All couples could recognize distinct successes among their transitional hardships; (2) A common process in successful adaptation was balanced role division between partners; (3) Mutual emotional support was paramount to their collaborative coping process, with partners often indicating that they would not be successful alone.

Conclusions: This study provides unique insights into promoting coping amid institutional barriers that impact IS/APIS couples' transition into Canadian communities. Understanding how couples display CDC processes can inform service provision (e.g., university counselling services) and strengthen comprehensive, relational supports for students and their families.

Madison Blatchford

Physics & Astronomy

Three biological models treated with gold nanoparticles, docetaxel, and radiation

External beam radiotherapy (EBRT) and brachytherapy (BT) are popular methods to treat many cancers. However, EBRT and BT have side effects and there is a limit to how much radiation dose can be safely delivered while limiting side effects. Thus, there is a need to investigate novel methods that enhance the biological effects of radiation while reducing the side effects associated with radiation.

Gold nanoparticles (GNPs) can act as a radiosensitizer, making cancer cells more vulnerable to radiation. Docetaxel (DTX) can arrest the cell cycle in the G2/M phase, where cells are more radiosensitive. DTX also alters cellular transport of GNPs so that GNPs get trapped closer to the nucleus. When used together in radiotherapy, GNPs and DTX can cause synergistic effects. Vascularized tumour spheroids are 3D tissue cultures that mimic solid tumours and present complex environmental conditions compared to other in vitro methods, such as avascularized tumour spheroids and 2D tumor cultures.

This research will assess uptake and transport of GNPs with and without DTX in 2D tumor cultures and 3D tumor spheroids with and without vasculature. MDA-MB-231 breast cancer cells will be used to investigate the effect of peptide-coated 12 nm GNPs and DTX. The three biological models will be treated with a single 2 Gy fraction and multifractionated EBRT and BT, with and without GNPs and DTX. GNP accumulation and retention will be assessed using inductively coupled plasma mass spectrometry, confocal imaging, and dark field imaging. Cell survival, damage, and reproductivity will be quantified using cell proliferation, clonogenic, and DNA double-strand break assays.

To our knowledge, multifractionated radiation has not been tested in 3D vascularized tumour spheroids. This research will contribute to the growing field of research surrounding radioenhancement and bio-engineering by investigating more physiologically relevant in vitro environments.

Sean Creighton

Education

Competency Without Hierarchy: Reimagining Democratic Relations in Curriculum

In classrooms across British Columbia, curriculum standards are organized into Core Competencies. Under this design framework, students are expected to proficiently demonstrate selections of content guided by teachers. At face value, this is a seemingly innocuous common cultural practice. However, built into the design of content demonstrations is a uniquely Western notion of competency that creates conditions of unequal relations for students who bring more dynamic accounts to classroom settings. The practice of demonstrating proficiency creates a de facto hierarchy of student relations that positions certain students into the lower rungs of educational and social success. To modify BC curriculum, I propose a relational democratic impetus. This emphasis can help situate content tools into the craft of democracy, which, as many pragmatist philosophers have argued, is about improving the conditions that support citizens' abilities to relate to one another as equals. Leaving content tools unsituated is an unfortunate colonial remnant premised in philosophical justifications that democratic societies are better off poeticizing. In the case of BC Curriculum, political mandates about competency create an environment of unequal student relations that can be rectified, as many indigenous philosophers have argued, by prioritizing relationship and community building.

Margaret Cummings

Education Studies

Seeking Inclusive Sex Education

According to the Government of Canada's website, 4.4% of people in Canada identify as 2SLGBTQ+, about 1.3 million people. However, sexually and gender diverse youth are twice as likely to experience poor mental health as a result of bullying, and twice as likely to consider suicide. There is a pressing need for inclusive curriculum in all schools to improve outcomes for these students, particularly in sexuality education. However, there are many ways that teachers can implicitly communicate that 2SLGBTQ+ people are not equally valued members of society during sex education classes, and students do take note and internalize those messages. Teachers who do not develop skills and habits to teach sex education without demonstrating such biases can do a great deal of harm to their students without intending to.

This presentation will summarize the work of my Master's thesis, wherein I put forth a set of criteria that I believe could guide the creation and implementation of 2SLGBTQ+ inclusive sex education curriculum, based on conducting a literature review and several interviews. I will summarize my methods and describe the criteria that will inform my work as I embark on my PhD research.

I have a vision of a world where the impacts of sex education are taken seriously, where no student comes out of sex education classes feeling that their body, feelings, or identity are wrong. I wish to dispel shame and fear from discussions about sexuality, and instill an attitude of joy and curiosity instead. There are still many people who support abstinence-only curriculum or deeply believe that it is wrong to be 2SLGBTQ+. However, the research supports a sex-positive, inclusive approach to sex education, and I intend to dedicate my energies to making this model a reality for a greater number of youth.

Savannah Dam

Mechanical Engineering

The Valor of Lignin: From pulp waste to anti-corrosion armour

Found in nearly all vascular plants, lignin is a natural polymer that provides strength and structure at a microscopic level. Within plant cells, it seals and stiffens the water-conducting tissues and aids in the formation of barriers against pathogens and physical damage, among other functions. As such, lignin is one of the most abundant and complex polymers on Earth. In the process of paper production, lignin is filtered from the targeted cellulose fibers, often in the form of black liquor, and has long been considered a low-value waste product. Since it is estimated that around 50–70 million tons of lignin is extracted annually, finding novel ways to valorize lignin is an important area of research as it offers an opportunity to convert abundant and renewable waste into high-value products. In protective coatings, lignin can replace bisphenol-A, a fossil-derived petrochemical, to form the backbone of epoxy resins after modification by epichlorohydrin. Alternatively, it can function as a filler or a curing agent. The objective of this research is to design a lignin-based epoxy coating with natural functional additives to prevent excessive steel corrosion in the marine and civil industries. The coating will be designed in such a way that it leverages the intrinsic properties of the incorporated compounds without the need for heavy chemical or environmentally taxing modifications. Focus will be on a favorable life cycle assessment and end of life safe disposal. This research is expected to advance the development of biobased coatings by demonstrating how ecological materials can be just as effective as traditional fossil-fuel reagents. The results will contribute to a deeper understanding of the behavior of lignin, support future research in lignin-based innovations and, ultimately, advance sustainable and regenerative engineering.

Autumn de Léon

English

Materializing Research: The Artists' Book as Essay

Artists' books employ their material form as a crucial component of their argument, intertwining carefully chosen paper types and printing methods with original or reprinted textual matter, reminiscent of the stylistic conventions of academic writing. The ability of these book objects to infuse their form with aspects of their argument allows for their arguments to enter new contexts outside the academy. Johanna Drucker describes letterpress as a conservative tradition; the use of such rarified printmaking techniques can thus challenge notions of institutional belonging. The translation of complex textual arguments into physical ones thus allows research to enter new contexts.

As a case study, *An Archive* (2026), an artists' book I completed following a year of original interviews, provides insight into the possibilities of the artists' book as research publication. The edition takes the physical form of a non-archival banker's box containing fourteen archival letterpress-printed cards each containing a question posed to a trans individual seeking medical transition-related care by a medical professional. The experiences of trans patients will thus outlast the cold archival box they sit in, challenging notions of archival authority and permanence. The colophon, also letterpress, informs the reader of what the cards contain. A reader unfamiliar with artists' books conventions may not identify the arguments being made with form, but the essence of the text remains fully legible through plainly written cards.

As a site for making research accessible to broader audiences, the artists' book is not impervious to critique. The relative inaccessibility of these materials in terms of economic and institutional access serves as a unique barrier, particularly within the context of editioned work. As a means of disseminating research, the artists' book thus trades one barrier for another while expanding the definition of what an essay can look like.

Emma Downie

Anthropology

Behavioural Responses of Neotropical Monkeys to Perceived Predation Risk

Nonhuman primates hold vital ecological roles across their distribution, including as prey species. Even in the absence of an immediate threat, the presence of predators in the environment influences prey behaviour. Variation in spatial and temporal factors across an animal's home range changes their perception of their own current level of risk. Previous studies report that primates respond to this perceived risk through antipredator behaviours like vigilance. However, the ways that social, environmental, and individual variables influence antipredator behaviours are still unclear. Furthermore, little data on predator-primate relationships is available from the Neotropics, compared to African data. I conducted fieldwork from June-August 2026 at La Selva Biological Station, Costa Rica to investigate how mantled howler monkeys (*Alouatta palliata*) and Central American spider monkeys (*Ateles geoffroyi*) experience and respond to perceived risk. I hypothesized: 1. Group cohesion is an anti-predator strategy for these species; and 2. Human disturbance, predator presence, low visibility, and the presence of subadults in a group increase their perceived risk. I collected 80 hours of primate behavioural data using focal animal sampling. Predator occurrence data was gathered by deploying 18 camera traps over 971 trap nights. Local knowledge regarding coexistence with wildlife was gathered through 3 interviews and 11 weeks of deep hanging-out with researchers and staff on site. Statistical analyses will use generalized linear mixed models in R to examine rates of antipredator behaviour in relation to predator activity, distance to anthropogenic edges, individual characteristics, and species. Qualitative data will be analysed using reflexive thematic analysis. Predator-prey behaviours are fundamentally intertwined, yet few studies integrate both predator and primate data. This research addresses this oversight to enhance our understanding of the behavioural flexibility of animals within human-modified landscapes.

Megan Dyck

Biochemistry & Microbiology / Molecular Life Sciences

Evidence that the Complement Pathway is a Predominant Immune Mechanism in Ovarian Cancer

Tumour-infiltrating B lymphocytes (TIL-Bs) are associated with prolonged survival in high-grade serous ovarian carcinoma (HGSC), but their role in anti-tumour immunity is unclear. TIL-B-derived antibodies could control tumours by activating complement. Complement is a system of blood proteins that, once activated, undergo enzymatic cleavages to initiate an immune response and kill target cells. Tumours can evade this killing by overexpressing complement regulatory proteins (CRPs). We hypothesized that TIL-B-derived antibodies bind tumours and activate complement, but killing is inhibited by tumour CRP expression. We used multiplex immunofluorescence (mIF) to assess cell death, immune infiltrates, complement activation, and CRP expression in untreated tumours from 638 HGSC patients. The median proportion of cells positive for cleaved-caspase-3 (CC3), an indicator of cell death, in the epithelium was 7%. Unexpectedly, neither TIL-B nor TIL-T were correlated with CC3, whereas cells positive for C4d, a marker of complement activation, were strongly associated with CC3 ($R > 0.4$, $p < 1e5$). Furthermore, 64% of HGSC tumours expressed one or more CRP (CD46, CD55, and CD59), suggesting positive selection for complement evasion. Survival analyses on mIF and bulk RNA-sequencing data show that high epithelial CD55 expression is associated with worse progression free and overall survival. In vitro, CRP-knockout cell lines were more susceptible to CDC by commercial antibody controls. Ongoing work is testing 197 recombinant patient-derived antibodies for CDC against CRP-knockout HGSC cell lines. Thus, complement is activated in HGSC and strongly associated with tumour cell death, suggesting a key effector mechanism for TIL-B. HGSC tumours seem to evade complement activation by overexpressing CRPs, particularly CD55, which is associated with poor survival. These findings will inform novel immunotherapies to unleash complement activation to improve tumour control and patient outcomes.

Oscar Grainger

Molecular Life Sciences

Developing a spatial imaging workflow to decipher immune cell positioning in genetically distinct prostate cancer bone metastases

BACKGROUND: In advanced prostate cancer (aPCa), bone metastases occur in >90% of patients and are a key driver of morbidity and mortality. Our understanding of the bone tumor micro-environment is limited; tissue biopsies are rare, and imaging often requires decalcification. We hypothesized that combining genomic profiling with spatial immune phenotyping of prostate cancer bone metastases (PCBmets) would reveal clinically relevant immunogenomic features.

METHODS: Clinical data, PCBmet tissue, and pre-operative blood samples were retrieved from 15 patients following spinal decompression surgery. Circulating tumour DNA fraction (ctDNA%) estimation and genomic profiling was performed using targeted DNA sequencing with a 72-gene panel. Tumour and immune cell positioning was evaluated using a high-plex antibody panel (Akoya Phenocycler Fusion) that includes prostate cancer-specific markers, immune markers and endothelial markers. Custom DNA barcode conjugations for anti-PSMA and anti-KLK2 antibodies were performed in-house. Cell phenotyping and tumour-immune spatial organization were determined using Cellpose-SAM and MCMICRO.

RESULTS: Pre-operative cfDNA contained adequate ctDNA% (median = 22.4%, range = 2.3-61%) for genomic subtyping of aPCa, including detection of AR amplifications and DNA damage repair defects with immunogenic potential. PSMA- and KLK2-DNA barcoded antibodies showed strong, specific IHC staining in positive controls and PCBmet tissue. Cell segmentation results from CellPose were comparable to commercial cell segmentation software and manual segmentation informed by serial H&E slides. Across genetically distinct PCBmets, higher macrophage infiltration was observed in mismatch repair-deficient versus repair-intact cases.

CONCLUSIONS: Integrated cfDNA genotyping and spatial immune profiling of PCBmets is feasible. Our validated mIF panel and image analysis pipeline will enable detailed spatial immune phenotyping of PCBmets from our patient cohort.

Ciara Halvorson

Medical Sciences

An investigation of the neuroinflammatory consequences of the putative rapid-acting antidepressant, reelin

Major depressive disorder (MDD) is a significant public health concern with a lifetime prevalence of 16%, and a profoundly debilitating condition that can substantially impair an individual's emotional, cognitive, and physical health. Current first-line treatments primarily target brain monoamines and do not adequately ameliorate symptoms for approximately one-third of people, highlighting the importance of developing more effective antidepressant treatments. Chronic stress elicits widespread, multisystem alterations that culminate in physiological and psychological disruptions. As a major precipitant of MDD, chronic stress is commonly used to recapitulate symptoms of MDD in preclinical models, including through daily injections of the stress hormone, corticosterone (CORT), in rats. Reelin, a naturally-produced protein reduced in depression and animal models of chronic stress, rapidly reverses chronic CORT-induced symptoms following a single 3 µg injection. However, high levels of reelin may be pro-inflammatory, indicating the need to determine if a dose of reelin that resolves chronic stress-induced impairments also exacerbates neuroinflammation as a possible adverse effect of reelin treatment. Microglia are immune cells in the brain that alter their morphology according to increased activation, including increased pro-inflammatory cytokine release and phagocytosis. Using either a single 3 µg intravenous reelin injection following chronic stress or repeated (3 x 3 µg) reelin injections throughout chronic stress in male and female Long Evans rats, we show that reelin does not promote microglia morphologies or protein expression indicative of pro-inflammatory function within the context of chronic stress, and that both reelin administration schedules rapidly reverse chronic stress-induced despair-like behaviour. These results offer insight into the effect of peripheral reelin administration on processes underlying neuroinflammation and suggest that restoring reelin following chronic stress does not exacerbate microglia-driven neuroinflammation. This research together with past research from our lab supports the advancement of reelin or reelin peptides towards clinical evaluation as a rapid antidepressant.

Sydney Houston

Biology

Friends, foes, and fungi among western redcedar roots

Western redcedar is one of British Columbia's most important tree species, valued for its ecological importance, cultural significance, and economic contributions. Like all living organisms, its health is influenced by interactions with various species. Many of these interactions occur within the root microbiome, a diverse community of microscopic organisms that inhabit its roots and the surrounding soil. In this study, I explored the fungal communities associated with western redcedar roots and examined how these communities change when trees are exposed to the fungal pathogen *Coniferiporia weirii*. By comparing seedlings grown under controlled greenhouse conditions with trees sampled from a long-term field trial, I investigated which fungal species are consistently associated with redcedar roots and which are influenced by differences in environment and disease exposure. The results reveal that western redcedar roots host a diverse fungal community, including species that may help roots function, compete with other microorganisms, or respond to disease. Comparing greenhouse and field-grown trees also helped identify fungi that are consistently associated with western redcedar roots across different environments, suggesting they may be members of the core root microbiome. By exploring the fungal community associated with western redcedar, this research provides new insights into the complex relationships that influence tree health and resilience. Understanding these root-associated communities may help support efforts to manage forest diseases and protect an important tree species in western North America.

Joshua Issa

Physics and Astronomy

Understanding the Origin of Key Elements for Habitable Planets

Every rocky planet that could host life needs a hot, active interior. On Earth, our hot core moves continents, builds mountains, and powers volcanoes, helping keep our atmosphere and climate stable. Part of that heat comes from a radioactive form of potassium that slowly decays. But potassium, along with other elements like phosphorus and silicon, were not made on Earth. They were formed inside of stars many times heavier than the Sun and scattered into space when those stars exploded. So where do these elements come from, and how much does a newborn planet receive? But not all stars produce elements the same. Some of them have a dramatic event hours before a giant star explodes, when two burning layers inside the star merge together called a shell merger. Understanding the precise mechanics of how these layers merge is critical to understanding the origin of elements relevant for planets. I will discuss what a shell merger is, what uncertainties exist in our models, and what observations can be used to reduce those uncertainties.

Brenda Jimenez-Gonzalez

Public Administration

Tasii?akqin ?uyaqhmisukqin (Our Journey, Our Story): Huu-ay-aht Government Perspectives on Modern Treaty Implementation

Implementing a modern treaty is not a singular event but an ongoing process of institutional, cultural and relational transformation. This presentation shares findings from Tasii?akqin ?Uyaqhmisukqin (Our Journey, Our Story), a community-based participatory research partnership between Huu-ay-aht First Nations and researchers at the University of Victoria and the University of British Columbia Okanagan. The broader project supports Huu-ay-aht First Nation's transition as a Maa-nulth Treaty Nation by documenting staff experiences of treaty implementation and self-governance.

The first phase of the study involved 25 semi-structured interviews conducted in 2022 with current and former Huu-ay-aht government staff, followed by collaborative thematic analysis with the Huu-ay-aht Research Advisory Committee. This analysis identified five interconnected themes shaping staff experiences: 1) Navigating the transition to self-governance; 2) Institutional challenges and workplace culture; 3) Financial and environmental considerations; 4) Cultural revitalization and community cohesion; and 5) Citizens engagement and treaty communication.

Building on these findings, the project entered a second phase of data collection in 2026, involving a new round of interviews with current Huu-ay-aht staff. This presentation shares preliminary findings from this current phase, examining how staff perspectives have evolved since the original interviews. While the five original themes continue to provide an important analytical framework, the latest data reveal emerging areas of inquiry related to leadership transitions, organizational sustainability and evolving capacities required to sustain self-governance.

By revisiting staff perspectives at a distinct moment in Huu-ay-aht's self-governance journey, this longitudinal research enhances understanding of treaty implementation as a dynamic and evolving process. It also demonstrates the value of community-led qualitative research in supporting Indigenous governance and self-determination.

Harini Kapali

Mathematics and Stats

Model Misspecification in Semi-Competing Risks: The Case of Dementia and Death

In survival analysis, it is of interest to model time-to-event data, where the outcome variable is the time until occurrence of one or more events. For example, in cardiovascular studies, the outcome could be time until heart failure, and it is of interest to find the risk factors of failure. Here, death could censor the observed failure time data.

Simply considering death as an independent censoring factor, and focusing only on disease occurrence, leads to overestimation of outcome rates since there is a strong association between the two event times. So, we consider an alternative approach for analyzing survival time data, where both the times until death and disease occurrence are considered simultaneously.

In the semi-competing risks framework, there is a non-terminal event such as disease progression/recurrence, the occurrence of which is subject to a terminal event such as death, and time until both events can be observed for a given individual. Further, occurrence of the non-terminal event (dementia, in my work) increases the probability of the terminal event.

Therefore, statistical analysis should account for this dependence structure between the non-terminal and terminal events, along with their respective censoring indicators. Illness-death models provide a natural way to jointly model the non-terminal event, death without the non-terminal event, and death after the non-terminal event. My research evaluates the impact of model misspecification on estimation and inference under the illness-death model, with varying degrees of individual-specific dependence between the event times.

Model performance is evaluated using bias, mean squared error, confidence interval coverage, and prediction accuracy for event probabilities. Results show that the Cox proportional hazards model performs well when the goal is to recover parameter estimates of the risk of dementia, while the Fine and Gray competing risks model is better suited to obtaining predictions such as the cumulative dementia probability.

Haley Keenan

Psychology

Functional Brain Differences in Older Adults With Superior Memory Abilities

Although memory decline in older age is typically considered to be inevitable, previous research has identified a remarkable group of older adults that maintains youthful memory in older age. These SuperAgers are ages 60+, performing in the range of individuals in their 20s and 30s on episodic memory tests. This group has been shown to demonstrate structural and functional brain differences compared to their typically aging peers, which are associated with memory performance. The current study sought to determine if SuperAgers show different patterns of functional activation in the brain's default mode network (DMN) compared to typical older adults (TOAs). Using functional magnetic resonance imaging (fMRI) data from an open access dataset, this study compared functional activity between SuperAgers, TOAs, and young adults, and its relationship to memory performance. We found that while SuperAger functional activity did not differ from TOAs, SuperAgers did demonstrate significantly stronger functional connectivity between several regions compared to young adults. Conversely, young adults also showed increased functional connectivity strength between two regions compared to SuperAgers. Only connectivity strength between the left posterior cingulate cortex and right caudate was significantly related to memory performance. This research builds on current explorations into the neural mechanisms underlying superior cognitive abilities in older adults.

Sinem Koçarslan

Pacific and Asian Studies

The Fragmented Body: Ero Guro Nansen and Violence in Edogawa Ranpo's Early Crime Stories

During the 1920s and 1930s, Japan experienced rapid urban growth alongside the rise of the Ero Guro Nansen (Erotic Grotesque Nonsense) movement. Driven by social anxieties over changing gender norms and the emergence of the independent “Modern Girl,” popular crime fiction frequently featured the fragmentation, dismemberment, and aesthetic control of female bodies.

This presentation examines how the Ero Guro Nansen aesthetic transformed female bodily violence into a popular literary motif through an analysis of two short stories by Edogawa Ranpo: *Mushi* (Insects) and *D-zaka no satsujin jiken* (The Case of the Murder on D. Hill).

-In *Mushi*, an alienated male protagonist becomes obsessively fascinated by a woman's bodily scar, eventually transforming her dead body into a fetishized landscape and attempting physical mummification.

-In *The Case of the Murder on D. Hill*, a murder investigation centers on a woman whose body is covered in scratches and bruises resulting from a sadomasochistic relationship, turning physical pain and bodily marks into an object of medical inspection and public observation.

By connecting Ranpo's representations of bodily damage, sadomasochism, and fetishized wounds with cultural attitudes, this presentation demonstrates how early Japanese crime stories systematically reduced the female body to a pathologized and fragmented spectacle. In doing so, it highlights the deep-seated male anxieties surrounding female desire, bodily autonomy, and authority in modernizing Japan.

Kinga Kotulska

Biology

Decoding Time In the Deep: A Methylation Clock for Age Estimation in Rockfish

Fisheries management has utilized age assessments since the early 1900s to predict stock abundance and the impact of fishing on ecosystems. The most widely used method for estimating fish age requires lethal, otolith (ear bone) extraction and specialized technicians, which restricts the scale of data collection. To avoid these data bottlenecks, researchers are developing methylation clocks that estimate age from non-lethal fin clippings. These clocks rely on chemical tags across the DNA that consistently change with age in a “clock-like” manner. Preliminary work has yielded accurate age predictions in test sets of Blackbelly Rosefish and Atlantic Cod; however, further work is required to build multi-species clocks.

Rockfish (*Sebastes* spp.) are primarily found in the North Pacific Ocean and are long-lived with late maturation. As females grow older and larger, they produce more, higher-quality larvae, anchoring population stability. However, this size makes them more vulnerable to fishing. Since the 1970s, decades of overfishing have caused Rockfish populations to decline, with species like Bocaccio (*S. paucispinis*) and Yelloweye (*S. ruberrimus*) rockfish now listed as threatened or endangered in parts of North America. Traditional otolith age methods have struggled to provide the scale of data needed to set sustainable catch limits and reduce bycatch for these species. To address this gap, we are building methylation clocks for Bocaccio, Yelloweye, and Rougheye/Blackspotted (*S. aleutianus/melanostictus*) rockfish whose observed maximum lifespans are 61, 121, and 147 years, respectively. These clocks will make age data more easily accessible, enabling more accurate stock assessments and better-informed management of these species.

Akina Kuperus

Interdisciplinary: Mathematics & Biology

Should I stay or should I go? Modelling mother-calf movement in Svalbard reindeer

Why an animal moves, where it chooses to go, and how these decisions interplay with the external environment are driving questions in movement ecology. However, animals do not live in isolation; their movement both impacts and is impacted by the movement of others, necessitating methods to study inter-animal interactions. For Svalbard reindeer, the most significant inter-animal interaction is between mother and calf. Despite this, the changes in mother-calf interactions from attraction to avoidance and the timing of behavioural emancipation is unknown. In this talk I explore the movement dynamics of mother and calf Svalbard reindeer by introducing a coupled animal movement model. This framework uses movement data to obtain a quantitative description of interaction modes. Understanding these dynamics gives insight into parental investment and calf learning, both of which have consequences for fitness.

Heather Kwan

Clinical Psychology

Interdisciplinary Perspectives on Cognitive Aging Trajectories

The existing theories of cognitive aging guide our understanding, research, and clinical applications of knowledge around aging cognition. There are currently multiple theories that attempt to describe factors and trajectories of cognitive aging. However, there are several factors that are not accounted for within this literature; including life course experiences such as sex/gender and hormones, the influence of trauma, culture, and atypical aging trajectories. Further, these models are developed and used within individual fields and do not include perspectives from multiple disciplines. This both limits the generalizability of these models and reinforces perspectives within a field without considering interdisciplinary perspectives on the complex issue of cognitive aging. The current research re-imagined a singular model of cognitive aging encompassing perspectives and input from a multidisciplinary panel of aging researchers. To create a singular model of cognitive aging, we used an iterative process to solicit ideas and collect feedback from the group in order to incorporate their ideas. The combination of their ideas led to the identification of multiple factors that influence cognitive aging, including: “Less Modifiable Influences” including Brain Endowment, Genetics, Sex & Gender, Stigma, Ageism & Marginalization, SES & Physical Environment, and Family History and “More Modifiable Influences” including Nutrition, Substance Use & Medication, Physical Health Conditions, Neurological Conditions, Mental Health Conditions, Exercise and Physical Activity, Social Connections and Emotional Wellbeing, Culture and Spiritual Connections, Agency, Self-Determination and Purpose, Lifelong Learning and Engagement, and Health and Digital Literacy. The resulting model has been named Victoria Integrated Trajectories of Aging and Lifelong (VITAL) Health Model.

Olivia Labelle

Political Science

“Cutting off the Possibilities for Change”: Human Nature in Western Thought, Techno-Optimism, and the Politics of Exclusion

Picture the modern human: intelligent, inquisitive, rational and ingenious; self-interested, entrepreneurial and competitive; technologically minded, capitalist and the master of the natural world. In this paper, I question the political and ethical implications of such views of human nature. Drawing on postmodern, poststructuralist, and New Materialist literature, I argue that the hegemonic Western framework of human nature, which I call the Modern Liberal Techno-Capitalist Subject (MLTCS), fosters political and ethical exclusions, marginalizing certain groups and reinforcing an anthropocentric worldview. First, I define and critique the Modern Liberal Subject (MLS), a broad onto-epistemological category in the Western canon reinforced by the nature-culture antithesis and the Subject-Object divides, legitimizing hierarchies that marginalize both certain human groups and the natural world. I then extend this critique to ‘our’ relationship with technology and capitalism, thereby challenging the deterministic logic of the MLTCS framework. In doing so, I explore alternative ways of understanding this relationship through the lens of cyborg politics and New Materialist epistemology. Moreover, I apply these critical frameworks to techno-optimist discourse, examining how the MLTCS is mobilized to justify unchecked technological and capitalist expansion as the only viable response to our changing world. Ultimately, this paper provides a conceptual foundation for interrogating how the MLTCS shapes contemporary political discourse. By problematizing its determinism and exclusions, this analysis opens space for rethinking human subjectivity, agency, and our entanglement with the broader world.

Anna Lawrance

Psychology

Exploring how prior knowledge biases memory across the lifespan

As we age, we build up a rich store of knowledge about how the world typically works. This knowledge helps us learn and remember new information, but it can also distort our memories - for example, we might recall an object as being its “typical” colour even when it was not. Prior work shows that, relative to young adults, older adults’ memories are often more strongly influenced by prior knowledge. The present study further probed this age-related biasing effect by examining how memories may be biased when new information varies in how well it aligns with what we already expect. In this memory experiment, young and older adults studied images of everyday objects in different colours. Some colours aligned with expectations (e.g., a red strawberry), some partially aligned (e.g., a green lemonade), and some directly conflicted with expectations (e.g., a purple avocado). After study, participants used an interactive colour wheel to recreate each object’s original colour, allowing us to measure their accuracy, and the direction in which their memories had drifted. Both age groups recalled studied information best when colours matched expectations, and less accurately when they conflicted with expectations. When information partially aligned with prior knowledge, both groups tended to remember the items as being more consistent with prior knowledge than they actually were (e.g., recalling green lemonade as being a little closer to yellow). Critically, this bias was significantly larger in older adults. Together, these results highlight that prior knowledge is a double-edged sword for memory: it can improve recall when information matches what we expect, but it can also pull our memories toward those expectations when information only partially fits. This bias appears to grow stronger with age, offering insight into how everyday knowledge shapes, and sometimes misleads, memory across the lifespan.

Erwin Li

Mechanical Engineering

Electrode Structure in a Zinc-Iron Redox Flow Battery

Redox flow batteries (RFBs) are an attractive solution for large-scale energy storage when paired with intermittent renewable energy from solar and wind. Unlike lithium-ion batteries, RFBs do not suffer from thermal runaway issues or require rare metals. The energy capacity of a flow battery is also largely independent of the actual battery size, since energy is stored in the form of liquid electrolytes that flow in and out of the cells.

Vanadium RFBs have seen the most commercial success, but zinc-iron chemistries are a rising research area due to the globally abundant reactants. Most zinc-based batteries are charged by electroplating zinc metal onto an electrode. The growth structure of this plated zinc is a major focus in the research of zinc RFBs, since the zinc takes up physical space within the electrode and can impact the overall performance of the battery.

Electrochemical cells perform better when an excess of reactants is supplied. In RFBs, reactant supply relies on the electrolyte flow rate and electrode geometry. In certain arrangements, the amount of reactant supplied to certain parts of the electrode can vary by 3 orders of magnitude. Any regions where insufficient reactant is supplied will result in decreased overall performance.

A 2-membrane, 3-electrolyte zinc-iron RFB was fabricated and tested using 5 different electrode geometry and material arrangements. Brief electrochemical experiments were conducted to compare the performance of these arrangements. Optical microscope images of the plated zinc electrodes and fluid dynamics modelling were used to help explain the differences between how these cells performed.

Makayla Madill

Theatre

Demystifying Methodology and Embracing the Possibilities

Methodology is a vital part of the research process, but can sometimes feel elusive, intimidating and overwhelming for the researcher to figure out. This presentation will document my journey in exploring methodologies and how I found approaches and ideologies that align with my identity and my research goals. Coming from a theatre background, when I was introduced to methodology, I felt like methodology was rigid and restrictive of my aspirations. I was challenged to try and find a methodology that supported, rather than limited, my research project, but I did not know where to look. To work through this challenge, I enrolled in multiple methodology courses in different fields of study to develop a deeper understanding of why methodology exists and how it can support my research. After exploring a variety of different methodologies, I discovered that methodology continues to evolve and has flexibility for meeting the needs, questions, and contexts of a particular research project. I came to understand that if used appropriately and thoughtfully by the researcher, methodology can be a supportive framework that offers the researcher possibilities and pathways for encountering and sharing knowledge. This shift in understanding increased my confidence and inspired me to create a mixed methodology of applied theatre and performative inquiry for my own research project. In this five-minute presentation, I will reflect on my journey toward understanding and selecting methodology, introduce applied theatre and performative inquiry as the methodological approaches informing my research, and examine how these approaches support the aims and values of my master's project. By sharing this process, I hope to invoke reflection and potential conversation amongst fellow graduate researchers about the variety of possible methodologies and to encourage them to consider creative approaches that can deepen and expand their research and learning.

Mariah Madill

Theatre

Considering Participants: Reciprocity in the Research with Immigrant and Refugee Communities

According to the United Nations High Commissioner for Refugees (UNCHR), as of 2025, there were 117.8 million people forcibly displaced from their homes. Even though this number is down 3% compared to the previous year, this number is still significant, and therefore, research that highlights refugees' experiences is imperative. However, it is important that this research is conducted ethically, as there have been unethical oversights in refugee studies that have left refugees wary and mistrustful of researchers. One of the issues is that refugees feel that after they commit to giving their time to the researcher, and the researcher has left, they see very little to no development in their community for having participated in the research. Therefore, when conducting research with more vulnerable groups, there exists a need to take more of the participants' needs and interests into consideration. My master's project uses Applied Theatre to explore the identity transformation that immigrants and refugees may experience when coming to Canada. With this project, I am working on finding ways to conduct my research with my participants, rather than about so the research does not extract information about them but instead focuses on their needs. Therefore, the research process can become reciprocal. I hope to achieve this by using Applied Theatre as my method, which encourages collaboration through artistic and theatrical activities, open conversations, and the devising of theatrical performances. Another way I will be contributing to a reciprocal research process is that before I conduct my research, I will be getting involved with their community in a voluntary way. Therefore, in this presentation, I will be sharing about theoretical ways of fostering a reciprocal research process, as well as my own reflections as a researcher who participates pre- research stage, in the participants community.

Kousar Malekinasab

Computer Sciences

Where Does My Call Go? Analyzing and Optimizing Video Conferencing Latency over Starlink

Real-time communication platforms such as Google Meet, Zoom, and Microsoft Teams are now widely used for work, education, and everyday communication. These platforms, however, were mainly designed for traditional Internet connections. Low Earth Orbit (LEO) satellite networks such as Starlink introduce a different network environment, where data first travels through satellites before reaching the terrestrial Internet. This can create unexpected delays during real-time calls.

This research examines how major communication platforms behave when used over Starlink. Measurements collected from both stationary and in-flight experiments show that the platforms handle user traffic in different ways. In some cases, traffic is directed to nearby service locations, while in others it remains connected to distant locations for the duration of a session. These choices can cause data to travel much farther than necessary after leaving the satellite network, increasing communication delay.

To improve this, LeoRTC is introduced as a new approach for real-time communication over LEO satellite networks. LeoRTC dynamically selects better relay locations and can take advantage of satellite-based paths when they provide a faster route. Evaluation through real-world measurements, simulation, and emulation shows that this approach can significantly reduce communication delay while keeping performance stable and packet loss very low.

These results show that improving real-time communication over satellite Internet requires looking beyond the satellite connection itself. The routes taken after traffic returns to the terrestrial Internet can be just as important in determining the quality and responsiveness of a call.

Valeria Montoya

Educational Psychology & Leadership Studies

Beyond Diagnosis: Neurodiversity-Affirming Care for Late-Diagnosed Autistic Adults (Montoya & Lawrence, 2026)

Autistic adults diagnosed later in life may reach diagnosis after years or decades of navigating relationships, environments, expectations, and distress without an explanatory understanding of their neurotype. Despite increasing recognition of adult autism, post-diagnostic supports remain limited and are often poorly aligned with the experiences and needs of late-diagnosed autistic adults. In this paper, we argue that addressing this gap requires more than extending existing autism services into adulthood. Drawing on literature concerning late diagnosis, autistic lived experience, mental health, and neurodiversity-affirming care, we propose three interconnected principles for post-diagnostic support. Relational epistemic humility positions autistic adults as knowledgeable participants in understanding their own experiences. Autistic flourishing and self-determination centre individuals' values and priorities in defining therapeutic goals and meaningful outcomes. Collaborative and responsive practice supports client-chosen change while recognizing that therapeutic practices, communication, and environments may also require adaptation. Together, these principles ask practitioners to consider whose knowledge counts, who determines what matters, and who is expected to change. Moving beyond diagnosis requires post-diagnostic care that recognizes lived expertise, supports self-understanding, and responds to autistic adults' individual needs, priorities, and ways of being.

Spenser Morouney

Environmental Studies

Trends and Drivers of Fire Recovery Across the Canadian Tundra

Annual burned area on the Canadian tundra is increasing in line with trends of climate warming. The tundra has historically been resistant to wildfire, and few studies have quantified the long-term ecological effects of tundra fire or local controls on recovery trajectories. To better understand the impact of fire in tundra ecosystems over time, we evaluated post-fire recovery using a database of Canadian tundra fires from 1985-2023 across a wide range of terrain types and ecological communities. First, to understand patterns of vegetation recovery on the regional scale, the satellite-derived Normalized Difference Vegetation Index (NDVI) was used to quantify greening trends over time in tundra burn scars across the Canadian Arctic. This analysis revealed greening that exceeded reference levels in burn scars after an average of two decades, indicating that plant communities are altered by fire. To better understand these broad trends of vegetation recovery, field investigations were undertaken at eight tundra fire scars within the Tuktoyaktuk Coastal Plain and Peel Plateau ecoregions of the Northwest Territories. Our field sampling investigated the local drivers of successional trends through sampling of community composition, plant growth traits, permafrost thaw depth, and nutrient levels in both soil and plant samples. With ongoing increases in tundra fire, understanding recovery is critical to predict the future structure of the tundra biome. The plant communities that establish within burned areas will impact wildlife habitat, permafrost conditions, community land-use, and shape ecological feedbacks to regional and global climate systems.

Victor Negrea Puskas

Biochemistry & Microbiology

Painting the Frontline: B Cells, Antibodies, and a Body-Wide Fight Against Ovarian Cancer

Background. Ovarian cancer is often caught late, and its deadliest type, high-grade serous ovarian cancer, has few effective treatments. How can we fix this? One encouraging clue: patients whose tumours contain more B cells, a type of immune cell, tend to live longer. This benefit was recently linked to B cells inside, not surrounding, the tumour, raising the question of which B cells matter most. B cells make antibodies that “paint” threats for destruction, so I hypothesized they were painting nearby cancer cells. In tumours from 72 patients, I found antibodies coating >50% of cancer cells. Surprisingly, nearby B cells did not appear to produce these antibodies. Instead, antibody levels tracked with deposits in blood vessels, suggesting most antibodies arrive from the bloodstream rather than made locally. I asked whether this pattern held across tumour sites within the same patient, a sign of a body-wide, not local, immune response.

Methods. I used tissue imaging to measure antibody deposits, immune cells, and blood vessels across matched primary and metastatic samples from 28 patients.

Results. Across 103 metastatic samples, antibody patterns stayed consistent between sites within each patient, despite varied immune cell numbers, and again tracked with blood vessel deposits rather than B cells. Excitingly, the tumour contained more antibody deposits than the surrounding pathologist-confirmed healthy tissue.

Conclusion. My findings suggest the antibody response hints at a body-wide immune strategy that could be harnessed for treatment, and targets cancer over healthy tissue. Knowing which types of B cells and antibodies relate most strongly to survival is the next foundational step toward identifying and harnessing the B cells that matter most. This survival analysis comparing short-, mid-, and long-term survivors, is underway, with results imminent. This work moves us closer to new B cell-based treatments for one of the deadliest gynecologic cancers.

Asma Noureen

Educational Psychology & Leadership Studies

Reading Indigenization and Internationalization Together: A Decolonial Feminist Inquiry into Settler Colonialism and Epistemic Justice in the Canadian University

I would like to present a work in progress for my PhD that reads the present moment in the Canadian university as a site where two seemingly opposed institutional processes, Indigenization and internationalization, are unfolding simultaneously and in tension. Indigenization initiatives respond to ongoing settler colonialism, while internationalization recruits racialized international students partly as a vehicle for extending Western knowledge globally and partly as a labor and tuition base that settler institutions depend on to sustain themselves. I argue that racialized international students are positioned ambiguously within this settler colonial structure: invited in as future settlers of color, implicated in the very dispossession that Indigenization initiatives seek to address, while remaining largely absent from how the university imagines decolonization. At the same time, racialized international students have the potential to challenge and disrupt the coloniality of the university and hegemony of Western/Eurocentric knowledge by making coalitions with the local indigenous communities if and as they gain decolonial consciousness through the Indigenization initiatives at the university. Drawing on the theories of (de)coloniality, extensive literature on decolonizing academia, and a decolonial feminist research lens, I will share the conceptual and methodological groundwork for my doctoral project, in which I plan to explore the racialized international students' experiences of indigenization initiatives at the university, whether it develops or furthers their decolonial consciousness, leading to decolonial actions such as coalition-making.

Diego Pena Palma

Mathematics & Statistics

An Adaptive Simultaneous Update Method to Calibrate the SMCM

The Stochastic Multicloud Model (SMCM) provides an effective probabilistic method for parameterizing unresolved microphysics in General Circulation Models (GCMs). The SMCM improves the simulation of climate phenomena, but its effectiveness depends on cloud transition timescales that are difficult to find just from observational data. Calibration of these SMCM parameters has been done through Bayesian inference approaches that require solving a system of differential equations, a computationally intensive process involving several matrix exponential computations. While previous implementations prove to be reliable, they remain computationally demanding as results require at least 24 days of continuous execution.

In this talk, we present the Adaptive Simultaneous Update Method (ASUM), a modified approach that accelerates the calibration from weeks to hours. This framework is based on a reconstructed block updating inference algorithm with efficient memory access patterns, and an adaptive burn-in phase that reduces the manual calibration of initial parameters. Benchmark results obtained with the Digital Research Alliance of Canada Trillium Cluster demonstrate a 240x speedup compared to the original paper results, enabling calibration with bigger data sizes that were previously prohibitive.

Tanya Philippssen

Interdisciplinary Studies

Retrospective analysis of age-specific non-pharmaceutical interventions on wild-type SARS-CoV-2 in Canada

Non-pharmaceutical interventions (NPIs) were implemented to target heterogenous drivers and modifiers of wild-type SARS-CoV-2 transmission in Canada; however, determining their individual and joint effectiveness on different populations is challenging. In this study, we identify relative age-specific NPI effectiveness on mitigating wild-type SARS-CoV-2 transmission in three urban Canadian regions (Calgary, Greater Vancouver, and the Greater Toronto Area) during the period March 2020-February 2021.

We developed an age-structured Susceptible-Exposed-Infectious-Recovered (SEIR) deterministic model and stratified our population into two age groups: children and youth (0-19 years) and adults (20+ years). Along with NPI strength parameters, data-informed contact mixing rates and wild-type SARS-CoV-2 age-specific susceptibilities were also incorporated. Detailed timelines for each region were compiled, capturing the time-dependent implementation of age-specific and population wide NPIs. Using maximum likelihood estimation, we determined regional baseline transmission probabilities in the absence of widespread NPIs, then estimated subsequent time-dependent and age-specific NPI strength on transmission reduction. Finally, we considered counterfactual NPI scenarios and compared simulated regional age-specific epidemic trajectories with reported case data.

Results showed that adult-specific contacts play a large role in transmission, and moderately-strengthened adult-specific NPIs were more effective in reducing transmission across all regions compared to a drastic strengthening of NPIs in children and youth (i.e., closing schools). These findings held when varying temporal applications of singular and joint counterfactual NPI scenarios.

By considering population heterogeneity, our study provides insight into age-specific NPI effectiveness on wild-type SARS-CoV-2 transmission. This can support preparedness and inform decision-making related to targeted NPI implementation for future emerging disease outbreaks.

Beata Plutova

Geography

Understanding Turbidity Responses to Storm Events in a Drinking Water Supply Watershed

Turbidity is a key indicator of water quality and an important operational concern in drinking water supply systems because elevated turbidity can increase water treatment requirements and associated costs. However, the mechanisms controlling turbidity dynamics during hydrological events remain incompletely understood. This study investigates turbidity responses to storm events in the Goldstream River Watershed, located within the Greater Victoria Water Supply Area, British Columbia, Canada. The study utilizes hourly records of precipitation, streamflow, and turbidity spanning 2011-2026 to characterize relationships between hydrological conditions and turbidity variability. Particular attention is given to turbidity-discharge hysteresis behaviour, which can provide insights into sediment sources, transport pathways, and catchment responses during storm events. Preliminary analyses explore the occurrence of different hysteresis patterns and their variability across seasons and hydrological conditions. Ongoing work aims to evaluate the influence of hydroclimatic factors, watershed characteristics, and disturbance history on turbidity responses. Improved understanding of turbidity dynamics can support the development of predictive water quality tools and inform watershed management strategies aimed at protecting drinking water resources under changing environmental conditions.

Lily Polenchuk

Political Science

Religious Populism: A Crisis Internal to Liberal Democratic Time

This project investigates what happens when liberal democratic citizens no longer experience themselves as inhabiting the same political present. It does so by examining religious-populist appeals to divine revelation that are made in the political sphere, and argues that such appeals are symptoms of a crisis internal to liberal democratic authority. Liberal democracies depend on a political order in which citizens recognize themselves as authors of the laws that govern them, yet this authority is increasingly mediated, deferred, and experienced as distant and unintelligible. The problem of liberal democratic time emerges from the fact that political action in a liberal democracy must proceed through deferred processes of fulfilment, even if demanding immediate and decisive outcomes. Resultingly, democratic legitimacy depends on the assumption that citizens can recognize themselves within this temporal structure that posits delay, mediation, and incompleteness as conditions of collective self-rule. Alberta politics suggests that this assumption is becoming increasingly fragile.

As the gap between democratic language and lived political experience widens, the legitimacy of democratic institutions becomes difficult to sustain against religious-populist rhetoric that promises present fulfillment through the divine over liberal democracy's promise of future reconciliation. Drawing on the work of Alain Badiou, Walter Benjamin, John Rawls, and other theorists, this project develops the concept of 'revelatory time' to describe a divinely-ordained political temporality in which deferred political promises are experienced as immediately present. A case study of the Religious Right in Alberta exemplifies how appeals to divine authority reorganize democratic deferral, revealing the limits of liberal democracy's secularity and the conditions under which its fragility is politically exploited.

Tabitha Rutonda

Educational Psychology & Leadership Studies

Exploring the Narratives of Black Women Leaders' Experiences in Mentorship and Mentoring in Tanzanian Higher Learning Institutions

Mentorship is widely recognized as an important pathway for developing future leaders and supporting women's advancement within higher education. However, women remain significantly underrepresented in university leadership across Africa, and structured mentorship opportunities for women academics in Tanzania remain limited. This qualitative study explores how mentorship can support the leadership advancement of Black women in Tanzanian higher education by drawing on the experiences of women leaders and academics at the University of Dar es Salaam, Mzumbe University, and the University of Dodoma.

Guided by Black Feminist Theory and the African philosophy of Ubuntu, the study examines how Black women understand mentorship, how they experience mentoring practices, and what their experiences suggest for developing more relevant and inclusive mentoring programs. Data were collected from seventeen participants, including faculty members, institutional administrators, and representatives of women's leadership organizations, through semi-structured interviews and a focus group discussion. The data were analyzed using Braun and Clarke's (2006) six-step thematic analysis.

The findings show that participants viewed mentorship along a continuum. While some understood it as a traditional, hierarchical relationship in which senior colleagues provide knowledge, guidance, and support to junior colleagues, others emphasized mutual learning, relationships, shared interests, and learning through practice. Participants described receiving mentorship primarily through informal peer relationships, academic writing groups, external organizations, and opportunities to gradually assume leadership responsibilities. These practices reflect Ubuntu's emphasis on interconnectedness, reciprocity, and collective growth. Participants also emphasized the need for mentorship programs that are flexible and accessible

Jenna Sonoski

Psychology

The Role of Art Expertise in Memory Among Older Adults

Research suggests that memory declines with healthy aging, and factors like expertise can help reduce these age-related changes. The benefits of expertise for memory are widely supported; however, the mechanisms driving this relationship are not well understood. One mechanism of particular interest is pattern separation, a process that allows for the differentiation of similar memories in the brain, and one that declines with age. The goal of this research is to understand how expertise might modulate age-related declines in pattern separation. The present study will focus on art expertise given evidence that it supports a variety of cognitive processes, including memory. Healthy younger and older adults will perform a memory task wherein they will be shown images of art and objects. First, participants will see these images in a learning phase. After a brief break, they will complete a surprise memory test wherein they will indicate whether presented images are the “same”, “similar”, or “different” from the images seen previously. Participants’ gaze will be monitored using an eye-tracker to understand how viewing patterns might differ for novices and experts. We expect that art experts in both age groups will demonstrate improved memory for art images. Moreover, we anticipate that older adult experts will show elevated memory performance compared to their novice counterparts, reflecting increased pattern separation. Altogether, this research will enhance our understanding of age-related memory changes in pattern separation and the role of expertise in this process. This presentation will cover the early stages of this research project.

Dhwani Sura

Neuroscience

How Sex and Estrogen Shape the Brain's Immune Response to Small Brain Bleeds

As the brain ages, small blood vessel ruptures called cerebral microbleeds (CMBs) become increasingly common, found in up to 15% of healthy older adults and in over 31% of people with dementia. These microbleeds are often silent but are strongly linked to stroke, cognitive decline, and dementia. The brain contains immune cells called microglia, which help protect and repair brain tissue. Microglia behave differently in males and females, influencing the risk, symptoms, and treatment of brain diseases such as stroke, multiple sclerosis, and Alzheimer's disease. Estrogen, a hormone more abundant in females, helps protect the brain, and when its levels drop, vulnerability to brain damage increases. This study examines male and female mice, including groups with surgically removed hormone-producing organs and, in a subset of females, estrogen replacement, to understand how sex and gonadal hormones, specifically estrogen, affect microglial response to microbleeds, and uses targeted drugs to identify which estrogen receptor is responsible for this effect. A small imaging window implanted over the brain allows the movement, shape, and activity of microglia to be tracked in living mice over time, to test whether estrogen drives sex differences in these responses. By comparing these responses across male and female mice with different hormonal states, this research aims to reveal how sex and estrogen shape the brain's immune response to injury. As Canada's population ages, insights from this work could guide personalized, sex-informed strategies to improve recovery after brain injury and reduce the risk of dementia and other age-related brain diseases.

Hannah Valihora

Counselling Psychology

Endometriosis and Psychological Health: Methodological Considerations for Examining Perceived Body Functionality as a Protective Factor Against the Psychosocial Implications of Illness

Introduction: Around the world, there are over 190 million women and gender diverse individuals diagnosed with endometriosis. The disease is defined by the shedding of endometrium-like tissue outside of the uterus, causing inflammation, scar tissue formation, and outward physical symptoms including significant bloating, abdominal pain, fatigue, and infertility. A notably underdiagnosed condition, endometriosis poses a significant negative impact upon psychological health, as evidenced throughout the literature. Existing research demonstrates that anxiety, depression, body dissatisfaction, and disordered eating behaviours are widespread throughout this clinical population. There is currently no research assessing perceived body functionality– a concept defined by beliefs about the capabilities and the well-being of the body– as a possible moderator and protective factor against the life-limiting psychosocial implications of endometriosis. **Methods:** The objective of this presentation focuses upon the methodological and ethical considerations for the conduction of this research. This cross-sectional online survey study will recruit approximately 200 participants through Canadian endometriosis non-profit organizations and peer-support groups. Psychometric measures of emotional well-being (EW-B), body dissatisfaction (BD), disordered eating behaviours (DEBs), and perceived body functionality (PBF) will be utilized for data collection. A moderated mediation model will be examined using PROCESS for SPSS, wherein EW-B will be assessed as a mediator of body dissatisfaction and DEBs. PBF will be examined as a moderating variable and is hypothesized to exacerbate the relationship between BD and the development of disordered eating. **Significance:** The proposed research will contribute to a more comprehensive understanding of the indirect effect of emotional well-being on disordered eating via body dissatisfaction among individuals with endometriosis, as well as the extent to which body functionality moderates these relationships. This presentation will highlight the advantages and limitations of the proposed methodological approach. Identifying a possible protective factor against the development of eating disorders in this clinical population is imperative.

Lara Vaziri

Psychology

Walk-and-Talk Therapy: A Scoping Review of Applications and Outcomes

INTRODUCTION: Walk-and-talk therapy (WATT), which involves conducting psychotherapy walking outdoors, has gained popularity over recent years. Given the well-established mental health benefits of physical activity, integrating movement into psychotherapy may offer additional therapeutic value. Emerging research has identified benefits of WATT for both clients and therapists, including increased physical activity, improved therapeutic relationships, and nature exposure, while also noting practical and ethical challenges. This review aimed to identify studies describing WATT and summarize its reported applications and outcomes.

METHODS: Two databases, PsycInfo and MEDLINE, were systematically searched using keyword clusters (e.g., walking, outdoor, psychotherapy) to identify studies that discuss the use of psychotherapy while walking outdoors, supplemented by backward citation searches. Eligible studies included psychotherapy delivered by a licensed or trainee professional, conducted outdoors while the therapist and client walked together. Data was extracted on population, WATT setting/duration, and reported benefits and challenges.

RESULTS: Of 1322 records screened, 14 studies met inclusion criteria: two used quantitative methods, 10 used qualitative methods, and two used mixed methods. Sample sizes were generally small ($M = 28.8$, $SD = 13.9$), and just over half of the studies (57%) focused solely on client experiences and outcomes. Most WATT sessions were conducted in outdoor settings, particularly parks, gardens, and forests. Overall, both therapists and clients reported positive experiences with WATT, highlighting its capacity to strengthen the mind-body connection, equalize the therapeutic relationship, and provide the added benefits of physical activity. Common concerns centered on confidentiality, environmental distractions, and maintaining professional boundaries.

Conclusion: The current literature primarily draws on qualitative research describing clients' and therapists' perceived benefits and challenges of WATT. Larger studies using rigorous designs (e.g., randomized controlled trials) are needed to evaluate the efficacy of WATT. Future research should also examine long-term outcomes and underlying mechanisms through which WATT may influence well-being.

Sonia Voicescu

Social Science / School of Environmental Studies

Restoration, Reconnection, and Renewal: Community Mapping in the Crowsnest Pass and Elk Valley regions, Canada

In Canada, mining operations have left a large footprint on the landscape, which continues to grow as the demand for mining products increases worldwide. Recovery requires collaboration at every level of engagement, and thoughtful integration between ecological and socio-cultural approaches to restoration of degraded land. Currently, the practice of ecological restoration faces the pressure of adjusting to increasingly variable climatic conditions while simultaneously accounting for the relationships people have developed with the landscapes they inhabit. Effectively reconciling competing views and priorities inherent to recovery planning has proven challenging, underscoring the need for more adaptive and inclusive restoration strategies. Building on the extensive photographic collection of the Mountain Legacy Project (MLP, <https://mountainlegacy.ca/>), this presentation will discuss the use of participatory photo-mapping with community members from the Crowsnest Pass and Elk Valley regions in Canada to: 1) understand how people experience change within mined lands, 2) visualize place attachment within a highly transformed landscape, and 3) provide opportunities for ecological restoration to support long-term sustainability of areas that have undergone significant environmental changes. Through an interdisciplinary and community-based perspective, this technique can provide an opportunity to (re)imagine the landscape and engage community members in considering different visions of and for their region. Ultimately, incorporating this approach into recovery planning can provide for a more comprehensive assessment of mined areas, and support the development of resilient landscapes for future generations.

Wenlin Xu

Mathematics and Statistics

Multi-event Dynamic Capture-Recapture model: Modelling the COVID-19 impact on age and gender in British Columbia

Understanding COVID-19 disease dynamics is important for improving outbreak management and healthcare planning. In this study, we developed an extension of the state-transition framework based on the Susceptible-Infected-Recovered Multi-event Capture Recapture (SIR-MECCR) model to characterize post-infection processes such as detection, hospitalization, recovery, and survival, with particular emphasis on hospitalized populations. We used individual-level data in British Columbia from October 5, 2020 to March 6, 2022 (provided by Population Data BC) and implemented a Bayesian inference framework to estimate model parameters.

To capture temporal heterogeneity, we divided the study period into 4 epidemic phases. We fitted our model independently to each phase and across subpopulations defined by age and gender. Our results showed that individuals aged 65 years and older exhibited substantially higher mortality risks, consistently had the highest hospitalization probabilities at 0.019 (0.014, 0.025), and showed lower discharge probabilities (typically below 0.153), suggesting longer hospital stays and slower recovery. Moreover, we found no significant differences between genders.

Infection and detection probabilities vary across epidemic phases, suggesting the influence of changes in viral characteristics and public health policies. We showed that our findings are consistent with past results while providing narrower credible intervals for key transition probabilities, particularly in hospitalized populations.

Kyla Younger

Chemistry

Modern Modulators: Using Computational Chemistry in Material Modelling

This project aims to investigate how crystal structure governs the electro-optical (EO) characteristics of barium titanate (BaTiO_3 , BTO), a promising ferroelectric material for next-generation fiber optic communication. Using quantum-mechanical calculations, I examine how atomic defects such as oxygen vacancies affect BTO's ability to encode and transport electrical signals as light. EO modulators are specialty materials at the core of high-speed data transmission that have the ability to change their refractive index when an electric field is applied. While the ferroelectric material lithium niobate (LNO) is the current industry standard, its low dielectric constant limits miniaturization, making for poor performance in applications like capacitors and transistors. In contrast, BTO displays a high dielectric constant, making it a better choice for these applications - but defects within BTO's complex cell structure makes the material's EO response challenging to characterize, and bulk BTO films difficult to manufacture. The link between oxygen vacancies and electronic structure are investigated, and changes in band structure, dielectric behavior, and EO performance of the material are analyzed. A better understanding of the link between defects and BTO's electro-optical performance will allow the construction of new modulator materials, and support the development of faster, higher-capacity data technologies for Canada's digital future.