

Excellence *in* Graduate Research Symposium

*Presented by the UVic Graduate Students' Society
in partnership with the Faculty of Graduate Studies, UVic
Libraries, and the Office of the Vice-President Research &
Innovation*

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

Abstracts are grouped alphabetically, by presentation type.

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*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 (Songhees and Esquimalt) Peoples on whose territory
the university stands, and the Ləkʷəŋən and W̱SÁNEĆ peoples whose historical
relationships with the land continue to this day. We commit ourselves to truth,
reconciliation, and decolonization.*

Posters

Veerle Appels

Biochemistry & Microbiology

The Host Proteome during Influenza A virus/Staphylococcus aureus Co-infection

Influenza A virus (IAV) causes annual epidemics and sporadic pandemics of respiratory disease. One of the most common complications of primary IAV is secondary co-infection with *Staphylococcus aureus*, which contributes to an annual death toll of over 100,000 people worldwide. Previous observations have shown that co-infection with IAV and *S. aureus* is associated with increased morbidity and mortality in patients. My research focuses on understanding how the two pathogens influence each other to increase disease severity.

In the lab, we have established a co-infection model, and we can show that the presence of *S. aureus* leads to increased IAV production. Using global protein analysis, we discovered three human proteins that are differentially abundant during co-infection. My project aims to characterize the role of these proteins in IAV replication, both alone and during co-infection. I will examine how changes in protein levels affect virus replication and the interaction of *S. aureus* with the host cell.

I will use a combination of molecular techniques, microscopy and genetic manipulations to understand how the bacteria manipulate host cells, and why and how that benefits the virus.

This work will allow us to better understand molecular events during co-infection, leading to novel targets for the development of therapeutics and diagnostics.

Serap Asar Brown & Aleks Waliszewska

Curriculum & Instruction/Leadership Studies

From division to confluence: Building knowledge in conversation with one-another to reimagine human-nature relations

In the context of climate change education, decolonization and relationality, this work aims to find ways to step out of the divided ways of thinking in the academic world and refer to a methodology that is invitational, diverse, interconnected, and collaborative to reimagine human-nature relations. We aim to explore what happens when we bring our graduate works in progress in conversation with one another, while recognizing that each project is woven from many threads of diverse influences in two different departments, Curriculum and Instruction, and Leadership Studies in the Faculty of Education. Like tributaries of a river, we confluence our experiences, perspectives, and research to ask: what are possible points of connection and intersection between an arts-based inquiry about water and an ethnographic case study of an outdoor learning community? What can we learn from one another's diverse approaches, theoretical perspectives, and methodologies? This presentation is co-created through a multifaceted and emergent collaborative inquiry. Inspired by the post-qualitative methodology of diff/reading employed by Lemieux, Johnston and Scott (2022), we will draw on decolonial methodologies (Kovach, 2020; Wilson, 2008), poetic inquiry (Leggo, 2016), wild pedagogies (The Crex Crex Collective, 2018), and Hospicing Modernity (Machado de Oliveira, 2021) to bring together diverse lenses for connecting with the land and water. Our collaboration aims to build interdepartmental bridges over established academic divisions that keep scholars separated, and offer us ways to practice a relational approach to research and to look for points of intersection between two seemingly distinct research projects in different departments.

Nazanin Babaei

Psychology

Evaluating the Impact of Publicly Funded Residential Treatment for Substance Use on Vancouver Island: the Role of Trauma and Acquired Brain Injury

Since 2016, over 47,000 Canadians have died from drug toxicity, with British Columbia facing a disproportionate share of this public health crisis. Marginalized populations, including Indigenous communities and individuals experiencing poverty and unstable housing, have been significantly impacted. In response, Island Health (ISHL) invested millions in 2023 to fund partnerships with privately operated, abstinence-based residential substance use treatment centers across Vancouver Island. These centers treat individuals with comorbidities, such as Post-Traumatic Stress Disorder (PTSD) and acquired brain injuries, but there is limited data on the effectiveness of this costly initiative. This study aims to address this gap by: 1) identifying the characteristics of clients applying for Island Health-funded treatment; 2) determining which clients benefit most and recommending tailored treatment pathways; 3) evaluating the treatment's effectiveness for those with comorbid conditions; and 4) assessing barriers that hinder successful outcomes. A mixed-methods approach will be used, combining quantitative data from 950 patients who applied for residential services between January 2023 and August 2024 and qualitative insights from 50 interviews with patients, service providers, and system leaders. Preliminary findings will guide Island Health in optimizing resource allocation, offering alternative care strategies for those less responsive to treatment, and improving service accessibility for individuals with complex mental health conditions. The results will be essential for policy development and enhancing public health responses to substance use crises on Vancouver Island.

Emma Bowick

Geography

The Politics of Sustainable Supply Chains: Canadian Policy and Legislation

Global food systems have rapidly transformed over the past several decades, driven by globalization, liberalized free trade, and transnational corporate concentration. The agri-food sector now faces increasing pressure to account for its role in exacerbating deforestation, biodiversity loss, and soil depletion, while also being vulnerable to the changing weather conditions caused by climate change. In response, supranational organizations like the United Nations (UN) and Organization for Economic Cooperation and Development (OECD) are urging governments to adopt compulsory regulations that require companies to identify, prevent, and mitigate environmental and social risks within their supply chains. Despite increasing environmental challenges posed by a changing climate, the Canadian government has opted for a softer regulatory approach, relying on voluntary business actions for ethical sourcing.

My research investigates the reasons behind Canada's lack of comprehensive human rights and environmental due diligence legislation. Specifically, I explore the barriers and actors that may be impeding the adoption of such legislation, with a focus on environmental management. Employing the Discursive Agency Approach (DAA) for interpretive policy and stakeholder analysis, this study combines content analysis with key informant interviews involving policymakers, businesses, and advocates to assess the political structures, discourses, and key actors that shape policy development. The anticipated findings of this study aim to provide valuable insights for policymakers seeking to strengthen corporate environmental responsibility, thereby contributing to global efforts to address environmental degradation within and beyond the agri-food sector.

Daniel Boyea

Physics & Astronomy

What can little galaxies teach us about Dark Matter?

The matter we understand—stars, planets, chemical elements, every particle we know—makes up only a tiny fraction of the universe. Most matter is instead called “Dark Matter,” which has never been directly observed. Astronomers know that there must be Dark Matter of some form by studying the gravitational dynamics of galaxies and the expansion of the universe. Little galaxies provide a unique window to test our understanding of Dark Matter. These “dwarf galaxies”, hundreds of times smaller than our Milky Way, are some of the most dark-matter dominated objects in the universe. I will give a summary of astronomical research in dwarf galaxies and their dark matter. Next, I will describe what I have learned through simulations of a particular galaxy, the Sculptor dwarf spheroidal. And finally, I will discuss what future telescopes and new simulations may be able to help us learn about Dark Matter.

Hannah Brown

Sociology

How identity effects student satisfaction at the University of Victoria: An analysis of data across time

As Ruth Bader Ginsburg said in 2009 “We will all profit from a more diverse, inclusive society, understanding, accommodating, even celebrating our differences, while pulling together for the common good”. As we push for a more diverse and inclusive higher education environment there are questions about how successful the actions to promote such inclusion are. This research looked at how do student’s socioeconomic variables effect their level of satisfaction at the University of Victoria (UVic), including the interaction of variables (intersectionality), and how these effects may have changed through time from 2014 to 2023. To do this the research examined data from four middle year student satisfaction surveys (n = 1225) using a total of 12 variables. In Stata, alongside univariate and bivariate analysis, a total of 22 multivariate regression models were run. From this it was found that variables such as citizenship, disability status, and gender have a significant effect on predicted probabilities of student’s level of satisfaction. The model with the best fit showed that 30.23% of the of the variation in the probability of student satisfaction can be explained by the socioeconomic factors studied (Pseudo R² = 0.3032). This has implications for UVic Policy (specifically around the Equity Action Plan that was launched in 2022) and provides areas for further future research.

Elizabeth Burke

Biochemistry & Microbiology

SUMOylation of RecQ: Wrestling for space at DNA double-stranded breaks

A DNA double-stranded break (DSB) is one of the most deleterious forms of DNA damage, and if it is repaired incorrectly then genetic information can be lost. In eukaryotic cells, there are two canonical DSB repair pathways: homologous recombination (HR), and non-homologous end-joining. HR is predominantly error free, and it is initiated by DNA end resection. However, if resection initiates, and HR is not possible, then alternative (alt) repair pathways such as alt-end-joining must be used. While alt repair pathways function as backups to promote cell survival, there is a tremendous cost, as these pathways are highly mutagenic. The human BLM homolog RecQ helicase Sgs1 in budding yeast plays a critical role in HR by mediating DNA end resection in complex with Dna2. Sgs1 is also SUMOylated in response to DNA damage on three lysine amino acid residues. Mutation of these sites impairs DNA end resection and DNA processing defects. Sgs1 interacts with Dna2 and Nej1 at the break site, which are factors important for HR and end-joining, respectively. The significance of SUMOylation in regulating these interactions has yet to be determined. As BLM is known to be SUMOylated in humans, determining the function of RecQ SUMOylation in budding yeast will be informative for human health and aging.

Matilde Cervantes Navarrete

INTD, Centre for Global Studies Graduate Fellow

Mexico/Canada, a shared agenda on Planetary Health and Climate Action

Globally, we are facing environmental challenges, including global warming, air and water pollution, loss of biodiversity, waste management, deforestation, etc., and these environmental challenges can bring unstable and vertiginous changes (Matthews, 2019). Themes related to air quality, water management, coastal resources, biodiversity, forests and the impact of climate change and the impacts on human health. It is urgent to understand that without a healthy planet, we cannot ensure healthy humans. Climate change has a global impact. My research interest includes the relationships between environment and health.

Using the “Planetary Health Framework” (Brousselle & McDavid, 2021), this arts-based, Indigenous-led, community-based (CBR) project will be co-developed with Indigenous communities to lay the foundations for a climate justice agenda from a planetary health perspective. This project is using Indigenous methodologies, arts-based paradigm, and a social justice approach. The project will be co-designed through existing partnerships and host gatherings in communities from Vancouver Island and Baja California Sur, Mexico working together to identify emerging priorities around climate justice and health equity in the West Coast region of North America. The research project is focusing on the 3 goals of agenda 2030, United Nations Sustainable Development Goals (SDG): 1) Good health and well-being; 2) Climate Action; and 3) Peace, Justice, and Strong Institutions. Adopting a planetary health perspective on climate action contributes to reaching these key sustainable development goals and the implementation of the UN Declaration on the Rights of Indigenous People, now law in BC and Canada (Brousselle & McDavid, 2021). Community partners include CIFAL-UNITAR, Awinakola Foundation, Global Pax Collective, Open Space Art Society, and other global stakeholders.

Ian C. Chagunda

Chemistry

Reactivity Revealed: Harnessing mass spectrometry to explore the reactivity of next-gen palladium precatalyst.

Palladium-catalyzed cross-coupling reactions are a cornerstone of synthetic chemistry, playing a crucial role in the development of pharmaceuticals, organic materials, and natural products. The success of these reactions hinges on the generation of catalytically active species that facilitate desired transformations. While ligated palladium complexes, denoted as $L_nPd(O)$, are widely acknowledged as the active catalysts, the precise ligation state—whether monoligated ($n = 1$), bisligated ($n = 2$), or a combination of both—remains unclear in many cases. This is further complicated by the observation that monoligated species often exhibit significantly higher reactivity with different reaction pathways compared to their bisligated counterparts. Recent advancements in ligand and catalyst design have enabled the controlled generation of highly reactive $LPd(O)$ species, exemplified by the dialkyl palladium precatalyst $(DAB)Pd(CH_2SiMe_3)_2$, developed in the Leitch Lab at UVic. This precatalyst has demonstrated exceptional activity in challenging cross-coupling reactions, however detailed understanding of its activation and mode of reactivity were lacking.

To explore the reactivity of this precatalyst, we used pressurized sample infusion (PSI) coupled with electrospray ionization mass spectrometry (ESI-MS) for real-time analysis of the catalyst in action. This innovative approach allowed us to monitor the catalyst at each stage of the reaction, yielding detailed mechanistic insights into the catalytically significant intermediates and revealing the reasons behind the observed high catalyst activity. The findings from our PSI-ESI-MS studies provide valuable perspectives on the nature of palladium-catalyzed cross-coupling reactions and the mechanisms of this new catalyst. This work underscores the necessity for continued chemical research of these reactions and their mechanisms, ultimately paving the way for the design of more targeted and efficient catalytic systems. Given the scarcity and associated high costs of palladium, there remains a strong need to develop efficient systems that are more selective and highly active toward the desired transformation.

Emily Clegg

Theatre

Storying experiences of using Mental Health services at UVIC through Applied Theatre research

This research seeks to discover what UVIC student experience of using and accessing the mental health services as provided by the wellness centre has been using applied theatre research methodology. Applied theatre is a community-based method of theatre, in which the desires of the participants are central to the development of the project, and direction in topic. Given this, this research project has chosen to use Community-Based Research Methodology, and applied theatre methodology to prompt the participants for responses, and allow the direction of the research to be out of the desires and participation of the students. Applied theatre methods demonstrate theatres ability to shift the power of research outcome representation into the hands of the participants, thereby encouraging participants to highlight what is important to them within the topics explored. This project provides an opportunity to understand shared and differing experiences within the system, to discover what is working and what is not, and finding hope in critical imagination through collaborative story creation (O'Connor and Anderson 19). This project will be taking place early October 2024, at which point a results from the project will be able to be gleaned upon for a presentation.

Nick Dyck

Chemistry

Adduct Formation In Mo(o) Phosphenium Complexes Unlocks Metal-Centered Hydrophosphination

Our group has previously demonstrated that molybdenum phosphenium complexes ($[\text{Mo}]-\text{PR}_2^+$) show promise in promoting P–C bond-forming hydrophosphination reactions to give products which are desirable but typically inaccessible through this reaction. Work to achieve catalytic turnover with these systems, which could theoretically produce zero waste byproducts, has been slowed by the formation of P–P bonded phosphine-phosphenium adducts ($[[\text{Mo}]-\text{PR}_2-\text{PR}_2\text{H}]^+$). However, further study of these adducts reveals an unexpected alternative mechanism for catalytic hydrophosphination. These findings provide valuable insights that could inform further catalyst design to achieve these difficult hydrophosphination reactions and efficiently form currently inaccessible products.

Emma Field

Biochemistry & Microbiology

C-sniff: Cultured *Rana [Lithobates] catesbeiana* tadpole olfactory epithelium is a sensitive system for detecting thyroid hormone induction and disruption

The amphibian olfactory system is highly distinct between aquatic tadpole and terrestrial frog life stages and therefore must remodel extensively during thyroid hormone (TH)-dependent metamorphosis. Furthermore, developmentally appropriate functioning of the olfactory epithelium is critical for survival. While endogenous THs initiate metamorphosis in wild premetamorphic tadpoles, THs are also a common wastewater contaminant. Previous studies in *Rana [Lithobates] catesbeiana* tadpoles showed that the olfactory epithelium is one of the most TH-responsive tadpole tissues investigated to date, positioning it as a useful bioindicator tissue for TH-disruption. Herein, a system for culturing tadpole olfactory epithelium *ex vivo* was developed and validated. Olfactory sacs were excised from *R. catesbeiana* premetamorphic tadpoles and cut in half to yield four tissue fragments which were exposed to 10 nM 3,5,3'-triiodothyronine (T₃) or solvent control for 24 hours at 24 °C in culture. RT-qPCR analysis showed that the cultured tissue fragments were enriched in olfactory tissue marker *omp* and demonstrated high TH-responsiveness as measured by the induction of classic TH bioindicator transcripts *thra*, *thrb*, and *thibz*. TH response was equivalent among each of the four tissue fragments. Additionally, the olfactory epithelium transcriptomes of tadpoles exposed to TH at 5°C and 24°C were analyzed by RNA-seq, revealing TH-induced postembryonic processes that may be targets for disruption by environmental contaminants. The highly TH-sensitive C-sniff system is a promising tool for the screening and detection of TH-disrupting substances, allowing for the easy manipulation of variables like temperature, duration of exposure, and chemical dosing while reducing animal usage.

Jade Fischer

Physics & Astronomy

Spatially Fractionated Radiotherapy with Very High Energy Electrons

Spatially fractionated radiation therapy (SFRT) delivers radiation with a characteristic pattern of alternating high- and low-dose regions, compared to conventional radiotherapy, which delivers a single homogenous radiation field. The non-uniform dose delivered by SFRT has been shown to spare healthy tissue from radiation and reduce side effects in radiotherapy patients. This work aimed to evaluate spatially fractionated radiation therapy (SFRT) delivered using a novel radiation source of very-high-energy electrons (VHEEs).

Radiochromic film, which darkens with exposure to radiation, was irradiated at the CERN Linear Electron Accelerator for Research (CLEAR) using 194 MeV electrons. The films were placed in water during irradiations to approximate the attenuation of radiation in human tissue. The quality of the SFRT dose distribution captured on the film was assessed by calculating the peak-to-valley dose ratio (PVDR) and identifying the depth, known as the depth of convergence, where the distinctive SFRT pattern is no longer visible. A computer model of the beam was developed and used to plan a theoretical treatment for a glioma patient. The treatment plan was evaluated by measuring the mean dose and maximum dose to the healthy and tumorous tissue compared to a conventional treatment plan.

The greatest PVDR from experimental measurements was found to be 15.5 ± 0.1 with a depth of convergence of 76.5 mm. Computer simulations and experiments showed good agreement, with maximum relative dose differences of 2%. The VHEE SFRT treatment for the glioma patient showed a decrease in mean dose of at least 16% to the healthy tissue surrounding the tumour while simultaneously increasing the dose to the tumour by 15%. The presented work demonstrates that pencil beam scanning SFRT with VHEEs could treat deep-seated tumors such as head and neck cancer or lung lesions.

Bonnie Gao

Geography

Powering the Future: Youth Inclusion for an Equitable Energy Transition

Anthropogenic climate change is a far-reaching global crisis affecting current and future generations. A transition to renewable energy is needed to meet carbon emissions reduction targets. The energy transition must include considerations of future generations who will inherit the future energy system, and the earth. To uphold intergenerational equity while addressing the climate crisis, youth voices must be involved in low-carbon energy transition. There is limited understanding of youth in the energy transition. This paper seeks to understand how diverse youth have engaged with the Canadian low-carbon energy transition and the challenges and opportunities they have faced. Interviews were conducted with diverse youth involved in the Canadian low-carbon energy transition. Findings will be interpreted through the frameworks of energy justice, energy democracy and intersectionality.

This research will contribute to a better understanding of how youth have been involved with the Canadian energy transition, and how to best engage with youth in the future.

Gregory Gaube

Chemistry

The Utility of Alkenyl Carboxylates in Pd-Catalyzed Reaction

Alkenyl carboxylates have C–O bonds that were previously thought of as nearly unreactive in palladium cross-coupling. However, in 2020 a report from the Leitch group highlighted their efficacy in a base-free, air-stable, palladium cross coupling reaction with aryl boronic acids. This report summarizes nearly five years of research with three distinct research areas. 1) A mechanistic follow-up to the previous work using electrospray ionization mass spectrometry (ESI-MS) and heteronuclear nuclear magnetic resonance (NMR). 2) The reactivity has been expanded to install boron-based synthetic handles via Miyaura borylation, where the lability of the boron handle allowed for the synthesis of multiple classes of compounds. And finally, 3) pharmaceutically relevant substrate classes have been synthesized to highlight the utility of these methodologies.

Zoë Gilson

Clinical Neuropsychology

Cumulative Risk and Protection in Cognitive Aging: An Application of STAC-r

The Scaffolding Theory of Aging and Cognition – Revised (STAC-r) posits that life-course experiences accumulate and contribute to neural resource enrichment and depletion, which impact brain structure and, in turn, cognitive function as we age. STAC-r provides a conceptual depiction of the impact of life-course experience on cognition, and thus simplifies some variables and their relationships to provide a more parsimonious picture of a large and complex series of processes. This model has not yet been tested mathematically due to its complexity. In this project, we tested an adjusted version of the STAC-r model using Structural Equation Modeling to examine how the accumulation of neural resource enrichment and depletion variables over the lifespan impacts white matter hyperintensity development and cognitive decline in older adulthood.

Participants (N = 8897, Mage = 64.3 years) were a subsample from the UK Biobank a large biomedical database of UK residents, aged 40 to 70, who had completed self-reports on a wide range of lifestyle factors, computerized cognitive assessments, and neuroimaging. Results showed a well-fit structural model (CFI = 0.974, TLI = 0.957, RMSEA = 0.030 [90% CI 0.028, 0.033], SRMR = 0.021). Alcohol and cannabis intake, as well as neuroticism, predicted a modest decrease in white matter hyperintensities and indirectly predicted an increase in cognitive performance. Engagement in social activities, exercise, and education predicted a modest increase in white matter hyperintensities and indirectly predicted a decrease in cognitive performance. Increased white matter hyperintensities predicted a significant decrease in cognitive performance. These results indicate that the life-course portion of the STAC-r conceptual model fits well mathematically, but that the relationships between many of the variables may not be as expected and not consistent with previous research when modeled simultaneously.

Kayla Hargrove

Biochemistry & Microbiology

Microbial Pioneers: Unravelling the Mysteries of Akkermansia Colonization in the Gut

Akkermansia muciniphila is a Gram-negative, anaerobic bacterium within the phylum Verrucomicrobia. *A. muciniphila* comprises upwards of 5% of the total bacterial content in the human gastrointestinal (GI) tract, and it is unique in its ability to utilize GI tract mucin glycans as its sole carbon and nitrogen source. Some species of Akkermansia can undergo assimilatory sulfate reduction (ASR) to utilize sulfur from sulfated mucin glycans to synthesize hydrogen sulfide (H₂S), which is used to generate essential nutrients. *A. muciniphila* genes in the amuc_1294-1301 locus encodes enzymes required to undergo the ASR pathway; mutants with genes knocked out in this locus cannot undergo ASR, and consequently, require exogenous cysteine or H₂S for growth. Naturally occurring Akkermansia species that lack the ASR pathway (ASR -ve) have been shown to outcompete ASR +ve strains due to this pathway being energy consuming. At present, there are few studies investigating the importance of the ASR pathway in *A. muciniphila*, and ASR could play a significant role in Akkermansia colonization in the gut microbiome and overall human health. In this study, we investigated the role of the ASR pathway in Akkermansia species by producing ASR -ve mutants using transposon mutagenesis on the amuc_1294-1301 gene locus. We demonstrated that *A. muciniphila* ASR -ve mutants display enhanced growth in the presence of cysteine and when grown in co-culture with sulfurreducing bacteria (SRB) in vitro. Furthermore, we discovered that an *A. muciniphila* ASR -ve mutant, amuc_1301::Tn (Akk 1301), outcompeted the wildtype strain when co-colonized in vivo. Our results revealed that *A. muciniphila* ASR -ve mutants can outcompete the wildtype strain in the presence of exogenous sulfide sources to grow on mucin and colonize the GI tract – loss of the ASR pathway may provide a competitive growth advantage in Akkermansia species.

Sydney Houston

Biology/Forest Biology

Understanding wood decay diseases in western redcedar through ITS-sequencing and development of qPCR assays

Root and butt rot diseases have caused high rates of wood decay defect to the living stands of western redcedar (WRC; *Thuja plicata* Donn), one of the most valuable forest species in western North America. However, WRC susceptibility and the virulence of wood-decay-causing fungal pathogens are understudied, presenting a high risk for the WRC forest industry. To evaluate susceptibility of WRC and decay incidence to the root and butt rot diseases, four pathogenic fungi, including *Armillaria ostoyae*, *Coniferiporia weirii*, *Heterobasidion occidentale*, and *Perenniporia subacida*, were used to inoculate WRC seedlings using artificial methods. Development of the diseases was assessed by visual observation of wood decay while successful infection was determined by presence of the targeted pathogens inside the WRC tissues using next-generation sequencing (NGS) of internal transcribed spacer (ITS) region of the nuclear ribosomal DNA (rDNA) and quantitative polymerase chain reaction (qPCR) assays. The qPCR assays were developed by design of species-specific primers, and they were validated for quantification of absolute abundance of *C. weirii* inside the WRC host tissues with high sensitivity and specificity. These newly developed qPCR assays provide rapid, cost-effective, and accurate tools to detect early and latent infection, with wide applications for surveillance of *C. weirii*-caused decay disease in greenhouse and field studies, as well as for screening of disease resistance in WRC breeding.

Bella Jacobs

Art History & Visual Studies

A Mughal Sensorium: The Art of Feasting

Imagine the sun's warm glow on your skin and a breeze carrying mist off the river. The air is filled with the fragrance of rosewater and saffron, mingling with the sweet aroma of ripe mangoes and pomegranates from nearby fruit trees. You sit on a plush velvet cushion, surrounded by the sounds of a rabab (lute), while a golden ewer pours water over your hands. Attendants approach with platters of food and each dish is a culinary masterpiece. Food is served on vessels of gold, silver, and jade, that is adorned with rubies, emeralds, and sapphires. This is no ordinary meal; it is a powerful display of wealth and refinement, where every flavour, scent, and sound reinforces the host's might and splendor. The Mughal Empire, that ruled the Indian subcontinent from the 16th-19th centuries, hosted such grand feasts not only as acts of consumption but as performances of cultural sophistication and imperial power. These events established social hierarchies, celebrated alliances, and upheld the imperial court's cultural values, rivaling the mythical gatherings of figures like Fereydun, Solomon, and Gaymars. Mughal male virtue was paramount, shaped by Akhlaq, a science of ethics that aimed at perfect self-cultivation. Central to this were the writings of Nasir al-Din Tuṣi, which outlined the ideal blend of intellect, strength, and desire. These texts inspired a genre of ethical literature in the Mughal era, which suggested that feasts were essential to demonstrating one's refinement and virtue. Thus, the Mughal feast served multiple purposes: displaying power, securing loyalty, reinforcing social hierarchies, and portraying the host's virtue. This research explores the multisensory experience of Mughal feasts, through sight, sound, smell, taste, and touch, to showcase how these events were unforgettable manifestations of Mughal culture, power, and identity.

Nicolas Jekill

Geography

Communicating Models of Community Governance for Emerging Renewable Energy Technologies

Canada currently possesses significant capacity for renewable energy and has the potential to be a leader globally in sustainable energy. Canada also has a long history of fossil-fuel reliance which has led to deeply embedded energy inequality and injustice. Faced today with the threat of growing social inequality and accelerating climate change, these challenges are being met by calls for a “just transition”. This principle suggests an inclusive and expedited energy transition, ensuring the whole of society (all communities, all workers, all social groups) are brought along in the pivot to a net-zero energy future. In response to this problem, scholars have identified how community developed energy projects delivered by local stakeholders could have a significant potential role in achieving the transition to a low-carbon future. Given the range of communities that renewable energy projects will likely be embedded into in the coming decades, the primary objective of this research is to develop an assessment of governance models available to communities who may look to become involved in the energy transition. As no comprehensive list of these models exists, this research will develop a toolkit that presents a range of feasible and practical governance models that are applicable to communities looking to engage with energy. This will support not only community self-determination, but will allow them to consider whether any models are a fit that might advance and improve their circumstances. In doing so, my research addresses a gap in the contemporary literature, something which is critical to supporting the development of community energy projects, but achieving a just energy transition and developing resilient local energy systems. This project focuses directly on the considerations that influence the cultural acceptance of renewable energy and will help to inform the development of contextually appropriate renewable energy systems.

Sema Kaya

Educational Psychology & Leadership Studies

3 Barriers : Equal Opportunity in Education at High Schools

Why is equal educational opportunity still a major issue in secondary schools? This poster explores social inequities to education and discusses the three main obstacles that lead to inequities in education; wealth disparity, discrimination based on race/ethnicity and lack of special education supports. This poster will: 1) set out the scope of the problem and provide real life impacts of these barriers. 2) document how these barriers feed into the cycle of educational inequity by analyzing how each is operationalized in educational systems and 3) explore potential solutions.

An important goal is to raise awareness concerning these important issues and stress the need for focused interventions. Future research will consider how this research might be used to inspire conversation and action among educators so that a more inclusive, equitable educational environment is created for all high school students.

Kristi Koons

Educational Psychology & Leadership Studies

DEI that makes a Difference: From Policy to Practice

Examining the disconnect between policy and practice: Creating inclusive, supportive and safe spaces for marginalized, equity-seeking groups

In recent years non-profit, for-profit and educational organizations have placed great emphasis on adopting fulsome diversity, equity and inclusion (DEI) policies that not only uphold the Human Rights Code but seek to create working/learning environments that are free from harassment, bullying and discrimination for equity seeking/marginalized groups - an environment that respects, acknowledges and celebrates the diversity of people with different lived-experience.

It is a Work Safe BC requirement that government agencies, non-profit organizations, educational institutions and private businesses in British Columbia have bullying and harassment policies, procedures and training for all staff. BC School Districts have also adopted specific inclusive policies around sexual orientation and gender identity, anti-racism, mental health, youth-in-care and disability. While these policies are beautifully crafted with sincere intentions they are not yet translating to a more inclusive working/learning environment and staff/students/families are still experiencing discrimination, micro-aggressions, bullying and harassment.

Where is the disconnect between policy and practice? How do we move the inclusive intentions of these policies into practice and procedures in order to positively impact teachers, students and the community in general?

Vivian Lo

Educational Psychology & Leadership Studies

The Marginalised Voice: Campus Experience of Post-secondary Middle-Year Students with Disabilities

This study aims to explore the campus experiences of middle-years university students with disabilities (SWD), a population whose experiences have been under-researched compared to first-year and final-year SWD. While the number of SWD in post-secondary institutions across Canada continues to rise, these students still face significant barriers in accessing higher education, despite institutional efforts toward inclusiveness. Previous research has focused primarily on the transition from secondary to post-secondary education and the resilience developed toward graduation, leaving a gap in understanding the experiences of SWD in the middle years of their university journey.

This study seeks to address this gap by comparing the experiences of middle-year SWD with their non-disabled peers, focusing on four key dimensions: participation, academic support and resources, financial considerations, and engagement. These dimensions are crucial for student success and well-being, yet they have been insufficiently explored for middle-year SWD. By understanding these aspects, the study aims to inform more targeted policies and practices that empower SWD and enhance inclusivity in higher education.

At present, the study is in the literature review stage, synthesizing existing research to identify the key issues and gaps regarding middle-year SWD.

Harvey MacKenzie

Chemistry

Functional π -Conjugated Nanomaterials via Living Crystallization-Driven Self-Assembly

Self-assembly enables the organization of materials with nanoscale precision, resulting in enhanced properties compared to those fabricated using macroscale techniques. These properties are related to dimensions, dispersity, shape, and composition, and as such, a key goal in nanoscience is to improve control of these features. Living crystallization driven self-assembly (CDSA) is an effective approach to generate nanoparticles from soft materials with excellent dimensional control, nanometer precision and the ability to incorporate multiple functionalities. The long-range exciton diffusion and efficient energy transfer properties inherent in π -conjugated nanoparticles created using this approach has opened new areas in the development of efficient electronics through bottom-up approaches and photocatalytic systems. This work focuses on extending these systems to make complex hierarchical π -conjugated nanoparticles structures which combine 1D and 2D features for energy funneling applications.

Kiara McDonald

Mathematics

Broadcast Independence and Broadcast Packing of Split Graphs

In the area of Graph Theory, the well-known problems of packing and independence are generalized by broadcast packing and broadcast independence. As an analogy, placing cell towers (of various powers) in a network so that the signals do not interfere is a broadcast packing problem. Placing cell towers in a network where the signals can interfere at any point except the towers is a broadcast independence problem. Our research was focused on determining explicit formulas and polynomial time algorithms for the broadcast independence and packing numbers of various types of graphs. These values are difficult to compute for graphs in general, so a standard move in graph theory is to look at specific classes of graphs to make use of their special properties to solve the problem.

One type of graphs that we examined in our research is split graphs. Split graphs are defined to have a partition of its vertices into a complete graph and an independent set, a property specific to this class of graphs. Additionally, all split graphs have diameter two or three. Using these special properties, we were able to determine explicit formulas for the broadcast independence and broadcast packing number of special types of split graphs. We were also able to show that broadcast independence number is polynomial time solvable for split graphs, whereas the broadcast packing number is not polynomial time solvable.

Tara McSweeney

Counselling Psychology

Exploring the Intersection of Weight and Disability Stigma in Canada: An Intersectionality-Informed Approach

Weight stigma is a social justice issue in Canada that negatively affects the mental and physical health of individuals with higher body weights. It is prevalent across the lifespan and in various social environments, contributing to weight discrimination. Negative stereotypes about higher body weight are widespread, and when combined with other marginalized identities, like disability, the challenges are exacerbated. Disabled individuals in Canada already face significant stigma, mirroring weight stigma, but research on the intersection of these two forms of discrimination is limited. Most studies focus on health outcomes, neglecting the lived experiences of disabled individuals facing weight stigma.

This research aims to explore the experiences of weight stigma in individuals with higher body weight who also identify as disabled. It adopts a social justice and intersectionality perspective to understand how these identities impact experiences of stigma.

The Enhanced Critical Incident Technique (ECIT) was used to gather experiences of weight stigma across the lifespan and in various social contexts. A national online survey was employed to ensure diverse representation. Participants provided wish list items—support they felt was missing during critical incidents of stigma—to inform future policies and practices in Canada. They also reflected on how their disability identity influenced their experiences with weight stigma. An inductive Thematic Analysis was conducted to identify key themes in how disabled individuals experience weight stigma. Wish list responses offered insights for shaping future policy and practice. Participants reported experiencing weight stigma in diverse settings, such as workplaces, schools, and healthcare.

The findings highlight the intersectional impact of weight and disability stigma on mental and physical health, as well as the lack of support during these stigmatizing experiences. This study provides a comprehensive intersectional understanding of weight stigma in Canada and identifies critical directions for future research and policy.

Taryn Neligan

Geography

A Geomorphic Investigation of Active Faulting on Flores Island, BC

Few active faults have been identified in British Columbia due to dense forest cover, recent glacial erosion, and lack of high-resolution topographic data. However, newly available high resolution lidar data has allowed for the discovery of an active fault scarp on Flores Island, BC. This study uses geomorphic mapping of young surface features coupled with analysis of vertical surface offset along the scarp to determine the approximate timing and magnitude of past earthquake ruptures. This rupture history is critical in understanding how the fault may re-activate and impact surrounding communities (Tofino, Ucluelet, Ahousaht) in the future.

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Teagan Parkin

Biochemistry & Microbiology

Investigating the Protective Effects of a New Antibiotic Alternative Against a Priority Pathogen in the Poultry Industry

Since humans discovered antibiotics, antibiotic resistance has been a growing threat to their effectiveness. A major contributor to the rise of antibiotic resistance is excessive use of antibiotics in livestock, so many governments are trying to reduce this practice. However, food animals are still susceptible to bacterial diseases, such as avian pathogenic *E. coli* (APEC), which affects poultry, causing mortality and massive economic losses.

Antimicrobial peptides (AMPs) are a potential alternative to antibiotics. Produced by all classes of life, they are less susceptible to the development of antimicrobial resistance than conventional antibiotics. Machine-learning models were used to identify ~900 potential AMPs produced by various invertebrate and vertebrate species. These peptides were tested against APEC bacteria to determine their ability to inhibit growth, and on red blood cells to ensure that they did not damage host cells. TeBi1 was a top AMP candidate of insect origin that inhibited APEC growth while being non-toxic to host cells, and advanced to be tested in a challenge trial. Eggs were injected with saline or TeBi1 at various doses three days before hatch. Then, day-old chicks were challenged with APEC, and the response of the birds' immune systems, and other metrics of bird health, were assessed.

There was no significant difference between treatments in the percentage of eggs that hatched. Birds treated with all tested doses of TeBi1 had significantly higher weights seven days after hatch than control birds. Additionally, birds treated with the highest dose of TeBi1 had lower levels of inflammatory markers in their airsacs a week after challenge, and lower rates of bacterial detection in both their airsacs and hearts compared to control birds. This implies that TeBi1 has beneficial effects in chicks infected with APEC. Further experiments are planned to determine if TeBi1 can protect birds at a larger scale.

Adam Regier

Geography

In search of Equitable Decarbonization: Engaging Regional Citizens and Communities to Provide Renewable Energy to Cities

Responsible for two-thirds of global greenhouse gas emissions, addressing cities' emissions is essential to meet the Paris Agreement goals. Due to the land requirements of renewable energy sources, cities likely cannot produce renewable energy self-sufficiently. To overcome this issue, some ambitious cities are looking to the regions that surround them to source renewable energy.

While energy generation often benefits societies, it also causes injustices, such as uneven dispossession, marginalization, and socioeconomic injustices, including for renewable energy development. When energy is developed with the meaningful involvement of non-traditional ("niche") energy actors, such as citizens, small and medium enterprises, and local governments, a more equitable distribution of the outcomes of energy development is possible. However, in practice, many community energy initiatives have more often engaged wealthier, dominant, and less diverse segments of society.

Through interviews and document analysis, this study will examine the justice implications of renewable energy projects being developed in regions for cities' decarbonization by applying a democratic innovations framework. This framework addresses who is involved, how participants are selected, and how decisions are made. Projects will be identified through the analysis of city plans, energy strategy documents, planning documents from relevant organizations, government documents, and webpages of the global cities that have adopted ambitious climate change goals and measures.

Given the contrast between high demand for energy in cities and the land requirements of renewable technologies, cities sourcing renewable energy from the regions that surround them could become an important model for decarbonization. Documenting the engagement of niche actors in regional renewable energy development will enhance decision-making among energy sector participants, working to prevent the potential reinforcement of disparities in the impact of energy development and offering a more equitable and justice-oriented model of decarbonization.

Tatiane Rigonati Silva

Curriculum & Instruction

Newcomer Children's Voices & Stories on Identity in Canada

In recent years, a significant number of people across the globe have crossed borders in search of safer homes, better health care, education, and economic opportunities. For the children who have experienced migration, they are more likely to face a discontinuity between their cultural heritage and the culture of their new society. In this study, the importance of listening to newcomer Latin American children's experiences in Canada was addressed in relation to their sense of belonging and identity development in a new country. Framed by sociocultural theory, funds of knowledge, multimodality, and translanguaging, 4-year-old Latin American newcomer children's experiences, (transnational) funds of knowledge, and identity development were examined across multiple contexts, such as their homes and daycare environments. Findings revealed that children combined and compared symbols, knowledge, experiences, and language from their home countries with those in Canada to develop their identities and sense of belonging in a new country. This study also provides additional insight on the significant role adult caregivers played in the children's worlds and resettlement journeys. Findings highlighted the importance of parents and early childhood educators engaging in translanguaging practices to accommodate newcomer children's needs and welcome their languages, knowledge, and identities in diverse environments. This study also offers recommendations for early childhood educators on potential ways to welcome and include newcomer children's funds of knowledge, languages, culture, and identities in early learning contexts.

Jacqueline Rutherford

School of Languages, Linguistics & Cultures

The Language Practices and Linguistic Representations of French-Speaking Immigrants in Greater Vancouver

My research will explore the language practices and linguistic representations of French-speaking immigrants in Greater Vancouver.

While Vancouver is a predominately English-speaking city, and BC is a predominately English-speaking province, they are also part of a bilingual country. Communities of French speakers in B.C. are considered “Official Language Minority Communities” or “Francophone Minority Communities”. Because they are a language minority, these individuals encounter obstacles such as integration and access to services in French, while these communities also encounter obstacles such as funding and services, maintaining their population, and also maintaining the French language.

According to the 2021 Census, 1.3% of BC’s population speak French as their first official language (ie. they are more comfortable expressing themselves in French than English). Of this population, 26.6% are immigrants. Therefore, these French-speaking immigrants are so important to the vitality of these minority communities. While some research has been done on French-speaking Immigrants’ integration to Vancouver, it has not focused specifically on language. Researching language practices and linguistic representations specifically, has been done in other Francophone Minority Communities across Canada such as in Toronto and Ottawa, but it has not been done here in BC.

My research is an exploratory case study which will gather data from about 10 participants. The data will be collected in two parts. The first part is an online questionnaire to be completed by ten participants, which will gather information on the participant’s profiles, what languages they speak in different areas of their daily life and how often, as well as their attitudes towards their use of French and English in particular. The second part will be semi-structured interviews with four of those participants, which will include more in-depth questions on the same themes as the questionnaire.

Tabitha Rutonda

Education Psychology & Leadership Studies

Exploring the Challenges of Mentorship Programmes to Women Leaders in Higher Learning Institutions in Tanzania (East Africa)

Despite the efforts by the government, institutions and international organizations to enact law and policies to enhance gender equality in all spheres of life, Tanzania still faces gender inequalities in management of various institutions. Despite the government efforts in employment law, policies and gender strategies to remove inequality, still there are underrepresentation of female employees in senior leadership positions. In higher education institutions for example, still the number of women in the positions of power is a problem. In more than 50 higher learning institutions in Tanzania, only 2 women are the vice chancellors. Lack of role models and lack of mentorship programs are cited as challenges which are hindering women from progressing/holding the positions of power in higher learning institutions. Therefore this study intends to explore mentorship obstacles hindering academic female leaders to climb the ladders of leadership positions in Tanzanian higher learning institutions.

Lauren Sopic

Law (LLM)

Exploring Liability, Rights, and Remedies for Sexual Misconduct in Elite-Level Sports: An Interdisciplinary Analysis

This thesis explores the legal and societal dimensions of sexual misconduct in elite level sports, with a particular focus on North American elite-level hockey, and a focus on institutional accountability, victims' rights, and the scope of civil and criminal liability.

Drawing on Critical Legal Studies and Feminist Legal Theory, the research examines the cultural factors that allow sexual misconduct to persist and the legal mechanisms, such as slush funds, that sports organizations employ to shield offenders while compensating victims.

Hockey Canada's use of slush funds highlights the normalization of sexual misconduct as a "cost of doing business" rather than a systemic issue requiring institutional reform. This research questions why office misconduct is often inadequately addressed within elite sports and seeks to define the scope of legal liability for organizations that cover up criminal behavior. Key case studies, including *Carcillo v. Canadian Hockey League**, will be analyzed to assess the effectiveness of current legal frameworks, such as vicarious liability and alternative dispute resolution, in handling these cases.

Quantitative methods include statistical analyses of legal outcomes, while qualitative methods focus on interviews with legal and sociological experts, such as Dr. Cheryl A. MacDonald and Professor Taylor McKee, as well as thematic analysis of legal documents and media coverage. The research will consider the differing treatment of male and female victims, the media's role in shaping public perceptions, and the broader societal implications of institutional silence.

This study aims to propose reforms that will ensure greater legal accountability within elite sports organizations, emphasizing the need for independent oversight bodies to handle criminal misconduct. By addressing both legal and cultural issues, this research contributes to the ongoing conversation on sexual misconduct in sports and seeks to influence future policy and legal reforms.

Samira Sarkardei

Civil Engineering

Unveiling the Microbial Ecology of Biosand Filters

Biosand Filter (BSF) application in drinking water treatment have seen significant growth globally as household-scale water treatment systems. This is due to their simplicity in design, construction, operation and maintenance: potential for high user acceptability, especially in resource-constrained settings, where the provision of treated household drinking water is challenging. These techniques coupled with safe storage practices ensure that communities without piped water but with access to water sources (often polluted) in sufficient quantities have potable water for human consumption. Despite the global prevalence of these filters, there's a gap in understanding the microbial ecology and biological processes in intermittently operated system. From a technical perspective, an improved understanding of the functional microbial ecology within these systems at the household level may have important ramifications from both a public health and operational perspective to improve overall access of communities to clean and safe water, leading to better public health outcomes and a reduced burden of waterborne diseases. To evaluate the functional microbial ecology of intermittent household sand filters a systematic literature review is being conducted to identify if there is any evidence in the literature on the improvement of water quality using these filters that are microbiologically mediated. Building on that knowledge, the aim is to then quantify the extent of microbiological ecology and activity occurring and identify the dominant type of treatment.

Ethan Small

History

Recognition and Restoration: Exploring Ongoing Commemoration at Ontario's Psychiatric Hospital Cemeteries

In the past two decades, psychiatric hospital cemeteries, intended to inter deceased patients on or in proximity to an institution's property, often without identification, have become an increasing focus of commemorative and restorative efforts. Interested parties, including past patients, families, volunteers, governments, and the institutions themselves have been in tension, attempting to reconcile an appropriate means of marking the cemetery space. This project seeks to analyze the state of psychiatric hospital cemetery commemoration in Ontario by comparing three sites, Lakeshore Psychiatric Hospital (Etobicoke), Huronia Regional Centre Cemetery (Orillia) and Asylum Point Cemetery (Penetanguishene). Approximately 3800 people were interred between these three sites. The cemeteries had shared use lifespans, founded between 1890-1904, with final burials occurring between 1970-1974. Each bears striking physical similarities, yet there are great differences in the scale and persistence of commemorative efforts. Most efforts have been volunteer or patient led, while the Government of Ontario has either been a secondary presence or a hindrance to the goals of commemorative groups. In the case of these three particular cemeteries, the grave sites are especially important because the physical structures of the institutions are still in use by various parties, thus, they themselves are compromised as adequate sites of commemoration. The appropriate treatment of these spaces has been contested since they were first conceived, and yet, the matter remains unsettled and ongoing.

Elias del Valle

Environmental Studies

Fishing in turbulent waters: resilience, risk, and trust in British Columbia's declining commercial salmon fishery

The impacts fishing communities face as a result of declining fisheries productivity and access may largely hinge on measurable attributes of their social resilience. Wild-origin Pacific salmon populations have been in a marked decline since the 1960s, resulting in progressively declining access for many commercial fisheries. More recent acute stressors have caused appreciable tribulation to commercial fishers in British Columbia, raising concern over their capacity to remain viable in the industry, and underscoring the need to examine the fishery under a social resilience framework. Here, we coupled an online survey instrument with in-depth interviews to assess commercial salmon fishers' social resilience, socioeconomic characteristics, risk perceptions, trust in fishery management, and the relationships between these variables. Our results show that social resilience is low overall, with older, more experienced, and less diversified fishers being particularly vulnerable to declining salmon access. While 73% of fishers reported having plans to adapt to future declines in salmon access, 92% reported feeling that there are barriers impeding their adaptation, and 75% reported having no trust in fisheries management helping them adapt. Fishers' social resilience was positively correlated with their trust in, and perceived trust from fisheries management.

Stacey Voll

Psychology

Five Factor Frailty Measure

Background: Availability of large longitudinal population health and aging studies, such as the English Longitudinal Study on Ageing, hold many opportunities for the examination of the development of Frailty over time. Lacking are psychometrically robust longitudinal measurement of the concepts of frailty required for accurate and reliable estimates and identification of frail individuals.

Objectives. Development of a psychometrically robust longitudinal research tool of Frailty. The tool is to be easy to replicate for future use in health and aging research.

Participants/Measurements. Data comes from four waves of ELSA (2014-2017); N=39,528. Six domains of health status deficits that may measure frailty were used: Mobility, Daily Function, Self-rated general health, Self-rated pain, Depression, Self-report doctor diagnoses of health.

Design. Exploratory factor analysis (EFA) of common-self-reported deficits available across four waves of longitudinal data were compared to determine which deficits were a best fit for a research-based frailty index. Standardized regression factor scores were calculated to represent individual's placement in factors identified from EFA. Cross-sectional validation and reliability are reported.

Results. Five-Factors of Frailty found were consistent across ELSA waves. Mobility/Severe Pain, Planning/Self Care, Depression, Moderate Pain/Movement/Arthritis and Cardio-Metabolic. The variable make-up of each factor differed between males and females. Psychometric properties of the five factor frailty model were taken into account at each stage of development (factorability/sampling adequacy, cross-sectional replicability, internal consistency, low interdeterminacy, relations with age).

Conclusions. Five distinct factors of an accumulation of deficits approach to frailty were found. Use and development of the five factors of frailty research tool are outlined. This research tool will aid researchers in determining the complex risk factors and outcomes of empirically derived components of frailty in ELSA.

Maya Willard-Stepan

Geography

Land and Energy: Exploring the spatiality of clustering renewable energy for a low-carbon future

To mitigate the increasing impacts of climate change through the reduction of anthropogenic emissions, an urgent transition to renewable energy systems is needed. One challenge facing this transition is the environmental impacts of increasing renewable energy production, particularly through land development. Due to a lower power density than fossil fuels, renewable energy typically requires more land to produce the same amount of electricity. Consequently, expanding renewable energy production creates the potential for competing interests for the same landscapes in the coming years.

One emerging type renewable energy system is known as renewable energy clusters, which involve the is the co-location of multiple types of energy technology operating as one system. Clustering renewable energy has been shown to theoretically result in more reliable energy production. Despite their potential, there has not been work to understand how renewable energy cluster development is impacting the environment. Because land-energy interactions have been identified as important in protecting ecosystem services, understanding the impacts that renewable clustered energy systems have is critical in informing decision-makers on how and where they should be implemented. My research seeks to understand the question: to what extent does clustering renewable energy impact ecosystem services?

My research makes use of a global dataset of cases of renewable energy clusters being created by the RESET CoLab at University of Victoria. From this dataset I will construct a geospatial database of clusters and combine this data with publicly available landscape and ecosystem services information. As renewable energy production increases, providing policymakers with accurate on-the-ground knowledge of how clusters operate in practice will become critical to facilitating a low-carbon transition.

Presentations

Madeleine Abbott

Biology

Hermit crab parasites are H-O-T-T-O-G-O

Species interactions, such as parasitism, are likely to be altered by environmental changes brought on by climate change. Many parasites are understudied, and therefore there remains an incomplete understanding of how both host and parasite may react to climate change. Following the historic 2021 Pacific Northwest Heat Dome event, we compared the thermal response of hermit crabs infected by a common and widespread rhizocephalan parasite to uninfected individuals. We did not find a difference in metabolism based on infection status but found that uninfected individuals had higher survival following heat stress. This study demonstrates the importance of studying parasitism in combination with environmental factors to better understand the effects of climate change on populations.

Noura Abusamaan

Public Administration

Barriers for Newcomers to Health Services Access and Utilization in Canada

With more than 1.3 million newcomers settled between 2016 and 2021, Canada is one of the fastest-growing immigrant and refugee host countries. However, upon their arrival in Canada, newcomers unfamiliar with the processes and practices of the new host country face a range of emotional, social, economic, health, and cultural challenges.

One of the main challenges faced by newcomers in Canada is health inequality due in large part to an inadequate understanding of the Canadian healthcare system, socio-cultural and economic factors, geographic and linguistic barriers, and implicit discrimination. Facing disruption in accessing healthcare services reflects their place of origin, cultural values, and life experiences that differ from those of Canadian-born patients.

Therefore, understanding factors that facilitate and constrain the ability of service providers and policymakers in health and health-related sectors to accommodate the health needs of newcomers is essential to formulate and implement health policies that incorporate diversity, equity, and inclusion of newcomers, thus reducing social disparity in health outcomes.

Anthony Theodore Amato

Social Dimensions of Health

Pandemic of Inequality: How did COVID-19 Impact Loneliness and Discrimination for 2S/GBTQ+ Persons Living with Disabilities?

Introduction: Social inequities (loneliness and discrimination) are prevalent across people with disabilities and 2S/GBTQ+ communities (i.e., Two-Spirit persons, Gay, Bisexual, and Trans men, Queer and Non-Binary people) . However, little is known about how loneliness and discrimination were experienced in Canada at the intersection of disability and 2S/GBTQ+ communities.

Method: To address this knowledge gap, four cycles (2019, 2020, 2021, 2022) of cross-sectional, community-based Sex Now survey data were used, which included 2S/GBTQ+ people aged 15 years or older living in Canada. 12,354 2S/GBTQ+ participants responded to loneliness, while 11,575 to discrimination outcomes. Among 2S/GBTQ+ participants living with disabilities, multivariable logistic regression models of each outcome identified 1) temporal trends by year, and 2) social determinants of health correlates.

Results: Statistically significant differences in outcomes emerged across survey cycles. Compared with 2019, the odds of reporting loneliness were greater for 2S/GBTQ+ participants living with disabilities in 2020 and 2021. 2S/GBTQ+ participants living with disabilities who reported a racialized identity, financial strain, or a gender-expansive identity had greater odds of reporting loneliness. Compared with 2019, decreased odds of reporting discrimination were found in 2021 and 2022. Generally, older 2S/GBTQ+ participants living with disabilities had fewer odds of reporting discrimination, while racialized, queer versus bisexual identified, and gender-expansive, reported greater odds of discrimination.

Conclusions: 2S/GBTQ+ people were greatly impacted by greater loneliness and lesser discrimination during COVID-19. However, social inequities were present among 2S/GBTQ+ people living with disabilities. Equitable policy planning is needed to ensure that underserved yet deserving communities are not disproportionately affected by future pandemics.

Arjun Banik

Mathematics & Statistics

Unraveling Dolly Varden Survival Patterns: A Bayesian Multi-state Approach with Covariate Considerations

Recent advancements in the Cormack-Jolly-Seber (CJS) model, used for analyzing mark-recapture data, have primarily focused on accommodating variations in capture and survival rates among individuals. While several methods have emerged to link capture and survival probabilities to auxiliary variables—ranging from discrete to time-constant to population-wide, and even individual continuous covariates that evolve over time—the challenge remains unresolved for continuous covariates that vary over both time, individual, groups, and states. Our study focuses on examining the impact of fork length and reproduction (breeding state) on the survival of the anadromous Northern form of Dolly Varden, *Salvelinus malma malma*.

We introduce a novel Bayesian multi-state mark-recapture model adept at handling such covariates. This model incorporates temporal and sex-based changes via a diffusion process, and it establishes connections between covariates and capture and state transition rates using logistic functions. We validate the model's performance through simulations and subsequently apply it to real-world Dolly Varden data collected from five river systems in the Northwest Territories, Canada. However, we acknowledge that parameter identifiability may occasionally be compromised due to the complex life history of Dolly Varden and the high scarcity of data.

Yasmeen Barakat

Education Psychology & Leadership Studies

Development of Sexual Agency in Lesbian, Bisexual and Queer Women and Individuals: Implications for Sexual Health and Education Practices in Türkiye

Sexual agency is defined as the process of exercising choice and control over one's body and sexuality while coping with related social, cultural, and political restraints. Although sexual agency is considered significant aspect of individuals' personal, relational, and sexual well-being, its development has not been adequately studied in sexual minorities, particularly lesbian and queer women who negotiate sex with other women. In Türkiye, the LGBTQ community currently faces and has historically faced political pressure, discrimination, and heteronormative norms, while simultaneously building their resistance and solidarity. Therefore, studying sexual agency among lesbian and queer women and nonbinary individual's is essential, as it is under-researched, and understanding it can inform practices and interventions to support the community. Thus, the present qualitative research explored the following questions by utilizing a feminist perspective: 1) How do lesbian and queer women in Türkiye define and experience sexual agency? 2) How do they develop sexual agency? 3) How does the development of sexual agency get informed by other factors such as age or ethnicity? Semi-structured individual interviews were conducted, audio recorded, and transcribed verbatim. The sample consisted of 22 participants aged 19-42, mostly university students. Data analysis was conducted with an inductive thematic analysis approach. Analysis of the interviews revealed the following themes: a) Facing challenges, b) Gaining familiarity with LGBTQ+ sexuality, c) Gaining relational experiences, d) Accepting sexuality. Participants explained that socio-political and heteronormative pressure made exploring and accepting their sexuality a struggle. Connecting with the LGBTQ+ community through social media and personal relationships was the most important source of support in this struggle. The findings exemplify sexual agency and suggest that long-term educational and cultural reforms in Türkiye are essential to combat LGBTQ+ discrimination. Additionally, support services must become more accessible to empower sexual minorities, increase their visibility, and protect their well-being.

Adrià Blanco Cabanillas

Geography

Understanding linkages between atmospheric events and sea ice variability in Baffin Bay during recent high and low ice years

A rapidly warming climate is significantly impacting Arctic sea ice. A relevant area of interest is Baffin Bay, a complex sea ice export pathway that has experienced a dramatic reduction in extent and thinning since 2001. To better understand relationships between ice dynamics, atmosphere-ice-ocean processes, and atmospheric events, we utilize ERA5 reanalysis and high-resolution Copernicus Arctic Regional Reanalysis (CARRA) datasets to understand contributing factors leading to relatively high and low summer sea ice extents in recent years. Preliminary results indicate that 2019 had one of the two lowest summer ice extents since a regime shift to consistently below-normal extents occurred in 2001. Higher-than-average sea surface temperatures were observed throughout the 2019 melt season, coupled with prolonged open-water conditions, likely contributing oceanic heat accumulation, a delayed freeze-up, and another low ice extent in 2020. The frequent collapse or failure to form of an ice arch in Nares Strait to the north in recent years has been shown in related research to be a prevalent factor in modulating ice import into the bay. In winter 2019, no ice arch formed, unusually extending the seasonal ice flux duration throughout the entire ice year and reducing the impact of ice import resulting from an ice arch collapse and sudden ice incursion has on the summer sea ice cover. In this study we further examine the roles of high-wind events, often associated with deep low-pressure systems, their influence on ice arches, and other climatic processes in modulating sea ice dynamics in Baffin Bay.

Mikaela Chia

Educational Psychology & Leadership Studies

Intergenerational stories of resistance, systemic racism, and the Chinese students' strike

Stories that we tell and are told simultaneously shape and are shaped by how we understand the world, others, ourselves, our lived experiences, and thus, our identities. Storytelling can act as a vehicle towards liberation; simultaneously, the silencing of stories, can be manipulated as a vehicle for the transmission of harm across generations, such as in cases of intergenerational racialized violence and systemic trauma.

The Chinese Students' Strike (1922-1923) is an integral event of Canadian history, whose living stories have long been silenced. The Students' Strike represents a powerful narrative not only of intergenerational resilience, but also one of powerful resistance, while also shedding light onto the ongoing impacts of systemic racism, all of which continue to live on today. Through a narrative inquiry approach rooted in Critical Race Theory and Liberation Psychology, this project, in partnership with the Victoria Chinatown Museum Society, co-created stories authored for and by the Chinese Canadian community alongside four descendants of original strike participants who marched over a century ago. It aimed to carve out spaces of storying together, and through processes of witnessing and recognition, disrupt the traumatic impacts of systemic racism across generations, amplify continuing stories of resistance and power from the Chinese Canadian community, and work towards collective healing for past, present, and future generations. Preliminary themes and excerpts from the stories will be shared.

Chiara Choi

Mechanical Engineering

The Role of Topological Defects in the Mechanics of Additively Manufactured 2D Architected Honeycomb Metamaterials

Architected metamaterials, a subset of hybrid materials, can offer multifunctionality through their tuneable architectures for a wide range of applications. Recently, multiple literature studies have independently shown the introduction of heterogeneity (i.e. topological defects) in architected metamaterials can enhance damage tolerance, strength, and energy absorption. It is thought that the behaviour exhibited when introducing defects into geometry of the metamaterial, imitates that of grain boundary strengthening in polycrystalline materials. Thus far, the systematic mechanical investigation of this new class of metamaterials has not yet been conducted. In this study, we investigate additively manufactured 2D architected honeycomb metamaterials structures and assess the role of a unique kind of topological defect consisting of a pentagon and heptagon pair (referred to as 5-7 defects) arranged to mimic dislocations found in graphene. Similar to a crystal where the accumulation of dislocations forms a grain boundary, here the arrangement of 5-7 defects forms an interface or boundary known as a “meta-grain boundary”. We designed a range of single interface structures with various arrangements of 5-7 defects creating meta-grain boundaries based on different misorientation angles. These honeycomb structures are fabricated using additive manufacturing (Digital Light Processing DLP 3D printing) and subjected to mechanical testing (quasi-static in-plane compression). Finally, the confluence of experiments demonstrates that the arrangement of the 5-7 defects has impact on the properties and failure mechanism of the heterogenous honeycomb structures

Sophie Culos

Biochemistry & Microbiology

Determination of *Leptospira* Endotoxin Diversity in Host-Like Environment

Bacteria grown in a laboratory are not exposed to the same environmental pressures as those found in the host. With no immune system to evade, bacteria may modify lipids that make up their outer membranes, changing components that otherwise allow them to escape host recognition or resist antimicrobials. Studies on bacterial virulence should, therefore, utilize culturing conditions that mimic the host environment to ensure bacteria continue to express pathogen-specific mechanisms.

Our body of research is on the structure and modifications of a well-recognized bacterial outer membrane lipid, colloquially known as endotoxin. Modifications to endotoxin allow bacteria to induce inflammation, inhibit immune responses, adapt to systems of clearance, or acclimate to the host environment. Characterizing structural patterns of endotoxin and integral modifications is crucial for furthering development of efficacious antibiotics and vaccines.

This study examines endotoxin in *Leptospira* bacteria, the causative agent of the zoonotic disease leptospirosis. Infection in humans, pets, and agricultural animals results in illness, renal failure, pulmonary hemorrhage, and death. The majority of studies on *Leptospira* biology and virulence utilize a culturing medium that does not simulate the host environment. When grown in a host-like medium, gene expression of pathogenic *Leptospira* bacteria becomes similar to that of leptospires found in the host during severe infection.

This study will characterise *Leptospira* environmental adaptations via endotoxin structure and modifications in host-like medium. Endotoxin from *Leptospira* grown in both traditional and host-like media will be chemically extracted, purified, and examined using mass spectrometry techniques. *Leptospira* will be exposed to environmental stressors to examine further modifications to endotoxin and to identify corresponding enzymes.

This work presents a unique opportunity to explore *Leptospira* endotoxin expression in a host-like environment without the use of animal models. This is the first comprehensive work on the endotoxin structure-function relationship in *Leptospira*.

Jesse Delmage

Chemistry

Using Simulations to Understand Nanomaterials

Measuring in at a billionth of a meter, studying materials on the nano scale has challenges. Nanoscale refers to materials that are in the range of 1nm to 1000nm of size, about one-millionth the size of a grain of rice. Nano materials have gained popularity due to their usage in fields such as spectroscopy, medicinal chemistry and material science. To study molecular behavior on this scale, computational chemistry has become the tool of choice. Computational simulations have allowed chemists to accurately model behavior of single molecules or interactions between two molecules. Molecular dynamics refers to a class of simulations where the trajectory of a system of atoms is tracked as they evolve in time. My research aims to utilize molecular dynamic simulations to explore metal atom exchange reactions between nano structures containing gold and silver atoms. One challenge of molecular dynamic simulations is capturing a meaningful time scale. Due to the complexity of the calculations done, simulations can take days to yield results spanning one trillionth of a second, whereas reactions often occur in seconds to even minutes. To overcome this barrier, a method known as meta dynamics can be used to accelerate simulations by giving molecules an energetic push to favor reaction paths. The goal of this research serves two purposes. Primarily, this research will further the methodology for applying meta dynamics simulations to research nano structures. Secondly, we hope to offer insight into the mechanism behind inter nanostructure metal atom exchange reactions furthering our understanding of these materials and their functional uses.

Anna Dema

Biochemistry & Microbiology

Synthesizing proteins outside of the cell: a more rapid and cost effective means of producing antimicrobial peptides

Antimicrobial resistance (AMR) is a prevalent issue in both medicine and agriculture and is caused by the overuse of antibiotics. The WHO predicts that by 2050, there will be 10 million deaths annually due to AMR. Antimicrobial peptides (AMPs) are short proteins that can fight against pathogens such as bacteria or fungi and are thus a promising alternative to antibiotics. Our goal is to find a method to produce these AMPs in a way that is rapid, cost-effective, and scalable. We are working with AMPs that are specific to two important pathogens: avian pathogenic *Escherichia coli* (APEC) and *Salmonella enterica* Enteritidis. Normally, proteins are synthesized inside of cells where all the required intracellular machinery and biological materials are localized. When synthesizing proteins for industrial purposes, this is traditionally done through yeast fermentation. This process can be quite complex and time consuming (1-2 weeks) and requires a high level of precision and fine-tuning. Cell free protein synthesis (CFPS) is method that has recently re-emerged as a more rapid and cost-efficient alternative to traditional fermentation as it can occur in a fraction of the time (1-2 days), is less sensitive and susceptible to damage from toxic by-products and more flexible. CFPS uses the usual cellular machinery needed for protein synthesis but outside of living cells to produce peptides. We will determine and optimize the most suitable production method, whether it is CFPS compared to traditional fermentation, for each of our AMPs of interest that can combat APEC and *Salmonella* infections in poultry.

Elisa Do

Psychology

A Community of Joy and Pride in Queer Bodies

The stigma that lesbian, gay, bisexual, transgender, and queer (LGBTQ) people face is an ongoing social issue that continues to affect many in our communities today. This social stigma affects LGBTQ people's mental health and wellbeing, and in particular, it can negatively affect their relationship with their own bodies. Queer bodies are stigmatized and viewed as abnormal, and this can lead queer folks to feel uncomfortable or out of tune with their body. One way for queer people to experience a safe space and build self-esteem is by participating in queer community gatherings. Since the 1970s, June has been celebrated as Pride Month across North America in honour of the Stonewall Uprising that happened in protest of discrimination against LGBTQ people. Today, events during Pride Month include a wide range of activism and celebrations from parades and dances to drag performances and sports. Events such as those that take place during Pride Month offer the opportunity for LGBTQ people to come together as a community. This study aims to explore how community engagement, coupled with the physical activity required during Pride Month festivities, can help LGBTQ people feel safe in their bodies and break down negative stereotypes they may have internalized from social stigma. For this study, data was collected during the 2024 Victoria and Vancouver Pride Festivals. More than 80 participants answered open-ended questions about how their participation during the festivals affected their relationship with others in the community and how they feel regarding their queer identity. Data will be analyzed qualitatively using reflexive thematic analysis. Results from this study will provide a better understanding of how community engagement and physical activity during activism can benefit queer people's wellbeing, enhance their self-esteem, and empower them in their identities.

Semyon Drozdetskii

Anthropology

Space, Place and Identity in Ethnic “Minority” Communities in Russia

The scope of this proposed study unites two ethnic “minorities”* of modern Russia. The first is the Itelmens, Indigenous People of the Kamchatka peninsula in the Far East of the country. The second is a community of Belorussian settlers in the Kurgan Oblast of Trans-Urals, descended from a group of colonists from the territory of modern-day Belarus who arrived in the region in the mid-nineteenth century. It is planned to explore cultural differences and similarities in the sense of place in these two communities. And especially commonalities in the transformation of this sense of place under the influence of Russian and Soviet government policies imposed on both communities (e.g., Russification, collectivization), forced resettlement, and major events in Russian history (e.g., the Russian Civil War, the collapse of the Soviet Union). This is to understand the importance of space taken by community, and places’ significance in identity shaping of ethnic “minorities” in Russia.

*The term “minority” is deliberately placed in quotation marks to emphasize that these communities are only relatively few in numbers within the context of Russia, and also to not undermine their relationship to their lands.

Mahayla Galliford

English

Five Minutes on Rachel Fane's May Masque (1627)

Rachel Fane (1613-1680), later Countess of Bath, was fourteen years old when she wrote *May Masque* (1627). The masque survives in a single manuscript at Kent Archive Office at Maidstone and provides a rare glimpse into the mind of an educated young woman in the seventeenth century. Masques allowed women to write and perform plays at a time when they were still not allowed on public stages. My project is the first scholarly, digital, critical edition of Fane's *May Masque* and will be available via an open-access UVic digital humanities project, *Linked Early Modern Drama Online (LEMDO)*, to mobilize knowledge, broaden the early modern dramatic canon, and supply a major pedagogical and scholarly need.

Shakespeare and a few male contemporaries still dominate the field of early modern studies; therefore, there is a need for the perspective of a young woman writer who because of her age and gender has been historically neglected. Yet, Shakespeare's works are crucial to Fane's text because *May Masque* is an early reception of *A Midsummer Night's Dream* and *The Winter's Tale* (O'Connor) which means that her important and intertextually rich text can be integrated into courses on early modern literature.

I will encode Fane's masque following the Text Encoding Initiative Guidelines with the LEMDO tag set for editing and encoding early dramatic works. I will give Fane's text crucial legitimacy and interoperability by editing and encoding the text using the same treatment as LEMDO does for the *New Internet Shakespeare Editions*. My final product will be a teachable resource on the LEMDO site, including a critical introduction, annotations, and collations tracking my editorial interventions.

Women on the page and stage have been left out of many histories; my edition of *May Masque* is feminist recovery work that will enrich our understanding of early modern literature.

Jason Gratl

Faculty of Law

Truth in Adjudication: Truth as Remedial, Normative and Overriding

There is a contest over whether trials produce truth. On one hand, Courts have repeatedly identify truth-seeking as the core purpose of the trial. Courts evaluate and determine adjudicative processes on the basis of their contributions to a truth-seeking apparatus.

On the other hand, critics of adjudicative processes deny that the Courts are truth-seeking. They say that adjudicative systems obscure, interfere with, or even pervert the quest for truth. They say damage is done to the search for truth by privileges (informant, solicitor-client, spousal, national security, cabinet), rules for exclusion of evidence, stipulated evidence and restrictive appellate review of facts. Access to justice considerations - including financial imbalance and costs of producing evidence or conducting investigations - impede truth-seeking. Worse, the adversarial system is said at its core to actively incentivize distortion and dissembling by parties.

Reconciling these divergent views starts with recognizing that truth in adjudicative trial process is remedial, normative and overriding. Truth is remedial because its process always connects to practical consequences and outcomes. Truth is normative in the sense that the truth is always the reason for which action is taken (there is no is/ought gap between the truth and the remedy). And truth in adjudication is overriding in the sense that it is better or more meritorious than the truth expressed by other non-adjudicative processes.

Understanding the remedial, normative and overriding aspects of truth produced by adjudication is fundamental to reconciling the tension because adjudicative truth is finite, partial, practical, value-laden, institutionalized and situated in a social-political context. The perceived failings of truth-seeking adjudication are largely the product of overly ambitious aspirations for adjudicative truth on the part of its critics. In ascribing truth-seeking to their own virtues, Courts should limit their truth-seeking claims to their modest domain.

E. Brooke Hayes

Environmental Studies

Measuring soil health using tea bag litter decomposition

Measuring soil health in response to anthropogenic and environmental forces is an important activity to document ecological changes that are meaningful to land managers. Defining and measuring soil health is a challenge that remains mostly unresolved, in part due to variability arising from crops, soil types, and climates, and due to the complexity of describing and understanding soil as a vital living system. Teabag litter decomposition was assessed to determine its value as a measure of soil health, relative to standard chemical and physical laboratory alternatives in an agricultural context across diverse production systems and soil types in British Columbia, Canada. Additionally, teabag litter decomposition was assessed to determine its sensitivity to crop type (annual vegetables, perennial fruit and trees, and grain/forage), and management system (conventional, organic, regenerative). Assessments were completed by engaging two groups of farms and farmers, creating two datasets that allowed for different types of analyses. The first group was composed of 35 farms that completed teabag litter decomposition using two types of tea (red and green), in addition to comprehensive chemical, physical and biological soil health assessments on three individual fields per farm where teabags were buried. A second group of 22 farms conducted tea bag litter decomposition analysis on three fields each. Management system and crop data were collected for all participants on 171 fields in total, and 545 retrieved teabags. This presentation presents findings arising from this research.

Heather Kwan

Psychology

How does modifiable and non-modifiable estrogen influences grey matter volume?

It is projected that the global population of adults above age 60 years will surpass 2 billion by 2050. Age related cognitive decline represents a prevalent issue and research has demonstrated that women are at greater risk than men. Changes in cognitive function with age are influenced by many factors and may include the natural lifetime exposure to estrogen and the transition to menopause. While the exact relationship between estrogen and the aging brain is unclear, the hormonal changes in menopause have been associated with a decline in grey matter volume. However, some studies have demonstrated that the use of hormone therapy may mitigate some of the effects of cognitive decline. The current study used magnetic resonance imaging techniques to examine the relationship between grey matter volume and natural lifetime estrogen exposure and differences in grey matter volume between women who used hormone replacement therapy and those who didn't. The data were retrieved from the Women's Healthy Ageing Project. Results demonstrated no significant corrections between whole brain grey matter volume and lifetime estrogen exposure. There were no significant differences between groups based on hormone therapy use. However, there was a trend towards a positive correlation between hormone replacement therapy use and grey matter volume. As the aging population continues to grow globally, it is essential to better understand the variables that influence trajectories of aging; especially for women, who are particularly at risk for age-related cognitive decline.

Kate McMurray

Biochemistry & Microbiology

Metabolite quantitation in small samples using nano-flow liquid chromatography

In cancer, changes occur not only in DNA but also in a cell's metabolism. Unlike DNA, we cannot simply increase the concentration of cellular metabolites (the small molecules involved in metabolism), which means we often need larger samples to detect them. However, cancer research typically relies on animal or human samples that may be available in limited amounts. Developing highly sensitive methods for the detection of metabolites will enable research involving small samples.

One common technique for detecting metabolites is liquid chromatography mass spectrometry, a method that separates metabolites based on chemical properties, such as hydrophobicity, and detects them based on their mass. Unfortunately, when using traditional liquid chromatography with small samples, the metabolites can become too diluted to detect effectively. An alternative approach, nano-flow liquid chromatography (nanoLC), uses tiny amounts of liquid to separate metabolites, making it possible to work with smaller samples. While nanoLC has been used to compare metabolite levels between small samples, it hasn't been fully explored for precise measurements.

In our research, we tested nanoLC using ovarian cancer cells to see if it could accurately measure metabolites in very small samples. Traditional methods typically require about 1,000,000 cells, but we aimed to measure metabolites in just 10,000 cells. The sensitivity increases in our miniaturized methods exceeded our expectations, with some of our metabolites of interest quantifiable in fewer than 10,000 cells. This breakthrough means we can now analyze valuable samples from animals and humans that are difficult or expensive to obtain, opening the door to previously unanswerable hypotheses. Our findings show that nanoLC is a powerful tool for improving metabolite measurement, and we are continuing to expand the range of quantifiable metabolites in small samples using this approach.

Sean Morgan

Psychology

Conflict Resolution in Expectant Couples: Behavioral Patterns and Their Long-Term Effects on Relationships

Conflict management is key to the health and longevity of romantic relationships. While positive behaviours like problem-solving and empathy can strengthen intimacy and resolve conflicts quickly, negative behaviours (e.g., hostility and avoidance) can harm relationship functioning and has been associated with negative outcomes like intimate partner violence. The transition to parenthood is a particularly challenging time, as couples face new roles and heightened stress. Previous research suggests that couples who rely on negative conflict behaviours can experience higher divorce rates and lower relationship satisfaction over time.

This study examines how couples expecting their first child handle conflict and how these behaviours predict relationship outcomes. 96 couples at the third trimester of pregnancy participated in conflict discussions, which were then observed and coded using the Couples Affect Intensity Rating System (CAIRS). We then followed these couples 1, 2, and 4 years postpartum to assess their relationship and individual functioning. After the results were obtained, we confirmed the CAIRS rating system, finding four clusters of behaviours: problem-solving, empathy, hostility, and distress/withdrawal.

Forthcoming results will explore how positive and negative conflict behaviours are linked to each partner's satisfaction, mental health outcomes (e.g., depression, anxiety, etc.), and other critical factors, including the occurrence of intimate partner violence. Moreover, we will assess whether these behavioural patterns predict divorce rates throughout pregnancy and early parenthood. These findings can aid in identifying negative conflictual patterns in prenatal couples. Moreover, these results will inform interventions aimed at promoting healthier conflict resolution strategies during this critical life stage.

Asma Noureen

Education Psychology & Leadership Studies

Creating Queer Livable Spaces: Queer Muslims Challenging the Visibility Paradigm in Queer Migration Processes

My research explores how the pursuit of higher education abroad allows queer Muslims to create queer livable spaces as an alternative and a resistance to the Western notions of queerness and visibility paradigm. Based on 14 in-depth, semi-structured interviews and autoethnographic reflections and centering the concepts of livability and queer livable space, my research highlights that queer Muslims move in and out of the closet seamlessly depending on the situation to maintain their livability. They often choose to stay closeted about their non-normative genders and sexualities in their home countries, particularly with their biological families to avoid homo/trans/queerphobia and physical violence. At the same time, they express themselves in other places, such as in private queer circles, dating apps, or abroad, where they feel safe. Queer Muslims migrate from their home countries to LGBTQ-friendly locations through the pursuit of higher education which allows them the flexibility and feasibility to create queer livable spaces through financial stability and social standing. They question the need of coming out and claiming a queer identity as it does not usually help them in maintaining relationships with their loved ones and/or avoid violence directed at queer people. They move between being visible and invisible as queers depending on the situation they are in and the people they are with, challenging both heteronormativity and homonormativity. This dance between visibility and invisibility helps them create queer livable spaces where they can be themselves and find queer belonging while also maintaining their familial and communal ties and avoiding queer/trans/homophobia and violence.

Jasmine Padam

Sociology

Mapping Migration: A Qualitative Analysis on the Federal Immigration Process and Experiences of Sikh Women in Canada

Canada's immigration policies create significant challenges for Sikh immigrant women. This is detrimental, as Canada holds the largest Sikh population outside of India since the establishment of the Immigration and Refugee Protection Act. Sikh immigrant women who face ongoing struggles when establishing themselves in Canada often lose their autonomy and become financially dependent on their husbands, with higher risks of becoming a victim of physical abuse. Consequently, these women face further scrutiny from the Sikh-Canadian community when attempting to voice their victimization. Therefore, there is an urgent need to understand the daily experiences of this group from a qualitative perspective. My research will address this gap through a qualitative model to contextualize the experiences of these women. Applying an intersectional feminist lens, I will investigate how race and gender intersect in the everyday lives of Sikh immigrant women. Two questions will guide my research: How do Sikh immigrant women interpret and experience federal immigration regulations? And, in what ways do these experiences affect the manner in which Sikh immigrant women adapt to Canadian society? As an ethnic minority female, my goal is to recognize policy gaps between Canadian immigration policies and Sikh immigrant women experiencing traumatic events and a lower quality of life. The contributions of my research will detect how the government can improve the livelihood of these women and how current federal funding can be re-distributed to improve resource allocation. Overall, my research seeks to build positive bridges of improvement to combat a historical legacy of racial and gender discrimination in the immigration process.

Tara Poole

Educational Psychology

Teachers' Perspectives of School Belonging as Educators and Students: A Narrative Inquiry

This study aimed to gain a deeper understanding of how experienced, mid-career, and novice school teachers perceive and promote students' sense of school belonging (SOSB) through a narrative inquiry approach. Over the past two decades, research on SOSB has gained significant attention due to its potential to address enduring educational challenges such as high dropout rates, low academic performance, student alienation, and disengagement. Extensive research supports the idea that SOSB—a student's subjective feeling of acceptance, inclusion, and attachment to their school—is critical for fostering positive academic and psychosocial outcomes. However, there is a scarcity of qualitative research on this topic, particularly in Canadian contexts. This study used two semi-structured interviews to collect rich narratives from three teachers at different career stages, exploring their perspectives and experiences of SOSB, both as educators and former students educated in British Columbia. The findings revealed that teacher and peer relationships, the school's physical environment, family contexts, and perceived safety at school play significant roles in shaping students' sense of belonging. Additionally, the study suggests that school staff can foster a stronger SOSB by building meaningful relationships, acknowledging students' strengths, encouraging their passions, and creating diverse, inclusive spaces that facilitate positive peer interactions.

Camryn Riccitelli

Geography

Roll for Perception: Games as a Site of Decolonization

Gaming is one of the fastest growing industries in the world today. In the video games market alone, the number of gamers is expected to reach 3.1 billion by the year 2027 and tabletop gaming is rapidly gaining popularity. Humans learn through play and games can be used to actively engage the player and teach difficult content, “[making] them a part of the experience rather than a passive observer”. While there has been a call for more diverse games and representation, and researchers in the field of game studies have explored how games perpetuate colonial narratives, there is little research on actively changing those narratives and designing games with the purpose of decolonizing not only the game itself, but the way people play it, and the values and ideas they take away.

The primary goal of this study is to examine the potential role of video and tabletop games in advancing decolonization and progressive social change and the relationship between player and game space, with the objectives of: understanding how players perceive game content; considering the decolonization potential of games and their effectiveness; and mobilizing games and game space as sites for social change. Looking at the role games play in decolonization efforts will help unwork colonial structures within today’s games and make gaming a more inclusive and rich experience. Using qualitative research methods, this study focuses on the experiences of players and the reciprocal relationship between player and game.

Hannah Schnicke

Chemistry

Biodegradable Two-Dimensional Platelets with Tunable Sizes from Polycarbonate-Based Block Copolymers

The use of two-dimensional (2D) nanostructures in biomedical applications has received considerable attention due to their prolonged circulation times in the bloodstream, reduced accumulation in the liver, and reduced immune system recognition. However, it remains a challenge to access uniform flat nanostructures with controlled size and spatially tailored chemistries. Living crystallization-driven self-assembly (CDSA) has emerged as a promising approach to prepare well-defined 1D and 2D coreshell micellar assemblies from crystallizable block copolymers (BCPs). Nevertheless, the development of biocompatible aliphatic polycarbonates, such as poly(trimethylene carbonate) (PTMC), as coreforming blocks for CDSA are considerably less explored and represent a key challenge due to their low crystallinity. Herein, we report the development of poly(dimethyltrimethylene carbonate) (PDTC) as a crystallizable core-forming block through side-chain engineering of PTMC. The BCPs containing crystallizable PDTC were shown to undergo living CDSA to prepare uniform and size-controlled 2D platelets. In addition, uniform segmented platelets with spatially localized coronal chemistries were successfully constructed. The colloidal stability of the platelets in aqueous solution allowed for an assessment of their toxicity toward healthy WI-38 and cancerous U-87 MG cells. These studies reveal that PDTC nanostructures exhibit no discernible cytotoxicity and excellent biocompatibility, indicating great potential for biomedical applications.

Alice Shen

Psychology

From Emotion to Action: Linking Emotional Knowledge, Emotion Regulation, and Disordered Eating

Facets of Disordered Eating (DE) has long been suggested as a maladaptive avoidance-based emotion regulation strategy. Since the emotion regulation (ER) is a context dependent process requiring the mobilization of emotional knowledge, characterized by a clear understanding of one's emotions and their attributable causes, the skills required to select adaptive ER strategies more suited to one's needs can be disrupted. The present study investigated the direct relationship between Deficits in Emotional Knowledge (DEK) and DE in young adults oversampled for engagement in DE ($n = 179$), and whether deficits in ER abilities mediated the relationship between DEK and DE. A simplified measurement model of DEK was used to predict DE through a parallel mediation model specifying deficits in four ER abilities: impulse control, goals, access to ER strategies, and acceptance of emotions. The relationship between DEK and DE severity was collectively mediated by the four ER ability deficits. However, difficulties mobilizing goal-directed behaviours negatively mediated this relationship, outlining a need to examine the orientation of goals among young adults engaging in DE.

Madison Shiyuk

Biochemistry & Microbiology

Mapping the Tumour Microenvironment with MALDI Mass Spectrometry Imaging

The tumour microenvironment (TME) contains a variety of cell types that influence each other via molecular signals. Cancer cells attempt to hijack the TME to promote tumour progression [1]. Some cancers, such as ovarian carcinoma, reprogram the metabolism of the TME to avoid elimination by immune cells by using cancer-derived metabolites to prevent immune cell infiltration. We aim to determine which metabolites are immunosuppressive in ovarian carcinoma to identify potential therapeutic targets.

The location of metabolites with respect to immune cells in a tumour can indicate their function. Metabolites in regions with few immune cells may be immunosuppressive. We can investigate the spatial distribution of molecules in a tissue with mass spectrometry imaging (MSI). This technique involves preparing tissue slices on glass slides and using a laser to generate ions from thousands of pixels across the tissue. Ions are accelerated through the mass spectrometer, and the mass detector reports their mass-to-charge ratio. Measured masses are aligned with known molecular masses to identify ions. Data is assembled into an ion “image” showing where a given molecule localizes in a tissue. The first step in our workflow is to perform MSI on metabolites in ovarian cancer.

Different metabolites have diverse properties, thus requiring unique combinations of sample preparation, data acquisition, and data processing steps. We have created a library describing the best workflows for detecting metabolites of interest to our collaborators. Future work will involve expanding on these workflows to acquire images of immune cells and metabolites in one experiment. To further map the TME, immune cell-specific surface proteins will be bound with antibody probes. MSI will be used to detect these probes and generate images of immune cells in the tumour. This will enable visualization of spatial correlations between immune cells and metabolites to facilitate discovery of targets for immunotherapy.