



**UNBC**

**Research Week**

**2020**

***March 2 – 6***

***20/20***  
***Research***  
***in Focus***

# Table of Contents

## Monday, March 2

Registration	3
Research Week Kick-off and Welcome	3
Keynote Speaker – Dr. Max Blouw	3
Presentations – The Business of Mathematics, Corporate Social Responsibility, Optimal Employee Density, and Economics	3
Lunch and Learn – So You’ve Published Your Research... Now What?	5
Special Presentation – API Economy: Research and Innovation Opportunities and Challenges	5
Poster Presentations	5

## Tuesday, March 3, 2020

Registration	7
Welcome	7
Presentations – Tracing Sediments and Traditional Indigenous Governance	7
Special Presentation – Research in the North, For the North: The Unique Community-based Model of the BVRC	8
Presentations – Research Potpourri: Nursing Education, Inuit Governance, and Substance Abuse Prevention	8
Lunch and Learn – Research Data Management	9
Three Minute Thesis (3MT®)	9
Public Panel – The Nechako Watershed Portal: An Integrative, Geospatial Tool to Bridge Governance, Knowledge Exchange, and Information-sharing Needs, and Foster Co-benefits for Health, Ecosystems and Equity	10

## Wednesday, March 4, 2020

Registration	10
Welcome	10
Public Panel – Learn From Students and Older Adults Who Lived Together for One Semester in a Long-term Care and Assisted Living Facility as Part of an Intergenerational Co-Housing Experiential Learning Opportunity	11
Presentations – Topics in Healthcare I: Perinatal Depression, Gender-based Frameworks, Palliative Care, and Social Media	11

Lunch and Learn – Trailblazing Harmonized Research Ethics in B.C.	12
Presentations – Topics in Healthcare II: Telehealth, Health Care Barriers, Genomics, and Nervous System Development	12
Public Panel – Cumulative Impacts Research at UNBC: Origins, Insights, and Emerging Directions	14

## Thursday, March 5, 2020

Registration	14
Welcome	14
Special Presentation – Cultivating Talent and Promoting Innovation: Equity, Diversity, and Inclusion in STEM	15
Presentations – Glyphosate, Oil Spills, Copula Functions, and Pediatric Cardiology	15
Lunch and Learn – Bridging Students and Research Involvement: UNBC Research Ambassadors Program	16
Interdisciplinary Weekly Seminar Series (IWSS) – Needles, Bushes, Hairbrushes and Polynomials	17
Poster Presentations	17

## Friday, March 6, 2020

Registration	18
Welcome	18
Presentations – Flowers, Fantasies, and Climate Change	18
Special Presentation – Advancing Forward: Intro to the New Tri-Agency Guide on Financial Administration	19
Global Friday Speakers Series – Northern and Indigenous Women’s* Experiences and Policy Engagement in the Context of Resource Extraction in the Canadian North	20
Closing Awards and Reception	20
Natural Resources and Environmental Studies Institute (NRESi) Colloquium – Canadian Institute of Forestry (CIF): Cariboo Section Master’s Night	20

# Monday, March 2, 2020

## Registration

**9:15am–9:45am**  
**Bentley Centre**

## Research Week Kick-off and Welcome

**9:45am–10:30am**  
**Bentley Centre 7-170/172**

**Lheidli T'enneh First Nation Welcome**  
Elder Darlene McIntosh

**UNBC Welcome and Opening Remarks**  
Dr. Geoff Payne – Vice President Research

**Research Impact Video**

## Keynote Speaker – Dr. Max Blouw

**President, The Research Universities Council of BC**  
**10:30am–11:00am**  
**Bentley Centre 7-170/172**

Dr. Max Blouw was appointed President of The Research Universities' Council of British Columbia effective October 1, 2019. He relocated to British Columbia from Ontario where, as President and Vice-Chancellor of Wilfrid Laurier University from 2007 to 2017, he championed evidence-based decision-making, research and graduate students. He also served as Chair of the Council of Ontario Universities and as a member of Universities Canada. Prior to that, from 1995 to 2007, he was professor of biology, and subsequently Vice-President Research, at the University of Northern British Columbia.

He has held lead roles in numerous organizations and has served on many boards, including three universities. Dr. Blouw has BSc and MSc degrees from the University of Manitoba, and a PhD in biology from the University of New Brunswick. He is also an Institute of Corporate Directors Certified Director. He is married to Lynn and has two adult sons, Carl and Peter.

## Networking Break

**11:00am–11:15am**

## Presentations – The Business of Mathematics, Corporate Social Responsibility, Optimal Employee Density, and Economics

**11:15am–12:15pm**  
**Bentley Centre 7-170/172**

**Dr. Andy Wan – Assistant Professor, Department of Mathematics and Statistics**

*Structure-Preserving Numerical Methods*

In the past seven decades, major advances in computational mathematics have led to significant impacts in many areas of science and engineering. This is accomplished by numerical simulations of complex differential equations arising from diverse applications. For instance, in physics, simulations of Einstein's equations of general relativity have led to a deeper understanding of merging of black holes and galaxies. In chemistry, large scale molecular dynamic simulations have revealed new complex structures and statistics of molecules. In engineering, modern buildings, vehicles and aircrafts are designed and simulated on computers before prototypes are built to minimize cost. In economics, simulations of optimal transportation have been applied to understand the matching theory in labor markets. In climate modelling, uncertainty and measurement are quantified and combined in order to produce long-range accurate predictions. In machine learning, parameters are optimized in deep neural networks to produce high accuracy in classification problems.

All these important applications are made possible due to fundamental advances in design of accurate, efficient and stable numerical methods. Moreover, in recent decades, numerical methods that preserve geometric structures have been shown to be an important feature for accurate long-term simulations. In my research, I tackle the fundamental problem of preserving geometry of differential equations in numerical simulations. In this talk, I will discuss recent advances in this research area and highlight its applications in science and engineering.

This talk is accessible to a general audience. Students are especially encouraged to attend.

### **Dr. Chengbo Fu**

#### **Assistant Professor, School of Business**

*CSR Disclosure of Foreign versus U.S. Firms: Evidence from ADRs*

Corporate social responsibility (CSR) is increasingly demanded by investors worldwide. In this paper, we study whether foreign firms listed on U.S. markets are competitive to U.S. firms in terms of providing better CSR disclosure. We also examine whether such transparency allows foreign firms to achieve a competitive advantage relative to their U.S. counterparts. Using environmental, social and governance disclosure scores, we find that foreign firms disclose more than comparable U.S. firms, particularly in the environmental and social dimensions of CSR. Furthermore, we find consistent evidence that compared to U.S. firms, foreign companies listed on U.S. stock markets with better CSR disclosures have lower idiosyncratic volatility, better liquidity, and higher institutional ownership.

### **Dr. Balbinder Deo**

#### **Associate Professor, School of Business**

*Deo's Formula for Optimal Employee Density to Reduce Theft-Related Shrink*

Theft-Related Shrink (TRS) is a common problem in the retail industry and researchers and retail managers have proposed various solutions to reduce it. Most of the solutions proposed and discussed in literature are in the domains of retail surveillance systems and structures, surveillance technology installation and its upgradation, economic incentives to employees, training and development of employees, and recruitment and hiring full time employees. A few quantitative studies have reported the negative relationship between the retail floor employee density (ED) and TRS. These studies have indicated that an increase in ED leads to reduction in TRS. However, there is a gap in the literature related to optimizing employee density to reduce TRS, as this idea has not been explored and presented in the extant literature.

In this paper, a formula is developed and presented for optimal employee density (OED) to reduce the sum total of TRS and the employee's cost (EC) to the minimum. The formula could be useful to researchers, retail store managers, and human

resource professionals in the retail industry to assess the number of employees required to minimize the sum total of EC and TRS and then accordingly plan the employee recruitment and hiring process.

### **Sara Wray Enns**

#### **MA, Development Economics**

*Economic Development Outcomes from the Creation of the Tuktoyaktuk-Inuvik Road*

In 2017, an all season road opened up between Inuvik and Tuktoyaktuk in the North West Territories (NWT). This road provides a unique case study in Arctic development because of the context in which it was built, and because of the economic development prospects it affords the community. This is worth studying in detail as further road development in NWT is considered.

The road was not built in a context that was required by resource development, nor was it an imposition from federal authorities. Instead, it represented a project that the communities of Inuvik and Tuktoyaktuk advocated for over 30 years. Construction and maintenance are delivered by Indigenous owned organizations. This context shows how development projects can be managed in ways that are supported and encouraged by Indigenous communities, though this support was not necessarily universal.

The economic effects of the road opening are varied, and in some cases surprising. These effects included increased food security and decreased food and fuel prices, unexpected tourism development, and the potential, or lack thereof, for the road to facilitate resource development. To date, little research has been published on the effects that the Inuvik Tuktoyaktuk road has had on these aspects of economic development. As the NWT government looks to construct more roads, the Tuktoyaktuk case will provide important insights into how to do this development well.

## Lunch and Learn – So You’ve Published Your Research... Now What?

**12:30pm–1:15pm**  
**NUSC Event Space 6-250**

**Presenters: Matt Wood, Director of Communications & Marketing, and Erin MacDonald, Senior Communications Advisor, UNBC Office of University Advancement**

Join Matt Wood and Erin MacDonald from the Office of University Advancement for an informal Lunch and Learn session where you will learn tips and tricks on using traditional and social media to help to publicize your work, raise your profile, and promote the impact of your research.

A light lunch will be available beginning at 12:15pm.

## Special Presentation – API Economy: Research and Innovation Opportunities and Challenges

**1:30pm–2:30pm**  
**Bentley Centre 7-170/172**

Application programming interfaces (APIs) have transformed our digital world by connecting data, processes and people. There are thousands of APIs publicly available for creating innovative research work/applications dealing with public services, health sciences, business, social media and many others. APIs offer great benefits, but they come with security and legal risks. Unfortunately, there are no readily available repositories that provide (security/legal) assessments on these publicly available APIs. Existing repositories such as API.io, RapidAPI, ProgrammableWeb and others are best at providing API endpoints, vendors and other information, which are not sufficient to address the security and legal concerns.

In this session, the speaker will talk about making data-driven applications more INNOVATIVE (through multiple APIs) yet SECURE (from cyber-attacks) and COMPLIANT (with GDPR, HIPPA, EU-US Privacy Shield, and other regulations). Overall, the audience will learn about how to: (1) take advantage of the myriad of public APIs; (2) accelerate your research and product development; (3) meet your compliance regulations; (4) reduce your legal and operational risks.

## Poster Presentations

**2:30pm–3:30pm**  
**Bentley Centre**

**Kelly Pratt – BAsC Civil and Environmental Engineering; Peter Zhao, MSc NRES; Dr. Jianhui Zhou, Integrated Wood Engineering**  
*Vibration Serviceability Performance of Dowel Laminated Timber Floors*

**Louisa Hadley – MA NRES; Kyle Aben, Environmental Science; Dr. Steve Helle, Environmental Engineering; Nathan Malcomb, MSc NRES**  
*UNBC Campus Commuting Carbon Audit Project*

**Patrick Robinson – MSc NRES Forestry**  
*High Resolution Wildfire Fuel Mapping Using LiDAR to Inform Climate Adaptation Planning for the Xaxli’p First Nation*

**Nicole de Blois – MSc NRES Biology; Dr. Brent Murray, Ecosystem Science and Management; Dr. Jeanne Robert, Adjunct Professor and Regional Forest Entomologist Omineca and Northeast**  
*Development of RNA Interference Technology to Reduce Populations of the Spruce Beetle, Dendroctonus Rufipennis*

**Seyed Ashkan Hosseinipooya – MSc NRES Environmental Science**  
*Integrated Oily Waste Management for Marine Oil Spill Responses*

**Ella Parker – MSc NRES**  
*Harnessing School-Based Monitoring for Water Resource Decision Making*

**Donovan Sneddon – Student, Northern Medical Program**  
*A Functional and Financial Comparison of Disposable Versus Reusable Surgical Textiles*

**Hannah van der Roest – Student, Northern Medical Program; Talise Lindenbach – Student, Northern Medical Program; Dr. Trina Fyfe, Health Sciences Librarian, NMP**  
*Physical Activity in Rural and Remote BC: An Investigation of the Barriers and Enablers for Youth in the Bella Coola Valley*

## Monday, March 2

**Jennifer Brown – Student, Northern Medical Program; Kian Draper – Student, Northern Medical Program; Christorina Taruc, UHNBC; Jennifer Hawkes, UHNBC; Dr. Christine Brenckmann, UHNBC; Dr. Trina Fyfe, Health Sciences Librarian, NMP**  
*Exploring the Feasibility of Implementing an Informed Consent Process for Rh Immune Globulin in Northern B.C.*

**Dr. Heather Bryan – Assistant Professor, Ecosystem Science and Management; Shenley Alkins, Research Skills Trainee, Ecosystem Science and Management; Dr. Paul Paquet, University of Victoria; Dr. Chris Darimont, University of Victoria; Dr. Hamish McCallum, Griffith University, Australia.**  
*The Contrasting Roles of Human and Natural Predators in Disease Dynamics of Prey Populations*

**Sophie Cook – BAsC Civil and Environmental Engineering; Dr. Jianhui Zhou, Integrated Wood Engineering**  
*Development and Evaluation of Two-layer Face Glued Spruce-Pine-Fir and Douglas-Fir Studs*

**Hooi Xian Lee – PhD Health Sciences**  
*Small Molecule Inhibitors of KRAS Expression in Human Colon Cancer Cells*

**Melanie Adamsons – MEd Counselling**  
*Mentalization and Interpersonal Problems in Borderline Personality Traits*

**Christopher Morgan – MNRES Natural Resources and Environmental Studies**  
*Systematic Conservation Planning in Tsay Keh Dene Territory: Incorporating Climate Change and Bridging Traditional Ecological Knowledge*

**Andrew Boxwell – MSc NRES Forestry**  
*Scorched: What Remains After an Old Growth Fire?*

**Leanne Varney – BSc (Hons) Biochemistry and Molecular Biology; Dr. Chow Lee, Chemistry and Biochemistry; Dr. Dezene Huber, Ecosystem Science and Management**  
*Antiproliferative Effects of Extracts from Budworm Insects on HeLa Human Cervical Cancer Cells*

**Carmen Huang – BSc (Hons) Biochemistry and Molecular Biology**  
*Purification and Characterization of an Anti-Proliferative Polysaccharide-Peptide E2L1a from Echinodontium Tinctarium*

**Amanda Baxter – MSc NRES; Dr. Brent Murray, Ecosystem Science and Management; Dr. Mark Shrimpton, Ecosystem Science and Management; Melissa Todd, MFLNRORD Coast Area Research Section**  
*Development of eDNA Monitoring Tools and Protocols for Assessment of Western Painted Turtles (*Chrysemys picta bellii*) in British Columbia*

**Jacob L. Bradshaw – MSc NRES Biology; Dr. Chris J. Johnson, Ecosystem Science and Management**  
*Seasonal Distribution of Caribou, Moose, and Predators is Influenced by Forest Harvesting*

**Jenna Burke – Volunteer Research Assistant, Northern Biobank Initiative; Dr. Nadine Caron, Northern Medical Program; Brooke T. Boswell, Research Manager NBI**  
*Finding Focus with Two-Eyed Seeing: Consultations with First Nations about a First Nations Biobank in Northern B.C.*

**Dr. Diana Kutzner – Research Manager Environment, Community, Health Research (ECHO) Network; Dr. Holly Clermont – Postdoctoral Fellow ECHO Network**  
*Developmental Evaluation in a 5-year CIHR Grant: Opportunities, Challenges and Pathways Forward*

**Ami Hagiwara – Instructor, Global and International Studies; Peter MacMillan, Education**  
*Modelling, Flower Arranging, and Workshopping: Motivating Students to Write Japanese Composition (Phase II)*

**Mehreen Zeb – PhD Health Sciences**  
*Purification and Characterization of a Complex Polysaccharide with Growth-inhibitory Activity from Echinodontium Tinctarium*

# Tuesday, March 3, 2020

## Registration

**9:30am–9:45am**  
**Bentley Centre**

## Welcome

**9:45am–10:00am**  
**Bentley Centre 7-170/172**

**Lheidli T'enneh First Nation Welcome**  
Elder Darlene McIntosh

**UNBC Welcome and Opening Remarks**  
Dr. Geoff Payne – Vice President Research

## Presentations – Tracing Sediments and Traditional Indigenous Governance

**10:00am–10:30am**  
**Bentley Centre 7-170/172**

**Kristen Kieta – PhD, NRES**  
*Determining Sources of Sediment in the Nechako River Basin in Response to the 2018 Wildfires*

Tracing sediments within a large river basin is useful for determining the naturally occurring features or land use practices that are contributing sediment to a river and its tributaries. The Nechako River Basin (NRB) in central British Columbia is a regulated basin that supports populations of sockeye and Chinook salmon and the Nechako white sturgeon, though these species are experiencing population declines and one potential cause of this decline is excess sediment. The NRB has experienced significant land cover change due to pressure from forestry and agriculture, the Mountain Pine Beetle epidemic, and large-scale wildfires in 2018, which can lead to increased sediment delivery to the river.

Focusing specifically on the impact of the 2018 wildfires on sediment transport from upland burned areas to waterways, this research aimed to determine if burned areas were a more significant contributor of sediment than unburned areas

and to determine how long polycyclic aromatic hydrocarbons (PAHs) persist in the tributaries and Nechako mainstem.

Source soil samples collected in 2018 and suspended sediment samples collected in 2018-2019 from impacted sub-watersheds were analysed for PAHs, which are produced during the combustion of organic matter. Results from fall 2018 and spring 2019 samples show a significant difference in PAH concentrations between unburned and burned soils, and a wildfire signal increasing over time in sediment from the tributaries and the mainstem. Analysis of samples from summer 2019 will help determine the spatial and temporal persistence of the PAH signal and the utility of PAHs as a potential tracer.

**Penina Sara-Lynn Harding – MA, NRES**  
*Progress Update for "Yucwemintem re Tmicw" as Secwepemc Experience of Place: Documenting Land-Based Learning through Creative Analytic Practice & Collective Storytelling*

This Masters of Arts - NRES research project is built through the application of the Esk'etemc Traditional Governance Structure for project oversight and to uphold the "Four R's of Indigenous Research" (Harris, L., & Wasilewski, J., 2004); "UNDRIP Section 31.1" (UNDRIP, 2007); "OCAP Principles" (First Nations Information Governance Centre, 2019); and, the "Six-Guiding Principles for Indigenous Research Practices" (Snow, et al., 2016). I will report on what I have learned by applying a Traditional Indigenous Governance Structure and Indigenous Epistemology (Kovach, 2009) to a master's level research project, and its importance as an ethical practice when collaborating with Indigenous communities in the development of territory-wide land-use plans.

## **Special Presentation – Research in the North, For the North: The Unique Community-based model of the BVRC**

**10:30am–11:00am**  
**Bentley Centre 7-170/172**

### **Presenters**

**Dawn Hanson, Executive Director Bulkley Valley Research Centre (BVRC)**

**Alana Clason, BVRC Research Associate and UNBC Alumnus**

The Bulkley Valley Research Centre was formed in 2002 to provide a northern hub for natural resources management research, collaboration, education and partnerships. This session will introduce our unique model of community-based research in areas such as whitebark pine, integrated systems research, wildfires, and forest stand dynamics. We will also share a bit about the history of the BVRC, future research potential, how researchers and the Centre work together, and the key roles the BVRC has in producing and sharing knowledge for natural resources management within our communities.

## **Networking Break**

**11:00am–11:15am**

## **Presentations – Research Potpourri: Nursing Education, Inuit Governance, and Substance Abuse Prevention**

**11:15am–12:15pm**  
**Bentley Centre 7-170/172**

### **Rukevwe Onororemu – MSc, Nursing**

*An Exploration of Internationally Educated Nurses Experience with Simulation learning in British Columbia Bridging Programs*

Abstract – According to the Canadian Institute for Health Information (2018), there is an increasing gap in the supply and demand of nurses (with growth rate reaching a record low of 0.7% in 2017), leading to the growing difficulty in effectively recruiting and retaining enough Registered Nurses (RN) to fill vacant positions, especially in rural and remote

areas. According to Immigration, Refugees and Citizenship Canada (IRCC), the worker-to-retiree ratio in Canada is now 4:1, but is projected to fall to 2:1 in 2035 (Harris, 2020). In other words, the amount of nurses that will be lost through retirement (and voluntary resignation) are more than the expected amount of graduate nurses expected to leave nursing school, making immigration a potential solution to fill jobs that will otherwise stay unfilled. In order to close this gap, Canada have put in place policies to encourage immigration of educated health professionals (Villeneuve & Macdonald, 2006).

According to the CIHI, 7.2 percent of Canadian regulated nursing workforce comprised of internationally educated nurses (Covell, Primeau, Kilpatrick, & St-Pierre, 2017). This number is projected to increase given the country's continued reliance on economic migrants to grow the workforce and labour market. This highlights the need for the effective utilization of not just the domestically trained nurses but the pool of internationally educated nurses (IENs) currently residing in Canada who are yet to be fully integrated into the Canadian healthcare system. Given that IENs enroll into bridging programs partly to acquire Canadian nursing experience, my study aims to explore how teaching methods differs within the province of British Columbia (BC) and to what extent simulation is used in each bridging programs to supplement traditional clinical practice environment.

### **Dr. Gary Wilson – Professor, Department of Political Science**

*Nested Federalism and Inuit Governance in the Canadian Arctic*

This presentation traces the political journey toward self-governance taken by three predominantly Inuit regions in the Canadian Arctic: Nunavik in northern Québec, the Inuvialuit Settlement Region in the western Northwest Territories, and Nunatsiavut in northern Labrador. Over the past 40 years, Indigenous communities in these three regions have successfully mobilized to negotiate the creation of self-governing regions based on comprehensive land claims agreements of treaties. The varied governance arrangements emerging as a result of these treaties are examples of nested federalism, a type of political-territorial organization in which autonomous Indigenous regions are situated or nested, politically and institutionally within existing provinces or territories within the Canadian federal



system.

Nested federalism is a new and largely unexplored model of government that is transforming the Canadian federal system as it reformulates the relationship between Indigenous peoples and the state. The presentation will compare the political and institutional evolution of these regions and their ability to exercise autonomy in a number of key policy areas. The research is based on a SSHRC-funded project on Inuit Regional Autonomy in the Provincial and Territorial North and has appeared in a new book by Gary N. Wilson, Christopher Alcantara and Thierry Rodon entitled *Nested Federalism and Inuit Governance in the Canadian Arctic* (UBC Press, 2020).

**Jasprit Preety Nijjar – Student, Northern Medical Program**

*Exploring Opportunities to Implement Evidence-Based Community-Level Youth Intervention Programs in B.C. for Prevention of Substance Use*

Alcohol and drug use by young people is a public health problem in British Columbia (B.C.). Substance use among adolescents has become a significant concern and there is a need for preventive interventions that are evidence-based, cost-effective, socially and culturally acceptable and accessible. The Preventure Program, an internationally recognized program by Dr. Patricia Conrod, is one avenue that may have the potential to create tangible change for adolescents in BC.

Cochrane Guidelines were used in completing a qualitative review of the literature that is narrative in nature, with the objective of gaining insight and understanding on Preventure. We reviewed the current experience with implementation of Preventure across the world, and developed recommendations for increasing the likelihood of successful implementation in communities across BC.

We identified the significance and impacts of a Train-the-Trainer program in a community setting targeted to adolescents, along with the main characteristics and components of the Preventure Program. There have been variations of Preventure that have been developed based on the region or country of implementation, including the United Kingdom, Australia and Canada. An identification of the similar and varying components were explored.

In capturing the variations of the program, we were able to reflect on the similarities and

adjustments that may be needed for the application of Preventure in BC. Based on our review of the evidence and implemented programs across the world we feel the implementation of Preventure in communities across BC will be feasible.

**Lunch and Learn – Research Data Management**

**12:30pm–1:15pm**  
**NUSC Event Space 6-250**

**Presenter – Susie Wilson, Data Services Librarian**

Research Data Management is something all researchers should be practicing regardless of your discipline. With the upcoming release of the Tri-Agency Research Data Management Policy, researchers need to be prepared to create data management plans as part of grant applications. This session will cover the basics and best practices of research data management across all disciplines, and introduce researchers to tools to help them create data management plans and care for their data across the research lifecycle.

A light lunch will be available beginning at 12:15pm.

**Three Minute Thesis (3MT®)**

**1:30pm–3:00pm**  
**Bentley Centre 7-170/172**

**Host**  
**Dr. Davina Banner-Lukaris, Associate Professor, Nursing**

**Judges**  
**Allan Kranz**  
Senior Lab Instructor, Computer Science  
**Chrissy Ingram**  
Academic Success Centre Coordinator  
**Dr. Hossein Kazemian**  
Director, Northern Analytical Laboratory Services  
**Dr. Rajeev Pillay**  
Postdoctoral Fellow, Ecosystem Science and Management  
**Dr. Tammy Pearson**  
Assistant Professor, Social Work

### **Competitors**

Jacob Bradshaw – NRES  
Emmanuel Ogwal – Economics  
Nicole Botten – NRES  
Louisa Hadley – NRES  
Dorna Sobhani – NRES  
Paige Wilson – NRES  
Rahim Jafari – NRES  
Georgia Betkus – Interdisciplinary Studies

## **Networking Break**

**3:00pm–3:15pm**

**Public Panel – The Nechako Watershed Portal:  
An Integrative, Geospatial Tool to Bridge  
Governance, Knowledge Exchange, and  
Information-sharing Needs, and Foster Co-  
benefits for Health, Ecosystems and Equity**

**3:15pm–4:15pm**

**Bentley Centre 7-170/172**

### **Panelists:**

Dr. Margot Parkes, School of Health Sciences  
Scott Emmons, GIS Lab  
Ella Parker, MSc student NRES

Calls for integrative, geospatial tools that can meet combined governance, knowledge exchange, and information-sharing needs are growing. This panel presentation will provide an overview of the development and application of an innovative

geospatial watershed portal, drawing on over a decade of development in conjunction with First Nations, ongoing input from the Scott Emmons in the UNBC GIS-Lab, and Margot Parkes' Canada Research Chair in Health, Ecosystems and Society. The panel discussion will introduce several research and community 'user-groups' that are using the watershed portal tool as an integrative geospatial system to foster co-benefits across health, ecosystem and equity objectives.

Through these user-groups, the portal is supporting several overlapping interdisciplinary research teams including the Integrated Watershed Research Group (IWRG, with a focus on the Nechako Watershed), the youth-focused Koh-Learning in our Watersheds project (partnered with School District 91 and also focused on the Nechako), and the Environment, Community, Health Observatory (ECHO) Network: a national and international project where partner watersheds are learning from what is being trialed and refined in the Nechako.

The panel will commence with an introduction to portal development, bridging research, technical and community perspectives, followed by a demonstration of some of the ways the portal is supporting experiential, place-based, waterways monitoring program, to connect Aboriginal education, community context and integrative science in the Koh-Learning in our Watersheds project. The session will conclude with a moderated discussion to learn more about the portal and how it is being used to fulfil community, governance and research objectives in northern BC and beyond.

---

# **Wednesday, March 4, 2020**

## **Registration**

**9:30am–9:45am**  
**Bentley Centre**

## **Welcome**

**9:45am–10:00am**  
**Bentley Centre 7-170/172**

**Lheidli T'enneh First Nation Welcome**  
Elder Darlene McIntosh

**UNBC Welcome and Opening Remarks**  
Dr. Geoff Payne – Vice President Research

## **Public Panel – Learn From Students and Older Adults Who Lived Together for One Semester in a Long-term Care and Assisted Living Facility as Part of an Intergenerational Co-Housing Experiential Learning Opportunity**

**10:00am–11:00am**

**Bentley Centre 7-170/172**

Have you seen those viral videos of older adults and university students living together and having an amazing time? Well, hear from the participants themselves about this new program in Prince George. This experiential learning and co-housing opportunity, engaging residents and students connect in a day-to-day shared living environment is accompanied by ongoing research.

Faculty members from Schools of Social Work and Nursing at the University of Northern British Columbia partnered with stakeholders from the Northern Health Authority to co-create the Intergenerational Activities for Growth and Engagement project (interAGE) and make things happen. Students enroll in an elective 3-credit course located on site at the facility which is also attended by residents, staff, family members, and interested guests from the wider community. This panel facilitated by Professors Dawn Hemingway and Shannon Freeman, will involve lively discussion involving residents, students and Northern Health staff reflecting on their shared experience of the interAGE project.

## **Networking Break**

**11:00am–11:15am**

**Presentations – Topics in Healthcare I: Perinatal Depression, Gender-based Frameworks, Palliative Care, and Social Media**

**11:15am–12:15pm**

**Bentley Centre 7-170/172**

**Laura Harvey – MSc, Nursing: Family Nurse Practitioner Program**

*Pathophysiology of Perinatal Depression*

This presentation on the pathophysiology of perinatal depression (PND) is aimed at students

in health sciences degrees and primary care practitioners. The presentation offers the latest findings of the epidemiology, risk factors, and epigenetic considerations of PND. Further, it informs viewers of the differentiation of PND to major depressive disorder (MDD) in both neurochemical findings and symptomology. The presentation ends by summarizing considerations in screening for this disorder and providing PND care to families in the perinatal period.

**Dr. Dawn Hoogeveen – Postdoctoral Researcher, Health Sciences/Geography**

*Impact Assessment: Challenges in Implementing Inclusive Gender-based Frameworks*

Section 22 (s) of Canada's Impact Assessment Act lists that sex, gender and other identity factors must be taken into account during Impact Assessment processes. Such a clause is an overdue response to increasing awareness of the need for improved regulation in the development of social and cultural Impact Assessment processes that relate to gender, class, ableism, and racialization. This paper reviews key examples of Social Impact Assessment, to inform improved tools and processes that account for inequities experienced during resource development.

We address issues related to race, class, gender, sex, economic and labour market access through the presentation of preliminary results from a knowledge synthesis project designed to assist in the implementation of equity oriented regulatory tools and processes in Canada and beyond. We fundamentally ask if the "indicator frameworks" is an adequate framing for issues concerning gender, class, ableism, and racialization and examine tools for thinking through implementation of GBA+ policy given the sensitive nature of equity data.

**Kimberley Thomas – MSc, Health Sciences**

*Perspectives of Healthcare Providers on Promoting Equitable and Community-Based Palliative Care for Rural and Remote Indigenous Communities in Northern British Columbia*

Inequitable access to palliative care is a pressing issue across Canada and is an issue being felt most profoundly for those situated in rural and remote communities. Palliative services are concentrated in urban centres in British Columbia, and Indigenous peoples in rural, remote and northern parts of the province face ethically problematic barriers to accessing care. The barriers identified for these geographies include travelling extreme distances to

reach care (thereby becoming disconnected from family, culture, land and community) and seeking palliative support in emergency departments and family medicine practices. For individuals who do stay in home communities with a life-limiting illness, an unsupported informal caregiving burden is often placed on their families. Recent innovative research has shown community-based palliative care to be a highly preferred and equitable way of rural palliative service delivery.

This qualitative study makes use of interviews with key informant front-line palliative healthcare providers who offer a powerful perspective on promoting community-based palliative care in northern BC. The findings of this work provide insights on (1) context-specific priorities for promoting community-based palliative care in the region, (2) areas of streamlining, collaboration and partnership amongst service organizations, and (3) insights relevant to future health promoting policy and community action work related to rural palliative care.

**Omolara Odulaja – PhD, Health Sciences**

*"Being Connected to my Shuswap Family in the South" – A Study to Understand the Social Media Experiences of Indigenous Youth in Northern and Rural British Columbia*

This study addresses a gap in the literature about Indigenous youth's social media experiences. It is the first study in Canada to elaborate on the social media experiences of Indigenous youth in northern British Columbia. This study explores how Indigenous youth ages 15 to 24 years use social media to express their cultural identities and to engage with their cultures. Using a mixed method study and the feminist and two-eyed seeing approach to data analysis, the study reveals challenges and benefits of using social media among Indigenous youth. The study also reveals youth's views about institutional and governmental regulation of social media including impacts on youth and communities.

## **Lunch and Learn – Trailblazing Harmonized Research Ethics in B.C.**

**12:30pm–1:15pm**

**NUSC Event Space 6-250**

**Presenters – Terri Fleming and Paola Pinto Vidal, Research Ethics BC**

Terri Fleming and Paola Pinto Vidal of Research Ethics BC will host an interactive session for anyone interested in research about the supports available to researchers and research ethics boards in BC. They encourage you to bring your questions about research ethics and 'harmonization' between institutions, including how to know if your research requires harmonized ethical review.

A light lunch will be available beginning at 12:15pm.

## **Presentations – Topics in Healthcare II: Telehealth, Health Care Barriers, Genomics, and Nervous System Development**

**1:30pm–2:30pm**

**Bentley Centre 7-170/172**

**Simran Jawanda – Research Skills Development Trainee, Northern Medical Program**

*Understanding What It Means to Measure Health in Rural Communities: Perspectives from Northwestern British Columbia*

Health disparities and discrepancies in healthcare access in rural and remote areas of Canada are widely reported in the literature. Efforts to reduce these disparities require a deep understanding of how rurality impacts the availability and accessibility of health services and influences health at large. This study explored the unique contexts that shape health in northwestern British Columbia (BC). Specifically, the purpose of the study was to better understand the barriers and facilitators to health and health care and identify important measurable health outcomes from the perspectives of people living in northwestern BC.

Semi-structured interviews (n=15) were conducted with community members, healthcare providers, and health policy-makers from four communities across the region. Transcripts were analyzed using an inductive thematic analysis approach. This presentation will focus on describing the identified

themes around how living in a rural region can impact health outcomes and the ways health can be measured. Furthermore, recommendations and future directions will be discussed.

**Georgia Betkus – MSc, Interdisciplinary Studies**

*Effects of a Geriatric Outreach Program on the Care of Older Adults in Northern British Columbia: Perspectives from Care Providers*

In areas where some health services may not be offered, telehealth has the potential to improve access to services by providing them at a distance through videoconferencing technology. The Geriatric Outreach Program in northern BC aims to improve access to specialist geriatric care by providing consultations with geriatricians and geriatric psychiatrists through telehealth appointments and in-person outreach clinics. While this program may improve access and decrease travel, not much else is known about how this program affects the care of older adults. This work aimed to better understand the Geriatric Outreach Program and how it influences the care of older adults in rural BC from the perspective of care providers and compare provider perspectives of the in-person and telehealth consultations.

Interviews were conducted over the summer of 2019 and included four general practitioners and two geriatric specialists (N = 6). Content analysis revealed three main ways that the care of older adults in northern BC is affected by the Geriatric Outreach Program and included: 1) care planning for patient management; 2) provider support; and 3) access. As well, analysis revealed that the differences in telehealth and in-person consultations from the perspective of care providers are the additional resources required for telehealth consultations and the inability to perform physical examinations through videoconferencing. Overall, the feedback from care providers suggested that this program positively influences the care of older adults in northern BC, as well as provides opportunities for referring physicians and geriatric specialists to build rapport.

**Bushra Khalid and Katrina Duong – Volunteer Research Assistants, Northern Biobank Initiative (NBI)**

*Foresight in 2020: Increasing Equity in Access to Participation in Biobanking and Genomic Research in Northern BC – the Northern Biobank Initiative*

The Northern Biobank Initiative (NBI) involves

the creation and deployment of a population-based biobank; a facility where clinical data and biospecimens are donated from people in northern British Columbia (BC) and are systematically stored in the University Hospital of Northern British Columbia (Prince George). The majority of biobanks in Canada and BC have emerged in urban, southern, and metropolitan locations. This has left rural and remote communities – particularly First Nations, northern, and remote communities in BC – under-represented, under-served, and falling into the globally acknowledged and widening ‘genomic divide’ with regards to genomic health research and the subsequent potential health care benefits. We have 20-20 hindsight on existing gaps in health; better health outcomes tomorrow require focusing our foresight on increasing access to participation in innovative health research.

NBI Phase II (NBI-II) [April 2016–March 2020] includes engagement with public in the Northern Health Authority (NH) and consultations with First Nations in the First Nations Health Authority (FNHA) Northern Region. Public engagement took place by way of panel events entitled, “What the heck is a biobank... and why do we need one in the North?” and pre-/post-panel survey [N = 56] to assess knowledge of biobanking and genomic research. First Nations consultations were conducted through interviews with Chiefs and Health Directors [N = 32], and community member focus groups [FG = 8, N = 44] among the 54 First Nations across northern BC. This presentation will include highlights from results from NBI-II public engagement and First Nations Consultations. The NBI project is led by Principal Investigator Dr. Nadine Caron of the Northern Medical Program and Research Program Manager Brooke T. Boswell.

**Dr. Kendra Furber – Assistant Professor, Northern Medical Program**

*Regulation of Oligodendrocyte Development in the Central Nervous System*

Myelination is essential for the fast, efficient conduction nerve impulses. Glial cells in the central nervous system (CNS), called oligodendrocytes, extend numerous processes that wrap nerve cell projections, called axons, in a compact membranous sheath. My lab investigates how oligodendrocytes develop from immature progenitor cells to mature myelinating glial cells. Current projects focus on a molecule called Sirtuin 2 (SIRT2). The expression of SIRT2 is up-regulated in the developing CNS during the period of intense

myelination. We use a multidisciplinary approach that combines techniques such as electron microscopy, immunohistochemistry, transcriptomics and proteomics to understand the function of SIRT2. Mice lacking the expression of SIRT2 have delayed myelin formation during development and enhanced loss of myelin during aging.

Our data indicates that SIRT2 regulates both the proliferation and differentiation of oligodendrocytes progenitor cells. SIRT2 is an enzyme that removes posttranslational modifications (i.e. acetyl groups) from proteins to modify their function, and we are trying to determine the target protein(s) that SIRT2 acts on at different stages of oligodendrocyte differentiation. This research has implications for understanding the cellular and molecular mechanisms underlying myelination during development, aging and under pathological conditions.

## **Networking Break**

**2:30pm–2:45pm**

## **Public Panel – Cumulative Impacts Research at UNBC: Origins, Insights, and Emerging Directions**

**2:45pm–3:45pm**

**Bentley Centre 7-170/172**

**Presenters – Dr. Greg Halseth, Dr. Art Fredeen, Aita Bezzola, Dr. Margot Parkes, Dr. Tristan Pearce**

UNBC's Cumulative Impacts Research Consortium (CIRC) is a research and outreach initiative collaboratively led by the Health Research Institute, the Community Development Institute, and the Natural Resources and Environmental Studies Institute. Established in 2014, CIRC has led many research and dialogue processes exploring the topic of cumulative impacts within northern communities, regions, and economies. This panel session provides an introduction to CIRC's founding and an overview of its major contributions.

Included are key points from its major book "The Integration Imperative" and an introduction to many of the novel and innovative tools used in its research program and community engagement processes. The panel also explores the development of partnerships and collaborations across the university, as well as its widening circle of influence both nationally and internationally. The panel concludes with a look forward towards new directions and initiatives around cumulative impacts research and community/policy outreach.

---

# **Thursday, March 5, 2020**

## **Registration**

**9:30am–9:45am**

**Bentley Centre**

**Lheidli T'enneh First Nation Welcome**

Elder Darlene McIntosh

**UNBC Welcome and Opening Remarks**

Mark Barnes, Director of Research

## **Welcome**

**9:45am–10:00am**

**Bentley Centre 7-170/172**

## Special Presentation – Cultivating Talent and Promoting Innovation: Equity, Diversity, and Inclusion in STEM

**10:00am–11:00am**

**Bentley Centre 7-170/172**

### Presenters

**Dr. Malabika Pramanik, Professor, Mathematics, University of British Columbia**

**Dr. Jacqueline Holler, Associate Professor, History/Women's and Gender Studies, UNBC**

Diversity in STEM has long been addressed from the perspective of workplace fairness and anti-discrimination. Increasingly, however, diversity is also seen as crucial to excellence: in particular, to the creation of better research teams and stronger, more innovative research. Yet many fields in STEM lack diversity, with some no more inclusive than they were decades ago. In this presentation, Dr. Pramanik and Dr. Holler will discuss underrepresentation in women and other equity-seeking groups in STEM, introduce the long history of women in mathematics, and identify equity issues in STEM with particular reference to mathematics. Dr. Pramanik will provide an overview of one exciting initiative with which she is closely associated: "Diversity in Mathematics," a multi-year, multi-level program hosted by the Pacific Institute for the Mathematical Sciences and geared towards promoting diversity and inclusivity in STEM.

## Networking Break

**11:00am–11:15am**

## Presentations – Glyphosate, Oil Spills, Prediction Models, and Pediatric Cardiology

**11:15am–12:15pm**

**Bentley Centre 7-170/172**

Nicole Botten – MSc, NRES Biology  
*Glyphosate Herbicide Persistence in Forest Plant Tissues, and Associated Influence on Available Nutrients*

Glyphosate is the most widely used herbicide worldwide, and the top choice for use on BC's forests after harvesting, to prevent competition for

commercially-significant conifers. When glyphosate-based herbicide (GBH) is sprayed aerially on forest cut blocks, various factors result in some plants receiving a sub-lethal dose. Surviving plants may store and translocate glyphosate molecules within their tissues, and glyphosate may thus persist in plant tissues for an extended duration of time. I am researching the duration of glyphosate persistence in plant tissues, by analyzing the shoot, root, and fruit tissues of four perennial forest plant species that were sprayed with GBH between 1 and 12 years before plant samples were collected.

As a known chelating agent, glyphosate readily binds to certain metal ions. This property could have a negative effect on the bioavailability of key nutrients in glyphosate-containing plants. I am investigating the potential effect that glyphosate may have on nutritional quality of wildlife forage, by comparing the nutrient profiles of plants gathered from treated and untreated areas. The results of my research are intended to be of use to forest and wildlife managers in the vegetation-management decision-making process.

### Nahid Hasanshahi – PhD, Environmental Engineering

*Marine Oil Spill Response*

Abstract – In these days, by growing petroleum industries, producing activities and extracting of oils, transporting, and consuming across the world, the concern of environmental pollution is increased due to the pouring chemical and toxic materials into the environment. Oil spills have many different negative impacts on the economy, the environment and public health in the short and long term. In Canada, several small oil spills happened that led to attract media's attention. For example, in 2013, Lac-Mégantic occurred and about 4,830 tonnes of crude oil was poured into the ocean that led to many negative impacts. Therefore, this becomes a challenge to clean up the oil spills using the appropriate method.

Several different methods are utilized for separating oil from water such as physical, thermal, mechanical and chemical processes. Chemical processes using demulsifiers is one of the best methods that is employed in the industries. One of the demulsifiers that gets attention is ionic liquid because of its "green ecofriendly characteristics" such as thermal stability, non-flammability and low vapor pressure.

In this project, the aim is to go beyond previous research and investigate the performance of the

gravity system following the demulsification process on the oil-water separation. For the purpose of designing the experiments and obtaining the optimal conditions, the design expert software will be used. In this way, the performance of effective parameters on the oil-water separation system will be measured and the optimal treatment system with high efficiency will be introduced.

**Dr. Pranesh Kumar – Professor, Department of Mathematics and Statistics**

*Copula Functions and Applications*

Applications of copula functions have been noted to study non-parametric, distribution-free or scale-invariant nature of dependence and extreme events. Since copula functions exhibit some appealing mathematical properties such as they allow scale-free measures of dependence, these are useful in simulating families of multivariate distributions. The concept of stochastic tail dependence refers to the clustering of extreme events. Extreme events, for example, in economic systems and in natural hazards contexts, generally exhibit tail dependence and thus often researchers wish to analyze the extreme behavior.

In recent past, several copulas with one or more real parameters are proposed and are applied in various disciplines like statistics, insurance, finance, economics, survival analysis, information theory, image processing and engineering. In this presentation, we will present a summary of results on copula functions and some applications to modeling and information measures.

**Jasprit Preeti Nijjar – Student, Northern Medical Program**

*Emerging Topics in Pediatric Cardiology: Improving Neurodevelopmental Outcomes in Patients with Congenital Heart Disease*

Congenital Heart Disease (CHD) is present in nine per 1000 live births making it the most common congenital defect (Marino et al., 2012). Management of CHD has changed over the last several decades resulting in a dramatic improvement in survival. Despite decreased mortality, we recognize a risk for neurologic, cognitive and psychosocial abnormalities in this population. The focus of care for patients has shifted from survival in the neonatal period to long-term outcomes, including neurodevelopment. Neurodevelopmental clinics at paediatric cardiac centers across North America are addressing the needs of patients with CHD through the identification of developmental delay

by multidisciplinary teams; however, there is no program currently established in British Columbia.

A literature review of the neurological outcomes of those with CHD was conducted. An environmental scan of successful neurodevelopmental clinics in North America was further explored. Search outcomes outlined effective clinic models, including multi-disciplinary clinic team members, time intervals for screening and established interventions.

It was found that the facilitation of periodic developmental surveillance, evaluation and re-evaluation throughout childhood may enhance identification of development deficits. This would allow for appropriate management to enhance long-term outcomes. Based on our review of the evidence, we were able to construct a business plan for a neurodevelopmental clinic, which will utilize readily available resources in conjunction with the BC Children's Hospital Neonatal Follow-Up Program model.

The implementation of the present business plan, will allow for the foundation of a more comprehensive neurodevelopment clinic in the future.

**Lunch and Learn – Bridging Students and Research Involvement: UNBC Research Ambassadors Program**

**12:30pm–1:15pm**  
**NUSC Event Space 6-250**

Our mission as UNBC Research Ambassadors is to facilitate connections between research opportunities and students with diverse passions, interests and experiences. We will share success stories of our role in supporting UNBC students and community members in their research journey. You'll find out about exciting projects that we have launched since expanding our program, including: 'Research the North' Podcast, an Online Forum for Distance Students, a Research Opportunities Webpage, activities surrounding out-of-province and regional recruitment, and ongoing one-on-one mentorship with students. We encourage faculty, staff, and students to attend to learn how our program might support your research-related work and goals!

A light lunch will be available beginning at 12:15pm.



**Interdisciplinary Weekly Seminar Series (IWSS) – Needles, Bushes, Hairbrushes and Polynomials Presented in Conjunction with the Pacific Institute of Mathematical Sciences Distinguished Lecture Series**

**1:30pm–2:30pm**  
**Agora 7-150**

**Presenter – Dr. Malabika Pramanik, University of British Columbia, Department of Mathematics**

Pretend that your car is a unit line segment. How do you perform a three-point turn using an infinitesimally small area on the road? It turns out that this seemingly impossible driving stunt relates to the fundamental theorem of calculus, as well as all the objects in the title of this talk! We will explore these connections and see how they have been useful in many problems in mathematics.

**Poster Presentations**

**2:30pm–3:30pm**  
**Bentley Centre Hallway**

**Sara Wray Enns – MA Development Economics**  
*Economic Development Outcomes from the Creation of the Tuktoyaktuk-Inuvik Road*

**Abby Dooks – MA International Development Studies**  
*British Columbia's Protected Forests and Local Community Management*

**Walsham Daniella Tenshak – MA Development Economics**  
*Foreign Aid in Development: Exploring Alternative Paths to Sustainable Development Finance*

**Sipe Fikayomi Folajimi – MA International Development**  
*The Role of Migration and Water Resources in Conflict*

**Chioma Confidence Ben – MSc Business Administration**  
*The Role of Big Data in Humanitarian Operations*

**John Hopeson Anku – MA Global and International Studies**  
*Keeping Down the Weeds: Mainstreaming UNODC's Alternative Development Concept into Ghana's Drug Law Enforcement Regime*

**Nnamdi (Reginald) Ihekwa – MA Global and International Studies**  
*Moving Beyond Numbers: Understanding Economic Development through the Capability Approach*

**Class Presentation – POLS 320**  
*Political Science 320 Classroom Project: Medicare Public Opinion Survey*

**Abby Dooks – MA International Development Studies**  
*British Columbia's Protected Forests and Local Community Management*

**Katherine Timms – BSc Biochemistry Molecular Biology and Biology**  
*Elevated Nuclear Versican in Invasive Breast Epithelial Cells.*

**Lisa J. Koetke – PhD NRES; Dr. Adam Duarte, Oregon State University; Dr. Floyd W. Weckerly, Texas State University**  
*Elk Population Dynamics Vary Within and Among Herds*

**Ashling O'Neill – Volunteer Research Assistant, Northern Biobank Initiative; Dr. Nadine Caron, Northern Medical Program; Brooke T. Boswell, Research Manager NBI**  
*What the Heck is a Biobank... and Why do we Need One in the North? Public Engagement to Raise Community Awareness Towards Equity in Access to Participation in Genomic Research*

**Christiana Oluwatoyin Onabola – PhD Health Sciences – ECHO Network**  
*On the Cusp of Planetary Health Equity: Adopting Watersheds as a Conceptual Framework for the Study of SDGs interactions and Health Outcomes*

**Andrew Guest – MA Political Science**  
*Conflict Mineral Policy: A New Look at Outcome Driven Solution Building*

**Sapphire Harpin – MSc Psychology/Counselling**  
*Generation Z – Interpersonal Experiences in Social Networking Sites*

**Dorna Sobhani – MSc NRES Environmental Science**

*C02: An Environmental Concern or a Business Opportunity?*

**Mason Legere – BSc Mathematics and Computer Science**

*Analysis of Time Dependent Damping Coefficients in Nesterov Acceleration*

**Class Presentation – INTS 490: Levi Black-Amstutz, Zachary Fleck, Briana Greer, Ericka Indaburu, Duncan Malkinson, Atsuki Nagashima, Madina Nurzhanova, Claire Sitter, Hongyao Yang**

*Global Capstone Research Projects*

**Dylan Fossil – BA (Hons) Biochemistry; Dr. Stephen Rader, Chemistry; Dr. Martha Stark, Chemistry; Galen Salies, BA Biochemistry**

*Transcriptomic Analysis of Cyanidioschyzon merolae Stress Response to Growth in Low Nitrogen Media*

---

# Friday, March 6, 2020

## Registration

**9:30am–9:45am**  
**Bentley Centre**

## Welcome

**9:45am–10:00am**  
**Bentley Centre 7-170/172**

**Lheidli T'enneh First Nation Welcome**  
Elder Darlene McIntosh

**UNBC Welcome and Opening Remarks**  
Mark Barnes, Director of Research

## Presentations – Flowers, Fantasies, and Climate Change

**10:00am–10:45am**  
**Bentley Centre 7-170/172**

**Allie Hendricks – BSc, Biology**  
*Glyphosate-based Herbicides Alter the Reproductive Morphology of Rosa Acicularis (prickly rose)*

Abstract – Glyphosate-based herbicides (GBH) are reported to cause abnormalities in the reproductive structures of agriculturally-relevant plants. The extent to which these abnormalities are present in forested environments after GBH use is unknown. This study investigated how nonlethal doses of glyphosate-based herbicides affect the reproductive morphology of off-target, *Rosa acicularis* plants, found in forest understories of British Columbia. Flowers and mature buds were collected one year after forestry-based applications of GBH in the Omineca Region of British Columbia. We measured the following characteristics: stigma height, ovary height, anther length, anther dehiscence, stamen height, pollen polar and equatorial axes, pollen shape, petal length and width, and flower diameter. Pollen viability tests were also conducted.

Sites treated with GBH experienced a reduction in pollen viability. Findings also indicated physical differences in pollen measurements, pollen shape, anther dehiscence, and anther length. Also, we observed differences in the colour of anthers and stigma between treated and control samples. These morphological differences, potentially caused by GBH, could impact reproductive success by

negatively impacting fruit production and seed set in *R. acicularis*. The potential changes in anther fluorescence could also have implications on bio-communication between plants and pollinators, further influencing reproductive success.

**Ceyanna Meroniuk – MA, English Literature**

*I Don't Want Whatever I Want: Wish-Spaces and Portal-Quest Fantasies in Coraline*

This paper addresses the role of portal-quest fantasies and wish-spaces on the growth and maturation of Coraline Jones in Neil Gaiman's novella *Coraline*. While the novel takes place in both a frame world and a wholly separate secondary world it is Coraline's experience in the secondary world—or other world—that will be the focus of this presentation. The other world functions in two distinct ways throughout the novella. The first time she crosses into it, it is a wish-space, where Coraline is promised anything she could ever desire with almost no personal cost. The second time she crosses, the space functions as a portal-quest fantasy, and this is when her growth and maturation are most evident as she is able to demonstrate what the first crossing taught her about herself.

Using Mendlesohn's definition of the portal-quest fantasy I argue that *Coraline* is only able to grow and mature because of how she interacts with the other world. Further, by separating her experience into two crossings, Gaiman is able to clearly demonstrate the importance of this separation as both her growth and maturation are clearer to the readers. Through this, one is able to easily understand how the other world is able to function as both a wish-space and a portal-quest that informs the growth and maturation she undergoes. This paper demonstrates that *Coraline*'s growth and maturation would not have happened if she had not experienced the other world as she did.

**Jessica Smart – MSc, NRES**

*Climate Change Impacts on Arctic Char (Salvelinus alpinus) and Implications for Inuit Subsistence*

Climate change impacts have already been documented in Arctic marine ecosystems. Current studies of change in arctic marine systems have provided a short-term view of ecosystem connectivity when compared with Inuit knowledge that has not been as well documented in the literature. Recent changes in the movement ecology and health of fish harvests highlight the

need to better understand the underlying drivers of ecosystem change and implications for Inuit subsistence. Inuit in Ulukhaktok, NT have identified a need to better understand the changes in key subsistence marine species, particularly, Arctic char (*Salvelinus alpinus*).

This work aims to document Inuit knowledge and observations of Arctic char (*Salvelinus alpinus*) in the context of changing climatic conditions in Ulukhaktok, NT. Specific objectives include: (1) document Inuit knowledge and observations of Arctic char movement ecology and health; (2) identify current exposure-sensitivities affecting Inuit-Arctic char interactions; and (3) characterize the adaptive strategies employed to manage these conditions. Data will be collected through semi-structured interviews using open-ended questions and in the preferred language of the participant. Key knowledge holders, including elders and avid fishers, will be the primary interview participants. Concurrently, quantitative data on individual fish movement patterns will be collected using telemetry. The expected results are intended to improve our understanding of the dynamics of movement ecology and the health of Arctic char and provide valuable information for the co-management of a significant species for Inuit food security.

**Networking Break**

**10:45am–11:00am**

**Special Presentation – Advancing Forward: Intro to the New Tri-Agency Guide on Financial Administration**

**11:00am–11:45am**

**Bentley Centre 7-170/172**

**Presenters**

**Jacqueline Dockray, Research Project Officer, Office of Research**

**Aneta Douglass, Research Accounting Analyst, Finance Department**

The Tri-Agency Financial Guide is changing! As of April 1, 2020, all SSHRC, NSERC and CIHR grants will be administered according to the Tri-Agency Guide on Financial Administration (TAGFA). The purpose of the new guide is to simplify and provide flexibility in the use and administration of Tri-Agency grant funds. It is principles-based and guided by mandatory requirements (directives) that provide a framework for decision-making processes

concerning the use of agency grant funds. If you hold an NSERC, SSHRC or CIHR grant or plan to apply for a Tri-agency grant, please come to find out what has changed!

**Global Friday Speakers Series  
– Northern and Indigenous  
Women’s\* Experiences and Policy  
Engagement in the Context  
of Resource Extraction in the  
Canadian North**

**Co-sponsored by Inspiring Wome  
Among Us (IWAU)**

**12:00pm–1:30pm  
Gathering Place 5-123**

**Presenter – Dr. Leah Levac, University of Guelph**

In this talk, I draw on two multi-year community engaged research projects (including one based in the Haisla Nation and Kitimat, BC) and three research reports to explore several questions, including:

- What do we know about the gendered and intersectional implications of resource extraction?
- How are (or can) northern and Indigenous women’s experiences be better reflected in assessing the impacts of resource projects?
- What sorts of strategies are northern Indigenous and settler women using to ensure that their experiences are included in policy development, including related to resource extraction?

These are pressing questions for two key reasons.

First, while we know quite a lot about the often significant and negative consequences of resource extraction for northern and Indigenous women, there has been very little attention paid to the impacts of resource extraction using an intersectional lens.

Second, the federal government has recently adopted a new Impact Assessment Act, which, among other things, calls for nearly two dozen mandatory factors to be considered during an impact assessment, including “(c) the impact that the designated project may have on any Indigenous group...; (g) Indigenous knowledge provided with respect to the designated project”; and (s) the intersection of sex and gender with other identity

factors”<sup>1</sup> This presents an important opportunity to shift how the state frames and engages with northern Indigenous and settler women as meaningful policy actors.

<sup>1</sup> <https://laws-lois.justice.gc.ca/eng/acts/I-2.75/page-4.html#h-1160335>

**Closing Awards and Reception  
2:00pm–3:15pm  
Bentley Centre 7-170/172**

Join us for the presentation of the awards for the best undergraduate, graduate, and faculty oral and poster presentations during Research Week 2020.

Light refreshments and snacks will be served.

**Natural Resources and  
Environmental Studies Institute  
(NRESi) Colloquium – Canadian  
Institute of Forestry (CIF): Cariboo  
Section Master’s Night**

**3:30pm–4:30pm  
8-164**

The Natural Resources and Environmental Studies Institute (NRESi) brings together members of the University community to promote integrative research on natural resource issues. The goal is to address issues and find solutions within our natural resource systems and human uses of the environment, including issues pertinent to northern regions. NRESi fosters communication and interaction among faculty, graduate students, and associated researchers, including those working with the two UNBC research forests and the Quesnel River Research Centre. It also facilitates interactions with local communities, management agencies, and research professionals, from both industry and government.

The NRESi Colloquium provides a forum for sharing information and facilitating discussion on a wide-range of perspectives on natural resource management issues, and is presented weekly during the fall and winter semesters. This week’s colloquium is hosted in conjunction with the Canadian Institute of Forestry (CIF) and features UNBC graduate students as they present their forestry-related research projects and results.

# Acknowledgments

We would like to thank the College of Science and Management (CSAM), the College of Arts, Social and Health Sciences (CASHS), the Northern Medical Program, and the Health Research Institute for their support.

**#ThisIsResearch #UNBCResearchWeek**



**[unbc.ca/research](https://unbc.ca/research)**