

# CANADIAN CENTRE FOR HEALTH AND SAFETY IN AGRICULTURE

»» ANNUAL REPORT ««  
July 1, 2022-JUNE 30, 2023



**NAME CHANGE**  
JUNE 1ST, 2023



**THE CANADIAN CENTRE**  
FOR RURAL AND AGRICULTURAL HEALTH



UNIVERSITY OF SASKATCHEWAN

Canadian Centre for Rural  
and Agricultural Health

CCHSA-CCSSMA.USASK.CA

BE WHAT THE WORLD NEEDS

The name change reflects the scope of research, knowledge mobilization, and service for rural and agricultural populations.

# CANADIAN CENTRE FOR RURAL AND AGRICULTURAL HEALTH



## OUR MISSION

To conduct and stimulate research, education, service and health promotion programs aimed at enhancing the health and well-being of rural and agricultural populations.



## OUR STRATEGY

To develop, collaborate, source, connect, and catalyze to advance research, knowledge mobilization, and service in the health and safety of rural and agricultural populations.



## OUR PROGRAMS

- Rural Dementia Action Research
- Musculoskeletal Health and Ergonomics
- Rural and Agricultural Health and Hygiene
- Omics in Rural and Agricultural Health
- Rural Population Health and Injury Prevention
- Farmers, Ranchers and Farming Health and Safety
- Enhancing Rural Access to Health Professionals
- Innovation and Advancement for Rural and Agricultural Health and Safety





## MEET OUR DIRECTOR

I am a nurse, and I grew up, live, and work as a health professional in rural Saskatchewan. I have been with the Centre for 30 years and was appointed the Director in January 2023. I am passionate about rural communities, I recognize the important role of rural to the economy and success of Saskatchewan and Canada, and I understand that this success only happens when the people living and working in rural areas are healthy and supported to work and live fully in their home communities.

The Centre works at the grassroots in rural areas. Our service, knowledge mobilization, and research support safe and healthy working and living in rural areas. I am continually amazed by what is accomplished by our Centre with the support of our partners and donors. The partner and donor support for work in rural and agricultural health and safety are unique, world renowned, and speak to the nature of how we work in Saskatchewan and Canada.

My mandate is 'partnering for success'. There are made-in-Saskatchewan approaches that can make a real difference to the health of rural people. It is collaborative, it is empowering those that live and work in rural areas, and it builds healthier rural people, communities, our Province and our Country

Our Boots are on the Ground working for the health and safety of rural and agricultural populations.



*Dr. Shelley Kirychuk,  
BScN, MSc, MBA, PhD,  
Director, Canadian Centre for Rural and  
Agricultural Health,  
Professor, Department of Medicine*



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# RESEARCH HIGHLIGHTS

## RURAL AND AGRICULTURAL HYGIENE AND HEALTH

WESBITE: [https://cchsa-ccssma.usask.ca/facilities\\_and\\_laboratories/occupational-hygiene-and-health-laboratory-.php](https://cchsa-ccssma.usask.ca/facilities_and_laboratories/occupational-hygiene-and-health-laboratory-.php)

The National Agricultural Industrial Hygiene Laboratory (NAIHL), under the direction of Dr. Kirychuk, continues its work in rural-based exposures and health including using animal exposure chambers and field-based samplings. This work is conducted alongside a Laboratory Manager (Thompson), one professional research associate (Schneberger), two research assistants (Nolting, Pandher), one Post-doctoral fellow (Keshavarz), two PhD students (Merkowsky, Didani), and two Masters' students (Castillo Toro, Binepal)



*Photo 1: Back Row: Brooke Thompson, Dr. Merle Massie. Second Row: Dr. Shelley Kirychuk, Dr. Niels Koehncke. Front Row: Dr. Elsa Keshavarz, Katie Thompson, Alejandra Castillo Toro, and Sheila Naytowhow.*



### SEX DIFFERENTIAL RESPONSES TO AGRICULTURAL EXPOSURES

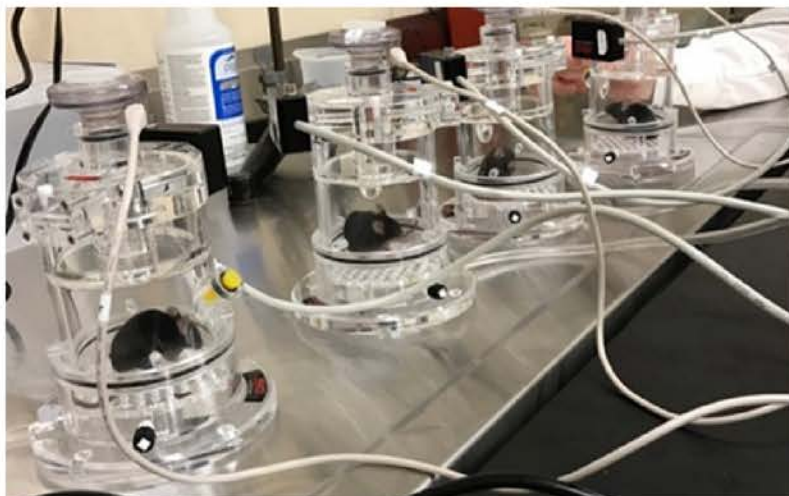
Organic dust including endotoxin and component constituents (DNA), Archaea and other bacterial components are common agricultural air pollutants and have been previously studied for their respiratory and inflammatory effects. Glyphosate is common in agricultural environments and products and can be present in animal, cereal, and produce production operations either as an element of the production process or as a component of feed aerosols. The influence of glyphosate on inflammation and respiratory inflammation has surprisingly not been studied. How the female inflammatory system responds to these complex airborne exposures is not known, nor do we know if the female immune and respiratory response and adaptation differs from that of males.

The purpose of the project is to understand the sex differential response to common airborne agricultural exposures.

Kaitlin Merkowsky, successfully defended her PhD in April 2023, studied the sex differential response after exposure to endotoxin (dust) and glyphosate. This work included the use of the BMIT beamline at the Canadian Light Source to study lung structural changes after exposure in female mice.

### Effects of low elevations of CO<sub>2</sub> on lung infection and inflammation

People, and a number of animals, spend much of their lives indoors, relying on ventilation systems to recirculate and provide fresh air. Engineering solutions are designed around providing air recirculation to remove gasses, odors, and particulates that build up in buildings to address issues of comfort (reduced smells, particulates, “stuffiness”) and health (buildup of noxious gasses such as carbon dioxide, ammonia (NH<sub>4</sub>), hydrogen sulfide (H<sub>2</sub>S), etc., depending on the facility). Elevated CO<sub>2</sub> is considered an indicator of poor ventilation, but not a problem in itself at levels below 5000ppm.



The purpose of this project is to determine if and how exposure to elevated carbon dioxide levels interacts with a viral infection. Our aims are to determine the effect of elevated CO<sub>2</sub> on the response to a viral infection and the effects on virus survival and spread in a mouse model.

*Whole body plethysmography chambers used to measure respiratory parameters.*

## ➤➤➤ ANTI-INFLAMMATORY POTENTIAL OF PHARMACEUTICALS

Inflammatory diseases such as pulmonary inflammation, lung cancer, asthma, and fibrosis exert a great economic impact across the globe. They have a tremendous impact on health and quality of life. Proinflammatory cytokines are released by the immune system which are activated by lipopolysaccharides (LPS), an endotoxin which mimics infection by gram-negative bacteria. LPS induces fever, acute lung injury, suppresses gonadal hormone release and potently activates the hypothalamic-pituitary-adrenal (HPA) axis leading to sickness behavior in many species. The innate immune system is responsible for many of the acute sickness symptoms related to systemic inflammation or infection.

Drs. Shelley Kirychuk, Amanda Nascimento and Upkardeep Pandher received funding from the MITACS Elevate program for this work. Dr. Upkardeep Pandher continued his work on the anti-inflammatory potential of NATURES Immune, a natural pharmaceutical product, on lung inflammation.

The purpose of this project is to evaluate and understand the anti-inflammatory potential of natural pharmaceuticals on lung inflammation induced by lipopolysaccharide.

## ➤➤➤ VENTILATION IN THE CONTROL OF PATHOGENS

Ventilation is generally designed for occupant comfort and air quality but not for infectious disease control. However, by increasing the amount of fresh outdoor air the concentration of pathogens/bio-aerosols indoors can be decreased reducing the chances of airborne transmission of diseases. Energy exchangers are energy saving devices commonly used to precondition ventilation air by recovering energy from building exhaust air. A recent study has shown that aerosols might deposit in these exchangers. These deposited aerosols might transfer from the exhaust air to the air being supplied to the space and hinder the application of energy exchangers. The fraction of the viable bio-aerosols transferred from the building exhaust air stream to the air being supplied to the building can be defined as the contaminant transfer ratio and is an important parameter to quantify.

Drs. Kirychuk, Soltan, and Simonson received funding from the Natural Sciences and Engineering Research Council (NSERC) Alliance grant program to study the impact of ventilation on the transfer and recovery of viruses during common ventilation practices. This work involves a series of steps including understanding the role of ventilation in pathogen transfer and infectivity; the role of recirculating ventilation in pathogen transfer; and mechanisms for controlling pathogens within ventilation systems. This work involves collaborations between Dr. Kirychuk's health sciences lab, Dr. Simonson's mechanical engineering lab, Dr. Soltan's chemical engineering lab, and Dr. Duchaine's laboratory at the University of Laval.

### Team Members:

Dr. Carey Simonson,  
Dr. Jafar Soltan,  
Dr. Shelley Kirychuk,  
Brooke Thompson,  
Dr. Yan Zhou,  
Tejvir Binepal,  
Pezhman Zolfaghari Didani,  
Dr. Caroline Duchaine,  
Dr. Nathalie Turgeon.

## ➤➤➤ ANTIBIOTIC RESISTANT GENES IN BIOAEROSOLS

The aim of this project is to address long-distance transport of ARGs through sampling in the Far North of Canada and in the high atmosphere, overseas and through diverse urban and rural activities.

Team Members from University of Laval: Dr. Caroline Duchaine, Dr. Nathalie Turgeon, Dr. Valerie Letourneau, Dr. Marc Veillette, Joanie Lemieux. Team Members from USask: Dr. Shelley Kirychuk, Brooke Thompson, Charly Nolting, Alejandra Castillo Toro.

Bioaerosols are understudied as reservoirs and propagation sources of antibiotic resistant microbes. Bioaerosols are defined by airborne particles of biological origin. They are found everywhere, emitted from natural and man-made sources such as agriculture, water, plants, and industrial activities. Air can lead to long distance transmission of biological agents and potential impact of human activities on spreading of antimicrobial resistance through the air must be better understood to fill appropriate risk and prevention models. There is an urgent need to better understand the role of air as a transport and spreading route for ARG in outdoor environments emitted from specific high bioaerosols producing activities and settings. Bioaerosols may play an active role in the environmental spread and exposure of antimicrobial resistance.



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*Charly Nolting collecting samples at a sampling site*



## **DEVELOPING STRATEGIES TO MINIMIZE HEALTH RISKS IN NEXT GENERATION LIVESTOCK BUILDINGS INTEGRATING MODERN ANIMAL WELFARE CONSIDERATIONS**

The increasing public concern for animals to be raised, transported and slaughtered humanely is pushing the livestock industry progressively towards animal welfare for farm animals in Canada. In pig production, the new Code of Practice mandates that all holdings brought into use after 2014 should house mated gilts and sows in groups, and existing facilities should be converted to group housing by 2024. With these configurations, animals are free to roam the larger pens and, consequently, there is a potential to produce more odours, gases, dust and microbes in the air due to increased animal activity. These housing changes are combined with the need to reduce the use of antibiotics in animal husbandry.

Dr. Stephane Godbout received funding from the Institut de recherche et de développement en agroenvironnement (IRDA, Quebec) and the AgriSafety Program (AAFC) for this project. Dr. Kirychuk and her team are collecting bioaerosol and greenhouse gas samples from livestock operations with different animal housing systems and management practices around Saskatchewan. This project also overlaps with the NSERC Discovery Frontiers project from Dr. Caroline Duchaine at the University of Laval.

The purpose of the project is to evaluate and improve air quality in agricultural settings using standards for animal welfare and, consequently, reduce health risks in Canadian agriculture.

*Team Members from IRDA: Dr. Stephane Godbout, Dr. Dalila Larios. Team Members from University of Laval: Dr. Caroline Duchaine, Dr. Valerie Letourneau. Team Members from USask: Dr. Shelley Kirychuk, Brooke Thompson, Charly Nolting, Alejandra Castillo Toro.*



## **NATIONAL AGRICULTURAL INDUSTRIAL HYGIENE LABORATORY AFFILIATE PROJECTS**

### **Development and Assessment of Emerging Green Technologies to Reduce Aerosol Risks and Hazards in Livestock Production**

*Principal Investigator: Dr. Lifeng Zhang, Department of Chemical and Biological Engineering, College of Engineering, University of Saskatchewan.*

*Funded by: Agriculture Development Fund and the AgriSafety Program.*

Aerosols in livestock production, including particulate matter, pathogens, microbes (i.e., endotoxins), and viruses are important to livestock health, disease transmission, worker health, and overall cost of production. As particulate matter is composed of organic substances, it can absorb and contain gases, microorganisms, viruses, and other agents that can enhance its biological activity and, therefore, increase the risk of health effects. Reduction of particulate matter and microbes in livestock production is paramount to livestock health and productivity and to the health of those who work in these environments. Several techniques to control contaminants in livestock barns have been reported, including oil spraying, modifying feeds, litter amendment, and exhaust air treatment. There are, however, few technologies currently available on the market for air quality control. Thus, the proposed research aims to evaluate the effectiveness of this method in deactivating microorganisms prevalent in livestock buildings and transport trailers.

### **Development of Chemical-free Eggshell Surface Decontamination Methods**

*Principal Investigator: Dr. Lifeng Zhang, Department of Chemical and Biological Engineering, College of Engineering, University of Saskatchewan.*

*Funded by: Natural Sciences and Engineering Research Council and Agriculture Development Fund.*

Eggs and egg products are widely consumed. Although eggs are an excellent source of many nutrients, they could also be carriers of foodborne pathogens. More recently, adoption of new housing systems for the benefits of welfare for birds in Canada increases contamination risks of shell eggs. Therefore, there is a need required for the egg and chicken industry to control microbial contamination to ensure food safety. In the egg industry, egg washing is the standard procedure to remove dirt and microbes from the shell surface; however, this approach destroys the egg cuticle and may lead to bacteria entering the egg. Further, egg washing generally uses hot water and chemicals such as chlorine to effectively destroy a wide spectrum of pathogenic organisms. However, there is a need to employ alternative approaches that are environmentally friendly, chemical free, low cost, and convenient to employ. Some promising technologies for eggshell decontamination are electro-nanospray, cold-plasma and non-thermal cold-plasma. The purpose of these projects is to develop and evaluate chemical-free decontamination methods for the egg industry.



## NATIONAL AGRICULTURAL & INDUSTRIAL HYGIENE LABORATORY TRAINEES & STAFF

**Alejandra Castillo Toro** is an MSc student in the Health Sciences program, supervised by Dr. Kirychuk. Her Masters' thesis is focused on antimicrobial resistant genes in Saskatchewan livestock operations.

**Tejvir Binepal** is an MSc student in the Department of Mechanical Engineering, supervised by Dr. Carey Simonson. His thesis is focused on bioaerosol transfer in semi-permeable membranes.

**Roger Bolo** is an MSc student in the Department of Chemical and Biological Engineering, co-supervised by Drs. Lifeng Zhang and Bernardo Predicala. His thesis is focused on the evaluation of a pilot-scale electro-nanospray system for decontaminating pig barns.

**Shiva Aminian** is a MSc student in the Department of Chemical and Biological Engineering, co-supervised by Drs. Lifeng Zhang, Shelley Kirychuk and Karen Schwaen-Lardner. Her thesis is focused on development of a novel egg surface decontamination method via electro-nanospray.

**Mina Movasaghi** is a MSc Student in the Department of Chemical and Biological Engineering, co-supervised by Drs. Lifeng Zhang, Shelley Kirychuk and Karen Schwaen-Lardner. Her thesis is focused on egg surface decontamination via cold-plasma.

**Kaitlin Merkowsky** is a PhD student in the Health Sciences program, supervised by Dr. Kirychuk. Her PhD thesis focused on characterization lung inflammation in agricultural respiratory exposures between the sexes. Kaitlin successfully defended her PhD thesis in April 2023.

**Pezhman Zolfaghari Didani** is a PhD student in the College of Engineering, co-supervised by Dr. Jafar Soltan and Dr. Kirychuk. His PhD thesis is focused on Air sanitization to inactivate pathogens using catalytic reaction with ozone.

**Dr. Elsa Keshavarz** is a Living Skies Post-doctoral fellow, supervised by Dr. Kirychuk. Her fellowship is focused on housing and health in Saskatchewan First Nation communities.

### STAFF

**Dr. Upkardeep Singh Pandher** is working as a Research Assistant in the National Agricultural and Industrial Hygiene Laboratory. His research is focused on lung inflammation and common agricultural exposures, and anti-inflammatory potential of natural pharmaceuticals on lung inflammation.

**Charly Nolting** is a technician in the National Agricultural and Industrial Hygiene Laboratory. She is responsible for sampling out in the field and maintaining industrial hygiene equipment in the laboratory.

**Dr. David Schneberger** is a Professional Research Associate in the National Agricultural and Industrial Hygiene Laboratory. His research is focused on innate immune responses, lung inflammation and common agricultural exposures.

**Brooke Thompson** is the laboratory manager for the National Agricultural and Industrial Hygiene Laboratory. Brooke is responsible for overseeing all lab-based projects, training staff and students on protocols and equipment, and maintaining laboratory equipment.

## RURAL POPULATION HEALTH AND INJURY PREVENTION



### **BUILDING THE FUTURE: THE BUILT ENVIRONMENT IN SASKATCHEWAN FIRST NATION COMMUNITIES**

Website: <https://research-groups.usask.ca/fn-built-environment/>

Dr. Kirychuk continues to work with Saskatchewan First Nation communities on the built environment and health. Drs. Kirychuk (Medicine), Martin (Nursing), Bradford (Engineering) and McPhedran (Engineering) were recently funded by SSHRC (\$5K), SHRF (\$170K) and CIHR (\$150K) to support the work of First Nations people in Saskatchewan towards vibrant and healthy houses. This work is supported by incoming Masters' student Sheila Naytowhow and Professional Research Associate Jeremy Seeseequasis, and Drs. Merle Massie and Pardis Keshavarz. The team is leading open conversations with Saskatchewan First Nation communities to identify best practices, barriers, and gaps in the First Nations built environment (infrastructure) including housing builds and housing maintenance. These conversations are supporting knowledge-to-action by building compendiums to support First Nations housing managers and those involved in the housing portfolio to quickly feel comfortable and knowledgeable about their work. The work will be brought to a symposium in November 2023 for workshoping with community, industry and policy makers for input and further direction.



*Back row: Dr. Jafar Soltan, Dr. Merle Massie.  
Second Row: Dr. Penelope Sanz, Sheila Naytowhow,  
Dr. Kerry McPhedran, Brooke Thompson.  
Front Row: Dr. Shelley Kirychuk, Dr. Wanda Martin,  
Dr. Tara Kahan, Dr. Lori Bradford, Katie Thompson,  
Dr. Pardis Keshavarz.*



### **MĀMAWŌHKAMĀTOWIN: WORKING TOGETHER TO UNDERSTAND HOUSING AND COVID-19 IN A SASKATCHEWAN FIRST NATION COMMUNITY**

Housing has been identified as an important element to understand, in terms of contributions to health and wellness. The house is the physical structure in which the family lives, versus the home, which includes the values by which the occupants of the house function. important factors in the house that contributed significantly to health and wellness including: the house was in need of major repairs; smell of mold; visible mold; crowding; and non-traditional use of tobacco in the house. House factors are important determinants of health and it is unknown if the house is an important contributor to COVID-19. Understanding the factors that prevent and/or contribute to house transmission are important to prevention and management. Drs. Kirychuk, Ramsden and Keshavarz continue to evaluate the role of the house in COVID-19 transmission.

*Team Members: Dr. Shelley Kirychuk, Dr. Vivian Ramsden, Dr. Chandima Karunanayake, Norma Rabbitskin, Shirley Bighead, Chief Christine, Longjohn, Brooke Thompson, Dr. Pardis Keshavarz, Ilona Monkman.*

## ➤➤➤ AGRICULTURAL FATALITY SURVEILLANCE

The Fatality Surveillance team (Karunanayake CP, Koehncke N, Enebeli S, Ulmer K, Rennie DC) recently published and presented an updated analysis of agricultural fatalities in Saskatchewan in the *Journal of Agromedicine*, November 2022. Trends in Work-Related Fatal Farm Injuries, Saskatchewan, Canada: 2005-2019 data was presented at the Department of Medicine Research Day in June of 2022, and a report of recent fatality data can be found on the Canadian Centre website. This surveillance program is part of the national surveillance program funded by the Canadian Agricultural Safety Association (CASA) and run through the Injury Prevention Center at the University of Alberta. Tractor roll-overs continue to be a leading cause of fatal injury in Saskatchewan and are very preventable through the installation of Roll-Over Protective Structures (ROPS). An study looking at a low-cost option for retrofitting ROPS on older tractors is underway through the Canadian Centre, lead by Jim Wasserman.

Tractor roll-overs continue to be a leading cause of fatal injury in Saskatchewan



*A roll-over protective structure (ROPS) has prevented the tractor from rolling completely on its back, which greatly reduces the risk of death in these circumstances.*

## ➤➤➤ OCCUPATIONAL HEALTH IN VETERINARY MEDICINE

Work by Mayer M. (College of Veterinary Medicine), Koehncke N. (CCRAH) and colleagues through a series of publications has assessed radiation practice and radiation Personal Protective Equipment (PPE) use in veterinary settings. This work has demonstrated low PPE use in both large and small animal veterinary settings with the potential for unnecessary ionizing radiation exposure as a result. Recently, it's been demonstrated that the use of radiological shielding (gloves, gowns etc) is a potential source for lead exposure in the veterinary workplace (Mayer et al 2022). As of June 5, 2023 a paper demonstrating surface lead exposure on the hands of veterinary workers has been accepted for publication in the *Journal of Occupational and Environmental Medicine* (JOEM). These researchers plus a medical student and a veterinary medicine student are undertaking a review of lead exposure in private practice veterinary clinics in Saskatchewan in the summer of 2023.



*Veterinary workers taking radiographs of a dog (above) and a horse (left). The radiographic equipment on the left is hand-held, which increases risk of ionizing radiation exposure.*



*Radiological gloves are often worn in veterinary settings since animals frequently have to be restrained manually in order to take radiographs. We have demonstrated that wearing leaded gloves can expose workers to lead dust on the surface of their hands.*

*Funded by: American College of Veterinary Radiology Diplomate Research Award.*



## ASSESS, REDRESS, REASSESS: ADDRESSING DISPARITIES IN HOUSE, HOME, AND MENTAL HEALTH AMONG FIRST NATIONS PEOPLE

We will evaluate the characteristics of the house, the home, and social determinants of Indigenous peoples' mental health at baseline and following interventions. Washahikan includes the physical nature or structure of the house and the way in which it is maintained. Mikiwam includes the values with which the occupants of the house function as a family unit. Social determinants of mental health include proximal, intermediate and distal factors. Mental health outcomes include stress, anxiety, depressive symptoms, substance abuse and suicidal ideation. This new project is based on the Cree people's traditional Tipi Teachings. The 15 poles that provide the internal structure of the tipi represent a set of universal values. The Tipi Teachings can be considered to correspond to current concepts of determinants of wholistic mental health in Indigenous peoples. The modern theory of Indigenous mental health published in the research literature maps quite closely to the Tipi Teachings, which were developed many years ago.

*The overall goals of this project are to assess house (Washahikan) and home (Mikiwam) as determinants of mental health outcomes in First Nations people; and to determine the effects of addressing and redressing issues involved in house, home, and mental health.*

*Funded by: CIHR 03-2022-02-2027*

**NPI:** James Dosman. **Co-PIs:** Punam Pahwa; Shelley Kirychuk; Jeremy Seeseequasis, Beady's; Marie Neubuhr; Delano Mike; Warren Seesequasis; Carol Naytowhow; Marilyn Baetz; Sylvia Abonyi; Malcolm King. **Co-investigators:** Chandima Karunanayake; Kathleen McMullin; Bonnie Janzen; Neils Koehncke; Josh Lawson; Vivian Ramsden; Mark Fenton. **Collaborators:** Greg Marchildon; Tom Smith-Windsor; Suzane Seeseequasis & Ray Mandes; Donna Rennie. **RAs:** Jill Dosman, Barada Mohanty.



## GEOGRAPHIC VARIATION IN THE UNDER- AND OVER-DIAGNOSIS OF ASTHMA

Asthma prevalence varies both globally and regionally including between rural and urban children. In a project jointly funded by the European Academy of Allergy and Clinical Immunology and the Saskatchewan Health Research Foundation, we are working towards a position paper investigating the proposed objective. This will include a systematic review of the under- and over-diagnosis of asthma internationally and by rural-urban status as well as the development and evaluation of clinical and research recommendations through a Delphi approach.

**Team Members:** Canadian Team: D Adamko, D Goodridge, D Cockcroft, B Philipenko, U Khanam, N Rybalka; International Team: G. Brozek (Poland), J. Rufo (Portugal), T. Trikamjee (South Africa), K. Khaleva (UK), S. Ertan (Turkey), R. Gawlik (Poland), W. Feleszko (Poland), H. Suojalehto (Finland), A. Moreira (Portugal), I. Eguiluz-Gracia (Spain), G. Roberts (UK).

*Led by Dr. J. Lawson, the overall objective of this project is to investigate under- and over-diagnosis of asthma, specifically the magnitude of the problem and differences between regions and identify opportunities and strategies to overcome the issues related to asthma diagnosis.*



## A VIRTUAL PROGRAM TO PROMOTE PHYSICAL ACTIVITY AND HEALTH BEHAVIOURS AMONG WOMEN WITH OBSTRUCTIVE SLEEP APNEA (OSA)

An under-served segment of those with OSA includes women living in rural areas. Women with mild OSA who live in rural areas will be recruited to complete a virtual 6-month multicomponent intervention program. We will then assess the impact of the program by looking at changes in healthy behaviours, body assessments, and feasibility.

*Team Members: Donna Goodridge, Josh Lawson, Mark Fenton, Nancy Gyurcik, John Gordon, Jaimie Peters, Kelly Tremblay, Dave Parkalub, Allison Cammer, J. Blouin.*

*Led by D. Goodridge and J. Lawson, the overall objective of this project is to examine the impact and feasibility of a virtual behavior change intervention focused on promoting physical activity and healthy behaviours in rural women with mild OSA.*



## ASTHMA AND MENTAL HEALTH CONDITIONS

Through a series of studies using data from the Saskatchewan Health databases, national research databases, literature review, and environmental scans we are investigating the determinants of asthma and mental health comorbidity as well as the impact of having a mental health condition on various health outcomes among children with asthma.

*Led by Dr. J. Lawson, the overall objective of this project is to investigate the association between childhood asthma and mental health conditions.*

*Josh Lawson, Darryl Adamko, Donna Goodridge, Don Cockcroft, Lloyd Balbuena, U. Khanam, P Jandaghi, M. Kim.*

## AGRIVITA CANADA INC.

Agrivita is a nationally incorporated not-for-profit company that stimulates and supports applied health and safety research and development aimed at sustainability and productivity in Canadian agriculture.

Agrivita is committed to ensuring that farmers and agricultural workers have a standard of work conditions and safety equivalent to other major industries in Canada.

Led by CEO and Scientific Director Dr. James Dosman, Agrivita continues its work in promoting, coordinating, and contributing applied science in Canadian agricultural health and safety through the ongoing management of the AgriSafety Program. The current Canadian AgriSafety Applied Research Program is funded through Agriculture and AgriFood Canada's (AAFC) Canadian Agricultural Strategic Priorities Program (CASPP) and consists of six unique projects as well as knowledge transfer activities. Unified by a comprehensive planned approach, this suite of projects was designed to respond to sector needs and seize current opportunities to mitigate agricultural illness, injury, and death. The 6 research projects are listed below with key highlights from the recently completed year 4 of this 5-year program.



## RESEARCH PROJECTS

### Activity 1: Improving Biosecurity and Welfare of Animals During Transportation

Research led by Dr. Predicala, Prairie Swine Centre Inc and Dr. Kirychuk, University of Saskatchewan

- With the completed prototype trailer, the research team is currently carrying out a series of road and disease-challenge tests to evaluate the trailer's performance.
- Based on the results from the road tests, the performance of the installed ancillary systems, such as ventilation and heating systems, was proven to be effective in maintaining an acceptable air quality and thermal environment for the pigs during transport, even during adverse weather conditions.
- The initial results from the disease-challenge tests have shown that installing an air filtration system in the trailer can protect pigs from potential exposure to airborne transmissible diseases such as the Influenza A virus (IAV) during transport.



Refilling port for water supply  
Emergency door  
Underbed storage

Activity 1 Proto-type Swine Transport Trailer

Canadian AgrSafety Applied Science Program  
**CANFARMSAFE**  
Testing the New Swine Transport Trailer  
Part 2 - Disease Challenge Tests

A new prototype research trailer (Figure 1) was developed in order to maintain a pathogen-free and welfare-friendly environment for pigs during transport. Following the enhancement and optimization of the trailer, the research team leading the improving the biosecurity and welfare of animals during transportation project planned a series of road and disease challenge tests. The preliminary tests have just been completed and the results will be presented in a report being co-authored with the disease challenge tests.

For the preliminary disease-challenge tests, 10 out of 40 pigs utilized in the road tests were randomly selected to ensure representative animal composition. The pigs were exposed to the ventilation exhaust air from a barn infected with the novel influenza virus (NIV), and then brought to another location for observation of infection onset while housed in the trailer.

**Exposure period**  
Two "H" Reefer ducts were used to connect the exhaust tubes of the ventilation fans of the nursery rooms in the air-infected barn to the inlet of the trailer air filtration system (Figure 2). Air flow meters with sampling ports (Figure 3) were also set up at the start of the exposure period for 12 hours. During the exposure period, feed and water were provided to the animals, and the trailer ancillary systems were in operation. In addition, oral fluid samples were taken from the pigs inside the infected barn for confirmation of their infection status.

The air and oral fluid samples were taken at a specialized laboratory for qPCR analysis. Unfortunately, the oral fluid samples came back negative for NIV and only one specimen air sample was categorized as "Suspect", indicating only a very low concentration of NIV was detected in sampled barn air.

### Activity 2: Development and Assessment of Emerging Green Technologies to Reduce Aerosol Risks and Hazards in Farms

Research led by Dr. Zhang, U of S College of Engineering

- Year 4 activities focused mainly on evaluating the performance of the developed electro-nanospray system in treating barn air and decontaminating barn surfaces.
- The efficacy of the system in cleaning barn air was evaluated by installing an electro-nanospray in a small pig room in the barn facility of the Prairie Swine Centre Inc. and treating the air inside the room with the generated water nanodroplets. Preliminary results are promising.



Activity 2 Electro-nanospray system

Canadian AgrSafety Applied Science Program  
**CANFARMSAFE**  
Scaling-Up the Nanospray  
Air Treatment System

Several studies have shown high prevalence rates of respiratory diseases in animal farm premises due to airborne bacteria and airborne microorganisms. In livestock, air-borne outbreaks due to microbial infection can also have devastating economic impacts on the livestock industry. To help deal with these issues, the development and assessment of emerging green technologies to reduce aerosol risks and hazards in farms project is currently testing a promising technology for decontaminating microbes in small farms. The nanospray based technology is used to generate engineered water nanodroplets (ENWs) which, react with microorganisms and interfere with their metabolic processes to effectively deactivate these harmful microbes. Preliminary tests in the laboratory have demonstrated the efficacy of the nanospray system for both surface and air decontamination. The next step is to evaluate the performance of the technology in decontaminating microbes in small-scale pig rooms at the Prairie Swine Centre (PSC) in Saskatoon, however, before testing the nanospray system in a real farm environment, certain operating parameters need to be optimized and the laboratory-scale system must be scaled-up to a pilot scale system.

**Methodology**  
The air flow rate in the chamber and the number of injection/needles were optimized in the lab using 0.1 ml of the test pathogen, *Aeromonas* sp. coli inside the treatment chamber was generated using a nebulizer and the reduction efficiencies at various chamber air flow rates were determined experimentally using the setup shown in Figure 1.

In water-based solution, was placed in 10-ml plastic syring and pushed through each needle at a flow rate of 1 µl/min using the syringe plunger. The needles were connected to a high voltage power supply to charge the solution passing through them, generating highly charged nano-sized water droplets. A DNA probe (mpDNA) was used to measure the reduction efficiencies.



### Activity 3: Fugitive Emissions Following Manure Spreading – Risk Assessment and Engineering Controls

Research led Dr. Godbout, Institut de recherche et de développement en agroenvironnement (IRDA)

- Using a large-scale wind tunnel, several experiments were done to evaluate the fugitive emissions related to manure spreading in a controlled environment. Airborne emissions were quantified for solid cow and poultry manure as well as liquid swine slurry.
- An intensive field sampling campaign is currently being conducted to measure airborne contaminants from the spreading of different types of manure and equipment used to spread manure under actual field conditions.



Activity 3: Wind Tunnel for Manure Emissions Testing & Solid Manure Fielding Testing

### Activity 4: Developing Strategies to Minimize Health Risks in Next Generation Livestock Buildings Integrating Modern Animal Welfare Considerations

Research led by Dr. Godbout, IRDA

- The comparison of air quality in dairy farms that use tie stalls with those that use free stalls was completed. With the current statistical analysis, no significant differences were found between the two types of buildings. New analyses are underway with results normalized based on animal density and building configuration. However, several pathogenic and etiological agents were found and quantified.
- Air samples were also collected at the exhaust fans of six swine barns in Saskatchewan to compare crate facilities versus group systems. Results will be available in Year 5.

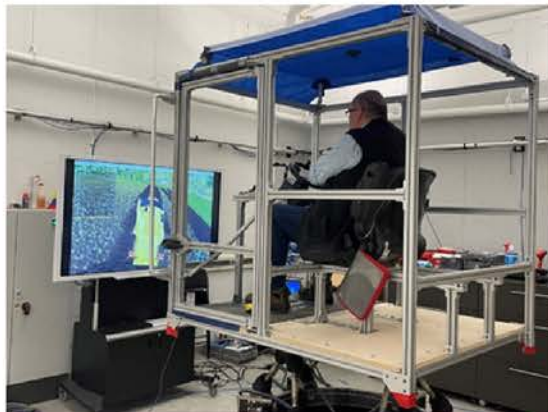


Activity 4: Sampling Dairy Barn

## Activity 5: Take a Break from the Shake: Farm Machinery Operator Interventions

Research led by Dr. Milosavljevic, U of S

- The major achievement of Year 4 was to complete the in-lab whole-body vibration (WBV) exposure study. During each testing session, participants were exposed to 1 hour of in-lab simulated WBV and then asked to complete one of 4 selected rest break activities.
- Field testing of rest break activities was started to further understand methodological development and apply in-lab findings in a true on-farm environment. Fifteen participants across six different farm locations took part in the study so far.



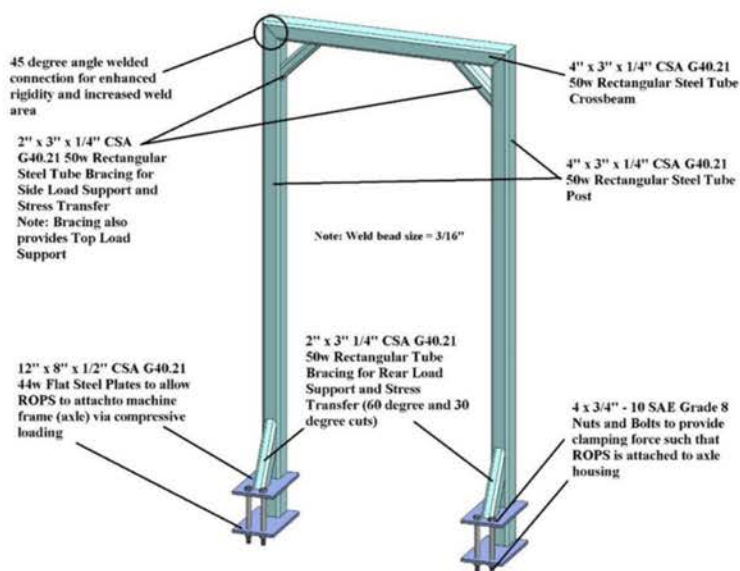
Activity 5: In-Lab Vibration Testing



## Activity 6: Roll Out of Low Cost Farmer-Built ROPS into a National ROPS Program

Research led by J. Wassermann and Dr. Koehncke, Canadian Centre for Rural and Agricultural Health

- Work was continued on the social awareness campaign pushing towards a national ROPS program using a parametric design to cover many older tractor models.
- To help accelerate the development of the parametric designs, a team of mechanical engineering students at the U of S was recruited. After several iterations, the design proposed by the student team fulfilled all the functions and objectives of their mandate. The concept is simple, using merely 5 different parts with easy to fabricate shapes.



Student ROPS Design



## RURAL HEALTH LABORATORY TRAINEES & STAFF

**Dr. Elsa Keshavarz** is a Living Skies Post-doctoral fellow, supervised by Dr. Kirychuk. Her fellowship is focused on housing and health in Saskatchewan First Nation communities.

**Dr. Meera Kachroo** started her Postdoctoral Fellowship with the Canadian Centre, University of Saskatchewan in September 2023. Her research is based in the subject of Ethnography and Sleep with supervision of Drs. James Dosman, Punam Pahwa, and Sylvia Abonyi.

**Sheila Naytowhow** is a Research Assistant in the Rural Health Lab, supervised by Dr. Shelley Kirychuk. Sheila is currently supporting the work being done by the Built Environment group and leading conversations with Saskatchewan First Nation communities.

**Jeremy Seesequasis** is a professional research associate in the rural health lab, supervised by Dr. Shelley Kirychuk. Jeremy is currently supporting the work being done by the Built Environment group and leading conversations with Saskatchewan First Nation communities.

**Dr. Merle Massie** is a professional research associate in the rural health lab, supervised by Dr. Shelley Kirychuk. Merle is currently supporting the work being done by the Built Environment group alongside Saskatchewan First Nation communities.

**Brooke Thompson** is the laboratory manager for the National Agricultural and Industrial Hygiene Laboratory. Brooke is responsible for overseeing all lab-based projects, training staff and students on protocols and equipment, and maintaining laboratory equipment.

**Nadia Smith** is seconded to Agrivita Inc. and manages the Agrivita Program

**Matthieu Girard** heads the Knowledge Mobilization activities for Agrivita projects.

### STUDENTS:

- Bisma Ikram, MSc student
- Shirmin Kader, MSc student
- Zinia Susman, MSc student
- Odette Wills MSc student
- Shiva Naseri, MSc student
- Barada Mohanty, PhD student
- Masud Rana, PhD student

## OMICS SCIENCE IN RURAL AND AGRICULTURAL HEALTH

### ➤➤➤ MASS SPECTROMETRY LABORATORY FOR OMICS RESEARCH

The Mass Spectrometry Laboratory for Omics Research is housed in the D-wing of the Health Sciences Building. The lab is equipped with state-of-the-art instrumentation capable of environmental (i.e air particulates, dust) and agricultural samples analyses, pesticide analysis, global proteomics (i.e identification of proteins, analysis of protein modification, characterization of protein-protein interaction), quantitative proteomics for discovery and validation of biomarkers, small molecule analysis, metabolomics and clinical proteomics.

Dr. Katselis leads the research programs focused on MS-based technologies. Under Dr. Katselis' leadership, the Mass Spectrometry Laboratory for Omics Research continues to run at high capacity for the Centre and collaborating researchers.



*From left: Dr. George Katselis, Brooke Thompson, Ibrahim Hoja, Lucas Julseth, Dr. Paulos Chumala, Megan Tomilin, Daniel Chao.*

## ➤➤➤ VIBRATION-RELATED MICRO-CONCUSSIONS

The purpose of this project is to identify protein markers resulting from WBV by comparing proteomic profiles and cognitive impairment of animals exposed to different vibration frequencies.

The physiological basis for the cognitive and physical effects of whole-body vibration (WBV) has not yet been defined and no biomarkers indicative of micro-concussion from WBV exposure have been identified. We believe that increasing levels of WBV cause damage via micro-concussions leading to increased cognitive impairment, and the damage corresponds with differential expression of blood/brain proteins that can be identified by MS-based proteomics. The study's focus on rat models will furnish results that will ultimately facilitate future studies on humans, and deeper investigations into the level, frequency, and duration of exposures that contribute to injury mechanisms and accident risk.

*Project Team Members:*  
 Dr. George Katselis,  
 Dr. John Howland  
 Dr. Stephan  
 Milosavljevic, Brooke  
 Thompson, Dr. Paulos  
 Chumala, Lucas Julseth,  
 Daniel Chao,  
 Megan Tomilin.

## ➤➤➤ PROTEOMICS CHARACTERIZATION OF INSECTICIDE RESISTANCE

Insecticide resistance is an innate characteristic involving changes in insect genes and the molecular basis of these changes are unclear due to the lack of complete genome sequences for most insect species. However, insect populations develop insecticide resistance through complex mechanisms. A combination of various mechanisms can confer higher rates of resistance to all classes of insecticides than one mechanism alone. The purpose of this project is to develop LC-MS/MS approaches to identify, characterize, and map the global proteome profile in *Triotoma infestans* and further develop a targeted approach to the characterization and validation of the proteome.

*Project Team Members:* Dr. George Katselis, Dr. Juan Ianowski, Dr. Paulos Chumala, Brooke Thompson, Noah Willfong, Megan Tomilin

## ➤➤➤ SERUM PROTEOMICS TO INVESTIGATE CLINICAL OUTCOMES FOLLOWING ST-ELEVATED MYOCARDIAL INFARCTION

ST-Elevated Myocardial Infarction (STEMI) occurs due to the complete occlusion of a coronary artery and despite improvements in treatments, it remains a major cause of mortality worldwide. Classical risk models that only rely on clinical variables are insufficient to predict the risk of adverse post-STEMI outcomes. Therefore, the prediction of cardiogenic shock and heart failure following STEMI is an unmet clinical need. Advances in proteomics can allow us to identify biomarkers to predict the occurrences of post-STEMI outcomes. We need to consider multiple methods, including multi-biomarker strategies, to stratify the risk of post-STEMI outcomes.

The purpose of this project is to determine proteomic differences between diabetic and non-diabetic STEMI patients and understanding the pathways involved in adverse post-infarction remodeling in general, and particularly in at high-risk subgroups, will therefore fulfil an important unmet clinical need.

*Project Team Members:* Dr. Jay Shavadia, Dr. George Katselis, Dr. Haissam Haddad, Megan Tomilin, Dr. Paulos Chumala, Dr. Rama Mangipudi, Brooke Thompson, James Matheson.

## ➤➤➤ INVESTIGATION OF EARLY DYNASTIC SUMERIAN ANIMAL MANAGEMENT

During the Early Dynastic period in Sumer there was a period of increased urbanization and in order to determine how this was facilitated it is necessary to elucidate ancient practices of optimized resource utilization. The analysis of sheep, goat and donkey teeth using stable carbon and oxygen isotope analysis, radiogenic strontium isotope analysis, and proteomics-based tandem mass spectrometry will be performed. Stable Carbon and Oxygen isotope analysis determined the component of C3 and C4 type plants in the animal's and how this changed over time and the watering source type consumed by the animal and how this changed over time, respectively. Radiogenic strontium isotope analysis was used to determine the movement of the animal over its life. Paleoproteomics can be used to determine the specific genus of plants that the animals were consuming.

*Team Members:  
Megan Tomilin,  
Dr. George Katselis,  
Dr. Tina Greenfield,  
Dr. Paulos Chumala,  
Brooke Thompson.*

## ➤➤➤ OMICS IN RURAL AND AGRICULTURAL HEALTH TRAINEES AND STAFF

### TRAINEES

**Noah Willfong** is an undergraduate Honours student, co-supervised by Dr. Katselis and Dr. Juan Ianowski. His honours project focused on Proteomics Characterization of Insecticide Resistance.

**Daniel Chao** is an undergraduate summer student, under the supervision of Dr. Katselis. His summer research project focused on Understanding Vibration-Induced Micro-concussions Using Mass Spectrometry-based Proteomics. Daniel will be starting his honours project with Dr. Katselis in Fall 2023.

**Megan Tomilin** is an MSc student in Interdisciplinary Studies, co-supervised by Dr. George Katselis and Dr. Tina Greenfield. Her thesis focused on Supporting the Urban Population of Abu Salabikh: The Management and Mobility of Animals. Megan will be starting her PhD with Dr. Katselis in September 2023.

**James Matheson** is an MSc student in the Health Sciences program, supervised by Dr. George Katselis. His thesis is focused on Investigating the Role of Diabetic Pregnancies in Kidney Disease among Type 1 and 2 Diabetes Mellitus Adolescents using Urine Proteomics

**Lucas Julseth** is an MSc student in the Health Sciences program, supervised by Dr. George Katselis. His thesis is focused on Understanding Vibration-Induced Micro-concussions Using Mass Spectrometry-based Proteomics.

**Greg Guenther** is an MSc student, co-supervised by Dr. George Katselis and Dr. Silvana Papagerakis. His thesis is focused on Evaluation of Natural Products Supplements for Oral Hygiene.

**Roman Koziy** is a PhD student in the Western College of Veterinary Medicine, co-supervised by Dr. Elemir Simko and Dr. George Katselis. His thesis is focused on the Investigation of Diagnostic Markers for Detection of Eradication of Joint Infection in Equine Septic Arthritis

**Ibrahim Hoja** a PhD student in the Health Sciences program, supervised Dr. George Katselis. His thesis is focused on Nutritional Determinants and Genetic Factors Influencing the Circadian Clock and Oral Tissues Development and Diseases.

**Muhammad Imran** is a PhD student in the College of Agriculture and Bio-resources, co-supervised by Dr. Mary Buhr and Dr. George Katselis. His thesis focused on Identification and Quantification of Sperm Head Plasma Membrane Proteins Associated with Male Fertility. He successfully defended his PhD in December 2022.

### STAFF

**Dr. Paulos Chumala** is the Mass Spectrometry Technician in the Mass Spectrometry Laboratory for Omics Research. Paulos' responsibilities include preparing samples for mass spectrometry analysis and bioinformatic analysis of samples.

**Brooke Thompson** is the Laboratory Manager for the National Agricultural and Industrial Hygiene Laboratory.

## RURAL DEMENTIA ACTION RESEARCH (RaDAR) TEAM



*Dr. Debra Morgan*

Dr. Debra Morgan, CCRAH Professor and Chair in Rural Health Delivery, has been leading the interdisciplinary Rural Dementia Action Research (RaDAR) team since 2003. The team's goal is to improve dementia care in rural and remote settings.



### SUMMIT OF THE KNOWLEDGE NETWORK IN RURAL AND REMOTE DEMENTIA CARE

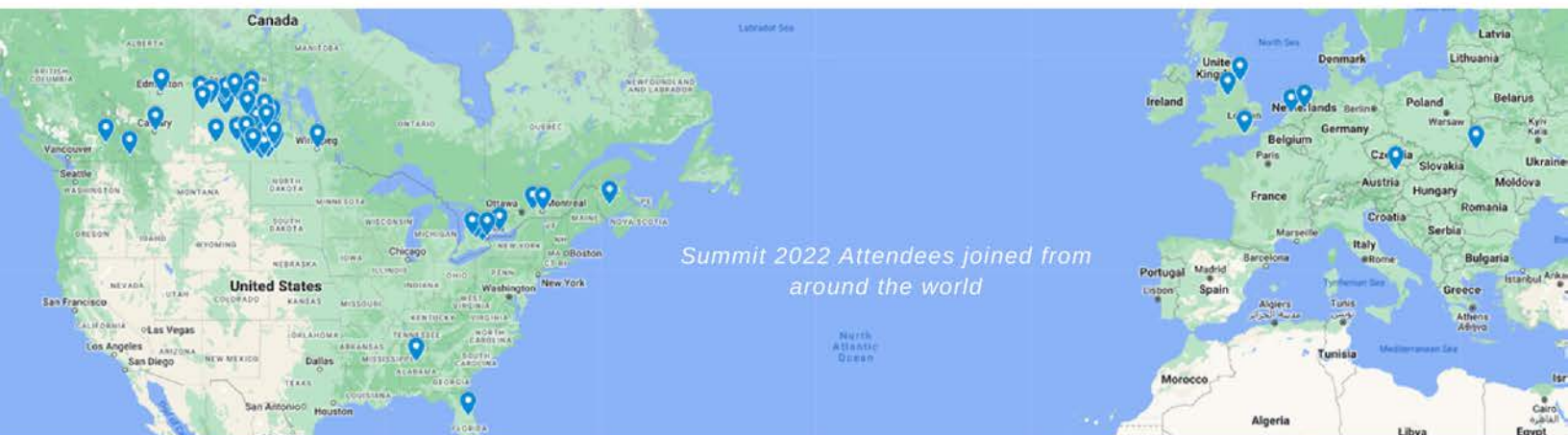
The RaDAR research program is guided by The Knowledge Network in Rural and Remote Dementia Care. The Network includes front-line health care providers and managers, people living with dementia and family members, health region representatives, international researchers, and individuals from governmental and community-based organizations. The Network meets at the annual Rural Dementia Care Summit, the RaDAR team's key knowledge exchange event, where Network members provide input into new and ongoing RaDAR research projects and learn about new dementia care research taking place in Saskatchewan and internationally. Duane Minish directs Summit organization and coordination each year.



The RaDAR team held its 15th annual summit November 22 & 23, 2022. Summit 2022 was the team's third to be held as an-online only virtual event. More than one hundred thirty-two attendees joined the two-day event that included an evening poster session and a mix of both live and pre-recorded presentations on a variety of dementia-related topics from a diverse group of presenters. Dr. Nicole Ruggiano, PhD, MSW, Professor and Associate Dean of Research with the University of Alabama School of Social Work joined Summit as keynote presenter. Dr. Ruggiano presented on Advancing Evidence-based Technologies to Support Dementia Care and Caregiving: Challenges, Opportunities, and Directions Forward.



*Dr. Nicole Ruggiano*



*Summit 2022 Attendees joined from around the world*

## BILOKRELI FAMILY TRUST FUND

The RaDAR team receives \$25,000 in annual funding to support the Summit and the team's activities, generously provided by the Bilokreli family. The family has an interest in supporting rural dementia research in the province, and we are pleased to offer student poster prizes in their name to student trainees working in the field. This year's Bilokreli Student poster prizes at the 15th Annual Summit were awarded to:



## CIHR FOUNDATION GRANT (2016-2026)

Dr. Debra Morgan holds a multi-year CIHR Foundation Grant for the research program "Design and evaluation of integrated primary health care practice for dementia in rural and remote settings". Co-investigators include Drs. Julie Kosteniuk, Megan O'Connell, Andrew Kirk, and Norma Stewart, and other Canadian and international experts.

*Rural Memory Clinic team members from partner communities at the RaDAR Summit in November, 2019*



## CANADIAN CONSORTIUM ON NEURODEGENERATION IN AGING (CCNA) PHASE II (2019-2024)



The CCNA was established by the Canadian Institutes of Health Research in April 2014 to address the growing prevalence of Alzheimer Disease and other dementias in Canada. The CCNA Phase II brings together over 350 researchers across 19 teams, including CCNA Team 15 Rural led by Drs. Megan O'Connell and Debra Morgan. CCNA hosts an annual Partners Forum and Science Day which is attended by all 19 CCNA teams. Due to the pandemic, the 2022 Forum was held as a virtual event.

As part of Team 15's research, the RaDAR team continues to sustain and evaluate the impact of seven rural PHC memory clinics that have been established in southeast Saskatchewan since CCNA Phase I. RaDAR is currently working with additional rural primary health care teams to establish a clinic in their community. This work is co-led by Drs. Morgan and Kosteniuk. Seven Phase II projects linked to the rural memory clinics are currently in progress and three have been completed. Included are projects examining the service/support needs of patients and care partners, an exploration of the role of the Alzheimer Society First Link Coordinator in rural memory clinics, and an environmental scan of programs and services for older adults in RaDAR memory clinic communities and surrounding areas.





## PROJECTS LED BY RADAR TEAM MEMBERS CONTRIBUTE TO THE FOUNDATION PROJECT AIMS

**Dr. Amanda Froehlich Chow**, an Assistant Professor in the School of Public Health at the University of Saskatchewan, is collaborating with rural Indigenous communities to co-create culturally rooted resources for supporting wholistic wellness and promoting intergenerational connections among Indigenous communities. Dr. Froehlich Chow is also a member of CCNA Team 18 which focuses on issues in dementia care for Indigenous Populations led by Dr. Jennifer Walker, Laurentian University.



*Dr. Amanda Froehlich Chow*

**Dr. Juanita Bacsu** completed her two-year Postdoctoral Fellowship with the support of Dr. Megan E. O'Connell and the RaDAR team in the summer of 2022. In July 2022, Dr. Bacsu was awarded a Tier II Canada Research Chair (CRC) in Nursing and Population Health and an assistant professor position in the School of Nursing at Thompson Rivers University (TRU). Her CRC work focuses on improving the health equity and quality of life of rural older adults living with dementia, supported by federal funding of \$600,000. The goal of her research is to reduce stigma of dementia and improve equitable access to health and support services to enhance rural aging. Dr. Bacsu also received



*Dr. Juanita Bacsu*

funding from the Canada Foundation for Innovation (CFI) to support the development of the Population Health and Aging Rural Research (PHARR) Centre at TRU. This interdisciplinary centre will focus on using population health intervention research to support healthy aging for rural older adults and especially rural people living with dementia. In January 2023, Dr. Bacsu hosted a CCNA Talking Brains webinar with Myrna Norman and Wayne Hykaway from the EPLED (Engagement of People with Lived Experience of Dementia) group on addressing COVID-19-related stigma of dementia. This past year, Dr. Bacsu and her team completed several new Twitter studies on dementia-related stigma and shared this research at numerous conferences hosted by the Gerontological Society of America, Canadian Association on Gerontology, the Canadian Consortium on Neurodegeneration in Aging (CCNA), the Rural and Remote Dementia Care Summit, and the National Rural Health Association (NRHA). Recently, Dr. Bacsu developed a new program entitled, Advancing Gerontology through Exceptional Scholarship (AGES), with the Gerontological Society of America, where she co-leads a group of international early career faculty members by providing guest speakers, mentorship activities, and interdisciplinary scholarship opportunities to advance academic careers in gerontology.

Another RaDAR project, led by RaDAR team member **Valerie Elliot**, is an environmental scan to explore community programs providing post-diagnostic services to clients who might include RaDAR rural PHC memory clinic patients and families in southeast Saskatchewan. This project includes focus groups with health care and service providers, a review of secondary sources of information on services (e.g., program brochures), a systematic internet search, and interviews with caregivers of people living with dementia who reside in these areas. Our goal is to better understand the availability of existing local community programs, current patient and family needs, program gaps and recommendations to address these gaps, and recent program changes or innovations. Data analyses are now complete, and manuscript writing is currently under way to disseminate findings.



*Valerie Elliot*



## OTHER RaDAR INITIATIVES

### Partnership with Saskatchewan Health Quality Council:

Drs. Kosteniuk, Morgan, and O'Connell, and the Saskatchewan Health Quality Council are conducting ongoing projects involving administrative health data. The latest project examined *utilization of health services before and after dementia diagnosis*. Another project is funded by the Canadian Consortium on Neurodegeneration in Aging (CCNA)'s Women, Sex, Gender & Dementia (WSGD) program. This project is investigating differences (sex, race, socioeconomic status, and geographic location) in the impact of the COVID-19 pandemic on health services used by people living with dementia in four provinces (PI Drs. Isabelle Vedel and Geneviève Arsenault-Lapierre, McGill University) with Dr. Debra Morgan leading the Saskatchewan component.

### Synthesis Reviews:

The RaDAR team has published several reviews using a collaborative team-based approach to map, synthesize, and identify gaps in the evidence across several dementia-related areas. A scoping review underway is led by Valerie Elliot to examine innovations and solutions that promote interprofessional collaborative primary care for older adults living with age-related chronic disease chronic disease in rural and remote areas. A *recent scoping review* led by Julie Kosteniuk identified barriers and facilitators to the use of electronic medical records in interprofessional primary care. Published reviews can be found on the RaDAR website [www.ruraldementiacare.usask.ca](http://www.ruraldementiacare.usask.ca) under the Publications tab.



## RaDAR AFFILIATED STUDENTS & TRAINEES

**Julie Beitel**, MSc nutrition student working with Dr. Allison Cammer was awarded a CIHR MSc scholarship (Sept 1 2022 to Aug 31 2023) for her work examining the role of participant socialization within The Cognitive Kitchen: Virtual Culinary Intervention for Dementia Prevention.

**Melissa Brausse**, BSc nutrition student working with Dr. Allison Cammer completed a project investigating end of life nutrition care needs from the perspective of registered dietitians working in long-term care from across Canada. Melissa presented this project at the Dietitians of Canada national conference in 2022.

**Ashlee Buekert**, MSc nutrition student working with Dr. Allison Cammer was awarded a SSHRC MSc Scholarship (2022-2023) for her project 'Steps towards addressing food sovereignty for Indigenous older adults (IOA): using an Indigenous framework to discover barriers and supports to including country harvested foods in long-term care'.

**Virginia Deobald**, Masters student, Nursing, with Dr. Shelley Peacock. Virginia's thesis is focused on non-pharmacological interventions for persons living with dementia while in long term care facilities from the nurse perspective.

**Meghan Flath**, PhD student, Clinical Psychology with Dr. O'Connell, is working on a pet augmented social inclusion intervention for persons with cognitive impairment and dementia.

**Ben Gould**, PhD student, Clinical Psychology with Dr. O'Connell is exploring Mi'kmaq community Mental Wellness needs, identifying and discovering appropriate approaches to improving aging and quality of Life.

**Karl Grewal**, PhD student, Clinical Psychology with Dr. O'Connell is working on integrating sensor technology to measure daily function as an outcome measure for cognitive rehabilitation for persons living with dementia.

**August Kortzman**, PhD student, Clinical Psychology with Dr. O'Connell, is working on developing a social network intervention that can be remotely delivered to rural caregivers of persons living with dementia and began a residency placement at the University of Manitoba in September 2022.

**Erin Leeder**, MSc student in Nutrition with Dr. Cammer successfully defended her Masters thesis in November 2022. Her work included a project using nutrition data from the Rural and Remote Memory Clinic. Erin won 1st place in the Bilokreli Student Poster competition this year at Summit 2022. She also won 1st place for her research presentation in the category Translational, Clinical, or Applied Science Research Presentation Award, University of Saskatchewan Life and Health Sciences Research Conference, May 5, 2022.

**Seshni Naidoo**, MSc student in Nutrition with Dr. Cammer is examining the nutrition related support required in urban and rural house-model long-term care homes. Seshni presented her research at the Canadian Association on Gerontology 41st Annual Educational & Scientific Meeting in Regina, SK October 20-22, 2022.

**Andrea Scerbe**, PhD student, Clinical Psychology with Dr. O'Connell, successfully defended her dissertation in August 2022 on technology-based methods for remotely delivering dementia education to rural primary care providers.

**Jake Ursenbach**, PhD student, Clinical Psychology with Dr. O'Connell, is working on differences in rural and urban dwellers in cognitive function, which has implications for assessment and dementia diagnosis for rural patients.



**RaDAR**

## MUSCULOSKELETAL HEALTH AND ERGONOMICS LAB RESEARCH



*Dr. A. Lang (Centre) and the Lab Crew*

The vision of the Musculoskeletal Health and Ergonomics (MHE) Lab, led by Dr. Angelica Lang since 2021, is to improve musculoskeletal health and quality of life of people around the world, but with a focus on Saskatchewan. Our goal is to understand how movement and biomechanics are related to injury, musculoskeletal health, and work.



### **SCAPULAR KINEMATICS AND FUNCTIONAL MOVEMENT: EXPLORING BEST PRACTICE METHODS FROM CALIBRATION TO APPLICATION.**

Dr. Angelica Lang was recently awarded a Discovery Grant from the Natural Sciences and Engineering Research Council of Canada (NSERC) for her research. The \$165,000, five-year grant will allow her to advance her investigation of the most repeatable and reliable methods for scapular motion tracking and analysis. As an early-career researcher, she also received a Discovery Launch Supplement of \$12,500. She hopes to develop a standardized procedure to measure movements of the scapula – commonly known as the shoulder blade – eventually leading researchers to greater understanding of what causes shoulder pain and how to remedy it.



**Musculoskeletal  
Health &  
Ergonomics  
Lab**

## DO SHOULDER MUSCLE ACTIVATION EXERCISES INFLUENCE MUSCLE ACTIVITY OF THE UPPER LIMB?

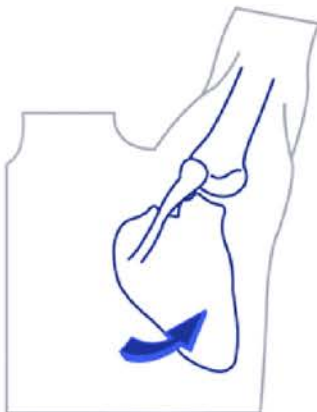
Shoulder musculoskeletal disorders (MSDs) are the second most common injury in Canada. Over half of all shoulder MSDs are repetitive strain injuries, meaning that they develop over time. Often, these injuries develop in part due to harmful movement patterns caused by muscle activity alterations. Some muscles may be overactive, while others are not active enough, causing an imbalance that changes movement patterns in a negative way. However, this muscle imbalance, and potential treatment strategies to fix it, have not been tested during functional movements. Acute exercise training sessions may be able to alter muscle activity to prevent a harmful imbalance during functional movement.



*The primary purpose of this study is to compare muscle activation ratios during a functional task protocol before and after acute exercise protocol.*

*This project is being completed by:  
MD Dean's Summer Project students Annaka Chorneyko and Vivian Heinrichs.*

## DO TIME AND RURAL RESIDENCE AFFECT UPPER LIMB BIOMECHANICAL ALTERATIONS IN ROTATOR CUFF DISEASE?



Upper limb pain is extremely common. The most frequent cause of pain and disability of the upper limb is injury to rotator cuff muscles, the small muscles surrounding the shoulder. Our team's previous research suggests there are movement strategy alterations that are related to rotator cuff disease development, but more research is needed to define this relationship. Further, the effect of rural residence on musculoskeletal health needs to be considered due to the social, occupational, and health care access differences that exist compared to urban dwellers. The goal of this \$120,000, three-year Saskatchewan Health Research Foundation-funded project is to better understand the biomechanics, or movement, aspects of rotator cuff disease over time to prevent injury progression and improve rehabilitation outcomes for people with shoulder pain in Saskatchewan. Lauryn Campbell is the study coordinator and MSc student on this project.

## ➤➤➤ SHOULDER FUNCTION MEASUREMENT FOR EVERYONE: A VALIDATION OF WEARABLE SENSORS FOR COMMUNITY-DRIVEN RESEARCH



Upper limb and shoulder movement patterns and postures are related to the development of body pain and injury. However, measuring shoulder movement ('kinematics') is challenging and often limited to studies of restricted movements in laboratory settings. The emergence of wearable sensors called inertial measurement units (IMUs) presents a possible solution to these challenges, but more research is needed to validate their use for the shoulder outside of the research lab.

*The purpose of this College of Medicine-funded \$30,000 for one-year project is to determine if IMUs can accurately measure shoulder kinematics when used in-field to assess functional tasks.*

## ➤➤➤ EFFECTS OF FULL WRIST FUSION ON SHOULDER KINEMATICS DURING FUNCTIONAL TASKS

*The purpose of this study is to investigate the differences in upper limb kinematics during functional tasks for patients who have received wrist fusion surgery to better understand how their functional abilities are impacted from surgery. This project is Alexander Waslen's MD Dean's Summer Project.*

Rheumatoid arthritis is an autoimmune disorders that leads to eventual degradation and loss of joint function. A commonly used treatment option for late-stage rheumatoid arthritis of the wrist is total wrist fusion, a procedure that involves surgically attaching the carpal bones of the wrist together. This procedure results in generally good clinical outcomes, but wrist fusions leave the patient with little to no wrist mobility. Total wrist fusion patients report having difficulties with several tasks of daily living, including lifting saucepans, reaching high shelves, and perineal care.



## ➤➤➤ TAKE A BREAK FROM THE SHAKE: EVALUATING REST BREAK ACTIVITIES TO REDUCE THE NEGATIVE HEALTH EFFECTS OF WHOLE-BODY VIBRATION EXPOSURE

Drs. Dena Burnett and Steve Milosavljevic, collaborators of the Musculoskeletal Health and Ergonomics Lab, are investigating strategies to empower operators in reducing the negative health effects of whole-body vibration exposure from agricultural equipment operation. This research group recently completed an in-lab study evaluating selected rest break activities on health outcomes after whole-body vibration exposure using the unique equipment available at the Canadian Centre for Rural and Agricultural Health. After rest break activities that included a gaze-stabilization component, participants slowest, or worst-case, reaction times were similar to pre-vibration exposure reaction times, whereas rest break activities such as sitting or walking worsened participant reaction time. Further on-farm evaluation is required to aid in determining the feasibility and practicality of rest break activity adoption and implementation.

These findings have recently been presented at the International Society for Agricultural Safety and Health (ISASH) Annual Meeting in Tampa, FL and at the Canadian Society of Biological Engineers (CSBE) Annual Meeting in July 2023. In partnership with Agrivita Canada and the Canadian Agricultural Safety Association, a pamphlet sharing these study findings was developed and distributed across Canada.

## ➤➤➤ MUSCULOSKELETAL HEALTH & ERGONOMICS LAB AFFILIATED TRAINEES

**Opeyemi Vincent Akinluyi** is an MSc student in the Health Sciences program, supervised by Dr. Lang. His Master's thesis will focus on defining the postures and kinematics of farmers during high-risk work tasks.

**Lauryn Campbell** is a research assistant in the MHE Lab, supervised by Dr. Lang. Lauryn is currently the study coordinator for the SHRF-funded shoulder pain study. She will be starting her MSc in the Biomedical Engineering in Fall 2023.

**Alexander Waslen** is an MD student completing his second Dean's Project with Dr. Lang.

**Vivian Heinrichs** is an MD Student completing her first year Dean's Project with Dr. Lang.

**Annaka Chornyeko** is an MD Student completing her first year Dean's Project with Dr. Lang.

**Dr. Dena Burnett** is a postdoctoral fellow under the supervision of Dr. Stephan Milosavljevic. Dr. Burnett is studying the efficacy of rest breaks to mitigate the potentially harmful effects of whole body vibration from farm machinery operation.



## MUSCULOSKELETAL HEALTH - ACCESS TO CARE

### ➤➤➤ A COMMUNITY-INFORMED TEAM AND TECHNOLOGY APPROACH TO CHRONIC BACK PAIN MANAGEMENT IN PARTNERSHIP WITH A NORTHERN SASKATCHEWAN CREE FIRST NATION

This project focuses on a community-identified need and builds on an 8-year history of engagement with the Peter Ballantyne Cree Nation and the Northern Saskatchewan community of Pelican Narrows. A research team comprised of researchers, decision makers, and health care providers is guided by Elders and community members with chronic back pain to implement and evaluate a culturally relevant approach for chronic back pain management. In this project, physical therapists will use remote presence robot technology combined with in-person care to link with other care providers and supports in the community.

Western-based services and evaluation approaches may not reflect Indigenous ways of knowing. Cree perspectives and experiences inform this project through engagement with community by applying community-based participatory action research methods in order to better support Cree community members who experience chronic back pain. We have co-designed a way to manage back pain using a team and technology approach with the guidance of community members and Elders throughout the project based on a community needs assessment.

Due to the pandemic, the intervention in the community was delayed; however, we were able to launch a virtual back pain clinic in early 2022. Our team has completed nearly 100 virtual visits (with nearly 40 community members with back pain). We are in the process of analyzing stories and outcome measures collected from community members who took part in the back pain project and will have findings to share in the coming months.



Research Team led by:  
Dr. Brenna Bath  
School of Rehabilitation Science.

Team: Stacey Lovo, Veronica McKinney, Sally Sewap, Rose Dorion, Sarah Oosman, Nazmi Sari.

*This project will inform how technology-assisted models of care may be adapted for enhancing access to culturally relevant services in underserved communities in Saskatchewan and beyond.*



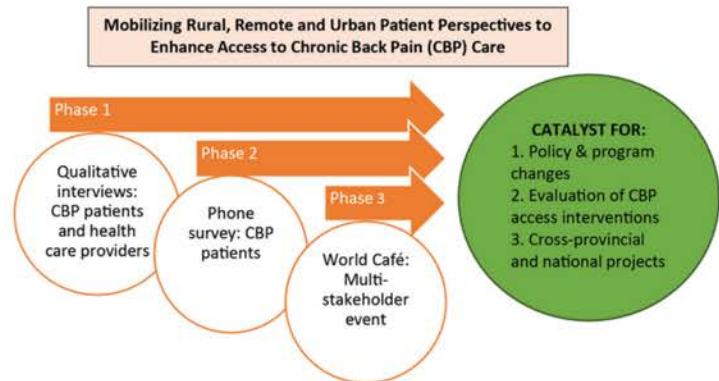
Sally Sewap  
Traditional Knowledge Keeper, member of Peter Ballantyne Cree Nation and registered social worker, Patient Advisor, Co-Investigator





## MOBILIZING RURAL, REMOTE, AND URBAN PATIENT PERSPECTIVES TO ENHANCE ACCESS TO CHRONIC BACK PAIN CARE

The main goal of this project was to explore and apply the experiences of rural, remote, and urban Indigenous and non-Indigenous people with chronic back pain and health care providers who serve them to develop a deeper understanding of health care access barriers and facilitators across rural, remote, and urban communities.



We have completed all phases of this research project, have two publications (one published and one accepted) and are preparing the final two manuscripts.

In February 2023, Drs. Brenna Bath and Stacey Lovo, hosted two end of project (phase 3) knowledge translation events (one in-person and one virtually). There was a total of 57 participants over the course of both events. These events showcased our research findings from interviews with over 40 people with chronic low back pain and health care providers, as well as a telephone survey of nearly 400 Saskatchewan residents with chronic low back pain. Panel presentations from both patient-partner and health care provider team members also provided lived experience and insight into access and provision of low back pain care in Saskatchewan. The second part of the events was an interactive World Café facilitated discussion with and among attendees to generate ideas for recommendations and actionable change to improve access to low back pain care in the province and beyond. Thank you to everyone who attended. More details on our events and World Café findings can be found in the event reports [here](https://cchsa-ccsma.usask.ca/mhac/completed-research-projects/mobilizing-rural-remote-and-urban-patient-perspectives-to-enhance-access-to-chronic-back-pain-care.php). (<https://cchsa-ccsma.usask.ca/mhac/completed-research-projects/mobilizing-rural-remote-and-urban-patient-perspectives-to-enhance-access-to-chronic-back-pain-care.php>)



### Research Team:

Brenna Bath (PI), Stacey Lovo, Veronica McKinney, Sarah Oosman, Terrence McDonald, Nazmi Sari, Katie Crockett, Catherine Trask, Bertha Carnegie, Stacey McIntosh, Marie Custer, Alison Irvine.

## ➤➤➤ FEASIBILITY AND ACCEPTABILITY OF A PHYSIOTHERAPIST LED EDUCATION AND EXERCISE PROGRAM FOR PEOPLE WITH OSTEOARTHRITIS AWAITING HIP OR KNEE TOTAL JOINT ARTHROPLASTY

Wait times for hip and knee joint replacement surgery in Saskatchewan are the longest in Canada and have grown even longer during the Covid-19 pandemic. Education and exercise management are recommended internationally as key treatment approaches for people with hip and knee osteoarthritis (OA) prior to surgery. This project will evaluate the feasibility and acceptability of a physiotherapist-led education and exercise program for people who are awaiting hip or knee replacement surgery.

Structured physiotherapist led education and exercise programs for people with hip and knee OA have been shown to be effective for people who are NOT awaiting joint replacement surgery, but the impacts of such a program for people who are waiting for surgery is unknown. This pilot project will allow our team to explore whether a supervised education and exercise program is feasible and acceptable for people awaiting hip or knee replacement surgery in Saskatchewan. We will use what we learn from this project to implement and evaluate similar larger scale innovations throughout the province.

*Funded by: CoMRAD, College of Medicine, University of Saskatchewan*

*This project represents an opportunity to evaluate an innovation that can potentially reduce the surgical backlog and improve post-operative outcomes for those who have joint replacement surgery.*

*Research Team: Brenna Bath (PI), Gary Groot, Anthony King, Nancy Gyurcsik, Bruce Craven, Hayley Legg, Jason Vanstone, Dawna Rose, Pat Danyluk, Ken Wilkinson, Mahour Taheri, Alison Irvine. Funded by: CoMRAD, College of Medicine, University of Saskatchewan.*

## ➤➤➤ BRIDGING ACCESS TO PHYSIOTHERAPY CARE GAPS FOR SASKATCHEWAN MOTHERS: EXPERIENCES OF POSTPARTUM WOMEN AND HEALTH CARE PROVIDERS

Maternal healthcare is complex and multifaceted. Persistent and problematic postpartum low back and pelvic pain are substantial, yet under recognized problems among Canadian mothers. Further, low back and pelvic girdle pain have been significantly associated with challenges including urinary incontinence and depression, which ultimately influence the ability of Canadian mothers to care for their children.

*Research Team: Brenna Bath (PI), Katie Crockett, Marwa Farag, Anne-Marie Graham, Christine Epp, Hayley Legg, Kemi Awe, Alison Irvine.*

*Funded by: Jim Pattison Children's Hospital Foundation.*

Physiotherapy care has much to offer to improve overall maternal wellness and has specifically shown to restore normal back and pelvic motor function while reducing the physiological and psychological impact of pregnancy-related low back and pelvic girdle pain. While physiotherapy care can positively impact mental and social well-being of mothers in the postpartum recovery period, access to maternal physiotherapy services in Saskatchewan is limited.

The goal of this project is to understand current gaps and opportunities for maternal health services, specifically physiotherapy care, among women with postpartum low back and pelvic girdle pain and dysfunction in Saskatchewan. Through surveys, interviews and active engagement with Saskatchewan mothers and health care providers, this project aims to understand current gaps and opportunities in maternal health services with a specific focus on identifying ways to enhance access to maternal physiotherapy care. These findings will lead to improved clinical outcomes and quality of life for postpartum women across Saskatchewan. More specifically, this research will also inform opportunities for improved maternal healthcare in Saskatchewan, specifically for the highly prevalent and burdensome health conditions of low back and pelvic girdle pain and dysfunction.





# **KNOWLEDGE MOBILIZATION**

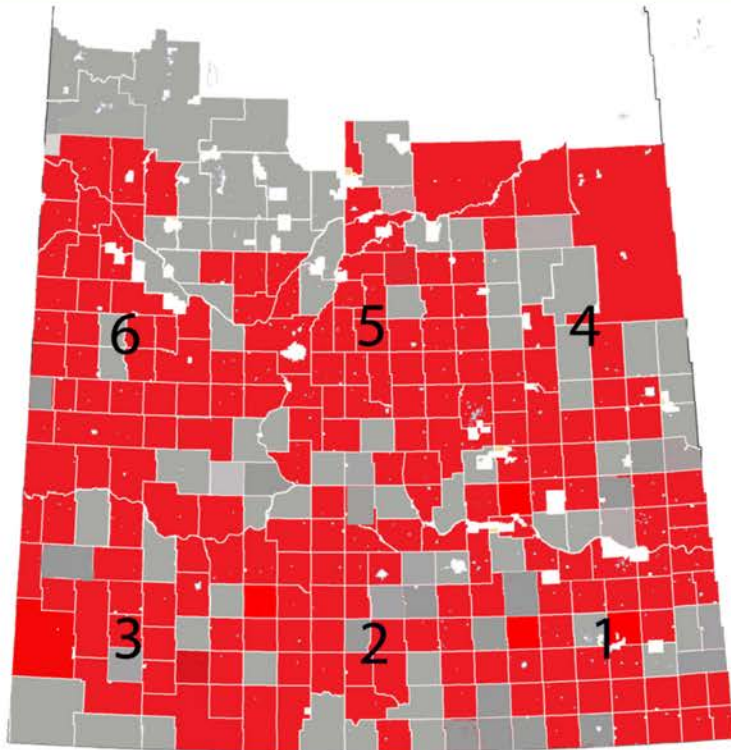
# AGRICULTURAL HEALTH AND SAFETY NETWORK (AHSN)

## MISSION

To improve health and safety on the farm through education, service and evaluation research

## GOAL

To reduce injury and illness related to agriculture production



**STRONGER  
TOGETHER FOR  
HEALTH AND  
SAFETY**

**22,000**  
SK Farm Families

**196**  
RM Members

*Partnership with RMs is the foundation of the Network*



**TOGETHER WE CAN MAKE A DIFFERENCE IN FARM  
HEALTH AND SAFETY**

# 2022-2023 AHSN ACTIVITIES

## ➤➤➤ SASKATCHEWAN ASSOCIATION OF RURAL MUNICIPALITIES (SARM) CONVENTION

The Agricultural Health and Safety Network/Canadian Centre for Rural and Agricultural Health was at the March 2023 SARM Convention celebrating the Network's 35th anniversary. While checking out the many brochures on farm health and safety at the booth, visitors also enjoyed the 35th anniversary cake. Both the trade show and the sessions offered opportunities for connection and learning, and the Network/Centre gave out their SARM scholarships in front of the packed house of over 3000 delegates.



The annual Saskatchewan Association of Rural Municipalities meeting brings together RMs from across Saskatchewan for featured forums, awards, bearpit sessions, meetings, sessions, and a trade show.

*Photos by: S.B. de Freitas*



Network AGM



SARM Delegates

## ➤➤➤ DISCOVERY DAYS PROGRAM

The Discovery Days (DD) program has resumed its in-person program delivery in the rural schools. Presenters traveled throughout the province reminding students in grades 4 to 6 of the hazards on the farm. To cope with demand, two new presenters were added to the DD program for 2023/ 2024. DD presentations may include hazard identification, grain safety, avoiding chemical exposure, safety around machinery, helmet use, and animal safety. New modules are in the process of development and implementation. A DD YouTube video describing the program has been developed and can be watched on the Centre's YouTube page.



SCHOOL	DATE	RM NAME & #	RM DIVISION
Mortlach Safety Day	September 21, 2022	RM of Wheatlands No. 163	Div 2
Moose Jaw Safety Day	October 26, 2022	RM of Moose Jaw No. 161	Div 2
Edenwold School	November 3, 2022	RM of Edenwold No. 158	Div 2
Emerald Ridge School	November 4, 2022	RM of Edenwold No. 158	Div 2
William Mason School	November 8, 2022	RM of Torch River No. 488	Div 4
Naicam School	November 9, 2022	RM of Pleasantdale No. 398	Div 4
Miller Elementary	November 18, 2022	RM of Cana No. 214	Div 1
Nokomis School	November 24, 2022	RM of Wreford No. 280	Div 5
Balgonie School	February 3, 2023	RM of Edenwold No. 158	Div 2
Borden School	February 10, 2023	RM of Great Bend No. 405	Div 6
Laird School	March 7, 2023	RM of Laird No. 404	Div 5
Langham School	March 17, 2023	RM of Corman Park No. 344	Div 5
Vanguard School	March 30, 2023	RM of Whiska Creek No. 106	Div 3
Aberdeen School	April 6, 2023	RM of Aberdeen No. 343	Div 5
Eagle Creek Colony School	May 8, 2023	RM of Eagle Creek No. 376	Div 5
Battleford Ag Society	May 11, 2023	RM of Battleford No. 437	Div 6
Hillcrest Colony School	May 17, 2023	RM of Dundurn No. 314	Div 5
Preeceville School	May 25, 2023	RM of Preeceville No. 334	Div 4
Hudson Bay Community School	May 30, 2023	RM of Hudson Bay No. 394	Div 4
Miner Creek Colony School	May 31, 2023	RM of Bjorkdale No. 426	Div 4
Biggar Ag Safety Day	June 1 2023	RM of Biggar No. 347	Div 6
Webb Colony School	June 5 2023	RM of Webb No. 138	Div 3
Smiley Colony School	June 7 2023	RM of Prairiedale No. 321	Div 6
Spring Field Colony School	June 7 2023	RM of Kindersley No. 290	Div 6
Glidden Colony School	June 8 2023	Rm of Newcombe No. 260	Div 3
Etonia Colony School	June 8 2023	RM of Chesterfield No. 261	Div 3

SCHOOL	DATE	RM NAME & #	RM DIVISION
Gull Lake School	June 9 2023	RM of Gull Lake No. 139	Div 3
Earview Hutterite School	June 14 2023	RM of Gull Lake No. 139	Div 3
Tomkins Colony School	June 15 2023	RM of Gull Lake No. 139	Div 3
Haven Colony School	June 19 2023	RM of Fox Valley No. 171	Div 3
Cypress Colony School	June 19 2023	RM of Maple Creek No. 111	Div 3
Spring Creek Colony School	June 20 2023	RM of Maple Creek No. 111	Div 3
Box Elder Colony School	June 20 2023	RM of Maple Creek No. 111	Div 3
Abbey Colony School	June 21 2023	RM of Gull Lake No. 139	Div 3
Grass Hill Colony School	June 21 2023	RM of Gull Lake No. 139	Div 3
Pennant Colony School	June 22 2023	RM of Riverside No. 168	Div 3
Ruskin Colony School	June 22 2023	RM of Riverside No. 168	Div 3
Consul School	June 23 2023	Rm of Reno No. 51	Div 3

*The Discovery Days program delivery wouldn't be possible without the continued support of the SaskWheat Development Commission.*



## ONE2ONE FARMER CLINICS

One2One Health and Safety Clinics for farmers are offered to assess farm families and farm workers respiratory or hearing health either at our Network clinic at the UofS campus or in your local RM.

RM NAME & #	TOWN	DATE
RM of Frenchman Butte #501	Paradise Hill, SK	April 19, 2022
RM of Preeceville #334	Preeceville, SK	April 27, 2022
Town of Preeceville #334	Preeceville, SK	April 27, 2022
RM of Mervin #499	Turtleford, SK	June 13, 2022
RM of Aberdeen #373	Aberdeen, SK	November 1 & 2, 2022
RM of Birch Hills #460	Birch Hills, SK	January 25, 2023
RM of Cambria #6	Torquay, SK	February 28, 2023
RM of Leroy #339	Leroy, SK	March 22, 2023
RM of Sask. Landing #167	Stewart Valley, SK	April 25, 2023
RM of Moose Range #486	Carrot River, SK	April 19, 2023
RM of Victory #226	Beechy, SK	June 12, 2023
RM of Sutton #103	Mossbank, SK	June 16, 2023







## COMMUNITY PRESENTATIONS & CONFERENCES AND TRADESHOWS

DATE	PRESENTATION	PLACE
July 11, 2022	Old Wives Lake Festival	Mossbank
July 19-21, 2022	AG IN MOTION	Langham
November 30, 2022	Gear Up For Ag Program, SK Polytechnic	Moose Jaw, SK
November 3-4, 2022	Women in Agriculture Conference	Saskatoon
November 16, 17, 2022	SARM-Mid-Term Convention	Saskatoon
December 8, 2022	Council Meeting Network Presentation	RM of Vanscoy
January 9-12, 2023	Western Canadian Crop Production Show	Saskatoon
February 2-3, 2023	Rural Women in Ranching	Maple Creek
February 7-9, 2023	Saskatchewan Industrial Safety Seminar	Saskatoon
March 14-15, 2023	SARM Convention, Tradeshow and Network AGM	Saskatoon



*S. Sander*



*Discovery Days*



*Health Clinics*



*S. Sander and J. Ulmer*

## ➤➤➤ SARM 90TH ANNIVERSARY SCHOLARSHIP

### SCHOLARSHIP WINNERS:

The winners of the 2022-2023 SARM Scholarship of \$1,500 each are Caleb Reeve of Wynyard, RM of Big Quill No. 308 and Kira Wignes of Viscount, RM of Viscount No. 341.



*"Safety is an absolute priority on our farm. We implement many safety measures that other farmers around our area do not. An example of this is that our yard manager has a harness system he uses on the bins to protect him from fatal falls. It only takes him a minute to get strapped in, so why wouldn't you?"*

**Caleb Reeve**



*"Farming is a demanding career that involves working long hours while trying to plan around many variables that are uncontrollable. After some time, working in such a physically and mentally stressful environment can become significantly exhausting and lead to impaired decisions, unsafely handling equipment or carelessly entering pens of livestock. This not only endangers yourself, but also those around you. It is critical to take care of your mental health as an agriculture producer and reach out to resources that can offer proper support in an accessible way."* **Kira Wignes**

## ➤➤➤ THE 2023 IKE THIESSEN "BUILDING A FOUNDATION" AWARD



Dr. S. Kirychuk, B. Zemluk, K. Ulmer

*The 2023 Ike Thiessen "Building a Foundation" award was presented to Brenda Zemluk in recognition of the support and dedication to the Agricultural Health and Safety Network and our mission for health and safety in agriculture production in Saskatchewan.*

# AHSN NEWSLETTER

## SPRING 2022 NETWORK NEWS EDITION #51

**FOCUS:**

- Asthma on the Farm
- Farm ATV Safety
- Spotlight on Ergonomics
- Long COVID Research
- Mental Wellness Short Videos
- Road & Railway Crossing Safety
- Kids Activity Page
- Scholarship Winners 2022



## WINTER 2023 NETWORK NEWS EDITION #52

**FOCUS:**

- Musculoskeletal Resource
- Working in Cold Weather
- The Winter Blues
- Take a Break from the Shake
- SK Work-related Fatal Farm Injuries
- National survey: Farmers Mental Health
- Kids Activity Page
- High Blood Pressure & Stroke



**2022 SPRING AND WINTER 2023 MAIL-OUTS**

- Delivered to the 196 Network Member RMs
- Reaching about 22,000 Farm Families

## AHSN SUPPORT

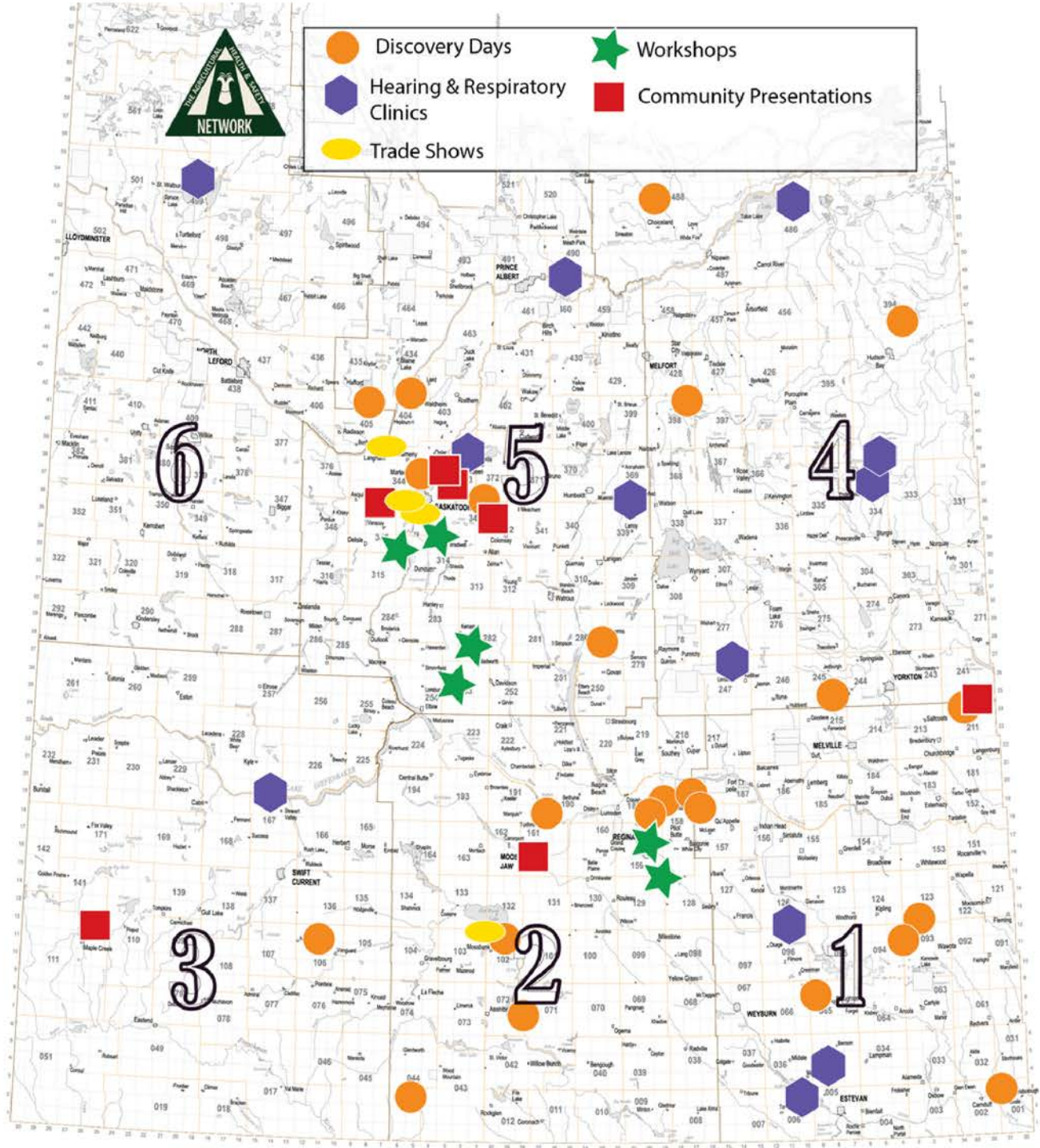
Member RMs pay an annual fee plus \$4.60 per active farm family plus a \$400 base membership fee to become a Network member.

- Grants from the Saskatchewan Ministry of Agriculture.
- Matching grants and sponsorship for specific projects.
- In-kind and matching funding from the Canadian Centre for Rural and Agricultural Health





# AHSN REACH



UNIVERSITY OF SASKATCHEWAN  
 CANADIAN CENTRE FOR RURAL AND AGRICULTURAL HEALTH  
 Agricultural Health and  
 Safety Network  
 AGHEALTH.USASK.CA



Government  
 of  
 Saskatchewan



UNIVERSITY OF SASKATCHEWAN  
 Canadian Centre for Rural  
 and Agricultural Health  
 CCHSA-CCSSMA.USASK.CA

## AHSN NEW RESOURCES

### ➤➤➤ MUSCULOSKELETAL HEALTH AND SAFETY IN AGRICULTURE

This resource provides many benefits to farmers and rural workers by:

- Increasing awareness of hazards on the farm that can impact farmer musculoskeletal health.
- Educating in ergonomic best practices and exercises.
- Learning tips on Musculoskeletal Disorder (MSD) prevention.
- Managing MSDs through decreased pain and increased strength.

#### OBJECTIVE

- To help reduce injury and illness related to agriculture production.

#### PRACTICAL TOOLS FOR FARMERS

- An extended version of this resource will soon be available on the Network website which will include:
  - (a) Practical checklists,
  - (b) Musculoskeletal Disorders (MSD) prevention policies,
  - (c) Incident investigation reports to use on your farm.



#### WHAT IS A MSD POLICY?

*It is the farm's commitment to preventing a group of related injuries referred to as ergonomic injuries (MSDs). It includes definitions, roles, responsibilities, risk factors, hazard identification and control, training and education, monitoring and evaluation.*

 **Musculoskeletal**  
Health and Safety in Agriculture



*Thanks to Chiropractors Association of Saskatchewan for supporting the printing and distribution of this resource to the Network membership in our March 2023 mailout to 22,000 farm families*

## ▶▶▶ TAKE A BRAKE FROM THE SHAKE

With funding from a CASA Provincial AgSafe Partner Program grant, the Network was able to undertake an initiative to empower farmers and workers with feasible and practical tools and strategies to mitigate the health risks associated with extended whole body vibration (WBV) exposure from farm machinery operation. An informational pamphlet was developed in both official languages and combined with reminder stickers to help pique the interest of farm machinery operators and increase uptake of the key messages:

- Exposure to WBV during farm machinery operation can have significant short and long-term health risks.
- Take a break once in a while! Although it is not possible to eliminate the hazard of WBV in agriculture, simple solutions such as rest breaks can significantly reduce the associated health risks.



Learn more at about the AHSN resources [here](https://cchsa-ccssma.usask.ca/aghealth/index.php) (https://cchsa-ccssma.usask.ca/aghealth/index.php)



## KNOWLEDGE TRANSLATION FOR AGRIVITA

The Canadian Centre undertakes the Knowledge Translation for the Agrivita Inc. research activities



### How to Measure Emissions from Manure Spreading in the Field

There is a significant concern associated with the fugitive emissions resulting from manure spreading. These gases (odour and trace gases) are present in manure and may potentially be emitted in large quantities following manure spreading on agricultural land. The main goal of the Fugitive Emissions Following Manure Spreading – Risk Assessment and Engineering Controls project is to assess the risks associated with manure spreading and determine the best strategies to mitigate these risks. The first step in this project was to evaluate the airborne emissions from spreading different types of manure in a controlled environment. A large-scale wind tunnel was built to compare all the contaminants released during spreading and control the air flow rate to precisely measure the emissions. Following these tests, the research team will update the results by conducting an extensive field testing campaign using full-scale manure spreading equipment. The field tests will take place at the BCRA's experimental farm in Leveson, Québec (Figure 1).



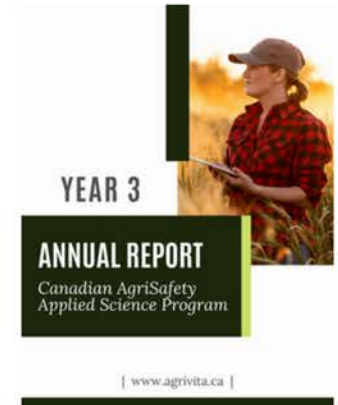
### Air Sampling

The main challenge with measuring airborne emissions in a field environment is due to the fact that the contaminants are dispersed by the wind that can quickly change speed and direction.



To overcome this difficulty, the sampling equipment will be deployed at a number of sites behind the spreader and at specific fixed points (Figure 2). The data provided by the samplers placed at the downwind extreme will help capture the emission plume and

- KT activities were directed toward the continued development, production, and publication of bulletins.
- AgriSafety Annual Program Report.
- Production of a video for each project. The videos will capture the entirety of the project from purpose to output and can be used to promote the project in a variety of settings.



- Many knowledge transfer outputs were developed and published over the past year, including a total of 13 CANFARMSAFE bulletins. The bulletins can be found on the Agrivita website at [www.agrivita.ca](http://www.agrivita.ca). Relevant results from the 6 AgriSafety activities were also included in the Agricultural Health and Safety Network's Discovery Days presentations.
- With help from the Usask Media Production team, summary videos for each Activity was started in Year 4. The videos will focus on telling the story of each project and emphasize the resulting methods developed and the final outputs.
- A special informational pamphlet was developed on the practical tools and strategies to help mitigate the health risks from exposure to whole body vibration while operating farm machinery. The pamphlet was printed and sent to agricultural health and safety organizations across Canada.

Agrivita continues its work to promote, lead, and seek opportunities to develop agricultural health and safety research through the ongoing development of a national collaborative network and continued stakeholder consultation. In October 2022, a hybrid version of the Annual Collaborative Meeting was held where teams gathered in person either in Saskatoon or Québec City. Both groups met virtually through Zoom. This meeting was a success and provided an excellent platform for the teams to discuss and collaborate on challenges and current project findings.





**SERVICE**



## ONE2ONE CLINICS

The program is an educational and respiratory screening service for farmers and their families that is delivered by professionally trained staff in the local community.



### RESPIRATORY CLINICS

The Respiratory Health Maintenance Program involves a lung function test.

What's the Process? Each participant: (a) complete a respiratory health questionnaire (b) has their blood pressure (c) measured performs a lung function test (d) has the results interpreted (e) receives personalized health teaching and resource materials (f) receives a copy of their lung test results (g) when necessary, is referred for follow-up

### HEARING CLINICS

The program is a hearing screening service for agricultural producers that is delivered by professionally trained staff in your community.

What's the Process? An individual who is interested in having their hearing tested will be given a Noise Exposure questionnaire to complete prior to the hearing screening. Staff will: (a) review your questionnaire visually (b) check your ears (c) do the hearing screening (d) interpret the screening test (e) provide you with a copy of your results (f) refer you for follow-up when necessary. Hearing screening takes 15-20 minutes.

## AHSN WORKSHOPS

The Agricultural Health and Safety Network presents a variety of workshops throughout the province. Workshop topics include:

### FARM SAFETY PLAN

Workshops are motivational and instructional for building a Farm Safety Plan, and focus on areas of concern such as: (a) Physical risks, (b) Long work hours and fatigue (c) Vulnerable populations (d) Farming practice modification

### AGING FARMERS

According to the CAIR program, the percentage of males who die in agricultural incidents was highest for adults aged sixty and over (95.2%). It is with this information in mind that we focus on techniques to encourage older farmers to practice safer farming techniques. This workshop includes a wealth of tips and tricks to compensate for the signs of aging. It is also designed for younger farmers to attend who work with older family members.

### STRESS AND AGRICULTURE

This workshop is based on the popular resource put out by the Network: "Difficult Times: Stress on the Farm." Farmers have a strong tradition of being independent and may not seek support until things are absolutely desperate. This workshop is a way of enabling farm families to understand stress early warning signs and its impact, and learn skills to help balance stress when farming in difficult times.

## STRESS AND AGRICULTURE

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## MAKING SLEEP WORK FOR YOU

Sleep affects your health and safety. Getting enough sleep is vital to the personal well-being, safety, and the success of Saskatchewan agricultural producers, those involved in an agricultural lifestyle, as well as those who live and work in rural Saskatchewan.

## CARING FOR A CAREGIVER IN RURAL SASKATCHEWAN

Many rural dwellers are working off the farm while still participating in farm work and caring for growing families. This workshop is designed to encourage them to take the time to take care of themselves.

## RESPIRATORY SAFETY AND HEARING LOSS PREVENTION

Recent studies show that older farmers are generally as healthy as non-farming Canadians, except in the areas of respiratory and hearing health. These two workshops focus on prevention methods for all farmers to ensure that these two areas of their health are not neglected and that they remain healthy in later years.

## RURAL DEMENTIA ACTION RESEARCH (RADAR)

### RURAL AND REMOTE MEMORY CLINIC

The objectives of the specialist memory clinic study are to increase the availability and accessibility of rural and remote dementia care in rural and remote areas, to determine the acceptability of the one-stop clinic and of telehealth versus regular follow-up, and to develop culturally appropriate assessment protocols for assessment of dementia in aboriginal older adults. Our focus is on diagnosis and management of atypical and complex cases of suspected dementia, where an interdisciplinary team assessment is most needed.

The clinic streamlines assessment and diagnosis in order to reduce repeated travel over long distances and to shorten the time to diagnosis by coordinating an interdisciplinary assessment on one day.

The core of the Foundation program is to design, implement and sustain rural primary health care (PHC) memory clinics that offer initial evaluation and management of individuals with suspected dementia, and scale-up the clinics to additional communities. Monthly 1-day memory clinics have been established in the southeast Saskatchewan communities of Kipling, Weyburn, Bengough, Radville, Carlyle, Maryfield, Esterhazy, and Lampman. Clinic team members include physicians, nurse practitioners, home care nurses, social workers, occupational therapists, physical therapists, dietitians, pharmacists, and Alzheimer Society First Link coordinators.



*Esterhazy Memory Clinic team*



*Lampman Primary Care Clinic*

The RaDAR team implemented the specialist Rural and Remote Memory Clinic (RRMC) at the University of Saskatchewan in 2004, to provide diagnosis and management of atypical and complex cases of suspected dementia. The one-stop interdisciplinary clinic streamlines the assessment process by coordinating a complete team assessment on one day, and uses Telehealth videoconferencing for follow-up appointments. The specialist RRMC was started as a research project and was subsequently funded by the Saskatchewan Ministry of Health to provide clinical services to Saskatchewan residents. Since 2004 over 850 patients have been seen in the clinic.



RRMC and researcher team meet in research room to discuss patient assessments (photo taken before COVID-19)  
Image credit to Honey Cut Studios



Clinic team feedback meeting with patient in family consultation room (photo taken before COVID-19)  
Image credit to Honey Cut Studios

*Due to COVID-19, the specialist RRMC adapted its method of providing services to the community by remotely delivering clinical services and interventions. Patients and family members met with the interdisciplinary team virtually, using secure web conferencing, or teleconferencing, depending on the technology available to them in their home. The clinic adapted its referral process for health care practitioners as well, adding an easy to remember web address to access referral information during the pandemic. The team has recently returned to in-person appointments while maintaining virtual appointments as an option for team follow-up visits as appropriate.*

Learn more at [www.remotememoryclinic.ca](http://www.remotememoryclinic.ca) about the services provided virtually to the people and health care providers in our province.

## RURAL AND REMOTE MEMORY CLINIC (RRMC) TEAM

Several team members support the RRMC including: Dr. Debra Morgan (Administrative Director), Dr. Andrew Kirk (Neurologist), Dr. Megan O'Connell (Neuropsychologist and Clinical Director), Dr. Ivan Panyavin (Staff in Psychology), Darla Walz (Clinic Nurse), Duane Minish (Psychometrist), Jennifer Fairbairn (Physical Therapist), Julie Jensen (Physical Therapist), and Meghan Flath (PhD student in Clinical Psychology).



Dr. Megan O'Connell

**Dr. O'Connell** leads the evaluation of the Virtual Rural and Remote Memory Clinic intervention (vRRMC). The vRRMC was a pandemic necessity, but our evaluation helped us understand the need for a similar model post-pandemic. We have also seen a noticeable increase in the need for our memory clinic and plan to ask SaskHealth for an expansion.

Two of Megan O'Connell's students, August Kortzman and Karl Grewal, are currently conducting care partner interventions for their respective dissertations. August is introducing a short-term focused course of Interpersonal Psychotherapy to increase perceived care partner social support, and Karl is using off-the-shelf technology to augment perceived care partner efficacy in the home.

Finally, Megan O'Connell is collaborating with numerous partners across Canada. She is the Saskatchewan primary investigator on the implementation of the Canadian edition of the Computer Interactive Reminiscence and Conversation Aid (CIRCA-CA), led nationally by Arlene Astell at University Health Network in Toronto. She is also bringing a multi-domain post-diagnostic support intervention to Saskatchewan – the Dementia Lifestyle Interventions for Growing Healthy Together, led by Laura Middleton at the University of Waterloo.



*Dr. Ivan Panyavin*

**Dr. Panyavin** has continued to be actively involved with running the virtual Rural and Remote Memory Clinic (vRRMC), providing diagnostic neuropsychological services to residents of rural Saskatchewan. He also continued to deliver individualized empirically derived treatment for chronic sleep disturbance, as well as cognitive rehabilitation services for individuals with cognitive impairment and their care partners. Additionally, Dr. Panyavin has been supervising professional development of Doctoral trainees in Clinical Psychology.

## CANWORKSAFE

CANWORKSAFE provides occupational health and safety screening and services to companies in Saskatchewan since 1987. The CANWORKSAFE program provides services such as: **(a)** Respirator fit testing, **(b)** Audiometric testing, **(c)** Respiratory testing and many more. These services are offered for a fee. If your RM is a member of the Agricultural Health and Safety Network, your RM receives a discount.



*CANWORKSAFE was on-site at Novozymes Bio in Saskatoon for employee occupational health screenings on June 7th, 8th, and 13th.*

Want our CANWORKSAFE Clinic at your place of employment or local RM?  
Contact (306) 966-6643 or via email

## OCCUPATIONAL MEDICINE CLINIC

Faculty Lead: Dr. Niels Koehncke  
Through the Saskatchewan Health Authority and Department of Medicine

## SLEEP MEDICINE CLINIC

**SLEEP MEDICINE CLINIC**  
Faculty Lead: Dr. James Dosman  
Through the Saskatchewan Health Authority and Department of Medicine



*K. Ulmer, B. Thompson, Dr. N. Koehncke, Dr. S. Kirychuk, J. Ulmer  
CANWORKSAFE Clinic*



# **GRANTS & AWARDS**

## AWARDS

**Abrametz K.** Biomedical Sciences Summer Student Scholarship for Kayla Abrametz (Supervisor: Dr. G. Katselis), University of Saskatchewan, \$8,050 (CAD), 2022.

**Baker T.** *Agrivita, Chair of the Board.* Awarded the Queen Elizabeth II Platinum Jubilee Medal (Saskatchewan) November 19th, 2022.

**Bath B.** *Liz Harrison Award for Interprofessional Collaboration.* Feb 2023. Awarded for project/ team: *A Community-Informed Team and Technology Approach to Chronic Back Pain Management in Partnership with a Northern Saskatchewan Cree First Nation (NPI B. Bath)*

**de Freitas SB.** Canadian Centre for Rural and Agricultural Health. Awarded the Queen Elizabeth II Platinum Jubilee Medal (Saskatchewan) September 29th, 2022.

**Chao D.** Co-supervised by Dr. G. Katselis was awarded a Natural Sciences and engineering Research Council of Canada (NSERC) Undergraduate Student Research Award for his summer placement in the Omics Laboratory, \$6,000 (CAD), 2023.

**Didani PZ.** University of Saskatchewan Vanier Scholar Awardee (PhD student co-supervised by Dr. S. Kirychuk). Building Air Purification Systems that Combat Viruses. College of Engineering, University of Saskatchewan.

**Dosman JA.** Agrivita CEO. Awarded the Queen Elizabeth II Platinum Jubilee Medal (Saskatchewan) November 19th, 2022.

**Grewal K.** PhD Student. Health Research Training Program Doctoral Award. Vascular Training (VAST)

**Iyoha R.** Best Poster and Presentation for Rebecca Iyoha (Supervisor: Dr. E. McNair, Co-supervisor: Dr. G. Katselis), Biomedical Sciences Research Day, University of Saskatchewan, 2022.

**Iyoha R.** Biomedical Sciences Summer Student Scholarship, (Supervisor: Dr. E. McNair, Co-Supervisor: Dr. G. Katselis), University of Saskatchewan, \$8,050 (CAD), 2022.

**Julseth L.** Supervised by Dr. G. Katselis, was awarded a 2022-23 Health Sciences Graduate Scholarship and the 2023-24 College of Medicine Graduate Student Award.

**Koehncke N.** Department of Medicine Research Day Presentation. May 5, 2023. First place. Presentation title: *Blood and hand surface lead in veterinary workers using lead shielding during diagnostic radiography.*

**Massie M.** Canadian Centre for Rural and Agricultural Health. Awarded the Queen Elizabeth II Platinum Jubilee Medal (Saskatchewan), 2022.

**Merkowsky K.** *Health Sciences Graduate Student Competitive Scholarship for Kaitlin Merkowsky (PhD student supervised by Dr. S. Kirychuk), University of Saskatchewan, \$24,000/annum*

**Nelson A.** College of Pharmacy and College of Medicine Interdisciplinary Research Award (Supervisor: Dr. E. Krol, Co-supervisor: Dr. G. Katselis), \$7,350 (CAD), 2023

**Willfong N.** Biomedical Sciences Summer Student Scholarship, (Supervisor: Dr. G. Katselis), University of Saskatchewan, \$8,050 (CAD), 2022.

**Toro AC.** Supervised by Dr. S. Kirychuk, was awarded a 2023-24 College of Medicine Graduate Student Award and the 2023-24 Respiratory Research Centre Student Award. \$19,000/annum.

**Toro AC.** Supervised by Dr. S. Kirychuk, was awarded a Health Sciences Graduate Student Competitive Scholarship, University of Saskatchewan, \$19,000/annum.

**Waslen A.** Dean's Letter of Excellence, Alexander Waslen, MD Dean's Student, College of Medicine, University of Saskatchewan, November 2022 [Supervisor: Dr. Angelica Lang]

**Yao Grant.** Undergraduate Research Symposium. October 2022. Second place. Category: Quality improvement poster presentation.

## RESEARCH GRANTS (FUNDED IN 2022-23)



26

Research Grants



\$

Total: 2,743.640+

**Bath B (NPI), Crockett K (Co-PI), Farag M (Co-I), Epp C (Co-I), Graham AM (Co-I), Awe O.(Co-I), Legg H (Co-I)** Bridging Access to Physiotherapy Care Gaps for Saskatchewan Mothers. \$99,960. Jim Pattison Children's Hospital Foundation Research Grant, (April 2023-March 2025).

**Bath B (NPI), Lovo S (Co-PI), Crockett K (Co-I)**. Enhancing Access to Chronic Back Pain Care in Saskatchewan: Mobilizing Rural, Remote and Urban Perspectives. \$10,000. Research Connections. SHRF. (Aug 2022-July 2023)

**Bath B(NPI), Groot G (Co-PI), King A (Co-I), Gyurcsik N (Co-I)**. Feasibility and Acceptability of a Physical Therapist Led Education and Exercise Program for People Living with Osteoarthritis Awaiting Hip or Knee Total Joint Arthroplasty. \$30,000. CoMRAD, College of Medicine, University of Saskatchewan (January 2023-December 2023).

**Cammer A, O'Connell ME, Jeffery B, Parrott E, Cook S.** (2023 – 2024). The Cognitive Kitchen: An evidence-based nutrition and socialization program for rural caregiver support. \$49,509 (CAD). SHRF Solutions Innovation Grant.

**Dosman J, Pahwa P, Kirychuk S, King M, Baetz M, Abonyi S, Seesequasis J, Mike DT, Naytowhow CDC, Neubuhr MJ, Seesequasis W (co-PIs).** Co-applicants: **Fenton M, Koehncke N, Ramsden V, Janzen B, Lawson J, Kaunanayake C, McMullin K.** Assess, Redress, Reassess: Addressing Disparities in House, Home, and Mental Health Among First Nations People. CIHR. Project Grant. \$1,399,950. 03-2022-02-2027.

**Groot G, Comfort P, Hartness C, Andreas B, Fenton M, Kamrul R, Lessard J, McKinney V, OByrne A, Rocha Michaels C, Vasquez Camargo A, Carr T, Goodridge D, Muhajarine N, Penz E, Lawson J, Osgood N.** Team Grant: THINC Implementation Science Team Grants. Integrated care clinical pathway implementation using a patient-oriented learning health system approach. CIHR

**Groot G, Meiers P, Lang AE (Co-Investigator), Carr T, Chamberlain D, Smith L.** (September 2022 – August 2023). Exploring Priorities for Breast Cancer Patients and Survivors in Saskatchewan. 9896.0 (CAD). Connections Program - Align Grant, Saskatchewan Health Research Foundations.

**Kahan T, Kirychuk S, Burgess I (Co-PIs).** Post-Doctoral Fellowship for 3 Post Doctoral Fellows. Guiding Public health Policies in Indigenous Communities through the Development of Analytical Tools to Assess Molecular-level Interactions between Environmental Tobacco Smoke and Mold. Living Skies Post-doctoral Fellowship Program. Total: \$120,000 for -01-2023 to 04-2024.

**Katselis G (PI).** Applications of Proteomics to Study Vibration-related Micro-Concussions. College of Medicine Research Award (CoMRAD), College of Medicine, University of Saskatchewan. Total: \$29,960 for 2023-01 to 2024-04.

**Katselis G (PI), Greenfield T.** (July 2022 – December 2025). Investigating food management strategies in Early Dynastic Southern Mesopotamia using zooarchaeological proteomics. SSHRC Explore Grant, SSHRC Institutional Grants. Total: \$7,000 for 2022-07 to 2025-12.

**Katselis G (PI), Taylor-Gjvre R, King A, Simko E, Bracamonte J, Koziy R, Chumala P.** Targeted Proteomics to validate One Health Links in Septic Arthritis. Department of Medicine, University of Saskatchewan. Total: \$15,000 for 2022-05 to 2024-04.

**Katselis G (PI).** Agilent Technologies Inc – High-sensitivity analysis of post-translational modifications with electron capture dissociation. International Industrial Grant, Agilent-University Relationships Research, Agilent Technologies Incorporated. Total: \$112,500 for 2022-04 to 2023-12.

**Krishnan A, Katselis G (Co-applicant).** Molecular Characterization of Cancer Cells Contributing to Perineural Invasion for tackling Prostate Cancer Recurrence. Prostate Cancer Fight Foundation/Ride for Dad. Total: \$50,000 for 2023 to 2024.

**Kiryuchuk S (NPI) Co-PIs: Bradford L, Martin W, McPhedran, K, Dosman J, Henderson E, Karunanayake C, Soltan J.** Building the Future: Addressing and Redressing the Built Environment for Health in Saskatchewan First Nations Communities. CIHR Planning and Dissemination Grant, \$25,000. 09-2023 to 12-2024.

**Kiryuchuk S (NPI). Co-PIs: Martin W, McPhedran K, Bradford L, Co-applicants: Soltan J, Ramsden V, Pahwa P, Campbell D, Fonstad T, Karunanayake C, Dosman J, Abonyi S.** Enhancing wellness in our miyo wāskahikan, SHRF Impact Grant, \$150,000. 04-2023 to 03-2025.

**Kiryuchuk S, (PI). Co-applicants: Martin W, McPhedran K, Bradford L, Bharadwaj L, Ramsden V, Pahwa P, Karunanayake C, Dosman J, Burgess L.** Thriving in our Miyo Wāskahikan, SHRF Connections Truth and Action Grant, \$10,000. 01-2023 to 03-2024.

**Lang A. (PI)** (April 2023 - March 2028). Scapular kinematics and functional movement: exploring best practice methods from calibration to application, 177,500(CAD). Discovery Grant - Individual, Natural Sciences and Engineering Research Council of Canada.

**Lang AE (PI), Bath B, Lanovaz J.** (July 2022-June 2025). Do time and rural residence affect upper limb biomechanical alterations in rotator cuff disease? 118,412(CAD), Saskatchewan Health Research Foundation.

**Lang AE (PI), Friesen KB, Koehncke N.** (January 2023-December 2023). Shoulder function measurement for everyone: a validation of wearable sensors for community-driven research. 30,000 (CAD). College of Medicine Research Award, College of Medicine

**Lawson J et al.** Geographic variation in the under- and over-diagnosis of asthma. SHRF Align grant. 2023.

**Lawson J et al.** The relationship between childhood asthma and mental health conditions: A focus on geographic variation. SHRF Align grant. May 2023.

**Lawson J et al.** Under- and over-diagnosis of asthma task force. European Academy of Allergy and Clinical Immunology. Dec 2022.

**Martin W, Kiryuchuk S, McPhedran K.** (co-PIs). Co-applicants: Bradford, L, Soltan J. Kisêwâtisiwin for the Home. SSHRC. Exchange Grant. \$5,000.07-2022-06-2024.

**Martin W, Kiryuchuk S, McPhedran K.** (co-PIs). Co-applicants: Bradford L, Soltan J. Kisêwâtisiwin for the Home. SHRF. Connections Grant. \$10,000.07-2022-06-2023.

**Martin W (NPI) Co-Applicant: Kiryuchuk S, Bradford L, McPhedran K, Sanz P.** First Nations Built Environment Climate Action. CIHR Catalyst Grant \$125,000

**O'Connell ME, Michael J, Marcinkiw K, Peacock S, Cammer A.** (2023-2025). Increasing capacity of Alzheimer Society of SK care partner support group facilitators in virtual care and interpersonal therapy: The CCAPS Project. \$148,953.40 (CAD). Impact Grant, Saskatchewan Health Research Foundation (SHRF)/Alzheimer Society of SK.

**Ogborn D, Lang AE (Co-Investigator),** Scribbans T, Woodmass J, Stranges G, Marsh J, Old J. (May 2023-April 2024). Defining scapular kinematics of patients with rotator cuff tears during work-related activities and functional tasks and their relationship with American Shoulder and Elbow Surgeons (ASES) scores. 10,000 (CAD). Alexander Gibson Fund, Pan Am Clinic.





# KNOWLEDGE MOBILIZATION



## PUBLISHED PAPERS

**Arnold A, Bath B, Prosko S, Ritchie K, Hunter K.** Mindful and Compassionate Self, Grounded Together: A Qualitative Description of Post-Menopausal Women's Perceptions of Balance Flow Yoga. *International Journal of Yoga Therapy*. (accepted Nov 2022, published Feb 2023). <https://doi.org/10.17761/2022-D-21-00069>

**Bacsu JD, Andrew MK, Azizi M, Berger C, Cammer A, Chasteen AL, Fraser SA, Grewal KS, Green S, Gowda-Sookochoff R, Mah JC, McGilton KS, Middleton L, Nanson K, Spiteri RJ, Tang Y, O'Connell ME** (2023). Using Twitter to Understand COVID-19 Vaccine-Related Ageism during the Pandemic. *The Gerontologist*, gnad061. Advance online publication. [doi:10.1093/geront/gnad061](https://doi.org/10.1093/geront/gnad061)

**Bacsu JD, Cammer A, Ahmadi S, Azizi M, Grewal KS, Green S, Gowda-Sookochoff R, Berger C, Knight S, Spiteri RJ, O'Connell ME.** (2022). Examining the Twitter Discourse on Dementia During Alzheimer's Awareness Month in Canada: Infodemiology Study. *JMIR Formative Research*, 6(10), e40049. [doi:10.2196/40049](https://doi.org/10.2196/40049)

**Bacsu JD, Kortzman A, Fraser S, Chasteen A, McDonald J, O'Connell ME.** (2023). Understanding intersectional ageism and stigma of dementia: A systematic scoping review protocol. *JMIR Research Protocols*, 12, e46093. [doi:10.2196/46093](https://doi.org/10.2196/46093)

**Bacsu JD, O'Connell ME, Cammer A, Ahmadi S, Berger C, Azizi M, Gowda-Sookochoff R, Grewal KS, Green S, Knight S, Spiteri RJ** (2022). Examining the Impact of COVID-19 on People With Dementia From the Perspective of Family and Friends: Thematic Analysis of Tweets. *JMIR aging*, 5(2), e38363. [doi:10.2196/38363](https://doi.org/10.2196/38363)

**Baustista M, Katselis G, Chowdhuri B, Chumala P, Mahendra R, Desai P, Kalyanamoorthy S, Krishnan A.** (2023). Comparative proteomics analysis of growth-primed adult dorsal root ganglia reveals key molecular mediators for peripheral nerve regeneration. *eNeuro*, 10(1):1-15. <https://doi.org/10.1523/ENEURO.0168-22.2022>

**Chu LM, Karunanayake C, Aich P, Hecker M, Pahwa P.** Association between liver enzymes and metabolic syndrome in Canadian Adults: results from the Canadian Health Measures Survey - Cycle 3 & 4. *Journal of Diabetes & Metabolic Disorders* 2022; <https://doi.org/10.1007/s40200-022-01124-x>

**Chu LM, Rennie DC, Kirychuk S, Cockcroft D, Gordon JR, Pickett W, Dosman J, Lawson JA.** Farm Exposures and Allergic Disease Among Children Living in a Rural Setting. *J Agromedicine*. 2023 Apr 10:1-13. doi: 10.1080/1059924X.2023.2200427. Online ahead of print.

**Crockett K, Lovo S, Irvine A, Trask C, Oosman S, McKinney V, McDonald T, Sari N, Carnegie B, Custer M, McIntosh S, Bath B.** Experiences of health care access challenges for back pain care across the rural-urban continuum: A protocol paper. *Journal of Medical Internet Research (JMIR) Research Protocols*. (Dec 2022) 11:12. <https://www.researchprotocols.org/2022/12/e42484>

**Dyck RF, Pahwa P, Karunanayake C, Osgood ND.** The Contribution of Gestational Diabetes to Diabetes Risk Among First Nations and Non-First Nations Women in Saskatchewan: Results From the DIP: ORRIIGENSS Project. *Canadian Journal of Diabetes* (2023) 47:6 509-518. <https://doi.org/10.1016/j.jcjd.2023.04.017>

**Dosman JA, Karunanayake CP, Fenton M, Ramsden VR, Seesequasis J, Mike D, Seesequasis W, Neubuhr M, Skomro R, Kirychuk S, Rennie DC, McMullin K, Russell BP, Koehncke N, Abonyi S, King M, Pahwa P.** STOP-Bang Score and Prediction of Severity of Obstructive Sleep Apnea in a First Nation community in Saskatchewan, Canada. *Clocks & Sleep* 2022; 4(4): 535-548. <https://doi.org/10.3390/clocks4040042>.

**Elliot V, Morgan D, Kosteniuk J, Bayly M, Froehlich Chow A, Cammer A, O'Connell ME** (2022). An overview of the experiences, needs, and shortfalls of dementia-related palliative and end-of-life care services and supports in rural areas. In Chapter 9 Late Stage, page 181-82, of Gauthier S, Webster C, Servaes S, Morais JA, Rosa-Neto P. 2022. *World Alzheimer Report 2022: Life after diagnosis: Navigating treatment, care and support*. London, England: Alzheimer's Disease International. Available at: [www.alzint.org/resource/world-alzheimer-report-2022/](http://www.alzint.org/resource/world-alzheimer-report-2022/)

**Friesen KB, Lang AE, Chad K, Oliver GD.** (2022). An investigation of bilateral symmetry in softball pitchers according to body composition, *Frontiers in Sports and Active Living*. 4:868518.

**Friesen KB, Lang AE.** (2022). Do musculoskeletal disorders affect work tasks in farmers: a study of rural Saskatchewan? *Journal of Occupational and Environmental Medicine*, 64(9): e591-e596.

**Friesen KB, Ostryzniuk A, Lang AE.** (2023). Comparison of scapular kinematics from optical motion capture and inertial measurement units during a work-related and functional task protocol. *Medical & Biological Engineering and Computing*, 1-11.

**Friesen KB, Wu L, Waslen A, Lang AE.** (2023). Defining repeatability for scapulothoracic and thorcohumeral motion during the Work-Related Activities and Functional Task (WRAFT) protocol, *Journal of Biomechanics*. 111596.

**George PBL, Rossi F, St-Germain MW, Amato P, Badard T, Bergeron MG, Boissinot M, Charette SJ, Coleman BL, Corbeil J, et al.** July 2022. Antimicrobial Resistance in the Environment: Towards elucidating the roles of bioaerosols in transmission and detection of antibacterial resistance genes. *Antibiotics* 19;11(7):974. <https://doi.org/10.3390/antibiotics11070974>

**Grewal KS, Gowda-Sookochoff R, Kirk A, Morgan D, O'Connell ME** (2023). Base rates of low neuropsychological test scores in older adults with subjective cognitive impairment: Findings from a tertiary memory clinic. *Applied Neuropsychology: Adult*. [doi:10.1080/23279095.2023.2208699](https://doi.org/10.1080/23279095.2023.2208699)

**Grewal KS, Trites M, Kirk A, MacDonald SWS, Morgan D, Gowda-Sookochoff R, O'Connell ME** (2022). CVLT-II Short Form Forced Choice Recognition in a Clinical Dementia Sample: Cautions for Performance Validity Assessment. *Applied Neuropsychology: Adult*. [doi:10.1080/23279095.2022.2079088](https://doi.org/10.1080/23279095.2022.2079088)

**Hare MJL, Maple-Brown LJ, Shaw JE, Boyle JA, Lawton PD, Barr ELM, Guthridge S, Webster V, Hampton D, Singh G, Dyck RF, Barzi F.** Risk of kidney disease following a pregnancy complicated by diabetes: a longitudinal, population-based data-linkage study among Aboriginal women in the Northern Territory, Australia. *Diabetologia* (2023) 66:837-846. <https://doi.org/10.1007/s00125-023-05868-w>

**Jahner S, Penz K, Stewart N, Morgan D, Kulig J.** (2022). "Staying Strong": A Constructivist Grounded Theory of How Registered Nurses Deal with the Impact of Trauma-Related Events in Rural Acute Care Practice. *Journal of Clinical Nursing*, 32(5-6), 879-893. [doi:10.1111/jocn.16459](https://doi.org/10.1111/jocn.16459)

**Joundi R, O'Connell ME, Patten S, Smith E.** (2023). Mediation of Post-Stroke Function by Cognition in the Canadian Longitudinal Study on Aging. *Canadian Journal of Neurological Sciences*, 1-9. [doi:10.1017/cjn.2023.6](https://doi.org/10.1017/cjn.2023.6)

**Karunanayake CP, Koehncke N, Enebeli S, Ulmer K, Rennie DC.** Trends in Work-Related Fatal Farm Injuries, Saskatchewan, Canada: 2005-2019. *Journal of Agromedicine* 2023; 28(3):444-455. DOI: 10.1080/1059924X.2022.2134244.

**Khanam UA, Gao Z, Adamko D, Kusalik A, Rennie DC, Goodridge D, Chu L, Lawson JA.** A scoping review of asthma and machine learning. *J Asthma*. 2023 Feb;60(2):213-226. [doi: 10.1080/02770903.2022.2043364](https://doi.org/10.1080/02770903.2022.2043364). Epub 2022 Mar 2.

**Kiryuchuk S, Russell E, Rennie D, Roberts C, Seesequasis J, Karunanayake C, Thompson B, Pahwa P, McMullin K, Fenton M, Ramsden V, Abonyi S, Dosman JA.** Housing inadequacy in rural Saskatchewan First Nation communities. *PLOS Glob Public Health* 2022; 2(8): e0000470. <https://doi.org/10.1371/journal.pgph.0000470>

**Kosteniuk J, Acan Osman B, Osman M, Quail J, Islam N, O'Connell ME, Kirk A, Stewart N, Morgan D.** (2022). Health service use before and after dementia diagnosis: a retrospective matched case-control study. *BMJ Open*, 12(11):e067363. [doi:10.1136/bmjopen-2022-067363](https://doi.org/10.1136/bmjopen-2022-067363)

**Lin A, Chumala P, Du Y, Ma C, Wei T, Xu X, Luo Y, Katselis GS, Xiao W.** (2022). Transcriptional activation of budding yeast DDI2/3 through chemical modifications of Fzf1. *Cell Biology and Toxicology*, 1-17. doi: 10.1007/s10565-022-09745

**MacDermott S, McKechnie R, LoGiudice D, Morgan D, Blackberry I.** (2022). Barriers and facilitators to screening for cognitive impairment in Australian rural health services. *Geriatrics (Basel, Switzerland)*, 7(2), 35. doi:10.3390/geriatrics7020035

**Martel, M, Kirychuk S, Bolo R, Yang Y, Thompson B, Zhang L, Predicala B, Guo H.** 2022. Improving air quality in broiler rooms using an electrostatic particle ionization system. *Journal of ASABE*, under revision (manuscript #: PAFS-15291-2022).

**Morgan D, Kosteniuk J, O'Connell ME, Stewart NJ, Kirk A, Cammer A, Dal Bello-Haas V, Minish DP, Elliot V, Bayly M, Froehlich Chow A.** (2022) A stakeholder engagement strategy for an ongoing research program in rural dementia care: Stakeholder and researcher perspectives. *PLoS ONE* 17(9): e0274769. doi:10.1371/journal.pone.0274769 PMID: 35171725 PMID: 37038656.

**Osinchuk SC, Grahn BH, Wilson TD, Thompson BN, Hart DA, Harrison KD, Cooper DML, Panihifar A, Rosenberg AM.** (2023) Evaluation of Uveitis Induced in Rats by Type I Collagen Peptide as a Model for Childhood Arthritis-Associated Uveitis. *Comparative Medicine*, Online ahead of print. <https://doi.org/10.30802/AALAS-CM-22-000129>

**Pandher U, Kirychuk S, Schneberger D, Thompson B, Aulakh G, Sethi RS, Singh B.** Adhesion Molecules in Lung Inflammation from Repeated Glyphosate Exposures. 2023. *International Journal of Environmental Research and Public Health*, 20(8):5484.

**Pavloff M, Bally J, Kirychuk S, Lasiuk G, Martin W, Labrecque ME.** "It was just a nightmare": Rural Home Care Nursing During COVID-19. 2023. *Canadian Journal of Nursing Research*. Online ahead of Print.

**Quan S, Menec V, O'Connell M, Cloutier D, Newall N, Tate R, St. John P.** (2022). Prevalence of obesity and elevated body mass index along a progression of rurality: A cross-sectional study – The Canadian Longitudinal Study on Aging. *Canadian Journal of Rural Medicine*, 27(4), 148-157. doi:10.4103/cjrm.cjrm\_55\_21

**Scerbe A, O'Connell ME, Astell A, Morgan D, Kosteniuk J, Panyavin I, DesRoches A, Webster C.** (2023). Digital tools for delivery of dementia education for caregivers of persons with dementia: A systematic review and meta-analysis. *Plos One*, 18(5): e0283600. doi:10.1371/journal.pone.0283600

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**Sukut SL, D'Eon M, Lawson J, Mayer M.** Providing comparison normal examples alongside pathologic thoracic cases can improve veterinary students' ability to diagnose disease. *Veterinary Radiology and Ultrasound*. Accepted Feb 2023.

## BOOKS

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**Elliot V, Morgan D, Kosteniuk J, Seitz D, Cameron C, Minish D. & Rural PHC Memory Clinic Team Members.** (2022). *RaDAR Rural Primary Health Care Memory Clinic Handbook*. Version: Fall 2022. Saskatoon, Saskatchewan: University of Saskatchewan. (174 pages, distributed as print and electronic versions).

**Kosteniuk J, Morgan D, Elliot V.** *Rural Memory Clinics: 2022 Update*. (2022). [report]. Printed at the University of Saskatchewan, Saskatoon, SK, Canada. (11 pages) Available at: <https://cchsa-ccssma.usask.ca/ruraldementiacare/publications/2022-dec-radar-memory-clinics-report.pdf>

**Ulmer K, Koehncke N.** *CANWORKSAFE Screening Report – Novozymes 2023*.

## MEDIA/ONLINE/REPORTS

**Bacsu JD, Hykaway W, Norma M.** (2023). Stigma, dementia, and COVID-19. Embrace Aging Series, Hosted by the University of British Columbia Okanogan, Invited Public Talk, Zoom/Online, March 8, 2023. Available from, <https://www.youtube.com/watch?v=FzxZAyfOOuc>

**Bacsu JD, Hykaway W, Norman M.** (2023). Stigma of dementia during COVID-19: Lived experience and social media research. Talking Brains Webinar. Hosted by the Canadian Consortium on Neurodegeneration on Aging and Engaging People with Lived Experience of Dementia (EPLD) Team. Zoom, January 18, 2023. Available from, <https://ccna-ccnv.ca/talking-brains-series/>

**Bacsu JD, Slattum P, Byrd G, Heyn P, Katz S, Lichtenberg P.** (2023). Top Tips for Opening a Research Centre. Gerontological Society of America, Zoom, June 6, 2023. Available from, <https://www.youtube.com/watch?v=Hwf2H78PzLw>

**Bacsu JD, Slattum P, Perry T, Kluss T, Posey LM.** Career Conversations: Working with the media. Gerontological Society of America. Zoom. June 22, 2022. Available from, <https://www.youtube.com/watch?v=TmtdyxAdN9E&feature=youtu.be>

**Bacsu JD, Slattum P, Trinkaus E, Herron R, Mingo Katz S.** Career Conversations: Surviving and thriving: Succeeding in your first academic position. Gerontological Society of America, Zoom, September 22, 2022. Available from, <https://www.youtube.com/watch?v=hnnHP0JtfvE>

**Bacsu JD.** (2023). Ageism and stigma of dementia during COVID-19. TRU Research Showcase Hour. Thompson Rivers University, Zoom/Kamloops, February 24, 2023.

**Bacsu, J. D., Slattum, P., Aronson, L., Epps, F., & Smith, A.** Using Social Media to Share Research: Strategies, Tips, and Techniques. Gerontological Society of America, Zoom, May 1, 2023/ Available from, <https://www.youtube.com/watch?v=K8hb3SoloX8>

**Burnett, W., and Milosavljevic, S.** Shake, Rattle & Farm. March 2023. Webinar: Online presentation and Q&A session facilitated by CASA . Canadian Agricultural Safety Alliance Forum. Recorded online discussion March 7 2023 from Saskatoon, SK.

**Cammer A.** Eating and Risk in Long-Term Care. Sherbrooke Community Centre and Central Haven Care Home, February 14, 2023.

**Cammer A.** Mealtime Enhancement in Long-Term Care, Spotlight on Research, Alzheimer Society of Saskatchewan. February 16, 2023.

**Cammer A.** Mealtimes and meal assistance: Crucial considerations in caring with older adults. Encircling Care Summit. April 25, 2023.

**Cammer A.** Meaningful conversations about comfort nutrition at the end of life. Canadian Association on Gerontology Pre-Conference Workshop: Strengthening family-centred care within a palliative approach to long-term care. October 20, 2022.

**Cammer A.** Nutrition and Healthy Aging: A Dementia Risk Reduction Lens, Saskatchewan Retirees Association. March 20, 2023.

**Cammer A.** Nutrition Considerations in Palliative Care. Continuing Education Palliative Care Workshop, Saskatchewan Polytechnic and Indigenous Services Canada. February 8-9, 2023.

**Cammer A.** Palliative and End of Life Nutrition in Long-Term Care: What do RDs need to know? Saskatchewan Long-Term Care Registered Dietitian Network. February 22, 2023.

**CANFARMSAFE.** 2023b. Testing the new swine transport trailer Part 1 – Road tests [Bulletin #004-1-1]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-1-1-testing-the-new-swine-transport-trailer-part-1.pdf>

**CANFARMSAFE.** February 2023. Introducing the Take a Break from the Shake Pamphlet [Bulletin CFS004-5-1]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-5-1-introducing-the-take-a-break-from-the-shake-pamphlet.pdf>

**CANFARMSAFE.** February 2023. Testing the New Swine Transport Trailer, Part 1 - Road Tests [Bulletin CFS004-1-1]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-1-1-testing-the-new-swine-transport-trailer-part-1.pdf>

**CANFARMSAFE.** March 2023. Air Quality in Alternative Dairy Barns - Dust and Bioaerosols [Bulletin CFS004-4-1]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-4-1-air-quality-in-alternative-dairy-barns-dust-and-bioaerosols.pdf>

**CANFARMSAFE.** March 2023. Dust and Bacteria Removal in Large-Scale Poultry Houses [Bulletin CFS004-2-1]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-2-1-dust-and-bacteria-removal-in-large-scale-poultry-house.pdf>

**CANFARMSAFE.** March 2023. Emissions from Swine Slurry Spreading, Part 1 - Gas and Odour Emissions [Bulletin CFS004-3-1]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-3-1-emissions-from-swine-slurry-spreading-part-1-gas-and-odour-emissions.pdf>

**CANFARMSAFE.** March 2023. Emissions from Swine Slurry Spreading, Part 2 - Dust and Bioaerosol Emissions [Bulletin CFS004-3-2]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-3-2-emissions-from-swine-slurry-spreading-part-2-dust-bioaerosol-emissions.pdf>

**CANFARMSAFE.** March 2023. Field Vibration Study [Bulletin CFS004-5-2]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-5-2-field-vibration-study.pdf>

**CANFARMSAFE.** March 2023. How to Measure Emissions from Manure Spreading in the Field [Bulletin CFS004-3-3]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-3-3-how-to-measure-emissions-from-manure-spreading-in-the-field.pdf>

**CANFARMSAFE.** March 2023. ROPS Save Lives [Bulletin CFS004-6-1]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-6-1-rops-saves-lives.pdf>

**CANFARMSAFE.** March 2023. Scaling-Up the Nanospray Air Treatment System [Bulletin CFS004-2-2]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-2-2-scaling-up-the-nanospray-air-treatment-system.pdf>

**CANFARMSAFE.** March 2023. Strategies to Improve Air Quality in Aviary Housing Systems for Laying Hens [Bulletin CFS004-4-2]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-4-2-strategies-to-improve-air-quality-in-aviary-housing-systems-for-laying-hens.pdf>

**CANFARMSAFE.** March 2023. Thinking Outside the Cab [Bulletin CFS004-6-2]. Retrieved from <https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-6-2-thinking-outside-the-cab.pdf>

**Elliot V, Morgan D, Kosteniuk J.** Co-editors (2023, January; Summer 2023). RaDAR Newsletters 2023, available online [acsu](https://www.agrivita.ca/documents/2019-2024-updated-bulletins/004-6-2-thinking-outside-the-cab.pdf)

**Lang A.** Co-author of Musculoskeletal Health and Safety in Agriculture Resource, shared by the Agricultural Health and Safety Network. [acsu](#)

**Lang A.** CTV News Saskatoon News segment, CTV News, October, 2022. [acsu](#)

**Lang A.** Press release interview for SHRF Establishment Grants. [acsu](#)

**Mayer M, Fent T, Sukut S, Wiebe S, Parker S, Blakely B, Koehncke N.** (2023). Blood and hand surface lead in veterinary workers using lead shielding during diagnostic radiography. Department of Medicine Research Day University of Saskatchewan May 5, 2023.

**Morgan D, Bayly M, Kosteniuk J.** Perceptions and outcomes of an embedded Alzheimer Society First Link Coordinator in rural primary healthcare memory clinics. A poster presentation at the CCNA Partners Forum and Science Days (virtual format), October 11-14, 2022: Abstracts. Canadian Geriatrics Journal, 26(1), pp. 223. [doi:10.5770/cgj.26.659](https://doi.org/10.5770/cgj.26.659)

**Morgan D, Minish D.** (2023). Summit 2022 Online Event Archive. [acsu](#)

**Morgan D.** Chair & Presenter, Summit 2022 - Knowledge Network in Rural and Remote Dementia Care – [15th] Annual Summit. Knowledge exchange meeting of research team and Decision-Maker Advisory Council, Saskatoon, SK, November 22 & 23, 2022. Virtual Event.

**Morgan D.** Editor, Rural Dementia Care: Strategies to Improve the Care of Persons with Dementia in Rural and Remote Areas (<http://www.cchsa-ccssma.usask.ca/ruraldementiacare>). A website highlighting team-based research in rural and remote dementia care. April 2008 to present.

**Morgan D.** Editor, Rural PHC Memory Clinics ([acsu](#) ). A website highlighting RaDAR memory clinics currently provided by primary health care teams in four rural Saskatchewan communities. May 2021 to present.

**Morgan D.** Podcast participant – From Scratch: Rural Dementia Care with Dr. Debra Morgan. (February 2023). A podcast interview with Debra Morgan in the series Researcher Under the Scope sponsored by the Office of the Vice Dean Research, College of Research, University of Saskatchewan. A transcript of the podcast is available online: [acsu](#)

**Morgan D.** Scaling up RaDAR Primary Health Care Memory Clinics in Rural Saskatchewan. Presentation at Community Table meeting for Dementia Supports in Rural Saskatchewan. Saskatoon, SK, March 3, 2023. Recorded archive of presentation available online at [acsu](#)

**Morgan D.** RaDAR rural primary health care memory clinics. Webinar presented nationally online. Hosted by brainXchange in partnership with the Alzheimer Society of Canada and the Canadian Consortium on Neurodegeneration in Aging. Saskatoon, SK, January 31, 2023. Recorded archive of presentation available online at [acsu](#)

**O’Connell ME.** (2022). Development of a remotely-delivered culturally safe support group for Indigenous caregivers of persons living with dementia. Invited Presentation, CCNA research blitz: Management of dementia, CCNA Partners Forum and Science Days 2022, Virtual, October 12, 2022.

**O’Connell ME.** (2022). The intersections among sensory, cognitive, and motor functioning: Closing the gap between research, practice and person-centered care. Invited Workshop Mediator. Canadian Association on Gerontology, Regina, October 20, 2022.

**O’Connell ME.** (June 2023). Issues in remote neuropsychological assessment for clinical practice. Section Featured Speaker Address, Professional and training issues. Canadian Psychological Association (CPA) Conference 2023, June 24, 2023.



**Podcast Interview:** Interview on WBD and Farmers with Frances MacKinnon, Learnio CPD for Professional Engineers. December 2022. Interview aired on Learnio subscription platform. Topics included what is WBV, health effects from occupational WBV exposure, how operators can mitigate the negative health effects of WBV exposure, and preliminary outcomes from the in-lab study.

**YouTube video:** USask Research Minute. Short YouTube video with University of Saskatchewan Office of the VP Research discussing strategies machinery operators can use in-field during harvest to reduce the negative health effects of WBV exposure. Released in September 2022. URL: <https://www.youtube.com/watch?v=Z552F9ovPYU>

**Yao G, Mayer M, Sukut S, Kubes K, Koehncke N.** Effect of Hands-Free Training on Worker Radiation Exposure. Undergraduate Research Symposium October 2022. (Grant Yao was the Dean's Summer Student – won 2nd place for poster presentation).

## INVITED PRESENTATIONS

**Bacsu J.** (2023). Enhancing the quality of life of people with dementia in rural communities. *Invited Public Talk*. Ashcroft Hub. Ashcroft, British Columbia, March 27, 2023.

**Bacsu JD.** (2023). Supporting healthy aging and dementia care in rural communities. *Invited Public Talk*. Creekside Seniors Centre. Chase, British Columbia, March 1, 2023.

**Bath B.** (September 2022). Overcoming Access Barriers to Rehabilitation in Canada. Global Health Rehabilitative Initiative Annual Symposium. School of Physical and Occupational Therapy. McGill University. Comment: *Invited Keynote presentation*

**Kirychuk S, Rabbitskin N, Bighead S, Karunanayake C, Thompson B, Longjohn C, David B, Ermine P, Dolovich L, Dosman JA, Fenton M, Graham H, Lamarche L, Jacobson N, Turner T, Ramsden VR.** Mamawohkamatowin (Working Together) to Enhance Wellness: Respiratory Health and the House. Department of Medicine Research Day, University of Saskatchewan, Saskatoon, Saskatchewan.

**Kirychuk S, Ulmer K.** Safe and Healthy Agriculture. APAS Policy Meeting. April 4, 2023. Saskatoon Inn & Conference Centre, Saskatoon, Saskatchewan.

**Kirychuk S, Ulmer K.** Safe and Healthy Agriculture. SARM Convention. March 14, 2023. Prairieland Park, Saskatoon, Saskatchewan.

**Kirychuk S.** Enhancing Rural Health. Department of Medicine Grand Rounds. February 1, 2023, Royal University Hospital, Saskatoon, Saskatchewan.

**Kirychuk S.** Occupational Health: Airborne emissions and health. Veterinary Comparative Respiratory Society (VCRS) International Symposium. October 2-5, 2022. Saskatoon, Saskatchewan.

**Lang, AE, Campbell L, Fadare D.** (May 2023). Preliminary analysis of the association between time since pain onset and shoulder kinematics in people with rotator cuff disease, Department of Medicine Research Day, University of Saskatchewan, Saskatoon, SK.

**Lawson J.** Environmental Epidemiology, *Medical University of Silesia*

**Lawson J.** The relationship between childhood asthma and mental health conditions. *Allergy Interest Group*

**O'Connell ME, Walker J.** (November 2022). Screening for cognitive impairment with Indigenous peoples, focusing on the need for cultural safety. *Invited Presentation*. National webinar, Brainxchange, Virtual, November 22, 2022.

**O'Connell ME.** (February 2023). Sleep Disturbances & Dementia. *Invited Presentation*. Alzheimer Society of Saskatchewan, Evening of Education, February 8, 2023.

**O'Connell ME.** (February 2023). The most challenging of dementia assessments: Language or intellectual disability presentations. *Invited Presentation*. Cowan Best Practice Days, 2023, February 16, 2023.

**O'Connell ME.** (March 2023). Issues in cognitive assessment with diverse groups: Focus on Indigenous Peoples. *Invited Presentation*. Vascular Training Program (VAST) Seminar Series, 2023, March 31, 2023.

**O'Connell ME.** (March 2023). Issues in cognitive assessment with diverse groups: Focus on Indigenous Peoples. *Invited Presentation*. Vascular Training Program (VAST) Seminar Series, 2023, March 31, 2023.

## CONFERENCES & ABSTRACTS

**Akinluyi OV, Lordall J, Lang AE.** (May 2023). Application of an in-field motion capture protocol for evaluating upper body movement. **Presented:** Life and Health Sciences Research Expo, College of Medicine, University of Saskatchewan, Saskatoon, SK.

**Alvarado A, Baguindoc M, Predicala B.** July 2022. Development of a mechanically ventilated transport trailer fitted with air filtration system to enhance biosecurity and animal welfare during transport. **Presented:** CSBE/SCGAM AGM and Technical Conference 2022. July 24-27 2022. Charlottetown, PEI.

**Arevalo TA, Palacios J, Brassard P, Desbiens V, Larios D, Godbout S, Raghavan V.** 2022. Use of passive flux samplers for measuring N<sub>2</sub>O emissions during manure spreading. **Presented:** AGM and Technical Conference of the Canadian Society for Bioengineering (CSBE-SCGAB), July 24-27, 2022. Charlottetown, PEI.

**Bacsu J D, Toal S, Viger M.** (2023). Addressing Stigma of Dementia: Rural Capacity-Building Workshop. **Presented:** National Rural Health Association's Health Equity Conference. San Diego, CA, May 15- May 16, 2023.

**Bacsu J, O'Connell ME, Cammer A, Ahmadi S, Berger C, Azizi M, Gowda-Sookochoff R, Grewal KS, Green S, Knight S, Spiteri RJ.** (2023). Understanding the evolving COVID-19 impact on people with dementia from the perspective of family and friends. **Presented:** Canadian Consortium on Neurodegeneration in Aging (CCNA) Partners Forum and Science Days 2022: Abstracts. Canadian Geriatrics Journal, 26(1), pp. 221. [doi:10.5770/cgj.26.659](https://doi.org/10.5770/cgj.26.659)

**Bacsu J, O'Connell ME, Cammer A, Ahmadi S, Berger C, Azizi M, Gowda Sookochoff R, Grewal KS, Green S, Knight S, Spiteri RJ.** (2022). Examining the health equity of people with dementia during the COVID-19 pandemic: First insights from a Twitter study. **Presented:** Gerontological Society of America Conference. Innovation in Aging, 6(S1), 776–777, [doi:10.1093/geroni/igac059.2810](https://doi.org/10.1093/geroni/igac059.2810)

**Bacsu J, O'Connell ME, Cammer A, Ahmadi S, Azizi M, Grewal KS, Green S, Berger C, Gowda-Sookochoff R, Knight S, Spiteri RJ.** (2023). Understanding Twitter discourse on dementia during Alzheimer's Awareness Month in Canada. **Presented:** Canadian Consortium on Neurodegeneration in Aging (CCNA) Partners Forum and Science Days 2022: Abstracts. Canadian Geriatrics Journal, 26(1), pp. 221. DOI: [doi:10.5770/cgj.26.659](https://doi.org/10.5770/cgj.26.659)

**Bacsu J, O'Connell ME, Cammer A, Azizi M, Ahmadi S, Grewal KS, Green S, Berger C, Gowda-Sookochoff R, Knight S, Spiteri RJ.** (2022). Understanding dementia discourse during Alzheimer's Awareness Month in Canada: First insights from a Twitter study. **Presented:** Gerontological Society of America Conference. Innovation in Aging, 6(S1), 768, [doi:10.1093/geroni/igac059.2782](https://doi.org/10.1093/geroni/igac059.2782)

**Bacsu JD, Johnson S, Toal S, Viger M.** (2023). Improving Dementia Awareness and Social Inclusion in Rural Communities. **Presented:** National Rural Health Association's Annual Conference. San Diego, CA, May 16-May 19, 2023.

**Bacsu JD, O'Connell ME, Cammer A, Ahmadi S, Berger C, Azizi M, Gowda-Sookochoff R, Grewal KS, Green S, Knight S, Spiteri RJ.** (2022). Examining the evolving COVID-19 impact people with dementia and their care partners. **Presented:** Canadian Association on Gerontology Conference, Regina, SK., October 22, 2022.

**Baghdadi M, Létourneau V, Turgeon N, Veillette M, Godbout S, Brassard P, Gaucher M-L, Duchaine C.** 2022. Dispersion of bio-contaminants into the air during spreading operations. **Presented:** American Society for Microbiology (ASM) international conference. June 9-13, 2022. Washington DC, USA.

**Baghdadi M, Rassard P, Godbout P, Létourneau V, Turgeon N, Rossi F, Veillette M, Desbiens V, Gaucher ML, Duchaine C.** 2022. Emission of Bioaerosols during manure spreading operations in controlled environment. **Presented:** 12th Asian Aerosol Conference. June 12-16, 2022. Taipei.

**Bergeron K, Létourneau V, Godbout S, Duchaine C.** Dust and Bioaerosols from Alternative Dairy Barns. Poster **Presented:** (a) ASM microbe 2022 – Washington, D.C; (b) Journées de la recherche en sciences et en génie 2022. Laval, Quebec; (c) Journées scientifiques annuelles de l'IUCPQ 2022. Laval, Quebec.

**Bolo R, Martel M, Thompson B, Zhang L, Predicala B, Guo H, Kirychuk S.** July 2022. Development and evaluation of a pilot-scale electro-nanospray system for improving air quality in barns. Presentation paper no. 106-2022, **Presented:** CSBE-SCGAB AGM and Technical Conference 2022. July 24–27, 2022. Charlottetown, PEI.

**Bolo R, Martel M, Thompson B, Zhang L, Predicala B, Guo H, Kirychuk S.** July 2022. Evaluation of a pilot-scale electro-nanospray system in decontaminating pig barns. **Presented:** Prairie Swine Centre Research Forum. October 25, 2022. Saskatoon, SK.

**Bolo R, Martel M, Thompson B, Zhang L, Predicala B, Guo H, Kirychuk S.** November 2022. Evaluation of an electro-nanospray system for decontaminating swine barns. **Presented:** CBE Graduate Seminar. November 2, 2022. Saskatoon, SK.

**Bolo R, Martel M, Thompson B, Zhang L, Predicala B, Guo H, Kirychuk S.** 2023. Pilot- scale testing of electro-nanospray system for decontaminating pig barns. **Presented:** Saskatchewan Pork Industry Symposium. March 8, 2023. Saskatoon, SK.

**Brausse M, Cammer A, Lengyel C.** Registered Dietitians practice perspectives in end-of-life care within the long-term care context. **Presented:** Canadian Foundation for Dietetic Research presentation, Dietitians of Canada Annual conference, September 2022.

**Cai S, Kirk A, Karunanayake C, O'Connell ME, Morgan DG.** Can depressive symptomatology at diagnosis predict cognitive and functional decline over one year in patients with dementia? Brausse M, Cammer A, Lengyel C. Registered Dietitians practice perspectives in end-of-life care within the long-term care context. **Presented:** Canadian Foundation for Dietetic Research. Dietitians of Canada Annual conference, September 2022. Annual Meeting of the International Neuropsychological Society, San Diego, California, USA, February 1-4, 2023.

**Cammer A, Brausse M, Lengyel C.** End-of-life nutrition care in Canadian long-term care: The role of Registered Dietitians. **Presented:** Canadian Association on Gerontology 51st Annual Scientific and Educational Meeting. Regina, SK, October 20-22, 2022.

**Cammer A, Wu S, Carrier N, Dakkak H, Harvie R, Lengyel C, O'Rourke HM, Slaughter SE, Trinca, V, Keller HH.** Needs assessment indicates long-term care providers require support for relationship-centred dining practices in a post-pandemic context. (Symposium: Improving nutrition care and mealtimes in long-term care; need for interventions) **Presented:** Canadian Association on Gerontology 51st Annual Scientific and Educational Meeting. Regina, SK., October 20-22, 2022.

**Carranza Díaz AK, Larios AD, Godbout S, Gravel J, Fournel S.** Greenhouse gas and ammonium emissions from egg production systems in southern Quebec. **Presented:** AGM and Technical Conference of the Canadian Society for Bioengineering (CSBE-SCGAB), July 24-27, 2022. Charlottetown, PEI.

**Carranza-Diaz AK, Godbout S, Gravel J, Dupont-Fortin B, Fournel S.** Gas emissions from conventional and alternative outdoor exercise areas for dairy cows housed in tie stalls. **Presented:** AGM and Technical Conference of the Canadian Society for Bioengineering (CSBE-SCGAB), July 24-27, 2022. Charlottetown, PEI.

**Cetin-Sahin D, Maclagan LC, Sourial N, Godard-Sebillotte C, Bronskill S, Quail J, Gruneir A, Seitz D, Morgan D, Vedel I. on the COVID ROSA Team.** Impact of the COVID-19 pandemic on healthcare service use by community-dwelling persons living with dementia: A cohort study of four Canadian provinces. **Presented:** CCNA Partners Forum and Science Days (virtual format), October 11-14, 2022: Abstracts. Canadian Geriatrics Journal, 26(1), pp. 222. [doi:10.5770/cgj.26.659](https://doi.org/10.5770/cgj.26.659)

- Desbiens V, Brassard P, Baghdadi M, Létourneau V, Turgeon N, Duchaine C, Arevalo AT, Godbout S.** 2022. Comparison of air contaminants emissions from two pig slurry spreading methods in a controlled environment. **Presented:** AGM and Technical Conference of the Canadian Society for Bioengineering (SCBE-SCGAB), July 24-27, 2022. Charlottetown, PEI.
- Elliot V, Morgan D, Kosteniuk J, Bayly M, Cameron C, O'Connell ME.** Environmental scan of services and supports for older adults in rural memory clinic communities and surrounding areas. **Presented:** CCNA Partners Forum and Science Days (virtual format), October 11-14, 2022: Abstracts. Canadian Geriatrics Journal, 26(1), pp. 223. [doi:10.5770/cgj.26.659](https://doi.org/10.5770/cgj.26.659)
- Elliot V, Morgan D, Kosteniuk J, Bayly M, Cameron C, O'Connell ME.** Environmental scan of services and supports for older adults in rural memory clinic communities and surrounding areas. **Presented:** CCNA Partners Forum and Science Days (virtual format), October 11-14, 2022: Abstracts. Canadian Geriatrics Journal, 26(1), pp. 223. [doi:10.5770/cgj.26.659](https://doi.org/10.5770/cgj.26.659)
- Fadare D, Campbell L, Lang AE.** (May 2023). Is time since pain onset related to shoulder kinematic changes in people with rotator cuff disease: a preliminary analysis. **Presented:** Life and Health Sciences Research Expo, College of Medicine, University of Saskatchewan, Saskatoon, SK.
- Friesen KB, Lang AE, Chad K, Oliver G.** (2022). Does body fat percentage influence movement asymmetry in softball pitchers? **Presented:** North American Congress of Biomechanics, Ottawa, ON.
- Friesen KB, Lang AE.** (2022). Validation of a work-related and functional task protocol to assess scapular motion. **Presented:** International Shoulder Group Conference, Delft University of Technology, Delft, NL.
- Godbout S, Brassard P, Desbiens V, Baghdadi M, Turgeon N, Létourneau V, Duchaine C.** 2022. Fugitive air contaminants emissions during animal manure spreading. **Presented:** XX CIGR World Congress. December 5-10, 2022. Kyoto, Japan.
- Godbout S, Carranza-Díaz AK, Larios-Martinez AD, Gravel J, Létourneau V, Duchaine C, St-Germain MW, Sébastien F.** Assessing ventilation rate by using direct and indirect measurements in conventional and alternative laying hens' buildings with mechanical ventilation. **Presented:** XX CIGR World Congress. December 5-10, 2022. Kyoto, Japan.
- Gowda-Sookochoff R, Grewal KS, Kirk A, Morgan D, O'Connell ME.** Analysis of Caregiver-Care Recipient Cohabitation and Associated Caregiver Coping in a Memory Clinic Sample. **Presented:** CCNA Partners Forum and Science Days (virtual format), October 11-14, 2022: Abstracts. Canadian Geriatrics Journal, 26(1), pp. 213. [doi:10.5770/cgj.26.659](https://doi.org/10.5770/cgj.26.659)
- Grewal KS, Gowda-Sookochoff R, Kirk A, Morgan DG, O'Connell ME.** Examining the base rates of low scores in older adults with subjective cognitive impairment from a specialist memory clinic. **Presented:** Annual Meeting of the International Neuropsychological Society, San Diego, California, USA, February 1-4, 2023.
- Kiryuchuk S, Rabbitskin N, Bighead S, Karunanayake C, Thompson B, Longjohn C, Davis B, Ermine P, Dolovich L, Dosman JA, Fenton M, Graham H, Lamarche L, Jacobson N, Turner T, Ramsden VR.** māmawōhkamātowin (Working Together) to Enhance Wellness: respiratory health and the house. **Presented:** 50th Annual Meeting of the North American Primary Care Research Group (NAPCRG), Phoenix, AZ; 2022 November 18-22
- Kosteniuk J, Morgan D, Acan Osman B, Islam N, O'Connell M, Kirk A, Quail J, Osman M.** Health service use by rural and remote memory clinic patients before and after diagnosis. **Presented:** Canadian Association on Gerontology Conference, Regina, October 20-22, 2022.
- Kosteniuk J, Morgan D, Acan Osman B, Islam N, O'Connell ME, Kirk A, Quail J, Osman M.** Health service use by rural and remote memory clinic patients before and after diagnosis. **Presented:** CCNA Partners Forum and Science Days (virtual format), October 11-14, 2022: Abstracts. Canadian Geriatrics Journal, 26(1), pp. 223. [doi:10.5770/cgj.26.659](https://doi.org/10.5770/cgj.26.659)

**Lang AE, Campbell L, Fadare D.** (May 2023). Preliminary analysis of the association between time since pain onset and shoulder kinematics in people with rotator cuff disease. **Presented:** Department of Medicine Research Day, University of Saskatchewan, Saskatoon, SK.

**Lang AE, Friesen KB.** (August 2022). Effects of inertial measurement unit placement on scapular kinematics. **Presented:** International Shoulder Group Conference, Delft University of Technology, Delft, NL.

**Lang AE, Friesen KB.** (June 2022). Assessing scapular motion measurement repeatability for functional applications., Department of Medicine Research Day, University of Saskatchewan, Saskatoon, SK.

**Lang AE, Kim SY.** (August 2022). Scapular kinematic alterations and rotator cuff disease in breast cancer survivors. **Presented:** North American Congress of Biomechanics, Ottawa, ON.

**Larios D, Turgeon JG, Godbout S, Fournel S, Turcotte S, Pouliot F, Gagnon P, Rousseau Alain, Morin C, Brassard P, Palacios JH, Katherin Carranza D.** Evaluation of an innovative ventilation control strategy to face heat stress in fattening pig's production. **Presented:** ASABE 2022, July 2022, Houston, TX.

**Mayer M, Fent T, Sukut S, Wiebe S, Parker S, Blakely B, Koehncke N.** (2023). Blood and hand surface lead in veterinary workers using lead shielding during diagnostic radiography. **Presented:** American Occupational Health Conference, Philadelphia, PA, April 2023.

**Morgan D, Bayly M, Kosteniuk J.** Perceptions and outcomes of an embedded Alzheimer Society First Link Coordinator in rural primary healthcare memory clinics. **Presented:** Canadian Association on Gerontology Conference, Regina, October 20-22, 2022.

**Moser B, Zhang H, Chumala P, Katselis GS, Lee J, Krol ES.** Photoaffinity labelling of alpha-synuclein: Diazirine probe development. **Presented:** Canadian Chemistry Conference and Exhibition, Calgary, AB, Canada, June 13-17, 2022.

**Naidoo S, Cammer A, Yakiwchuk E, Goodridge D.** Nutrition and house-model long-term care. life. **Presented:** Canadian Association on Gerontology 51st Annual Educational & Scientific Meeting, Regina, SK, October 20- 22, 2022.

**O'Connell ME, Camicioli R, Cammer A, Chertkow H, Desmarais P, Fisk JD, Freedman M, Friedman N, Geddes M, Ismail Z, Kirk A, Lee L, Morgan DG, Pettersen J.** A virtual interdisciplinary diagnostic memory clinic: Rural patient and caregiver satisfaction. **Presented:** Canadian Neurological Sciences Federation's Congress, 2023, Banff, June 6-9, 2023.

**O'Connell ME, Kadlec H, Taler V, Gicas K, Griffith L, Wolfson C, Kirkland S, Raina P.** (2022). Cognitive impairment indicator for the CLSA: Incorporating reliable change indices and base rates. **Presented:** International Neuropsychological Society Mid-Year Meeting, 2022, Barcelona, July 6-8, 2022.

**Pavloff M, Labrecque M, Kirychuk S, Baily J, Lasiuk G.** Rural Home Care Nurses' Experiences with Continuing Nursing Education. **Presented:** IAFOR International Conference on Education (IICE2023). Hawaii, US. January 5-8, 2023.

**Reid A, Watts B, Meyer C, King L.** Low-Cost ROPS Design for Older Agricultural Tractors. **Presented:** College of Engineering, University of Saskatchewan. March 2023. Saskatoon, SK.

**Reid A, Watts B, Meyer C, King L.** Low-Cost ROPS Design for Older Agricultural Tractors. **Presented:** College of Engineering, University of Saskatchewan. March 2023. Saskatoon, SK.

**Sapaden M, Alvarado A, Predicala B.** July 2022. Performance assessment of a modified trailer in controlling risk of airborne virus infection during livestock transportation. **Presented:** CSBE/SCGAM AGM and Technical Conference 2022. July 24-27 2022. Charlottetown, PEI.

**St-Germain Magali-Wen, Larios Martínez AD, Létourneau V, Godbout S, Boulianne M, Duchaine C.**

Concentrations de poussières et de bioaérosols dans des poulaillers de poules pondeuses ayant des logements conventionnels ou alternatifs. **Presented:** (a) Journées de la recherche en Sciences et Génie (Laval University), Journées Québécoises en Santé Respiratoire. May 2022. Laval, Quebec; (b) Journées de la recherche du CRIUCPQ. 2022. Laval, Quebec.

**St-Germain, M-W Larios AD, Létourneau V, Godbout S, Boulianne M, Duchaine C.** June 2022. Bioaerosols and dust concentrations in conventional and alternative canadian laying hen barns. **Presented:** ASM Microbe 2022. Washington, D.C.

**Tomilin M, Greenfield T, Holmden C, Katselis G.** Saving it for Later: Dietary Leftovers Identified from Proteins Preserved on Ancient Animal Teeth. **Presented:** CNPN 2023 Conference, Regina, SK, Canada, May 15-17, 2023.

**Waslen A, Lang AE** (May 2023). Do sex and age influence scapular and thoracohumeral kinematics during a functional task protocol? **Presented:** Life and Health Sciences Research Expo, College of Medicine, University of Saskatchewan, Saskatoon, SK.

**Waslen A, Lang AE.** (August 2022). Age-related effects on upper limb kinematics during functional task performance. **Presented:** University of Saskatchewan Undergraduate Student Symposium, Saskatoon, SK.

**Waslen A, Lang AE.** (October 2022). Age-related effects on upper limb kinematics during functional task performance. **Presented:** College of Medicine Undergraduate Research Symposium, Saskatoon, SK.

**Willfong N, Chumala P, Thompson B lanowski J, Katselis G.** The Kiss of Death: Proteomics Characterization of Insecticide Resistance in *Triatoma infestans*. **Presented:** CNPN 2023 Conference, Regina, SK, Canada, May 15-17, 2023.

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