



ANNUAL REPORT

& summary of activities

2021-2022



UNIVERSITY OF SASKATCHEWAN

Canadian Centre for Health
and Safety in Agriculture

CCHSA-CCSSMA.USASK.CA

MESSAGE FROM THE DIRECTOR



"... the resilience and capabilities of our faculty, staff, and students to adapt and thrive over these last few years is truly remarkable".

Another year has passed with research, outreach, and activity overall at the Centre visibly increasing on-site. Our report once again speaks for itself. Despite the lingering challenges of the pandemic, the research and outreach at the Canadian Centre for Health and Safety in Agriculture (CCHSA) finds a way to flourish! The numbers speak for themselves: over 6M in active research grants this year, with 46 published papers, 36 conference abstracts, 31 knowledge transfer activities and outreach events, 12 invited presentations, and 2 technical reports.

Our outreach via the Agricultural Health and Safety Network reaches over 200 RMs and 24000+ farm and rural families and offers a bi-annual newsletter, webinars, seminars, clinics (hearing and respiratory, with general practitioner (GP) or specialist follow-up as necessary), school outreach, and resource development. The Network has partnered with many organizations, including the Saskatchewan Association of Rural Municipalities (SARM), Canadian Agricultural Safety Association (CASA), Bridges Health, the DoMoreAg Foundation, Grain Commissions, SaskPower, 3M, and others, to help achieve these targets and deliverables. None of this would be possible without the longstanding support of the Ministry of Agriculture and the RMs via their membership, which provides critical funding for the Network. The remarkable work of our dedicated Network staff makes this all possible.

Research continues to thrive at CCHSA. Our faculty continue research and outreach in many areas important to agricultural

OUR MISSION

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

OUR VISION

World leadership in the health of rural people

and rural workers: respiratory exposures and health effects, farm injury and fatalities, musculoskeletal health and access to care, biomechanics, proteomics and metabolomics, rural dementia, asthma, diabetes in First Nations, and sleep health among First Nations People. CCHSA continues to develop and provide outreach and knowledge translation materials for projects supported through Agrivita Canada Inc, including researchers in Quebec and Saskatchewan, on six different applied research and engineering projects highlighted in this report and innovative to agricultural production and safety.

On top of all that, CCHSA also offers clinical occupational health screening and surveillance to employers and producers through the CCHSA CANWORKSAFE program which includes hearing and lung function testing as well as respirator fit testing, medical fitness-to-wear respirator assessments, and WCB communication if necessary. If you are interested in finding out more, let us know!

I make a note of this with every message – the resilience and capabilities of our faculty, staff, and students to adapt and thrive over these last few years is truly remarkable. I am so proud of everyone here at CCHSA. I wish you all a very safe, healthy and productive year,



Niels Koehncke, MD, MSc, FRCPC
Director, Canadian Centre for Health & Safety in Agriculture

RESEARCH

RURAL DEMENTIA ACTION RESEARCH (RADAR) TEAM

Dr. Debra Morgan, CCHSA 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

*Summit
2021 Online*

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 14th annual summit November 2 & 3, 2021. Summit 2021 was the team's second to be held as an online only virtual event.



Dr. Fiona Marshall

One hundred twenty-nine attendees logged in to attend 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. Keynote speaker Dr. Fiona Marshall, from the University of Nottingham, UK, and Director of Flourish Rural Derbyshire Community Interest Company, joined us virtually to present on the topic of 'farm-based care' as part of her work on agricultural-based dementia care.

More information about the Summit, including archived full presentations from many of the sessions, can be found on the RaDAR team's website under the Previous Summits tab: www.ruraldementiacare.usask.ca

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 14th Annual Summit were awarded to:

FIRST PLACE:
August Kortzman

SECOND PLACE:
Karl Grewal, & Michaela Trites
(co-presenters)

THIRD PLACE:
Erin Leeder &
Kayley Lawrenz (tied)

RURAL AND REMOTE MEMORY CLINIC



*RRMC and researcher team meet in research room to discuss patient assessments (photo taken before COVID-19).
Image credit: Tara Yolan Productions*

The RaDAR team implemented the Rural and Remote Memory Clinic (RRMC) 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 RRMC was started as a research project and now receives funding from the Saskatchewan Ministry of Health to provide clinical services to Saskatchewan residents. Since 2004 over 815 patients have been seen in the clinic.



*Clinic team feedback meeting with patient in family consultation room (photo taken before COVID-19)
Image credit to: Tara Yolan Productions*

Due to COVID-19, the Rural and Remote Memory Clinic (RRMC) team has adapted our method of providing services to the community. During this past year, the University of Saskatchewan campus slowly started to re-open to staff and students, with limited opening to the public and we have continued to remotely-deliver clinical services, and interventions. Patients and family members meet with our interdisciplinary team for assessment on one day 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 to better meet their needs during this time. Learn more at www.remotememoryclinic.ca about the services provided virtually to the people and health care providers in our province.

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), Leslie Holfeld (Clinic Nurse), Duane Minish (Psychometrist), Dr. Allison Cammer (Dietitian), Jennifer Fairbairn (Physical Therapist), Julie Jensen (Physical Therapist), and Meghan Flath (PhD student in Clinical Psychology).

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. O’Connell and Morgan. CCNA hosts an annual in-person Partners Forum and Science Day (PFSD) which is attended by all 19 CCNA teams. Due to the pandemic, PFSD 2021 was held as a virtual event.



As part of Team 15’s research, the RaDAR team continues to sustain and evaluate the impact of 4 rural memory clinics established in southeast Saskatchewan in CCNA Phase I. RaDAR is currently working with a 5th rural primary health care team to establish a clinic in their community. This work is co-led by Drs. Morgan and Kosteniuk. Ten Phase II projects linked to the rural memory clinics are currently in progress and two 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 a formative evaluation of the Kipling Active Living Program for people living with dementia.

CIHR FOUNDATION GRANT (2016-2023)

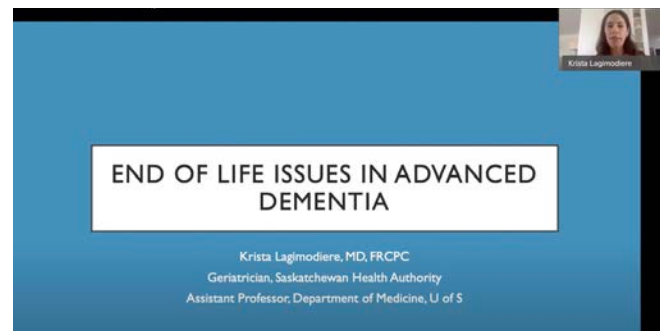


Drs. Morgan and Bayly at Carlyle Community Health building

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, Norma Stewart, and other Canadian and international experts.

The core of the Foundation program is to sustain rural 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, Rural West (Bengough, Coronach, and Radville), and Carlyle. Clinic team members include physicians, nurse practitioners, home care nurses, social workers, occupational therapists, physical therapists, a dietitian, and an Alzheimer Society First Link coordinator.

In May, 2021 The RaDAR team provided an online training session hosted by geriatrician, Dr. Krista Lagimodiere on Management of End-Stage Dementia.



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

Learn more about the clinics under the Rural PHC Memory Clinics tab on our team website

www.ruraldementiacare.usask.ca

Dr. Megan O’Connell is continuing to work on remote dementia assessment, diagnosis, and treatment in both the memory clinic and in her capacity as co-lead of Team 15 in the Canadian Consortium of Neurodegeneration in Aging (CCNA). Dr. O’Connell co-leads a telemedicine working group within the CCNA with Dr. Maiya Geddes. This national team of top researchers aims to continue developing and delivering remote dementia care, capitalizing on models that were used before and during the COVID-19 pandemic. Dr. O’Connell is also a member of the Stigma and Social Inclusion cross-cutting platform of the CCNA, which focuses on reducing stigma and improving social connections for people living with dementia.

The Rural and Remote Memory Clinic-interventions (RRMCi) continues to provide remote psychological interventions for rural patients with dementia and their caregivers. Two ongoing interventions relate to remotely delivered, empirically validated treatments for chronic sleep disturbance and maximizing daily function with cognitive rehabilitation. Additional interventions supporting socialization for caregivers and older adults including those with dementia during the era of COVID-19 are at various stages of implementation, and include rural, remote, and Indigenous populations. As well, an intervention for psychological consequences of driving cessation is currently underway, and recruitment for this study is set to begin shortly.



Dr. Ivan Panyavin

Dr. Ivan 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.



Dr. Amanda
Froehlich Chow

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 part of CCNA Team 18 which focuses on issues in dementia care for Indigenous Populations led by Dr. Jennifer Walker, Laurentian University.



Dr. Juanita Bacsu

Projects led by RaDAR Postdoctoral Fellows contribute to the Foundation project aims. **Dr. Juanita Bacsu** will complete her two-year Postdoctoral Fellowship with the support of Dr. Megan E. O’Connell and the RaDAR team this summer 2022. During her postdoctoral fellowship, Dr. Bacsu led a national team of researchers and trainees to analyze Twitter data to understand stigma against people with dementia during the COVID-19 pandemic. Her team’s research on the COVID-19 impact on people with dementia was published in Alzheimer’s Disease International’s [World Alzheimer Report](#), the Canadian Journal of Public Health, the Journal of Medical Internet Research (JMIR), and JMIR Aging. She also won a poster award at CCNA’s 2021 Partners Forum and Science Days for her team’s Twitter research. Recently, Dr. Bacsu hosted a [brainxchange](#) webinar with Rev. Faye Forbes, Emily McLellan, and Jody Peters from the EPLED (Engagement of People with Lived Experience of Dementia) team on eradicating stigma of dementia. She also presented her team’s research at multiple conferences hosted by the Gerontological Society of America, International Federation on Aging, Canadian Association on Gerontology, Canadian Association for Health Services and Policy Research, Emerging Researchers in Aging Australia, and the Rural and Remote Dementia Care Summit. Last fall, Dr. Bacsu co-produced a podcast series entitled, Science and Storytelling, with the Gerontological Society of America (GSA), where she co-hosted episodes on rural aging and stigma of dementia.



Dr. Melanie Bayly

Dr. Melanie Bayly has been involved in a number of RaDAR projects since joining the team as a post-doctoral fellow in 2017. These include a scoping review of dementia-related education and support service availability, accessibility and use in rural areas, an examination of the financial consequences of young onset dementia on families, and a meta-analysis of the impact of early-stage interventions on the wellbeing of caregivers and their ability to provide care to persons with MCI and dementia. She also worked with data from the Canadian Longitudinal Study on Aging to examine whether older adults living alone with cognitive impairment are at higher risk of poor physical, social, and psychological wellbeing. She also investigated the experiences of patients and families who are assessed for dementia by the RaDAR rural primary care memory clinic teams, in order to understand their perspectives of the team-based model of care and how the assessment processes could be improved. Additionally, Dr. Bayly and the RaDAR team are collaborating with the Alzheimer Society of Saskatchewan to assess benefits, challenges, and outcomes associated with the inclusion of a First Link coordinator in this team-based model. As of December 2021, Dr. Bayly accepted a position with the Research Ethics Office at the University of Saskatchewan, although she is still involved in some of RaDAR’s ongoing work.



August Kortzman

As well, Dr. O’Connell’s PhD student **August Kortzman** delivered a presentation discussing informal social support in the context of care partners of persons living with dementia at the CCNA Public Event: Caring and Caregiving for a Person living with Dementia. A body of research was presented that outlined informal social support deficits/opportunities and practical at-home exercises were described to help enhance social support network functioning.

Another RaDAR project recently underway, 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 Primary Health Care Memory Clinic patients and families in southeast Saskatchewan. This project includes focus groups with health care and service providers and a review of secondary sources of information conducted at two time-points over three years. 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 program changes or innovations over time. Focus groups and data extraction of secondary sources for the first time-point are complete and telephone interviews to explore the patient-family perspective are currently underway.

OTHER RADAR INITIATIVES

- Partnership with Saskatchewan Health Quality Council: Drs. Morgan, O'Connell, and Kosteniuk and the Saskatchewan Health Quality Council are conducting a number of ongoing projects involving administrative health data. One such 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. Topics related to individuals living with dementia included: support and education access and needs, team-based primary health care, stigma, palliative care, interventions for caregivers of people with mild cognitive impairment and early dementia, and multiple physical care transitions. Published reviews can be found on the RaDAR website www.ruraldementiacare.usask.ca under the Publications tab.



Juanita Bacsu, PhD, Postdoctoral Fellow will complete her two-year Postdoctoral Fellowship with the support of Dr. Megan E. O'Connell and the RaDAR team this summer 2022. Her postdoctoral research focused on two areas: i) examining the impact of COVID-19 on people living with dementia and their care partners; and ii) addressing cultural safety to improve dementia care for Indigenous peoples.

Melanie Bayly, PhD, Postdoctoral Fellow with Dr. Morgan. Dr. Bayly is working with RaDAR on needs and supports for individuals with dementia and their caregivers living in rural areas.

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.

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 will begin a residency placement at the University of Manitoba in September 2022.

Erin Leeder, MSc student in Nutrition with Dr. Cammer is working on a project using nutrition data from the Rural and Remote Memory Clinic.

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.

Andrea Scerbe, PhD student, Clinical Psychology with Dr. O'Connell, is preparing to defend her dissertation 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.

MUSCULOSKELETAL HEALTH & ACCESS TO CARE

Musculoskeletal (MSK) conditions, such as low back pain and arthritis, are a significant worldwide population health challenge. MSK health is interconnected to physical, psychological, and social factors, thus understanding causes and management of MSK conditions often requires taking a broad, interdisciplinary perspective. MSK conditions impair quality of life, and place economic burden on individuals, communities, and the health care system.



The [Musculoskeletal Health and Access to Care \(MHAC\)](#) research group is co-led by CCHSA faculty, Dr. Brenna Bath. A significant portion of research projects under the MHAC research group have a focus on chronic back pain and other MSK conditions like arthritis and access to non-pharmacological management and rehabilitation services.

Access is a multidimensional concept that can be defined as the opportunity to have health care needs fulfilled. This includes the opportunity to reach and obtain appropriate health care services from situations of need, perceived need, as well as health care seeking, reaching, and utilizing. Access to health care can be impacted by factors related to health care providers, organizations, institutions and systems.

Diverse populations experience MSK health challenges and access to care differently for a variety of reasons such as culture, where people live, and other social and economic factors. MHAC research is focused on understanding root causes, barriers, and challenges of MSK health conditions in a variety of settings and finding unique and innovative ways to improve equitable access to affordable and cost-effective care.

Further details regarding MHAC's current and past research projects can be found on our website:
<https://cchsa-ccssma.usask.ca/mhac/>

MUSCULOSKELETAL HEALTH AND ERGONOMICS LABORATORY

The Musculoskeletal Health and Ergonomics (MHE) Lab is a new research group housed in the Ergonomics Lab space in the Canadian Centre for Health and Safety in Agriculture (CCHSA), led by Dr. Angelica Lang. The vision of the MHE Lab 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.

The Ergonomics Lab is equipped with state-of-the-art biomechanical equipment, including optical motion tracking, wearable motion tracking sensors, electromyography, force plates, force cubes, and a rotopod for vibration simulation for enhanced measurement and understanding of musculoskeletal health. For more information, visit our website: <https://research-groups.usask.ca/ergolab/index.php>



DO MUSCULOSKELETAL DISORDERS AFFECT WORK TASKS IN FARMERS: A STUDY OF RURAL SASKATCHEWAN

(Kenzie Friesen & Angelica Lang)

Recently, we have surveyed farmers across Saskatchewan to understand how their pain or injuries are influencing their work. Shoulder pain and injuries were the most commonly experienced disorder in farmers and farm workers and resulted in difficulty when performing a number of work tasks, such as working with power tools, operating all-terrain vehicles, repairing buildings, and lifting above or below the waist. Performing these tasks may be the cause of the pain and injury, or it may worsen them. In the future, we plan to visit Saskatchewan farms to measure motion during these important farm work tasks identified in the survey to better understand how injuries could happen, how to prevent them, and how to best return farmers to work after pain or injury.

VALIDITY AND RELIABILITY OF UPPER LIMB KINEMATICS DURING A FUNCTIONAL TASK-BASED PROTOCOL

The first step to high-quality measures of biomechanical contributions to musculoskeletal health, both in the lab and field, involves validation and reliability assessments of methods. To do this, Dr. Lang and team [Dr. Kenzie Friesen (postdoctoral fellow), Alexander Waslen (MD Dean's Project), Anya Ostryzniuk (MD student), and Laura Wu (MD Student)] have extensively tested the repeatability of motion capture measurements in the lab with optical motion capture and the validity of using wearable motion capture sensors for future use in the field. Dr. Friesen and Alexander Waslen are currently investigating the sex and age effects of upper limb kinematics.

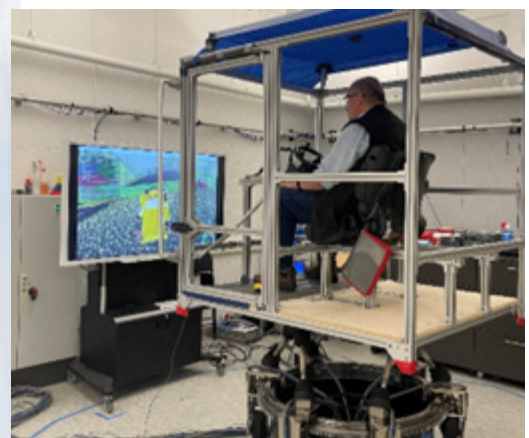
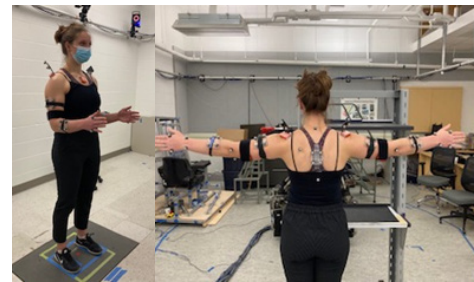
Future plans for this line of research are to apply these tested methods to in-field ergonomic measurements of farming and rural Saskatchewan populations and to in-lab assessments of clinical populations, such as rotator cuff pain, post-shoulder replacement, and breast cancer survivors.

EMG ASSESSMENT IN ADULTS WITH UPPER LIMB DISORDERS: A VALIDATION STUDY OF SUBMAXIMAL REFERENCE CONTRACTIONS

Electromyography (EMG) is a measure of the level of activation of muscles while moving. Together with Dr. Soo Kim (School of Rehabilitation Sciences) and Nathan Pham (MPT Student), Dr. Lang is investigating the best methods for normalizing this type of data for future analysis of clinical populations.

TAKE A BREAK FROM THE SHAKE: EVALUATING CONTROLLED VIBRATION EXPOSURE AND REST BREAK INTERVENTION

Drs. Dena Burnett and Steve Milosavljevic, collaborators of the Ergonomics Lab, are investigating the efficacy of rest breaks to reduce whole body vibration negative effects. Machinery use in agriculture exposes operators to extensive vibrations during machinery operation. Excessive vibration can lead to disturbances in reaction time and balance, as well as increase the risk of developing back and neck pain. The goal of this study is to determine whether a variety of short rest and activity breaks while using farm machinery can reduce these negative health effects.



MASS SPECTROMETRY (MS) LABORATORY FOR OMICS RESEARCH

The Mass Spectrometry (MS) Laboratory for Omics Research of the Canadian Centre for Health and Safety in Agriculture (CCHSA) Division in the Department of Medicine is part of the National Agricultural-Industrial Hygiene Laboratory and is housed in the Health Sciences Building, College of Medicine at the University of Saskatchewan.

The MS lab is equipped with state-of-the-art instrumentation capable of environmental (e.g. air particulates, dust) and agricultural samples analyses, pesticide analysis, global proteomics (e.g. identification of proteins, analysis of protein modification, characterization of protein-protein interaction), quantitative proteomics for discovery and validation of biomarkers, small molecule (drugs) analysis, metabolomics, lipidomics and clinical proteomics.

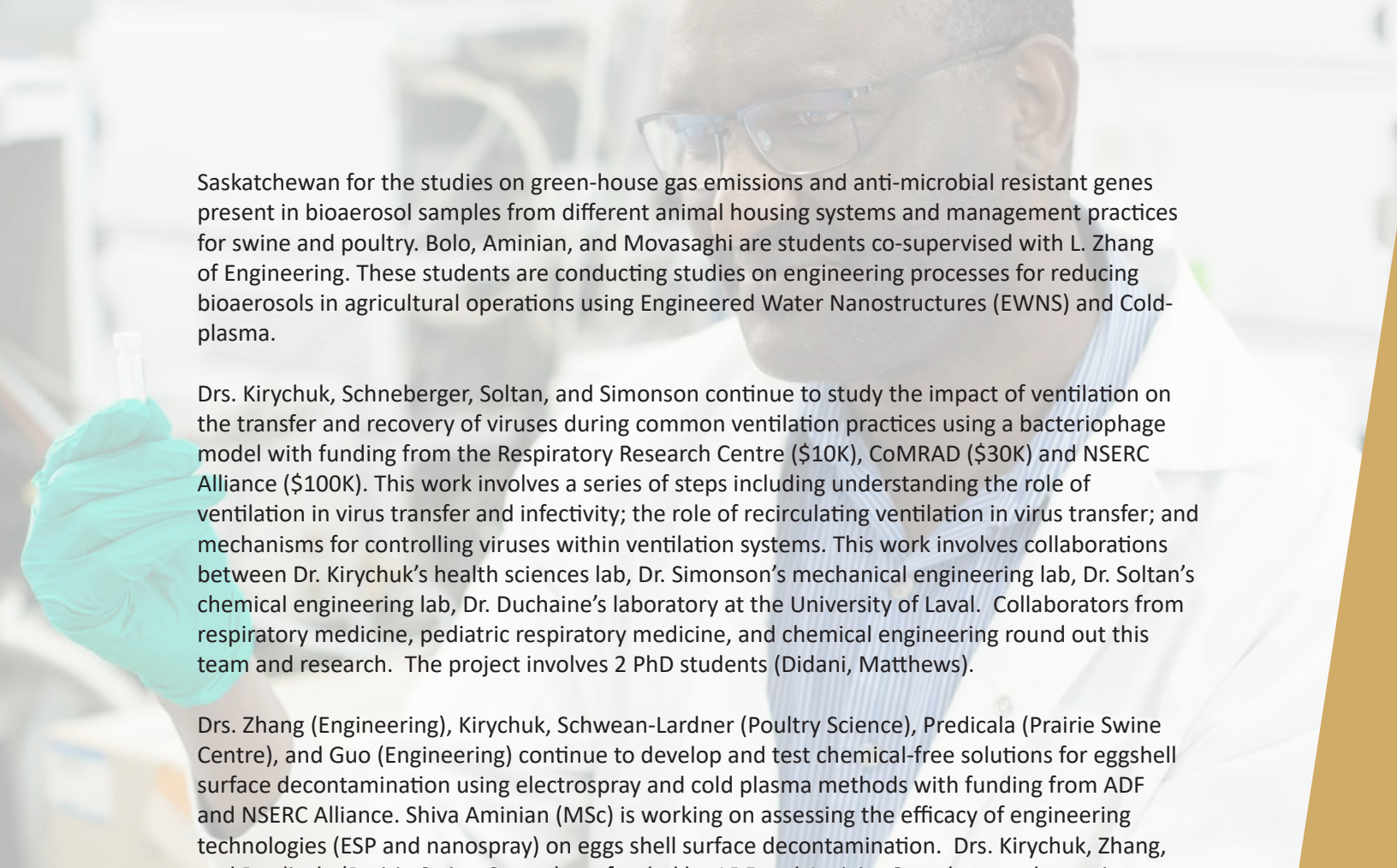
Dr. George Katselis is a faculty member in Clinical Proteomics and Metabolomics in the Department of Medicine, Division of the Canadian Centre for Health and Safety in Agriculture, College of Medicine and the lead CCHSA faculty in research programs focused on MS-based technologies. Under Dr. Katselis' leadership the CCHSA MS laboratory continues to run at high capacity for CCHSA and collaborating researchers (U of S campus, Provincial, Canadian, and International). Dr. Katselis' primary focus is on urinary mass spectrometry-based proteomics for monitoring children's health. In addition, another focus of Dr. Katselis' research is on (a) discovery, (b) identification, (c) characterization and validation of biomarkers which will assist towards discovery of treatment tools in the areas of diabetes, kidney, asthma, arthritis, cystic fibrosis, Parkinson's, cardiovascular, prostate cancer and musculoskeletal disorders.

Dr. Katselis' lab continues its involvement in research towards development of a COVID-19 diagnostic test based on saliva proteins, and towards the characterization of antigens which will be used in vaccine formulations to combat COVID-19.

Dr. Katselis has established collaboration with industry (Agilent Technologies) to develop novel MS instrumentation for omics research. Members of Dr. Katselis' research team include: Dr. Paulos Chumala (MS research technician), Imran Zaib (PhD student), Dr. Roman Koziy (PhD student), James Matheson (MSc student), Megan Tomilin (MSc student), Lucas Julseth (MSc Student), Natisha Thakkar (BSc Honours Student) and Brooke Thompson (Laboratory Manager).

NATIONAL AGRICULTURAL INDUSTRIAL HYGIENE LABORATORY (NAIHL)

Dr. Kirychuk's lab continues its work in respiratory exposures and health effects including utilizing the animal exposure chambers (agricultural inhalation exposures and respiratory inflammatory health) and population health activities (Housing and Health). This work includes a Laboratory Manager (Thompson), two Research Assistants (Schneberger, Nolting), one Post-doctoral fellow (Pandher), two PhD students (Merkowsky, Didani) and four Masters students (Castillo Toro, Bolo, Aminian, Movasaghi). Kaitlin Merkowsky is studying sex differential response after exposure to endotoxin and glyphosate including using the BMIT beamline at the Canadian Light Source to study lung structural changes after exposure. Dr. Upkardeep Pandher (Post-doctoral fellow) is studying the anti-inflammatory potential of NATURES Immuno, a natural pharmaceutical product, on lung inflammation. David Schneberger and Brooke Thompson are continuing to work on animal models of sex differential innate immune responses including the effects of ventilation (Carbon dioxide) on viral immune response; and the inflammatory effects of common agricultural exposures (glyphosate and LPS). Charly Nolting (Industrial Hygiene Technician) and Alejandra Castillo Toro (MSc) are collecting bioaerosol samples from livestock operations around



Saskatchewan for the studies on green-house gas emissions and anti-microbial resistant genes present in bioaerosol samples from different animal housing systems and management practices for swine and poultry. Bolo, Aminian, and Movasaghi are students co-supervised with L. Zhang of Engineering. These students are conducting studies on engineering processes for reducing bioaerosols in agricultural operations using Engineered Water Nanostructures (EWNS) and Cold-plasma.

Drs. Kirychuk, Schneberger, Soltan, and Simonson continue to study the impact of ventilation on the transfer and recovery of viruses during common ventilation practices using a bacteriophage model with funding from the Respiratory Research Centre (\$10K), CoMRAD (\$30K) and NSERC Alliance (\$100K). This work involves a series of steps including understanding the role of ventilation in virus transfer and infectivity; the role of recirculating ventilation in virus transfer; and mechanisms for controlling viruses 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, Dr. Duchaine's laboratory at the University of Laval. Collaborators from respiratory medicine, pediatric respiratory medicine, and chemical engineering round out this team and research. The project involves 2 PhD students (Didani, Matthews).

Drs. Zhang (Engineering), Kirychuk, Schwean-Lardner (Poultry Science), Predicala (Prairie Swine Centre), and Guo (Engineering) continue to develop and test chemical-free solutions for eggshell surface decontamination using electrospray and cold plasma methods with funding from ADF and NSERC Alliance. Shiva Aminian (MSc) is working on assessing the efficacy of engineering technologies (ESP and nanospray) on eggs shell surface decontamination. Drs. Kirychuk, Zhang, and Predicala (Prairie Swine Centre) are funded by ADF and Agrivita Canada to evaluate virus transfer during transport of pigs, as well as to evaluate nanospray technology for reducing airborne contaminants in animal production facilities. The projects involve 4 Masters students (Bolo, Sapaden, Aminian, Movasagi).

Dr. Duchaine (U of Laval), Dr. Kirychuk, et al, received NSERC Frontiers funding to investigate antibiotic resistant genes in bioaerosols in Canada. Dr. Kirychuk's role focuses on the contribution from bioaerosols in agricultural production in Saskatchewan. Sample collection from swine and poultry confinement facilities began in February 2022 in Saskatchewan. This work involves a Project Manager (N. Turgeon, U of Laval), Technicians (V. Letourneau, U of Laval; B. Thompson, U of S; C. Nolting, U of S; D. Larios, IRDA) and undergraduate (TBD) and graduate students (A. Castillo Toro, U of S; J. Lemieux, U of Laval). This work will also overlap with the work being done by Drs. Kirychuk and Godbout (IRDA, Quebec) who are studying air samples collected from different housing systems for swine and poultry production facilities.

Dr. Kirychuk continues to work with Saskatchewan First Nations to assess and redress the house on First Nations reserves in Saskatchewan. Drs. Kirychuk and Ramsden were recently funded by CIHR (\$273K) to evaluate the role of the house in COVID-19 transmission in one Saskatchewan First Nation community. A research team, led by NPI Dr. Dosman, and co-led by Pahwa, Kirychuk, King, Baetz, Abonyi, Seesequasis J, Mike, Naytowhow, Neubuhr, and Seesequasis W were funded by CIHR (\$1.4M) to Assess, Redress, Re-assess: Addressing Disparities in House, Home, and Mental Health Among First Nations People. Dr. Kirychuk's laboratory will support the housing assessments and role of the house in outcomes.

AGRIVITA CANADA INC.

Agrivita is a national 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 7 activities are listed below with key highlights from the recently completed year 3 of 5:

1. Improving Biosecurity & Welfare of Animals During Transportation led by Dr. Predicala and Dr. Kirychuk (U of S), Prairie Swine Centre Inc;

- The enhancement and optimization of the prototype trailer's design were completed and the trailer was evaluated in static, road and disease-challenge tests.
- These preliminary tests demonstrated that the current prototype trailer can provide the required environment for the pigs during transport.



Prototype Swine Transport Trailer

2. Development and Assessment of Emerging Green Technologies to Reduce Aerosol Risks and Hazards in Farms, led by Dr. Zhang, U of S College of Engineering;

- Activities focused mainly on the optimization of the operating parameters and design of a pilot-scale electro-nanospray, which is a scale-up of the previous laboratory-scale system that will be used in subsequent small-scale tests in the PSC barn facility.

3. Fugitive Emissions Following Manure Spreading – Risk Assessment and Engineering Controls, led by Dr. Godbout, Institut de recherche et de développement en agroenvironnement (IRDA)

- In order to quantify emissions of airborne contaminants following manure spreading, a large-scale wind tunnel was constructed and used to carry out manure spreading experiments. In 2021, 6 spreading repetitions were done with both solid cow manure and liquid pig slurry.



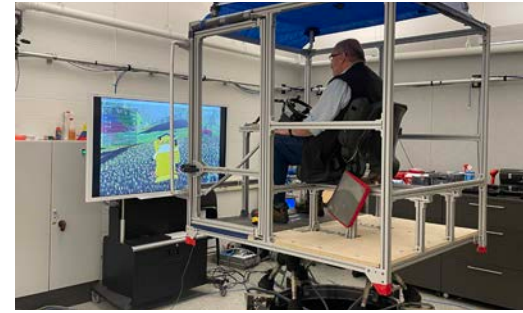
Wind Tunnel for Manure Emissions Testing

4. Developing Strategies to Minimize Health Risks in Next Generation Livestock Buildings Integrating Modern Animal Welfare Considerations, led by Dr. Godbout, IRDA.

- The comparison of air quality in conventional and alternative laying hen production systems was completed. It was observed that ammonia emissions, dust, endotoxins and bioaerosols were more important in aviaries than in facilities with cages.
- Air samples were also collected in six dairy farms to compare the air quality in barns that use tie stalls with those that use free stalls.

5. Take a Break from the Shake: Farm Machinery Operator Interventions, led by Dr. Milosavljevic, U of S.

- To move forward and implement field vibration exposure studies, a portable balance measurement device (force plate) was acquired, calibrated, and validated.
- The research team also worked on evaluating the applicability and feasibility of a smartphone application to help farmers to understand vibration exposure levels and make decisions regarding their own daily exposures.



6. Roll Out of Low Cost Farmer-Built ROPS into a National ROPS Program, led by J. Wassermann, P. Eng., and Dr. Koehncke, CCHSA.

- Work was continued on the social awareness campaign pushing towards a national ROPS program using a parametric design to cover many older tractor models.
- Also, the www.agropscanada.ca website has been created and made live.

7. Program-Wide Knowledge Transfer, led by Dr. Koehncke, CCHSA.

- Many knowledge transfer outputs were developed and published over the past year, including a total of 13 CANFARMSAFE bulletins and the third issue of the AgriSafety Newsletter.
- The bulletins and newsletter can be found on the Agrivita website at www.agrivita.ca.

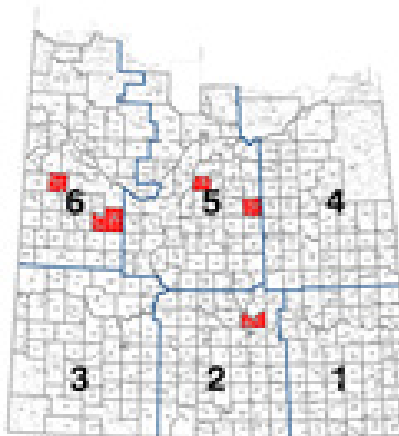
AgriVita continues its work to promote, lead, and seek opportunities to develop agricultural health and safety research through the ongoing development of a national collaborative network and continued stakeholder consultation. In October 2021, a virtual version of the Annual Team Meeting was held and provided an excellent platform for the research teams to discuss and collaborate on challenges and current project findings.



SERVICES

THE AGRICULTURAL HEALTH AND SAFETY NETWORK

The Canadian Centre for Health and Safety in Agriculture (CCHSA) partnered with the Saskatchewan Association of Rural Municipalities (SARM) and five Rural Municipalities in 1988 and founded the Agricultural Health and Safety Network with the mission to improve the health and safety on the farm through education, service, and evaluation research. This organization is now in its 32nd successful year in providing occupational health and safety services to 202 RMs that are current members of the Network, with a mailing list of approximately 24,000 farm families. The Network represents an agricultural health and safety program that is unique to Saskatchewan and Canada.



1988: 5 RMs

MISSION STATEMENT:

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

GOAL

To reduce injury and illness related to the farm environment through co-operative efforts with our partners.



STRONGER TOGETHER
in Agricultural Health and Safety

CURRENT MEMBERSHIP
202 RMs

SK FARM FAMILIES
24,000

AG WORKERS

PROGRAMS DELIVERED
in Schools

CLINICS OFFERED
in RMs

RESOURCES DEVELOPED

ACTIVE
in social media, website

PARTNERSHIPS

DELIVERED TO THE FARM GATE:

**2021 SPRING AND FALL MAIL-OUTS WERE DELIVERED TO THE 202 NETWORK MEMBER RMS
IT'S A REACH OF APPROXIMATELY 24,000 FARM FAMILIES**



SPRING/ SUMMER NEWSLETTER: STAYING SAFE & RESILIENT ON THE FARM

COVID-19 Pandemic continues to impact our lives, as we adapt it is important to keep ourselves and families safe on the farm.

ISSUE FOCUS:



- Ticks & Lyme Disease
- Sun Exposure on the Farm- ABCDs of early detection
- Updated COVID-19 Resources for Farmers
- COVID Vaccinations: The what, so what, and now what?
- Preventing & Planning for Fires
- Hantavirus
- Kids activity page
- What should be included in your Mental Health Plan?
- Farmer Developed Farm Safety Innovations



FALL/ WINTER ANNUAL PACKAGE: TAKING CARE OF YOURSELF ON THE FARM

With the fight against COVID-19 continuing on, producers faced additional stress and uncertainty due to extreme drought. These hard times underscored the importance of taking care of yourself during stressful times and changing perceptions of mental health in the agriculture sector.

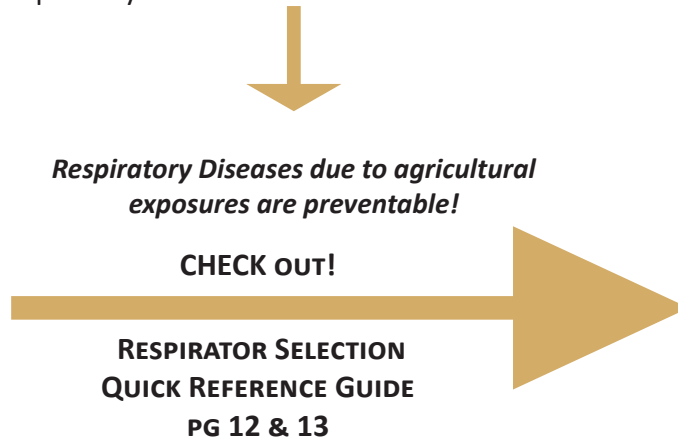
ISSUE FOCUS:



- Saskatchewan Farm Safety Plan Project: 5 Top Reasons to Build your Plan
- Fostering Resiliency in Ag Project: Self-Care, 10 ways to Build Resilience
- Highlights of New Respiratory Health in Ag Resource
- Kids activity page
- Pregnancy of the Farm
- Q & A COVID-19 Vaccines
- Dugouts Are Not Just a Summer Hazard
- Electrical Injuries
- Calving Season: Health and Safety 101

FEATURED ANNUAL NEW RESOURCE:

This resource helps you better understand respiratory hazards that exist in agriculture and assists you in applying a combination of controls to protect your respiratory health.



HEARING & RESPIRATORY CLINICS

The Network is looking forward to resuming the clinics in March 2022 in rural communities, and at the RM offices! Clinics were put on hold because of the pandemic restrictions.



If your RM is interested in hosting a Hearing Clinic or Respiratory Clinic for your farm families please contact (306) 966-6643.

If your RM is interested in offering the Hearing Loss Prevention Clinic for RM employees please reach out!

Many RMs request to hold the clinic for RM employees and farmers on the same day.

We look forward to working with your RM!

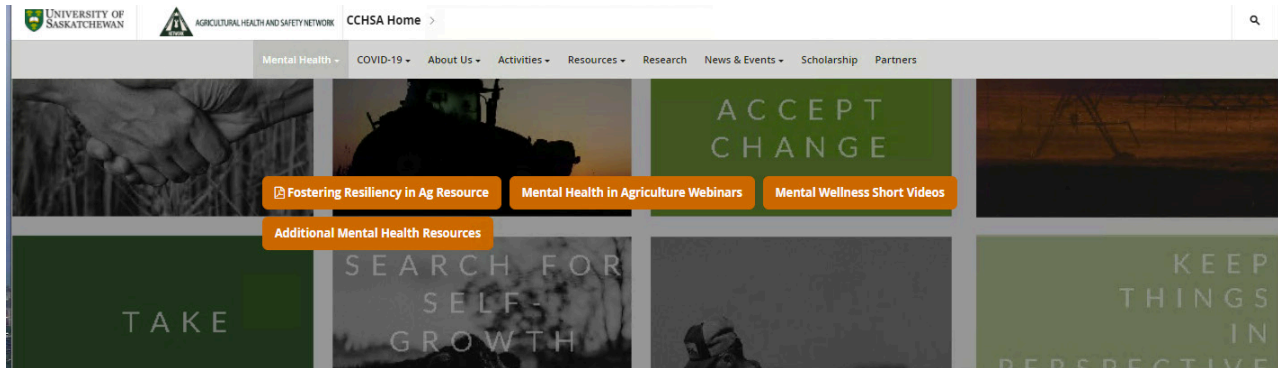


PARTNERSHIP IS INSTRUMENTAL TO THE NETWORK!

The Network strives to foster strong partnerships to increase our capacity to develop, deliver and promote new projects and initiatives to address the Saskatchewan Agricultural community. Thank you to our partners for your collaboration!



MENTAL HEALTH IN AGRICULTURE WEBPAGE



Fostering Resiliency in Agriculture
The Importance of Self-Care @ Stress Management to Maintain Mental Health

Logos: CANADIAN AGRICULTURAL PARTNERSHIP, BRIDGES HEALTH, Canadian Centre for Health and Safety in Agriculture, Saskatchewan, Canada.

- Stress
- Burnout
- Resilience
- Self-care
- Boundaries
- Mental Health Plan

MENTAL WELLNESS SHORT VIDEO SERIES

MENTAL WELLNESS SHORT VIDEO SERIES
<https://ccha-ccsma.usask.ca/aghealth/mental-health-in-agriculture/mental-wellness-short-video-series.php>

Logos: CANADIAN AGRICULTURAL PARTNERSHIP, BRIDGES HEALTH, Canadian Centre for Health and Safety in Agriculture, Saskatchewan, Canada.

HEALTHY BOUNDARIES Healthy boundaries are an important way to protect our time, energy, and overall mental health. Learn important steps of how to say "no" and maintain healthy personal boundaries. LENGTH OF VIDEO: 00:04:09	POSITIVITY PERSPECTIVE Keeping a positive perspective in the face of adversity and challenging times allows us to focus on hope, optimism, and gratitude. Identify ways to choose positivity each day and incorporate it into our regular routines. LENGTH OF VIDEO: 00:00:58	STRESS RESPONSE: BREATHING EXERCISES When we respond to stress, our bodies experience a number of physiological reactions, including increased breathing. Walk through guided breathing exercises, including coherent breathing and box breathing, which can be utilized to assist in relaxing and grounding ourselves during stressful situations. LENGTH OF VIDEO: 00:06:49	MINDFULNESS Our bodies and brains are constantly on the go, quickly moving from one thing to the next due to all of the roles and responsibilities we have on the go. Mindfulness, which is the ability to be fully present and "pay attention in the present," can be practiced intentionally on a regular basis through these exercises. LENGTH OF VIDEO: 00:07:42	UNDERSTANDING & ELIMINATING STIGMA The stigma that exists surrounding mental illness still prevents individuals from speaking openly about their struggles and seeking support when they need it. Learn about the key elements of both internal and external stigma and how speaking openly can help break the cycle. LENGTH OF VIDEO: 00:05:57
TOUGH TALKS Having a conversation surrounding mental health and mental illness with a loved one is never easy. Prepare for these difficult conversations with key tips and considerations to ensure the individual feels safe and supported. LENGTH OF VIDEO: 00:04:55	IF IN CRISIS PLEASE CONTACT: 911 Saskatchewan Suicide Hotline: 1-306-525-5383 Farm Stress Line: 1-800-567-4402	POWER OF VULNERABILITY Having a conversation surrounding mental health and mental illness with a loved one is never easy. Prepare for these difficult conversations with key tips and considerations to ensure the individual feels safe and supported. LENGTH OF VIDEO: 00:04:35		

SOWING THE SEEDS OF MENTAL HEALTH RECORDINGS

Recordings are available on our website on a variety of topics.

SOWING THE SEEDS OF MENTAL HEALTH

Supporting the Mental Health of Canadian Farmers

with Dr. Bill Howatt & Dr. Dayna Lee-Baggley

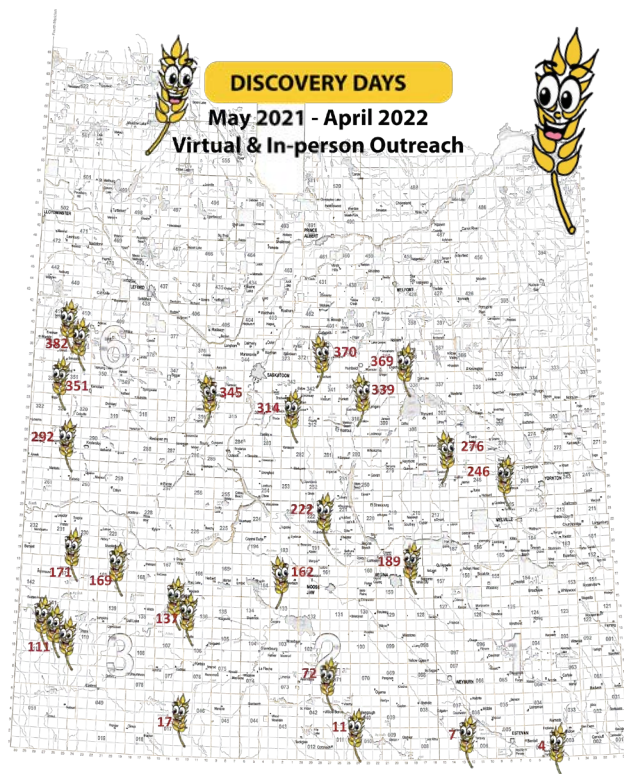
maintain your mental fitness through the winter season.

Weekly Sessions January – March 2022.

Howatt

DISCOVERY DAYS

- Farm Safety program geared towards rural grades 4-6
- Year prior to pandemic reached **39 schools, 1800 students** (delivered by 6 trained staff)
- Since inception reached **138 schools, 6000 + students**
- Network is exploring funding opportunities to increase capacity to reach more students with new modules and new resources. We are so excited about the interest and need of this program in rural Saskatchewan!



SARM SCHOLARSHIP

In 1995, the Saskatchewan Association of Rural Municipalities (SARM) auctioned off the first copy of its history book “The Building of a Province: Commemorating the 90th Anniversary of the Saskatchewan Association of Rural Municipalities.” This auction netted the sum of \$2,600 which the SARM Board of Directors contributed to the Canadian Centre for Health and Safety in Agriculture (CCHSA). These funds initiated the SARM 90th Anniversary \$1,000 Student Scholarship in Agricultural Safety and Rural Health. The Founding Chairs Program at CCHSA now maintains the scholarship.

This year two scholarships of \$1,500 each were awarded to grade 12 students, Danielle Dordu, Shaunavon, RM No. 79, Arlington and Caitlyn McMunn, Star City, RM No. 428. Students were asked to submit essays about (a) *The importance of safety and health on our farm* or (b) *Safety and health hazards on our farm*.

SCHOLARSHIP AWARDEES: SARM CONVENTION 2022



Danielle Dordu,
Shaunavon,
RM No. 79, Arlington



Caitlyn McMunn,
Star City,
RM No. 428

INVITED PRESENTATIONS

12

KNOWLEDGE TRANSFER

31

TECHNICAL REPORTS

2

INVITED PRESENTATIONS

Bacsu J. (2022). Stigma of dementia: Tackling the taboo. *Invited:* Public Talk. KM in the AM Saskatoon, University of Saskatchewan. Zoom/Saskatoon, January 13, 2022.

Bacsu J. (2022). Supporting healthy aging in place for rural people with dementia. *Invited:* Public Talk. Edson School of Nursing and Innovation, Arizona State University. Zoom/Phoenix, March 28, 2022.

Katselis GS, (June 2021). An Innovative and Highly Specific Approach for Detection of COVID-19 Salivary Biomarkers. *Invited:* Department of Medicine Research Day Presentation, University of Saskatchewan, June 9, 2021.

Katselis GS, (November 2021). Detection of SARS-CoV-2 Salivary Biomarkers using Mass Spectrometry-based Omics. *Invited:* CCHSA Research Seminar Series, University of Saskatchewan, November 9, 2021.

Kirychuk S, Schneberger D, Pandher U, Merkowsky K, Nascimento A, Thompson B. Occupational Hygiene Respiratory Exposures and Health: Anticipating, Recognizing, Assessing, and Controlling Physical, Chemical, Biological, and Ergonomic Stressors. *Invited:* CCHSA Research Seminar Series, Saskatoon, SK, 2021 December 7.

Koehncke N. Occupational Diseases – Perspectives from an Occ Doc. *Invited:* Worker's Compensation Institute 2021 May 26, 2021.

Kosteniuk J, Morgan D, O'Connell ME, Kirk A, Seitz D. Navigating Remote and Rural Dementia Care in the Future: Lessons from Canada. *Invited:* Webinar Series in the Institute for Lifecourse and Society, National University of Ireland Galway. Ireland, May 20, 2021.

Lang AE, Kim SY. (2022). Survivorship and shoulder related issues. *Invited:* 2022 Oncology Conference, Continuing Medical Education, College of Medicine, University of Saskatchewan, Saskatoon, SK. April 9th, 2022.

Lang AE. (2021). Scapular double calibration: instructions and applications. *Invited:* Clinical Biomechanics Orthopedic and Sports Outcomes Research (COOR) Lab Seminar, University of Southern California. November 15th, 2021. [virtual]

Merkowsky K, Thompson B, Pandher U, Schneberger D, Aulakh G, Singh B, Kirychuk S. Characterizing Lung Inflammation in Agricultural Respiratory Exposures Between the sexes. *Invited:* HSc 990 Seminar Series, Saskatoon, SK, 2022 March 22.

Merkowsky K, Thompson B, Pandher U, Schneberger D, Aulakh G, Singh B Kirychuk S. Characterizing Lung Inflammation in Agricultural Respiratory Exposures Between the sexes. *Invited:* HSc 990 Seminar Series, Saskatoon, SK, 2021 November 3.

O'Connell ME. (2022). Cognition in the Canadian Longitudinal Study of Aging. *Invited:* CIHR Institute of Aging, Summer Program in Aging 2022, Virtual (Calgary), May 17, 2022.



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Bacsu J, Ligus K, Reinhard S, Taffet G, Rozario P. (2021). 75 Years in Aging at the GSA: Where we were: Where we are going. Career Conversations. Gerontological Society of America. Zoom: October 18, 2021. Available from, <https://www.geron.org/meetings-events/career-conversations>

Bacsu J, Lingus K, Hu R, Henning-Smith C. Rural aging. Science and Storytelling: A GSA 75th Anniversary Podcast Series on Aging, Gerontological Society of America (GSA). Zoom: October 1, 2021. Available from, <https://podcasts.apple.com/us/podcast/gsa-on-aging/id1462340546>

Bacsu J, Lui W, Johnson S, Schulman-Green D, Price E, Skinner M. (2022). Career Conversations in Gerontology: Negotiating your first academic job offer. Gerontological Society of America. Zoom, March 23, 2022. Available from, <https://www.youtube.com/watch?v=fvR61m8zyZk&feature=youtu.be>

Bacsu J, Viger M. (2021). Stigma of dementia. Science and Storytelling: A GSA 75th Anniversary Podcast Series on Aging, Gerontological Society of America (GSA). Zoom: July 15, 2021. Available from, <https://podcasts.apple.com/us/podcast/gsa-on-aging/id1462340546>

Burnett D, Milosavljevic S. (Ergonomics Lab collaborators). May 2022. Getting to the bottom of bad vibrations. [Western Producer]. Retrieved from <https://www.producer.com/farmliving/getting-to-the-bottom-of-bad-vibrations/>

CANFARMSAFE. February 2022. Completed Prototype Trailer [Bulletin CFS003-1-1]. Retrieved from <https://agrivita.ca/articles/2022/003-1-1.php>

CANFARMSAFE. February 2022. Deactivating Microbes in Swine Barns [Bulletin CFS003-2-2]. Retrieved from <https://agrivita.ca/articles/2022/003-2-2.php>

CANFARMSAFE. February 2022. How Much Does It Stink? [Bulletin CFS003-3-2]. Retrieved from <https://agrivita.ca/articles/2022/003-3-2.php>

CANFARMSAFE. January 2022. All Cooped Up – In a Nutshell: Air Quality from Laying Hen Housing [Bulletin CFS003-4-3]. Retrieved from <https://agrivita.ca/articles/2022/003-4-3.php>

CANFARMSAFE. January 2022. All Cooped Up – Part 1: Gas Emissions from Laying Hens Housing [Bulletin CFS003-4-1]. Retrieved from <https://agrivita.ca/articles/2022/003-4-1.php>

CANFARMSAFE. January 2022. All Cooped Up – Part 2: Dust and Bioaerosol Concentrations in Laying Hen Housing [Bulletin CFS003-4-2]. Retrieved from <https://agrivita.ca/articles/2022/003-4-2.php>

CANFARMSAFE. January 2022. Challenges of DIY ROPS: Producing a Simple-to-Build and Safe ROPS Design [Bulletin CFS003-6-2]. Retrieved from <https://agrivita.ca/articles/2022/003-6-2.php>

CANFARMSAFE. March 2022. Pig Trailer Design 101: Challenges in Designing a Swine Transport Trailer [Bulletin CFS003-1-2]. Retrieved from <https://agrivita.ca/articles/2022/003-1-2.php>

CANFARMSAFE. March 2022. The WBV Smart-Device App [Bulletin CFS003-5-2]. Retrieved from <https://agrivita.ca/articles/2022/003-5-2.php>

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Lang AE, Friesen KB. May 2022. Presenter for the Verna J Kirkness program (aimed at introducing Indigenous high school students to research and academic mentors).

Lang AE. Spring 2022. Farm work is tough enough: Musculoskeletal disorders and task difficulty among rural Saskatchewan farmers. [Agriculture Health and Safety Network News].

Magazine: La terre de chez nous. July 14, 2021. Title: Vers une nouvelle génération d'épandeurs à fumier solide.

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

Morgan D. (Editor), Rural PHC Memory Clinics (https://cchsa-ccssma.usask.ca/ruraldementiacare/PHC_Clinics.php/). A website highlighting RaDAR memory clinics currently provided by primary health care teams in four rural Saskatchewan communities. May 2021 to present.

Morgan D. Chair & Presenter, Summit 2021 - Knowledge Network in Rural and Remote Dementia Care – [14th] Annual Summit. Knowledge exchange meeting of research team and Decision-Maker Advisory Council, Saskatoon, SK, November 2 & 3, 2021. Virtual Event.

O'Connell ME. CIHR Institute of Aging Summer Program in Aging. May 9-20, 2022. Co-facilitating small group sessions culminating in presentations on aging and cognition. Mentor.

The Canadian AgriSafety e-Newsletter. March 2022. Issue 3. Distributed electronically to e-mailing list and at <https://mailchi.mp/945e684de0c3/canadian-agrisafety-program-e-newsletter>

Wassermann J, Kelly T, Koehncke N. ROPS Fact Poster. Do you have a tractor that does not have a ROPS?. January, 2022.

Wassermann J, Kelly T, Koehncke, N. ROPS Fact Poster. Canadian ROPS Key Stats. January, 2022. Year 2 2020 – 2021 Annual Report of the Canadian AgriSafety Applied Science Program available in print and retrieved from <https://www.agrivita.ca/documents/2019-2024-bulletins/year-2-apr.pdf>

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Kosteniuk J, Morgan D, Froehlich Chow A, Bayly M. Rural Memory Clinics: 2021 Update. (2021). [report]. Printed at the University of Saskatchewan, Saskatoon, SK, Canada. (10 pages) Available from, <https://cchsa-ccssma.usask.ca/ruraldementiacare/publications/2021-dec-radar-memory-clinics-report.pdf>

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- Bacsu J, Fraser S, Chasteen AL, Camme, A, Grewal K, Bechard LE, Bethell J, Green S, McGilton KS, Morgan D, O'Rourke HM, Poole L, Spiteri RJ, O'Connell ME** (2022). Using Twitter to examine stigma against people with dementia during COVID-19: Infodemiology study. *JMIR Aging*, 10.2196/35677. Advance online publication. <https://doi.org/10.2196/35677>. PMID: [35290197](https://pubmed.ncbi.nlm.nih.gov/35290197/)
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CONFERENCE & ABSTRACTS

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Bacsu J, O'Connell M, Cammer A, Grewal K, Green S, Poole L, Azizi M, Spiteri R. (2021). Examining the COVID-19 impact on people with dementia. **Presented:** Canadian Consortium on Neurodegeneration on Aging Conference: 2021 Partners Forum and Science Days. Zoom: October 13, 2021.

Bacsu J, O'Connell M, Cammer A, Grewal K, Green S, Poole L, Azizi M, Spiteri R. (2021). Using Twitter to identify the COVID-19 impact on people with dementia: Policy implications. **Presented:** Virtually CAHSPR: Canadian Association for Health Services and Policy Research Conference 2021. Online, May 19, 2021.

Bacsu J, O'Connell ME, Cammer A, Grewal K, Azizi M, Green S, Poole L, Webster C, Wighton M, Sivananthan S, Spiteri R. (2021). Assessing the impact of COVID-19 on people with dementia and their care partners. **Presented:** 19th National Conference of Emerging Researchers in Ageing: Survive and Thrive. Zoom/Australia: Emerging Researchers in Ageing Australia, Nov. 4, 2021.

Bacsu J, O'Connell ME, Chasteen A, Fraser S, Bechard L, Cammer A, Green S, Grewal K, McGilton K, Morgan D, O'Rourke H, Poole L. (2021). Stigma of dementia during COVID-19: First insights from a Twitter study. **Presented:** Gerontological Society of America's Annual Scientific Meeting: Disruption to Transformation Aging in the New Normal. Zoom, GSA, November 13, 2021.

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Bacsu J, O'Connell ME, Fraser S, Chasteen A, Bechard L, Cammer A, Green S, Grewal K, McGilton K, Morgan D, O'Rourke H, Poole L. Ageism and stigma of dementia during COVID-19: An analysis of Twitter data. Part of S. Fraser's Symposium, Perspectives on ageism: What was said, what was done? **Presented:** IFA's 15th Global Conference on Ageing: Rights Matter. Niagara Falls, ON: International Federation on Ageing, November 10, 2021. Available from, <https://www.ifa-abstracts.com/perspectives-on-ageism-during-covid-19-what-was-said-and-done/>

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Burnett W, Milosavljevic S. Methodological Development for In-Field Rest Break Activity Intervals to Reduce Occupational Whole-Body Vibration Exposure During Agricultural Machinery Use. **Presented:** School of Rehabilitation Science Virtual Research Meeting. March, 2022. Saskatoon, SK.

Burnett W, Milosavljevic S. Validation of a Portable Force Plate for In-Field Evaluation of Postural Sway. **Presented:** School of Rehabilitation Science Virtual Research Meeting. April, 2021. Saskatoon, SK.

Burnett W, Milosavljevic S. Vibration exposure and vibration measurement techniques (accelerometers and iPhone app). Presented: Huskies Motorsports ¼-Scale Tractor Design Team in Engineering. April, 2021. Saskatoon, SK.

Carranza Díaz A, Larios D, Turgeon J, Turcotte S, Gagnon P, Pouliot F, Rousseau A, Godbout S, Fournel S. Évaluation d'une nouvelle stratégie de ventilation sur le bien-être et la performance de porcs à l'engrais soumis à un stress thermique en environnement contrôlé Évènement. **Presented:** RDT Concours étudiants gradués CDPQ. September 16, 2021. Quebec.

Carranza-Díaz A, Fournel S, Larios D, Godbout S, Palacios J, Alvarez E. Emissions from indoor and outdoor exercise areas for cows housed in tie stalls: factors and technics of measurement. **Presented:** 5th CIGR International Conference 2021, May 13, 2021. Quebec City, Quebec.

Carranza-Díaz, A, Fournel S. Providing exercise to dairy cows by redefining indoor and outdoor spaces and best management practices. **Presented:** Dairy Farmers of Canada: My Dairy Research Student Competition. Virtual. September 15, 2021.

Chakanyuka C, Bacsu J, DesRoches A, Walker J, Dame J, O'Connell ME, Symenuk P, Bourque-Bearskin L. (2021). Advancing cultural safety within the context of Indigenous healthcare: Protocol of a scoping review of reviews. **Presented:** Gerontological Society of America's Annual Scientific Meeting: Disruption to Transformation Aging in the New Normal. Zoom, GSA, November 13, 2021.

Dupuis F, Déry J, de Oliveira F, Pecora AT, Gagnon R, Harding K, Camden C, Roy JS, Lettre J, Hudon A, Beauséjour M, Pinard AM, Bath B, Deslauriers S, Lamontagne ME, Feldman DE, Routhier F, Desmeules F, Hébert LJ, Miller J, Ruiz A, Perreault K. Strategies to reduce waiting time for outpatient rehabilitation services for adults with physical disabilities: a systematic review. **Presented:** Canadian Physiotherapy Association Congress May 2021.

Friesen KB, Lang AE. (2022). Farm work is tough enough: a description of musculoskeletal disorders and task difficulty among rural Saskatchewan farmers. **Presented:** Life and Health Sciences Research Expo, College of Medicine, University of Saskatchewan, Saskatoon, SK. May 5th, 2022.

Geldenhuis I, Martin S, Matheson J, Katselis GS, Desai KM. (2021). Evidence of interactions between thyroid hormones/receptors and glucose, fructose and methylglyoxal: Implications for thyroid dysfunction in metabolic syndrome. **Presented:** 90th Annual Meeting of the American Thyroid Association (virtual), United States, September 30 – October 3, 2021.

Grewal KS, Trites M, O'Connell ME, MacDonald SWS, Kirk A, Morgan D. Cognitive Status & Dementia Severity in CVLT-II-SF Forced Choice Recognition: Implications for Effort Assessment. **Presented:** The Gerontological Society of America (GSA) 2021 Annual Scientific Meeting, Phoenix, Arizona, November 10-14, 2021.

Khanam U, Oluwale O, Rennie D, Lawson J. Investigation of asthma phenotypes in urban and rural locations. **Presented:** Canadian Respiratory Conference; April 2022.

Marin LM, Katselis GS, Chumala P, Siqueira WL. (2021). An Innovative and Highly Specific Approach to the Detection of COVID-19 Salivary Biomarkers. **Presented:** University of Saskatchewan Life and Health Sciences Research Expo (virtual), Saskatoon, SK, May 6, 2021.

Morgan D, Kosteniuk J, O'Connell ME, Kirk A, Seitz D, Elliot V, Bayly M, Daku J, Hack T, Hoium F, Kennett-Russill D, Sauter K, Cameron C. Saskatchewan rural primary health care memory clinics. **Presented:** Saskatchewan Health Research Showcase 2021, November 16 & 18, Canada. (virtual poster presentation).

O'Connell ME, Kadlec H, Taler V, Gicas K, Griffith L, Wolfson C, Kirkland S, Raina P. Cognitive impairment indicator for the CLSA: Incorporating reliable change indices and a base rates. **Presented:** International Neuropsychological Society Conference 2022, February 2-4, New Orleans, USA. (virtual presentation).

Peermohamed S, Lecuyer C, Lawson J, D'Eon M. Benefits of an antimicrobial stewardship themed escape room as a novel educational activity for internal medicine residents. **Presented:** Canadian Conference on Medical Education; April 2022.

Ramsden VR, Kirychuk S, Karunanayake C, Rabbitskin N, Bighead S, Dolovich L, Dosman JA, Fenton M, Graham H, Lamarche L, Davis B, Jacobson N, Thompson B, Turner T. It's the House! māmawōhkamātowin (Working Together) to Enhance Wellness. **Presented:** 48th Annual Meeting of the North American Primary Care Research Group (NAPCRG), Leawood, KS (virtual conference); 2021 November 20-24.

Spaden M, Alvarado A, Predicala B. November 2021. Assessment of modified livestock prototype trailer to improve biosecurity and welfare during swine transport. **Presented:** Saskatchewan Pork Industry Symposium 2021. November 16, 2021. Saskatoon, SK.

St-Germain M, Létourneau V, Martinez A, Godbout S, Duchaine C. Airborne dust and bioaerosol concentrations in Canadian laying hen facilities using battery cages, enriched cages, and aviaries. Presented: AAAR Annual Conference. October 21, 2021. Albuquerque, NM.

St-Germain M, Martinez A, Létourneau V, Godbout S, Duchaine C. Effect of dust and ammonia reduction strategies on air quality and bioaerosols in bench-scale aviaries. **Presented:** 13th Annual Symposium of the CRIPA. June 4th & 11th, 2021. St-Hyacinthe, Quebec.

St-Germain M, Martinez A, Létourneau V, Godbout S, Duchaine C. Effect of dust and ammonia reduction strategies on air quality and bioaerosols in alternative housing for laying hens. **Presented:** CIGR International Conference 2021. May 12, 2021. Quebec City, Quebec.

St-Germain M, Martinez A, Létourneau V, Godbout S, Duchaine C. Effect of dust and ammonia reduction strategies on air quality and bioaerosols in alternative housing for laying hens. **Presented:** Canadian Society of Microbiology Annual Conference 2021. June 16, 2021. Presented virtually.

Sutherland M, Kirk A, Karunanayake C, O'Connell

ME, Morgan DG. What Happens to the Worried Well? – Follow-up of subjective cognitive impairment. **Presented:** The Alzheimer's Association International Conference 2021, July 25-30, 2021. Amsterdam, Netherlands (Virtual Event).

Tomilin ME, Katselis GS, Greenfield T. (2021). Baa Baa Fat Sheep: Dietary investigations via isotopic and proteomics analyses from Aby Salabikh, Iraq. **Presented:** ASOR Annual Meeting 2021, Chicago, United States, November 17-20, 2021.

Vedel I, Arsenault-Lapierre G, Bergman H, Bronskill SE, Couturier Y, Godard-Sebillotte C, Henein M, Kosteniuk J, Khanassov V, McAiney C, Morgan D, O'Brien N, O'Connell M, Rojas-Rozo L, Seitz D, Sivananthan S, Smith Eric E, Sourial N, Wilchesky M, l'équipe COVID-ROSA. Améliorer les soins aux personnes âgées atteintes de démence au Canada pendant la pandémie de COVID: une étude à méthodes mixtes pour informer les politiques et les pratiques. **Presented:** 41es Journées Annuelles de la Société française de gériatrie et gérontologie. November 15-17, 2021. Paris, France. (live poster presentation).

Vlaski E, Cvejaska-Cholakovska V, Kimovska M, Ristevska T, Lawson J. (September 2021). External oxidants and asthma in childhood. In European Respiratory Journal. **Presented:** European Respiratory Society International Congress – 2021.

RESEARCH GRANTS

Dosman JA, Pahwa P, Abonyi S, King M, Maetz M, Kirychuk S, Mike D, Naytwohow C, Neubuhr M, Seesequasis J, Seesequasis W (PIs), Karunanayake C (Co-applicant). "Assess, Redress, Re-assess: Addressing Disparities in House, Home and Mental Health among First Nations People", CIHR grant- Principal Investigators 2022-2027. \$1,399,950 CAD.

Duchaine C, McGeer A, Kirychuk S (Co-investigator), Coleman B, Topp E, Corbeil J; Gaucher M-L, Bergeron M, McEwen S, Badard T, Goodbout S. Collaborators: Delort A-M, Yao M, Boissinot M, O'Shaughnessy P, Amato P, Reid-Smith R. Antimicrobial resistance genes in bioaerosols in Canadian arctic, rural, and urban environments: sources, profiles, transport and fate. Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Frontiers. Total : \$3,997,700 for 2020-05 to 2024-04

Katselis GS, Taylor-Gjevre R, King A, Simko E, Bracamonte J, Koziy R, Chumala P. Targeted Proteomics to Validate One Health Links in Septic Arthritis, Department of Medicine & Pocket Estate Arthritis Re-search Fund. Total: \$15,000 for 2022-04 to 2023-04.

Katselis GS (Principal Investigator), Siqueira W, Sanche S, Skomro R, Penz E, Kinloch M. Detection of Salivary Biomarkers of 2019 Novel Coronavirus using Mass Spectrometry-based Proteomics, 2020 Rapid Response COVID-19, College of Medicine. Total: \$10,000.00 for 2020-07 to 2022-03.

Katselis GS (Principal Investigator), Siqueira W, Sanche S, Skomro R, Penz E. An Innovative and Highly Specific Approach for Detection of Salivary Biomarkers of 2019 Novel Coronavirus, Department of Medicine. Total: \$20,000.00 for 2020-06 to 2022-05.

Katselis GS (Principal Investigator), Trask C, Milosavljevic S, Taghibiglou C. Get your Head Straight: A Pilot Study of Vibration-related Micro-Concussions, Department of Medicine. Total: \$20,000.00 for 2020-03 to 2022-03.

Kirychuk S (Principal Applicant), Simonson C, Duchaine C, Soltan J, Scheneberger D (Co-investigator). Recovery of viruses during Common Ventilation Practices. College of Medicine Research Funding (CoMRAD), University of Saskatchewan. Total: \$29,811.41 for 2021-01 to 2023-03.

Kirychuk S (Principal Investigator), Ramsden VR, Rabbitskin N, Karunanayake CP. mamawohka-matowin: working together to understand the house and COVID-19 in a Saskatchewan First Nation Community. Canadian Institutes of Health Research (CIHR). Total: \$272,415.00 for 2022-04 to 2023-03.

Kirychuk S (Principal Investigator). Research Cluster Funding, University of Saskatchewan OVRD. Total: \$20,000.00 for 2022-04 to 2023-03

McNair E, Dokouhaki P, Moser M, Mondal P, Khani-Hanjani A, Reid D, Sawicki G, Katselis G (Co-investigator). Assessment of Proteome Changes in the Development of Acute Kidney Injury following Cardiopulmonary Bypass-supported Cardiac Surgery, College of Medicine Research Awards (CoMRAD). Total: \$29,509 for 2022-01 to 2023-04.

Mendez I (PI), Lovo S (Co-PI), Behl V (Co-PI), Tait C (Co-PI), Babyn P (Co-PI), Bath B (Co-I), Bouchard B (Co-I), Zarzeczny A (Co-i), Hansen G (Co-I), McIntyre L (Co-I), Custer M (Co-I), O'Connell (Co-I), Leong N (Co-I), Johnson R (Co-I), Sewap S (Co-I), Adams S (Co-I), Lee S (Co-I), Holt T (Co-I), McKinney V (Co-I). Delivery of Virtual Care in Saskatchewan: A Strategic Framework and Roadmap for Implementation. Saskatchewan Health Research Foundation (SHRF) Solutions-Impact Grant. \$149,999.68. (April 2022-March 2024).

Milosavljevic S (PI), Hendrick P (Co-PI), Bath B (Co-I), Lovo S (Co-I), Mondal P (Co-I), Okpalauwaekwe U (Co-I), Riberiro D (Co-I), McDonough (Co-I), Hurley (Co-I). An international collaboration between researchers in Canada, Ireland, United Kingdom and New Zealand targeting walking interventions to effectively manage chronic low back pain. \$13,667. International Research Partnership Fund. USask International Office. (April 2022-Sept 2023).

Rosenberg A, Katselis GS (Co-Investigator) et al. High Mobility Box 1 Protein in Pediatric Coronavirus Disease, 2020 Rapid Response COVID-19, College of Medicine. Total: \$10,000.00 for 2020-07 to 2022-03.

Shavadia J, Katselis GS (Co-Investigator) et al. Serum Proteomics, Left Ventricular Systolic Function and Clinical Outcomes Following ST-Elevation Myocardial Infarction, RUH Foundation. Total: \$25,000.00 for 2021-04 to 2022-05.

Simko E, Katselis GS (Co-investigator), Koziy R. Transcriptomic analysis of synovial fluid to identify potential messenger RNA markers for the eradication of infection in equine septic arthritis model, Townsend Equine Health Research Fund. Total: \$37,341 for 2020-01 to 2022-03.

Simonson C, Kirychuk S (Co-investigator), Soltan J, Tam J, Zhou Y. Study of pathogens transfer through membranes for energy exchangers. NSERC Alliance. Total: \$50,000 for 2020-08 to 2022-08.

Soltan J, Kirychuk S (Co-investigator), Simonson C, Tam J, Zhou Y. Development of air sanitization unit to inactivate pathogens (e.g. COVID-19 virus) using catalytic reaction with ozone. NSERC Alliance. Total: \$50,000 for 2020-08 to 2022-08.

Zhang L, Kirychuk S (Co-investigator), Schwann-Lardner K. Development of Chemical-free Egg Shell Surface Decontamination Methods Through Electro Nano-spray. NSERC Alliance. Total: \$50,000 for 2020-08 to 2022-08.

Zhang L, Kirychuk S (Co-investigator), Schwean-Ladner K. Development of green and sustainable processes for surface decontamination of shell eggs. Agriculture Development Fund (ADF). Total \$260,000 for 2021-01 to 2024-03



FACULTY, STUDENTS & STAFF NEWS, CREDENTIALS & AWARDS

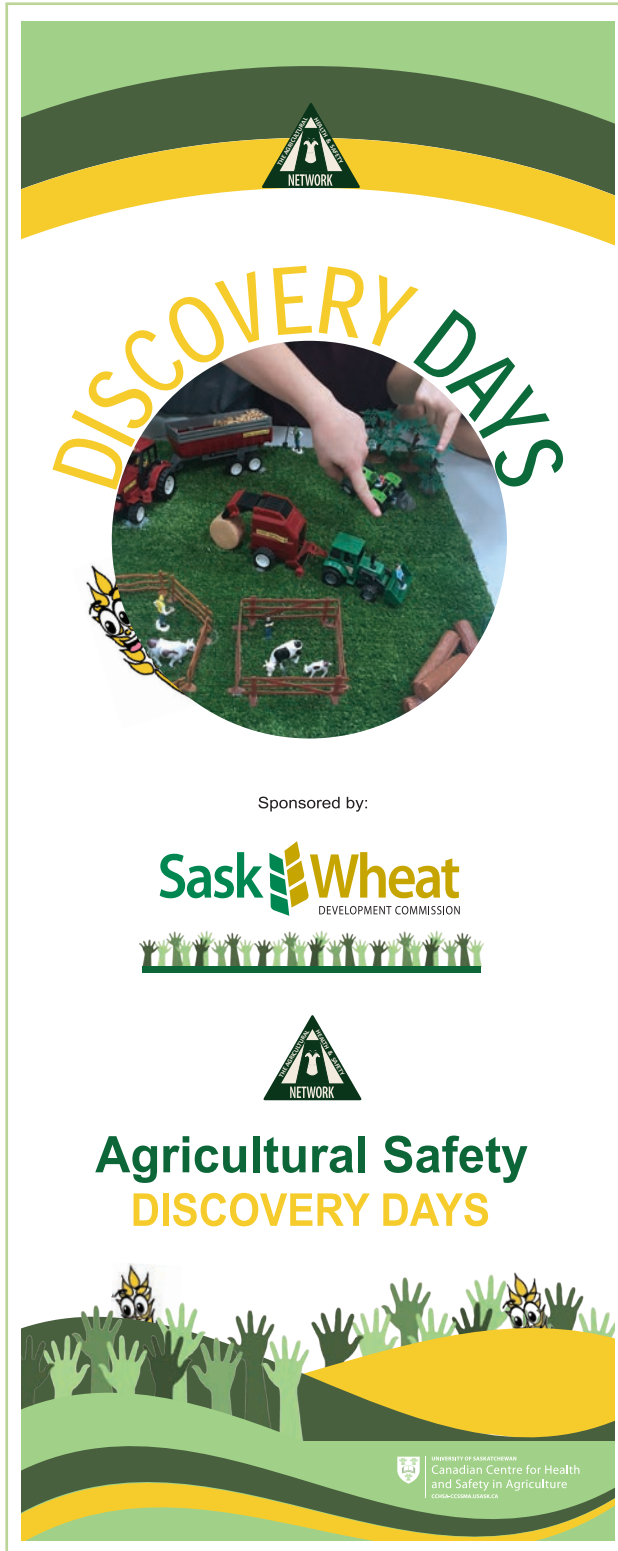
Bacsu J. Trainee Poster Award, Canadian Consortium on Neurodegeneration on Aging Conference: 2021 Partners Forum and Science Days. Zoom: October 13, 2021.

Bacsu J. Volunteer Appreciation Week, Gerontological Society of America's (GSA) Connect Open Forum Digest Post from GSA President Lichtenberg and GSA Twitter post, April 21, 2022. <https://twitter.com/geronsociety/status/1517181623741075460>

Bayly M. Trainee Poster Award, Canadian Consortium on Neurodegeneration on Aging Conference: 2021 Partners Forum and Science Days. Zoom: October 13, 2021.

*Annual Report compiled, designed & edited
by Sueli B. de Freitas
June, 2022*

BOOK A DISCOVERY DAY TODAY



The poster features a central circular image of a child's hands playing with toy farm vehicles on a green mat. Above the circle, the words "DISCOVERY DAYS" are written in a large, yellow, curved font. Below the circle, the text "Sponsored by:" is followed by the "SaskWheat DEVELOPMENT COMMISSION" logo, which includes a stylized wheat stalk icon. Below this is a row of green hand icons. The "Agricultural Safety NETWORK" logo is centered below the hands. The main title "Agricultural Safety DISCOVERY DAYS" is prominently displayed in green and yellow. At the bottom, there are stylized green hills with two cartoon bee characters peeking over them. The footer contains the University of Saskatchewan logo and the text "Canadian Centre for Health and Safety in Agriculture" with the website "1-800-668-6868" and "www.usask.ca".

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