

Forward facing Animal Welfare Research drives innovation



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The NSERC Industrial Research Chair in Swine Welfare is a five year research program focusing on emerging questions in swine welfare. Led by Dr. Yolande Seddon and developed in collaboration with 14 industry partners representing Canadian producers, processors and swine genetics, the Chair program will deliver knowledge and increased resources in swine welfare to position the industry to respond to a evolving farming practices: increasing production efficiency while meeting social responsibility.

Based at the University of Saskatchewan, the research partnership, one of the largest of its kind, is a collaboration between the 14 industry partners, the Natural Sciences and Engineering Research Council (NSERC), the University of

(Forward facing Animal Welfare research ... cont'd on page 2)

Inside This Edition

Enhancing biosecurity and welfare of pigs during transport.....	4
Does creep feed have any benefit?	6

Feed processing to reduce ergot toxicity.....	8
Reducing pre-weaning mortality.....	10

Personal profile	12
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Playful pigs: A piglet launches into a playful run, photo: Christina Weese.

(Forward facing Animal Welfare research ... cont'd from page 1)
Saskatchewan, the Prairie Swine Centre and national and international research groups. The research is being conducted at the Prairie Swine Centre and in industry partner facilities – bringing together the science and commercial application. The Chair program has four overarching research goals, each focusing on an area critical to advancing our understanding of swine welfare. In this article, part one of a five part series on the NSERC IRC program, the overarching goals of the program are introduced.

Goal 1: Early life management of piglets on lifetime welfare and performance

Early life (birth to four weeks of age) is a critical phase for the piglet during which rapid physiological development occurs. What the piglet experiences during this phase has long-term implications for their future welfare and performance, influencing behavioural development, stress responsiveness, health and future reproductive success.

Goal 1 breaks down the separate and interactive effects of early life management strategies to influence the development of the pig, to understand the consequences for animal welfare and productivity. Sociability, resilience to stresses, gut health and tail biting will be explored in pigs reared birth – slaughter with different early life management. This research will identify practices conducive to promoting high pig welfare, support the development of greater stress resilience in pigs, and deliver knowledge on relationships that lead to the development of tail biting.

Goal 2: Play behaviour and its role to enhance pig welfare and production

Play behaviour, characterized by spontaneous and excitable movements, is a natural behaviour and integral to the

development of species specific behaviour, emotional regulation and social skills. Goal 2 will identify the role of play to enhance pig welfare and promote beneficial production characteristics, in particular by determining whether opportunities to play can induce positive emotions and influence the pigs' immune response, sociability skills and ability to respond effectively to stress.

Goal 3: Biomarkers of pig welfare: Measuring and monitoring – to understand and improve

Animal welfare can be a divisive issue fueled by emotion and subjective opinion. Tools for the objective measurement of animal welfare are important for improving our understanding of pigs and how management practices influence their needs, providing information for constructive debate between stakeholder groups when developing animal care requirements. Goal 3 will identify and validate biological markers, objective and quantifiable characteristics of biological processes, for their ability to provide information on the welfare of the pig. Under investigation includes methods to evaluate welfare over a longer period of time (chronic measures) and real-time monitoring of welfare on farm. Deliverables will provide tools for industry and research use.

Goal 4: Pig welfare assessment at meat inspection: Can carcasses assessment inform about animal welfare at different stages of the value chain?

Animal-based indicators of welfare look at measurements on the animal and are a favoured method for welfare evaluation because they can inform on the wellbeing of groups and individuals, regardless of the production system (Whay et al. 2003). Goal 4 is examining whether measuring animal-based indicators of welfare measured on the carcasses of swine at meat inspection can provide accurate and reliable information about the swine welfare at different stages of the value chain:

on farm, handling and transport, lairage and stunning. Exploring the links between welfare indicators, meat quality and animal management, the value of a carcass assessment system to provide feedback to producers and different parts of the value chain will be understood. Success in this area could provide the basis for the development of a standardized, continuous animal welfare monitoring system: providing oversight for the large number of pigs sent to Canadian abattoirs. Application includes a tool for tracking production progress and complementing on-farm assurance scheme animal care measures.

Adapting for research to continue in the Covid-19 pandemic, the use of camera systems to perform welfare assessments on farm and at slaughter is being explored – paving the way for understanding the capabilities of new tools for remote and automated animal welfare assessment and animal care tools. To conclude: the NSERC IRC in Swine Welfare will advance understanding on critical topics in swine welfare, and provide practical information on management strategies to improve pig welfare and to effectively monitor the welfare of swine from multiple farming operations. The research output will provide strategies for the swine industry to also meet broader goals including reducing antibiotic use, improving pig health and meat quality.



The creation of the NSERC IRC in Swine Welfare research program represents a commitment by the Canadian swine industry to advance the care of farmed swine. The application of the knowledge output will position the Canadian swine industry as a leader in progressive, welfare-based management practices that also improve product quality.

Stay tuned... Over the next four issues, each of the four research goals will be separately explored covering; the scientific questions, the deliverables for pig welfare, production and product value and, introducing the collaborating teams working on each goal.

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Reference

Whay, H.R., Main, D.C.J., Green, L.E. and Webster, A.J.F (2003) Animal-based measures for the assessment of welfare state of dairy cattle, pigs and laying hens: Consensus of expert opinion. *Animal Welfare*, 12: 205-217.

Dr. Seddon is an Assistant Professor at the University of Saskatchewan, Western College of Veterinary Medicine and the NSERC IRC in Swine Welfare. With specialized training in animal behaviour and scientific assessment of animal welfare, her research career has focused on addressing welfare challenges in farmed swine. Her previous research has involved management of sows in group housing, pain control, early disease detection, and high welfare farrowing systems.

Dr Giuliana Miguel-Pacheco is a veterinarian with an MSc in Applied Animal Behaviour and Welfare from the University of Edinburgh, UK, and a PhD in Dairy Cattle Behaviour and Welfare from the University of Nottingham, UK. She is currently working with Dr Yolande Seddon's team at the University of Saskatchewan in the development of methods for pig welfare assessment on-farm and at the abattoir. She has experience as a researcher in the areas of animal welfare assessments and applied animal behaviour for precision livestock farming. She has been an independent farm animal welfare consultant for international food companies and animal welfare NGOs.

