ANIMAL WELFARE
SCIENCE CENTRE

THE ANIMAL WELFARE SCIENCE CENTRE VICTORIAN NODE ANNUAL REPORT 2016-2017

Contents

Background

The Centre has four partners –

- Department of Economic Development, Jobs, Transport and Resources, Victoria. (DEDJTR), Agriculture Victoria Research Division.
- The University of Melbourne, (UOM), Faculty of Veterinary and Agricultural Sciences.
- The South Australian Research and Development Institute, (SARDI), Livestock & Farming Systems.
- The University of Adelaide, (UOA), School of Animal and Veterinary Sciences.

Across partner organisations, the AWSC has capability across a wide range of research disciplines:

Animal Science, Applied Ethology, Biometrics, Immunology, Neurophysiology, Neuroendocrinology, Psychology, Sociology, Stress Physiology and Veterinary Science.

Research is conducted across a range of animal sectors including pork, dairy, eggs, meat chicken, beef, sheep meat, wool, companion animals and zoo animals.

Scientists also provide technical and advisory functions on Government, industry and scientific committees including the National Primary Industries Animal Welfare R,D&E Strategy and the OIE Collaborating Centre for Animal Welfare Science and Bioethical Analysis Management Committee.

The AWSC has built upon its key discipline in studying human/animal interactions, animal housing and husbandry and the effects of community attitudes and behaviour upon animal welfare.

Operating Environment

Animal welfare awareness continues to increase in society, strongly influencing views on animal use and the acceptability of various animal management practices. Stakeholders in the animal welfare domain include the public, generally as consumers, owners or concerned observers, special interest groups, businesses based on the commercial supply of animals and animal products and those developing, implementing or auditing compliance with relevant policy at government or community level. Thus consumer and public attitudes to animal welfare have the potential to dramatically affect the use of animals in society, influencing the operations of livestock industries, medical research, the management of feral and wild animals and the care of recreational and companion animals.

While consumer and public attitudes to animal welfare ultimately determine society's use and care of domestic animals, science has a critical role in underpinning society's decisions on animal use and the attendant conditions and compromises. Lack of awareness of factual information means that many people are unaware of the conditions under which domestic animals live, how they are treated and their species-specific requirements.

Thus there are basically four key areas of activity necessary to rationally address animal welfare:

- animal welfare science
- understanding public and consumer attitudes to animal welfare
- public education and
- industry education

It is expected that certain animal production and management practices will be highlighted from time to time by community groups and that their viewpoints will be promoted to the community. It is important that the community is well informed, including the scientific perspective.

While research can be utilised to underpin the establishment, amendment or validation of industry welfare standards and practices, it is critical to deliver industry education, through staff selection

and training strategies, and modify legislation, codes of practice and/or welfare QA programs to achieve these welfare standards.

The Centre is represented on the National Primary Industries Animal Welfare Research Development and Extension Strategy which brings together the core providers of farm animal welfare research with the major funding organisations to deliver targeted cross-sectoral research, development and extension within Australia's livestock industry sector.

The Centre, CSIRO and the University of Queensland (Centre for Animal Welfare and Ethics) are the Australian partners in the OIE Collaborating Centre for Animal Welfare which was formed in 2009 with the Animal Welfare Science and Bioethics Centre of Massey University, the Animal Behaviour and Welfare Research Centre of AgResearch and the Ministry for Primary Industries in New Zealand. The OIE Centre (now re-named as the Centre for Animal Welfare Science and Bioethical Analysis; the David Bayvel Consortium) supports the OIE region for Asia, the Far East and Oceania by, for example, building regional capacity through "twinning" programs and developing an animal welfare training course.

The Centre's activities are guided by our vision and mission:

Our Vision

"Animal welfare and its constant improvement are societal and cultural norms"

Our Mission

"To contribute to improved animal welfare as a world leading provider of expert information, advice and education underpinned by rigorous research"

Animal Welfare Science Centre activities

The Centre conducts research in three program areas:

1. **Welfare methodology or the development and validation of methods to assess animal welfare.**
2. **Housing and husbandry effects on animal welfare.**
3. **Attitudinal effects:**
    a. The effects of the attitudes of stockpeople, animal handlers and animal owners on the welfare of their animals.
    b. The effects of attitudes to animal welfare on consumer and community behaviour.

These programs support the fourth program area:

4. **Tertiary, post-graduate and industry education and training.**

Through these programs, the Centre aims to:

- Develop scientifically defensible welfare methodology.
- Use scientifically defensible methodology to establish, amend or validate animal welfare standards and practices.
- Develop and support industry education and training strategies and provide scientific advice to support the development or revision of animal welfare standards and guidelines and codes of practice, and the development of quality assurance programs to introduce scientifically defensible welfare standards in the animal industries.
- Understand public and consumer attitudes to animal welfare to assist Governments and industry in:
    - developing animal welfare policy
    - assuring local and international consumers, public and other governments of the welfare standards for Australian domestic animals.

- Ensure tertiary students entering the animal industries are better prepared to provide sound, science-based advice on animal welfare practices to industry, interest groups and the public.
- Provide high quality postgraduate and postdoctoral training for the next generation of researchers and teachers in animal welfare science.

Centre personnel

Staff of the Centre (VIC Node)

The Centre's research and teaching capacity is considerable with scientific expertise and experience in the key disciplines of animal behaviour, psychology, stress physiology and veterinary medicine.

Principal investigators

Prof. Paul Hemsworth (Faculty of Veterinary and Agricultural Sciences, The University of Melbourne) –Director of the Centre: A research career studying the behaviour and welfare of farm and companion animals, particularly examining the influence of the social and physical environment on farm animal behaviour and welfare and the influence of human-animal interactions on animal welfare and productivity.

Prof. Grahame Coleman (Faculty of Veterinary and Agricultural Sciences, The University of Melbourne) – Grahame has followed a research career in aspects of human and animal behaviour associated with biological rhythmicity and sleep and changes in stress-related and reproductive hormones. Current research interests focus primarily on human-animal interactions in farm and companion animals and public attitudes to animal welfare.

Dr. Rebecca Doyle (Faculty of Veterinary & Agricultural Sciences, The University of Melbourne) – Rebecca's research projects have included animal cognition and cognitive bias; correlating stress physiology with behavioural and cognitive welfare measures; and how to make practical animal welfare improvements locally and in developing countries. Her position with Centre focuses on welfare improvements in the sheep and beef industries.

Prof. Andrew Fisher (Faculty of Veterinary & Agricultural Sciences, The University of Melbourne) – Chair of Cattle and Sheep Production Medicine. Andrew has significant experience in the area of animal welfare, with a particular focus on production animal management and transport. Research interests include welfare aspects of dairy cow and calf management

Dr. Ellen Jongman (Faculty of Veterinary & Agricultural Sciences, The University of Melbourne) - Research interests include the effect of housing, husbandry procedures and management on the welfare of sheep and dairy cows.

Dr. Jean-Loup Rault (Faculty of Veterinary & Agricultural Sciences, The University of Melbourne) – Jean-Loup has worked with an array of species but focuses his research on pigs and poultry, specifically social behaviour and oxytocin, free-range systems in poultry, and euthanasia and slaughter.

Post-doctoral research fellows

Dr. Lauren Edwards (Faculty of Veterinary & Agricultural Sciences, The University of Melbourne) – Research interests include the behaviour and welfare of farmed species (particularly poultry), exploring novel methods of assessing animal welfare, the human-animal relationship in farmed species, cognitive bias and its impact on animal behaviour, and assessing affective experiences in animals.

Dr. Lauren Hemsworth (Faculty of Veterinary & Agricultural Sciences, The University of Melbourne) - Research interests include the human-animal relationship and its influence on animal welfare and productivity, field welfare assessment in farm and companion animals and developing education programs for recreational horse owners.

Dr. Tiffani Howell (Faculty of Veterinary & Agricultural Sciences, The University of Melbourne) – Tiffani currently works closely with Grahame Coleman in delivering the Centre's program on attitudinal research.

Supporting scientists

Dr. Ian Bland (Faculty of Veterinary and Agricultural Sciences, The University of Melbourne) – Lecturer in Animal Science and Management. Ian is interested in the behaviour and welfare of neonatal/weaned pigs and zoo animals.

Mr. Kym Butler (Agriculture Research, DEDJTR, Hamilton and Faculty of Veterinary and Agricultural Sciences, The University of Melbourne) – Kym works within the Biometrics Unit, Agriculture Research and applies biometric analysis to the Centre's research projects.

Dr. Peter Cakebread (Faculty of Veterinary and Agricultural Sciences, The University of Melbourne) – Senior Lecturer in Animal Science and Management. Peter's research interests include welfare implications of common dental procedures in horses, behavioural and welfare.

Dr. Angus Campbell (Faculty of Veterinary and Agricultural Sciences, The University of Melbourne) – Senior Veterinary Consultant and Lecturer in Ruminant Medicine & Production. Involved in research into herd and flock health on sheep, goat and cattle farms in south-eastern Australia, and consults internationally on agricultural development.

Associate Scientists

Dr. Steve Moeller (Department of Animal Sciences, The Ohio State University) – Research interests include human-animal interactions in swine, the effects of housing systems on the welfare of swine and the effects of genetics on pork quality.

Dr Monique Pairis Garcia (Department of Animal Sciences, The Ohio State University) – Research interests include lameness, pain relief and animal welfare assurance programs.

Dr. Greg Cronin (Faculty of Veterinary Science, The University of Sydney) - A research career studying the behaviour and productivity of pigs and in particular the effects of the environment on maternal behaviour and the role of maternal behaviour in piglet survival and growth. Interested also in alternative housing systems for sows during gestation and farrowing/ lactation and housing systems for poultry.

Dr. Keven Kerswell (Honorary Research Fellow, Faculty of Veterinary & Agricultural Sciences, The University of Melbourne) – Research interests include the characteristics of companion animal owners and communication in the dog.

Dr. Rebecca Morrison (Rivalea Australia, Corowa, NSW) - Rebecca is a Research Scientist at Australia's largest pork production enterprise. She conducted her PhD (Behaviour and welfare of pigs in deep-bedded, group housing systems) with Prof. Paul Hemsworth and Dr. Greg Cronin at the University of Melbourne. Rebecca has worked at the University of Minnesota as the Sustainable Swine Production Systems Scientist, working and researching a range of non-crated farrowing systems.

Administration and technical staff

Andrew Carlyon, Research Assistant, The University of Melbourne

Samantha Borg, Technical Officer, The University of Melbourne

Maxine Rice, Research Assistant, The University of Melbourne

Jeremy Skuse, Executive Officer, Program Leader - Industry Education & Training, The University of Melbourne

Tracie Storey, Technical Officer, The University of Melbourne

Postgraduate students

Leigh Atkinson (MSc student) -Trialling pharmacological models of positive affect in sheep.

David Beggs (PhD candidate) - Ensuring dairy cow welfare with increasing scale of production

Samantha Chiew (PhD candidate) - The effects of zoo visitor-zoo animal interactions at display enclosures on both the animal and the visitor

Sarah Cook (MSc student) - Conditioned feeding to increase feed intake in a mature gilt model

Natalia Espejo (MSc student) - The feeding behaviour of sows and its relationship to the welfare and reproduction of primiparous gestating sows

Kristy Ficken (MPhil student) - The effect of keeper interactions on elephants at Melbourne Zoo

Ruby Fones (MSc student) - Relationship between dog behaviour and lamb fear behaviour pre-slaughter

Belinda Hall (MSc student) - Evaluating fear and curiosity as predictors of HAI interaction outcomes in zoo animals of various species

Megan Hayes (PhD candidate) - Human enrichment in pigs

Sally Haynes (PhD candidate) - The relationship between the attitudes and behaviours of human handlers and the behaviour and welfare of shelter dogs

Samantha Healey (MSc student) - Development of a welfare assessment tool for guardian dogs

Yan Jinyu (MSc student) - Characterisation of sham-chewing behaviour and the development a valid measurement of sham-chewing in group housed sows.

Maria Jorquera (PhD candidate) - Novel measures of remote monitoring applicable to welfare assessment

Rebecca Kite (MSc student) - Development of a practical animal welfare assessment tool for seals at Melbourne Zoo

Sarah Kuyken (PhD candidate) - Development and trial of a horse welfare assessment tool

Hannah Larsen (PhD candidate) - Free-range hen welfare: Characterisation of ‘outdoor’ and ‘indoor’ hens and physical features in the range

Kirsty Lawrence (MSc student) - Effects of preweaning housing on piglet play behaviour

Mark Learmonth (PhD candidate) - Human interaction as enrichment for zoo-housed animals: Opportunity for positive affective experiences?

Carolina Munoz (PhD candidate) - Assessing and addressing on-farm sheep welfare

Monoar Sayeed Pallab (PhD candidate) - The assessment and management of calf health and welfare in dairy systems

Lydia Rehnberg (PhD candidate) - Working within the ARC Linkage Project, Human-animal relationships in zoos: Optimising animal and visitor experiences

Maxine Rice (MPhil student) - The relationship between social behaviour, feeding behaviour and stress in lambs in intensive finishing systems

Declan Sega (MSc student) - A Novel Method of Analysing Oxytocin through PCR

Desiree Smith (MSc student) - The influence of food enrichment on the behaviour of three captive kangaroo species.

Bronwyn Stevens (PhD student) - Does restricting an animal's access to a highly preferred resource result in altered biological function?

Peta Taylor (PhD student) - The characteristics of free-range systems on the welfare of the broiler chicken.

Eleanor Tiernan (MSc student) - Effects of summer evening concerts on zoo animals

Rebecca Woodhouse (MPhil student) - CO2 stunning of pigs

Board of Management

Dr. Joe Jacobs	**Interim Chair.** (April 2017 – June 2017). Acting research Director – Animal Production Sciences. Principal Scientist – Dairy. Agriculture Victoria Research, Department of Economic Development, Jobs, Transport and Resources
Dr. Greg Harper	**Interim Chair.** (July 2016 – April 2017). Executive Director, Agriculture Research and Development, Agriculture and Rural Division, Department of Economic Development, Jobs, Transport and Resources
Prof. Gavin Begg	Research Chief, South Australian Research and Development Institute, Aquatic Sciences.
Prof. John Fazakerley	Dean, Faculty of Veterinary and Agricultural Sciences, The University of Melbourne.
Prof. Wayne Hein	Head of School, Dean of Roseworthy, School of Animal and Veterinary Sciences, The University of Adelaide. (University of Adelaide representative Jan-July 2017).
Prof. Phil Hynd	Deputy Head, School of Animal and Veterinary Sciences, The University of Adelaide. (University of Adelaide representative July-Dec 2016).
Ms. Lucinda Corrigan	Independent Director (appointed May 2017).
Mr. Rob Cumine	Independent Director (appointed May 2017).
Professor Paul Hemsworth	Director AWSC, The University of Melbourne (Ex-officio).

AWSC Representation on committees in a technical/advisory capacity

AECL Hen Welfare Advisory Group	Paul Hemsworth
APL Specialist Group 2 (Genetics, reproduction and welfare)	Paul Hemsworth
Animal Welfare Advisory Committee	Paul Hemsworth
Australian Sheep Welfare Standards Writing Group	Andrew Fisher
Council for Sustainable Egg Farming	Paul Hemsworth Jean-Loup Rault
DEDJTR Beef and Sheep Industry Leadership Group	Paul Hemsworth
DEDJTR Livestock Industry Consultative Committee	Andrew Fisher
DEDJTR Agriculture Research and Extension Animal Ethics Committee	Andrew Fisher
Dairy Moving Forward Animal Husbandry Steering Group	Paul Hemsworth Andrew Fisher
Greyhound Racing Victoria Welfare Committee	Grahame Coleman
Hassad-Australia Animal Welfare Committee	Paul Hemsworth
International Society of Applied Ethology	Jean-Loup Rault (sec)
International Society of Applied Ethology, Australasia-Africa	Rebecca Doyle (sec – retired Oct 2016)
RSPCA Victoria Animal Welfare Policy Committee	Ellen Jongman
National Primary Industries Animal Welfare Strategy Steering Committee	Paul Hemsworth
OIE *ad hoc* Group on Animal Welfare and Pig Production Systems	Paul Hemsworth
OIE Collaborating Centre for Animal Welfare Science and Bioethical Analysis Management Committee	Paul Hemsworth
Zoos Victoria Animal Welfare Peer Review Committee	Paul Hemsworth

Summary of major Centre RD&E projects and 2016/17 project funding if applicable

2016/17 External and internal cash funding - $ 1,285,931

1. Dairy industry

1.1. Differences between heat tolerant and heat susceptible cows in standing, walking and lying time defined

Investigators:	E. Jongman, P. Hemsworth, A. Fisher
Funding:	Department of Economic Development, Jobs, Transport and Resources
	2016/17 - $ 183,000
Commencement date:	2015
Completion date:	2017

This project aligns with a larger DEDJTR project (Nutritional and genetic strategies to mitigate the influence of heat events on milk production) to provide new insights into feeding strategies and management options for cows during periods of heat stress that will inform further research and development activities to improve on-farm management.

1.2. Milking order and animal welfare in large herds

Investigators:	E. Jongman, P. Hemsworth, A. Fisher
Student:	D. Beggs (PhD)
Funding:	Department of Economic Development, Jobs, Transport and Resources
	2016/17 - $ 140,000
Commencement date:	2016
Completion date:	2017

This 1-year project will determine the effects of management practices, herd size and relative place in the milking order on animal welfare outcomes in order to enable dairy farmers to be informed on best management practices of large herds.

2. Pork industry

2.1. Sham-chewing and sow welfare and productivity

Investigators:	L. Hemsworth, P. Hemsworth, J-L Rault
Funding:	CRC for High Integrity Australian Pork
	2016/17 - $ 25,704
Commencement date:	2016
Completion date:	2017

The project will determine the relationships between sham-chewing, a commonly observed stereotypy in pigs, and the welfare and productivity of group-housed gestating sows. Clarifying whether this stereotypy is a sow welfare and/or productivity problem or not, is a necessary first step if we are to assess means to alleviate the problem through

interventions such as altering feed levels, housing system, providing environmental enrichment, or other means.

2.2. Development of commercially-viable enrichment programs for group-housed sows

Investigators: E. Jongman, R. Morrison, P. Hemsworth, R. Parkes

Funding: CRC for High Integrity Australian Pork

2016/17 - $ 60,083

Commencement date: 2016

Completion date: 2017

The aim of this project is to determine the effects of environmental enrichment in the form of i) straw, (ii) a 'Ridley block', (iii) Lucerne hay, (iv) a wooden block and (v) 1 kg of corn silage in comparison to (vi) a control treatment of no environmental enrichment on sow aggression, injuries, foraging behaviour and reproductive performance. The commercial-viability of each enrichment sources will be assessed including cost, practicality and effluent management.

2.3. Brain-derived neurotrophic factor as an indicator of environmental enrichment effectiveness

Investigators: J-L Rault, C. Ralph, A. Lawrence

Funding: CRC for High Integrity Australian Pork

2016/17 - $ 12,980

Commencement date: 2017

Completion date: 2017

This study will investigate whether BDNF concentration differ between piglets housed in different systems during lactation (enriched vs. barren) and/or after weaning (enriched vs. barren).

2.4. The feeding behaviour of sows and its relationship to sow welfare and reproduction

Investigators: M. Verdon, R. Morrison, P. Hemsworth

Funding: CRC for High Integrity Australian Pork

2016/17 - $ 14,280

Commencement date: 2016

Completion date: 2016

This project will determine the relationships between sow feeding behaviour, welfare and productivity when sows are fed over multiple feed drops per day.

2.5. Welfare implications of group lactation at various ages

Investigators: J-L. Rault, R. Morrison, M. Verdon

Funding: CRC for High Integrity Australian Pork

2016/17 - $ 33,434

Commencement date: 2015

Completion date: 2016

This project will examine the implications of grouping sows during lactation on sow and piglet welfare and productivity, and comparing grouping at 7 and 14 days after farrowing in a commercial setting. A two-stage lactation systems may bring immediate benefits in terms of sow welfare, and possibly long-term benefits for the development of pigs' social skills in later life.

2.6. Carbon dioxide stunning of pigs

Investigators:	J-L. Rault, E.C. Jongman
Student:	R. Woodhouse (MPhil)
Funding:	Australian Pork Limited
	2016/17 - $ 50,840
Commencement date:	March 2015
Completion date:	December 2016

This 2-year project will conduct a systematic, critical literature review on gas stunning methods for pigs, assess the effects of various factors on the reaction of pigs to CO2 stunning and identify practical indicators and develop minimum operating standards on CO2 stunning systems.

2.7. Developing ways to measure and increase sow contentment

Investigators:	R. Doyle, K. Plush, R. Morrison, C. Ralph, G. Cronin, C. Lee, S. Hazel
Funding:	CRC for High Integrity Australian Pork
	2016/17 - $ 42,588
Commencement date:	February 2015
Completion date:	March 2018

This project will assess the contentment of sows during lactation by using scientific indicators of positive welfare and then developing practical measures for use on farm. This study will also assess the effect enrichment has on the welfare of lactating sows, with the hypothesis being that enrichment will increase the level of contentment a sow experiences during lactation.

2.8. Conditioned feeding to increase feed intake in the mature gilt model

Investigators:	L.M. Hemsworth
Student:	S. Crook (MSc)
Funding:	Commonwealth
	2016/17 - $ 2,000
Commencement date:	2016
Completion date:	2017

2016 Science and Innovation Awards (APL sponsored): This project aims to provide proof of concept in the use of conditioning to facilitating meal initiation and increasing feed intake in mature gilts as a model for lactating sows. The project will be conducted over 3 replicates.

2.9. Increased light intensity and mat temperature attract piglets to creep areas in farrowing pens

Investigators: J-L Rault, G. Cronin, J. Marchand-Forde, R. Morrison, G. Morello

Funding: CRC for High Integrity Australian Pork

2016/17 - $ 26,825

Commencement date: 2016

Completion date: 2016

Pen farrowing systems have been considered as alternatives to crates to enhance sow welfare. A major concern with pen systems is the higher piglet pre-wean mortality due to crushing by the sow. This project tested the hypothesis that an optimized management of light and mat surface temperature can promote greater piglet use of the creep, which has been associated with reduced piglet crushing.

2.10. ProHand® Pigs technical support

Investigators: J. Skuse and G. Coleman

Funding: Australian Pork Limited

Commencement date: 2012

Completion date: 2017

This project provides technical support to ProHand® Pigs and Abattoir training.

3. Other Ruminant industries

3.1. Assessing and Addressing On-Farm Sheep Welfare

Investigators: R. Doyle, P. Hemsworth, G. Coleman, J. Webb-Ware, A. Fisher, L. Kubeil

Student: C. Munoz (PhD)

Funding: Meat and Livestock Australia

2016/17 - $ 121,875

Commencement date: 2014

Completion date: 2017

The welfare and survival of sheep are vital to both farming profits and community acceptance of products. This project will examine the relationships between farmer attitudes, other job-related characteristics, farm management, profits and animal welfare. This project will also assess the efficacy of an intervention method on improving management and welfare on farm in an effort to encourage practice change, reduce mortalities and improve farm production and profitability.

3.2. Relationships between fear of humans, temperament and handling pre-slaughter and lamb welfare and meat quality

Investigators: P. Hemsworth, G. Coleman, E. Ponnampalam

Student: C. Muñoz

Funding: Australian Meat Processor Corporation

2016/17 - $ 32,631

Commencement date: 2013

Completion date: 2016

The objectives of this project are to determine the relationships between

- key animal characteristics and handling pre-slaughter on lamb welfare (on the basis of stress and behaviour) and meat quality.
- behavioural measures pre-slaughter and stress pre-slaughter and consequently poor welfare and meat quality.

3.3. Beat the heat – reducing impacts of hotter summers to grazing sheep

Investigators: E. Jongman, R. Doyle, A. Fisher

Funding: Department of Economic Development, Jobs, Transport and Resources

2016/17 - $ 212,454

Commencement date: 2016

Completion date: 2017

This 1-year project will determine the effect of providing shade to growing lambs in hot periods in northern Victoria on animal behaviour, physical and physiological responses to heat and metabolism and examine the relationship between temperament, use of shade and water, physical and physiological response to heat, metabolism and growth on individual sheep.

3.4. Developing the basis for an attitude-behaviour training program for stockpeople in the sheep transport and abattoir sectors

Investigators: P. Hemsworth, G. Coleman, J. Skuse

Funding: Meat and Livestock Australia

2016/17 - $ 19,119

Commencement date: 2017

Completion date: 2018

The objective of the project is to collaborate with key sheep-meat stakeholders to review the general content of a cognitive-behavioural training program for sheep abattoir stockpeople, decide on the platform for the program and its delivery method(s) and identify potential funders and sheep-meat industry collaborators.

3.5. Field euthanasia of livestock

Investigators: K. Stanger, T. Jubb, C. Johnson, A. Fisher

Funding: Meat and Livestock Australia

2016/17 - $ 39,900

Commencement date: 2017

Completion date: 2018

The objective of the project is to identify a more suitable agent for the euthanasia of livestock for transmissible spongiform encephalopathies (TSE) surveillance in Australia; compare the efficacy and animal welfare responses of sheep euthanased with either an injectable barbiturate (gold standard) and saturated salt solution (KCl and MgSO4) and

generate objective, scientific data to support the use of the most appropriate method of euthanasia that facilitates the collection of intact brain samples for TSE surveillance.

3.6. Ensuring dairy cow welfare with increasing scale of production

Investigators: A. Fisher, D. Beggs, E. Jongman, P. Hemsworth

Funding: Dairy Australia

2016/17 - $ 27,709

Commencement date: 2013

Completion date: 2017

The purposes of the project included the collection and evaluation of objective, science-backed information on the welfare state of cows in large dairy herds in Australia in order to understand the particular challenges that are associated with increasing herd size. This will provide industry with the option to demonstrate its welfare performance, while at the same time providing guidance on suitable management strategies used by farmers of large herds to optimise cow husbandry and welfare into the future.

4. Companion, zoo, work animals

4.1. Human-animal relationships in zoos: Optimising animal and visitor experiences

Investigators: G. Coleman, P. Hemsworth, R. Rassool, K. Fanson, K. Butler, M. Magrath, V. Melfi, D. Peake, W. Shaw

Students: S. Chiew (PhD), L. Rehnsberg (PhD)

Funding: ARC Linkage

2016/17 - $ 57,644

Commencement date: 2014

Completion date: 2017

Extensive research on human-animal relationships in agricultural and domestic settings shows that human-animal interaction affects animal behaviour and welfare, which in turn affect human attitudes to animals. As conservation and welfare organisations, zoos aim to provide visitors with opportunities to closely interact with animals to improve visitor experience and conservation outcomes, whilst maintaining good animal welfare. Some visitor interactions may be stressful for some animals creating conflict between animal welfare and visitor experience. By determining visitor effects, this project aims to provide zoos with practical animal management and educational strategies to optimise both animal welfare and visitor experience.

4.2. Development of husbandry and management educational material for Victorian recreational horse owners

Investigators: E. Jongman, and L. Hemsworth

Student: S. Kuyken

Funding: ANZ Trustees, Kathleen Agnes Back Trust

Commencement date: 2013

Completion date: 2016

This project is developing an independent website, to be managed and maintained by the Victorian Horse Council (VHC), which will provide recreational horse owners with the resources required to appropriately manage their horses, in order to improve the welfare of recreational horses, and reduce the incidence of horse welfare investigations in Victoria. The website will include an interactive tool, based on a horse welfare assessment protocol which will consist of a range of welfare indices, including body condition score, lameness score, hoof score, injury score and dental score, which recreational horse owners will use to measure the health and welfare outcomes of their horses. The results of the assessment, inputted back into the program, will then direct horse owners to the areas of the website with information relevant to their outcomes.

5. General/Other

5.1. Animal Welfare Science Centre (VIC Node)

Investigators: P. Hemsworth, J. Skuse

Funding: Department of Economic Development, Jobs, Transport and Resources and The University of Melbourne

2016/17 - $182,665

Commencement date: 2015

Completion date: 2020

This project supports the operation of the Victorian node of the AWSC to deliver services to the AWSC board in its governance activities, effectively communicate the work of the AWSC in providing independent, authoritative scientific knowledge and advice to government, industry and the community and maintain a reliable, independent and accessible knowledge resource. The project also supports the AWSC's program of Industry Education & Training.

Significant collaboration

A novel two-step gas system to allow for humane on-farm euthanasia of piglets

Investigators: D. Lay, **J-L Rault**, R. Gates

Funding: National Pork Board (US)

Commencement date: 2015

Completion date: 2018

This project forms part of a large USDA/ NIFA project. Part 1, aims to measure a piglet's aversion to a gas chamber following a previous exposure to a gas treatment in the chamber and part 2 aims to validate telemetric EEG recording in freely moving pigs in order to assess the welfare implications of inhaling nitrous oxide.

Can oxytocin nasal spray improve gilt behaviour during the peri-partum period and increase the weaning weight of piglets?

Investigators: C. Ralph, **J-L Rault**, K. Plush

Funding: CRC for High Integrity Australian Pork

Commencement date: 2016

Completion date: 2018

Stress during farrowing causes the production of opioids, which inhibit oxytocin release. This study will assess the effectiveness of nasal administration of oxytocin on improving maternal behaviour.

Intra-specific behavioural contagion of the human-animal relationship in pigs

Investigators: C. Tallet, M.C. Meunier-Salaun, **J-L Rault**

Funding: INRA

Commencement date: 2016

Completion date: 2016

Collaborative research project with INRA (St Gilles, France; pork behaviour and physiology team), Jean-Loup co-supervision of a Master student: Oceane Leribillard (University of Rennes 1, France), in collaboration with Celine Tallet and Marie-Christine Meunier-Salaun on the topic: “Intra-specific behavioural contagion of the human-animal relationship in pigs”.

Effect of perch height on meat chicken behaviour

Investigators: R. Poletto, **J-L Rault**

Funding: Instituto Federal do Rio Grande do Sul, Brazil

Commencement date: 2016

Completion date: 2017

This project will examine the effect of perch height on the perching behavior of meat chickens. The experiments will be carried out in facilities of the Câmpus Sertão, Instituto Federal do Rio Grande do Sul, Brazil.

Development of an interactive training app for timely and humane on-farm euthanasia in pre-weaned piglets

Investigators: M. Pairis-Garcia, **J.-L. Rault, G. Coleman**, A. Johnson, S. Millman, R. Anthony, K. George

Funding: National Pork Board

Commencement date: 2015

Completion date: 2017

This project will develop an app to assist stockpeople in the pork industry make the appropriate decisions with regard to the euthanasia of piglets. The app will reinforce the attitudes of stock people that timely, appropriate euthanasia of piglets is essential to minimize poor welfare outcomes.

Smallholder goat value chains in Pakistan; challenges and research opportunities

Investigators: **A. Campbell**, D. McGill, **R. Doyle**, A. Jabbar

Funding: Australian Centre for International Agricultural Research

Commencement date: 2016

Completion date: 2017

This project aims to: 1.Map and analyse predominant goat value chains linking smallholder farmers to markets including the value smallholders derive from them; 2.Investigate smallholder farmer perceptions on their engagement with goat value chains and the role that women play both on-farm and post-farm gate and 3. Identify research opportunities for improved smallholder goat producer engagement with, and contribution

to, specific goat meat value chains. The AWSC is involved in the animal welfare component of the project.

Informing future sheep extension strategies to improve reproduction and related welfare outcomes

Investigators:	J. Trompf, L. Kubeil, C. Hollier, C. Arnot, J. Young, G. Kearney, **G. Coleman**
Funding:	Meat and Livestock Australia
Commencement date:	June 2014
Completion date:	June 2017

This project will inform future extension strategy by improving industry understanding of how to influence producer attitudes and behaviours towards sheep reproduction and related welfare outcomes, particularly lamb survival. The ultimate aim of this project is to change on farm behaviour increasing the rate of adoption of industry best practice reproduction and welfare management.

Final reports

AMPC 3000/5091. Relationship between fear of Humans, Temperament and Handling Pre-Slaughter on Lamb Welfare & Meat Quality. P.H. Hemsworth, G.J. Coleman, M. Rice and E.N. Ponnampalam.

APL Project 2015/003. The re-development of ProHand: Carbon dioxide stunning of pigs. J-L Rault, E. Jongman.

APL Project 2014/155. Euthanasia is a vitasl part of good welfare.The re-development of ProHand: Carbon dioxide stunning of pigs. T. Holyoake, G. Coleman, J-L Rault.

CRC for High Integrity Australian Pork Project 1A-116. Increased light intensity and mat temperature attract piglets to creep areas in farrowing pens. J-L Rault, G. Cronin, J. Marchand-Forde, R. Morrison, G. Morello.

CRC for High Integrity Australian Pork Project 1A-115. The feeding behaviour of sows and its relationship to sow welfare and reproduction. M. Verdon, R.S. Morrison and P.H. Hemsworth.

Dairy Australia Project C100000614. Ensuring dairy cow welfare with increasing scale of production. D. Beggs, E. Jongman, P.H. Hemsworth and A Fisher.

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1.a Book chapters

1. **Coleman, G.J.** (2017). Consumer and societal expectations for sheep products. In Ferguson, D., Lee, C. and Fisher, A. eds. Advances in sheep welfare. Woodhead Publishing. Accepted May 2017. In press.

2. **Hemsworth, P.H.,** Mellor, D.J., **Coleman, G.J.,** Beausoleil, N.J., Fisher, A.D. and Stafford, K.J. (2016). Australian and New Zealand perspectives. In: Brown, J. and Seddon, Y. (Editor), Animals and Us: 50 years and more of Applied Ethology, Wageningen Academic Publisers, pp193-210. ISBN: 978-90-8686-282-5

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1.c Research papers in press

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2. Conference publications

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35. Brown, J., Seddon, Y., **Rault, J-L., Doyle, R.E,** Jensen, P., Rodenburg, B. and Marchant-Forde, J. (2016). 50th Congress of the International Society for Applied Ethology. 12-16 July,Edinburgh, UK, 112
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51. **Munoz, C.A., Campbell, A.J.D., Hemsworth, P.H.** and **Doyle, R.E.** (2016). Assessment of human-animal relationship in extensively managed ewes. 50th Congress of the International Society for Applied Ethology. 12-16 July,Edinburgh, UK, 380
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3. Theses

Aleri, J. (2016). Immune and stress responsiveness parameters as predictors of dairy heifers coping ability in their production environment. PhD Thesis, The University of Melbourne.

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Animal Welfare Science Centre Seminars

http://www.animalwelfare.net.au/article/scientific-seminars

November ‘16

Remote monitoring of animal welfare

Dr Cameron Clark and Dr Sabrina Lomax, The University of Sydney

“Remote monitoring of dairy cattle: opportunities for improved welfare across all species”

PDF

Assoc Prof Roger Rassool and Dr David Peake*, The University of Melbourne and *DETECT Australia

“Physicists might be useful!”

PDF

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