University of Glasgow

THE AWARDS 2020 | UNIVERSITY OF THE YEAR

University of Glasgow: Dairy research in progress - 2021

Nicholas Jonsson

Professor of Animal Health and Production

Institute of Biodiversity, Animal Health and Comparative Medicine
School of Veterinary Medicine

WORLD CHANGING GLASGOW

University of Glasgow (2020)

- Consolidated income: £690 million

- Research income: ~£160 million

- Total staff number: 6295; Academics: 2895

- Total student number: ~35,000

- Dairy research staff distributed over several colleges, schools and institutes

Dairy research/clinical/teaching staff

- Academic staff members of SVM & BAHCM: 10

- Residents (all MVM students): 5

- PhD students: 4

- MVM research: 1

Major research themes

- Animal welfare
- Health management in the peri/post partum period
- Reproduction
- Precision livestock farming
- Point of care diagnostics (especially proteomics)
- Bovine digestion, metabolism & immunogenetics
- Sustainable parasite control

Elena Borelli, Martin Tomlinson, Kathryn Ellis, Emily Hotchkiss

Knowledge, behaviours and attitudes of Scottish dairy farmers towards antimicrobial use

Aims

- The project aims to characterise farmers' beliefs about antimicrobial resistance, factors influencing antimicrobial use and barriers/motivators to/for change.

- This should support the development of interventions to reduce AMU, increase uptake of best practices on farms, to the benefit of farming and public health.
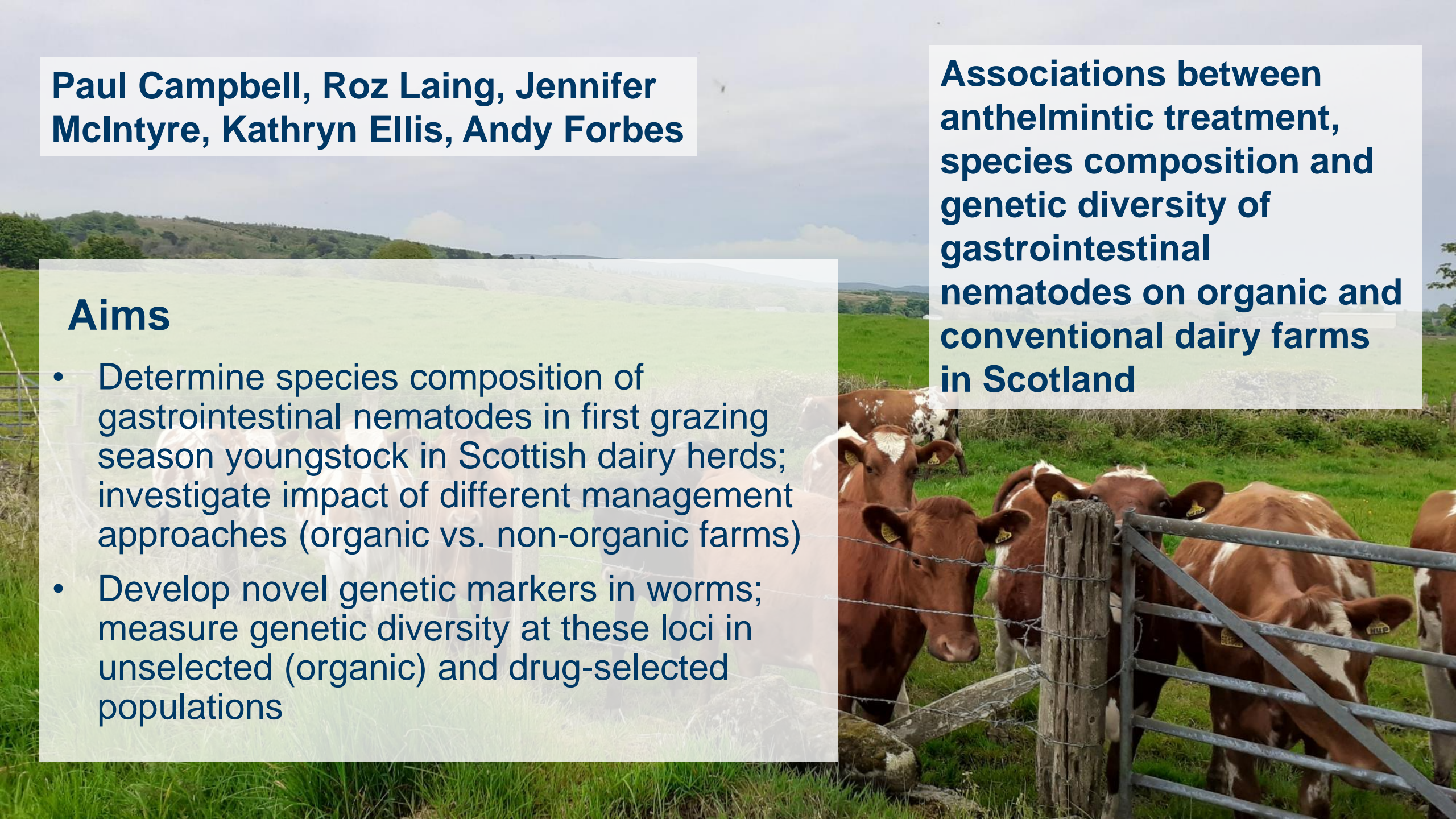
Paul Campbell, Roz Laing, Jennifer McIntyre, Kathryn Ellis, Andy Forbes

Associations between anthelmintic treatment, species composition and genetic diversity of gastrointestinal nematodes on organic and conventional dairy farms in Scotland

Aims

- Determine species composition of gastrointestinal nematodes in first grazing season youngstock in Scottish dairy herds; investigate impact of different management approaches (organic vs. non-organic farms)

- Develop novel genetic markers in worms; measure genetic diversity at these loci in unselected (organic) and drug-selected populations

Will be recruiting study farms for 2022 and 2023

If interested please contact Paul Campbell p.campbell.5@research.gla.ac.uk or Kathryn Ellis Kathryn.Ellis@glasgow.ac.uk

Associations between anthelmintic treatment, species composition and genetic diversity of gastrointestinal nematodes on organic and conventional dairy farms in Scotland

Giovanni Capuzzello, Lorenzo Viora, Nicholas Jonsson, Thomas Wittek (VetMedUni Wien)

Reticuloruminal motility for diagnosis of systemic and digestive disorders

Aims

- Develop gut-motility-based methods for the early identification of indigestion, milk fever and other disorders

- Validate in-house prototypes and smaXtec proprietary boluses against clinical observations

- Characterize normal diurnal variation in motility and assess variation with dietary cereal content

- Determine usefulness for milk fever diagnosis

Katie Denholm, Alexandra Haggerty

Exploring Failure of Passive Transfer (FPT) and colostrum quality in Scottish dairy calves

Aims

- Establish prevalence FPT in Scotland

- Measure colostrum quality (Brix and bacteriology)

- Compare indirect testing methods for FPT in calves

Katie Denholm, Alexandra Haggerty

Exploring Failure of Passive Transfer (FPT) and colostrum quality in Scottish dairy calves

Results

- 14% FPT as determined by RID

- 44% (111/252) colostrum samples classed as poor quality (Brix)

- Of these 28 (25.2%) and 38 (34.2%) also exceeded TBC and TCC thresholds

- Indirect testing methods (Brix, TP, ZST) overestimated number of calves with FPT

- Accuracy of all 3 indirect testing methodologies improved by lowering cutpoints (to 5g/L for TP, 15 units for ZST and 8.2% for Brix)

Nicola Gladden, Kathryn Ellis, Dorothy McKeegan, Jessica Martin (Edinburgh)

Bovine parturition: welfare and production implications of assistance and ketoprofen analgesia

- The aim was to characterise the effects of farmer-provided assistance and ketoprofen analgesia on the welfare and productivity of Holstein cows and their calves.

- Found that calving assistance is associated with reduced postpartum welfare and has a negative effect on subsequent productivity of dairy cows and calves

- Ketoprofen treatment is associated with improved postpartum comfort of cows and calves, as well as improvements in some measures of productivity, regardless of assistance

Yixin Huang, David Eckersall, Paul Johnson, Richard Dewhurst (SRUC)

Growth models for calves and adults

- Aim was to determine the best models for analysis of effects of interventions on animal performance

- Found that an exponential model is best for calves and gives a more precise estimate of treatment effects

- Found that Von Bertalanffy model provides best fit for whole of life

Yixin Huang, David Eckersall, Paul Johnson, Nicholas Jonsson

Faecal proteomic evaluation of cattle on cereal rations

- Aim was to establish baseline protein profiles of faeces from cattle on barley diets

- Developed methods for sample preparation that are effective with faeces

- Identified the most abundant proteins in bovine faeces, including proteins from cow, barley, other plant components, and the gut microbiome

Rheinallt Jones, Mark McLaughlin, David Eckersall, Nicholas Jonsson

The faecal phenotype

Aims

- We aim to characterise the faecal phenotype of ruminants in health and disease, with a view to developing non-invasive diagnostic and management tools.

- We will apply these tools in the first instance to identify diets that make inefficient use of starch supplementation and have adverse systemic consequences for cattle.

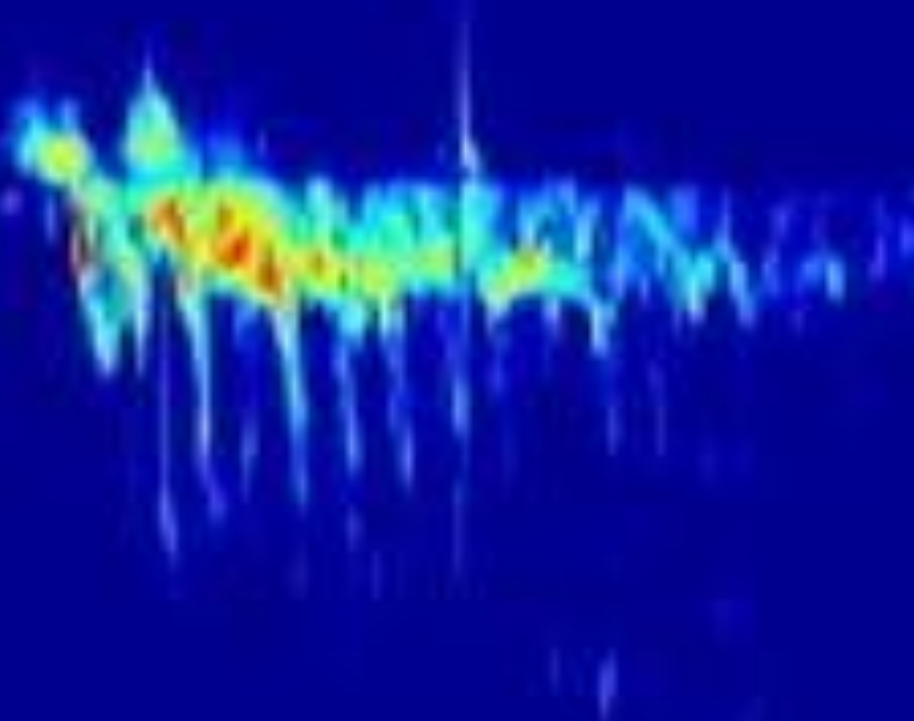**Nicholas Jonsson, Brian Barrett, Jon Moorby (Aberystwyth), Jacobo Arango (CIAT), Juan Cardoso (CIAT)**

CoForLife – sustainable forage production for Colombia

- Characterise rumination, eating, resting and walking patterns, location and production responses of cattle in silvopastoral and traditional monoculture pasture systems.

Konstantina Linardopoulou, Nicholas Jonsson, Lorenzo Viora, Julien Le Kernec, Francesco Fioranelli (TU Delft)

Micro-Doppler radar for lameness detection
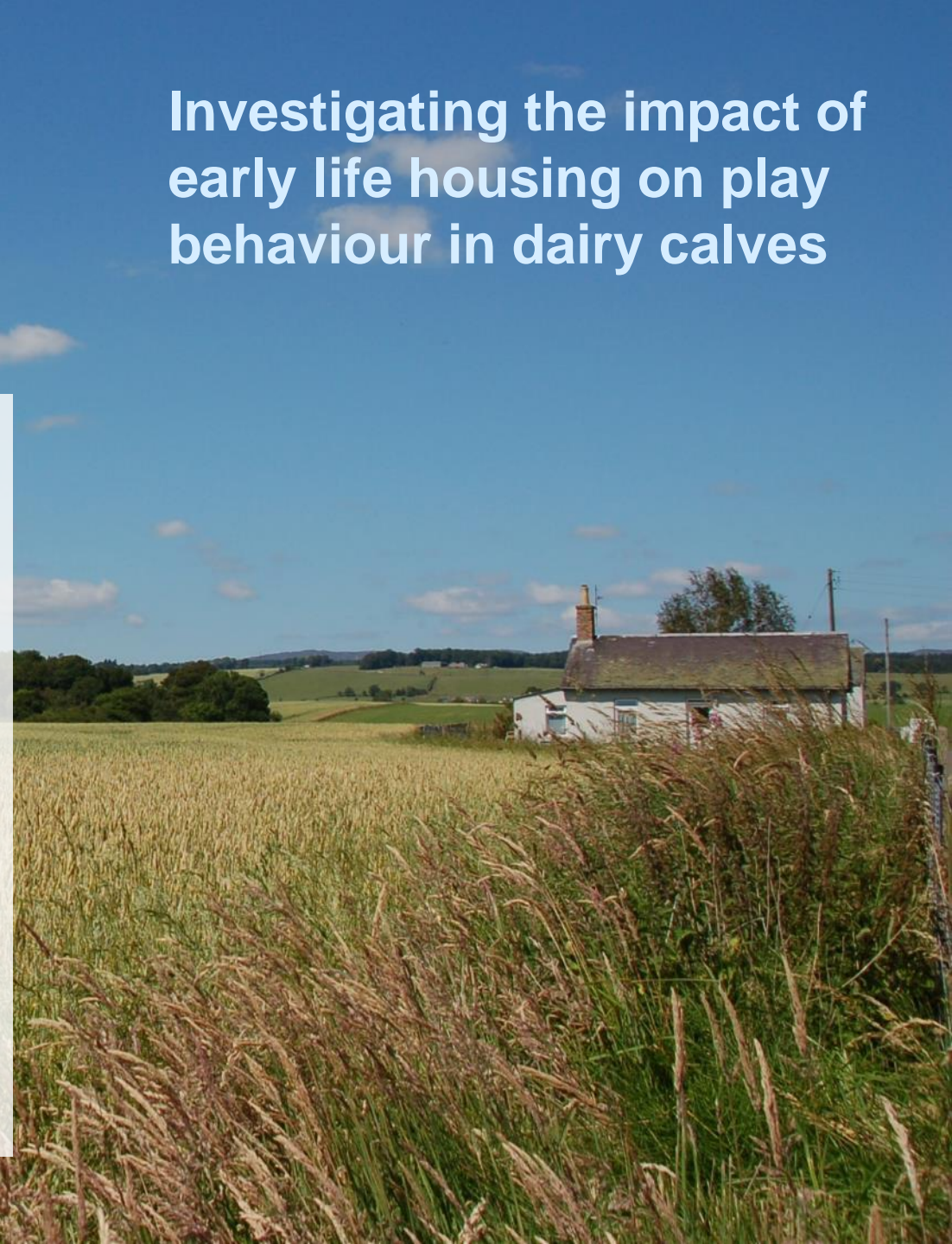
Aims

- Modifications to AHDB mobility scoring system to enable accurate labelling of algorithms

- Collect longitudinal and cross-sectional data to train algorithms

- Test algorithms on independent populations

Ciara McKay, Kathryn Ellis, Nicola Gladden, Marie Haskell (SRUC)

Investigating the impact of early life housing on play behaviour in dairy calves

Aims

- To investigate the effect of different housing systems on play behaviour in neonatal dairy calves

- To investigate the effect of early life housing on future animal health, behaviour, and production

- To investigate the use of play behaviour as an indicator of future animal health, behaviour, and production

Sander Prins, Kathryn Ellis, Dorothy McKeegan, Jayne Orr

Do teaching procedures create visible behavioural changes as result of stress?

Aims

- In veterinary training the use of animals is essential to gain basic skills.

- Welfare shouldn't be compromised in this training

- The aim of this new project is to investigate whether animals used for teaching experience stress, its severity, and factors that influence it

Richard Vazquez, Katie Denholm, Federico Randi, Theo Pepler, Lorenzo Viora, Monika Mihm-Carmichael

Comparison of reproductive management strategies for lactating dairy cows using detection of oestrus or synchronization of ovulation and fixed timed AI for first AI

Aims

- The aim was to identify the most successful reproductive strategy in dairy cattle: Oestrus detection + Ovsynch (n=333); Oestrus detection + PRIDsynch (n=358); Double Ovsynch (n=339) cows.

- On-farm study over 1 year

- No difference in pregnancies per AI were detected: OD-Ov (43.2%), OD-PR (41.6%) and DO (45.7%)

Thanks

nicholas.jonsson@glasgow.ac.uk

All email addresses are

firstname.secondname@glasgow.ac.uk