

Completion Report for BSAS Scholarships

**Name and affiliation: Royal (Dick) School of Veterinary Studies
The University of Edinburgh**

Award Name and value of the award: Murray Black Award £500

Was any additional funding secured to support the activity?

(If yes, please state the value and source of funding): Yes, I was awarded the Birrell-Gray Travelling Scholarship by the Royal (Dick) School of Veterinary Studies £430 and also funding for traveling (flights and accommodation) was provided by industrial sponsors: Bioparametrics Ltd and ABVista

Start/end date of the award: 3rd of September to 3rd of October

Summary of the award (Briefly describe the objectives and how was it undertaken):

(approximately 300 words)

The aim of the Murray Black award was to help with costs of attending two conferences held in Australia: 1) the International Symposium on the Nutrition of Herbivores/International Symposium on Ruminant Physiology, 8th – 12th September 2014 held at Canberra at this conference I presented two papers: **Ambriz-Vilchis V.**, N.S. Jessop, R.H Fawcett, D.J. Shaw, A.I. Macrae Comparison of rumination time obtained with rumination collars against direct visual observations in cubicle housed and grazing dairy cows ISNH/ISRP Canberra, Australia 8th to 12th September 2014 (Poster) and **Ambriz-Vilchis V.**, N.S. Jessop, R.H Fawcett, D.J. Shaw, A.I. Macrae Effect of dietary yeast supplementation on production, rumen pH and rumination time of cubicle-housed dairy cows with induced episodes of sub-acute rumen acidosis ISNH/ISRP Canberra, Australia 8th to 12th September 2014 (Poster) and 2) the 8th International Workshop: Modelling Nutrient Digestion and Utilization in Farm Animals 15th – 17th September 2014 held at Cairns on which I presented two papers **Ambriz-Vilchis V.**, R.H Fawcett, J. Rooke and N.S. Jessop Biopara-Beef a whole animal simulation model: methane predictions 8th ModNut Cairns, Australia 16th September 2014 (Talk) and **Ambriz-Vilchis V.**, R.H Fawcett, D.J. Shaw, A.I. Macrae and N.S. Jessop Biopara-Milk: a whole cow simulation model: rumen pH predictions 8th ModNut Cairns, Australia 16th September 2014 (Talk and poster).

After attending the conferences I was able to meet with researchers and organized two field trips to: 1) DairyNZ Hamilton NZ meeting hosted by Dr. Pablo Gregorini and his team and also at AgResearch Hamilton, NZ teleconference with Dr David Pacheco and his team; 2) CSIRO Townsville Australia visited the Dr Carlos Alberto Ramirez Restrepo and his team and the facilities at the Lansdown Research Station.

Benefits of the Award:

This is the main part of the report and the two sections below should be approximately 1000 words in total. You may focus on benefits to yourself, to the animal science community, or both – depending on the nature of the activity undertaken.

Benefit of the award to you (e.g. new knowledge or skills, new contacts and collaborations):

The attendance of both scientific meetings: Symposium and Workshop, allowed me to improve my presentation skills both written and oral. I was able to discuss my research with colleagues from other countries that provided me with a fresh view on the work I presented. These discussions led to incorporate new ideas and further analyses of my research. The papers presented on these conferences have been further developed: one has been published in a prestigious journal: **Ambriz-Vilchis V.**, N.S. Jessop, R.H Fawcett, D.J. Shaw, A.I. Macrae (2015) Comparison of rumination activity measured using rumination collars against direct visual observations and analysis of video recordings of dairy cows in commercial farm environments. *Journal of Dairy Science* 98, Issue 3: 1750 – 1758, one more has been submitted and two more are in preparation and almost ready to be submitted.

Preparing the abstracts and talks for these conferences and subsequent papers helped further my writing skills. It also helped improving my networking skills and ways to engage with other scientists.

Attendance to these two conferences enabled me to gain a deeper knowledge into the research being carried out in Australia and New Zealand. The level of research presented at the conferences was second to none. At the International Symposium on the Nutrition of Herbivores/International Symposium on Ruminant Physiology I was able to learn more about the fields of Physiology and Nutrition in ruminants especially dairy cows, which are the main focus of my PhD. I engage with international animal scientist, not only researchers that I had previously met at other scientific meetings (from the UK, Mexico and Brazil) but also the ambiance at the meeting encouraged me to made new contacts that after the meeting was over enable me to visit DairyNZ and AgResearch at Hamilton NZ.

At the 8th International Workshop: Modelling Nutrient Digestion and Utilization in Farm Animals I was able to further my knowledge and understanding of modelling: from the cell level and biochemical pathways to THE farming system level. This workshop was a perfect opportunity to discuss an important part of my PhD related with modelling rumen pH dynamics in dairy cows.

After attending the scientific meetings I was able to travel to New Zealand where I visit: 1) DairyNZ Hamilton NZ, I visit Dr. Pablo Gregorini I was able to present my work and discuss the work been carried out by Dr Gregorini and his team. We discuss different approaches to modelling intake using mechanistic whole cow simulation models and intake prediction in grazing systems. The visit was positive and it might be the beginning of further collaboration. Also I was able to visit AgResearch Hamilton, NZ and had a productive teleconference with Dr David Pacheco and Dr Khan Ajmal we discuss the use of new technologies in dairy systems i.e. rumination collars and rumen pH boluses. After a very productive meeting ideas for future collaboration were discussed.

Back in Australia I visited the CSIRO centre hosted by Dr. Carlos Alberto Ramirez-Restrepo we discussed the research been carried out in this centre and visit the facilities at the Lansdown Research Station. The

work carried out on methane research includes the use of state of the art open-circuit respiratory chamber, fistulated animals and automated in vitro gas production technique.
All in all the attendance to these scientific meetings and field trips were a highly valuable academic and personal experience.

Benefit of the award to the animal science community, academic and industrial:

Results from the work presented at the ISNH/ISRP and ModNut 14 will be of benefit to the scientific community in that: we provided a validation of the use of new technologies i.e. rumination collars in housed cows in commercial farm settings. The use of rumination collars on housed dairy cows could now aim to address important questions such as factors affecting rumination and its relationship with disease and the use of the rumination collars as tools to aid in the detection of estrus, parturition and early onset of disease.

The modelling exercises presented at ModNut14 using a mechanistic whole cow simulation model gives a tool for animal scientists, researchers and nutritionist to evaluate feeding strategies in terms of their effect on rumen pH (dairy cows) and methane output (beef cattle).

For dairy cattle the simulation model could be used as a diagnostic tool for rumen pH related diseases such as sub-acute rumen acidosis. The beef model could be incorporated as part of a whole farm evaluation system and predicting discharge to the environment associated with different feeding strategies.

Other supporting information:

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