School of Veterinary Science
2017 UQ Winter Research Project Descriptions

Project title:	**Can Near Infrared Reflectance Spectroscopy (NIRS) technology be used to assess the level of pasture contamination with infective nematode parasite larvae of important gastrointestinal nematode parasites of livestock or horses?**
Project duration:	*6 weeks*
Description:	Internal parasites are a major constraint to both the livestock and equine industries, and anthelmintic resistance to multiple drug classes among many of the most pathogenic helminth species is widespread. The principles of integrated parasite management are essential in the sustainable management of parasites in these industries, which encompasses the management of parasite "refugia" (environmental stages of the parasite life cycle). The ability to prepare safe pastures for grazing by susceptible stock classes is fundamental to parasite management, however, there is no practical or convenient method of estimating pasture larval contamination. Near infrared reflectance spectroscopy (NIRS) technology has been used for decades to predict the composition of plant and animals tissues as well as aspects of animal performance. In more recent years, research focus has expanded to consider other innovative uses of NIRS technology and widen its application. The objective of this project will be to test the ability of NIRS to detect differences in pasture larval contamination with infective nematode larvae. An experiment will be conducted to seek proof of concept, where pasture plots spiked with known quantities of L3 larvae will be used to develop calibration models. These models will then be used to measure the spectral absorbance of some unknown test samples. If NIRS is reliably able to detect differences in pasture larval contamination, future work could focus on expanding and refining the models to include variations in pasture types and species of nematode larvae. Positive findings from this pilot project may indicate a useful role for NIRS technology in parasite management worldwide.
Expected outcomes and deliverables:	*Students may gain skills in experimental design, data collection, and near infrared spectroscopy. Results may be publishable. A report on experimental findings will be expected at the conclusion of the project.*
Suitable for:	*This project would suit a student from Agricultural Science or Animal Science, possibly Vet Science also. UQ enrolled students only. No prerequisite skills required.*
Primary Supervisor:	Dr Anne Beasley
Further info:	For further info contact Anne Beasley: a.beasley@uq.edu.au

Project title:	**Survey of integrated chicken-fish farms in Myanmar with a questionnaire app**
Project duration:	6 weeks (20 hours per week)
Description:	A cross-sectional study will be conducted to describe the current practices, identify constraints and opportunities of integrated chicken-fish farming in the Ayeyarwaddy Delta of Myanmar. Looking specifically at good animal health management practices and the economics of integrating chicken-fish production, data will be collected using a questionnaire app for smart phones or tablets. Data collection in Myanmar will be conducted by a local research team. The applicant for this winter research project is expected to develop the questionnaire app and update the app regularly, download the data and conduct the data analysis and economic modelling under supervision.
Expected outcomes and deliverables:	The applicant will gain skills in developing the app, in data collection and data analysis. It is expected that a report will be produced by the applicant, which should lead to a scientific application.
Suitable for:	This project would suit a Bachelor of Veterinary Science student with strong experience in app development and data analysis. As this project will require the collection and analysis of survey data, skills in database software and statistical modelling are required.
Primary Supervisor:	**Joerg Henning**
Further info:	**If you are interested in this project please contact Joerg Henning on j.henning@uq.edu.au**

Project title:	**Prevalence of canine parvovirus 2 (CPV2) in Australia: analysis of a dataset**
Project duration:	4-6 weeks
Description:	Canine parvovirus 2 (CPV2) causes severe enteritis, dehydration and immunosuppression in dogs. Genetic variants of CPV2 have emerged, comprising CPV2a, CPV2b and CPV2c genotypes. There is scientific debate regarding the effectiveness of older CPV2 vaccine strains against the new variants. There is also uncertainty about whether there is an association between genotype and severity of disease. Our lab has determined the CPV2 genotype based on the DNA sequence of CPV2 DNA from more than 500 canine faecal samples. The aim of the project is to collate and analyse the data from this work. The hypotheses are: - CPV2 genotypes will have varied geographic and temporal distributions. -CPV2 genotypes will be associated with different types or severity of clinical signs.
Expected outcomes and deliverables:	The student will gain skills in data analysis, use of spreadsheets and databases and interpretation of analyses. They will produce a short report on their analyses, including graphs or figures. They may be an opportunity to co-author a journal publication on the results.
Suitable for:	The project would suit students who have completed a basic course in epidemiology or statistics. The project is based at the Gatton campus.
Primary Supervisor:	Prof. Joanne Meers
Further info:	Students can email Joanne Meers (j.meers@uq.edu.au) or John Alawneh (j.alawneh@uq.edu.au) for further information

Project title:	**Comparison of two total intravenous anaesthetic techniques in horses.**
Project duration:	Up to 4 weeks
Description:	**Aim**: A direct comparison between ketamine-medetomidine-midazolam (KMM) and ketamine-medetomidine-guiafenesin (KMG) anaesthesia has not been reported in horses. The purpose of this study was to determine any clinical differences between intravenous KMM and KMG anaesthesia in horses. **Overview**: Fourteen (14) horses each received 2 anaesthetics of 45 minutes duration. Horses were randomly allocated to receive either KMM or KMG intravenous anaesthesia and then the treatments were reversed after 4 months. Physiological variables that were monitored and recorded include heart rate, respiratory rate, arterial blood pressure, pulse oximetery and arterial blood gases. The time from the end anaesthetic infusion to when the horse was extubated, first lifted its head, achieved sternal recumbency and stood was recorded. The anaesthetic recovery periods were videoed to be later scored by experienced anaesthetists blinded to the treatment group.
Expected outcomes and deliverables:	Scholars may gain skills in data entry and statistical analysis. By participating in the project they should gain a good understanding of clinical experimental design. There may be an opportunity to be part of publications or an oral presentation at the end of the project. During the designated project period scholars will be required to enter raw data into excel and perform some data and statistical analysis (with guidance). Some editing of anaesthetic recovery videos may also be required.
Suitable for:	The project is open to applications from students enrolled in any year of BVSc or BVetTech program. It would be particularly suited to students with a particular interest in veterinary anaesthesia or equine veterinary science.
Primary Supervisor:	Dr Wendy Goodwin
Further info:	For further information please contact Wendy Goodwin via email w.goodwin@uq.edu.au