2019 UQ Winter Research Scholarship Program

Research Projects offered by School of Veterinary Science

How to apply

The UQ Winter Research Scholarship Program is offered by the School of Veterinary Science and UQ Student Employability Centre during the winter vacation period (mid-June to mid-July). This document provides you with a list of available projects.

1) Browse the projects.

2) Contact a potential supervisor in the area of your interest, or the contact person listed, to discuss your interest to undertake their research project. Gain the research project supervisor’s tentative approval, and include this with your full UQ Summer Research Scholarship application.

3) Submit your application via StudentHub
Supervisor: Dr Swaid Abdullah
Duration: 4 weeks

Contact Details:
- Telephone - +61 7 5460 1965
- Email - swaid.abdullah@uq.edu.au

Geographical variation in the prevalence, associated risk factors and resistance patterns of intestinal parasitism in pet dogs in Southeast Queensland

Australia has one of the highest rates of pet ownership in the world, with 37% of Queensland households having dogs and this number is on the rise. As with other animal species, dogs are infected with various parasites, which not only affect their health and wellbeing but also some of these parasites are serious zoonoses for humans. Dog faeces could serve as a potent source of viable zoonotic pathogens, contaminating the surroundings and placing inhabitants at high risk.

The aim of this study is to a) quantify spatial variation in the prevalence of intestinal parasite infestation of pet dogs living in urban and suburban areas of Queensland and identify associated risk factors and b) estimate the efficacy of the currently used anti-parasitic drugs.

The proposed study will work around public parks and gardens in the urban and suburban areas of Queensland. The project has two objectives: first, we will collect faecal samples from dogs that visit the parks and ask their owners to fill a questionnaire about their dog and their awareness about dog parasites. The second objective is to determine the parasite load of dogs from pooled samples covering a broader range of public parks, without having any knowledge about the individual dogs. All faecal samples collected during this study will be brought to School of Veterinary Sciences, Gatton for analysis. The samples will be examined for various parasitic eggs and oocysts using the centrifugation with flotation methods. The faecal samples will also be analysed by PCR to assure that the negative samples (no eggs found in microscopic exam) are truly negative. All the data will be statistically analysed for prevalence and possible interactions between parasite load and host, environment and management factors. Spatial epidemiology models will be used to produce distribution maps of various parasites. Any possible cases of anthelmintic drug resistance, which may have developed over time, will be based on the recent treatment history of the dog and persistence of parasite eggs in the faecal samples.

Number of student places available: 3

Expected outcomes - This study will provide a deeper insight of the extent of parasitic infestation in dogs and potential zoonoses in Queensland.

This study will help the scholars learn the skills of public interaction; the students will also get opportunity to learn faecal sample examination techniques, identification of various parasitic eggs and oocysts. They will also be exposed to data analysis and interpretation.

Suitable for - The student should be enthusiastic and should be able to interact with people in public places. He or she should be familiar with basic microscopy.

Other important details – Interested students must contact the supervisor/s, prior to submitting an application. Evidence of supervisor support is required to be uploaded as part of the application process.

For any interest in the project, please write an email to me indicating why you are interested in the project and what are you expecting to gain from getting involved in this study.
**Modelling best practice in self-directed clinical skills development.**

The SVS Student Clinical Skills Hub opened in March 2017 as a purpose built, self-directed learning laboratory for students to practice their clinical skills. Student, staff, alumni and industry engagement with the facility has been increasing rapidly and donations of expired or underutilised clinical and laboratory consumables and equipment has inspired the development of many in-house training models. The development of these models and how they are implemented has been guided by student feedback regarding relevance to coursework and which part of each clinical skills the student’s find most difficult during the learning process.

Authenticity of procedure is critical for developing muscle memory and confidence, however we have shown repeatedly that in many instances this is not reliant on hi-fidelity models. The critical aspect is the use of re-purposed clinical equipment in an authentic manner.

The aim of this project would be to conduct a literature review of other studies evaluating this premise and other simple models which can be constructed in-house. Then use this as a foundation to develop a new model and its associated learning resources, based on their own experience of learning a new clinical skill in the veterinary program which the students found manually difficult or a skill for which deconstruction of the skills creates a deeper understanding of the skill or its underlying theory.

**Expected outcomes** - Students can expect to gain experience in literature searching, evaluation and summarisation, basic scientific article planning and use of endnote software. The students will be asked to prepare a mini journal article including information from their literature review and the methodology for their model design, learning resources and implementation and efficacy evaluation plan. This will be used as the basis for a collaborative journal article between the students, the Hub’s coordinator, the Chair of the SVS T&L committee and director of the Clinical Studies Centre.

Additionally the students will be expected to design and construct at least one new clinical skills training model and its associate training resources, an implementation and basic efficacy evaluation plan. This will be implemented during semester two by the Hub’s coordinator and students will able to see how their work is supporting the learning of their peers.

**Suitable for** - This project is open to applications from students enrolled in the UQ BVSc program, who are currently undertaking years 2, 3 or 4 of the program. Students must be able to work effectively in a team, as ideally this project would attract two students who would be able to undertake the reviews independently and then workshop ideas and undertake model construction jointly.

**Other important details** - Interested students must contact the supervisor/s, prior to submitting an application. Evidence of supervisor support is required to be uploaded as part of the application process.

To discuss the project before applying, please email Dr Fran Shapter f.shapter@uq.edu.au

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**Supervisor**

Dr Fran Shapter

**Duration:** 4 weeks

**Contact Details:**

Telephone - +61 7 5351 5046

Email - f.shapter@uq.edu.au
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<th><strong>Supervisor</strong></th>
<th>Dr Allison Stewart</th>
<th><strong>Duration:</strong> 4 weeks</th>
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<td>Email - <a href="mailto:allison.stewart@uq.edu.au">allison.stewart@uq.edu.au</a></td>
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**Collection of equine serum samples to help validate the DIVA Hendra Virus Vaccine antibody test.**

CSIRO/AAHL wishes to validate their new DIVA assay against their serum neutralisation assay to measure protective antibody against Hendra virus. The new DIVA assay can differentiate vaccine induced antibody from naturally acquired antibody and thus is important for exportation of Hendra vaccinated horses from Australia. They have 1000 samples from unvaccinated horses and require 1000 samples from vaccinated horses. We will aliquot a sample of serum from each vaccinated horses that has had samples submitted to the UQ Veterinary Laboratory Service. Students will do medical record searches, identify the samples, label tubes and aliquot samples prior to shipment to AAHL. Students will also help solicit volunteer samples from current equine clients for free testing. Written client consent, sample collection and sample processing will be required. Students will determine the number of times horses have been vaccinated against Hendra virus and the age of the horse to then subsequently perform correlations with titre results.

**Number of student places available:** 1

**Expected outcomes** - A publication will result from this work. Students will be acknowledged on the final publication and depending on their involvement could present work or be a co-author on an oral or poster presentation at a National Conference in 2020. The results of the titres will not be available during the winter period, and the student would be involved in a team that will continue to work on this project over the next 12-18 months. However this would be an ideal project for a student in 4th year who is looking for a 5015 research elective project during their final year.

*Scholars will gain skills in data collection, medical record review, blood sample collection and processing.*

**Suitable for** - Veterinary students, veterinary technology students, or science student with a background in microbiology and epidemiology. Previous excel spreadsheet experience would be useful. An interest in horses or previous horse handling experience is desirable, but not necessary. Only samples from Hendra vaccinated horses will be managed. The testing will be performed at CSIRO/AAHL therefore there is negligible risk of exposure to Hendra virus. 2 students can be involved on this project.

**Other important details** - Students must arrange an interview to be considered for this project. The project requires an independent student and work will be undertaken in the Veterinary Medical Centre at Gatton Campus.
Monitoring of *Dirofilaria immitis* in mosquitoes

Our project focus is to explore the significance of the mosquito vectors of the dog heartworm disease in Australia. Mosquitoes have a central role in the *Dirofilaria immitis* cycle, nonetheless, there have been no recent studies on heartworm vectors of dirofilariasis in the country. The aim of this field investigation is to obtain preliminary data on the status of dirofilarial vectors in a Queensland area of known transmission and to provide the basis for future xeno-monitoring studies. The outcome will be a better understanding of transmission that will define better prophylaxis of the disease.

**Project description:** Sampling will be performed in the Mackay area: sampling sites will include urban, outer marginal and semi-rural regions in which positive dogs have been recently reported. In each monitoring site, a mosquito trap baited with lures will be positioned and in each site the traps will be operating for a period of 24h. Mosquitoes obtained will be then morphologically identified and different species will be grouped in pools. *Dirofilaria immitis* specific real-time PCR will assess the pools positivity for the parasite.

**Number of student places available:** 1

**Expected outcomes** - The successful applicant will acquire expertise on medical entomology, field sampling techniques for mosquitoes, mosquito identification tools and biomolecular techniques. He/she will be actively involved in positioning and operating the traps, collecting, storing and transporting the mosquitoes, identifying the different species and performing the PCRs. Sampling will be repeated 5 times so the candidate is required to spend a total of three weeks in Mackay and surroundings.

**Suitable for** - Open to people with interests in parasitology, animal and biological sciences.

**Other important details** - For further information, and prior to submitting their application, students must contact Dr Silvia Ciocchetta.
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<th><strong>Supervisor</strong></th>
<th>A/Prof Benjamin Ahern</th>
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**Screw fixation of type 3 distal phalanx fractures of horses – an invitro study of efficacy**

Type 3 (midsagittal articular) fractures of P3 have been variably treated using medical and surgical treatment options. Recently an invitro study using a single screw fixation showed equivocal efficacy in reducing in vitro induced fractures. This is in contrast to our clinical experience. The objective of this study is to evaluate if 1 or 2 screws is more effective in reducing these fractures using CT and fluoro assessment of repair.

**Number of student places available:** 1 - 2

**Expected outcomes** - Study design and execution. Surgical techniques of minimally invasive surgical placement of lag screws within the hoof wall of horses. CT and fluoroscopic guidance of screw placement.

**Suitable for** - Veterinary students with an interest in surgery or horses.

**Other important details** - Interested students must contact the supervisor/s, prior to submitting an application. Evidence of supervisor support is required to be uploaded as part of the application process.