

BURSARY SUPPLEMENT

A Double Triumph for the Connect Bursary

The Connect Bursary has just marked its 18th year in true style; the exceptional quality of the projects from this year's Bursary recipients meant that, for the first time ever, we have made two overall winner awards.

Furthermore, we celebrated the inaugural Connect Equine Bursary Award, which is also included in this supplement.

"Being part of the Connect Bursary is intended to give veterinary students both the freedom to explore new ground as well as providing a taste of working in industry. Once more this has been achieved with a refreshing diversity of projects.

Through the Bursary Award Day we travelled from exploring equine health and welfare in Jaipur, to fruit bats in Tanzania and stallion sperm in Colorado. No less impressive were the practical based investigations of



the adverse effects of chemotherapy in dogs and the exploration of laterality in dogs.

The joint award winners were Charlotte Cockburn from the Royal Veterinary College for her exploration of laterality in dogs and Hayley Harwood from the Royal (Dick) School of Veterinary Studies, Edinburgh who identified an optimal thawing process for frozen stallion semen.

We are also delighted to welcome the inaugural Connect Equine Bursary recipient, Holly Claridge from the Royal Veterinary College, who had to satisfy a panel of equine experts with her project to describe the 3D anatomy of the cervical articular process joints in relation to the spinal cord.

All of these projects really are a testament to the spirit of the Bursary and showed what it is possible to achieve."

David Hallas
 General Manager
 Intervet/Schering-Plough
 Animal Health

The 2009 bursary award projects:

- **Gabrielle Laing** (University of Liverpool)
- **Alex Torrance** (University of Cambridge)
- **Amy Gordon** (University of Bristol)
- **Sharon Brown and Rebecca Johnson** (University of Glasgow Small Animal Hospital)

JOINT WINNERS

- **Charlotte Cockburn** •
 (The Royal Veterinary College)
- **Hayley Harwood** •
 (Royal Dick School of Veterinary Studies)

EQUINE WINNER

- **Holly Claridge** •
 (The Royal Veterinary College)

Judge's comment...



"Once again it was a privilege to be associated with judging the Intervet/Schering-Plough Animal Health Connect Bursary Award scheme in 2009. All of the candidates achieved an exceptionally high standard this year and the quality of presentations

was to be commended. The subject matter was very diverse and each student adopted a systematic and professional approach to tackling their chosen projects.

The reports provided in advance of the presentations were also of a high standard. This made the judging particularly difficult and for the first time ever we were

not able to come up with a single clear winner. The overall work of two of the candidates, Hayley Harwood and Charlotte Cockburn, was of such high quality that we felt that we should present two awards this year.

We also heard an interesting presentation from Holly Claridge, our Equine Bursary Award winner, which was both engaging and very accomplished.

I sincerely hope that this brief venture into the field of veterinary research will have provided a valuable insight and perhaps even have inspired some of our participants to consider venturing into the field of research later in their veterinary careers."

**Mike Francis, R&D Director
Intervet/Schering-Plough Animal Health**

Intervet/Schering-Plough held its fourth annual presentation day at its Milton Keynes headquarters, which saw eight students being recognised for their exceptional work under the Connect Bursary scheme, designed to provide financial assistance for students for elective research during their college years.



JOINT BURSARY AWARD WINNERS.....

Charlotte Cockburn, from the Royal Veterinary College (RVC) was one of two joint overall winners for her investigation into tests for laterality in dogs.

Handedness in humans is used as an indicator of cerebral asymmetry and therefore laterality and is important in human medicine to identify the dominant hemisphere before undergoing certain brain surgery. Tests for laterality in dogs have been documented but no tests have been described for use by veterinary surgeons.

Charlotte's study investigated tests for laterality in dogs to determine if domestic dogs show a significant paw preference and to identify a test that can be used for this purpose in general practice. The aim was to find a test for laterality that can be performed in a normal examination environment, that is easy to carry out

JOINT BURSARY AWARD WINNERS.....

regardless of the dog's nature, breed or age and that provides consistently reproducible results.

Three tests used in previous studies (the tape test, the pot test and the Kong test) and two new tests (initiation of gait and the placing test) were investigated. These were assessed for ease of use, reproducibility and accuracy. The tests were carried out on a group of 40 dogs of mixed breed, age and sex.

Significant differences between the responses to each test were observed, showing that, as a population, the dogs did not respond well to the pot test (45%) or the Kong test (12.5%). Overall the population expressed a lateralisation bias towards the left with no significant correlation between paw preference and the sex, age or breed of dog. Two of the new tests (initiation of gait and placing test) plus the tape test all revealed a significant left paw preference while the pot test and Kong test did not show a significant paw preference.

The initiation of gait test, a measurement of laterality using the paw that initiates walking, was the only test to gain a response from 100% of the dogs. It was also the most easily reproducible test although it was not easy to maintain the starting position of each dog. This test was

concluded to provide the same laterality results as the tape test used in other studies, but was found to be more practical and applicable for use in a consultation environment.

Although evidence was provided for the use of recording the initial paw used to walk forward being a test that could be used for measurement of laterality in dogs in a clinical situation, further investigation is required, including using a larger sample of dogs and studies into the effect of the number of male and female dogs in the study sample on the laterality at the population level.



David Hallas, Charlotte Cockburn, Hayley Harwood & Mike Francis

Hayley Harwood from the Royal Dick School of Veterinary Studies (Edinburgh) was the other joint overall winner for her research into the motility of stallion spermatozoa thawed at various rates and maintained for up to 24 hours.

Cooled semen is widely used in the equine industry but problems may arise when a mare is ready to ovulate but the stallion is overbooked or unavailable for collection.



With the acceptance of frozen-thawed semen use, a stallion's semen may be banked, thawed when required and prepared for cooled shipment. The aims of Hayley's study were to design a protocol for the thawing of semen that would allow cooled transported frozen-thawed semen to be used effectively and to provide information on the effectiveness of cooling semen after it has been thawed and diluted for shipment.

Working as part of an exchange programme with Colorado State University, Hayley collected single ejaculates from six stallions aged 9-22. The ejaculate was frozen in two commercially available extenders then subjected to various thawing treatments (37°C, 72°C or 5°C) and cooled in an equine semen transporter.

JOINT BURSARY AWARD WINNERS.....

Motility was analysed after 24 hours using computer assisted semen analysis (CASA).

Hayley's study concluded that the choice of freezing extender had no effect on total and progressive motility, but that thawing sperm at 72°C resulted in a significantly higher total motility than other treatments. This result is widely supported by previous studies in the stallion and the bull showing that higher thaw temperature and faster thaw rates give higher post thaw motility. Diluting samples had little effect on the motility of sperm thawed at 72°C or 37°C, however diluting sperm thawed at 5°C significantly improved both total and progressive sperm motility. Dilution may be carried out dependent upon the individual stallion. Furthermore,

the ability of the individual stallion's sperm to tolerate freezing and cooling will ultimately be a major factor in carrying out this procedure.



EQUINE AWARD WINNER

Holly Claridge from The Royal Veterinary College was the winner of the inaugural equine bursary award. She investigated the 3D anatomy of the cervical articular process joints in the horse and their role in spinal cord compression.

Articular process joint (APJ) effusions are suggested as one of the causes of cervical vertebral malformation or 'wobblers', common among Thoroughbreds and Warmbloods. Early recognition is essential in giving a better outcome of treatment.

Holly's aims were to describe the 3D anatomy of the equine cervical APJs via a left-right comparison and comparison between different locations. Their relationship with the spinal cord would then be assessed

and thus establish the potential for APJ effusion to cause spinal cord compressive disease.

The study involved CT scans of the necks of 6 cadavers, after injection of a negative contrast agent to maximum distension. 3D reconstructions were then used to measure joint volume and assess distance to the spinal cord.

Joint volume varied significantly between locations (C2C3, C3C4, C4C5, C5C6, C6C7,) and was found to be inversely related to the length of the vertebra caudal to the joint. The medial extension of the APJ towards the vertebral canal showed no significant variation between location and did not appear to extend into the spinal canal at any point. Flexion of the neck resulted in minor changes to the shape of the APJ but did not result in the medial extension encroaching any closer to the spinal cord.

The investigation concluded that in the absence of any other soft tissue or bony changes an effusion of the APJ is unlikely to cause spinal cord compression, but with other changes it may exert pressure on the surrounding tissue and thus contribute to compression.



David Hallas, Holly Claridge & Mike Francis

Gabrielle Laing from the University of Liverpool conducted a study of working equine health and welfare at a charitable clinic in Jaipur, India.

Horses in the poorer communities of Jaipur provide a vital means of work and trade to their owners in a country where 42% of the population are living under the international poverty line of around 30p per day.

Working at the charity Help-in-



Suffering, Gabrielle set out to study the impact of poor dental health on body condition and to identify health & welfare problems to allow effective targeting of veterinary services in the areas most impacting productivity and welfare. The charity, in association with The Brooke, utilises mobile clinic and in-patient facilities, run by one vet and two trained equine technicians.

Data was collected from individual cases seen by the clinic using a questionnaire with details of work, nutrition and health status alongside a basic clinical and dental exam. The dental examination was performed using a Hausmann's Gag, head torch and dental mirror and results recorded

on a form similar to that used by the British Equine Veterinary Association.

Gabrielle's results showed that there is no direct influence of dental disease on body condition score although it is likely to play a role, but there is a positive correlation between old animals (15+ years) and moderate to severe dental disease. Other major health and welfare issues affecting working equines were limb and gait abnormalities, dehydration and exhaustion, harness wounds and other traumatic injuries, and colic. There was a general lack of knowledge regarding welfare in the population, therefore education campaigns are critical to help improve the situation.

Sharon Brown and Rebecca Johnson investigated the prevalence and severity of adverse effects associated with chemotherapy in canine patients.

There are significant differences in the aims of chemotherapy in human and veterinary medicine. In the veterinary setting the aim is to prolong an animal's life at an acceptable quality without necessarily achieving a complete cure. For this reason lower doses of drugs are often used, with the benefit of fewer adverse effects.

Sharon and Rebecca assessed the prevalence and severity of adverse effects of the chemotherapeutic



agents doxorubicin and carboplatin in the Oncology department of the University of Glasgow Small Animal Hospital. It aimed to establish if specific factors including age, breed, sex, concurrent medication and tumour type could predispose to any adverse effects observed.

A retrospective study of 110 dogs was undertaken of which 56 were treated with chemotherapy regimes involving carboplatin, 66 with doxorubicin and 12 with a combination of both.

There were 271 episodes of adverse effects in the dogs. The incidence of severe adverse effects was low with both drugs, however they were administered at doses below those recommended which may explain the low incidence of side effects. The incidence of haematological

abnormalities was similar in dogs receiving either carboplatin or doxorubicin, but the prevalence of gastrointestinal adverse effects was much greater in dogs receiving doxorubicin.

The study concluded that carboplatin is very well tolerated compared to doxorubicin and neither chemotherapeutic agent is influenced by the administration of other drugs. The most common adverse events seen after the administration of carboplatin, either alone or in combination with other chemotherapeutic drugs, were leukopenia and anaemia which occurred in 39.4% of patients. Dogs receiving doxorubicin were more likely to show symptoms of gastrointestinal toxicity; which occurred in 63.9% of dogs.

Alex Torrance from the University of Cambridge set off to Tanzania for an investigation into the relationship between ectoparasites, alopecia and blood-borne pathogens in the straw-coloured fruit bat *Eidolon helvum* and into the haematological and biological ranges in the same species.

Not only is *Eidolon helvum* classified as Near Threatened on the IUCN Redlist, but it is also known to play a critical role in pollination and seed dispersal of a variety of trees, so the demise of the species may have a significant environmental and economical effects.

The aim of the research was to produce reference ranges for a variety of biochemical and haematological parameters that can serve as indicators of health status in individuals within a population. It was hypothesised that there may be an association between immune status characterised by haematological values, body condition and parasite load. *E. helvum* are commonly known to be parasitized by the nycteribiid batfly, *Cyclopodia greeffi* that feed on the bat's blood. Association between the burden of this ectoparasite and any haemoparasites

found may suggest an indirect or vector-borne route of transmission.

The study involved catching the bats in nets, and transferring them to cloth bags, followed by weighing and sexing, assessment of breeding status, morphometric measurements, body condition scoring from pectoral palpation, and taking samples of ectoparasites, hair, faeces and urine and blood.

Field limitations restricted the ability to produce a full profile of biological and haematological parameters and, in the absence of absolute white cell counts, estimates were made based on the blood smear. The proportion of neutrophils and lymphocytes varied significantly in the individuals captured but it may be indicative of a variable stress response to the capture process.

There was no correlation between parasite burden and the occurrence of alopecia but the sensitivity of skin scrapes was variable and the sample size very small. Therefore further investigation would be required to identify the aetiology of the alopecia.

This study has ultimately contributed to the understanding of normal physiological parameters in a species that has been largely overlooked.



University of Bristol student, Amy Gordon, set out to study the vigilant behaviour shown by sheep to determine whether sheep that have undergone early stress or pain respond to events more negatively than those that have not.

Lambs reared in the UK commonly undergo one or more stressful or painful experiences soon after birth. Research into other species, such as mice and humans suggests that neonates experiencing early-life pain or stress may have permanently altered responses to subsequent pain or stress even in adulthood.

The aim of Amy's study was to determine whether sheep that have been in pain or been stressed early in life appeared to behave more anxiously than sheep that had not,

when subjected to various tests. In theory, anxious sheep should show more vigilant behaviour because in their negative affective state they are more likely to be aware of potential predator attack.

Twenty-seven female lambs were used in the study. They experienced one of three different treatments on day three or four after birth; none (control), tail docking (painful experience), inducing the feeling of sickness (early life stressor). The test protocol involved exposing the sheep

to: a negative cue (man with dog); an ambiguous cue (lady with pushbike); a negative cue after being stressed; and an ambiguous cue after being stressed.

The results of the study suggest that the individual ewes that underwent early-life stress, by experiencing mild illness, are more vigilant than those that experienced early-life pain or nothing at all. They will also react to an aversive situation more strongly, retaining vigilance for longer and be more likely to react negatively to an unfamiliar cue.

connect

 **Intervet**
Schering-Plough Animal Health

Connect from Intervet/Schering-Plough is an information and support service for veterinary students which provides individuals and recognised groups and societies with educational and sponsorship assistance during college.

The scheme incorporates a number of benefits which include:

Literature – Intervet/Schering-Plough has an extensive collection of literature on a variety of subjects in the companion animal, livestock and poultry sectors. Simply e-mail Customer Support at support.uk@intervet.com to find out more.

Education support – Intervet/Schering-Plough has played an active role in sponsoring clinical club meetings and will continue to positively receive requests for presentations or lectures.

Bursary Awards – The annual bursary provides financial assistance to students enabling them to undertake research in new and exciting areas of veterinary work.

Your University Contact...

- University of Bristol Philip Duffus
- University of Cambridge Katheryn Ayres
- University of Edinburgh Jacqui Matthews
- University of Glasgow Lesley Nicolson/Maureen McNulty
- University of Liverpool TBC
- Royal Veterinary College Jenny Jones/David Church
- University of Nottingham Malcolm Cobb

2010 submissions...

To submit your proposal for 2010 simply contact Paul Jennings at ABC on 01694 731914 or paul@abccomms.co.uk - or the staff representative at your vet school.

You will need to submit a synopsis of your proposed project covering the aims, objectives and hypothesis of the research project; the successful applicants will be invited to attend the Intervet/Schering-Plough Bursary Award Day.

Intervet/Schering-Plough Animal Health, a leading animal health company in the UK based in Milton Keynes, is dedicated to the research and development of high quality innovative animal health products and providing industry-leading technical support and customer service. For more information email support.uk@intervet.com or visit one of the following websites:

www.intervet.co.uk

www.future-of-vaccination.co.uk

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