



Welfare Pulse

Animal welfare in New Zealand and around the world

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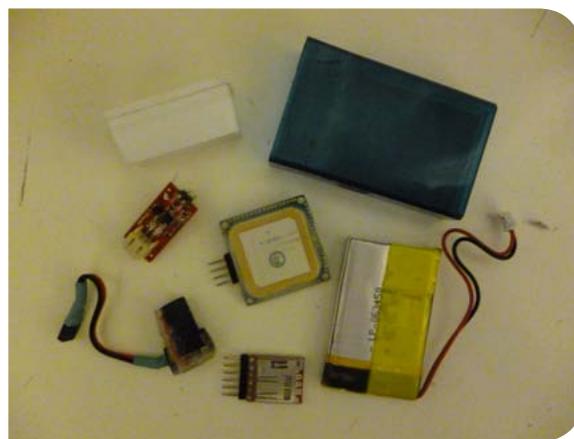
Tracking Jack

Cats are by nature nocturnal – ever wondered where yours goes during darkness? This was the question posed by Isaac Tebbs of Kelburn Normal School in a project exhibited at the 2012 NIWA Wellington Science and Technology Fair.

Isaac attached a small Geographical Positioning System (or GPS) to a harness made for his ginger tom and let him roam at will. Jack was tracked over four sessions, two during the night and two during the day. Jack, a normally cool cat, was not bothered by the harness and quickly resumed his normal activities. However, the sessions were not back-to-back so that he could have a break from wearing the harness.

The information on the GPS unit was downloaded onto a computer and put through a programme enabling the distances the cat travelled to be compared on a Google Earth map of the neighbourhood. Consideration also had to be given to the accuracy of the data, which was dependent on what satellites were in view, and the electronic filtering required to produce the final pictures of Jack's travels.

As the blue lines in the accompanying image show, the maximum distance Jack moved during the night was much further compared with his orange line exploits recorded during the day. The Tebbs' home is in the middle.



Jack, who had one eye when adopted from the SPCA, with his GPS harness attached and ready to roam. Below are the electronic components designed to track his travels.

Isaac was awarded a special prize by the Australian and New Zealand Council for the Care of Animals in Research and Teaching (ANZCCART). Candidates had to have involved animals in their work, be able to demonstrate knowledge of ethics approval and have considered the welfare of the animals involved.

The annual school science fair is sponsored by the National Institute of Water and Atmospheric Research which engages in environmental science to enable the sustainable management of natural resources.

ANZCCART's aim is to foster and promote best practice in ethical, social and scientific issues relating to the use and wellbeing of animals in research and teaching.

continued...



Jack's movements through a Wellington neighbourhood during the night (blue) and daytime (orange). The concentric circles show the outer limits of Jack's movements.

Welfare Pulse

Welfare Pulse is published three times a year by the Ministry for Primary Industries (MPI). It is of special relevance to those with an interest in domestic and international animal welfare developments.

The articles in this magazine do not necessarily reflect Government policy.

For enquiries about specific articles, refer to the contact listed at the end of each article.

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Anaesthetising possums in the wild using Zoletil

The brushtail possum (*Trichosurus vulpecula*), introduced from Australia to New Zealand in 1837 for the establishment of a fur trade, has become a serious pest over large areas of New Zealand due to its impacts on indigenous fauna and flora, and its role as a vector of bovine tuberculosis. Possums are studied extensively to underpin improved management through better understanding of their impacts, movements, population dynamics, behaviour, disease transmission, and responses to control operations. Such research work often requires that possums are restrained for purposes such as the attachment of radio-collars, collection of tissue samples, vaccination, or measurement of body parameters.

Like most wild animals, possums are not innately docile, and vigorously resist prolonged physical restraint which is considered, therefore, both practically and ethically unacceptable. Rather, anaesthetics are used to sedate the animal so that movement and responsiveness are greatly reduced.

Ketamine has been used for many years for sedating possums captured in the wild in New Zealand, but its recent reclassification as a Class III drug under the Misuse of Drugs Act 1975 has made its continued use impractical. Consequently, four other injectable anaesthetic compounds (Zoletil, xylazine–butorphanol, medetomidine–butorphanol, and Fentazin) were evaluated as replacements for ketamine.

Zoletil (a combination of zolazepam and tiletamine) was the only effective alternative. Possums were sedated adequately for general procedures, such as fitting radio collars, at an intramuscular dose of 5 mg kg⁻¹. At this dose, possums were sedated on average in 3.6 min, and recovery took 65 minutes on average. In contrast, Fentazin and combinations of xylazine–butorphanol and medetomidine–butorphanol failed to produce sedation at doses

known to be effective in other mammal species. It is important to report these negative results to help avoid duplication of effort and unnecessary use of animals by other researchers.

Zoletil caused a very “smooth” anaesthesia in possums unlike some other anaesthetics that can cause animals to become “jumpy” during the induction of anaesthesia or recovery from it. However, as there is no reversal drug for Zoletil, possums left unattended during recovery in the field must always be placed at a site where they would not stumble into danger (e.g. cliffs, streams, pools) if they were to move while still partially sedated. Sites should also be shaded, not only to avoid possums overheating, but also because possums’ eyes remain open during Zoletil-anaesthesia risking damage to the eyes from direct sunlight. There is little risk of possums being disturbed or predated by other animals during recovery as there are no naturally occurring predators of possums in New Zealand.

Zoletil proved similar to ketamine in both performance and cost (i.e. around \$1.50 per 3-kg possum), and is therefore recommended as a cost-effective anaesthetic and humane method for sedating possums captured in the wild.

A full paper on this study has been published recently in *Animal Welfare* (Volume 22, Number 3).

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Ivor Yockney of Landcare Research handling a young anaesthetised possum fitted with a radio collar.

David Barbour's outstanding and dedicated service to animal welfare acknowledged



Dave Barbour accepting his Assisi Award

In recognition of his outstanding service to animals and their welfare over 40 years service with the Ministry for Primary Industries (previously MAF), the New Zealand Companion Animal Council recently presented Dave Barbour with an Assisi Award.

The award, named in honour of St Francis of Assisi, the patron saint of animals, acknowledges those whose goals echo the principles of excellence in animal welfare.

David, until his recent retirement, was an Animal Welfare Investigator with MPI, based in Canterbury. He completed a full

and active career in animal welfare both in the production and companion animal areas. David's primary responsibilities included roles as a Livestock Instructor and an involvement with endemic disease control programmes affecting pigs, sheep, cattle and deer, and monitoring farm dogs for hydatids. He also accompanied two live sheep shipments to the Middle East contributing to the reduction in stock losses.

Others presented with their awards at the recent Companion Animal Council Annual Conference in Wellington were:

- **Danielle Duffield** – founder of the Otago Student Animal Welfare Defence fund.
- **Rolf Jansen** – pet shop retailer who created new benchmarks for the welfare of animals in pet shop retailing through having veterinarians practising on site.
- **Johanna Brens** – hearing impaired founder of Hearing Dogs for Deaf People in New Zealand and the National Hearing Dogs Training Centre.
- **Kevin Stafford** – veterinarian, ethologist, author and accomplished lecturer.
- **Helen Schofield** – for her services to the welfare of exotic animals especially those rescued from circus environments (awarded posthumously after Helen was tragically killed by a rescued elephant at the zoo and sanctuary she founded).

The New Zealand Companion Animal Welfare Council provides a forum to facilitate the achievement of harmonious relationship between companion animals, people and the environment (www.nzcac.org.nz).

Penny Timmer-Arends
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CODES OF WELFARE

update on consultation, development and review

Issued 2012

- Goats
- Meat chickens
- Layer hens

Recommended to the Minister

- Llamas and Alpacas

In post-consultation process

- Rodeos

Under development

- Dairy housing
- Equines
- Temporary housing of companion animals

Under review

- Circuses
- Zoos

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Changes proposed for New Zealand's animal welfare system

During August and September this year the Government publicly consulted on proposals for a New Zealand Animal Welfare Strategy and amendments to the Animal Welfare Act 1999.

The proposed strategy aimed to set out the values that New Zealanders hold about animal welfare and signalled animal welfare roles and responsibilities for Government, sector groups, and all New Zealanders. It highlighted that:

- Animal welfare is important, with both domestic and international dimensions – even isolated cases of poor animal welfare could damage our reputation.
- Not complying with minimum animal welfare standards is unacceptable.
- Professional and industry groups should take a proactive and leading role, particularly in educating their members and measuring animal welfare performance.
- Good animal husbandry and stockmanship is fundamental, and there are opportunities to adopt better practices and technologies to improve the way we treat and use animals.

The key legislative proposal was to create a new power in the Animal Welfare Act enabling the Government to set mandatory animal welfare standards in regulations. Regulations would be supported by a range of compliance tools and penalties, as well as other non-regulatory activities to encourage good animal welfare. The Ministry also proposed a number of other changes to improve the clarity and enforceability of the Animal Welfare Act.

The Ministry sent the consultation document to a large number of stakeholder groups and individuals likely to have an interest in the proposals, and promoted it via its website, through partner organisations, and using social media tools such as Facebook and YouTube. The Ministry also held six stakeholder workshops around the country to discuss the proposals. We had good attendance at these workshops and a wide range of perspectives were represented. Feedback on the workshops was positive and we saw good discussions across the tables between different interest groups.



The Ministry received a total of 2,209 submissions in response to the issues set out in the consultation paper. Submissions came from individuals and groups with a wide variety of interests in animals, from farmers to animal advocacy groups, pet owners, veterinarians, animal scientists, and hunting, pest management, and fishing groups.

The Government will shortly be considering final proposals for a New Zealand animal welfare strategy and amendments to the Animal Welfare Act. If the Government decides to go ahead with the proposed changes, those with an interest in animal welfare will have another chance to have their say when the proposed changes are considered by a Parliamentary Select Committee.

CODES OF ETHICAL CONDUCT

– approvals, notifications and terminations since issue 11

All organisations involved in the use of live animals for research, testing or teaching are required to adhere to an approved code of ethical conduct.

Codes of ethical conduct approved

- PharmVet Solutions

Amendments to codes of ethical conduct approved

- Department of Conservation
- Eastern Institute of Technology

Codes of ethical conduct revoked or expired or arrangements terminated or lapsed

- AgResearch Ltd

Notifications to MPI of minor amendments to codes of ethical conduct

- Animal Health Research Ltd (to use PharmVet Solutions' code – renewal, arrangement expired)
- Argenta Manufacturing Ltd (to use PharmVet Solutions' code – renewal, arrangement expired)
- Bayer New Zealand Ltd (to use PharmVet Solutions' code – renewal, arrangement expired)
- BioCell Corporation Ltd (to use PharmVet Solutions' code – renewal, arrangement expired)
- Caledonian Holdings Ltd (to use PharmVet Solutions' code – renewal, arrangement expired)
- Carne Technologies Ltd (to use PharmVet Solutions' code – renewal, arrangement expired)
- Elanco Animal Health (to use PharmVet Solutions' code – renewal, arrangement expired)
- Mason Consulting (to use PharmVet Solutions' code – renewal, arrangement expired)
- New Zealand Forest Research Institute Ltd (to use University of Waikato's code)
- Novartis New Zealand Ltd (to use PharmVet Solutions' code – renewal, arrangement expired)
- SciLactis Ltd (to use AgResearch Ltd's code)
- SCEC Pty Ltd (to use PharmVet Solutions' code)
- Stemvet New Zealand Ltd (to use PharmVet Solutions' code – renewal, arrangement expired)
- Virbac New Zealand Ltd (to use PharmVet Solutions' code – renewal, arrangement expired)

Codes of ethical conduct revoked or expired or arrangements terminated or lapsed

- Baldock, Anne
- Bomac Research Ltd
- New Zealand Forest Research Institute Ltd

Linda Carsons
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Cases of illegal horse castrations concerning

Castration of horses is a common procedure that is performed throughout New Zealand to reduce the masculine and aggressive behaviour that often occurs in stallions. However, despite being a relatively simple surgical procedure, it has potentially severe and even fatal repercussions if performed incorrectly or if the horse is not provided with adequate post-operative care. For this reason, the castration of horses is classified as a significant surgical procedure under the Animal Welfare Act 1999. This means that legally, the castration of horses is restricted to veterinarians or to veterinary students acting under the direct supervision of a veterinarian.

MPI has recently been involved in an investigation into illegal horse castrations in some rural parts of New Zealand including the Hawke's Bay and wider east coast area. Unqualified people have been found to be carrying out this procedure not only on their own horses but also as part of business enterprises. People are choosing to castrate their horses themselves instead of using the services of a veterinarian for a number of reasons including the cost, inaccessibility of veterinary help or simply because horse castration is a farm tradition passed down through the generations.

Complications can occur, and some can be life threatening and require immediate veterinary help. In addition, post-operative hygiene and care is essential to ensure the health of the horse, and continuing post-operative pain relief preferable. The horse may also require a course of antibiotics should the incisions and surrounding area become infected.

To maintain horse welfare, either an approved general or local anaesthetic needs to be provided. Veterinarians have access to both. Some drugs, such as chloroform, cannot be used to anaesthetise animals. The use of chloroform as a general anaesthetic was discontinued some time ago in both the medical and veterinary profession due to the risks associated with its use to both patient and handler.

MPI is keen to spread the message to the public that continuation of this practice can attract prosecutions under the Animal Welfare Act 1999. This applies to horse owners who allow illegal castration of their horses, as well as the individuals performing the procedure. Penalties for offences in this area under the Animal Welfare Act 1999 carry a maximum fine of \$50,000 or 12 months imprisonment.

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Veterinary students engrossed with animal welfare

For one week, a group of final year veterinary students from Massey University attempted to gain a more in-depth understanding of animal welfare and its current state in New Zealand.

The week began with a philosophy lecture challenging the concepts (and our mental capacities) of what is morality and what is the difference between right and wrong. Next, Kevin Stafford kept us up to date with what is happening in the welfare industry and Craig Johnson reviewed the important players and legislative structure. We heard from the post-graduates at Massey about their current research projects, which range from defining emotions in lambs to the pharmacokinetics of opioids. Finally, David Mellor gave us an overview of positive welfare and possible future directions in which the industry may evolve.

We ventured outside of Palmerston North, spending a day in Hamilton with the AgResearch group at Ruakura. They were very welcoming and provided us with a different perspective on the research that they are conducting. Thinking about the interests of the industries in contrast to academics was enlightening for us all. To round out our experience, we spent a day in Wellington, hearing from the Ministry for Primary Industries and the New Zealand Veterinary Association. We talked to MPI about the important role vets have in improving animal welfare by educating clients, and in contributing to the animal welfare system in New Zealand. We also discussed changes in the public perspective over the years and the impact of that on welfare. Finally, we heard about the process involved in the review of the current Animal Welfare Act, which certainly gave us an appreciation of the complexity of public policy.

Overall, the week was very informative and involved many interesting debates which we will be reflecting upon and discussing with our colleagues. We would like to thank everyone involved for their generous hospitality.

Kelly Kezer
Final year vet student
Massey University



Final year vet students with Associate Professor Craig Johnson

FLAT-FACED CATS – what are we breeding?

Cats have been selectively bred for specific traits over many generations. There are a large number of distinct cat breeds recognised today and they all have their different specific traits, be they short haired, long haired, small or large, relaxed or active, and of course, they exist in a large range of colours. But in breeding for specific traits, are we affecting the cats' physical health and in turn, their welfare?

One case in which selective breeding has resulted in challenges for some breeds of cat is in the case of the brachycephalic breeds. Brachycephalic cats are those which have been bred to have flattened faces, the most recognised being breeds such as the Persian, Burmese and Himalayan cats. The term “brachy” means shortened and “cephalic” relates to the head so a brachycephalic cat has been bred to have shortened bones in the head, giving the face a rounded, pushed in appearance. This shortening of the bones changes the anatomy of the structures in the head and this can lead to problems, especially with breathing.

The nostrils in brachycephalic cats are small and narrowed and restrict the amount of air that can flow into the nose. Along with this, the soft palate at the back of the throat is often a normal length, which, with the shortened mouth, means that the soft palate can block the entrance to the larynx as the cat tries to breathe. This often shows up as mouth breathing because it is easier for the cat to breathe through its mouth rather than its nose. The breathing difficulties experienced in everyday life for these cats means that they struggle in hot, humid conditions, often lack energy and can be prone to fainting. The restricted ability to breathe also places them at a higher risk when they are required to be anaesthetised for surgical procedures.



In addition, brachycephalic cats can be prone to teeth and eye abnormalities. The shortened face means that the jaws are distorted and shortened. The lower jaw is often angled upwards while the top jaw is shortened causing crowded, angled teeth. The misalignment of the teeth means that they can be used incorrectly and these cats are susceptible to dental disease.

The eyes in brachycephalic cats can also be problematic sitting very prominently on the face and protruding past the nose. This makes the eyes very susceptible to trauma, corneal ulceration and further eye disease. The tear ducts are usually underdeveloped and tear staining is a common feature.

All of these conditions cause pain and distress to the animal concerned. Surgical procedures can correct some deformities but should we be thinking about reducing the occurrence of these

problems rather than repairing the faults? Judging standards over the years have encouraged the breeding of brachycephalic cats, with flatter faces being rewarded in the show ring. Many brachycephalic cats lead normal lives, however, selective breeding for the physical attributes such as flattened faces has led us to a point where we are causing some cats a lesser quality of life simply to fulfil our requirements for a cat that has a certain “look”. Awareness of the discomfort and distress that these animals experience on an everyday basis may encourage a move away from selectively breeding cats with deformities such as flattened faces, in favour of breeding cats with the emphasis on a high level of physical health and wellbeing.

Karen Phillips

Deputy-Chair

National Animal Welfare Advisory Committee

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Animal manipulation statistics due

All organisations/individuals with a code of ethical conduct or who have an arrangement to use another organisation's animal ethics committee are reminded that their annual return of animals manipulated during 2012 is due to be submitted to MPI by 28 February 2013. Returns must be in writing and should be made on the forms provided by MPI for this purpose.

A copy of the form is posted to organisations in December each year and is also available on the MPI website:

<http://www.biosecurity.govt.nz/forms/naeac-animal-manipulation-figures>. Please do not use old versions of the form.

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OPTICAL IMAGING – a powerful tool for reducing the numbers of animals and refining experiments

Optical imaging is a sensitive tool for imaging live small animals. It is based on the detection of bioluminescence or light produced by the reaction of the enzyme luciferase with a substrate such as that found in tumours. The optical imager simply measures the light produced.

Much work using laboratory animals is pre-clinical biomedical research to better understand human diseases and/or evaluating novel treatments. Traditional approaches in this type of research use a large number of animals culled at specific time points. This approach is not only labour intensive, costly and time consuming but it also decreases statistical power. A solution to this problem is to use in vivo optical imaging to measure disease development and recovery in the same live animal at multiple time points.

Optical imaging has several advantages: it reduces financial costs to researchers by reducing animal numbers and ensures robust results. Many high impact factor journals are now calling for this technology as solid pre-clinical evidence of therapeutic benefit. Optical imaging now spans “bench to bedside” as many of the imaging agents developed in laboratory mice are now making their way to the clinic to detect disease in patients.

As a biomedical researchers, ethically acceptable research is always at the forefront of our work. Optical imaging is a powerful tool for implementation of two of the Three Rs, reduction and refinement (the third being replacement).

For example, prior to optical imaging a typical study set up to examine, say subcutaneous human prostate tumours in mice, would monitor tumour growth with calipers, and cull groups at weekly intervals to assess the development of the tumour in different organs. Such a study would require 256 mice at a cost

of \$12 800 (\$50 per mouse).

A major experimental disadvantage of this approach is that tumour burden could not be accurately assessed nor could it be determined if there was any evidence of metastatic disease (spread of the cancer) without culling the mice and undertaking a comprehensive screen of all organs. A further disadvantage was that the tumours did not spread in mice as they would in humans with prostate tumours, limiting the pre-clinical applicability of the model. These experimental limitations meant the work was unlikely to be published in internationally reputable or high impact factor journals.

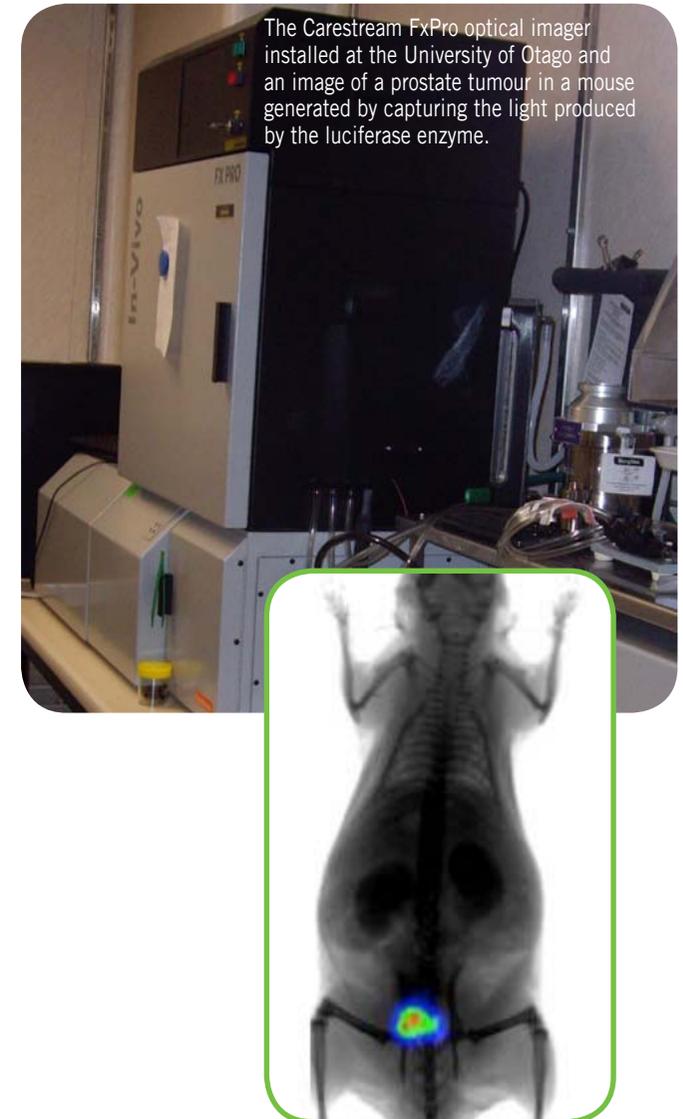
In contrast a typical research design using optical imaging now involves an injection of luciferase labelled human prostate cell-lines into the prostate, and imaging the same mice weekly. The work now only requires just 16 mice at a cost of just \$800.

Furthermore, intra-prostatic injection more closely mimics the progression of human prostate cancer. Metastatic disease can now be identified in a live animal based on the luciferase enzyme signal or florescence. Tumour burden can be accurately determined which ensures mice are culled before suffering unnecessarily. Finally, the work is suitable for publication as it uses internationally accepted pre-clinical imaging techniques.

In conclusion, optical imaging has significant benefits for the researcher and for our ethical responsibility when undertaking animal research.

Elspeth Gold
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Dr Gold is a member of the New Zealand board of ANZCCART



CALShare – promoting the Three Rs in teaching animal science

CALShare is an initiative of the Institute of Veterinary, Animal and Biomedical Sciences at Massey University and provides resources for students undertaking courses in veterinary sciences, veterinary nursing, agriculture and science. CALShare is a veterinary based website that displays a large number of anatomical photos and videos together with relevant information. As a contribution to the 'replacement and reduction' concepts of the "Three Rs", these resources are being offered free to other institutions for use in their own teaching curriculums. The concept of the Three Rs states that wherever possible animals used in research, testing and teaching are replaced with alternatives; the number of animals used in procedures is reduced; and the procedures are refined so that there is less impact on animal wellbeing.

CALShare has a vast database of radiography, anatomy and histology photos as well as interactive figures like Skeledog where users can click on different bones of the canine skeleton and learn about their structure, function and placement. Images of body processes are overlaid with audio

taking users through a variety of tutorials including "Alive and beating – studying the heart of a living dog".

CALShare is seeking to work in collaboration with other veterinary schools worldwide in order to extend the initiative of promoting the Three Rs, with positive feedback from the USA and UK received so far.

You can access the CALShare website at:

<http://calshare.massey.ac.nz>

Neil Ward

Senior Technician

Institute of Veterinary, Animal & Biomedical Sciences

Massey University

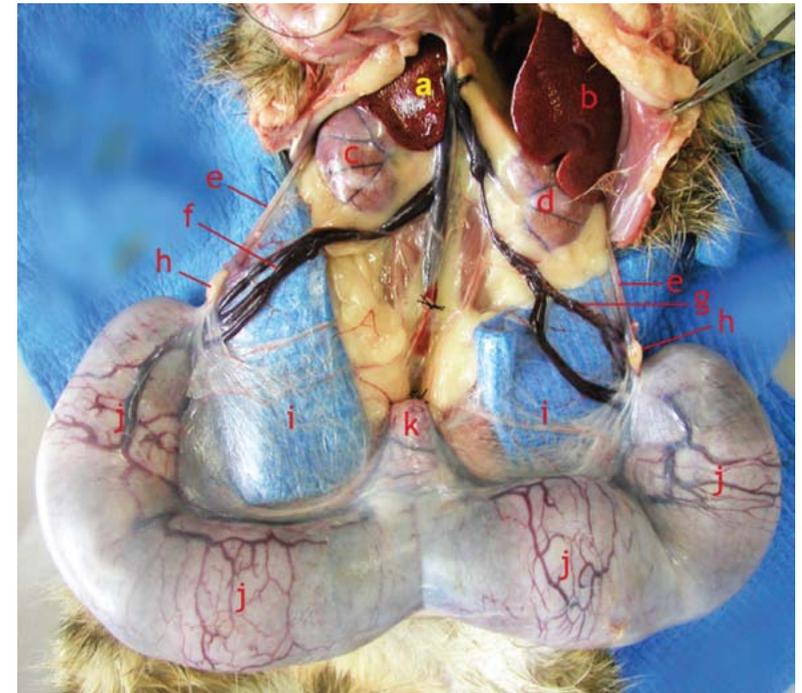
Email: N.Ward@massey.ac.nz

Alex Davies

Associate Professor

Institute of Veterinary, Animal & Biomedical Sciences

Massey University



Cat uterus: Cat material is difficult to obtain for teaching anatomy. Only occasionally is the result of dissection as clear as in this picture. This picture records details that are difficult to demonstrate avoiding repeating the dissection for subsequent classes.

Click on the left and right buttons to show a series (1 to 9) of still frames with labels.

QUESTIONS

Dog heart imaged by fluoroscopy: X-ray fluoroscopy uses live animals. In this case the contrast material was injected by an invasive method. The result is an interactive movie that clearly shows the flow of blood through the heart in a way that dissection cannot do. It demonstrates the principle of using one animal to create material that can be used repeatedly.

Your feedback

We look forward to hearing your views on *Welfare Pulse* and welcome your comment on what you would like to see more of, less of, or something new that we have yet to cover. Please send your feedback to us by emailing animalwelfare@mpi.govt.nz

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