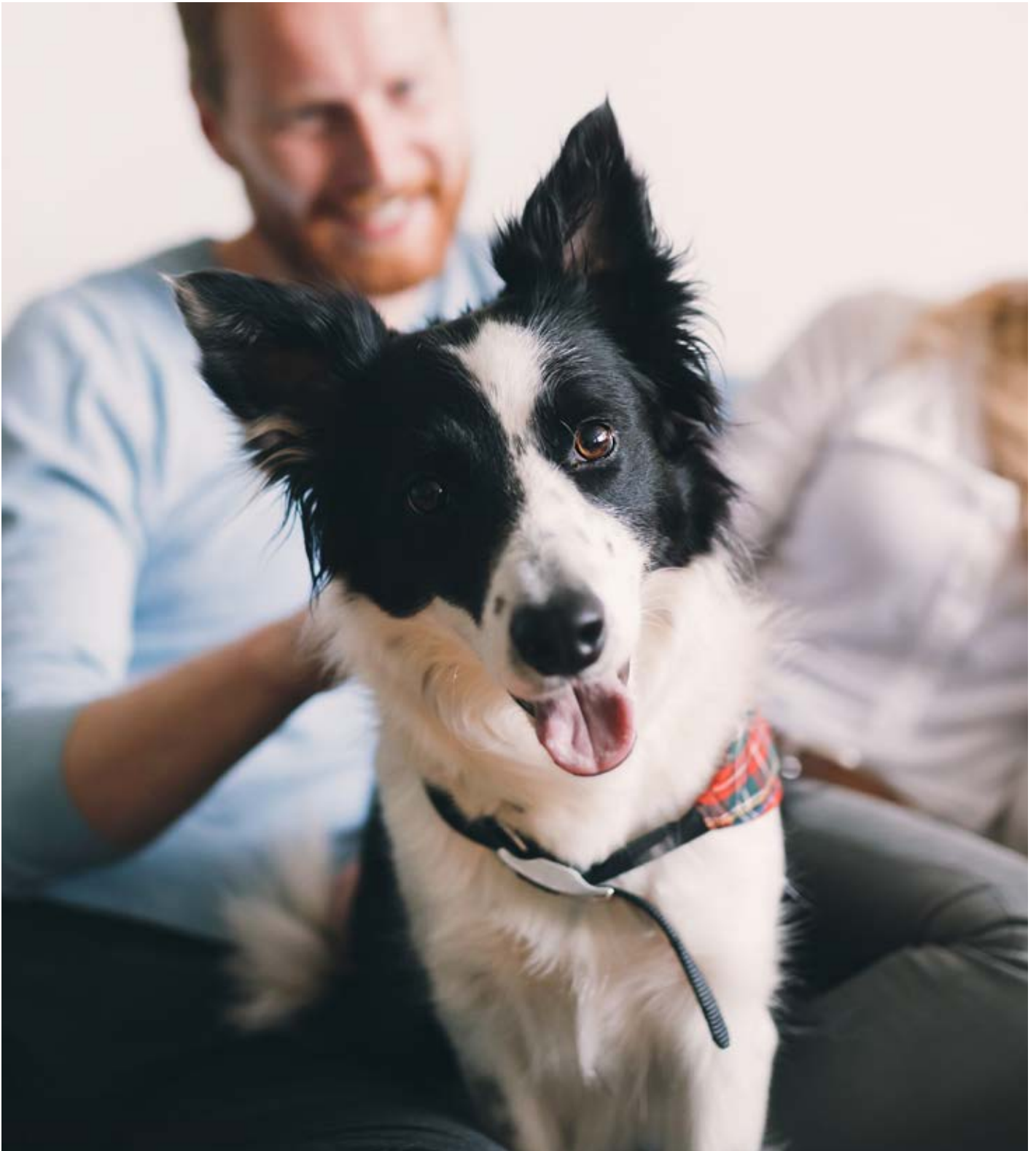


# THE AUSTRALIAN VETERINARIAN MAGAZINE

Veterinary volunteers have Christmas spirit, all year round

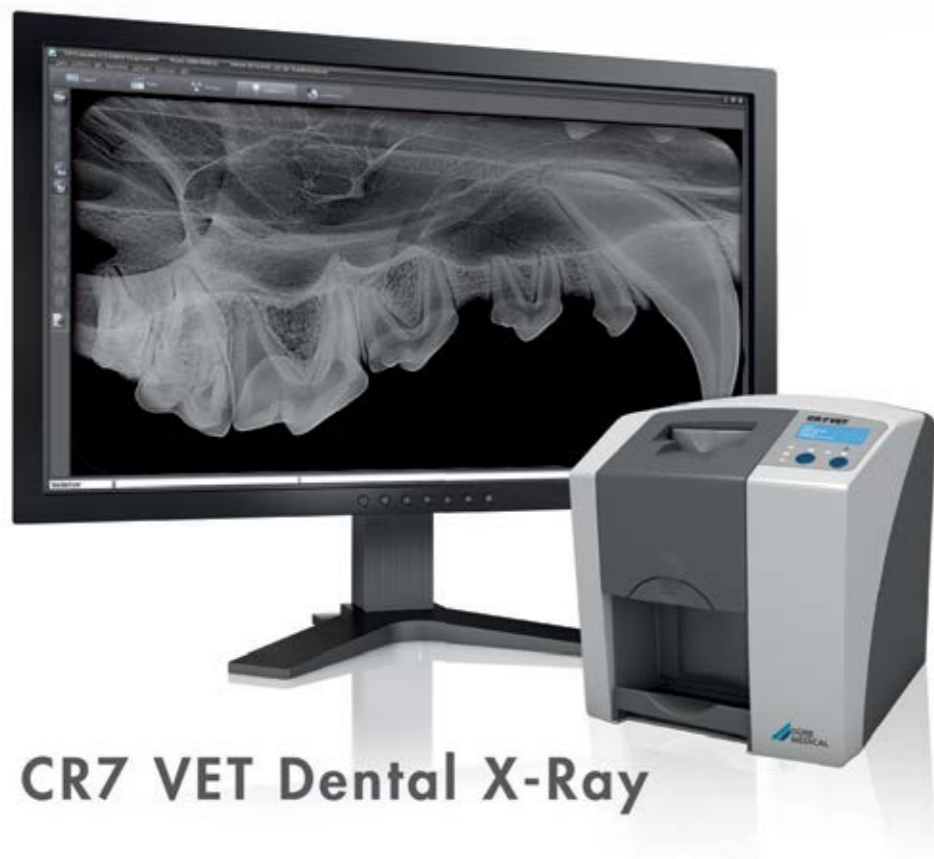
**Tooth fractures and treatment options in dogs and cats**

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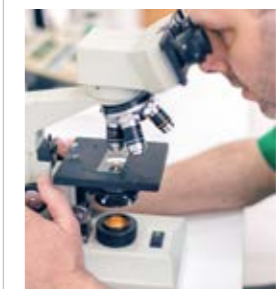


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# VETERINARY VOLUNTEERS HAVE CHRISTMAS SPIRIT, ALL YEAR ROUND

**MANY VETERINARIANS SEE THEIR WORK AS A CALLING AND HAVE AN ONGOING DESIRE TO GIVE BACK TO THE ANIMAL KINGDOM. VETERINARY VOLUNTEERS WITH VETS BEYOND BORDERS (VBB), AN AUSTRALIAN-BASED INTERNATIONAL ANIMAL CHARITY, DEVOTEDLY SHARE THEIR TIME, KNOWLEDGE AND SKILLS NOT JUST DURING THE SEASON OF GIVING BUT ALL YEAR ROUND.**

"Since 2003, VBB volunteers have made a measurable contribution to the health and welfare of animals and people in developing communities around the world," said VBB CEO Maryann Dalton.

Through its VetMatch and VetTrain programs, the charity deploys volunteer veterinarians, veterinary nurses and other animal welfare workers throughout the year to deliver animal health and community awareness where they are desperately needed.

"You feel like you're welcomed, you're wanted, and you're making a true difference," said Victorian veterinarian Dr Alan Sherlock, who has volunteered annually in India for many years training local vets in veterinary medicine and surgery and working with VBB's anti-rabies program Sikkim Anti-Rabies and Animal Health (SARAH).

India carries a third of the world's rabies burden and SARAH is the first state-wide rabies program which has demonstrated successful near elimination of this nearly 100% fatal dog-mediated disease, explained Ms Dalton.

In the last financial year, VBB desexed over 7,000 animals, administered nearly 36,000 doses of anti-rabies vaccine and 290 doses of distemper vaccine, in addition to the medical, surgical and hospital care we provided to hundreds of sick and injured domestic animals and wildlife.

During the current financial year, in addition to treating sick and injured animals, VBB will administer 30,000 to 40,000 rabies vaccinations, plus 150-200 distemper vaccinations and sterilisation of up to 9,000 dogs, Ms Dalton added.

"Vets Beyond Borders provides the volunteers and facilitates clinical skill development of local vets," she said. "We need funds to purchase medical equipment and vaccinations to treat street dogs for distemper, parvo and rabies."

#### **VBB vets' generosity have a global impact**

Veterinarian Dr Victoria Bondin from the Mediterranean island of Malta recently returned from her first volunteer assignment with VBB's VetMatch program in Ladakh, India. For Dr Bondin, volunteering is 'taking a break' from her day-to-day running of her clinic.

"People tell me that I'm not really taking a break since I'll still be working, but they don't understand that for me, my work is my hobby and surgery relaxes me," she said. "I look forward to making a difference, however small, in the suffering that stray animals endure. I believe that in this day and age, with all the supposed progress we have made as a civilisation, stray domestic animals should not still exist or at the very least should all be afforded adequate veterinary care and animal welfare standards."

Queensland veterinarian Dr Gordon Corfield recently travelled to Cambodia as part of VBB's VetTrain program to provide clinical training to veterinarians working with Cambodian animal welfare organisations.

"It has been an exciting opportunity to take VBB to Cambodia and make a meaningful and measurable difference to the emerging veterinary profession there," said Dr Corfield.

Canadian veterinarian and vet technician educator Dr Martine Nadeau has been a volunteer for VBB for several years, first lending a hand in India. She recently travelled to Sardinia, the second largest island in the Mediterranean Sea, where she sterilised 100 street animals in one week as part of VBB's VetMatch program. After a month's stay there, Dr Nadeau continued to Cambodia as part of VBB VetTrain to share her knowledge and skills with local veterinarians.

"Vets Beyond Borders is grateful for the continued generosity of volunteers not just during the holiday season but all year round," said Ms Dalton. "We encourage animal lovers to support VBB volunteers in giving animals in developing communities access to basic veterinary care and training local vets to make a difference, too."

To donate to Vets Beyond Borders or for more information about the animal health and community awareness programs in Australia and around the world, visit [www.vetsbeyondborders.org](http://www.vetsbeyondborders.org).





# TOOTH FRACTURES AND TREATMENT OPTIONS IN DOGS AND CATS

David Clarke, BVSc, Diplomate AVDC, Fellow AVD, MANZCVS  
Registered Specialist, Veterinary Dentistry and Oral Surgery, Dental Care for Pets, www.vdec.com.au  
Telisha Noller, BSc, DVM

## Structure of the teeth and tooth supporting apparatus

The adult tooth is comprised of two sections: the crown positioned above the gum margin and the root positioned below the gum margin (Figure 1). The crown is covered by enamel which is formed by ameloblasts prior to tooth eruption. After eruption the ameloblasts die and therefore the enamel has no regenerative properties. Enamel thickness varies from 0.1 - 1mm in cats and dogs (Crossley 1995). The root is covered by cementum, which is formed by cementoblasts. Cementoblasts retain the capacity to produce cementum throughout the tooth's lifespan. The central portion of the tooth, termed the pulp canal, is a hollow chamber occupied by dental pulp. Dental pulp contains nerves, blood and lymphatic vessels, connective tissue and odontoblasts. Odontoblasts, which line the pulp canal and remain alive throughout the tooth's lifespan, produce dentine. Dentine produced during tooth development is termed 'primary dentine', whilst dentine produced after root formation is termed 'secondary dentine' or 'tertiary dentine'. Secondary dentine is the normal physiological production of dentine resulting in narrowing of the pulp canal and thickening of the tooth wall. Tertiary dentine is produced as an attempt to protect and repair the tooth and prevent pulp exposure when a tooth suffers external wear (abrasion or attrition). The periodontal ligament attaches to the cementum and anchors the tooth onto the surrounding bone.

The pulp communicates with the periodontal ligament at the apical tip of the tooth root. The apical opening in immature adult teeth is open and large. It closes into an apical delta at approximately 11 months of age through a process of apexogenesis (Verstraete 2011, Nanci 2008, Pashley and Liewehr 2006, Evans and de Lahunta 2013, Wilson 1999).

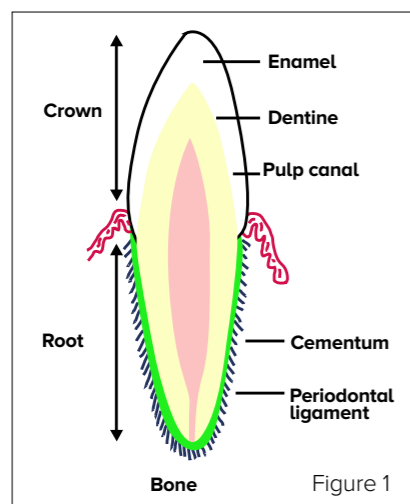


Figure 1

## Common Causes of Tooth Fracture

Fractures are a common problem in dogs and cats presented to veterinary clinics worldwide. Fractured teeth have been found in 27% of client-owned dogs (Golden et al 1982) and nearly 10% of cats (Harvey et al 1994) and are often an incidental finding on routine physical examination during vaccination or other visit to the clinic. In dogs presented as referral clients to our practice, the most common teeth fractured are all canine teeth and maxillary 4th premolar teeth. In cats, it is the maxillary canine teeth that are commonly fractured.

A significant number of dogs and cats have access to hard objects, including raw natural bones, antlers, hooves, and nylon bones resulting in injuries caused during chewing; they may also be involved in high impact trauma such as car accidents, sporting injuries, i.e. golf stick/ball, baseball bat; or low impact trauma such as falls resulting in tooth fractures (WSAVA Dental Guidelines 2018). The British Veterinary Dental Association Position Statement has reported that "Many veterinary dentists are reporting that they are seeing fractured teeth as a direct result of chewing on antler bars. In particular, the maxillary fourth premolar tooth" (BVDA website).

A study in foxhounds fed raw carcasses, including raw bones, showed that they had a high prevalence of tooth fractures (Robinson and Gorrel 1997). The skulls of 29 African wild dogs eating a "natural diet", mostly wild antelope, also showed evidence of teeth wearing (83%) and fractured teeth (48%) (Steenkamp and Gorrel 1999). Nineteen free-ranging maned wolves in Brazil on oral examination revealed 34 teeth with crown fracture in twelve animals (Furtado et al 2007).

## Classification of Tooth Fractures

Classification of fractures may be done using the system of traumatic dentoalveolar injuries (Soukup et al 2015) which is based on the amount of tooth structure exposed, i.e. enamel / dentine, crown / root, as well as whether the pulp tissues are exposed. Superficial fractures may result in loss of enamel and/or dentine with no pulp exposure, termed 'uncomplicated', whereas more extensive tooth loss may expose the pulp, termed 'complicated'.

**“Fractures are a common problem in dogs and cats. Fractured teeth have been found in 27% of client-owned dogs and nearly 10% of cats”**

## The most common classifications seen in practice are:

- Enamel damage or infraction (Figures 2 and 3): An incomplete fracture (crack) of the enamel without any loss of any tooth substance
- Enamel loss with no exposure of dentine (Figures 4 and 5): Fracture confined to the enamel
- Enamel and dentine exposure without pulp exposure (Figures 6 and 7)
- Crown and root involvement without pulp exposure (Figures 8 and 9)
- Root fracture without crown damage or pulp exposure (Figures 10 and 11)
- Pulp exposure isolated to the crown (Figure 12 and 13)
- Pulp exposure involving both crown and root (Figure 14 and 15)

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## Clinical Presentation

When the pulp is exposed and left untreated, the resulting disease will progress over months to years from pulpitis and pulp necrosis to osteomyelitis and sepsis. Clinically, a non-vital maxillary canine or premolar tooth may result in a draining sinus tract adjacent to the medial canthus of the eye or lateral bridge of the nose. A non-vital mandibular canine tooth may produce a sinus tract on the ventral or lateral surface of the mandible. It is also possible for pulpitis or necrosis to occur as a result of an uncomplicated tooth fracture, especially when the fracture is close to the pulp canal, as the exposure of the dentinal tubules can allow communication between the oral cavity and the pulp.

## Diagnosis

Every endodontic examination requires tooth exploration and radiographs to confirm or rule out pulp exposure, internal root resorption and to assess the health of the periapical area. When the pulp is not exposed a dental explorer probe drawn across the tooth should feel hard and mineralised. If the fracture is acute and extends into the pulp canal, the pulp will appear pink and may haemorrhage when probed (Figures 13 and 15). Pulp exposure is quite often painful and the patient may hyper-salivate, show anorexia, behavioural changes or resist conscious oral examination. Once the pulp is necrotic, it may appear grey / black and there is usually no haemorrhage or pain on probing.



Figures 2



Figures 3



Figures 4



Figures 5



Figures 6



Figures 7



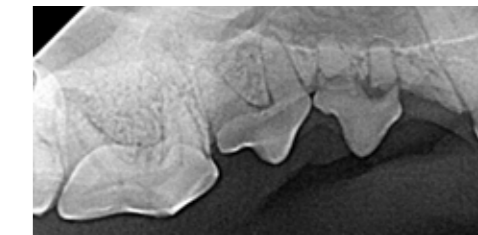
Figures 8



Figures 9



Figures 10



Figures 11



Figures 12



Figures 13



Figures 14



Figures 15





**Treatment Options**

Treatment is directly related to the type and degree of damage, the duration of any pulp exposure, as well as the presence or absence of endodontic infection. All teeth with any type of damage should be radiographically examined for signs of non-vitality or infection. If there is evidence of this on radiology, root canal therapy or extraction is necessary.

- When the defect is confined to the enamel (Figure 5), without dentine or pulp exposure and without radiographic signs of infection, smoothing any sharp edges and restoration is recommended. The tooth should be checked and radiographed after six months to rule out internal resorption and pulp necrosis, which would be observed as decreased pulp canal narrowing, due to no dentine production, compared to the contralateral tooth.
- When dentine is exposed without pulp exposure (Figures 7 and 9) or radiographic signs of infection, smoothing any sharp edges and restoration are recommended. Treatment of dentine exposure is necessary to reduce sensitivity, to seal the dentinal tubules to prevent ingress of bacteria into the pulp canal, to smooth the tooth and to decrease plaque and calculus accumulation. The tooth should be checked and radiographed after six months to rule out internal resorption, pulp necrosis or periapical pathology. Pulpal necrosis would be observed as

decreased pulp canal narrowing, due to no dentine production. Periapical pathology, such as a granuloma or abscess is observed as a periapical lucency.

- Teeth with pulp exposure (Figure 13 and 15) of less than 48hrs may be treated by direct pulp capping or extraction (Clarke 2001). Teeth treated by capping should be radiographed after four months to confirm success, which is observed by formation of a dentinal bridge covering the pulp canal, narrowing of the pulp canal and no signs of the periapical lucency.
- Teeth with pulp exposure (Figure 13 and 15) of longer than 48hrs or radiographic signs of pulpal necrosis/tooth infection requires treatment by extraction or root canal therapy to prevent periapical abscess and osteomyelitis formation which may lead to systemic complications. Teeth treated by root canal treatment should be radiographed after 12 months to confirm success which is observed by resolution of the periapical lucency.
- Chronic wear results in the production of tertiary or sclerotic dentine so the tooth pulp continues to be protected by a dentinal layer. These teeth require no therapy, as long as they are radiographically healthy. When the tooth is undergoing endodontic disease, they should be extracted or have a root canal procedure performed.

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The following terms and abbreviations from the American Veterinary Dental College are used:

| Abbreviation | Pathology   |
|--------------|---|
| T/FX/EI      | Enamel Infraction - Incomplete fracture (crack) of the enamel without loss of tooth substance                     |
| T/FX/EF      | Enamel Fracture - Fracture in which crown substance is lost, limited to enamel                                    |
| T/FX/UCF     | Uncomplicated Crown Fracture - A fracture of the enamel and dentine not involving the pulp.                       |
| T/FX/CCF     | Complicated Crown Fracture - A fracture involving enamel and dentine and exposing the pulp                        |
| T/FX/UCRF    | Uncomplicated Crown Root Fracture - A fracture involving enamel, dentine, and cementum, but not exposing the pulp |
| T/FX/CCRF    | Complicated Crown Root Fracture - A fracture involving enamel, dentine, and cementum and exposing the pulp        |
| AB           | Abrasion - Tooth wear caused by contact of a tooth with a non-dental object                                       |
| AT           | Attrition - Tooth wear caused by contact of a tooth with another tooth  |



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## BREAKTHROUGH IN THE HUNT FOR A VACCINE AGAINST FOAL PNEUMONIA



A vaccine against deadly foal pneumonia might finally be within reach, thanks to Morris Animal Foundation funded research conducted at two major universities in the United States. The breakthrough could potentially save the lives of thousands of foals every year.

"After many decades of efforts, our research, funded by Morris Animal Foundation, has led to the first effective vaccine protecting foals against infection with *R. equi*., considered the most common and important form of pneumonia in foals older than a few weeks of age," said Dr. Noah Cohen, one of the senior authors of the PLOS Pathogens paper describing the vaccine trial, and the Patsy Link Chair in Equine Research at Texas A&M University. Researchers at Harvard Medical School also were part of the research team.

In addition to causing severe, insidiously progressive pneumonia, infection with *Rhodococcus equi* can affect other organs in the body, such as bones (including the spine), abdominal lymph nodes, eyes, joints and brain. Fatality rates range from 20 percent to 40 percent of infected foals. There currently are no licensed vaccines to protect against foal pneumonia, creating a critical need for development of an effective vaccine.

For the vaccine trial, Dr. Cohen's team first investigated if vaccinating pregnant mares at three weeks and six weeks prior to birth of their foals protected their newborns against foal pneumonia. The team found antibodies that ward off pneumonia were transferred to the foals via the mares' colostrum, which was critical to establish as horses lack the ability to transfer antibodies through the placenta. Most importantly, those antibodies were able to protect almost all the foals born to vaccinated mares from contracting pneumonia.

Next, the team conducted a small, randomised, controlled study of nine foals with *R. equi*. Five foals were given serum with high levels of antibodies against *R. equi* and four were not. All five foals

receiving the hyperimmune serum were protected against *R. equi* pneumonia whereas the foals that received standard plasma all developed pneumonia.

Further safety testing is ongoing, but these early results appear to support the safe and effective use of this novel foal vaccine strategy against pneumonia. Moreover, it suggests that immunising donor horses with this vaccine could be used to produce plasma with which foals could be transfused to prevent *R. equi* pneumonia.

Pneumonia caused by *R. equi*, which often clusters by farms, is found on all continents except Antarctica. Some farms experience problems recurrently and other farms sporadically or not at all. Despite effective antibiotic therapies, the incidence of this disease remains high, and many affected foals die. At farms that have problems with this disease, an average of 15 percent to 20 percent of foals develop pneumonia in a given year.

In addition to protecting foals against pneumonia caused by *R. equi*, Dr. Cohen said the new vaccine has the potential to protect against other diseases, including sepsis, the leading cause of death for foals in the first few weeks of life.

Other potential disease targets for the vaccine include bacterial infections such as *Streptococcus equi* subspecies *equi*, the cause of the ancient and prevalent disease known as strangles.

"Developing a vaccine to protect foals against pneumonia has long been a priority at Morris Animal Foundation and of the equine researchers we support," said Dr. Kelly Diehl, Interim Vice President of Scientific Programs at Morris Animal Foundation.

"We have invested more than \$2 million to help fight this disease. Dr. Cohen's team's findings are ground breaking and have the potential to change how we manage this disease going forward, saving the lives of young horses around the world," Dr Diehl said.



## UNIQUE ALLIANCE SET TO BENEFIT AUSTRALIAN VETS AND NURSES



In 2019, veterinary education company Improve International Australia will join with emergency specialist group Animal Emergency Australia (AEA) and bring another level of continuing education (CE) opportunity to the Australian veterinary community.

The two companies, who will formally begin working together from 1 January 2019, see the union as an exciting partnership, with the ultimate beneficiaries being veterinarians and nurses who are looking for progressive continuing education options.

"As a CE provider, one of our biggest tasks is ensuring our content remains current, practical and of the highest standard. The relationship with AEA will allow us to keep our finger on the industry's pulse and to leverage the extensive experience and knowledge of the vets and nurses within AEA", said Dr Brooke Sheehan, Managing Director of Improve International Australia.

AEA owns and operates Animal Emergency Service, Perth Vet Emergency, and Pet Intensive Care Unit veterinary hospitals. The team includes an emergency specialist, residents in training, and numerous ANZCVS Members. Continuing education and career development have been a major focus for the group.

"We see continuing education as vital to the development of vets and nurses, and to the provision of quality patient care. We're excited to be working with Improve to develop and grow their suite of courses for the Australian market", said AEA Director Dr Rob Webster.

Improve International was founded in the UK in 1998 and is now the largest CE provider in Europe, offering modular programs and short courses in 22 countries. Improve was launched in Australia in 2014 and has become one of the country's leading CE providers

The AEA Group was founded in Brisbane in 2005 and has since grown to also include hospitals on the Gold Coast, Sunshine Coast and Perth. The organisation has more than 200 team members and remains privately owned and operated.



## PROGRAM HELPS HORSE OWNERS WITH SPEEDIER DIAGNOSIS



An educational program is helping horse owners and vets to recognise and treat two hormonal conditions which are the most common causes of founder.

University of Queensland (UQ) researcher Dr Allison Stewart said the program could help reduce the impact of founder, or equine laminitis, which causes devastating hoof inflammation, pain and lameness.

"Founder often recurs and, although it can be successfully managed, it is rarely cured," Dr Stewart said.

"Most owners know that fat horses are more likely to founder, though many people don't realise that hormonal problems can be the underlying cause.

**"The most common cause of founder is equine metabolic syndrome, or EMS, which is similar to type two diabetes in people and is caused by insulin dysregulation," she said.**

"The other condition, pituitary pars intermedia dysfunction, or PPID, was previously known as equine Cushings syndrome, and it affects one in five Australian horses and ponies over the age of 15 years.

"Educating owners to recognise the early clinical signs, and to have annual testing of older horses can help promptly diagnose the condition."

Dr Stewart said clinical signs of PPID in horses included long hair coats, loss of muscle mass, laminitis, lethargy and abnormal fat distribution, with the end-stage disease leading to complications that sometimes results in euthanasia.

Horses and ponies with EMS have abnormal fat distribution such as cresty necks and rolls of fat in their shoulders, sheaths and rumps. It is predisposed by genetics and frequently influenced by diet.

The UQ School of Veterinary Science has been a world-leader in equine laminitis research since the mid-1990s, making significant breakthroughs that have led to changes in clinical approaches and management of founder.

The UQ VETS Equine Specialist Hospital at UQ's Gatton campus offers comprehensive screening tests for PPID and EMS which are recommended in the prevention and management of laminitis.

Dr Stewart said donations to support equine endocrinology research and education at UQ could be made via UQ's donation platform.



# NEW METHOD TO TREAT LIFE-THREATENING HEART ARRHYTHMIAS IN DOGS

Morris Animal Foundation-funded researchers have developed a new treatment for dogs with a rare, but life-threatening, arrhythmia caused by atrioventricular accessory pathways (APs). The minimally invasive technique, which uses radio frequencies, is modified from a human cardiology procedure and has a more than 95 percent success rate in treating dogs with this type of arrhythmia.

The technique, radio frequency catheter ablation (RFCA), was adapted by Dr. Kathy N. Wright and her colleagues at MedVet, a family of emergency and specialty veterinary hospitals around the United States. The team published their findings in the Journal of Veterinary Internal Medicine.

“Accessory atrioventricular pathways are one of the more common causes of rapid heart rhythms in young dogs and we were pleased to prove they are curable with radio frequency catheter ablation,” said Dr. Wright. “The dogs can then go on to have their hearts recover and be off all heart drugs within a period of three months, and then go on to live normal lives.”

APs are abnormal electrical circuits in the heart that can become activated and overcome the heart’s normal current pathways, severely impairing its ability to pump. RFCA uses radio frequencies to destroy those rogue circuits and allow the heart’s normal function to resume.

“Dr. Wright’s study demonstrated that radio frequency catheter ablation is a safe and highly effective alternative to lifelong medications and repeated veterinary visits for dogs,” said Dr. Kelly Diehl, Interim Vice President of Scientific Programs at Morris Animal Foundation. “Even better is that it’s a long-term solution for a problem that can be fatal if left untreated.”

In this study, the team used RFCA to treat 89 dogs with AP-related arrhythmia. While 23 breeds were represented, more than half of the patients were Labrador retrievers, as APs are more prevalent in that breed. The researchers threaded a catheter into each dog’s heart and then delivered radio waves toward the APs.

Each dog was monitored with telemetry for at least 16 hours after the procedure and before they were discharged. Within two months, the dogs’ heart activity was measured to determine the procedure’s effectiveness. In all but three dogs, initial treatment with RFCA cured the arrhythmia. The remaining dogs were cured with a second treatment.

Once considered relatively harmless rhythm disturbances, APs are now known to cause rapid heart rhythms that can result in congestive heart failure or sudden death. Symptoms can include extreme fatigue and gastrointestinal distress, including lack of appetite and vomiting. These symptoms are similar to other common health problems in dogs, making the condition difficult to diagnose. It’s not known how APs are created.



**Journal Reference:**  
Kathy N. Wright, Chad E. Connor, Holly M. Irvin, Timothy K. Knitans, Dawn Webber, Philip H. Kass. Atrioventricular accessory pathways in 89 dogs: Clinical features and outcome after radio frequency catheter ablation. Journal of Veterinary Internal Medicine, 2018; 32 (5): 1517 DOI: 10.1111/jvim.15248

# FUR BABIES CHEW INTO FAMILY FINANCES



Pets are adored members of many Australian families yet new research has revealed they’re unknowingly costing their owners thousands every year.

The national survey of more than 1,000 pet owners revealed while the average annual cost of owning a pet is \$1,335 per year, more than a third don’t know how much they’re spending.

In addition to necessary items like food, vet bills, medicine and council registration, pets are being treated to grooming, clothes and accessories. The research was completed by AAMI and Spokesperson Ashleigh Paterson said it isn’t surprising given the rise of the ‘fur baby’.

“There’s no question pet owners love their pets – three quarters of people consider them to play a key role in their family and they’re expressing their love in a variety of ways,” Ms Paterson said.

“But it’s concerning the number of owners who don’t know how much their affection is costing, especially when over the course of a pet’s lifetime it’s potentially \$13,000 (average lifespan is 10 years),” said Ms Paterson.

“Planning and budgeting for pet expenses not only helps in managing the day-to-day costs, it alleviates the financial stress if unexpected expenses arise.”

Despite more than a third (38 per cent) admitting they love their pets more than family members, the research revealed more than 80 per cent don’t insure them against injury or illness.

“Given the important role pets play in the lives of millions of Australians, it’s interesting to see how owners prioritise their pet-related purchases,” Ms Paterson said.

“Nearly 50 per cent admit to ‘spoiling their pets’, one in four buy their pets more toys and clothing than they need and 10 per cent buy their pets ‘fancy’ accessories.

“But we know the cost of caring for a pet can significantly blow out if they have an accident or become ill, which is why owners should seriously consider protecting them, and themselves, from any unforeseen circumstances.”

**Other key findings:**

What are the most common types of pet expenses?

| Type of pet expenses in the last 12 months (percentage of pet owners) |     |
|---|-----|
| Food  | 84% |
| Vet visits  | 59% |
| Medicine  | 59% |
| Council registration  | 33% |
| Grooming  | 31% |
| Clothing and accessories  | 23% |
| Boarding/day care/pet sitters   | 16% |
| Pet insurance   | 16% |

- Most pets no longer live outside with 76 per cent living inside the house and a further third refer to their pet as their ‘fur babies’.
- Dogs are the most commonly owned pet (48%), followed by cats (28%), fish (9%) and birds (8%).
- The main role pets play in the household is being part of the family (76%). This is even higher among female respondents (82%).
- 30% of younger pet owners (18 to 34-year-olds) have bought clothing and accessories for their pets in the last 12 months. This is higher than the older age groups (21% among 35 to 44-year-olds, 16% among over 55s).



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## VETS WARN A RISE IN CAT POISONINGS FROM DEADLY FLOWERS



With summer festivities fast approaching it's more important than ever to keep pets safe! Many pet owners keep toxic foods (i.e. chocolate) from paw's reach but often forget the dangers blooming in their gardens or floral arrangements.

According to pet health insurance product provider PetSure, 340 cats have been treated for lily toxicity in the past five years. Unfortunately, not all pet poisoning cases come up roses, explained Dr Leigh Davidson, Veterinarian and Director of YourVet Online, Australia's only 24/7 online veterinary telehealth service.

"An increasing number of pets are being poisoned by plants, and sadly, not all survive," said Dr Leigh. "The top three poisonous plants I see are the Lily; Yesterday, Today, Tomorrow (Brunfelsia) and Sago Palm (Cycad)."

Minke, a 4-year-old house cat in Brisbane, Qld, nearly died recently after being poisoned by Easter Lilies. Minke's owner Elle Shearer-O'Brien, who works in hospitality, would often bring home flower arrangements containing lilies. But it was her neighbour's property, which contained a large amount of the deadly flower, that ultimately poisoned Minke. Fortunately, Elle noticed her behaviour changing and quickly sought veterinary advice.

"All parts of the lily are toxic to cats including the flowers, leaves, pollen, bulbs and even the vase water," warned Dr Leigh. "Sometimes, a cat will ingest a part of a lily and may experience some initial vomiting which then stops. Often, the cat will seem normal or maybe a little depressed. However, by 24 to 48 hours, damage to the kidneys has started."

Cats that ingest any part of a lily suffer from acute kidney damage - their kidneys shut down and stop functioning. "Many cats cannot be saved unless aggressive treatment is started immediately," said Dr Leigh.

Treatment involves intensive fluid therapy, ultrasound examinations, blood and urine testing. The costs of veterinary treatment for lily poisoning can be in the thousands, Dr Leigh added.

Like many pet owners, Elle didn't know that lilies were toxic to cats and when she reached out to other pet owners online, she realised just how many didn't know either.

"It's important that pet owners are aware how deadly these flowers can be to cats. Minke is lucky to be alive!" said Dr Leigh.

Thankfully, Minke pulled through her ordeal and is now recuperating at home. She will require ongoing blood tests and will need to be fed a special diet to help her kidneys function, said Dr Leigh.

"By sharing Minke's story, pet lovers will hopefully be more careful about the kinds of flowers and plants they keep in their homes and gardens," she said. "I also encourage garden centres and florists to introduce pet owner education protocols to help prevent pet poisonings."



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# COMPLETION OF VETERINARY ANTI-CANCER TRIAL IN USA TREATING DOGS WITH MAST CELL TUMOURS

**AUSTRALIAN LIFE SCIENCES COMPANY, QBIOTICS GROUP LIMITED (QBIOTICS) HAS RECEIVED POSITIVE TOP LINE RESULTS FROM ITS CORE PIVOTAL FIELD SAFETY AND EFFICACY CLINICAL TRIAL IN DOGS WITH MAST CELL TUMOURS, USING ANTICANCER PHARMACEUTICAL TIGILANOL TIGLATE (EBC-46).**

The eleven site, multi-centre, fully blinded and sham (untreated) controlled field study evaluated the full tumour destruction (Complete Response) rate in 123 dogs with MCTs, 28 days after receiving a single injection into the tumour with tigilanol tiglate (EBC-46). The Complete Response, following a single injection, was calculated at 75% compared to 5.3% in the control group.

Adverse events (negative effects) and owner provided quality of life measures were also assessed during and after treatment. Tigilanol tiglate was reported to be well tolerated by patients with pet owners stating good quality of life both during and after the study.

These core field safety and efficacy trial results are the final section of QBiotech's data package required for submission for registration of tigilanol tiglate as a veterinary pharmaceutical to the FDA and the EMA in October 2018.

Dr Victoria Gordon is QBiotech CEO and Managing Director. She said "We are very pleased with the outcomes of this major veterinary study as they are consistent with the levels of safety and efficacy demonstrated in previous Australian studies".

"Our objective is to gain registration and marketing approval in the United States and Europe, followed by Australia and other major regions," Dr Gordon added.

#### Clinical trial progress

Tigilanol tiglate has demonstrated anticancer potential in a range of solid tumours in over 400 companion animals (dogs, cats and horses).

The USA clinical trial focus has been on dogs with mast cell tumours. Following completion of initial field safety and efficacy veterinary clinical trials in Australia, this pivotal efficacy registration trial in 123 dogs in the USA has now been completed.

Application for registration of tigilanol tiglate as a veterinary pharmaceutical in the USA will be via the FDA-CVM. The centralised European Medicines Agency (EMA) route will be taken for European veterinary registration of the drug, which will enable marketing authorisation for tigilanol tiglate in all 28 EU countries. Application for registration in other regions, including Australia, will then follow.

**"We are very pleased with the outcomes of this major veterinary study as they are consistent with the levels of safety and efficacy demonstrated in previous Australian studies."**

**Dr Victoria Gordon**



#### Cancer in dogs

Worldwide as many as 1 in 4 dogs will develop cancer at some time in their lives, and almost 50% of dogs over the age of 10 years will die of the disease.<sup>1,2</sup> Mast cell tumour is the most common cutaneous cancer in dogs accounting for 16 to 21% of all cutaneous canine cancers.<sup>3,4</sup>

To date, there are only a very small number of registered treatments for cancer in companion animals, providing a significant opportunity for new treatments in this growing market.

#### Mode of action

Tigilanol tiglate works through specific protein kinase C (PKC) activation, in which it locally stimulates the immune system resulting in destruction of the tumour mass as well as the tumour's blood supply, followed by rapid healing of the site with minimal scarring.<sup>5</sup>

Studies have demonstrated that tumour destruction usually occurs within 5-7 days with the site fully healed within approximately 4-6 weeks.<sup>6,7</sup>

In addition to destruction of the tumour, added benefits of the drug as identified in the clinical trials include potential avoidance of limb amputation in the case of limb located tumours and minimal scarring of treatment site supporting return to normal mobility.

Tigilanol tiglate administration is by injection directly into the tumour mass. Generally, treatments with the drug do not require the use of sedation, or local or general anaesthesia. In general, clinically observed actions of the drug are as expected due to the mode of action of tigilanol tiglate on tumour destruction. These actions include transient, localised swelling and moderate pain for the first few days.

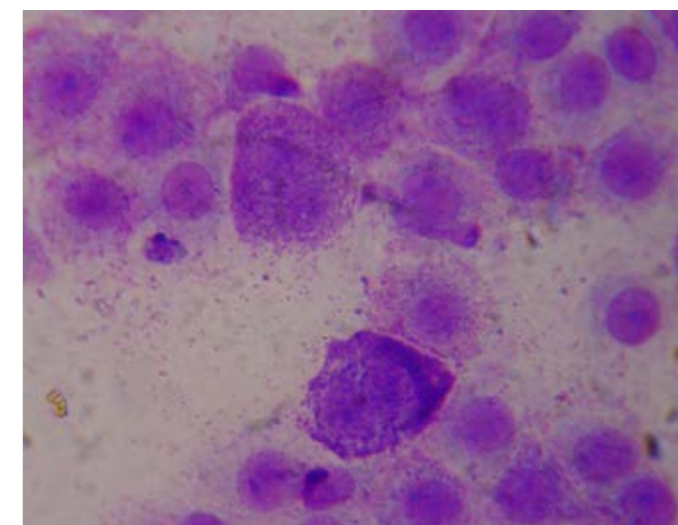
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#### Other QBiotech progress

QBiotech's commercial strategy is to bring tigilanol tiglate to major veterinary markets to create cash flow for further development of QBiotech technology in human cancers and wound healing.

QBiotech has recently completed a first-in-human clinical trial of tigilanol tiglate in patients involving four Australian hospitals. This Clinical Phase I/IIA safety study is in the final stages of report writing. Results from this trial are planned for submission to a peer reviewed global scientific journal for publication as well as presentation at global pharmaceutical industry conferences. QBiotech is in the process of commencing a Human Clinical Phase IIA trial treating head and neck cancer with tigilanol tiglate.





## POSITIVE HENDRA VIRUS CASE CONFIRMED IN NSW



New South Wales Department of Primary Industry recently advised a positive Hendra virus case was diagnosed on a 4-year-old Arab cross located near Tweed Heads.

The case was diagnosed by a private veterinarian who is confirmed to have been wearing Personal Protective Equipment at the time. The infected Arab cross, which was not vaccinated against Hendra virus, has been euthanased.

Spokesperson for the Australian Veterinary Association, Dr Ben Poole, said it's critical that horses located in high risk Hendra areas are vaccinated against Hendra virus.

"It provides a horse health and welfare benefit, and a public health benefit," Dr Poole said.

"This latest death is an unfortunate reminder of an unnecessary death of another horse, highlighting that the Hendra virus can occur at any time of the year and is not predictable," he added.

Dr Poole said testing for the disease takes time and delays possible life saving therapies.

"That is why vaccination is so important, because a vaccinated horse has an extremely low risk of having Hendra virus infection. Sadly, another horse has died from this disease despite there being a fully registered vaccine available," Dr Poole said.

"When horses are infected with Hendra virus, people are potentially and unnecessarily exposed to the virus. Vaccination is

the only way to ensure high standards of horse health and welfare whilst also reducing the risk to veterinarians, horse handlers and owners" he explained.

Dr Poole said that the vaccine, introduced in 2012, remains the most effective way to manage the Hendra virus and is fully registered with the Australian Pesticides and Veterinary Medicines Authority.

"Vaccination of horses provides a public health and workplace health and safety benefit by reducing the risk of Hendra virus transmission to humans and other susceptible animals and helps to ensure high standards of animal health and welfare," Dr Poole said in conclusion.



## ADDITIONAL CONDITIONS FOR LIVE SHEEP EXPORTS



The Department of Agriculture and Water Resources intends to implement conditions above the Australian Standards for the Export of Livestock (ASEL) for live sheep exports departing from 1 November 2018.

### The intent is to require journeys outside the northern hemisphere summer from 1 November 2018 to implement:

- A 17.5 per cent reduction in the stocking density required by the ASEL for sheep consignments to the Middle East.
- Independent auditing of vessel pen air turnover readings to confirm the data entered into the industry heat stress risk assessment model is accurate.

The proposed conditions are based on the best available evidence, supported by feedback from independent observers aboard live export vessels travelling to the Middle East and other relevant information.

The department intends these arrangements to remain in place until the comprehensive ASEL review has concluded, which will update the export standards according to the best possible scientific evidence.

Exporters are also required to comply with other changes recommended by Dr Michael McCarthy in his review of the conditions for the export of sheep to the Middle East during the northern hemisphere summer, including:

- The notifiable mortality level for sheep exported by sea to the Middle East will remain at 1 per cent
- Independent observers will continue on every sheep voyage, reporting back daily to the department (including footage), to support verification and compliance activities.

The department is implementing a series of changes to improve the sustainability of the trade with improved animal welfare outcomes.

The review of the ASEL and the further consultation and testing of the heat stress risk assessment model are underway and are due to be completed by the end of 2018.

Both processes will support the development of high standards for live exports going forward.



## VET NAMED GOLD COAST YOUNG ENTREPRENEUR OF THE YEAR



Pet owners know the struggle of getting your beloved family member to see the vet, but Tomas Steenackers is easing the burden on animal lovers across the country.

Founder of National Veterinary Care, Tomas Steenackers, took out the top title at the 2018 Gold Coast Young Entrepreneur of the Year Awards.

Held at QT Gold Coast in October, Tomas faced stiff competition from some of the Gold Coast's best business minds. Collectively, the finalists turned over more than \$380 million in the last financial year and employed more than 3,500 people both on the Gold Coast and nationally.

However, Tomas stood out from the rest with his ASX listed powerhouse of a company National Veterinary Care (ASX: NVL). Founded in 2014, and listed in 2015, National Veterinary Care employs over 800 Australians, and turned over \$66.8 million in revenue during the last financial year.

Tomas said his chain of over 70 clinics across Australia and New Zealand offer something far more important than his competitors, a personal touch.

"Acquisition is important to our business and other veterinary chains in Australia, but that's not the only thing we do," said Tomas.

"We try to stay relevant in the industry. We do the best we can in new technologies, and we look after our people," he added.

Where other veterinary service providers might gobble up clinics around Australia to form one large, cohesive brand, Tomas emphasises how important it is for his clinics to maintain their connection to the community they're in.

"We encourage our clinics to maintain their identity in the communities in which they operate," said Tomas.



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**"While the industry is fragmented, we are selective in our acquisition strategy, preferring to transact with clinics with multiple vets rather than sole operators. Our training centres, open to all vets, nurses and administrative staff, upskills vets in more complex procedures that are typically higher margin. This allows more procedures to be retained in clinic rather than referred to specialists. It also allows vets who have been out of the work force for a period to upskill and build confidence," Thomas explained.**

With biometric technology becoming more available, and far more advanced than it's ever been, Tomas is prioritising the development of tech in his clinics, improving outcomes for both pet owners and administrative staff alike.

"Technology is really important to us," said Tomas.

We're trying to be a bit creative or innovative. So for example something we're working on at the moment is because every animal needs to be microchipped one idea is to see if we had a microchip that also had biometric data so we could know if the animal has done enough exercise in the week before or things like that then vets and nurses could be alerted and see if there's something wrong with the animal," he explained.

"If we could integrate that in the system and make pet owners more aware of what's going on in the life of their pet it would benefit them and our staff," he said in conclusion.



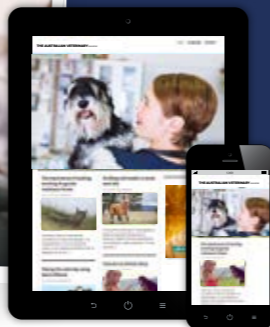


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## APP-BASED MOBILE VET SERVICE APPOINTS NEW CEO



National app-based home visit vet booking service Pawssum Vets has appointed veterinarian Dr Vadim Chelom as the group's new Chief Executive Officer.

Dr Chelom steps into the role from his position as a Pawssum Melbourne based house call vet and has previously held the role of Veterinary Director at Greencross Vets in Warringal and Preston.

He was also a Senior Veterinarian with RSPCA Victoria for four years, received his Bachelor of Veterinary Medicine from Melbourne University, and has a Diploma in Management.

Dr Chelom said he was thrilled to be approached by Pawssum's Sydney based co-founder Guy Sharabi, to take on the position of Pawssum CEO.

**“Pawssum’s revolutionising the veterinary industry for pet owners by bringing a new level of service, convenience and personalisation to the table, which is long overdue, and I’m looking forward to being able to help more people embrace this new family friendly pet health care model,” Dr Chelom said.**

“For vets, the Pawssum platform provides an invigorating new career path, as it did for me, helping us get back to what we love doing best, treating pets and supporting their owners, and being

able to do it in a less time pressured environment but with all the business support we need, including delivering clients. I'm passionate about this model, which also gives veterinarians job flexibility and better remuneration, as I believe it's the way of the future for the veterinary industry,” he went on to add.

Mr Sharabi has been appointed as Chairman and Director of Innovation for the service, which provided personalised vet care to thousands of pets around Australia, with more than 120 vets on board the platform. The service is fully operational in all Australian major cities.

“After building Pawssum to its current position it's time to give the steering wheel to Dr Vadim. We're very excited about this change as we know it's the next necessary step to take our incredible vet service into more Australian homes,” said Mr Sharabi.

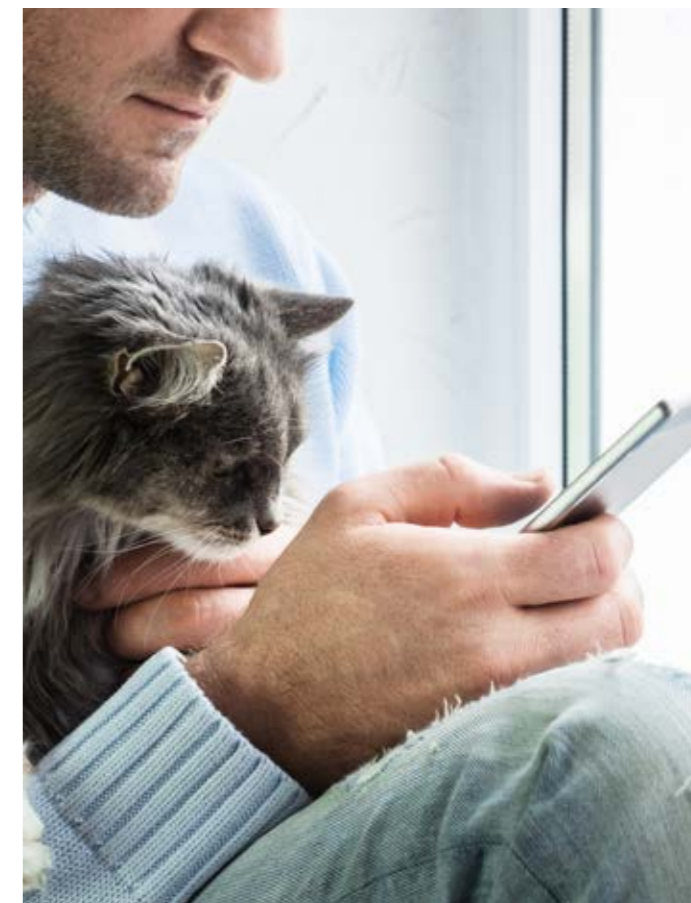
Pawssum enables vets to make home visits and then refers cases needing surgery to trusted and selected Pawssum referral vet clinics around Australia, such as Animal Doctors, Bondi Vet Hospital, Sydney Animal Hospitals, Vet HQ, Perth equine hospital, Foothills animal hospital, Lilydale Veterinary Centre and Dr Paws to name a few.

Pawssum's on-demand veterinarians can deliver 80% of a pet's health care needs in the home or office, including vaccinations, health checks, dental checks, behaviourist consultations and peaceful at home euthanasia for increased comfort and privacy.

Pawssum donates part of its earnings to charity organisations such as RSPCA, SAFE and Animal Welfare League.



New CEO Dr Vadim Chelom





# SCIENTISTS UNCOVER VOLCANIC LOST WORLD OFF TASMANIAN COAST

**SCIENTISTS STUDYING OCEAN PRODUCTIVITY HAVE UNCOVERED A VOLCANIC LOST WORLD TEAMING WITH MARINE LIFE OFF THE TASMANIAN COAST.**

The lost world was uncovered during detailed sea floor mapping by CSIRO research vessel Investigator while on a 25 day research voyage led by scientists from the Australian National University (ANU).

The mapping has revealed, for the first time, a diverse chain of volcanic seamounts located in deep water about 400km east of Tasmania.

The seamounts tower up to 3000m from the surrounding sea floor but the highest peaks are still far beneath the waves, at nearly 2000m below the surface.

Dr Tara Martin, from the CSIRO mapping team, said the mapping offered a window into a previously unseen and spectacular underwater world.

“Our multi-beam mapping has revealed in vibrant detail, for the first time, a chain of volcanic seamounts rising up from an abyssal plain about 5000m deep,” Dr Martin said.

“The seamounts vary in size and shape, with some having sharp peaks while others have wide flat plateaus, dotted with small conical hills that would have been formed by ancient volcanic activity,” described Dr Martin.

“Having detailed maps of such areas is important to help us better manage and protect these unique marine environments, and provides a stepping stone for future research. This is a very diverse landscape and will undoubtedly be a biological hot

spot that supports a dazzling array of marine life,” she went on to explain.

Ship data collected during the voyage revealed spikes in ocean productivity over the chain of seamounts, with increased phytoplankton activity and marine animal observations in the area.

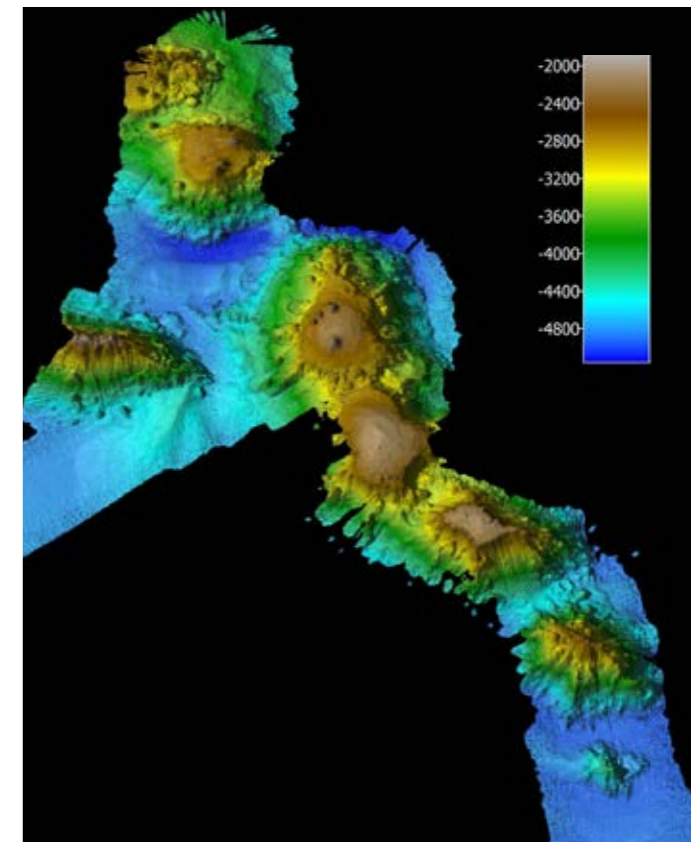
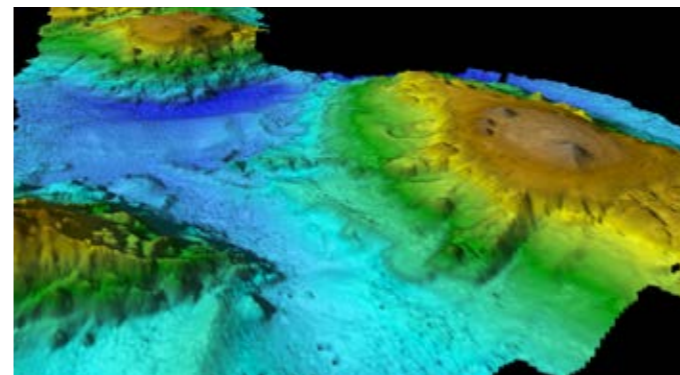
Dr Eric Woehler from BirdLife Tasmania, who was on Investigator with a team conducting seabird and marine mammal surveys, was astounded by the amount of life they saw above the seamounts.

“While we were over the chain of seamounts, the ship was visited by large numbers of humpback and long-finned pilot whales,” Dr Woehler said.

“We estimated that at least 28 individual humpback whales visited us on one day, followed by a pod of 60-80 long-finned pilot whales the next. We also saw large numbers of seabirds in the area including four species of albatross and four species of petrel. Clearly, these seamounts are a biological hot spot that supports life, both directly on them, as well as in the ocean above,” he said.

Research indicates that seamounts may be vital stopping points for some migratory animals, especially whales.

Whales may use these sea floor features as navigational aids during their migration.



“These seamounts may act as an important signpost on an underwater migratory highway for the humpback whales we saw moving from their winter breeding to summer feeding grounds,” Dr Woehler said.

“Lucky for us and our research, we parked right on top of this highway of marine life,” he added.

The life and origin of the seamounts will be further studied when Investigator returns to the region for two further research voyages departing in November and December.

A range of surveys will be conducted on these voyages, including capturing high resolution video of marine life on the seamounts using deep water cameras, and collecting rock samples to better understand their formation and origin.

Dr Woehler will be on the first of these voyages and expects further surprises on the return visit.

“We expect that these seamounts will be a biological hot spot year round, and the summer visit will give us another opportunity to uncover the mysteries of the marine life they support,” said Dr Woehler.

Research vessel Investigator is Australia’s only research vessel dedicated to blue-water research, and is owned and operated by CSIRO, Australia’s national science agency. The vessel conducts research year round, and is made available to Australian researchers and their international collaborators.

**“Lucky for us and our research, we parked right on top of this highway of marine life.”**

**Dr Tara Martin**





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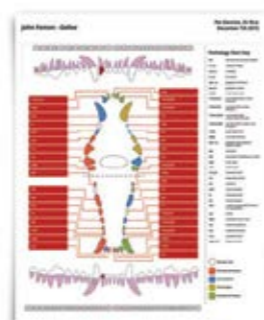
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|--------------|---|
| 29 / 01 / 19 | Anatomy, Tooth Development, Jaw Growth, Juvenile (Puppy and Kitten) Dentistry |
| 31 / 01 / 19 | Periodontal Disease   |
| 05 / 02 / 19 | Radiology   |
| 07 / 02 / 19 | Analgesia and Anaesthesia   |
| 14 / 02 / 19 | Oral Surgery (Extractions)  |
| 19 / 02 / 19 | Homecare / Business of Dentistry  |

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|---|--|
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| <b>Location:</b>                        | VDEC, 81 Belgrave-Hallam Road, Hallam, VIC, 3803, Australia  |

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Dr David E Clarke, DAVDC, Specialist Veterinary Dentist  
Dr Ira Luskin, DAVDC, Specialist Veterinary Dentist  
Dr Barden Greenfield, DAVDC, Specialist Veterinary Dentist  
Dr Angus Fechny, Resident Vet Dentistry  
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- Dr David Clarke BVSc, Australia

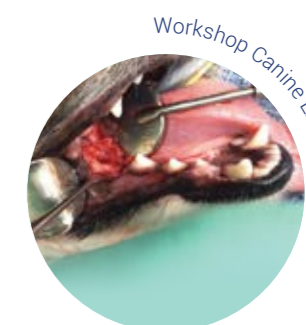
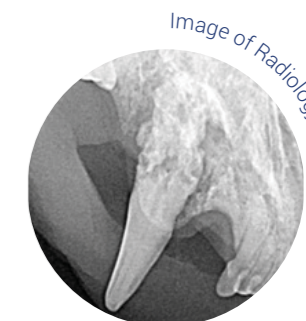
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## PETS ASSISTING THE BETTER MANAGEMENT OF MENTAL HEALTH DISORDERS

The positive effects that pets have on people have been well researched. Now, research conducted by the University of Manchester<sup>1</sup> in the United Kingdom suggests that pets can help people who are living with a mental illness to manage their condition.

President of the Australian Veterinary Association (AVA), Dr Paula Parker said the human-animal bond plays a crucial and positive role in the health and wellbeing of the community.

"Benefits can include companionship, health and social improvements and assistance for people with special needs. This research takes our knowledge about the human-animal bond a step further suggesting that pets can help people who are struggling with a serious mental illness to manage their mental health," Dr Parker said.

**"Only through more research like this, can we come to better understand just how increasingly valuable animals are to an individual's wellbeing and the community," she added.**

The study involved 54 participants with a severe mental illness, for example, schizophrenia or bipolar disorder. 25 of the participants identified a pet as being important in the everyday management of their illness. What's more, of these 25 participants, more than half identified their pet as being one of the most important things to them in managing their mental health.

Dr Parker said there's already strong evidence to indicate that owning a pet brings health benefits including physical health benefits, for example, dog owners increase their exercise by walking their pet.

"Research also suggests that pets have positive effects on the community. A study<sup>2</sup> conducted by the University of Western Australia found that pets facilitate first meetings and conversations between neighbours, with over 60 per cent of dog owners reporting that they got to know their neighbours through their pets," Dr Parker said.

"While pets can improve our health and wellbeing, it's important to remember that the human-animal bond is a two-way street and we need to provide the same benefits to our pets by ensuring we properly care for their health and welfare," she said in conclusion.



### References:

1. Brooks H, Rushton K, Walker S et al. Ontological security and connectivity provided by pets: a study in the self-management of the everyday lives of people diagnosed with a long-term mental health condition. BMC Psychiatry 2016;16:409. DOI: 10.1186/s12888-016-1111-3.
2. Wood L, Martin K, Christian H et al. Social capital and pet ownership: a tale of four cities. SSM Population Health 2017;3:442-447.

## WINNERS ANNOUNCED FOR INAUGURAL COMPANION ANIMAL RESCUE AWARDS



Companion Animal Rescue Awards Founder Cathy Beer from Pets4Life was thrilled to announce the winners of the inaugural Companion Animal Rescue Awards which celebrate and recognise inspiring examples of dedication to the rehabilitation and re-homing of companion animals Australia wide.

517 entries were received in these first companion animal rescue awards. Winners were revealed at a live broadcast event in mid-October in Melbourne at the national headquarters of Jetpets, Awards Platinum Rescue Hero and naming Partner.

Jetpets Founder and Managing Director Sandy Matheson said Jetpets is proud to be the Platinum Partner of this year's inaugural Companion Animal Rescue Awards.

"As a long-standing pet industry participant and now reconfirmed in my time as an awards judge, I have a true appreciation of the amazing work done by so many individuals and rescue groups across the country. On behalf of the Jetpets team, I would like to commend all the very worthy nominations and particularly congratulate the winners," he said.

Australia has over 900 rescue groups and animal shelters supported by thousands of volunteers. Following the announcement of the finalists in early October, one winner from each of the seven categories was selected by a panel of nine judges.

**"The bar was set very high and we received many outstanding submissions from rescue groups and animal shelters across the nation," said Cathy.**

"In a field of 200 registrations, a total of 89 rehoming organisations completed a submission for categories 1 to 6. The winners demonstrated their ability to not only provide excellent animal welfare outcomes but also ensure the sustainability of their organisation," she added.



2018 Winners Companion Animal Rescue Awards Australia Rescue dog Sahara Sandy Matheson Jetpets Rescue Awards Founder Cathy Beer

For category 7, the Advocate® People's Rescue Story received 428 entries from Aussie pet guardians who shared their stories about pet adoption and fostering.

Dan White, Brand Manager of Advocate® at Bayer said it was very difficult to choose the top 10 finalists, let alone a winner.

"The judging, although a lengthy process, has also been a thoroughly rewarding and uplifting one," Dan said.

"All of the stories, although different in a number of ways, have one thing in common. They truly inspire and demonstrate the difference a re-homed pet can make to an individual or peoples' lives. We've been absolutely privileged to have been involved," he added.

Cathy thanked Partners and Supporters for making the Rescue Awards possible, and acknowledged the great efforts of rescue groups, animal shelters and volunteers.

"These awards celebrate their hard work and success in giving companion animals a second chance in a loving home! A huge thank you to our Supporters!" she said in conclusion.

### WINNERS

- **Category 1:** Outstanding Rescue Group - Saving Animals from Euthanasia (SAFE)
- **Category 2:** Outstanding Animal Shelter - RSPCA QLD
- **Category 3:** Outstanding Council Animal Shelter - Shire of Campaspe Animal Shelter
- **Category 4:** Innovation in Rescue - Safe Pets Safe Families
- **Category 5:** Community Education and Outreach Program - The Good Neighbour Project (Cat Protection Society NSW)
- **Category 6:** Volunteer of the Year - Frances O'Connell (AWL South Australia)
- **Category 7:** Advocate® People's Rescue Story - Jason Vallas and his faithful dog, Diesel





# KEEPING DRY COWS COOL IS GOOD FOR THE BOTTOM LINE

**KEEPING A DRY COW COOL AND COMFORTABLE IS BENEFICIAL TO HER, HER CALF AND A DAIRY FARMERS' BOTTOM LINE, ACCORDING TO US ANIMAL SCIENTIST PROFESSOR GEOFF DAHL, WHO PRESENTED AT A SERIES OF WORKSHOPS IN THE MURRAY DAIRY REGION IN OCTOBER.**



The professor was a keynote speaker at the 2018 Australian Association of Ruminant Nutrition Conference recently held in Victoria, and his visit was supported by Dairy Australia.

During the workshops Geoff outlined that understanding heat stress management is not only important for the whole dairy herd but particularly vital for dry cows, with updated research showing that it results both in lower milk production and can have a 'generational effect' on future progeny.

At the workshops Geoff explained how heat stress limits mammary growth, metabolism and immune function, with these factors setting the stage for a more challenging transition, resulting in lower yield in the next lactation.

Geoff's research found that cooling dry cows increased milk for 40 weeks after calving. Yields from cows cooled during the dry period were 4 - 5 litres/day higher than cows that experienced heat stress, he reported, despite zero differences in how the animals were treated after calving.

'Across the board, they all show the same thing. Animals cooled when dry make more milk in their next lactation,' Geoff said.

Cooling dry cows increases body weight pre-partum, but decreases body weight post-partum. Geoff explained that cooled animals actually gained weight during their dry period and, because they are making a lot more milk after calving, they're metabolising more body tissue.

Research also found that cooling dry cows has positive effects on their immune function, including lymphocyte proliferation and increased neutrophil action postpartum.

Geoff noted the effects on acquired immunity and antibody production could be important to vaccination profiles.

"Biopsies revealed that cooling dry cows has a direct impact on their mammary cells. The difference is an effect on the proliferation, or growth, of these cells," he explained. "There are a lot more in cooled cows," Geoff observed.

Heat stress on the cow also impacts the unborn calf, both early in life and when she begins lactating. Geoff termed this a 'generational issue' and not just on the affected animal, likening it to human mothers smoking during pregnancy and its resulting effect on a child's development.

"We have essentially created a situation where calves cannot reach their genetic potential when they suffer heat stress in the dry period," Geoff said.

Geoff confirmed that cooling the cow increases her calf's birth weight.

"We found the difference persists into weaning, as does the persistence of lower birth weights of hot cattle," he said, citing research that found in-utero heat stress of about six weeks in length reduced calf body weight and height at weaning.

"Cooled calves were heavier and taller," Geoff reported.

Cooling also improves immunity, measured by the higher circulating IgG.

"In fact, it looked like calves born to hot cows had lower ability to absorb IgG," Geoff said.

Geoff's studies also show that in-utero heat stress decreases reproductive performance, with cooled calves requiring fewer services and achieving pregnancy at an earlier age at pregnancy, by almost a month.

Geoff emphasised that it makes good financial sense to cool cows, for the present and long term. While the ideal approach would be to build a barn to accommodate heat stress, or retrofitting it with a cooling system like fans or soakers, he recognises this is not always feasible.

"Creating temporary shade structures, providing tree shade, sprinklers or even planning calving patterns that allow cows to be dry in the cool months of the year, will all help," he said.

"At a minimum we need to be allowing animals to recover from heat stress to ensure core body temperature does reduce, and that will have positive flow-on effects for the whole business," Geoff added.

"It makes sense to cool dry cows," he said.

## "Cooled calves were heavier and taller."

**Professor Geoff Dahl**





# A SHELTER DOG FIRST BENEFITS AN INNOVATIVE LEG IMPLANT



Russian scientists and veterinarians have developed hind leg prostheses for pets, which ensures a full recovery after surgery.

Veterinarians from Novosibirsk have conducted Russia's first osseointegrable prosthetics of the hind leg in a dog.

Shans the dog lost his leg due to an accident. Doctors made an individual prosthesis with a biocoating so it would take root better. Currently, the biocoating developed by Tomsk Polytechnic University scientists is under patent pending.

**“An implant was tailor-made for the dog based on a patented prosthetic technology (SerGoFIX by S. Gorshkov, BEST clinic, Novosibirsk, Russia). The technique implies a tailor-made prosthesis with the biocoating which is implanted into the bone and fuses with the tissues ensuring reliable fixation without infection,” says Sergei Gorshkov, a veterinarian from the BEST pet clinic.**

Initially, veterinarians conducted a computed tomography scan of the patient's hind legs. Then they made a 3D model of the prosthesis and after adjusting and testing all parameters it was 3D printed using selective laser sintering. The main part of the

prosthesis is made out of a titanium-nickel-vanadium alloy and, for example, guide systems for resection (removal - ed.) - out of a biocompatible photopolymer.

As Prof. Sergey Tverdokhlebov from the TPU Veinberg Research Center says:

“When we received the implant, our task was to apply a calcium phosphate coating on it. This is necessary to ensure the integration of the implant with the bone since this material seems to be deceiving the body and making it to perceive as its own. Due to this, the pet has complete freedom of motion after the surgery.

We had developed with our partners an advanced microarc oxidation facility to apply such coatings.

In this case the complexity was in selecting technological modes for the modification of porous 3D products.”

After the implantation, the veterinarians fixed the prosthesis with an external exoprosthesis made out of polycaprolactone.

As Novosibirsk veterinarians point out, Shans the dog feels well and uses the prosthesis ‘100% of the time with full support’. Now it is under the patronage of the Varezka charity fund and waits for a new owner.



Shans the dog with the hind leg implant.



These are implants with an applied coating developed at Tomsk Polytechnic University.



# SHELTER DOGS GET SECOND LEASH ON LIFE



Better behaviour assessment could be the key to more successful adoptions and reducing risk of euthanasia for shelter dogs, according to new University of Queensland research.

School of Veterinary Science PhD candidate Liam Clay is collaborating with RSPCA Queensland to make behavioural assessments better at reflecting shelter dogs' true behaviours, and their adoption suitability.

“Shelters need to find out why dogs have been surrendered; identify dogs with behaviour issues that can include high levels of arousal, fear, anxiety, or aggression before putting them up for adoption; and get reliable information to discover the dog's true behaviour,” he said.

“Behavioural assessments have been used in shelters in Australia and around the world to identify possible behavioural tendencies to help in the re-homing process, and also identify behavioural problems in dogs surrendered to shelters.

“We look for subtle behavioural cues using short, structured tests at the RSPCA, longer-term monitoring, and adoption survey information.

**“We’re comparing in-kennel behaviour with assessment information to recognise early behavioural problems in the shelter which may continue once a dog is re-homed.”**

Mr Clay said dogs exhibited behavioural problems for a number of reasons (often related to anxiety, stress, boredom, or fear), and the

role of assessments was to discover those behaviours and why the dog might be exhibiting them.

“If we can identify key issues early we can do training to help each dog while it stays in shelter, and better match them with an appropriate forever home for them,” he said.

“By creating more efficient and effective testing we hope to decrease the time a dog will spend in a shelter and minimise their risk of euthanasia.

“We’re now starting our final study, which assesses dogs in society, whether they have been adopted from shelters, come from a breeder or purchased from a previous owner.

“Our aims are to identify whether the assessment methods we’ve established accurately reflects the behaviour of the dog in their home as well as in the shelter.

“Whether you’ve got the perfect pet, are having problems with your dog, or just want to contribute to science, we would love to assess your dog and help you understand them a little better.”

Researchers are seeking dogs older than six months and under 10 years of age, and have been with their family for at least six months.

“Owners will need to first answer some questions on their dog's behaviour at home, and then we will find a suitable time to assess the dog at the testing location,” Mr Clay concluded .





# ANIMAL MEDICINES ADD VALUE TO AUSTRALIA'S LIVESTOCK INDUSTRIES



The Economic Contribution of Animal Health Products to Australia's Livestock Industries, 2015-2016 report commissioned by Animal Medicines Australia confirms the important role of veterinary medicines in supporting our livestock industries.

Executive Director of Animal Medicines Australia Ben Stapley said the report has for first time quantified the additional economic value of animal medicines in key livestock industries.

The report considers the value added through the use of animal health products in seven key production industries including beef, dairy, wool, sheep meat, eggs and chicken meat.

"We know that healthy animals are more productive and now we have been able to put a dollar figure on the benefit that is supplied by animal health products," said Mr Stapley.

**The report undertaken by ACIL Allen Consulting showed animal health products:**

- contribute \$2,668 million to the Australian economy;
- create 9,898 full time jobs; and
- generate more than \$578 million in wages.

Additionally, the report recognizes use of animal health products has a positive outcome for consumers with costs savings on an average grocery bill of almost \$270 per annum.

"Consumers are beneficiaries of increased production as a result of animal health products. The responsible use of these products results in healthier animals, higher production for farmers and a reduced grocery bill," said Mr Stapley.

**"The estimated productivity attributable to animal health products ranged from 14% for poultry meat to 28.5% in dairy farming. This is a considerable productivity gain for farmers, which in turn benefits consumers."**

"Animal health products are vital in maintaining healthy and productive animals and protecting them from disease.

"Animal Medicines Australia members are at the forefront of agricultural production industries, helping farmers to meet the challenges of food security, safety, sustainability and profitability through innovation.

Animal Medicines Australia is committed to achieving better health for people, animals and the environment through One Health principles.

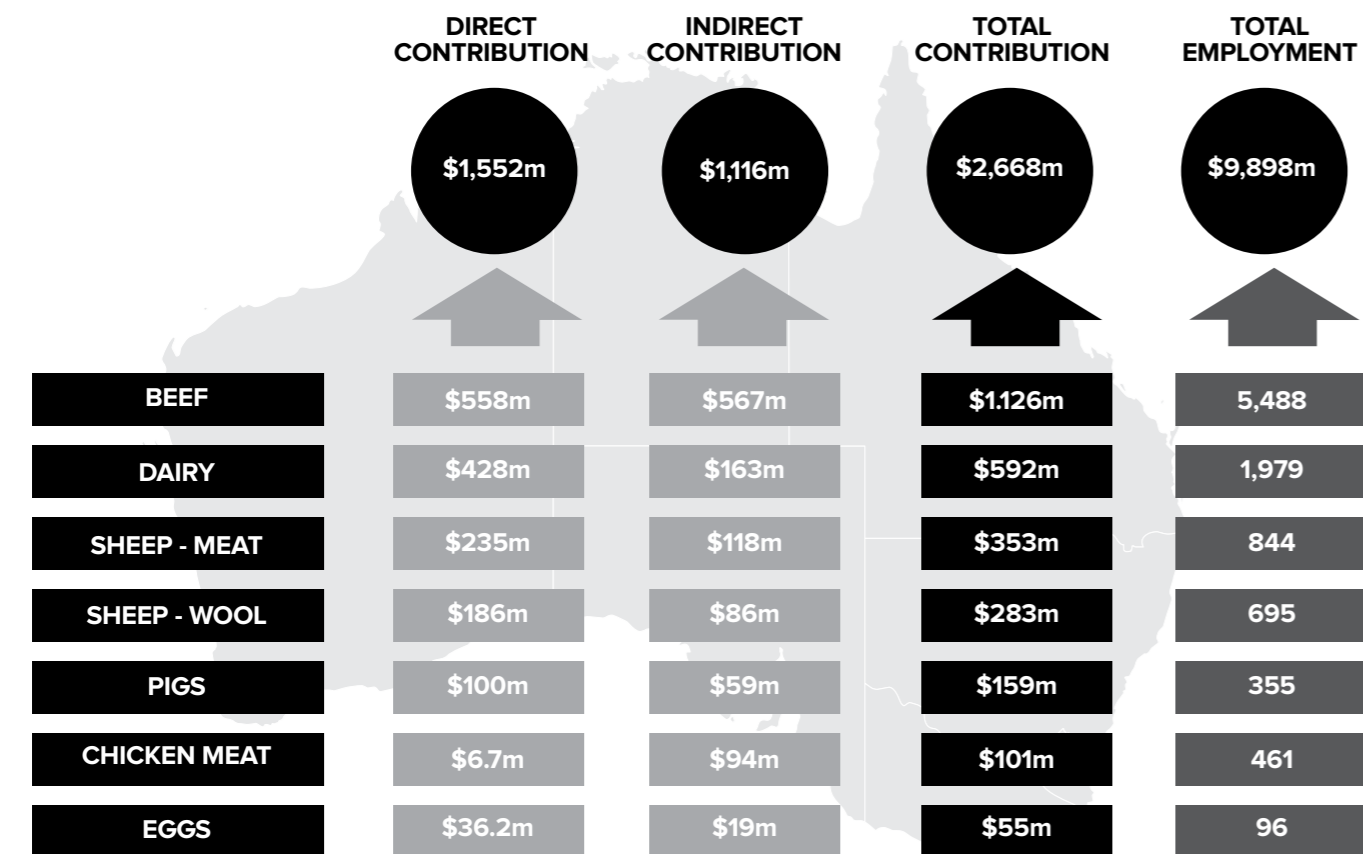


Figure 1 Estimated total economic and employment contribution attributable to animal health products use in 2015-16. ACIL Allen Consulting (2018), Economic Contribution of animal medicines to Australia's livestock industries 2015-16, June 2018.

# DNA MONITORING PROVIDES CLUES ABOUT CORROBOREE FROG SURVIVAL

The power of new DNA technologies has helped a University of Canberra researcher to monitor the endangered northern corroboree frog for the first time.

Researchers from the Institute of Applied Ecology (IAE) have developed sensitive and cost-effective methods to monitor the survival of captive bred northern corroboree frogs (*Pseudophryne pengilleyi*) after their release into the wild.

This method detects traces of DNA that frogs leave behind in pond water such as skin and secretions, in a process called environmental DNA (eDNA) monitoring. This study is published in Wildlife Research.

"The corroboree frog is an iconic Australian species," says lead researcher Jack Rojahn. "Like many amphibians worldwide they have been decimated by a disease caused by the chytrid fungus and are now endangered. Scientists have invested a great deal to conserve the corroboree frog through captive breeding programs, and we hope this study can complement the work they do."

Researchers from the IAE introduced captive-bred northern corroboree eggs to three small frog-free ponds in the Brindabella Ranges. Water samples were taken immediately before the introduction of eggs, and 1, 8, 15, 22, and 78 days after.

After processing, samples were analysed and showed a perfect match to a DNA sequence from the northern corroboree frog. Corroboree frog DNA was detected at all sites at some point

during the study period, but at only two sites after 78 days.

"Our eDNA monitoring project proved it is possible to detect corroboree frog DNA in pond water after the release of eggs. This information could be useful in understanding the timing and cause of population failure once introduced to the wild," says Mr Rojahn.

"This can provide information that may be critical for conservation and management decisions that aid corroboree frog survival.

"The next step is to continue this monitoring over the summer during breeding season, and even to other frog species. Some species have been able to develop some resistance to the chytrid fungus, and I'm hoping that the corroboree frog can do the same," says Mr Rojahn.



# DRAGONS VS CATS – NATIVE ANIMALS FIGHTING FERAL PREDATORS



Bearded dragons (*Pogona vitticeps*) are battling the impacts of climate change, habitat destruction, native predators, and now we can add feral cats to the list, too.

Researchers from the Institute from Applied Ecology at the University of Canberra are currently in Cunnamulla, Queensland, studying sex reversal in dragons. The threat of feral cats was brought home recently when one of the dragons they were tracking, a pregnant female affectionately known as Niña, was taken by a feral cat.

Researcher Kris Wild has been tracking dragons at in the Bowra Conservation Reserve for the last three months and was saddened to see Niña killed.

"To our distress, puss pounced then played with Niña, killed her, ate one leg, and discarded the remainder. Clearly the cat was not particularly hungry, but nevertheless, did what cats do," said Mr Wild.

Feral cats are an unwelcome guest in the Australian landscape. They are highly effective killers and have the potential to lead to local extinctions. Australian native wildlife has been isolated millions of years and is particularly vulnerable to the introduction of feral cats.

"Almost half of the animals we have been tracking have been taken by predators over the last three months, which seems exceptionally high. We hope our data will provide valuable

information on how much feral cats are contributing to the low dragon numbers," said Mr Wild.

Recent studies have provided detail on the impact of feral cats on prey abundance. Feral cats cause high rates of mortality for many bird and mammal species and are responsible for the extinction of at least 18 species of island-endemic vertebrates. Their impact is not dramatically lessened as abundances decline, and so already threatened species can be brought to the brink of extinction by the added predation pressure.

"Our unfortunate experience with Niña may have deeper relevance for her species in the semi-arid regions of western Queensland. Cats are one of a tyranny of 1,000 cuts, and I hope that cats aren't the final cut that tips this species and others over the edge when things get tough," said Mr Wild.





# 13TH INTERNATIONAL VETERINARY CONGRESS



With the successful completion of the International Veterinary Congress 2018, Conference Series LLC Ltd is proud to announce its upcoming 13th International Veterinary Congress to be held during May 2 - 3, 2019 in London, UK with a theme 'Emphasising Contemporary and Emerging Issues in Veterinary Research'.

Veterinary - 2019 aims to accelerate scientific discoveries and major milestones in the current situation, challenges and innovations relating to Veterinary Research and Animal Sciences and its relevant areas.

The scientific-program ensembles sphere heads and innovators within the pitch of Veterinary Research in distinct formats like keynote sessions, session oratory, poster presentations, E-poster, video presentations for two info-packed days which will facilitate them raise and surpass in their role.

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- Sponsors, Exhibitors and Delegate slots are available.

The event welcomes Australian Veterinarians and Veterinary Nurses, Veterinary Technicians, Veterinary Clinic Teams, Researchers and Specialists, Veterinary /Medicine /Animal Sciences Faculty, Veterinary Associations/Groups/Societies and Animal Health Companies.



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