Bella, a five year old Labrador bitch, presented as an emergency after a head-to-head collision with another dog (a Bull Terrier cross) whilst chasing a ball. Immediately after the collision she stumbled for a few strides and then collapsed but didn't lose consciousness. She was taken to the nearest Veterinary Surgery.

On presentation Bella was reported to be mildly ataxic and confused. Bilateral moderate epistaxis and left-sided exophthalmos were present. Within an hour of the injury the neurological signs resolved but she was restless and tachypnoeic. No other injuries were apparent.
Case Study

Rebuilding Bella

continued from front page >

Bella was admitted to The Queen’s Veterinary School Hospital (QVSH) immediately and was able to walk into the hospital unaided and with no signs of neurological injury. Examination showed that she had subcutaneous emphysema over the frontonasal region and the skin over this region inflated and deflated like bellows as she breathed (video – Bella’s breathing). Despite the left-sided exophthalmos, pupillary light reflexes, blink and menace reflexes and vision all appeared normal. Palpable frontonasal bony disruption was evident. No other skull injuries were present. Oral examination and occlusion were normal and the epistaxis had resolved.

A CT scan of the skull was performed (Figure 1). A comminuted fracture of the frontonasal region is shown, with ventral displacement of the fragments into the nasal cavity and frontal sinuses. The lateral aspect of the left frontal bone is displaced into the retrobulbar space leading to exophthalmos. The scan also showed that cribriform plate is mildly depressed.

Left corneal ulceration developed and self-trauma to the left eye required the use of an Elizabethan collar. This was presumed to be due to a combination of impaired tear flow and inability to completely close the eyelids when blinking, due to the marked exophthalmos.

In view of the impaction of the frontonasal bones into the frontal and nasal cavities, the resulting ocular displacement and corneal ulceration, a decision was taken to reduce and stabilise the fractures using internal fixation. Surgical approach, via a midline incision from the frontal bone to the nasal planum, allowed the impacted fragments to be gently prised out of the nasal cavity. Veterinary cuttable plates with 2.0mm cortical screws were used to bridge the comminuted fractures and restore the anatomy (Figure 2). In so doing, the left orbit returned to its normal position in the orbital socket (Figure 3). A tie-over bandage was used to apply compression to the surgical field for 3 days post-operatively so as to prevent subcutaneous emphysema or seroma formation.

Bella was able to eat normally within 12 hours of surgery. Artificial tears (LacriLube) were applied six times a day to the left eye. The left conjunctival swelling resolved within 48 hours and the corneal ulcer healed within seven days. Wound healing progressed uneventfully. No epistaxis or nasal discharge developed after surgery.

Eight weeks after surgery Bella had made a full clinical recovery.

Bella recuperating with Anna

Figure 1

Figure 2

Figure 3
Canine transmissible venereal tumour (CTVT) is a cancer transmitted by transfer of living cancer cells during mating and produces ugly tumours on the genitals of dogs. The disease originated from the cancer cells of one individual dog that lived approximately 11,000 years ago. CTVT now affects dogs all over the world, which makes it the oldest and most widespread cancer known in nature.

In our new study published in eLife (2016) and carried out at the TCG laboratory at the University of Cambridge Department of Veterinary Medicine, we investigated how and when CTVT spread around the world. Thanks to our veterinary collaborators based all over the world, we collected and analysed CTVT tumour samples collected from over 400 dogs in 39 countries across six continents.

Our research showed how CTVT has rapidly spread around the world over the last two thousand years. By tracing the five genetic lineages, or “clades”, of CTVT tumours (see the illustrative map), we mapped the geographical routes that the tumour may have taken on its global travels. These studies suggest that some CTVT lineages may have been transported around the world by dogs travelling on ships along historic exploration and trade routes. For example, CTVT may have only reached the Americas around 500 years ago, probably carried there by dogs travelling with European settlers. Likewise, CTVT probably only came to Australia after European arrival.

Like healthy cells, cancer cells contain compartments known as mitochondria that produce the chemical energy needed to power vital processes. Inside the mitochondria, there is some DNA that encodes the proteins that mitochondria need to perform this role. Changes (or mutations) to this DNA may stop the mitochondria from working properly, which may lead to the death of the cell. Interestingly, CTVT cells have previously been found to occasionally capture this mitochondrial DNA (mtDNA) from normal dog cells, suggesting that replenishing their mtDNA may help promote CTVT cell growth. Our research revealed that the most damaging types of mutations were absent from the mtDNA of CTVT, which implies that fully functioning mitochondria play an important role in the spread of CTVT.

Unexpectedly, we also found evidence that certain sections of mtDNA in CTVT cells have been exchanged, or shuffled, with mtDNA from normal dog cells. This type of “recombination” is not usually thought to occur in mtDNA, and has not previously been detected in cancer. Future studies will determine if this process is widespread in other types of cancer, including in humans, and if blocking recombination may offer opportunities for treating cancer. It is exciting that work on this very special canine cancer can also give us insights into processes occurring in human cancers and may, in the future, help with finding new options for cancer treatment.

Our work has revealed how CTVT has spread around the world, and has highlighted some of the genetic “tricks” this unusual disease has performed in order to survive the millennia. We hope that our future work will continue to help us understand the characteristics enabling the spread of the disease, thus providing new strategies for CTVT prevention and management.
## An Increasingly Practical Approach to Veterinary Education

*continued from front page>*

While we do pride ourselves on how knowledgeable our students are, and like to think that they are among the best in the world at problem solving and clinical thinking, we also think that they have the chance to learn and practice their practical and clinical skills as much or more than any other British vet students. At Cambridge Vet School we believe that as well as book knowledge and cognitive skills, our students need to learn the important, practical clinical and professional skills that will prepare them for a career in veterinary medicine, and we are working hard to expand their chance to learn and practice those skills throughout their course. We are fortunate, too, that our small class size enables us to teach these skills in small groups throughout the curriculum.

It now all starts in first year, when vet students come up to the Vet School to learn animal handling with horses, cattle, sheep, dogs and cats as part of their Principles of Animal Management course. One of the fun things about teaching these practicals is that first year Cambridge students have wide range of backgrounds and experience with animals, so there are always opportunities for them to learn from each other. They are assessed on these practical skills in Direct Observation of Procedural Skills (DOPS) assessments in Lent term, which they need to pass in order to start their pre-clinical extramural studies (EMS) placements in farms and kennels.

Our second year students come to the Vet School to gain an understanding and put into practice their communication skills, and also learn more about the veterinary profession by interviewing real clients about their relationships with their vets. This is all part of their Preparing for the Veterinary Profession course. In the meantime, they are also learning important scientific and evidence-based medicine skills in their other pre-clinical courses.

After focusing on a variety of practical skills such as field work, lab skills and data analysis for their intercalated Part II’s in their third year, students are exposed to much more practical work in their clinical course. As part of their induction to fourth year, and during twice-weekly rotations, students learn paraclinical and basic clinical skills, on live animals, in the teaching hospital and at the University farm. They also rotate through the Pauline Brown Clinical Skills Centre (supported by the University of Cambridge Veterinary School Trust and now the envy of many

### Funding the next generation of Vets

Our Clinical Skills Teaching Centre was opened in 2015 and since then we have been working hard to equip it with a full range of training equipment.

The wish list below shows some of the items we still need, if you are able to make a contribution towards an item, you will be making a huge difference to future generations of vets.

**Simply go to:**
www.justgiving.com/ucvst

to make a donation online or complete and return the banker’s order form (back page) to make a one-off gift or multiple donations.

**Thank you!**

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<td>Blacksmith buddy</td>
<td>Training aids</td>
<td>£2,150.00</td>
<td>A standard piece of equipment routinely used in practice for the safe application for the restraint of difficult patients for intramuscular injections.</td>
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<td>Ethical rodent imitation training aid</td>
<td>Training aids</td>
<td>£695.00</td>
<td>Oral medication and other medical skills.</td>
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<tr>
<td>Crush Cage</td>
<td>Training aids</td>
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<td>A standard piece of equipment.</td>
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<td>Electronic stethoscope</td>
<td>Training aids</td>
<td>£356.40</td>
<td>This stethoscope approach the Centre about auscultation skills and this stethoscope would enable us to facilitate realistic simulation. With additional use by final years in reference and teaching purposes. The teaching and learning opportunities with this piece of equipment would be immense. Students frequently apply the Centre about auscultation skills.</td>
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<tr>
<td>Teaching stethoscope</td>
<td>Training aids</td>
<td>£96.20</td>
<td>This teaching stethoscope can record up to 12 30-second recordings, which can be instantly heard through the stethoscope ear-tips and played back for future reference.</td>
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<td>Telford tilt top tables 1600 x 800</td>
<td>Furniture</td>
<td>£205.50</td>
<td>We need two of these!</td>
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<tr>
<td>Half screen 1.5 x 1.2m</td>
<td>Furniture</td>
<td>£125.00</td>
<td>We need four of these!</td>
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veterinary schools around the world) and have additional formal practicals there to learn and practice skills on simulators. The aim of these rotations and practicals is to prepare students for their clinical EMS opportunities, and build their confidence. They learn skills such as gowning and gloving, suturing and instrument handling, clinical pathology, anaesthetic machine set up, and rectal palpation using our state-of-the-art Haptic Cow.

A similar schedule occurs in the fifth year, as students build on their basic skills, and learn more advanced techniques. Throughout the two years, the students also have several communication skills rotations in small groups, including role playing with professional actors who are trained as simulated clients to give the students experience of clinical consultations. This includes more challenging scenarios such as breaking bad news and dealing with an angry client.

The final year is lecture-free, with students participating in hospital rotations which cover all aspects of the veterinary profession and where they have the opportunity to take on clinical case responsibility and liaise directly with clients. In addition, they undertake a further DOPS assessment in their induction to final year, to make sure that they are comfortable with their basic clinical skills prior to entering clinics. Of course, students continue to learn and hone their skills in final year, and beyond graduation in their first few years in practice. But we hope that the practical experience they have gained in earlier years will allow them to apply those skills in a more integrated way in the clinical context.

This curriculum, which we believe balances the important knowledge, skills and attitudes required to be a successful veterinary surgeon, is constantly being assessed and reviewed, and improved. With this in mind, we still rely on and appreciate those of you that provide our students with EMS opportunities, and mentor them as new graduates so that they can continue their learning.

So we’d love to hear from you... how are our students and graduates doing? What can we do to build on this foundation to make them even better? Please call or drop us a line.

I found the rotation very useful as it allowed me to practice procedures such as closed gloving which I had not seen much in practice. I particularly enjoyed the case based approach.

5th year student

The Blacksmith buddy was designed by a farrier to accurately replicate the weight and angle of an adult horse leg and create an authentic shoeing experience. It has since been successfully used as a multi-purpose equine foot simulator for the rehearsal of day one skills, including the use of hoof testers, shoe removal, paring and rasping at the hoof and hoof bandaging.

An administration, endotracheal intubation, intramuscular drug administration, venepuncture, rectal temperature and handling. Of particular interest to students who have fundraised towards it.

Piece of equipment routinely used in practice for the safe application for the restraint of difficult patients for intramuscular injections.

Telford tilt top tables 1600 x 800

£205.50

We need two of these!

Half screen 1.5 x 1.2m

£125.00

We need four of these!
Photodynamic therapy (PDT) is a promising method of treating superficial tumours that is non-invasive and carries minimal risk of toxicity. PDT combines tumour-selective photosensitiser dyes and targeted illumination to generate cytotoxic reactive oxygen species (ROS) within the tumour. In addition to directly acting on tumour cells, PDT damages and restricts tumour microvasculature, and causes a local inflammatory response that stimulates an immune response against the tumour. Unlike surgery or radiotherapy the surrounding extracellular matrix is unaffected by PDT, thus tissue healing is excellent and PDT seldom scars. This, combined with the ease of light application, has made PDT a popular treatment for cancers and pre-cancers in humans. In veterinary practice, PDT has been used successfully for treatment of superficial squamous cell carcinoma of the feline nasal planum and for equine sarcoids.

We have developed a novel form of photodynamic therapy using 5-aminolaevulinic acid (5-ALA) applied topically to superficial tumours and illuminated by a light-emitting diode (LED) red light source of 635 nm. We published a pilot study in 2001 (Stell and others, 2001) and a series of 55 cats with superficial SCC’s of the nasal planum in 2008 (Bexfield et al, 2008), in which we achieved an 85% complete response rate with no toxicity, proving the principle that this treatment is efficacious and safe.

With the aid of a generous donation from the University of Cambridge Veterinary School Trust, in 2012 we were able to purchase a new, more powerful, light source (Lumacare), and in collaboration with Dr Jon Golding (Open University, Milton Keynes) were awarded a grant from the European Society of Veterinary Dermatology to conduct a trial using 5-ALA and glycolysis inhibitors for treatment of equine sarcoids.

This study which was completed in 2015 showed a greater than 90% response rate at 1 month for occult sarcoids treated with ALA and the glycolysis inhibitor Lonidamine as recently published in Veterinary and Comparative Oncology.

Critical Care Liquid Diet Review

Dan Thompson – Senior Clinical Training Scholar (Small Animal Medicine)

Funded by Royal Canin

A 14 year old, male neutered Border Terrier presented to the hospital for a 10 day history of progressive inappetance, polyuria/polydipsia, weight loss and abdominal discomfort on cranial palpation. On examination he had a body condition score of 3/9 and his muscle condition score was considered below normal. He had a grade II/VI left systolic murmur, however no other abnormalities were detected.

Biochemistry identified a significant increase in all liver enzymes, with more marked increases seen in cholestatic enzymes (ALP and GGT). There was a mild increase in total bilirubin and his cholesterol was also moderately increased above the upper reference limit. Abdominal ultrasound identified a biliary mucocoele without evidence of other abdominal pathology and a laparotomy was therefore performed for cholecystectomy and liver biopsy. In view of the previous inappetance, the low body condition score and the poor muscle condition score, it was elected to place a gastrotomy tube at the time of surgery to facilitate post-operative feeding.

The dog recovered well from anaesthesia but remained inappetant for the first 24 hours after surgery. The dog was therefore started on a refeeding program utilizing Royal Canin Recovery Liquid from the recently released range of liquid diets. A daily resting energy requirement of 405 Kcal was calculated and a program calculated to reach this level over the course of 5 days via tube feeding.

The dog tolerated the feeding well but
The Brachycephalic Obstructive Airway Syndrome Group Update

Jane Ladlow – Senior Lecturer in Small Animal Surgery

Over the last three years we have been very active and developed and published a non-invasive objective method of diagnosing brachycephalic obstructive airway syndrome (BOAS) to different degrees including control dogs that had no evidence of disease. In order to test these dogs we visited a large number of dog shows and were assisted by the Bulldog Club, French Bulldog Club and the Pug Club.

Using this objective data we have moved on to look at the effectiveness of our surgical treatments for BOAS, the risk factors for BOAS within our data set (now over 1,000 dogs) and the different diagnostic techniques for BOAS. The risk factors that are evident in all breeds are narrowed or ‘stenotic’ nostrils and having a high body condition score or obesity. Interestingly the only other conformational measurement that we found was important as a risk factor in the Bulldog for developing the disease was neck to chest girth ratio i.e. individuals with a proportionally thicker neck are more likely to be affected. The grading system has also allowed us to work on the genetic background of this disease, using the presence or absence of airway disease to search for changes in the genome that we will use to develop a genetic test to aid breeders when selecting dogs for breeding.

Having established that our surgery is effective but some dogs respond better than others, we have introduced new techniques that are currently only available in one other clinic in Germany. Professor Oechtering from Leipzig University has pioneered laser assisted turbinectomy (LATE) in dogs and was kind enough to train us in this technique. We are currently the only clinic in the UK offering this procedure. We use LATE on dogs that do not respond to the traditional surgery and have been very pleased with dogs responses and the objective improvement in breathing.

One of our cases that responded very well to laser turbinectomy to remove excessive nasal tissue was a French Bulldog named Riley that we treated for BOAS. Riley came to us from Aberdeen with exercise intolerance, problems eating, regurgitation and severe sleep apnoea. Riley could not sleep properly due to his airway collapsing and obstructing airflow. When we saw him in December Riley was falling asleep standing up in the consult room. After surgery including LATE, Riley is now having a good night’s sleep to the delight of his owners and is a far more active dog during the day as a result.

We are delighted that Dr Nai-Chieh Liu completed her PhD with flying colours and we had two students, Eileen Troconis and Hattie Wright who passed their MPhil vivas in this period.

For more information on this work see: www.vet.cam.ac.uk/boas

We are still looking for healthy Pugs, French Bulldogs and Bulldogs who can exercise with little or no airway noise please contact us on BOAS@vet.cam.ac.uk

The complete range of new liquid ICU products
Focus on Urinary Incontinence in Dogs – Fixing those leaks!

Laura Owen – Lecturer in Small Animal Surgery

Research

The problem of urinary incontinence in dogs has become an interesting focus of research for The Queen’s Veterinary School Hospital (QVSH) over the last 12 months. This is an area of canine medicine and surgery which remains poorly understood and for which we still have treatment options that are far from perfect. We currently have two main studies underway in the clinic:

1. A prospective study to compare the clinical outcome of colposuspension surgery and artificial urethral sphincter placement in bitches with urethral sphincter mechanism incompetence (USMI)

Through this study, we hope to shed some light on whether one of these treatments is superior to the other in terms of clinical outcome, or whether they are similar with potentially different complication rates. In addition, would some dogs benefit more from one procedure compared to the other? Is it possible to tailor treatment to an individual rather than to a condition? These are all questions we would love to get some answers to and are very grateful to all the dogs/owners that have already taken part.

We are still actively recruiting for this study, and are looking for young-middle aged medium-large breed bitches with urinary incontinence thought to be due to USMI and with owners who are interested in exploring the surgical options, either due to poor response to medical management, or because they have a desire to avoid lifelong medication if possible. If you have any patients you think may be suitable for this study we would be very happy to hear from you……… reduced fees are still available for the next 10 patients.

2. Golden Retriever ultrasound screening ectopic ureter project

We are proud to have joined forces with both the Kennel Club and Golden Retriever breed clubs to look at the problem of ectopic ureters specifically in this breed. This project has a preventative aim and is screening clinically normal adult Golden Retrievers with doppler ultrasound to determine the position of their ureteric openings. This has already shown that whilst approximately ¾ of dogs have normal ureters (A type), the remainder have either ureters opening at a position within the bladder, but too caudal to be ‘normal’ (B type) or have unidentified ectopic ureters (C type). We hope that this information may prove useful as a stand-alone pre-breeding test, or may enable a DNA test to be developed to govern breeding and reduce the incidence of ‘wet puppies’.

Endoscopic laser ablation of ectopic ureters

The QVSH is proud to be one of the first centres in the UK to offer minimally invasive correction of ectopic ureters in both bitches and dogs, which gives the same clinical outcome, with much reduced morbidity compared with conventional surgery. This can be carried out anytime from 12 weeks of age and patients can usually be discharged the same day. The procedure involves ablation of the abnormal ureteral wall using a diode laser, under cystoscopic guidance and is safe and well tolerated. We see this as a real step forward in the treatment of this condition and look forward to continuing to refine this technique.

For more information about either of our research projects, to advise of any potential cases or to find out more about laser ablation of ectopic ureters please contact Laura Owen at lo247@cam.ac.uk
Under Nick Jeffery’s supervision, Paul Freeman began a part-time residency at Cambridge in 2006. At the time Paul was a partner in a large veterinary practice in Braintree where, having long-ago completed a Certificate in Small Animal Orthopaedics, he developed a keen interest in spinal surgery and neurology. Juggling the residency alongside establishing a referral centre for orthopaedics and neurology (in partnership with his practice), he managed to clock up the clinical hours and huge amount of study necessary to pass the European Diploma in Veterinary Neurology. Paul’s main area of interest is spinal cord compression, particularly in acute situations, and the value of decompressive surgery.

Paul agreed to take on the full-time position of leading the hospital’s neurology team at the beginning of the 2016 academic year. During his residency he had built up strong working relationships with the hospital team and grown to really enjoy teaching and guiding the students, residents and interns. Noting with a wry smile that today’s students work incredibly hard compared with his time at Cambridge (Paul graduated in 1987) he is particularly impressed with the tremendous amount of hands-on experience they gain throughout their time at the Vet School and particularly in their final year. The sixth years are involved in all aspects of the management of the referral caseload, from initial consultation through imaging and treatment and especially the nursing of the hospitalised patients and regular communication with their owners.

For Paul, another appealing aspect to the role is the reduced pressure on consultation times compared to commercial practice. He feels that the client should, as far as possible, be part of the decision making process regarding treatment options and the longer consultation times allow the team the opportunity to listen and talk to clients and discuss the different options available in more detail. Vitaly the veterinary school environment also provides the opportunity to discuss cases with other clinical specialists who can offer further expert insight and opinions.

The neuro team is keen to provide a rounded approach to cases with Paul adding that there are no set rules for case management; “Every case is individual and in particular we don’t tend to push surgical treatment too hard and try to take a conservative approach whenever the evidence would point to this being reasonable. We can offer cutting-edge procedures when required but sometimes it is good to step back, take time and perhaps offer a more holistic approach”.

The spectrum of surgeries and treatments available for patients is soon to be expanded with the hospital investing in a SonoCure ultrasonic aspirator. This will allow the neuro team to perform spinal surgeries more rapidly and efficiently because of the ability to remove both bone and soft tissue in a way that preserves surrounding elastic structures particularly blood vessels. It will also increase the possibilities for performing brain and spinal cord tumour removal.

Other team members include Clinical Neurologist Lisa Alves who is working on a project to investigate the possibilities opened up by micro CT, alongside Junior Clinician Georgina Harris.

To refer a case to the neurology team please contact:
Email: hospital@vet.cam.ac.uk
Phone: 01223 337621


Dr Bruce James Netschert (known as Jamie) sadly died at the end of November. His family are setting up the Jamie Netschert Fund in his memory to provide grants for equipment and EMS support for vet students from Selwyn College, which was Jamie’s college whilst at Cambridge.

If you would like to contribute to the fund please contact Mike Nicholson, Development Director, Selwyn College mgn24@cam.ac.uk.
Sabbaticals, San Francisco and Salmonella!

Clare Bryant
Professor of Innate Immunity

“A sabbatical? You academics have so much holiday with the university vacations, what do you need a sabbatical for?” I often hear this from my non-academic colleagues when I mention a potential sabbatical time. The former is not really applicable to the Vet School as the final year students do not have university vacations and are on rotation all year, and the terms are longer for our 4th and 5th year students. As Lecturers, Readers or Professors within the University of Cambridge you are expected to run an internationally recognised scientific research group and in the current economic climate, especially with Brexit looming and 50% of the University research funding coming from the EU, this is not an easy task. For me the mythical university vacations mean I can spend my time doing research by managing my group, attending/speaking at conferences to ensure we are at the cutting edge of our innate immunity research, and thinking (most of mine is done on aeroplanes or trains as I travel to scientific meetings).

My research group is now in the fortunate position to be well funded. This has taken a monumental effort from my postdocs, PhD students and myself, along with brilliant help from my collaborators in Biochemistry, Chemistry, DAMTP and Physics as well my fantastic network of international collaborators. It is my international collaborators who help me with reagents and cutting edge techniques in innate immunology, so that when I am due sabbatical leave, I use the time to make visits to the best labs in the world, wherever that may be. This has paid off hugely for me over the years as after each visit our research has made massive leaps and we have gained grant funding as a direct result (I have also made brilliant new friends). The application of multidisciplinary techniques to answer difficult questions is, I have realised, what we do best.

The questions I am most interested in answering, and that are of key importance in understanding infectious disease, are based around trying to understand the molecular mechanisms underpinning how phagocytic cells ‘see’ bacteria (primarily Salmonella species) and bacterial ligands to initiate inflammation. Bacteria are detected by receptors on the cell surface or within the cytosol of the cell. These receptors trigger the formation of very large multi-protein signalling complexes within the cell which result in either sending a transcription factor to the nucleus to initiate inflammatory gene production or to drive the direct processing of immature inflammatory cytokines to their mature forms (through the inflammasome). If we understand how these mechanisms work then we can design new ways to expel Salmonella (from man and animals) and improve vaccination strategies as well as potentially identify novel anti-inflammatory agents. Our work is primarily human based (the majority of research funding available is for medical research), but we are very interested in understanding why animals such as chickens tolerate some Salmonella species with no disease symptoms yet cause severe food poisoning in man. This research is of key importance to food safety and has therefore been well funded so helps to keep my veterinary research interests alive and kicking.

I was awarded sabbatical leave from October 2015 to September 2016 based on my research plan which was to spend time in Vishva Dixit’s lab in Genentech in San Francisco. He has one of the best labs in the world based in a drug company and his expertise in inflammatory cell death is second to none. It was a privilege to be accepted to go there and he gave me a grant to cover my accommodation costs. Genentech has a policy of encouraging senior academics to visit the site and spend time there and their (enlightened) view is that this benefits both the academics and their staff. I was keen to investigate how Salmonella behaved in a number of their novel models with a particular focus on understanding cell death and the processing of the IL1 family of cytokines. His lab is also world renowned for its genetic engineering and I was keen that we should learn their cutting edge skills to bring back to Cambridge. Two of my graduate students were offered internships so I was to be there for 6 months on my own before they joined me.

It is not an insignificant thing to get up and leave your home, family, friends and research group for virtually the other side of the world to live on your own in a place where you know no one. There were reams of paperwork to get visas sorted out, I had to find a place to rent (I was very, very lucky and ended up in Noe Valley near the Castro) and work out how to get to work (cycling). This latter task ended up being the most important thing for my social life: the Genentech Cycling Club left Ritual Roasters café on Mission (the best coffee in SF) at 6:30 and cycled to work. The hills are unbelievable and we cycled over Bernal Heights every morning (the cars are parked sideways on because it is so
steep) which is a major shock to the system after Cambridge! With the club I ended up cycling many of California’s iconic climbs and I saw so much of the local country (cycling over the Golden Gate Bridge is very special). In California you can, of course, be pretty certain of the weather so much of the social life is spent outdoors. The plant life is positively Jurassic with the remarkable Giant Redwood trees. The ocean wildlife is spectacular too since California took an aggressive stance on clean water and I saw many whales, seals, sea lions, sea otters and dolphins. I had many visitors from home including a couple of my tutees dropping by for dinner. I also made many new friends and reconnected with one of my ex-graduate students who was a trainee medical anaesthetist in Stanford. I started out feeling lonely, but definitely did not want to leave especially after Brexit. Trump, however, was looming and I felt that he was likely to be marginally worse than Brexit, but we shall see.

The working environment at Genentech was fabulous and we identified several novel gene phenotypes for Salmonella-induced inflammation which we are now investigating in Cambridge. Our new genetic techniques are making a real impact in our research and we are routinely using the CRISPR/Cas 9 gene editing approaches to remove genes or add tags to genes in chicken cells. This will revolutionise what we can do in veterinary as well as medical research because, up until now, the only way to study what happens when you remove a gene was to make a knock out mouse. Now after a few weeks you can make cells that lack a specific gene from any species (human or domestic animal) where you have an immortalised cell line. I have made excellent new friends and started a number of new collaborations. I learnt an immense amount about industry and the way things are managed in this environment all of which I have bought back to try and improve our working environment. I don’t know what the next few years will bring in the way of grants or papers, but I am hopeful that the San Francisco sabbatical will help us grow our fundamental research and also to translate this to medical and veterinary therapies.

Follow Clare’s blog on https://bryantblog27.wordpress.com/author/bryantblog27/
Please consider supporting us, every contribution makes a vital difference to help Cambridge Veterinary School continue to educate, diagnose, treat and discover.

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**Contact Information**

Queen’s Veterinary School Hospital:

Small Animal Hospital: 01223 360908 or 337621
Cambridge Equine Hospital (first opinion): 01223 760535
Cambridge Equine Hospital (referral/emergency): 01223 746571
Farm Animal Veterinary Services: 01223 337647

Visit our new website at: http://camvet.vet.cam.ac.uk/
Tel: 01223 764475 or 337610
Email: trust.office@vet.cam.ac.uk

**Reunion News**

There are three reunions planned for this year, please get in touch if you would like to take part:

2007 Saturday 2nd – Sunday 3rd September
Visit Cambridge Vet School Class of 2007 Facebook page for more info.

1987 Saturday 7th October

1997 Saturday 21st October

Contact Katy Stevenson at kb104@cam.ac.uk for more info.

**Department of Veterinary Medicine**

University of Cambridge Veterinary School Trust, Madingley Road, Cambridge CB3 0ES.

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