

Animal *Health* Trust News



Issue 79 | Autumn 2015

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AHT discovers new form of glaucoma in Basset Hounds and launches DNA test

Examination of three Basset Hounds by the AHT has uncovered a condition never previously recorded within the breed – primary open angle glaucoma (POAG).

Thanks to expertise within the Kennel Club Genetics Centre at the AHT the mutation responsible for the condition has been found and a DNA test launched to help breeders control this blinding disease. The test is now available to order from the AHT's DNA Testing Service less than a year after POAG was first discovered in Basset Hounds during research undertaken for a PhD project into canine glaucoma.

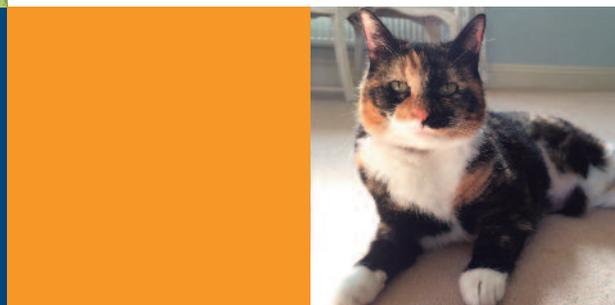
James Oliver, new Head of Ophthalmology who leads the research, is pictured above with Monty, left, the first Basset Hound discovered with POAG, owned by Su Jones, and right are her girls: Lexi, Lizzy and Wiggy who are all clear of the disease.

Primary glaucoma is an inherited condition and is subdivided into two types: closed angle glaucoma (PCAG) and POAG. In both forms glaucoma results from reduced drainage of fluid within the eye, causing a build-up of pressure which, in turn, leads to pain and blindness.

It was during routine examinations for a PhD investigating the most common form of canine glaucoma, PCAG, that James Oliver, one of our specialist ophthalmologists, discovered signs of POAG within three Basset Hounds. James said: "I've examined thousands of dogs as part of my PhD study but this is the first time I've stumbled across a form of the disease in a breed that I wasn't previously aware of. POAG has never been recorded before in the Basset Hound, so it's a really interesting and important discovery.

"What's more, as it seems to be an emerging disease in the Basset Hound, the fact that we've been able to find the genetic mutation and launch a DNA test so quickly means we should be able to nip this form of glaucoma in the bud before it becomes a wide-spread problem.

"Although we may not have seen many Basset Hounds affected by this



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form of glaucoma the carrier rate is estimated to be at about 16% in the UK Basset Hound population, which is relatively high. Therefore DNA testing before breeding is going to be really critical in order to get this form of glaucoma under control in this lovely breed."

James continued: "Without the support of the Breed Club, Basset Hound owners, the AHT's genetics team and Dogs Trust for funding my PhD, this discovery wouldn't have happened. Now, I hope Basset Hound breeders will have the right knowledge and tools to be able to prevent many more dogs suffering from this painful and blinding condition."

For more information about the AHT's work to fight canine glaucoma, please visit: www.aht.org.uk/giftofsight

Tortilla the Torti walks again thanks to AHT vets

Tortilla came to the Animal Health Trust as an emergency case when she suddenly lost the use of her back legs and tail.

Up until the previous evening Tortilla had been her normal, active self. Her owners Sue and Paul, who had rescued Tortilla from a rubbish tip as a kitten, had noticed a slight limp but nothing serious. At 5am the following morning Sue was woken by the sound of Tortilla in immense discomfort and when she tried to settle her realised that she was unable to move her back end and was paralysed from the waist down.

Sue rushed Tortilla to her local vet who swiftly referred her to the AHT's Anita Shea, one of our expert neurology team, and they embarked on the anxious three-hour drive.

The diagnosis

Anita conducted a full neurological examination which suggested that there was a problem with Tortilla's lumbosacral spinal cord segments. An MRI scan was required in order for Anita to see exactly what was going on in Tortilla's spine.

The MRI showed an extensive swelling and abnormal brightness of the spinal cord in the lower lumbar region, affecting both sides of the spinal cord. This was suggestive of a blood clot in the spinal cord, commonly known as a "spinal stroke" - the cause of the sudden paralysis. A "spinal stroke" is an injury which can occur in both humans and animals and is usually associated with a strenuous activity or potentially, trauma. In humans it can be things like sports and car accidents, in dogs the injury often suddenly occurs during a walk or while playing.

After her successful diagnosis, Tortilla was started on medications to try to reduce the swelling of the blood clot and kept in for the next four days to start physiotherapy. Physiotherapy is considerably easier to perform in dogs than it is in cats - dogs are used to walking on a lead whereas cats are far less likely to be willing to walk in an unusual environment. Dogs are also more amenable to massage while cats prefer to be touched only on their own terms!

Tortilla's progress

Anita said: "Although Tortilla wasn't the greatest fan of the physiotherapy exercises she was extremely tolerant and allowed us to perform them. Through a combination of the medications, the physiotherapy, her body's natural healing ability and her own determination, two days after her diagnosis Tortilla showed great improvement and the following day she was able to walk short distances without assistance. After just five days Tortilla was able to go home to continue her recovery."



Sue commented: "It wasn't easy keeping on top of Tortilla's medication schedule and physio - but my husband and I managed to get the hang of the exercises and became pros at getting Tortilla to take the pills! She is doing absolutely wonderfully and runs up and down the stairs with no trouble at all now. Only the last three inches of her tail is a little bit limp but she is living a normal life, which I wouldn't have believed possible."

I was so pleased with the standard of care from Anita, I've since made a £200 donation to the charity. I really didn't think she would be able to come back from her injury but thanks to the AHT it's like nothing ever happened!"



Strangles: A pathogenic legacy of the war horse

In the largest study ever conducted into *Streptococcus equi* (*S. equi*), the bacteria responsible for the development of Strangles, AHT experts have come one step closer to designing an effective vaccine to prevent this devastating disease.

Strangles is characterised by a fever followed by abscesses of the lymph nodes of the head and neck. Despite over 100 years of research, the disease remains the most frequently diagnosed infection of horses worldwide. In new research, scientists from the Animal Health Trust, the Wellcome Trust Sanger Institute and the University of St. Andrews joined forces to examine the history and evolution of the disease.

The researchers examined 224 samples of *S. equi* procured from horses around the globe to try and find a common bacterial ancestor from which modern strains would have developed. Despite the disease first being described in 1251, the researchers were surprised at the genetic similarity of the samples and identified a total population replacement at the 19th or early 20th century. This corresponds to a period when horses from around the world were brought together in global conflicts including World War I, where an estimated eight million horses died on the battlefield.

"The mobilisation and mixing of horses in conflicts such as WWI provided perfect conditions for *S. equi* to thrive," says Dr Simon Harris from the Wellcome Trust Sanger Institute. This combined with high mortality rates among the horses and their replacement with young susceptible horses could explain what we see around the world today."

While loss of diversity could be considered detrimental to bacterial populations, *S. equi* still infects more than 20,000 horses in the UK alone each year. Its success, researchers believe, is due to its ability to persist in some horses for years after they have recovered from Strangles, where the bug can evolve to evade the horse's immune system.

Dr Andrew Waller, Head of Bacteriology at the Animal Health Trust says, "The data we have gathered in this study has enabled us to pinpoint the genes that help the bacteria to persist, spread and thrive in the horse population. This research provides an unprecedented opportunity to reduce the impact of and prevent Strangles in future generations of horses."

For more information on our research into strangles please visit www.aht.org.uk/Strangles



AHT research transformed by new cutting-edge technology



Following a successful application, scientists at the AHT are among a select few to receive an Oxford Nanopore "MinION" DNA sequencer – pioneering new equipment to revolutionise the way scientists sequence DNA and conduct research.

As one of the UK's leading veterinary research institutions, DNA sequencing forms an integral part of our research. The process allows scientists to find mutations that cause inherited diseases and facilitates future vaccine development and disease management. DNA sequencing is also vital in the study of equine diseases Strangles and equine herpes virus (EHV), in which the AHT are world-leaders.

The MinION DNA sequencer is a welcome addition to the AHT's portfolio as it is able to sequence long pieces of DNA, enabling genetic codes to be assembled and read swiftly. With the addition of the MinION DNA sequencer, the doors are opened for the AHT to make potential breakthroughs in the study of both Strangles and EHV.

"We are now fantastically equipped at the Trust as we have four DNA sequencers which all perform a slightly different role," said Oliver Forman (pictured above), Post-doctoral Scientist in the Kennel Club Canine Genetics department at the AHT. "The fact that the MinION specialises in sequencing long pieces of DNA will be invaluable in putting the pieces of sequence together, which is often like a jigsaw puzzle."

Dr Andrew Waller, Head of Bacteriology said, "The MinION will enable us to learn more about a new strain of *Streptococcus equi*, the causative agent of Strangles, which has swept across the UK and has now been identified in horses with Strangles in Ireland, France, Belgium, Holland and Dubai. The information will help us to work out why this new strain has become so widespread, and assist in developing improved vaccines that will be better able to prevent the disease."

Dr Neil Bryant, Virologist and lead scientist in the study of EHV said, "Long term, the information we gain from the MinION will help us identify differences between EHV-1 isolates and how they relate to the disease in horses." The technology will also be utilised by the AHT's award-winning canine genetics group, led by Dr Cathryn Mellersh, who have recently been recognised for their work to improve understanding of inherited diseases in purebred dogs and their development of DNA tests to help dog breeders improve the health of future generations of dogs.

Oliver concluded, "We are delighted to have been awarded this new sequencing device. It has the potential to aid so many important studies and help us to improve animal health and welfare."

Head of Genetics wins prestigious award

Dr Cathryn Mellersh, Head of Canine Genetics, has won a prestigious award for her research which has significantly improved our understanding of inherited diseases in purebred dogs and has led to the development of numerous DNA tests to help dog breeders improve the lives of future generations of dogs.

Cathryn was recognised as this year's joint recipient of the International Award at the coveted International Canine Health Awards run by the Kennel Club Charitable Trust, funded by Metro Bank. She received the award at the International Conference on Advances in Canine and Feline Genomics and Inherited Disease.

The awards highlight those individuals who go one step further to promote the health and wellbeing of dogs through their work in the world of veterinary science and include a fund to help support the individual's future research projects. As joint winner of the International Award Cathryn receives a £20,000 fund to support future canine genetics research projects here at the AHT.

Speaking about the award, she said: "Receiving this award is a real honour and I am privileged to have been able to build a career that combines my love of dogs and genetics. My research has helped to prevent inherited disorders in purebred dogs, but it may also help us understand inherited diseases in all dogs, and maybe humans too, in the future.

"I'm very proud of my team and what they have achieved so far for the health of the dog and thanks to funding from the Kennel Club Charitable Trust we have been able to find close to 20 genetic mutations responsible for debilitating health conditions affecting about 35 breeds. By working with breeders to develop these tests we're able to help prevent inherited disease in countless dogs, all over the world, and this award will have an invaluable impact. For that I am truly very grateful.

"The fund will be split between the three main areas of our work and will help us to make great strides in sequencing the whole genome of several breeds, as a resource to help streamline all of our research, as well as assisting our current investigations into idiopathic epilepsy and inherited eye disease in a number of breeds, helping us to make a huge difference to the health of future generations of dogs."

Mike Townsend, Chairman of Trustees at the Kennel Club Charitable Trust, which runs the awards, said: "Dr Mellersh represents everything that this award is about. She has completely transformed our understanding of dog diseases and our ability to test for life limiting conditions, dramatically improving the lives of dogs.

"She was amongst the first in the world to identify disease carrying genes in dogs that has enabled the huge advancements in testing and technology that we thankfully have today. Her work is truly transforming dogs' lives and she is continually showing her passion and commitment by attending breeder seminars and conferences and has published multiple papers about her field of expertise."



Joint pain in horses explored in AHT research

The prevalence and characteristics of sacroiliac (SI) joint region pain and its relationship to lameness in horses has been investigated in pioneering research conducted at the AHT. The research, conducted by Dr Sue Dyson, Head of Clinical Orthopaedics at the AHT and Amy Barstow, a previous AHT intern, built on previous AHT research that recognised SI joint region pain as a contributor to poor performance and hindlimb lameness. As the first large-scale study of its kind, the research provides important guidance for both vets and horse owners on the clinical signs of SI joint region pain and how best to examine it.

Notable results include the observation that clinical signs of SI joint region pain are worse when horses are ridden, such as bucking in canter and spontaneously breaking from canter. This highlights the importance of vets examining horses under saddle wherever possible in order to observe the true severity and breadth of the clinical signs.

Clinical signs of SI joint region pain can be dramatically reduced following diagnostic analgesia, a safe but non-specific block. Signs suggestive of SI joint region pain included canter quality that is worse than trot, and bucking and kicking out especially in canter. Bunny-hopping type canter, being on the forehand and croup high or a stiff, stilted canter, changing legs behind, spontaneously breaking from canter to trot and being reluctant to canter were also commonly observed, as well as the tendency to come above the bit. For horses showing the above signs, blocking the SI joint in a diagnostic investigation could provide crucial answers.

The research also found that only 42% of horses which had a positive response to SI block and underwent nuclear scintigraphy had abnormal results, showing that scintigraphy alone is unreliable for the diagnosis of SI joint pain.

The majority of horses in the study had SI joint region pain and hindlimb lameness. Although clear improvement was seen in some horses when in hand after removing the source of pain in the lame limb, ridden exercise highlighted the persistence of another source of pain, which was sometimes worse after abolishing the lameness. This again emphasises the crucial importance of ridden exercise in both trot and canter when assessing lameness and poor performance. Dr Sue Dyson said, "Assessing the effect of treatment of the SI joints is not an effective method of diagnosis; the use of nerve blocks is much more reliable."



60 seconds with...

...Vickie Pilfold-Wilkie in the cancer research team

How long have you been at the AHT?

I've joined the AHT in March 2013 as the Sample and Data Curator for the Molecular Oncology Team. Previously I worked for Cambridge University in various departments such as Breast Cancer Research and Bowel Cancer Research.

Why do you do, what you do? It's essentially the dream job (apart from Top Gear presenter!), being able to work here incorporates many of the things that I love: research, genetics and dogs.

I get to speak to people from all walks of life, and we all have a common aim: fighting against canine cancer. My role is to essentially get samples from healthy and affected dogs, so liaising with vets, dog owners and breed clubs. Without the samples there would be no research projects into cancer in canines.

Cancer research takes a lot of perseverance as getting all the samples we need can be difficult, especially as sadly we need samples from affected dogs as well as healthy dogs, but I feel I am contributing in a big way to helping learn more about canine cancer and potentially finding some answers. This in itself is very rewarding. The AHT provides such valuable service to the health of animals, and the research here is diverse and fascinating. It's a real honour to be part of the 'team'.

What do you enjoy doing in your spare time? I have three kids, three dogs and a partner, so there isn't much spare time! Weekends are usually spent walking the dogs and the kids, trying to tire them out while preventing my three-year-old Cocker Spaniel, Iris, from running off in the woods near our house in search of something more exciting to chase! I also really love spending time in my garden, it's wonderful to watch the garden change in the seasons.



Vickie pictured with her Cocker Spaniel Iris, Black Labrador Tess and Large Munsterlander Murphy

ZOE'S JOURNEY UK, raise more than £30,000 for cancer research

Jayne May made a pledge in January of this year to raise £5,000 for the AHT. She wanted to do something to give dogs a better chance of fighting cancer after three of her own dogs have been badly affected by this terrible disease.



A long term member of the Facebook Group, Golden Retrievers England UK, Jayne turned to the online group, which had offered her emotional support when her dog Zoe was diagnosed with lymphoma nearly two years ago, aged 12, for help with the fundraising. The support Jayne received was unimaginable and today the total amount raised for our canine cancer research stands well over £30,000. 35 committed supporters of Zoe's Journey UK attended a celebratory event at the AHT, on Zoe's 14th birthday, to celebrate and mark their special achievement. Jayne said: "Zoe has defied the odds and after carefully monitored and controlled chemotherapy treatment at Watkins and Tasker Veterinary Group in Bristol, she stands here today clear of lymphoma 20 months after her diagnosis.



Committed supporters of Zoe's Journey UK!

"But unfortunately, not many dogs are as lucky as Zoe and sadly I've seen too many dogs lost to this horrible disease. I wanted to try and make a difference by raising £5,000 for canine cancer research – which I thought was an ambitious target back in January! The support for Zoe's Journey UK from all over the country, and abroad, has just been incredible. Zoe wouldn't be here if it wasn't for my vets and the knowledge they have thanks to organisations like the AHT. Hopefully now many more dogs will have a better chance of fighting cancer in the future."

The AHT is treating animals with cancer every day in our dedicated, state-of-the-art cancer centre and our expert teams of vets and scientists are undertaking multiple research projects to gain a better clinical and scientific understanding of canine cancers, and ways to better diagnose and treat the disease.

Andrew Simmonds, Head of Individual Giving at the AHT, said: "The Zoe's Journey UK team have to be one of our most successful fundraising groups to date and it's just incredible the way that they've been able to galvanise such support through social media alone. We're so grateful to Zoe's Journey UK for choosing to support our canine cancer research and can't wait to see what's next for this amazing campaign which seems to be unstoppable in what they can achieve!"



Andrew Simmonds pictured with Jayne May and Zoe

To find out more please go to www.aht.org.uk/cancer

Newmarket Gala Race Day

Congratulations to Amy Drummond, the winner of our first ever Charity Race!

All of our riders did an absolutely amazing job and we're so proud of them all. They all prepared for the race as well as fundraising for the work we do to fight disease and injury in animals.

Here's a shot of all of our wonderful riders receiving their prizes from our Chief Executive Mark Vaudin. Please join us in saying a huge well done especially to Amy! The Race Day raised an amazing and record £52,000 for the AHT.

We have now confirmed our next Race Day - Saturday 25th June 2016. Are you up for a challenge to ride in our charity race and raise vital funds for the AHT? If interested please contact sophie.tyser@aht.org.uk by 2nd November 2015.



Robbie Mills, Verity McMahon, Rosie Margaron, Amy Drummond, Hannah Knowles, Carina McKeown and Katy Reed pictured with AHT Chief Executive Mark Vaudin

Fergus walks coast to coast for the AHT!

My name is Fergus, I am an eight year old Welsh Springer Spaniel. I am a working dog and normally very fit and strong, but when I was three, I became very ill very quickly with Seasonal Canine Illness (SCI). Thankfully I recovered, but several poor dogs lost their lives to SCI. The Animal Health Trust has done lots of work to publicise and research SCI so that dog owners and vets are more aware of the signs and how to treat it. They are also doing a lot of research into Glaucoma in dogs, especially Welsh Springer Spaniels like me.

So, this summer I walked my owners along Wainwright's Coast to Coast, that's 192 miles from St Bees to Robin Hood's Bay, to raise money to help the AHT with their work. I completed the walk in 18 days and in total climbed more than the height of Mount Everest!



Debbie, Fergus's owner said: "We've been blown away by people's generosity so far and have exceeded our target of £1,000 for the AHT. It's thanks to their expertise that Fergus, and many other dogs, are surviving the mystery illness, known as SCI. Although the cause of SCI was never fully found I'm sure increased awareness and knowing what to look out for has made a huge difference to many dogs' lives, including our Fergus, and for that we're really grateful."

AHT gives Earl his sight back

Ten weeks ago, Nikki Stebbing from Tasburgh, Norfolk, embarked on a personal journey, training for 'Run Norwich', a 10 kilometre race, to aid her fundraising efforts for the Animal Health Trust.

In 2013, Nikki's Border Terrier, Earl, was diagnosed with cataracts in both eyes. As a result he was blind. Earl underwent an operation at the AHT which restored his vision and gave the 10-year-old terrier a new lease of life. Nikki wanted to give something back to the AHT and on 30 August she completed the Run Norwich race in under an hour, with a fantastic time of 56:12!

Nikki said: "The AHT were there to support Earl and I 24-7, the team took such great care of him that I knew I just had to give something back. What makes the AHT really special is that not only do they offer specialist treatment to animals with serious conditions like Earl, they also carry out research to find new ways to better diagnose and prevent disease, meaning that potentially, in the future, other animals won't have to suffer in the way Earl had to."



Earl returns home after his operation

Calling on support from a number of her local business contacts, along with that of her family and friends, Nikki raised a phenomenal £1,600 for us.

The AHT is committed to fighting disease and injury in animals. We are currently undertaking research into a number of blinding eye conditions that could prevent blindness and suffering in dogs across the UK, and possibly the world. Find out more about this work at www.aht.org.uk/giftofsight

Prudential RideLondon Surrey 100 2015

This summer 10 intrepid cyclists from the AHT cycling team took part in the 3rd Prudential RideLondon-Surrey 100. This event is a wonderful cycling sportive that takes place along the 2012 Olympic cross country route covering a challenging 100 mile course from London through Surrey, up Box Hill, Leith Hill and then finishing back in London along the Mall. Team AHT did extremely well and managed to get around safely in incredible times!



Steve & Caroline Shore

This year we were honoured to have sponsors including: Totepool, Aberdeen Asset Management, LuxDeco and Betsi. The AHT cycling team honoured these sponsors by wearing their logos emblazoned on their new bright pink cycling kit!



Robin White & Andrew Nichols

The vigorous and dedicated training was fully rewarded with a special day enjoyed by all the riders and impressive funds raised for the AHT's vital work. Our thanks go to: Steve & Caroline Shore, Clare Fleming, Mike Woodcock, Adam Cummings (a Serology Technician from our Diagnostic Lab!), Stuart Cureton, Robin White, Andrew Nichols, Tim Sankey and Robert Cass.

Bryony's miniature horses raise magnificent sum!

Rainy, a two year old miniature pony owned by Bryony Gillespie who has had some big problems with her eyes. Rainy had been suffering with her left eye for some time, with inflammation of the eye and head-shaking. Unresponsive to antibiotic drops, the decision was taken to refer Rainy for a specialist opinion.

Bryony said, "Another of my horses, Prince, was actually already staying with the AHT being investigated for poor performance related issues by Sue Dyson. I was so impressed with her work and the whole of the AHT that I knew there was only one place to take Rainy."

Rainy was referred to the ophthalmologists at the AHT, and straight away Rachael Grundon noticed that her left eye was significantly under-developed with little vision and suffering recurrent uveitis. Rainy's right eye was also suffering with affected vision, with lens luxation and a cataract. Unfortunately, Rainy's left eye had to be removed, but she is now much more comfortable. Bryony said, "Rainy is so much happier and content now. She's really adapted to life with one eye. She couldn't have carried on with that painful condition, so removing her eye was definitely the right thing to do."

Bryony has been so impressed with the care her horses received that she decided to fundraise and raise awareness of our charity at the Lincolnshire Show. "I was overwhelmed by the amazing staff and I just felt I had to give something back to them and other horses in the future. I've raised over £1,000 so far and plan to carry on fundraising to help more sick horses like Rainy and Prince get the best possible care."

Congratulations to Bryony, who raised vital funds at the Lincolnshire Show. The horses proved to be really popular with visitors of all ages queuing up to get their photos taken with them.

We'd like to say a massive thank you to Bryony for all her hard work and dedication! Without fundraisers like Bryony, we simply wouldn't be able to do the work we do to fight disease and injury in horses, dogs and cats.



If you would like to take on a challenge on behalf of our charity, or simply want to support the fantastic work that we do, then please visit www.aht.org.uk/fundraise



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