THE Irish Wolfhound Foundation

Focus

Winter 2010

Focus
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Wishing you a Happy Holiday Season and a Bright New Year

A Wolfhound Christmas Carol

Samuel E. Ewing, III

It came upon the midnight clear,
That glorious song of old.
The Wolfhounds howled in unison
Out in the winter cold.
Peace on the earth, good will to dogs,
The message that they bring.
The world in solemn stillness lay
To hear the Wolfhounds sing.

Beneath the starry skies they all
Wag tails, both straight and curled,
And still their houndly music floats
O'er all the weary world.
A siren moans, a whistle shrieks,
The hounds stand in a ring,
And ever o'er these noisy sounds
The Irish Wolfhounds sing.

For lo; the time approaches soon
By prophet bards foretold.
The Wolfhounds' song announces now
The coming age of gold.
When peace shall reign o'er all the earth
For man and dog and thing,
And the whole world send back the song
Which now the Wolfhounds sing.

Reprinted from The Gentle Giant 1978 Vol. 3

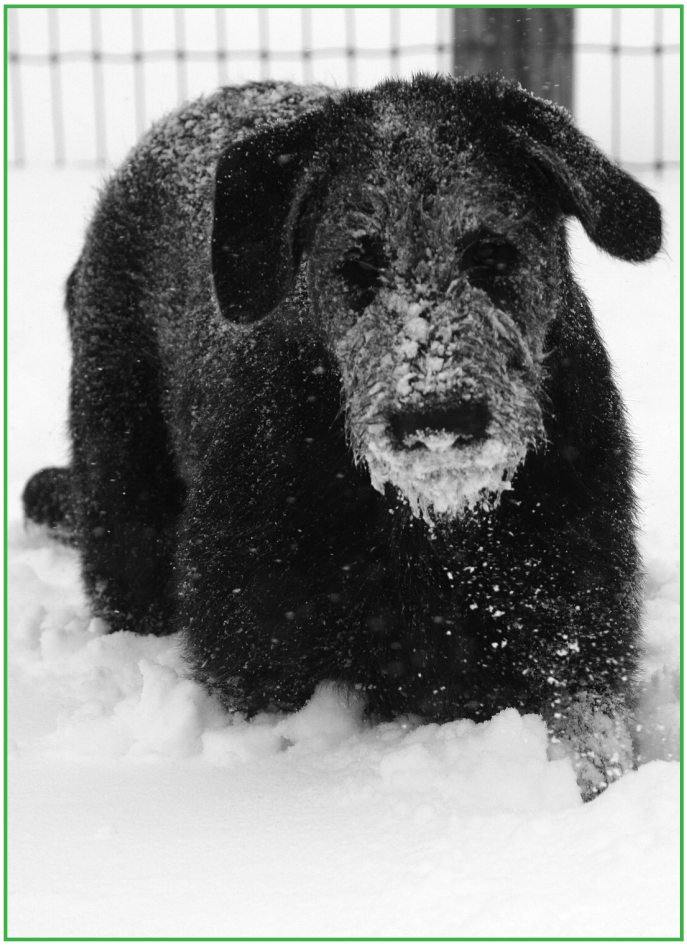

Photo by A. St Clair

Canine Osteosarcoma and Hemangiosarcoma: The Challenge of the Dog Disease Mapping Project

Canine Osteosarcoma and Hemangiosarcoma:
The Challenge of the Dog Disease Mapping Project
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Several years ago, the Dog Genome Project, spearheaded by the Broad Institute of MIT and Harvard together with the canine genetics community, completed the sequencing of the dog genome. This has given us an in depth understanding of the canine genome (genome = entire length of DNA in a dog), and led to the development of a powerful tool called SNP array (su-nIp array), which allows researchers to look for mutations that give dogs their specific traits, including inheritable diseases.

Our collective hope in writing this article is to raise awareness of osteosarcoma and hemangiosarcoma among Irish Wolfhound owners, and to ask you to participate in our Dog Disease Gene Mapping Project.

What are Hemangiosarcoma (HSA) and Osteosarcoma (OSA)?

Hemangiosarcoma (HSA) is a malignant tumor of vascular endothelial cells (i.e., cancer of blood vessels) that affects dogs more than any other species. Although HSA affects all breeds, the incidence is considerably higher in certain breeds, including Golden Retrievers, Labrador Retrievers, German Shepherd Dogs, and Boxers, Leonbergers and Great Pyrenees to a lesser extent. HSA has the potential to arise at any type of tissue/organ in the body, but the four most common sites are the spleen, heart (right atrium or auricle), skin/subcutaneous tissues and liver. Other less frequent primary sites include kidney, muscle, bone, oral cavity, bladder and lung. It is a very aggressive type of cancer that can spread to multiple organs/tissues at a very early stage, either through blood vessels or via local seeding following tumor rupture.

Being a cancer of blood vessels, the tumor itself is usually filled with blood. The most problematic aspect of the disease is that tumors originating in internal organs can develop into large masses asymptomatically, thus going undetected. The tumor can rupture suddenly and cause severe internal bleeding at times resulting in death. For this very reason, HSA is often referred as a "silent killer." It is emotionally devastating for family members to face such a crisis, often requiring an immediate surgery and aggressive supportive care. It is equally frustrating for clinicians who can offer only limited treatments in cases with an advanced stage.

Osteosarcoma (OSA) is the most common malignant bone cancer in dogs and the second one in humans. In humans it is most frequent among young adults and it primarily occurs during adolescence in conjunction with rapid bone growth. In dogs it is an important health concern, accounting for 5-6% of all canine neoplasms. In the United States, 8,000–10,000 cases are reported annually. Canine OSA shows strong clinical, histological and cytological similarities to the human cancer. It is a very aggressive cancer and in the majority of cases, metastasis and death follows within a few months or years. The median survival time for dogs treated with amputation plus chemotherapy is 12 months, with only 20% surviving 2 years. While osteosarcoma can occur in dogs of any size, some large and giant dog breeds have a much higher risk of developing OSA within their lifetime than other breeds (three to twenty fold increased risk compared to the average in dogs) including the long-limbed hounds: Irish wolfhounds (with the highest frequency, 12% of all 10 year old dogs had been diagnosed in a recent Swedish study), Great Dane, Scottish Deerhound, Rhodesian Ridgeback, Great Pyrenees and Borzoi and mastiff-type breeds (Rottweiler, Labrador Retriever, Flat-coated Retriever, Golden Retriever, Mastiff,

(PROJECT Continued on Page 4)

Early Spay-Neuter
Considerations for the Canine Athlete
One Veterinarian's Opinion

Chris Zink DVM, PhD, DACVP

Those of us with responsibility for the health of canine athletes need to continually read and evaluate new scientific studies to ensure that we are taking the most appropriate care of our performance dogs. This article provides evidence through a number of recent studies to suggest that veterinarians and owners working with canine athletes should revisit the standard protocol in which all dogs that are not intended for breeding are spayed and neutered at or before 6 months of age.

Orthopedic Considerations

A study by Salmeri et al in 1991 found that bitches spayed at 7 weeks grew significantly taller than those spayed at 7 months, who were taller than those not spayed (or presumably spayed after the growth plates had closed).(1) A study of 1444 Golden Retrievers performed in 1998 and 1999 also found bitches and dogs spayed and neutered at less than a year of age were significantly taller than those spayed and neutered at more than a year of age.(2) The sex hormones, by communicating with a number of other growth-related hormones, promote the closure of the growth plates at puberty(3), so the bones of dogs or bitches neutered or spayed before puberty continue to grow. Dogs that have been spayed or neutered well before puberty can frequently be identified by their longer limbs, lighter bone structure, narrow chests and narrow skulls. This abnormal growth frequently results in significant alterations in body proportions and particularly the lengths (and therefore weights) of certain bones relative to others. For example, if the femur has achieved its genetically determined normal length at 8 months when a dog gets spayed or neutered, but the tibia, which normally stops growing at 12 to 14 months of age continues to grow, then an abnormal angle may develop at the stifle. In addition, with the extra growth, the lower leg below the stifle likely becomes heavier (because it is longer), and may cause increased stresses on the cranial cruciate ligament. In addition, sex hormones are critical for achieving peak bone density.(4) These structural and physiological alterations may be the reason why at least one recent study showed that spayed and neutered dogs had a higher incidence of CCL rupture.(5) Another recent study showed that dogs spayed or neutered before 5 1/2 months had a significantly higher incidence of hip dysplasia than

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YourThoughts

Reader's comments are welcomed.
Please submit to: Audrey St Clair editor, 537 Hackman Rd, Lititz PA 17543
or email thecoopersinn@aol.com with the subject Focus.

Just given it a quick glance but it looks like another great IWF newsletter. I want to thank you again for taking this over and getting it done. Timely, informative newsletters in associations like this are critical. Keep up the good work!

Tracey Luty

Editor,

This year the IWADV participated in, what will hopefully be, our 1st annual Leprechaun Toss. Our goal was a fun-filled event while raising money for the Irish Wolfhound Foundation. We are pleased to say that we sold out of all leprechauns raising a total of $276.00. Mrs. Peg Carty was our big winner of $138.00 and our club donated the balance to the Irish Wolfhound Foundation. We wish to thank all participants and the Eastern Irish Setter Association for lending us their leprechauns.

Respectfully,
Brenda Skalski (Roland)

Photos by Margie Milnes

A Word From the President

This has been a very active year for the IWF; the launching of our new web site, the resurrection of the news letter, and the continued mission of the Foundation of health, education, and rescue to name a few. The IWF's presence has become a mainstay at the national specialty, as well as the DelVal regional specialty, providing educational and testing opportunities that would otherwise not be available. This year alone the IWF has subsidized over a 100 echocardiograms.

The 2011 national specialty is approaching quickly, the Foundation will again be offering Echo's at an affordable cost. Details will be forthcoming, please look at our web site for details after the first of the year.

We are always looking for content for the Focus; please contact our Editor if you might have something of interest. Also, I again extend to all regional clubs to contact us if there is something that the IWF can sponsor in terms of health, education, and rescue grants.

Thank you to all who have supported the IWF throughout the year, our mission cannot be realized without it. I wish a Merry Christmas, Happy Holidays and Happy New Year to all.

Doug Marx –
Irish Wolfhound Foundation President

Doug Marx

PROJECT

(Continued from Page 2)

Bullmastiff, Saint Bernard, Irish Setter and Newfoundland). The average age at diagnosis is seven and a half years old.

Finding the cause of OSA and HSA requires identifying mutations in genes that may make certain breeds, and certain individuals within a breed, susceptible to these devastating diseases. This is a challenging task that we, members of the dog disease mapping team at the Broad Institute of MIT and Harvard (www.DogDNA.org), together with numerous collaborators throughout the US and worldwide have been working on in the past few years. Identifying causative mutations/genes will subsequently enable the development of DNA tests capable of detecting susceptible individuals, and individuals that may pass these genes on to offspring. This will allow owners/veterinarians to more closely follow the susceptible dogs for tumor occurrence before possible life-threatening symptoms. Identification of the genetic basis of OSA and HSA also will allow scientists to better understand the biology of the disease in the long run, which may lead to the development of preventative measures and effective new treatments.

About OSA/HSA disease mapping projects

The identification of genetic abnormalities in a cancer is the first step in the development of new, and often more effective/targeted therapy. Genome-wide association study to find mutations causing cancer has been carried out in human medicine for quite some time, but because there are most likely several mutations that can increase the risk of a cancer, finding those mutations has been a great challenge. Because of the unique genomic structure of dogs due to their domestication and breed creation history, mapping those cancer-causing mutations in dogs should be easier than in humans, but it is still a challenging task.

Briefly, the process of finding cancer-causing mutations is as follows: The first step is called"genome-wide association mapping", in which the entire length of DNA (a.k.a. whole genome) is scanned using a SNP array, which now contains ~170,000 SNP markers. Those SNP markers come in different flavors in different individuals. The "flavor" of the marker is called "haplotype" in genetic terms. The haplotypes of the SNP markers of each individual at each location are compared between groups of affected (with cancer) and unaffected (healthy) dogs. By doing so, we can locate regions that come in a common haplotype in the affected dogs, and are different from the unaffected dogs. For the OSA and HSA project, we are performing the initial genome-wide association mapping within a single breed, Greyhounds and Golden Retrievers, respectively.

When we find regions that are associated with OSA or HSA in the initial screening, we then compare the regions by more densely picked SNP markers across several related breeds that suffer from the same disease, including the Irish Wolfhounds. The step is called "fine-mapping" across breeds. We suspect that at least some of these breeds will share the same mutation as the breed used in the genome-wide association step. Since each breed has its own characteristics at any given location of the genome, searching for a smaller region that is shared among affected dogs across breeds will allow us to rapidly narrow down the region and identify disease-associated mutations.

Where we are in the OSA/HSA disease mapping projects

We have been working very hard to collect a sufficient number of cases and control dogs in the past few years. We initially analyzed ~100 HSA cases and ~100 controls (Golden Retrievers), and ~120 OSA cases and ~120 controls (Greyhounds and Rottweilers) on one type of SNP array. Based on the data we obtained from the initial SNP array analysis, we have also moved onto the fine-mapping stage. Unfortunately, our in depth analysis revealed that the initial SNP array we were using did not have the sufficient marker density to accurately pinpoint the regions where we should look for the mutations.

RESEARCH

We still learned a lot from this experience, and we have developed a new type of SNP array that can scan the dog genome more densely and evenly. We are happy to report that we have just analyzed 145 HSA cases and 113 controls (Golden Retrievers) and 155 OSA cases and 120 controls (Greyhounds) on the new type of SNP array. We are also happy to report that the results are looking very promising. We are in collaboration with Mike Starkey at the Animal Health Trust in UK to perform a genome wide scan in Irish wolfhounds as well. We have submitted 17 OSA cases with 30 controls from US, plus 24 cases and 24 controls from our collaborators in Sweden, that in addition to the UK collection will add up to a good number of samples. At the same time we continue to analyze other breeds for these variants, as well as in detail investigate the genomic regions for potential mutations.

From our first mapping experience, though, we also learned that we need more cases and controls from each breed to participate and aid us to find the mutations accurately.

Therefore, please read on and learn how you can help us succeed in identifying mutations that give dogs the susceptibility to HSA and OSA.

How to participate in the OSA/HSA disease mapping projects – Please note: we need older dogs (8y+) with no history of cancer to participate, too!!!

As we mentioned above, in order for us to successfully identify a gene (or genes) that is associated with any given disease, it is very important to recruit a high enough number of participants. We are enrolling Irish Wolfhounds (and other pure breed dogs) that fall into any of the following categories:

1) Has HSA or OSA (presumptive diagnostics is OK)

2) Over 8 years old and without cancer

3) Has other types of cancer/hereditary diseases (a list available at www.DogDNA.org)

We only need 5ml (= 1 teaspoon) of blood in a purple top tube (EDTA tube). If your dog received blood transfusions due to excessive hemorrhage, then we would accept cheek swab samples. Blood sample gives us much higher quality of DNA, so if you suspect your dog has HSA and would like to participate in our study, please get the blood sample taken before any blood transfusion. The sample can be mailed in at room temperature, as long as it arrives within a week from the time it was taken. Please make sure it is well protected against potential breakage, especially because the tube for blood sample is made of glass. We need a consent form signed by the owner to be sent in with the sample. We are asking for pedigree and health information of the dog on the consent form. The consent form can be found at www.DogDNA.org by clicking on the link "Printable brochure" (PDF). We are asking the pedigree information only because we are looking at genes that are all inherited from the parents, and need to know the "relatedness" of each dog enrolled in the study. A copy of your dog's pedigree is helpful, but if your dog (or any of his/her parents/siblings) is registered with any organization (e.g. AKC), you can just provide us the registration number and organization. All the information regarding your dog is kept strictly confidential, and the genetic disposition of any dog is never to be made public. The details of "how to" can be found at www.DogDNA.org. You can also contact us by e-mail at dog info@broadinstitute.org

We are looking forward to your participation!!!

Photo by A. St Clair

ATHLETE

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those spayed or neutered after 5 1/2 months of age, although it should be noted that in this study there were no standard criteria for the diagnosis of hip dysplasia.(6) Nonetheless, breeders of purebred dogs should be cognizant of these studies and should consider whether or not pups they bred were spayed or neutered when considering breeding decisions.

Cancer Considerations

A retrospective study of cardiac tumors in dogs showed that there was a 5 times greater risk of hemangiosarcoma, one of the three most common cancers in dogs, in spayed bitches than intact bitches and a 2.4 times greater risk of hemangiosarcoma in neutered dogs as compared to intact males(7). A study of 3218 dogs demonstrated that dogs that were neutered before a year of age had a significantly increased chance of developing bone cancer.(8) A separate study showed that neutered dogs had a two-fold higher risk of developing bone cancer.(9) Despite the common belief that neutering dogs helps prevent prostrate cancer, at least one study suggests that neutering provides no benefit.(10) There certainly is evidence of a slightly increased risk of mammary cancer in female dogs after one heat cycle, and for increased risk with each subsequent heat. While about 30% of mammary cancers are malignant, as in humans, when caught and surgically removed early the prognosis is very good.(12) Luckily, canine athletes are handled frequently and generally receive prompt veterinary care.

Behavioral Considerations

The study that identified a higher incidence of cranial cruciate ligament rupture in spayed or neutered dogs also identified an increased incidence of sexual behaviors in males and females that were neutered early.(5) Further, the study that identified a higher incidence of hip dysplasia in dogs neutered or spayed before 5 ½ months also showed that early age gonadectomy was associated with an increased incidence of noise phobias and undesirable sexual behaviors.(6) A recent report of the American Kennel Club Canine Health Foundation reported significantly more behavioral problems in spayed and neutered bitches and dogs. The most commonly observed behavioral problem in spayed females was fearful behavior and the most common problem in males was aggression.(12)

Other Health Considerations

A number of studies have shown that there is an increase in the incidence of female urinary incontinence in dogs spayed early (13), although this finding has not been universal. Certainly there is evidence that ovarian hormones are critical for maintenance of genital tissue structure and contractility.(14, 15) Neutering also has been associated with an increased likelihood of urethral sphincter incontinence in males.(16) This problem is an inconvenience, and not usually life-threatening, but nonetheless one that requires the dog to be medicated for life. A health survey of several thousand Golden Retrievers showed that spayed or neutered dogs were more likely to develop hypothyroidism.(2) This study is consistent with the results of another study in which neutering and spaying was determined to be the most significant gender-associated risk factor for development of hypothyroidism.(17) Infectious diseases were more common in dogs that were spayed or neutered at 24 weeks or less as opposed to those undergoing gonadectomy at more than 24 weeks.(18) Finally the AKC-CHF report demonstrated a higher incidence of adverse reactions to vaccines in neutered dogs as compared to intact.(12)

I have gathered these studies to show that our practice of routinely spaying and neutering every dog at or before the age of 6 months is not a black-and-white issue. Clearly more studies need to be done to evaluate the effects of prepubertal spaying and neutering, particularly in canine athletes.

Currently I have significant concerns with spaying or neutering canine athletes before puberty. But of course, there is the pet overpopulation problem. How can we prevent the production of unwanted dogs while still leaving the gonads to produce the hormones that are so important to canine growth and development? One answer would be to perform vasectomies in males and tubal ligations in females, to be followed after maturity by ovariohysterectomy in females to prevent mammary cancer and pyometra. One disadvantage is that vasectomy does not prevent some unwanted behaviors associated with males such as marking and humping. On the other hand, females and neutered males, frequently participate in these behaviors too. Really training is the best solution for these issues. Another possible disadvantage is finding a veterinarian who is experienced in performing these procedures. Nonetheless, some do, and if the procedures were in greater demand, more veterinarians would learn them.

I believe it is important that we assess each situation individually. For the canine athletes, I currently recommend that dogs and bitches be spayed or neutered after 14 months of age.

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Photo by A. St Clair

Peanut Butter Puppy Poppers

2 cups whole-wheat flour
1 tbsp. baking powder
1 cup peanut butter (chunky or smooth)
1 cup milk

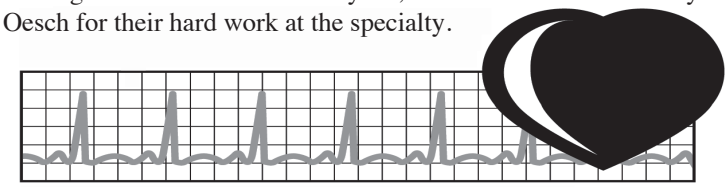
Preheat oven to 375'F. In a bowl, combine flour and baking powder. In another bowl, mix peanut butter and milk, then add to dry ingredients and mix well. Place dough on a lightly floured surface and knead. Roll dough to 1/4 inch thickness and use a cookie cutter to cut out shapes. Bake for 20 minutes on a greased baking sheet until lightly brown. Cool on a rack, then store in an airtight

Photos by A. St Clair

IWF Sponsored Heart Testing at IWADV Specialty

The IWF once again sponsored EKGs, blood pressure screenings and echocardiograms by Dr. William D. Tyrell, Jr., DVM, DACVIM (Cardiology), at the IWADV specialty in October in Morgantown, Pa. The response was great; over 50 dogs had echocardiograms. Participants donated $75.00 with the balance subsidized by the Foundation. Anyone that has had echos done knows what a great deal this was.

Huge thanks are due to Dr. Tyrell, Frances Abrams and Cathy Oesch for their hard work at the specialty.



In Memory of those we have lost recently

Jonette Jones
Capt. Kelly Carr

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Frances Abrams
IMO Hound Hill Tapanga of Aerie

Alexander Adam
Seizure Study-IMO All Wolfhounds

Nancy Angell

Arkansas Welcome Center
IMO Jonette Jones

Susan Ashcom

Tamatha Aube

Gloria Barrick
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IMO Finn, Emmet, and Oisin

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IMO CH Carrickaneena McGarry

Margaret Heydenrych

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Rita Terrell
IMO Jonette Jones

Chris Thompson

Peter and Margaret VanBrunt

Diana Vreeken

Kristine Wagenaar
IMO Gracie "Lisa's loving companion"

Darlene Walker

Joan Ward

Nancy Webster

Richard White and Nancy Munroe

David Williamson

Anne Worthmann
IMO Joanna Nesmith-Rosner "A dear friend who loved her hounds more than anything else in life"

Carla Zayak

The Irish Wolfhound Foundation, Inc.

Treasurer's Report

Year to Date

Total funds $166,787.49

(includes Rescue Endowment and General Endowment)

Receipts $44,779.41

(includes bequests designated to the Rescue Endowment and the General Endowment)

Disbursements $34,512.58

The Irish Wolfhound Foundation, Inc.

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THE Irish Wolfhound Foundation

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