



MISSION:

The Foundation is dedicated to advancing the health of all dogs and their owners by funding sound scientific research and supporting the dissemination of health information to prevent, treat and cure canine disease.

May is Pet Cancer Awareness Month

To help dog owners better understand the treatment options, cutting-edge research and ways to support canine cancer research, the AKC Canine Health Foundation (CHF) kicks off "Pet Cancer Awareness Month" (PCAM) in May.

The cancers of greatest concern in the dog include:

- Hemangiosarcoma
- Lymphoma
- Osteosarcoma
- Mammary Tumors
- Mast Cell Tumors
- Melanoma
- Soft-Tissue Sarcoma
- Hepatic Carcinoma
- Squamous Cell Carcinoma
- Gastric Cancer
- Brain Tumors
- Malignant Histiocytosis
- Prostate Cancer
- Transitional Cell Carcinoma



The key to managing cancer is catching it early

Just as with humans, early detection saves lives. While canine cancer can be treated using surgery, chemotherapy and radiation, the best thing you can do is catch the disease in its early stages – before it spreads. Early detection is critical for successful treatment, recovery and quality of life. This is another reason why annual or semi-annual visits with your veterinarian are so important.

(continued on page 2)

THIS ISSUE AT A GLANCE

May is Pet Cancer Awareness Month	1
What to Expect When You Visit a Veterinary Oncologist.....	3
Parent Club Conference	5
Champion of Canine Health	6
Your Impact: Extending the Lives of Dogs with Melanoma.....	6
Nestlé Purina PetCare Continues Support for Healthy Dogs	7
Advances in Canine Cancer: Lymphoma	8
Reevaluating the Nature of Hemangiosarcoma	8

Registration Now Open!

National Parent Club
Canine Health Conference

August 7-9, 2015
St. Louis, Missouri

Cancer in the Dog *(continued from page 1)*

Symptoms that something is wrong:

- Abnormal lumps or swellings that persist or continue to grow
- Sores that do not heal
- Weight loss
- Loss of appetite
- Chronic bleeding or discharge
- Difficulty eating or swallowing
- Loss of stamina, reluctance to exercise and play
- Chronic lameness or stiffness that implies discomfort
- Difficulty breathing, urinating or defecating

Research gives hope for a cure

Canine cancer research has been an integral part of CHF's research portfolio for 20 years. During this time, cancer medicine has evolved significantly, moving from a rather simplistic understanding of tumor biology and tumor progression to a molecularly based discipline with improved diagnosis and tumor imaging, providing veterinarians with more effective treatment options. The discovery of novel therapeutics aimed at cancer-specific cellular signal transduction pathways has also impacted the field of canine cancer research. This discovery provides researchers with the tools to better target medications for cancer patients, giving them better quality of life.

Our commitment to canine cancer remains strong, and during 2015, we are seeking innovative researchers who will aid us in the discovery of advancing diagnostic technology and therapeutic target identification.

"We recognize that cancer is the leading cause of death for older dogs, with approximately 30% of all dogs more than seven years of age experiencing cancer at some point in their lifetime," said Susan Lilly, CHF chief executive officer. "As part of our ongoing commitment to understanding and addressing canine cancer, CHF is focused on developing a deeper understanding of the diverse nature of tumors and cancer evolution in the dog.

Our goal is to equip veterinarians with tools for faster diagnosis and treatment options that prolong the lives and quality of life for our dogs."

Incidence rates vary by breed and it is thought that the "genetic islands" created by specific breeds may give human oncologists greater insight into the role of genetics in predisposition to cancer. A significant number of neoplastic diseases share numerous traits with human counterparts in terms of tumor biology, dissemination and responsiveness to therapy. These include lymphoma, soft-tissue sarcoma, melanoma, mammary tumors, canine bladder cancer and osteosarcoma. Because dogs share our environment, our homes, our lifestyles and most of our genome, cancer research in the dog provides reciprocal impact on human health.



How to help

It is through the support of donors like you that we are able to make strides in our understanding of canine cancer. The research you help fund provides our beloved dogs with earlier diagnosis, more treatment options and the chance at a high quality of life post diagnosis. A gift to CHF will help the dog you love today and those you will love in the future. Learn more about how you can support our research efforts by visiting www.akcchf.org/donate.

Resources:

CHF online resources – www.akcchf.org/caninecancer

Flint Animal Cancer Center, Colorado State University – www.csuanimalcancercenter.org

Animal Cancer Care and Research, University of Minnesota – www.cvm.umn.edu/accr

Sprecher Institute for Comparative Cancer Research, Cornell University – www.vet.cornell.edu/cancer

Comparative Cancer Center, UC Davis – www.vetmed.ucdavis.edu/cccl



What to Expect When You Visit a Veterinary Oncologist

Dr. Rachel Reiman is a veterinary oncologist at Lakeshore Veterinary Specialists in Port Washington, Wisconsin. She completed her DVM at Kansas State University and her oncology residence at Louisiana State University. Dr. Reiman is a Diplomate of the American College of Veterinary Internal Medicine with a specialty in oncology.

AKC Canine Health Foundation (CHF): Are there any common symptoms in cancer in dogs?

Dr. Rachel Reiman (Reiman): The most obvious is any new lump or bump. Whenever we have an owner who suspects that there is a new lump or bump on their pet's body, we recommend getting them in to have that checked out. Another symptom that can give us a clue that there may be an underlying cancerous process is unexplained weight loss. Some owners find sores that potentially won't heal. Also, in routine screening blood work, we can sometimes see things such as elevations in calcium or liver enzymes that may signal an underlying cancerous process.

CHF: If someone suspects their dog may have cancer, should the first step be to take their dog to see their regular veterinarian or should dog owners go directly to see an oncologist?

Reiman: That's a really good question. We really rely on our regular veterinarians or family veterinarians to be our first line of defense because they are seeing those patients on a yearly or semi-yearly basis. So we want them to be the first to look at new lumps and bumps as they're noticed since they are also keeping track of weight, body condition and all of those things. What we see as veterinary oncologists is kind of a snapshot in time; this pet as it is right now versus a family veterinarian who sees a pet year after year or semi-yearly. So they're going to be able to detect weight loss and also keep track of new lumps or bumps that weren't on their previous visit records. It's important to set up a relationship with that veterinarian because they know your pet the best.

CHF: Once a dog is referred to an oncologist and an appointment is scheduled, is there anything that an owner should bring with them to that first visit?

Reiman: Absolutely. What we would love to have is a list of the pet's medications, including the supplements the pet's taking, such as a glucose and chondroitin. In addition to the list, we'd like to see the dosage and frequency of giving. Pet owners should also provide some type of recent (within the last year or two) medical record, which can either be provided by your family veterinarian via fax or email to us or brought with the patient. We'd also like to see any type of X-rays, CT, MRI or ultrasounds that have been done. Additionally, I really enjoy and find it helpful if owners also

bring the list of questions and concerns they may have about treatment, quality of life, side effects, etc. All of those types of questions are what we need to address at that first consultation.

CHF: Do most oncologists work alone in an oncology-specific practice?

Reiman: The vast majority of oncologists work in multi-disciplinary specialty hospitals, meaning that there are usually multiple specialists of all different varieties within that practice. For example, the practice that I'm at right now does not only have oncologists, but we also have surgeons, internal medicine, dermatologists, neurologists, etc. The benefit of having that many specialties in the same practice is that most of the time, most pets don't have just one thing wrong. As oncologists, we treat cancer, but we also treat the entire pet, and it's not uncommon for some of our patients to have multiple issues. For example, we may have a dog that comes in with a low thyroid level and is on medication for that, but also has concurrent cancer. We can't ignore the low thyroid level just to treat the dog's cancer. If we can treat all of those conditions, we're going to get a better quality of life. So it's very good to have other specialists close by so we can just trot down the hall and say "Hey, I have this patient that has a thyroid condition in addition to lymphoma. Let's talk about the best management of these two conditions and how we're going to provide the best quality of care for that dog."



CHF: When a dog and its owner walk into a specialty clinic, what are their first steps? Do they see a doctor immediately?

Reiman: When a patient walks in to our hospital, they get registered at the front desk. That includes supplying information about their dog's age, breed, sex, pertinent medical history, etc. After that process of getting registered, the first person the pet owner is going to see is the veterinary technician. Veterinary technicians are people who have advanced training in animal handling and also in the pathophysiology of diseases in pets. They usually begin by taking a very brief history. They want to know how long you've had your dog, how old your dog is, any concurrent health issues, etc. They'll also take a list of the medications your dog is taking. They gather that information and then

(continued on page 4)

What to Expect When You Visit a Veterinary Oncologist

(continued from page 3)

present it to the veterinarian so the veterinarian can speak to the owner about any specifics as they relate to that pet's type of cancer. The veterinarian will also discuss any additional diagnostics that need to be performed.

CHF: Are there special tests that are routinely used by oncologists to fully diagnose the nature of a dog's problem?

Reiman: That's a good question. A lot of the tests that we do are very specific, depending on the type of cancer we are dealing with, but there are some basics that we use very routinely. Prescreening blood work is important because we are not only looking for evidence of cancer within the blood work itself, but we're also looking for concurrent disease. Again, because most of our pets are older, it's not uncommon for them to have other problems that we need to be aware of. After that, we usually look at some type of an X-ray, whether that be of the chest or the abdomen, depending on what we're seeing on blood work, on our physical exam, etc. If we have a tumor that is really very small inside or is in a location where we're concerned about blood supply, we may also recommend a CT scan or an MRI.

CHF: Can you tell us a little bit about how some of these tests work?

Reiman: Well, one of the most common tests we do is an X-ray, which is very similar to the type of X-ray that you or I would get. It is a screening test, using very low doses of radiation, which allows us to safely look at the inside of a pet in a noninvasive manner. The X-ray technology that we have for pets is incredibly similar, if not the same as, those that you or I get. Most pets don't even need sedation for their X-rays. Occasionally, we have a few pets that do. The other test that we like to run commonly is an ultrasound of the abdomen. Again, this is the exact same technology human doctors would use if you or I needed an ultrasound. It's the same test they do on pregnant women to look at the baby. In our case, we're not looking for babies, we're looking at organs, so we're going to look at liver and spleen and kidneys and all of those things. An ultrasound is actually sound waves that bounce, that are transmitted into the animal and then bounce back. So the test itself is very, very noninvasive and very safe. There is no exposure to radiation, and we get a lot of really good information about what's going on inside the animal without having to go in and look.

CHF: Approximately how long does it take for a dog to complete a visit to the oncologist?

Reiman: Generally, our first consultation takes about an hour to an hour and a half. During that time, we're going to talk about the type of cancer that the dog has, treatment options and what further diagnostics we need to take.

Then we can set up a type of treatment plan or a plan to move forward with additional testing. Some of those tests can be done the same day, others have to be scheduled at a later date depending on the schedule of the owner and veterinarian, etc.

CHF: Once a diagnosis of cancer has been made, what are the next steps typically?

Reiman: Once that diagnosis has been reached, we talk to the owners about options. Most oncologists are very big into options; we want to lay out at least two to three different options or approaches to the treatment of that type of cancer knowing that there's very likely no one right answer for every single pet and every single owner. We want to outline our options and then have a discussion of risk-to-benefit ratios of each of those options. Some treatment options may be low risk, but may have shorter remission times. Others may be slightly higher risk in terms of side effects or complications, but may give us a longer period of time. Which option we choose or is chosen by the owner depends on what risk they are willing to accept in terms of what benefit we may get. A lot of the discussion is about what the owner can do for their pet. That can be as simple as oral medications at home to help with any discomfort, nausea, etc.

CHF: How often should an owner expect to bring their dog in for oncology rechecks?

Reiman: This depends on the type of cancer that we're treating and also on the type of treatment chosen. For some types of cancers, owners actually bring their pets in weekly for therapy. For others, we only see the pet back monthly for rechecks. How frequent those rechecks are depends on the status of the animal. Those animals that are very critically ill with their cancer at the time that we make that diagnosis often need to come in much more often, at least initially. Hopefully, as we get that pet on the path to recovery, they see us less and less. Although we miss them, we like to see them less. If the pet is fairly healthy and feeling good at the time of the diagnosis, we may not need to see them as often, depending on what treatment is chosen.

CHF: In your opinion, what are our greatest gaps in knowledge in canine oncology, and what sort of research should CHF be recruiting in the future?

Reiman: I think the biggest gap is defining the underlying cause of cancer and trying to develop methods and strategies for early detection of cancer. The old adage, "an ounce of prevention is worth a pound of cure," is never more apparent than when we're talking about cancer in dogs and cats. If we can do more to prevent them developing cancer, we're going to be far more successful than actually treating that cancer.

This article was adapted from a podcast in our HealthE-Barks educational series. To listen to this and other podcasts in this series, please visit www.akcchf.org/podcasts. 

Parent Club Conference



The 2015 National Parent Club Canine Health Conference, hosted by the AKC Canine Health Foundation and sponsored by Nestlé Purina, will take place August 7 – 9 in St. Louis, Missouri.

Registration

All AKC Parent Clubs and other clubs that participate in the Purina Parent Club Partnership Program are guaranteed one representative at the conference if registered by July 12, 2015. Invitations for these clubs were sent by email and contain a special link for a discounted registration fee of \$250. Clubs and individuals who have achieved our Millennium Founder donor level, as well as members of our Heritage Society, will also be issued a discounted registration link for one person.



The general registration fee is \$500. General registration spots are open to the public, limited in quantity and available on a first-come, first-served basis. If general registration sells out, a waiting list will be maintained and spots not claimed by clubs will be made available after July 12, 2015.

Clubs, Millennium Founders and Heritage Society Members who are eligible for discounted registration must access registration through an email invitation. If you did not receive the discounted registration link by email, please contact jah@akcchf.org.

Registration includes two nights' hotel accommodations, most meals and conference materials. All travel and incidentals are the responsibility of the attendee.



Registration is nonrefundable. However, registration is transferable if necessary.

Conference Topics and Speakers

Visit www.akcchf.org/NPCCHC for updated conference information.

- Stem Cell Therapy for Supraspinatus Tendonopathy – Jennifer Barrett, DVM, PhD
- Bright Mind Platform – Deb Greco, DVM, PhD, DACVIM
- Osteosarcoma – Bruce Smith, VMD, PhD
- Lymphoma – Jeffrey Bryan, DVM, MS, PhD, DACVIM (Oncology)
- Personalized Cancer Treatment – Doug Thamm, VMD, DACVIM (Oncology)
- The Human-Animal Bond / Quality of Life Scale – Alice Villalobos, DVM, FNAP (Keynote)
- Atopic Dermatitis and the Mycobiome – Jan Suchodolski, DVM, PhD
- Atopic Dermatitis and Antimicrobial Resistance – Charles Bradley, VMD, DACVP
- Bloat Research Update – Laura Nelson, DVM, MS, DACVS
- Bloat Research Update – Claire Sharp, BSc, BVMS (Hons), MS, DACVECC
- Inflammatory Bowel Disease – Kenneth Simpson, BVM&S, PhD
- Subvalvular Aortic Stenosis – Josh Stern, DVM, PhD, DACVIM (Cardiology)
- Infectious Disease Prevention Recommendations – Jason Stull, VMD, MPVM, PhD, DACVPM
- Brucellosis – Matthew Krecic, DVM, MS, MBA, DACVIM
- Senior Cognition – Gary Landsberg, BSc, DVM, DACVB, DECAWBM (Behavior)
- Regenerative Medicine Techniques to Treat Cartilage Disorders – Brian Saunders, DVM, PhD, DACVS
- CCL Conformation Scores – Dominique Griffon, DMV, MS, PhD, DECVS, DACVS
- Degenerative Myelopathy – Joan Coates, DVM, MS, DACVIM (Neurology)
- Epilepsy Research Update – Ned Patterson, DVM, PhD
- Nutritional Management of Canine Epilepsy – Holger Volk, DVM, PhD, DECVN, FHEA, MRCVS 🐾

Champion of Canine Health: George & Patty Benford

Some dogs continue to make an impact even after they're gone.

Amanda was the beloved pet of George and Patty Benford. A beautiful Border Collie/Chow mix, Amanda was a rescue who came to live with the Benfords in 2004. "Amanda was a social butterfly who loved travel and meeting new people," according to George Benford. Unfortunately, Amanda's life was cut short by cancer and she passed away suddenly in 2013.

To honor Amanda's legacy of unconditional love, the Benfords founded the Amanda Benford Cure for Canine Cancer Fund. Their goal is to increase awareness of canine cancer and to raise funds to support research at CHF.



Pictured: Amanda Benford
Photo Credit: George Benford

Doggie Howl-0-Ween is an annual event sponsored by several businesses in downtown Charlottesville, Virginia. Proceeds from the event benefit the Amanda Benford Cure for Canine Cancer Fund. Doggie Howl-0-Ween has taken on new meaning since its beginning in 2008. "Amanda loved this event and after her passing, we wanted Doggie Howl-0-Ween to have a real cause behind it," said George Benford. "I did a lot of research into various organizations and I was impressed by the solid record the AKC Canine Health Foundation has for working on health concerns for all dogs."

In addition to support from local businesses, the Charlottesville community has also been very supportive, with hundreds of two- and four-legged family members attending. The event continues to grow and this past year more than 90 dogs were registered for the Doggie Howl-0-Ween parade and over \$5,000 was raised to benefit CHF. Doggie Howl-0-Ween is held on the 30th of October so as not to impact traditional Halloween festivities. "Doggie Howl-0-Ween is a great event that involves families and businesses to benefit our beloved dogs," said George Benford.

"We are grateful to the Benfords and the Charlottesville community for their support of CHF," said Susan Lilly, CHF chief executive officer. "This type of grassroots fundraising makes a difference in the health of our dogs and makes a meaningful impact on the future of veterinary medicine."

The Benfords would love to see Doggie Howl-0-Ween replicated in other communities. "We've had a lot of practice running the event and we're happy to share our knowledge," said George Benford. "To have donations go to CHF in Amanda's name would be a beautiful legacy for a dog we love and miss dearly."

If you are interested in having a Doggie Howl-0-Ween event in your community, please visit the Amanda Benford Cure for Canine Cancer Fund website to learn more: www.amandabenfordcccf.com. 🐾

Your Impact: Extending the Lives of Dogs with Melanoma

01633: Novel Therapy for Melanoma, Lymphoma, Meningioma and Nephroblastoma; Dr. Heather Wilson-Robles, DVM, Texas A&M AgriLife Research

Even with aggressive therapy, the median survival time for dogs with melanoma is less than one year. Dr. Wilson-Robles' laboratory originally discovered that a molecular diagnostic marker for canine melanoma, S100B, significantly contributes to unregulated melanoma cell growth. Based on these early





Established in 2002, the PPCP Program enables Purina Pro Club members who participate in the program to designate a breed of dog and submit weight circles (similar to proofs of purchase) from qualifying Purina brand dog foods. An annual donation based on the value of the submitted weight circles is split between the parent clubs' Donor Advised Funds (DAF) at CHF for canine health research and the parent clubs for education, research and rescue efforts. The PPCP Program has raised more than \$3 million for canine health research in important areas such as cancer, epilepsy, cruciate ligament rupture, bloat, exercise-induced collapse, tick-borne disease and more.

In addition to PPCP Program funds in 2014, Nestlé Purina also supported the CHF mission with a corporate gift of \$150,000. Since 1997, Nestlé Purina PetCare Company has invested nearly \$11.5 million in the health of dogs through CHF, by supporting sound, scientific canine health research.

"Nestlé Purina has been a vital and committed partner in our mission. Their investment in CHF has enabled our researchers to seek answers to health problems faced by all dogs and to provide better treatment options," said Susan Lilly, chief executive officer of CHF. 🐾

observations, S100B became a logical drug target, and her research group hypothesized that inhibition of the function of S100B may halt melanoma metastasis. Using a very pragmatic approach, her group identified two drugs known to inhibit S100B function that were already approved for use in dogs: chlorpromazine, an antiemetic and sedative, and pentamidine, an antiprotozoal drug. Within her research group, scientists and clinicians worked together to test the hypothesis that pentamidine/chlorpromazine therapy is safe for canine melanoma patients.

Outcome: After enrolling 13 dogs in a clinical trial, researchers found that the combination of pentamidine and chlorpromazine was safe and efficacious in tumor-bearing dogs. Over 41% of dogs receiving the drug combination experienced partial remission, extending their quality of life and time at home. Dr. Wilson-Robles believes the outcome of this study may have application to other veterinary cancers with elevated S100B such as lymphomas, meningiomas and nephroblastomas. 🐾

Nestlé Purina PetCare Continues Support for Healthy Dogs

From the Affenpinscher Club of America to the Yorkshire Terrier Club of America, 191 national parent breed clubs participated in the Purina Parent Club Partnership (PPCP) Program in 2014, resulting in a contribution of \$229,285.28 to CHF. The donation represents half of the 2014 PPCP earnings. An equal donation was shared among the participating parent clubs.

"Nestlé Purina PetCare is very proud of our long-standing partnership with the AKC Canine Health Foundation," said Ann Viklund, director of conformation for the Breeder/Enthusiast Group at Nestlé Purina PetCare and a member of the CHF Board of Directors. "We both are passionate about the mission of helping dogs live longer, healthier lives, and research funded through the AKC Canine Health Foundation is vital to achieving that goal."



Pictured: Barb Fawver, Susan Lilly and Ann Viklund

VetVine

Our partner VetVine has established a marketplace on Amazon with products recommended by veterinarians. Proceeds from sales will benefit CHF. Visit their marketplace:

<http://astore.amazon.com/vetvineCHF-20>



Advances in Canine Cancer: Lymphoma

What is lymphoma?

Lymphoma is cancer that begins in cells of the immune system found in lymph nodes. Lymphoma accounts for approximately up to 20% of all canine cancer and 80% of all canine blood cell malignancies. Lymphoma is generally seen in older dogs (median age, 6–9 years).

Lymphoma progresses over time and is “staged” based on its degree of metastasis and invasiveness. The stages are as follows:

- **Stage I:** Ailment restricted to a single lymph node
- **Stage II:** Regional lymphadenopathy (restricted to one location or region)
- **Stage III:** Generalized lymphadenopathy (widespread enlargement of lymph nodes)
- **Stage IV:** Enlargement of the liver and spleen or hepatosplenomegaly (with or without lymphadenopathy)
- **Stage V:** Bone marrow, CNS (Central Nervous System) or involvement of other extranodal sites due to metastasis

The past

Development of new drugs for treatment of lymphoma has been mostly empiric, with a limited knowledge of the molecular background of the tumor, the involvement of multiple molecular targets in disease pathogenesis and ultimately, the effect of the drug on the target and thus the patient. The variability observed in responsiveness to treatment was likely the result of the heterogeneity of the underlying molecular mechanism responsible for the individual cancer.

What is the current state of lymphoma research?

Thanks to advances in molecular biology, lymphoma research has made exponential progress in the last decade. We now know that the cells involved in lymphoma are phenotypically different from patient to patient even though they may be of the same hematopoietic lineage. And most importantly, we have learned the cells are molecularly heterogeneous, meaning the tumor cells differ in genetic makeup across individuals. What does this mean for curing and preventing cancer in the dog? Although it appears we will not have a “one gene” causative agent and the problem is more complicated than originally thought, there is a great deal of power in these findings, which gives us hope.

The future: personalized medicine

Knowledge is power because we now know a “one-size-fits-all” treatment strategy is not optimal. We are moving toward integration of the genetics of the individual with the genetics of the tumor to make informed treatment decisions. What will be the

outcome? Clinicians will be able to make informed, cost-effective decisions about treatment that will increase the likelihood a tumor will respond and a dog will defeat cancer.

How will we meet this challenge?

In February 2015, CHF released a cancer-focused request for proposals that asked researchers to respond to the challenges of integrating tumor-specific biomarkers, genetic information and drug targets into practical, personalized medicine plans for patients. We asked for both clinical-trial-focused studies to put into practice what we already know, and basic science studies to fill those gaps in knowledge that are holding us back. Not only will biomarker-driven personalized medicine become a reality in the cure and management of this disease, but data will ultimately allow breeders to have a deeper knowledge about their lines and make informed decisions to avoid this dreaded disease. 🐾

Discoveries

Look for a new and updated *Discoveries* in November. In the meantime, be sure to keep up with all the latest CHF news by signing up for our e-newsletter at:

www.akcchf.org/enewsletter

Reevaluating the Nature of Hemangiosarcoma

Hemangiosarcoma is a type of cancer that is quite common in dogs. It is aggressive and deadly; more than 50% of dogs with hemangiosarcoma die within four to six months of diagnosis. Treatment is difficult, in part because the origin of hemangiosarcoma is poorly understood. That’s why it’s so exciting that two studies from researchers at the University of Minnesota Twin Cities have begun to shed new light on where these tumors come from and how they grow.

Hemangiosarcoma tumors are remarkably diverse. They can occur in almost any organ, although, in dogs, they are most commonly located in the spleen, the right auricle of the heart and the skin. They are also quite variable in configuration. Hemangiosarcoma tumors contain intricate networks of blood vessels, but under the microscope, they can appear as solid, dense masses or they can contain large channels or pools of blood. The diversity of hemangiosarcoma and the poor responses to conventional treatments and to treatments targeting blood vessel formation have made scientists question previous assumptions about the origins of this disease. The goal is that understanding what type, or types, of cells give rise to this cancer, and how these cells interact with tissues

(continued on page 10)

We are grateful to all of our donors for their commitment to canine health research and helping dogs live longer, healthier lives.

Donor Honor Roll (1/1/15 – 3/16/15)

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Reevaluating the Nature of Hemangiosarcoma

(continued from page 8)

where the tumors grow could potentially lead to better ways to treat the disease – or even a way to keep them from forming in the first place.

When Drs. Jaime Modiano, Erin Dickerson and their colleagues began trying to classify the types of hemangiosarcoma found in dogs, they discovered something quite interesting. The tumors could be broken down into three distinct types – one with markers associated with blood vessel growth, another with markers associated with inflammation and a third with markers associated with fat metabolism. They first thought that the tumors came from different origins, but several pieces of evidence worked against that conclusion. First, several dogs had multiple tumors of different types, which implied that they might all spring from the same problematic ancestor cell. Second, when the scientists grew tumor cells in the lab, they found that they could get a single cell to differentiate into any one of the three types of tumor. That suggested that all three types of hemangiosarcoma tumor might actually derive from a single type of multipotent cell, presumably a stem cell from the bone or fatty tissue, and that tumors develop different structures and characteristics based on the signals present in the environments where they embed and mature.



The logical next steps from these findings were to study how hemangiosarcoma tumors influenced the processes of inflammation, blood vessel growth and fat metabolism in their local environment. One molecule that seemed to play an important role in those negotiations was the inflammatory cytokine interleukin 8 (IL-8). Dr. Modiano's group showed that blocking IL-8 made it more difficult for tumors to become established in the body, which strongly suggests that the molecule plays an important role in establishing communication between the tumor and the surrounding environment. Ongoing work seeks to confirm and expand these results to achieve the goals of developing effective strategies to diagnose, treat and eventually prevent hemangiosarcoma in dogs. 🐾

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Tick Talk



Disease Transmission after Attachment

3 – 6 hours: Ehrlichiosis and Rocky Mountain Spotted Fever
 24 – 48 hours: Lyme Disease

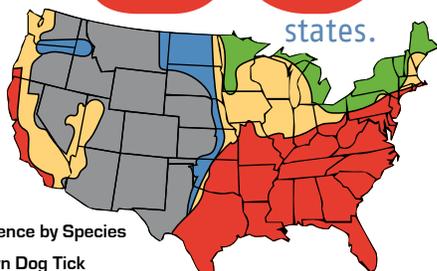
Size Comparison



Tick-borne diseases are found in all

50

states.



Tick Presence by Species

- Brown Dog Tick
- Brown Dog Tick and American Dog Tick
- Brown Dog Tick and Deer Tick
- Brown Dog Tick, American Dog Tick and Deer Tick
- Brown Dog Tick, American Tick, Deer Tick and Lone Star Tick



Climate/weather patterns cause changes in prevalence of ticks.

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