



Dear Canine Health Supporter:

This year, we celebrate the 20th anniversary of the AKC Canine Health Foundation (CHF), a milestone that would not be possible without your commitment to the health of all dogs.

Thanks to you, the dogs we love benefit from advances in veterinary medicine, receiving better treatment options and more accurate diagnoses for both common and complex health issues.

From laying the groundwork that mapped the canine genome, to awarding grants that eventually led to genetic tests for conditions like Exercise-Induced Collapse and Von Willebrand's Disease; from working collaboratively with researchers to bring about better understanding and more effective treatments for diseases like cancer, epilepsy and bloat, to being on the forefront of new, promising breakthroughs like stem cell research/regenerative medicine, anti-viral therapy and personalized medicine, your support of CHF has made these breakthroughs possible.

As we look toward the future, your gift to CHF is as important as ever.

By donating and continuing your commitment to canine health, you help build on the important scientific advances in veterinary medicine and biomedical science, impacting future generations of dogs. Please make a donation today by visiting us at www.akcchf.org/donate or by using the enclosed envelope.

As our partner in canine health, we are grateful for your passion, commitment and dedication to helping all dogs live longer, healthier lives.

Thank you for your continued support.

Suran Lilly

Happy Holidays,

Susan M. Lilly, CFRE

CEO

P.S. If it's been a while since you've donated to CHF, or if you know someone who shares your commitment to the health of dogs, but who is not currently a donor, now is a great time to make a gift to support CHF. Now through December 31, 2015, all gifts to CHF from new or lapsed donors (last gift December 31, 2012) will be matched by the American Kennel Club, up to \$500,000.



# Dr. Douglas Thamm, VMD, DACVIM, Receives Asa Mays, DVM, Award for Excellence in Canine Health Research

The Asa Mays, DVM, Award for Excellence in Canine Health Research is presented to investigators who demonstrate meritorious advancements identifying, characterizing and treating canine diseases and ailments. It is named for Dr. Asa Mays, a founding board member of the AKC Canine Health Foundation (CHF).

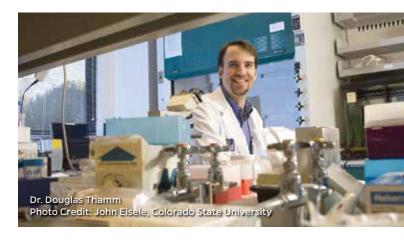
CHF is pleased to announce that Dr. Douglas Thamm, VMD, DACVIM, associate professor of oncology at Colorado State University, Flint Animal Cancer Center, is the 2015 recipient of the Asa Mays, DVM, Award for Excellence in Canine Health Research.

Dr. Mary Smith, chair of the Foundation's Grants Committee, presented the award to Dr. Thamm in August at the 2015 National Parent Club Canine Health Conference in St. Louis, MO.

"In addition to being a leading researcher, Dr. Thamm is also a great partner to the AKC Canine Health Foundation. He frequently contributes to our podcasts, educational materials and volunteers his time and expertise to our peer review process," Dr. Smith said.

"I am gratified to be one of the first clinical researchers to receive this award, and that CHF is continuing to fund outstanding clinical research in addition to their outstanding track record in canine genetics."

Upon receipt of the award, Dr. Thamm stated, "I am truly honored to receive this award. I would like to acknowledge all of the attendees and their respective breed clubs, without whom my work and the work of all the other CHF-funded researchers would not be possible. I would also like to thank all the previous award recipients, especially the cancer researchers, Drs. Ostrander, Breen and Modiano, who are some of my idols! I must also acknowledge the outstanding clinical mentors I have had during my training and beyond, including Drs. Greg MacEwen and David Vail in medical oncology, Dr. Ed Gillette in radiation oncology and Dr. Steve Withrow in surgical oncology — each is a true pioneer in clinical research in their respective disciplines. Finally, I'd like to thank my family, especially my wife Grace, for her indulgence and support."



Dr. Thamm added, "I am gratified to be one of the first clinical researchers to receive this award, and that CHF is continuing to fund outstanding clinical research in addition to their outstanding track record in canine genetics."

The Foundation has awarded Dr. Thamm nearly \$240,000 for his work involving novel targeted therapies for animal and human cancer and ways to integrate these therapies with existing treatments.

Dr. Thamm has authored over 100 peer-reviewed publications in veterinary and basic cancer research, and is co-editor-in-chief of the journal Veterinary and Comparative Oncology.





#### **New Grants**

Some of our new research grants are detailed here. For more information about any of these studies, including ways to provide financial support/sponsorship, visit www.akcchf.org.

#### **Dermatology & Allergic Disease Research Program Area**

02176-A: Intralymphatic Immunotherapy for the

Treatment of Canine Atopic Dermatitis

Principal Investigator: Dr. Andrea Lam, DVM; Tufts

University

Total Grant Amount: \$12,113.82 **Grant Period:** 7/1/2015 - 7/31/2016

**Project Abstract:** Atopic dermatitis (AD) is a genetically predisposed inflammatory skin condition affecting approximately 10% of dogs globally and is probably the most prevalent skin disease in all canines. Affected dogs manifest with itchy skin and ears and secondary infections. Clinical features are associated with IgE antibodies produced against indoor/outdoor environmental allergens. Breeds such as Boxers, Terriers, Retrievers and Bulldogs are predisposed.

Current treatment options include antihistamines, corticosteroids, cyclosporine, oclacitinib and allergenspecific immunotherapy (ASIT), as well as adjunctive topical and antimicrobial therapy.

Antihistamines are effective in about 25% of dogs. Corticosteroids are extremely efficacious; however, side effects are common, thus long-term use is strongly discouraged. Cyclosporine is effective in many dogs with few serious adverse effects, but cost can be a limitation in large-breed dogs. Oclacitinib has been shown to have good efficacy, but long-term side effects have not been studied. ASIT appears as the only treatment that is able to induce a clinical cure. However, the percentage of atopic dogs that respond to this treatment is only 60-70%, and in many, the response is only partial.

It has been proposed that efficacy of subcutaneous ASIT is limited by the ability of the skin to stimulate the immune system. This study proposes to test an alternative route of administration using ASIT for this important skin condition. The investigator will test if direct administration of allergens into a peripheral lymph node may be more effective in stimulating an immunologic reaction, and thereby increasing the response rate, and potentially the cure rate, for canine atopic dermatitis.

**02182-A:** Is Defective Secretion of Antimicrobial Peptides Associated with Reduced Microbial Effects in Atopic Keratinocytes?

Principal Investigator: Dr. Domenico Santoro, DVM;

University of Florida

Total Grant Amount: \$12,958.92 **Grant Period:** 7/1/2015 - 6/30/2016

Project Abstract: Antimicrobial peptides (AMPs) are small proteins produced by many organisms. They have multiple functions, the most important of which is the defense against pathogens. The antimicrobial activity of such proteins has been demonstrated against multiple microorganisms. Recently, a lack of secretion of AMPs, after exposure to bacteria in human skin cells harvested from allergic patients, has been hypothesized as a possible cause of recurrent infections in allergic skin conditions. Allergies are common in dogs and frequently associated with recurrent, antibiotic-resistant skin infections. Thus, the identification of ways to boost ability to fight bacteria is important. The investigation of possible changes between healthy and atopic skin cells is fundamental in order to be able to intervene and make such secretion more effective without the use of synthetic antimicrobials. Thus, the goal of this study is to determine if, like in people, lower AMP secretion is present in skin cells harvested from allergic dogs after stimulation with common cutaneous pathogenic bacteria.

The hypotheses to test are 1) whether a lower amount of AMPs is secreted by allergic skin cells compared with healthy ones, and consequently, bacteria are not effectively killed; and 2) if a higher amount of AMPs is retained within the allergic cells. This study has the potential to open the way for a revolutionary approach to treating skin infections that occur secondary to allergies in dogs by increasing the secretion of natural antimicrobial defenses, thus reducing the use of synthetic and expensive antimicrobials with potential side effects.

#### **Reproductive Conditions & Disease Research Program Area**

02188-A: Combined Anti-Müllerian Hormone and Progesterone Testing for the Diagnosis of Canine Ovarian Remnant Syndrome

Principal Investigator: Dr. Ned J. Place, MD, PhD; Cornell

University

Total Grant Amount: \$8,165.00 **Grant Period:** 7/1/2015 - 6/30/2016

**Project Abstract:** Canine ovarian remnant syndrome (ORS) is a diagnosis that veterinarians consider when a spayed bitch shows signs that she is still under the influence of ovarian hormones. This would indicate that she has retained some functional ovarian tissue. Before surgical exploration is considered, the veterinarian will want to have strong evidence that an ovarian remnant is present. Current diagnostic tests for ORS have limitations, and Dr.

Place and team are proposing to thoroughly evaluate a new line of testing: anti-Müllerian hormone (AMH) combined with progesterone. Dr. Place's laboratory was the first to demonstrate that AMH effectively distinguishes between spayed and intact dogs. When combined with progesterone testing, their preliminary data suggest that AMH is also effective in determining if a spayed bitch has an ovarian remnant. The ovaries are the sole source of AMH in mammals, and therefore a positive AMH test indicates the presence of ovarian tissue. Interestingly, the ovarian structure that develops after ovulation, the corpus luteum, does not produce AMH, but it does produce large amounts of progesterone. These researchers have identified a few cases of ORS for which the AMH test was negative, but the progesterone test was positive. In these cases, microscopic exam showed that the ovarian remnant was almost entirely luteal tissue. This grant will evaluate the efficacy of an AMH+progesterone test for the diagnosis of canine ORS, and perform histopathological examination of any tissue that is surgically removed from bitches that have undergone AMH+progesterone testing in their lab. If successful, this testing will help to reduce the number of unnecessary exploratory surgeries in dogs.

Senior Dog Health & Wellness Research Program Area

**02226-A:** Pilot Clinical Trial to Test the Efficacy of Mesenchymal Stem Cells Over-Expressing IL-10 to Treat Osteoarthritis in Elbows of Senior Dogs

**Principal Investigator:** Dr. Fernando A. Fierro, PhD;

University of California, Davis **Total Grant Amount:** \$12,953.95 **Grant Period:** 9/1/2015 - 2/29/2016

Project Abstract: Osteoarthritis (OA) is characterized by both chronic inflammation and structural defects in cartilage and subchondral bone. Mesenchymal stem cells (MSC) have become ideal candidates for therapy, because these cells could contribute to the treatment of OA in two ways: they can differentiate and replace the damaged cartilage and bone, but also secrete key signals that regulate the immune system. In fact, at least 13 early-stage human clinical trials are underway and three canine trials testing the delivery of MSCs into patients with OA have been completed. Certainly, this approach has, and is expected to demonstrate, a satisfactory safety profile. However, to date, clinical efficacy has been poor, due to an insufficient contribution from the cells. Dr. Fierro and team propose an optimized treatment for OA by combining cell and gene therapies, which will induce the expression of the anti-inflammatory cytokine interleukin 10 (IL-10) in canine adipose-tissue-derived MSCs. This approach is based on the research team's experience on a planned first-in-human Phase I clinical trial with a very similar approach, strictly adhering to the same safety profile requested by both clinicians and regulatory agencies. The main goal of this proposal is to conduct a pilot study in four senior dogs, injecting 5-7 million MSC/IL-10 cells (carried in 0.5 ml hyaluronic

acid) into one elbow with more severe OA. The proposed outcome measurements are objective and rely on the latest technology. With this pilot study, the investigators expect to demonstrate both safety and efficacy of MSC therapy for this important unmet clinical need, and ultimately, find a cure for OA in senior dogs.



# AKC Canine Health Foundation Welcomes Dr. Diane Brown, DVM, PhD, DACVP, as Chief Scientific Officer

Dr. Diane Brown, DVM, PhD, DACVP, joined the AKC Canine Health Foundation (CHF) as chief scientific officer (CSO) in August. Her role is to cultivate the Foundation's research and education strategy in collaboration with its grants committee, external peer reviewers, principal investigators, board of directors and staff to ensure strategic application of donor funds for the benefit of canine health.

As a scientist and veterinarian, Dr. Brown's experience and interest in comparative and translational medicine and veterinary practice and clinical pathology drew her to the Foundation.



"For the past 20 years, CHF has been at the forefront of advancing excellent science and good health for all dogs. With today's rapid advances in biomedical science, genomics and medicine, the time is now, and this is the Foundation that will be able to address and impact the important problems that face our canine friends and their human caretakers," said Dr. Brown.

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# Dr. Diane Brown Joins **CHF Team**

(continued from page 5)

Dr. Brown received her DVM from Colorado State University (CSU). Following four years in veterinary practice, she returned to CSU for a residency in veterinary clinical pathology and to pursue a PhD in pathology. There she completed an NIH Fellowship in the study of genetic diseases shared by human and veterinary patients, going on to complete her board certification in veterinary pathology through the American College of Veterinary Pathologists (ACVP).

Dr. Brown was previously on faculty at Harvard Medical School and director of the Comparative Clinical Pathology Laboratory at Massachusetts General Hospital. She has been a consulting pathologist in the Department of Molecular, Cellular and Developmental Biology at the University of Colorado and at Massachusetts General Hospital. She enjoys teaching and also providing mentorship to students interested in pursuing training and careers in biomedical and veterinary science.

She is currently adjunct assistant professor in the Department of Molecular and Comparative Pathobiology at Johns Hopkins University School of Medicine, and has

> held affiliate faculty appointments in the veterinary schools at Tufts, Colorado State and Purdue universities. Before joining the faculty at Harvard, Dr. Brown was a senior pathologist at Eli Lilly and Company.

Dr. Brown has worked with, lived with and has a special place in her heart for service dogs.

Her research interests have focused on comparative hematology,

or the study of blood cells and disease. in many different species, and range

from developing micro-volume blood assays to studying host-pathogen interactions and hematopathology in salmonella infections, to investigating inherited metabolic diseases of dogs and cats.

She has served on professional committees and as a peer reviewer for numerous scientific journals in comparative medicine, biomedical research and veterinary pathology. Prior to coming to CHF, Dr. Brown served as CSO for

Morris Animal Foundation. Dr. Brown has worked with, lived with and has a special place in her heart for service dogs. She and her son have shared their lives with numerous dogs and cats of different breeds and of wide-ranging size and personality. She currently has a very talkative cat and a Llewellin Setter named Lily. \*



# CHF & VetVine Team Up for Webinar Series: HealthBytes

The AKC Canine Health Foundation (CHF) and VetVine have teamed up to deliver a series of four educational webinars for pet owners. These live events feature some of the leading researchers in their respective fields and provide a great opportunity for pet owners to ask questions and become more informed on health and prevention strategies for their dogs.

VETVINE The next live webinar in the series will be held on Monday, November 23, at 8:00 p.m. EST, on the topic of itchy dogs. Dr. Andrew Hillier, BVSc, MANZCVS, DACVD, a senior veterinary specialist with Zoetis, will discuss:

- · What pet owners can do to help reduce skin irritation.
- · New treatment options available to veterinarians.
- · Improving quality of life for dogs with chronic skin disease.

Registration is required through VetVine: http://vetvine.com/article/193/akcchf-itchy-dog-event

Previous webinars in the series are available for on-demand viewing: www.akcchf.org/vetvine\*

Canine Cancer with Dr. Jeffrey N. Bryan, DVM, MS, PhD, DACVIM (Oncology)

Joint Health in Dogs with Dr. James L. Cook, DVM, PhD, ACVS Diplomate, ACVSMR, Director, Comparative Orthopaedic Laboratory University of Missouri

From Leashes to Neurons: The Importance of Exercising Your Dog's Brain for Optimal Mental and Physical Health with Dr. Karen Overall, MA, VMD, PhD, DACVB, CAAB

\* Free registration through VetVine is required. \*

#### Donor Advised Fund Research Sponsors (3/14/15 - 8/26/15)

We are grateful to these organizations for utilizing their donor advised funds and Purina Parent Club Partnership Program contributions to support important canine health research.

American Bouvier des Flandres Club/Bouvier **Health Foundation** 

**American Bullmastiff Association** American German Shepherd Dog Charitable Foundation, Inc.

Basset Hound Club of America, Inc.

Bichon Frise Club of America, Inc.

Cairn Terrier Club of America, Inc.

**Collie Health Foundation** 

Dandie Dinmont Terrier Club of America, Inc.

**English Cocker Spaniel Club of America** 

English Setter Association of America, Inc.

German Shorthaired Pointer Club of America, Inc.

Gordon Setter Club of America, Inc.

Havanese Club of America

**National Redbone Coonhound Association** 

Newfoundland Club of America Charitable Trust

**Rottweiler Health Foundation** 

Scottish Deerhound Club of America

Soft Coated Wheaten Terrier Club of America, Inc.

Staffordshire Bull Terrier Club of America

Staffordshire Terrier Club of America, Inc.



# 20th Anniversary Donor Advised Fund (DAF) Challenge

We are coming down the home stretch of 2015, and the AKC Canine Health Foundation (CHF) is excited to issue a challenge to all of our DAF-holding organizations. Organizations that release \$20,000 or



20% of their current DAF balance to any CHF research program area by December 31, 2015, will receive special recognition in our 2015 annual report. More importantly, by completing the 20th Anniversary DAF Challenge, you will help CHF achieve our mission of advancing canine health by funding cutting-edge research grants in the areas most important to your breed. Contact us today to learn more! 😩



## **Distinguished Research** Partners to be Honored at Canines & Cocktails in December

The AKC Canine Health Foundation's Distinguished Research Partners are pioneers in the pursuit of improving the health of dogs. These donors are consistently and actively engaged, identifying areas where important canine health research is needed. They invest significant resources to help move science forward, benefitting not only their breed, but all dogs. Distinguished Research Partners are major stakeholders in CHF's mission to prevent, treat and cure canine disease, and they understand that, by working together, we have the greatest impact.

The 2015 Distinguished Research Partners will be recognized at our annual Canines & Cocktails event in Orlando, FL, on Thursday, December 10. These four organizations have collectively donated nearly \$1 million to CHF to help prevent, treat and cure canine disease over the course of the past 20 years:

· American German Shepherd Dog Charitable Foundation

"In recognizing the contributions of these Distinguished

- · Dalmatian Club of America Foundation
- · Flat-Coated Retriever Foundation
- · Rottweiler Health Foundation

Research Partners, we are highlighting the impact that passionate people can make on canine health, each day," said Dr. Diane Brown, CHF's CSO. "These organizations are supporting research through CHF in important scientific arenas that include cancer genomics, mast cell disease, thyroid and autoimmune disease and the devastating disorder of epilepsy, to name only a few. They help fund innovative approaches that specifically target disease prevention and treatments through vaccines, immunotherapy and regenerative medicine. Canine health issues, historically underfunded, are receiving much-needed support through their generosity. This is the way forward to

better health for all dogs."



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# 2015 National Parent Club Canine Health Conference Recap

The 2015 National Parent Club Canine Health Conference. sponsored by the Nestlé Purina PetCare Company, and hosted by the AKC Canine Health Foundation (CHF), took place this past August 7-9 in St.

Louis, MO. This event draws veterinarians, researchers,

dog club members, dog owners and breeders eager to hear from

featured speakers on the latest medical and scientific advances in preventing, treating and curing canine health issues.

"This biennial conference is a unique opportunity for our supporters to hear from the foremost scientists and clinicians in the field of canine health research," said Susan Lilly, Foundation CEO.

### "The human-animal bond is especially interesting as it relates to canine and comparative health issues."

Lilly pointed to presentations such as "Stem Cell Therapy for Supraspinatus Tendinopathy" with Dr. Jennifer Barrett, "Regenerative Medicine Techniques to Treat Cartilage Disorders" with Dr. Brian Saunders and "The Human-Animal Bond/Ouality of Life Scale" with Keynote Speaker Dr. Alice Villalobos, as highlights of an outstanding speaker lineup.

"The human-animal bond is especially interesting as it



### 2015 Conference Highlights

Registered Attendees

**Veterinarians** 

Veterinary Students attendance supported through OFA Veterinary Scholarship Program

Canine Health Researchers

who spoke at the conference

**AKC Parent Club Members** representing companion, conformation & field events

Representatives from the AKC, OFA, Purina, Zoetis & VetVine

relates to canine and comparative health issues. There is increasing insight into the positive physical and mental health impacts of dog ownership to people," said the Foundation's CSO Dr. Diane Brown, DVM, PhD, DACVP, adding, "New evidence also points to shared brain pathways between humans and dogs that may elucidate our understanding of important canine and human health issues."

#### **Veterinary Students: Tomorrow's Leaders**

Through the Veterinary Student Scholarship Program, a joint effort between the Orthopedic Foundation for Animals and CHF, veterinary students attend the National Parent Club Canine Health Conference at no cost. This wonderful opportunity provides tomorrow's veterinary leaders with a forum to meet researchers, members of breed clubs and other individuals who are committed to canine health. Veterinary Student Scholarship recipients are selected based on academic achievement, past experience, involvement in the sport of purebred dogs and future interests in the veterinary profession. All applicants must be enrolled as full-time students at an accredited United States veterinary medical school.

Jennifer Kuzminsky, Veterinary Student Scholarship recipient from Kansas State University and Purina Representative for the Class of 2017, states:

"The AKC Canine Health Foundation Conference was an incredible opportunity to learn more about specific



breed-related problems. interact with breeders and veterinarians from across the country and to hear about current research in multiple fields. As a third-year veterinary student from Kansas State University, I was presented with the chance to attend this conference through the Orthopedic Foundation for Animals (OFA), who offered a completely sponsored trip and

included extra interaction time with AKC Canine Health Foundation board members, breeders and veterinarians.

"The conference was also a great opportunity for the vet students in attendance to meet veterinarians and breeders who are equally as interested in improving canine health."

I was extremely grateful to be selected and was tremendously impressed by the research being done across the country and world that will benefit all dogs – purebred or mixed. All of the presenters spoke about the specific breed they were studying, but always made sure to include all other breeds that could be affected by the condition.

The lectures on gastric dilatation volvulus (GDV) and bloat were of particular interest to me because it is so prevalent in large-breed dogs. Although certain breeds are more prone, the work presented gave me an excellent understanding of what to expect and how to better handle any GDV case. The work being done by all the researchers shows the magnitude of canine research, which will undoubtedly benefit other fields of research as well.

Several presentations were given on stem cells, which were extremely interesting and show the promise for the potential to regrow cartilage, which will certainly influence canine, equine and human medicine alike.

The conference was also a great opportunity for the vet students in attendance to meet veterinarians and breeders who are equally as interested in improving canine health. I talked to numerous breeders who gave me wonderful ideas of how to interact and better establish a relationship with breeders in my own area. Veterinarian and breeder alike stressed the importance of open communication and working cohesively to improve the connection between these two worlds. Attending



this conference allowed me to glimpse into the world of purebred dogs and the dedication these breeders and their veterinarians have to improving canine health. I attained a deeper understanding of the bigger issues affecting our canine patients and to see the solutions these lead researchers are developing. As a third-year veterinary student, this was an absolutely wonderful chance to interact with the researchers, talk to veterinarians across the country, hear more about CHF and OFA and learn more about certain breeds."

Emily Brown, Veterinary Student Scholarship recipient from University of California, Davis, and AKC Canine Health Foundation Clinician-Scientist Fellow, Class of 2015:



"Their enthusiasm for the work being done by clinicianscientists to better the health of their breeds is contagious, and as a graduate student working

on understanding the genetic basis of inherited diseases in the dog, I find it especially motivating."

"I had a fantastic time at this year's National Parent Club Canine Health Conference. My first time at this conference two years ago, I was impressed by the science presented, but even more blown away by the individuals that I met. This year was no different. As a veterinary student, our interactions with breeders and the dog-breeding community are very limited, which is a shame considering these individuals are some of the most devoted to their pets. Their enthusiasm for the work being done by clinicianscientists to better the health of their breeds is contagious, and as a graduate student working on understanding the genetic basis of inherited diseases in the dog, I find it especially motivating."





# The Labrador Retriever Club, Inc., to Receive President's Award at Canines & Cocktails

The AKC Canine Health Foundation (CHF) will present The Labrador Retriever Club, Inc., with the 2015 President's Award at Canines & Cocktails in Orlando, FL, on Thursday, December 10. This award, given annually to a person or organization that has made an exceptional contribution to advancing canine health, is selected by the Foundation's chairman, currently Dr. A. Duane Butherus.



The Labrador Retriever Club, Inc., has generously supported CHF for nearly 20 years, and in that time, they have contributed more than \$331,455 to support canine health research.

"The Labrador Retriever Club, Inc., has been a vital partner with CHF since the beginning," said Susan Lilly, AKC Canine Health Foundation CEO. "They have consistently supported research that not only benefits Labrador Retrievers, but the health of all dogs."

### **Amazon Smile!**



Are you an Amazon customer? Did you know that for every eligible purchase you make on Amazon using this link—

http://amzn.to/10SeewN—Amazon will donate

0.5% of the price to CHF? This is a great opportunity to support CHF while shopping for the holidays!

### **Cold Weather Canine Care**

The sun is clearly over the horizon as a flock of mallards starts that familiar corkscrew into your decoy spread. You pick a greenhead, fold him cleanly and he splashes into the frigid water. On command, your Lab takes a couple of tentative steps toward the water where it had been bounding only a few minutes before. Is it fatigue, or something worse?

It may not occur to many hunters and other dog owners whose pets exercise or work during extreme cold conditions, but cold-weather preparation starts at home. "As temperatures get cooler, a dog burns more calories to maintain its body temperature, thus needing to eat more calories," said Dr. Brian Zanghi, an animal nutritionist with Purina. "We recommend feeding sporting dogs a caloriedense 'performance' food once a day after finishing the day's hunt. This will maximize digestion before the next day, and they will have a more optimal exercise metabolism in a fasted or unfed state."

Dr. Zanghi, a life-long hunter and Labrador Retriever owner, said, "It is the most advantageous to have a dog on a performance formula all year long and not switch to a maintenance formula in the off-season. All year long removes the 2–2.5 months of transition and back. Our sporting formulas also have sufficient Omega-3 fatty acids for joint health."

At a grassroots level, Dr. Zanghi suggests using a dog's body condition as a barometer: Can you see the dog's ribs when it's breathing and feel them at rest? Can you see the tuck at the belly? When viewed from above, does your dog have a slight hourglass figure? These are all characteristics of an ideal body condition score of 4-5, with 9 being the max of severely obese.

Proper nutrition is paramount to keeping a dog healthy and warm in cold conditions. Don't feed before heading afield, and let the dog rest before feeding in the evening. And remember, the more a dog eats, the more water it needs.

Bob West concurs. As director of sporting field operations for the Purina Professional Engagement Team, West brings 40+ years of dog and dog-training experience, including training multiple Versatile Champion dogs in the North American Versatile Hunting Dog Association along with scores of field trial titles and Retriever titles.

"An Iditarod dog may burn 6,000 to 8,000 calories a day," he said. "A hunting dog can burn 3,000 to 4,000 calories a day. Depending on the work and temperature, a dog may

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need a 70-100 increase in calories to satisfy the dog's requirement for energy."

West said that for every 10-degree drop in temperature, the caloric need for a dog increases 7-7.5%. You can decide the baseline temperature. (This is a rule of thumb.) You must take into account factors like stress of travel and the excitement of hunting or other activity. And then there's hydration. During cold weather, you say? Absolutely. Water is a requirement for digestion of food, as well as helping the body absorb nutrients. It cools the dog's body and removes wastes through urination.

The sight of a panting dog on a hot summer's day is a common sight, and human nature is such that we probably pay more attention to hot-weather hydration than cold, but a dog needs water all the time. West said two factors affect hydration: change in ambient temperature and activity.

"A dog pants to cool," said West. "Warm, moist air comes from the lungs and cools the tongue and the back of the throat, which act as a radiator for the dog. The cooled blood goes back to the core to thermoregulate the dog. There is less humidity in winter so the cooling effect is better."

Frequent watering also acts to "clean the radiator," as West puts it, of mucus, slime and feathers.

West said the best substance to hydrate a dog is plain old water. There can be an obvious attraction to use something like a sports drink, but water is best.

"A dog's body has a certain balance of electrolytes in its digestive tract," said West. "When a dog loses body moisture through panting, the amount of electrolytes becomes more concentrated. A product like Gatorade will super-saturate and suck more moisture out of the muscle."

Dr. Zanghi advises against using ice-cold water in the sweltering summer, as it could cause vascular constriction in the back of the throat, but when the outside temps are below zero, the water will be cold.

An easy way to hydrate dogs in the field is to carry plastic squirt bottles of water with you. Periodically hydrate the dog by putting the tip of the bottle against the back of the lower jaw and gently squeezing. The dog will swallow without choking. Many high-drive dogs simply don't want to take a break for hydration when there are birds to be hunted or other tasks at hand. Some dogs may respond better to a collapsible bowl or pouch for water breaks.

Giving the hardworking dog a break about every 15-20 minutes for a drink will help to minimize dehydration and allow them a breather to cool their elevated body temperature, as some dogs will not immediately drink after exercise or may need baiting with a few kibbles or broth in water.

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#### **Cold Weather Canine Care**

(continued from page 11)

Cold weather brings on other concerns for performance dogs. Dr. Joe Spoo is a veterinary sports medicine specialist in South Dakota with a passion for upland bird and waterfowl hunting. He is owned by an English Setter and a field-bred Cocker Spaniel. The opening scenario for this article came from him, and he offers some other pointers for cold-weather care.

"We don't see much hypothermia. Heat stroke is more common," he said of extreme temperature maladies. "Signs of hypothermia could be a dog easing into the water or reluctance to retrieve. Keep an eye on their mental state. Shivering is not a reliable indicator of extreme cold, nor is teeth chattering, as many dogs will do these things out of excitement. Gum color can be an indicator as pale gums can mean a restrictive blood supply."

Dr. Spoo recommends some simple things to ward off the cold-weather issues. Neoprene vests are vital to cold-weather hunts as they do a great job of keeping a dog's core warm. It is important to ensure proper fit as vests that are too tight can cause restrictive movements, and vests that are too loose allow cold water to enter and heat to escape. Dry dogs off after coming out of the water and offer a source of supplemental heat. That can be a blanket in the blind or a heated truck cab in more extreme cases. In the blind, have something under the dog's paws and keep a dog from standing in water or snow for extended periods of time.

Snow and ice can also offer issues. Crusty snow and frozen ground can cause paw injuries. Dr. Spoo uses booties and in deeper, crusted snow will put additional wrap above the top of the boot to lessen abrasions on the dog's leg in deeper snow. He buys in bulk from www.dogbooties.com.

When it comes to cold conditions, it ultimately depends upon the individual. There is no minimum "too cold" for performance dogs.

"That is situational," he said. "A lot of it depends upon acclimation, housing and training conditions. A dog that spends his days outside is likely going to acclimate to the given temperature quicker than a house dog. Temperature tolerance is highly individualized, and it is important to know your dog's comfort level whether it is heat or cold tolerance we are talking about. When we are dealing with extremes in temperature, I'm extra vigilant with the house dog, or the dog kenneled in a well-insulated kennel, as they haven't had the time to adjust to extremes, and so they warrant close observations as the weather changes."

In order to cut down on other injuries, Dr. Spoo points to other factors. Housing between hunts and in between hunting is important. Warm, dry and comfortable bedding helps prevent injuries whether you are transporting between hunting sites or between hunting days as it allows your dog's body to focus on recovery and rest. If the conditions are cold and drafty in the crate, trailer or dog box, that dog is continually having to expend energy and calories to stay warm, isn't relaxing and isn't allowing the body to recover.

"Other factors we see in injured dogs are unconditioned dogs in early season and heavy workloads in late season," he said.

Ultimately, cold-weather dog care is much like cold-weather human care. Treat the dog like you treat yourself. We're pretty sure you eat well, hydrate adequately and stay as dry and warm as you can. Do the same for your canine partner. We're also pretty sure he or she is going to work much harder than you are.



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# Your Impact: Spontaneously Occurring Cancer in Dogs Helps to Inform Human Disease

AKC Canine Health Foundation Contributing Funding to Research Linked to Discovering New Treatment Options

The AKC Canine Health Foundation (CHF) is pleased to announce that findings from CHF-funded research grant 1889-G are impacting both canine and human health.

A paper published September 16, 2015, in *Genome Research* by Ingegerd Elvers, et al. details results of a collaboration between eight US and international institutions of veterinary and human medicine and biomedical research into spontaneously occurring cancer in dogs that can be used in developing new treatments.

"Naturally occurring cancers in dogs, who so closely share our homes and lives, prove to be invaluable targets for study that will advance our understanding of cancer in both species," said Dr. Diane Brown, CHF's CSO, adding, "The findings from these studies will ultimately lead to novel approaches to combating this devastating disease."

There is a growing body of evidence to substantiate the genetic and prognostic similarities between human and canine cancer. With funds provided by CHF, the National Institutes of Health and others, the researchers successfully defined molecular subtypes of lymphoma, a commonly diagnosed cancer in dogs, from three specific dog breeds in comparison to the same human cancer.

According to senior author Dr. Jessica Alföldi of the Broad Institute of MIT and Harvard, "Working with the tumor DNA of Golden Retrievers, Cocker Spaniels and Boxers, we have identified genes with known involvement in human lymphoma and other cancers as well as novel genes that could help in the discovery of much-needed new treatment options for cancer."

While lymphoma is among the most common cancer in all dogs, the inherent genetic similarities between dogs of the same breed facilitate the study and identification of specific disease-causing mutations and cellular mechanisms. Such findings can then be applied to research into human cancer, thus helping to determine predisposing genetic markers for human disease at the same time. The investigators, working with samples from pet dogs, have capitalized on this scientific fact.

To support important research like this, that not only positively impacts dogs, but their human companions as well, please visit www.akcchf.org/donate.

See this article online: www.akcchf.org/lymphomaresearch



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