



AMERICAN KENNEL CLUB
**CANINE HEALTH
FOUNDATION**
PREVENT TREAT & CURE®

DISCOVERIES

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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.

UPDATE FROM THE CEO

Update from the AKC Canine Health Foundation CEO, Dr. Terry T. Warren, PhD, JD

We will all be watching the world's best athletes compete as the Summer Olympics unfold in London this July. These athletes understand the importance of following a strict, optimum performance regime to be an injury-free competitor. The summer months take us all outdoors seeking more activity to improve our health and well-being. Unfortunately, we part-time athletes don't always take the time to prepare for this new level of activity. Often, the weekend warrior comes up lame on Monday morning because of inadequate preparation! As we launch athletic pursuits, many of us have our canine athlete right alongside. The increased participation of dogs in performance activities such as agility, rally, flyball, herding, hunting and tracking is phenomenal. Just as we wouldn't consider running a marathon without a strict conditioning routine, our dogs need the same kind of special attention to training, conditioning, diet, nutrition and hydration to prevent injury.

One prominent injury to dogs, cruciate ligament rupture, has an estimated economic impact of \$2 billion a year for dog owners. The Foundation funds grants focused on many aspects of the cruciate ligament to find alternative, less costly treatments and to find preventative measures to stop other dogs from experiencing a rupture.

Nestlé Purina PetCare Company, a leading AKC Canine Health Foundation (CHF) alliance, takes nutrition for the canine athlete seriously. Dr. Arleigh Reynolds, DVM, PhD, senior research scientist at Nestlé Purina Research says, "It is well established that travel and competition result in an increased incidence of illness in professional human athletes. Changes in diet, environmental

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2013 Champions of
Canine Health Calendar!

Your donation will help dogs
live longer, healthier lives.

See back for more

Feet on the Ground

This article is the third in a four-part series contributed by Dr. Karen Gellman, DVM, PhD, and Dr. Judith M. Shoemaker, DVM. For more information about postural rehabilitation or training for vets, visit:

www.PosturalRehabVets.com.

For all terrestrial animals, essential information about their environment is transmitted by their feet. Think of your own experiences...did you like to go barefoot when you were a kid? Remember the feeling of lush green lawn underfoot, of hot sidewalk, of ouchy pebbles or a trail in the woods? Your feet told your brain the texture, temperature and firmness of the ground beneath you in an instant. Now think of wearing unfamiliar shoes, maybe even high heels if you are unaccustomed to them. What if you want to dance, or run for your life? How confident would you be? Now imagine having a pebble in your shoe. All you can think about is how quickly you can sit down, take that shoe off and get rid of it.

GROUND SURFACE

Our brains, and those of our highly intelligent companion animals, are hard wired to interpret critical information through the soles of our feet, and the sensory nerves in our leg joints, tendons and muscles. They tell us where the ground is, how hard it is and whether it supports our bodies. One of the mechanisms we use is a skin surface "map" on the bottom of our feet (or paws) that registers body weight and sudden changes in weight bearing. For instance, if your dog is running in a field and puts a foot into a hole, perceived changes in the angle of the leg and pressure on the foot will trigger a fast withdrawal of that leg and shift of body weight, preventing a serious accident.

Figure 1: Normal toenails—toes well above ground



Unfortunately, our modern, man-made environments tend to alter the sensitivity of this feedback loop. Our dogs spend much of their time on slippery floors, abrasive concrete or pile carpet—all pretty unnatural surfaces! But dogs, as domestic animals, are highly adaptable. Most dogs with an intact nervous system can program a neural



Figure 2: Grossly abnormal toenails resulting in abnormal posture—cramped in behind, base narrow in front, twisted toes, hyperextended

response to deal with these environmental changes. But when a dog has neurologic challenges—like advanced age, hind-end weakness, spinal disease—we have to carefully consider whether the information they are getting from their feet is helping or hindering their locomotion. Even in a healthy dog, the "domesticated lifestyle"—artificial surfaces and limited exercise—can interfere with their foot-brain connection.

WHEN DID YOU LAST GET A PEDICURE?

One of the most common foot issues among canine companions is long toenails. In wild canids, miles traveled daily over rough surfaces to "make a living" result in appropriately short nails. What is an appropriately short nail? One that does not touch the ground when standing on a firm, level surface, but will give useful traction when climbing a hill or digging. (See Figure 1: Normal toenails) So the only time a normal dog's nail should contact the ground is when it is climbing a hill. In a dog with overgrown nails, the neurologic signal from a long toenail contacting the ground is interpreted by the brain as an inclined ground surface. The central postural control system attempts to compensate for the imaginary hill by leaning forward, but since the dog is on level ground, this would make it fall on its nose. So the postural control system contrives a secondary compensation, by counter-balancing with the hind legs further forward. This creates the abnormal posture we call "goat-on-a-rock", with front legs behind the vertical and hind legs too far forward. (See Figure 2: Grossly abnormal toenails resulting in abnormal posture) This abnormal compensatory posture results in too much weight carried by the hind legs, thus overloading those joints. Many animals who seem to be lame or weak behind can be helped enormously with just an effective nail trim that changes this posture.

Show dogs are groomed and clipped regularly for aesthetic reasons, but reap enormous musculoskeletal

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SPOTLIGHT ON DISEASE: PYTHIOSIS

PYTHIOSIS: DESCRIPTION, TYPES AND SYMPTOMS

Pythiosis is a relatively rare, but emerging infectious disease of domestic animals that is derived from an algae-like fungi that enters the body through the nose/sinuses, esophagus or broken skin through contact with water. Sometimes referred to as "swamp cancer," pythiosis typically occurs in the swampy areas of the southeastern United States, but has been found to occur as far west as the central valley of California. Pythiosis usually appears in the fall or early winter months where the organism thrives in ponds, wetlands and swamps.

There are two forms of pythiosis: GI and cutaneous. GI pythiosis affects the dog's digestive tract, causing the tissue of the stomach and/or intestines to thicken. Symptoms include fever, vomiting, diarrhea, abdominal mass/pain and enlarged lymph nodes. Cutaneous pythiosis develops as lesions on the legs, tail, head, neck, perineum and/or the inside of the thigh. These swollen, non-healing wounds on the dog's skin appear as invasive masses of ulcerated pus-filled nodules. Tissue death (necrosis) follows, with the affected skin eventually turning black and wasting. In dogs, the GI form of the disease is observed more commonly than the cutaneous form.

DIAGNOSIS AND TREATMENT

In September 2011, Carole and Larry Johnson were vacationing in Bluff City, Tennessee, when Katy Rose, their four-year-old Cavalier King Charles Spaniel began exhibiting signs of distress. According to Mrs. Johnson, they initially suspected Katy Rose had a urinary tract infection. The Johnsons took Katy Rose to a nearby veterinary clinic where the veterinarian, Dr. Kate Zimmerman, requested urinary testing and a culture, which would take a few days for results. Unfortunately, the next day Katy Rose seemed to be deteriorating and in pain, so the Johnsons returned to the veterinary clinic. Dr. Zimmerman prescribed pain medication, and while outside her office, Katy Rose had a bowel movement with evidence of blood. Dr. Zimmerman performed an ultrasound that showed a mass. She recommended that the Johnsons return home to Florida, as treatment and follow-up care could be lengthy. En route home, the Johnsons called their regular vet and set up an appointment for Katy Rose to be seen once they arrived. Dr. Kristi Sluiter recommended another ultrasound. The mass was confirmed and surgery was recommended.



"When the pathology report came back negative for cancer, we were elated and confident that pythiosis was not going to be an issue."

Photography by: John Jefferies

According to Mrs. Johnson, Katy Rose had a rather large colon mass and during surgery 14 inches of her intestine were removed. A specimen was sent to pathology and a titer test was done to test for pythiosis.

The Johnsons took Katy Rose home and waited for the test results. "She recovered from surgery remarkably well and we were very optimistic that she only had a benign obstruction. When the pathology report came back negative for cancer, we were elated and confident that pythiosis was not going to be an issue," said Mrs. Johnson. "We had researched pythiosis and could not conceive that our happy-go-lucky little dog would suffer from 'swamp cancer'," said Johnson. Unfortunately, Katy Rose tested positive for pythiosis.

Dr. Sluiter recommended Katy Rose begin a three-month regimen of anti-fungal drugs. Dogs diagnosed with GI pythiosis have a poor prognosis. Their treatment options are limited and the anti-fungal drugs can have severe side effects, including liver and kidney damage. Because of this, dogs must undergo regular lab tests while on these drugs to monitor their liver and kidneys. Mrs. Johnson said, "Dr. Sluiter was with us throughout this ordeal, offering emotional support and advising us on the use of supplements to protect Katy Rose's organs and support her immune system." She continues, "Due to all the fear and anxiety we experienced each time there was any change, real or imagined, in Katy Rose's condition, we phoned Dr. Sluiter a lot. She was amazingly patient and prompt in answering all our calls."

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AKC Canine Health Foundation and Golden Retriever Foundation Collaborative Cancer Grant RFP

The AKC Canine Health Foundation and the Golden Retriever Foundation (GRF) have teamed up to jointly fund up to \$1 million in canine cancer research. The foundations are partnering to solicit, review and ultimately select one canine cancer research project focusing on Golden Retrievers and potentially benefitting the health of all dogs. According to Nancy Talbott, president of the GRF, "Nearly 60% of Golden Retrievers die from cancer, a fact that has rallied the Golden Retriever community to action."

The Request for Proposal (RFP) for the AKC Canine Health Foundation/Golden Retriever Foundation collaborative cancer grant was written as a program project grant. According to Dr. Shila Nordone, CSO of CHF, there are several unique aspects of program project grants that make them a powerful mechanism for moving research forward in a giant leap rather than in small, incremental steps. "The budget for a program project RFP is greater than in individual research grants, allowing investigators to do research that may be cost prohibitive under normal circumstances," said Nordone. The grant will also be awarded to a team of researchers working in collaboration, rather than to an individual. This collaborative nature will be a defining aspect of the grant, creating an environment of synergy so that the sum of the effort will be greater than what could be achieved as individual, stand-alone projects. Nordone continues, "Each individual project will be meritorious on its own, ensuring that every aspect of the research program makes a major contribution to the field, and resources will be shared across the research team, thereby saving precious research funds."

Talbott, of the GRF, echoes the unique opportunity presented through this grant. "The opportunity and challenge presented in the RFP is for a collaborative group of scientists to 'dream big.' While we recognize that the funding level may not reach that of human cancer research, it is definitely a standout grant award for canine cancer research, and we hope that it will inspire excitement in the scientific community. We hope that this level of funding commitment—directed toward multiple individual approaches that meet a unified scientific goal—will encourage development of a project that has the depth, breadth and power to make an impressive impact to help all dogs."

Another equally important aspect of the program project grant is that it asks for a tangible outcome. According

to Nordone, "The recipient of the RFP will be expected to deliver something demonstrable so that the field of canine cancer research moves forward in a substantial way." Examples of these "deliverables" to canine health include identification of genetic or protein-based biological markers of hemangiosarcoma or lymphoma for diagnostic and prognostic use in high-risk breeds; identification or development of canine-specific monoclonal antibody-based therapeutics in hemangiosarcoma or lymphoma; integration of tumor genotyping/phenotyping with therapeutics for the development of personalized treatment strategies; and identification of novel pathways of tumor survival and points of therapeutic intervention.

Nordone considers grants submitted for the RFP that have industry partnerships or a One Health emphasis to be highly favorable. She states, "The power of early academia-industry partnerships is the availability of resources not generally available in academia, and the potential for moving research from the laboratory bench to the veterinary clinic faster and more efficiently than if academia works alone. One Health efforts will help leverage the resources and expertise in human oncology, thus benefiting both the dog and humans simultaneously."

The partnership between CHF and GRF is an exciting avenue in canine cancer research. By collaborating on the RFP, the foundations demonstrate the benefits of working together for the greater good. "Both organizations have excellent reputations in the canine cancer research community, and we believe that this joint effort will bring a synergy to the project that will benefit all dogs," said Talbott.

To support canine cancer research, visit www.akcchf.org/cancer.

Photography by:
Miguel Betancourt



Champion of Canine Health: The Golden Retriever Foundation

The Golden Retriever is consistently ranked as one of the most popular breeds in the United States. This lovable family dog has endeared itself to many people because of its loyalty and friendly temperament. In 1997, the Golden Retriever Club of America (GRCA), created the Golden Retriever Foundation (GRF) from a \$100,000 bequest. This newly created foundation sought to foster and promote the appreciation of dogs in general and Golden Retrievers in particular; to further the understanding of the diseases, genetic defects, injuries and other ailments that afflict dogs in general and Golden Retrievers in particular; to develop and disseminate educational materials about the proper care, treatment, breeding, health, development and training of Golden Retrievers; and to foster and promote the rescue, rehabilitation and placement of displaced Golden Retrievers.

The GRF is staffed by volunteers who devote many hours to promoting the breed, to maintaining fiscal responsibility and to reviewing research proposals. Current President Nancy Talbott, first became acquainted with Goldens in 1976. "Unfortunately, my first Golden was the poster child for health and temperament concerns. Although she was a disaster as a competition dog, she brought me into the world of dog shows and the Golden Community." Through this community, Talbott became passionate about the breed and saw the opportunity to serve in leadership roles. As a board member of the GRCA, Talbott learned about the GRF in its infancy, watching it grow and benefit a breed she loves.

Dr. Ann F. Hubbs, DVM, is the chairperson for the GRCA's Health and Genetics Committee. This committee, also staffed by volunteers, reviews research proposals and maintains communication with canine health organizations. Hubbs says that she owes the Golden Retriever breed an enormous debt of gratitude. "In the early 1980s, two Golden Retrievers, Daquiri and Diamond, woke me up in a house fire the day after I was released from the hospital." Additionally, Hubbs tells the story of a Golden named Gala who was her son Adam's constant companion. According to Hubbs, Adam is a child with uncommon physical and intellectual challenges, and it was Gala who was the first to recognize that Adam was a kind and loving child fully capable of interacting with other living things. "Gala would nuzzle Adam, reach a paw out to him, ask for a pat in every way she knew how,



Since 2000, the Golden Retriever Foundation has consistently supported CHF, contributing over \$235,000 to help dogs live longer, healthier lives.

while Adam, instead, played with inanimate objects and did not interact with other living things. Then one day, to the disbelief of all involved, Adam reached out and patted Gala." Hubbs' experiences with Goldens solidified her commitment to the breed, which has translated to her commitment to their health.

Rhonda Hovan has served as the research facilitator for the GRCA for 10 years. Rhonda got her start with Golden Retrievers in the obedience ring as a high school student. Her first Golden, Faera, inspired the kennel name for her now well-known line of "Faera" Golden Retrievers. CH Faera's Future Classic, OS "Thunder," is one of the top producing sires in the breed's history and led Hovan to support canine health research. Thunder passed away in 2000 from lymphoma. A Thunder grandson, CH Faera's Starlight, OS is the namesake for Hovan's Donor Advised Fund at the AKC Canine Health Foundation. Since its inception in 2001, the Starlight Fund has sponsored more than \$52,000 in canine cancer research.

Together, these women, along with countless other volunteers who serve in various capacities, are committed to the mission of the GRF and advocating for the breed they love.

SPOTLIGHT ON GENETIC TESTS: Update on Exercise-Induced Collapse and Border Collie Collapse

In 2008, the AKC Canine Health Foundation (CHF) reported on the ground-breaking discovery of the genetic mutation associated with exercise-induced collapse in the Labrador Retriever by the Mickelson Canine and Equine Genetics Laboratory at the University of Minnesota. Since then, thousands of dogs have been tested for the mutation using blood samples submitted to the University of Minnesota Veterinary Diagnostic Laboratory.

The full name for the condition is d-EIC (*DNM1*-associated exercise-induced collapse) as it is due to a recessive, likely causative, mutation in the dynamin 1 (*DNM1*) gene in symptomatic dogs. The *DNM1* mutation is also present at high frequency in Chesapeake Bay and Curly-Coated Retrievers, and at low frequency in Pembroke Welsh Corgis. However, the *DNM1* mutation was not found in a random sample of 151 Border Collies, and no Border Collies submitted because of a collapse phenotype (23 dogs) had the mutant *DNM1* allele.

Thus, it is likely that Border Collie Collapse (BCC) has a novel genetic basis. With those data in hand, the Mickelson laboratory initiated a project with funding from the CHF to begin sample collections to investigate this hypothesis. They now have sufficient samples with which to perform an initial whole genome association analysis.

Independently of the project funded by CHF, Dr. Susan Taylor and colleagues at the University of Saskatchewan have completed pre- and post-exercise evaluation of normal Border Collies chasing a ball, normal Border Collies herding sheep and 10 sheep-herding or ball-chasing dogs with BCC. These studies involve complete muscular, metabolic and cardiac evaluation of affected dogs in order to eliminate other causes of exercise intolerance, and were designed to enable the investigators to be confident in the diagnosis of BCC and the clinical features of BCC episodes, as required to establish reliable phenotypic descriptions for a genetic study.

The results were striking. Routine laboratory evaluations



of dogs with BCC are normal at rest and negative for circulating acetylcholine receptor antibodies expected with the autoimmune disease acquired myasthenia gravis. Furthermore, post-exercise blood lactate concentrations, serum creatine kinase and muscle biopsies were normal in BCC dogs, eliminating common metabolic disorders and making mitochondrial myopathy (a type of neuromuscular disease) unlikely. Of perhaps equal importance was the establishment of reference values in normal exercising Border Collies in order to interpret potential changes that occur with exercise in dogs with BCC. With these reference values in place, it appears that the hyperthermia (elevated body temperature) and laboratory "abnormalities" identified after exercise in dogs with BCC are not different from what is seen in normal exercise-tolerant Border Collies or Labrador Retrievers performing the same exercise. Collapsing Border Collies from sheep-herding and ball-chasing lines have similar clinical signs and laboratory findings.

DR. MICKELSON'S INTERPRETATIONS OF THE RESULTS:

1. BCC is likely a unique episodic seizure disorder that can occur in sheep-herding or ball-chasing activity.
2. Parents, littermates and half-siblings of dogs with BCC are often affected, which, with the apparent clustering within the breed, supports a heritable basis.
3. A genome-wide association study should be conducted to map chromosomal loci contributing to BCC.

Dehydration & Overheating

Active and healthy lifestyles are important for you and your dog. Including exercise in your dog's routine can be fun and rewarding. But just like incorporating exercise into your own routine, if you've been sedentary for some time, it's best for you and your dog to slowly build stamina, rather than tackling a marathon straight from the couch.

Whether you're interested in agility training, performance events, field trials, hunting tests or simply having your dog as your companion on your daily walk or run, it's important to remember that dogs, just like humans, are susceptible to athletic injuries and health concerns.

With the long, hot days of summer here, it's especially important to be mindful of dehydration and overheating. Recognizing early warning signs is the key when dealing with these potentially serious health concerns.

DEHYDRATION

An excess loss of body fluids, dehydration involves the loss of water and depletion of electrolytes, which include the essential minerals of potassium, sodium and chloride.

Signs of a dehydrated dog include sunken eyes and dry mouth, gums and nose. Poor skin elasticity is another dehydration symptom, which can be tested by gently pulling up on the skin at the back of the dog's neck. If



the skin doesn't immediately spring back to its normal position, your dog may be dehydrated. The longer it takes for the skin to return to its normal position, the more severe the dehydration.

Capillary refill time is another dehydration test that can be performed at home. To do this, press your finger against your dog's gums until they turn white, then remove it. If the gums don't regain color immediately, your dog could be dehydrated.

Since untreated dehydration can lead to organ failure and death, seek immediate medical attention if dehydration is suspected. Depending on the severity, your vet may suggest water with electrolyte products. In extreme cases, intravenous fluids will be administered to replenish your dog's fluids.

OVERHEATING

Heat-related canine conditions can also become life-threatening without immediate treatment. Overheated dogs can suffer heat exhaustion, heat stroke or sudden death from cardiac arrhythmias.

Panting, followed by disorientation and fast, noisy breathing could signal overheating. Other possible signs are collapsing or convulsing, bright-red or blue gums, vomiting and diarrhea.

If you suspect your dog is overheated, wet him with cool tap water before heading to the veterinarian. Let the office know you're on the way, so a team can be prepared to act quickly.

Your vet may apply alcohol to the ears, foot pads and groin to safely lower the temperature, as well as administer cool IV fluids. For serious overheating, your dog may need a breathing tube and artificial ventilation. Depending on the severity of symptoms, correcting electrolyte imbalances and controlling seizures may also be needed. If organ damage is suspected, hospitalization may be required.

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New Acorn Grants

New ACORN research grants are here. For detailed information about any of these studies, including ways to provide financial support, visit us at www.akcchf.org.

Grant 01699-A: Does Intranasal Vaccination with Bordetella Bronchiseptica Vaccine Create False Positive Results on Rapid Slide Agglutination Tests Used to Detect Brucella Canis Infection in Dogs?; Dr. Christina M Larson, DVM, University of Minnesota, **\$10,567.00**

Project Goal: Brucellosis is a highly infectious disease that causes abortion, stillbirths and sterility in dogs. Importantly, brucellosis can be transmitted to humans when they come into contact with infected animals. Testing for brucellosis is highly recommended for dogs prior to breeding; however, there is growing concern that immunization with a common vaccine against Bordetella (kennel cough) could result in false positive tests for brucellosis. Dr. Larson and colleagues will determine whether false positive Rapid Slide Agglutination Test (RSAT) results for brucellosis are obtained after vaccinating dogs with commercially available Bordetella (kennel cough) vaccines. These results will be critical to prevent inaccurate diagnosis and euthanasia of dogs as the result of false positive brucellosis tests.

Grant 01718-A: Effect of Ulnar Ostectomy on Intra-Articular Pressure Mapping of the Canine Elbow Ex Vivo; Dr. Ursula Krotscheck, DVM, Cornell University, **\$12,042.00**

Project Goal: Fragmented Coronoid Process (FCP), one of the main causes of elbow dysplasia, is a condition in which a small piece of bone on the inner side of the joint has broken off of the ulna bone. This piece of bone irritates the lining of the joint and is a source of forelimb lameness, pain and reduced mobility in young, large-breed dogs. Removal of the broken fragment is the current treatment of choice; however, this often results in progression to arthritis. Dr. Krotscheck and colleagues will describe the contact pressures within the normal and damaged elbow joint before and after treatment with one of the two ulnar cutting methods (top of the ulna with pin placement or bottom of the ulna without pin placement). As a result of this study, they will determine the most effective method of relieving the pressure within the joint that can then be used in clinical practice to decrease or inhibit arthritis formation in dogs treated for elbow dysplasia.

Grant 01726-A: Role of Hepatocyte Growth Factor in Canine Osteosarcoma Cell Motility and Invasion; Dr. Stuart Helfand, DVM, Oregon State University, **\$12,960.00**

Project Goal: Canine Osteosarcoma (OSA) comprises 85% of all bone malignancies, affects up to 10,000 dogs in the United States annually and is almost always fatal due to spread (metastasis). In order to develop novel therapeutics to circumvent the progression of this disease, key factors regulating tumor cell invasion and metastasis to surrounding

Kudos

More tails are wagging thanks to **Contra Costa County Kennel Club**, who renewed their club membership and made an additional donation of \$2,300 to our mission.

Thank you, **Ms. Helen Tjader**, for supporting one of our degenerative myelopathy studies for \$1,100!

Bravo to **Samoyed Club of America Education & Research Foundation** for contributing \$10,000 to support Grants 1609, 1418, 1584 and 1569.

We salute **Mr. and Mrs. Sheldon B. Adler** for contributing \$1,000 to help all dogs live longer, healthier lives!

Excellent work from the **Westie Foundation of America, Inc.**, for sponsoring \$22,000 toward six different canine research projects!

We are grateful to **Mr. Mike Shaw and Mrs. Nancy J. Shaw** for selecting AKC Canine Health Foundation as the recipient of a \$10,000 donation to prevent, treat and cure canine disease.

Many thanks to **Toby's Foundation** for choosing to support Grant 1615: Identification of Idiopathic Epilepsy Genes in Australian Shepherds.

Outstanding work, **Health and Rescue Foundation of the PBGV Club of America**, for supporting Grants 1609, 1594 and 1612 for \$7,500.

Mr. Bill Dunnivant expressed his commitment by contributing \$5,000 to the Berner Lovers' DAF to support the breed.

Resounding thanks to the **Bernese Mountain Dog Club of America** for raising over \$48,000 for their DAF from a Health Auction held at the breed's recent National Specialty in Gettysburg.

tissues must be identified. Hepatocyte Growth Factor (HGF) is one such factor as is known to contribute to motility, migration and invasion, by human OSA tumor cells. Dr. Helfand will evaluate how HGF contributes to canine OSA cell migration and invasion, and begin to explore the potential to block HGF effects by switching off this circuit with several tyrosine-kinase inhibitors that target different points in the HGF pathway. Inhibition of the HGF pathway may serve to inhibit the spread of highly metastatic tumors such as canine OSA.

Grant 01727-A: Banking of DNA Derived from Golden Retrievers Histologically Proven Free of Pigmentary Uveitis and Iris Cysts;

New Acorn Grants cont.

Dr. Wendy M. Townsend, DVM, MS, Purdue University, **\$12,957.00**

Project Goal: Pigmentary Uveitis (PU) causes cataracts and glaucoma that frequently blind older Golden Retrievers. Glaucoma is particularly devastating because it causes pain. Available evidence suggests PU is an inherited disease, as it is only seen in Golden Retrievers, and can be traced through pedigrees. However, a major frustration for breeders is PU's late onset: By the time of diagnosis, affected dogs have often produced multiple litters. Affected offspring are impossible to identify until they develop clinical signs, which typically occur at eight years of age or older. Identification of the genetic defect(s) causing PU and development of a genetic test would allow early identification of dogs with PU, and selective breeding practices to reduce the prevalence of PU-affected dogs. As a first step in this effort, Dr. Townsend will collect post-mortem eye tissues from older dogs and verify they are unaffected controls. Once negative control tissue is in place, Dr. Townsend will conduct Genome-Wide Association Studies (GWAS) to search for genes causing PU.

Grant 01783-A: Mechanical Strength of Three Patella-Ligament-Tibia Allograft Fixation Techniques for Ruptured Cranial Cruciate Ligament Repair; Dr. Jeffery Biskup, University of Minnesota, **\$10,886.00**

Project Goal: The Cranial Cruciate Ligament (CCL) is one of the main stabilizing ligaments of the knee and equivalent to the ACL in humans. Rupture of the CCL is the most common cause of limping in dogs and over \$1.2 billion per year is spent on treatment in the US. Research has supported that surgery provides dogs with the best chance of return to pre-injury activity. However, none of the surgical procedures that are currently performed for rupture of CCL in dogs reproduce the anatomy or mechanical duties of the normal CCL. This is one explanation why nearly all dogs get progressive arthritis even with surgery. Dr. Biskup and colleagues will test surgical techniques for ligament replacement that mimics all functions



of the CCL in hopes of decreasing postoperative arthritis. The project will test the strength of ligament grafts secured in the knee with two techniques commonly used in humans and one new technique. They hope to determine if these fixation methods are strong enough to consider clinical trials in affected patients.

UPDATE FROM THE CEO

(cont. from page 1)

conditions and exposure to novel pathogens may all play a role in this syndrome. The role of exercise varies with intensity and duration. Low to moderate exercise has been shown to enhance immune function, while extreme exercise compromises immune function." Research shows the same occurs for dogs. Dr. Reynolds spoke about his research on this topic at the 2011 National Parent Club Canine Health Conference. His presentation, "Coping with Stress: Nutritional Approaches to Enhanced Immune Function," can be heard by going to www.akcchf.org/videos.

The AKC Canine Health Foundation is focusing on the health needs of the canine athlete through featured articles in

this issue of *Discoveries*, podcasts throughout July and August, in *e-Barks* and on Facebook and Twitter. CHF is also launching a major campaign to establish a canine athlete fund. This fund will be part of a targeted effort to fund more research on the health concerns of the canine athlete and it will fill knowledge gaps in the veterinary field concerning canine sports medicine and rehabilitation.

We need your support to continue our important work to help dogs and their owners live longer, healthier lives. Donate today to prevent, treat and cure canine disease.

Thank you and have a great injury-free summer with your canine athlete!

benefits from this beauty regimen. The average pet dog gets its nails clipped a couple of times a year, if it's lucky! Several factors conspire to make nail cutting a dreaded activity. With such infrequency, the dog may not be inclined to cooperate, turning nail clipping into a wrestling match. The constant painful stimulus from the long toenails hitting the ground sensitizes the nail bed, making it very uncomfortable for the dog to have its feet handled. Indeed, when the toes are pushed up or twisted by long nails, the toe joints can become arthritic and painful as well.

HOW TO CLIP WITH CONFIDENCE

We don't often appreciate how much dog toenails are like our own! If you look at your fingertip, you will see the hard, insensitive nail laid on top of the living finger. If, for instance, you filed the top of the "living" portion, it would not hurt, because there is a layer of keratin—a hard, horn-like substance—that protects the nail bed. A dog's nails are actually pretty similar. The tip of their finger is "the quick," which has sensitive nerves and blood vessels. When you "quick" a dog, making it bleed, you have essentially nipped off the end of their finger. No wonder they don't like it! But no dog ever died from a quicked toenail, so it is not the end of the world. With good technique, you can shorten even ghastly long toenails without ever making them bleed.



Figure 3: Abnormal toenails—claws below weight-bearing pad, pushing nail bed

When toenail length is excessive, the quick grows longer, protected by the long nail. (See Figure 3: *Abnormal toenails*) The goal of therapeutic podiatry is to remove the protective long nail so that the quick will recede. The easiest way to do this is to use **shallow** cuts with a sharp, small, scissor-type nail clipper (Four Paws Super Nail Clipper for Small Animals works well for nearly all dogs), cutting away the top of the nail. The cuts should be parallel to the quick, not across it.

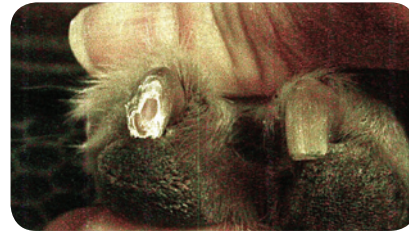


Figure 4: Close-up view of intact quick exposed by shallow nail cutting technique

Figure 5: View of dark nails—chalky insensitive nail, dark, shiny quick



Whether the nail is dark or light, it is easy to distinguish between the insensitive nail and the sensitive finger tip. There is a white and chalky line around the quick—even easier to see on a dark nail than on a white one. (Figures 4 & 5) The quick is shiny and moist—it looks like living tissue. In most dogs, there is a clear demarcation between them. It is possible to significantly shorten the toenails, and get an immediate postural response in a single session. Nails need to be cut every other week to maintain their length. To shorten the quick, one must cut once a week. Some dogs tolerate a rotary grinder, like Pedi Paws, Oster Gentle Paws or a Dremel® tool better than clippers.

Without the interference of erroneous information from toenails, a dog can fully rely upon its feet on the ground to stand straight and move with confidence.

FUTURE SEGMENTS:

It's more than just bite! – Did you know that more than half of the AKC breed standards allow for a bite other than a scissors bite? It's not just aesthetics we are worried about—malformed dentition and distorted skull shapes have a profound effect on posture and balance. Some simple juvenile interventions can go a long way in helping our dogs have a better bite.

PREVIOUS SEGMENTS:

What is Posture and Why Should We Care About It?

Oh, That Flexible Neck.

Visit www.akcchf.org/news-events/library for previous segments.

Katy Rose completed her anti-fungal treatment in January. She underwent another ultrasound that came back negative for regrowth, and she also had another titer test for pythiosis, which also came back negative. Mrs. Johnson said, "Katy Rose has not yet regained her former stamina and must lose the three pounds of weight gained, but these issues are really of small importance compared to the usual outcome when a dog is diagnosed with pythiosis."

AWARENESS

Mrs. Johnson said that while Katy Rose was never allowed to run loose, she describes her as a sniffer. While they can't be sure where or how she contracted pythiosis, they imagine a spore entered through her nostril. The Johnsons encourage all pet owners to become familiar with the signs and symptoms of pythiosis so that immediate medical attention can be obtained. Katy Rose survived and has an excellent prognosis due to the Johnsons' quick response to her change in behavior and to the immediate care provided by the veterinary teams. "Every day with Katy Rose is a day for celebration. We call her our miracle child," said Mrs. Johnson.

References:

http://www.petmd.com/dog/conditions/infectious-parasitic/c_multi_pythiosis

PREVENTION

Simple precautions can ward off dehydration and overheating.

To help prevent dehydration, offer water at least hourly to dogs that are outside and active. Get to know your dog and be observant of his behaviors. Know when he has had enough and needs a break. Wobbliness, weakness or collapse are signs to provide shade and offer small amounts of water. If your dog doesn't improve, seek immediate veterinary attention.

To prevent overheating, help your dog beat the heat by encouraging resting and drinking at his leisure. He can also be submerged in cool (not cold) water to allow his body to siphon off the building heat. If available, take him inside into an air-conditioned room or a room with a fan. The key to bringing your dog's body temperature down is to do so gradually.

Including your dog in a healthy lifestyle can be rewarding for everyone involved. Knowing the warning signs of dehydration and overheating for both you and your dog will help both of you have fun, rewarding and active lives.

SAVE THE DATE



Friday, December 14, 2012
6:30 – 9pm

Rosen Centre Hotel
9840 International Drive
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Please join us for a celebration of our canine companions benefitting the AKC Canine Health Foundation.

For more information and to purchase tickets, visit:
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