



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

DISCOVERIES

issue 45 • summer 2013



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

Happy Fourth of July! This month, we celebrate canine working dogs who are contributing patriotically to the overall safety and well-being of our armed service men and women, to our community first-responders and to the general public's welfare as they travel throughout the United States.

The AKC Canine Health Foundation (CHF) has been a strong supporter of the working dog. We funded Dr. Cindy Otto, DVM, PhD, of the University of Pennsylvania, who has focused her research on the health and well-being of search and rescue dogs. Dr. Otto was presented with an American flag flown in Afghanistan by Major Janice L. Baker, U.S. Army Veterinary Corps, in recognition of her commitment to the health of working dogs. Major Baker informed Dr. Otto that they "carried this flag and displayed it proudly... in honor of you and your colleagues, who are dedicated to the medicine, research and promotion of the health of working dogs."

Military working dogs serve a variety of vital roles in the U.S. Armed Forces, and their service to our country is immeasurable. CHF is proud to be continuing its support for the working dog. Dr. Shila Nordone, Chief Scientific Officer of the Foundation, recently attended the 2013 Penn Vet Working Dog Conference and reiterated our commitment to studying the physical, mental and social aspects of canine health in the working dog. Later this year, we will release educational programming including podcasts and webinars from some of the behavior and training experts who attended the conference.

CHF's 2013 Bloat Initiative also helps working dogs. Many working dogs are

Story continued on page 4

THIS ISSUE AT A GLANCE

- The Importance of Persistence in Canine Health Research..... 2
- Weekend Companion Turned Seizure Alert Dog..... 3
- CHF Releases Regenerative Medicine Webinar..... 4
- Bloat Initiative Update 5
- New Acorn Grants..... 10

LAST CHANCE TO REGISTER

**National Parent Club
Canine Health Conference
AUGUST 9-11, 2013
ST. LOUIS, MISSOURI**

[See back for details.]

The Importance of Persistence in Canine Health Research

Over the last 18 years, the AKC Canine Health Foundation (CHF) has funded over \$30 million in canine health research. Our mission is to prevent, treat and cure canine disease, and we have been persistent in our efforts. The character trait of persistence is shared across research in general, from those of us who fund the research, to the investigators who do the research, to our donors who have invested in seeing our mission through to the end. In all cases, our collective persistence has been met with challenge. In an effort to understand the challenges of research, we reached out to several notable researchers to ask how they persevere, whether they have moments of discouragement or frustration, and how they instill the quality of perseverance in the next generation of researchers. Their answers were refreshingly candid and sometimes surprising. These scientists share some obvious personality traits: They are individuals who are curious about the unknown, they enjoy problem solving, they have a strong desire to help others through research and they are highly tolerant of what others would perceive as failure. Interestingly, to them, failure is not defeat, but rather it is the beginning of a new challenge, an opportunity to rethink their approach, an effort renewed.

Have you ever had moments of disappointment or lack of success in your research?

Dr. Kent Lloyd, DVM, PhD, Associate Dean for Veterinary Research and Graduate Education Programs, UC Davis School of Veterinary Medicine:

"If one doesn't take risk, there's no chance for real discovery, and without discovery there's really no scientific progress. So failure is inherent when taking risk, but the successes that do arise can be exhilarating. It's easier to think and say this now, because it is done from the perspective of experience. But when just starting out, or building a career, one needs to really be courageous to pursue an idea despite the odds, despite the risks and despite the failures. Of course, one needs to use valid rationale and objective justification...but it can still take a lot of fortitude."



per·sis·tent (pə-r-'sis-tənt) adj.

1. Refusing to give up or let go; persevering obstinately.
2. Insistently repetitive or continuous.
3. Existing or remaining in the same state for an indefinitely long time; enduring.

Synonym: See *stubborn*.

Dr. Jaime Modiano, VMD, PhD, Director, Animal Cancer Care and Research Program, University of Minnesota College of Veterinary Medicine, Perlman Professor of Oncology and Comparative Medicine:

"Yes and no. Success is a relative term. Practically speaking, when experiments are designed correctly, they are always successful, even if the answer is not the one we were expecting. Research requires an open mind and a readiness to challenge dogma. As long as we include appropriate conditions that provide controls for biological complexity and for trivial pitfalls in technique or from instrumentation, we will always learn something from an experiment. Often, the experiment that 'did not work' is the most exciting one of the day."

Dr. Gina Bertocci, PhD, Professor of Bioengineering, Endowed Chair, Biomechanics, University of Louisville:

"Yes. I continually have to remind myself, and especially my graduate students, that research is an iterative process. One step forward, three steps back. In research, it is rare to do any task that attempts to advance science just once. To solve even just a small portion of a problem, varying approaches or combinations of approaches are most often necessary to take a minuscule step forward. So to be able to endure and sustain this sort of time-intensive effort for little return toward progress requires a certain type of mindset—one that is extremely patient and that does not expect instant gratification (or anything even close to it). Without this mindset, one would not be able to persevere as a scientist."

Have you ever felt frustrated with your research?

Dr. Lloyd:

"Certainly...and frustration is a unique feeling that leads me to re-examine my thought processes that led to the cause of the frustration (experimental failure, etc). Frustration forces me to carefully and objectively evaluate each step, changing only one variable at a time, using deductive reasoning to challenge what I

Story continued on page 8

Weekend Companion Turned Seizure Alert Dog and Dock Diving Champ

Corey is a happy-go-lucky, 5-year-old black Labrador Retriever and Golden Retriever mix. Corey was trained as a guide dog through the VISION Guide Dog Program, one of the many innovative inmate training programs in the United States. Through this program, dogs are placed with prison inmates who are responsible for the training and daily care of the dogs. The programs are a successful collaboration and the inmates take their responsibility very seriously. On the weekends, the dogs live with volunteer families who can expose them to public places like grocery stores and malls, as well as help them acclimate to a home environment. Robin Hentz, of Decatur, GA, was one of the volunteers who fostered Corey on the weekends. "I couldn't commit to having a dog full-time so I started volunteering with the VISION program, and that's how we met Corey."

Catherine Hentz is Robin's 11-year-old daughter. At four years old, Catherine was diagnosed with epilepsy. Catherine's seizures typically occur at night and they are frightening for the whole family. In an effort to comfort Catherine, her parents allowed her to start sleeping in their bed. One night, Robin was awakened by Corey tossing and turning in his crate, which was in her bedroom. Eventually, Corey began barking. "It was about his third or fourth weekend with us and I had not heard him bark, because as a general rule, guide dogs are taught not to bark," said Robin. "He had never woken me up on other weekends, and I thought, this puppy needs to go to the bathroom." Robin took Corey out and returned him to his crate. Robin had kept the light off in her bedroom and turned it on to check Catherine. It was then that she realized Catherine was having a seizure. A few weekends later, the same thing happened—Corey was restless in his crate and Catherine was having a seizure. "I didn't make the connection at first," said Robin, "but it became clear that Corey was alerting us to Catherine's seizures."

Epilepsy is a neurological disorder that affects dogs and humans. Canine Health Foundation (CHF) funded-researchers, through further studies into this disorder, hope to better understand the causes and improve treatments. While the CHF-funded studies will involve dogs, the work will undoubtedly impact human medicine, benefiting people like Catherine who have been diagnosed with epilepsy.



Catherine and Corey

Corey continued in his training to become a guide dog, staying with the Hentz family on the weekends for about six months. Catherine, who was having at least one seizure a week in her sleep and small episodes during the day, was managing her epilepsy with a larger dose of medication, and was put on a waiting list for a seizure-alert dog.

As Corey's training progressed and became more intense, his time with the Hentz family decreased. About four months after they had last volunteered with Corey, Robin received a phone call from the trainer in charge of the VISION program. According to Hentz, Corey was suffering from stress allergies, and he was going to be released from the program. Would the Hentz family be interested in adopting him? "We couldn't get to New York fast enough to pick him up," said Robin. While Corey had no formal training as a seizure alert dog, the Hentz family knew from their time with him that he was a perfect match for Catherine. "Corey had already been trained in obedience and had his canine good citizen [certificate], so we knew Corey and Catherine just needed further bonding."

In the summer of 2011, when the Hentz family was on vacation in Canada, Corey did a lot of jumping off the dock into the lake. "Corey loves water and Catherine is a swimmer, so this was one more way they bonded," said Robin. Shortly after returning home to Georgia, Robin took Corey to a program at The Canine Ranch, a local training facility for dock diving teams. "I didn't know anything about dock diving as a sport or competition," said Robin. Dock diving ended up being a perfect fit for Catherine and Corey, and further cemented their bond. "I was better at it as a handler than my mom was, and two weeks after we took Corey to The Canine Ranch, we entered a competition and took second place!" said Catherine.

Story continued on page 11

CHF Releases Regenerative Medicine Webinar

The AKC Canine Health Foundation (CHF) recently launched a new webinar, "Regenerative Medicine for Canine Orthopedic Concerns," featuring internationally recognized veterinary orthopedic surgeon, Dr. Sherman Canapp. CHF's webinar series focuses on different aspects of canine health and canine health research, and this new release reflects CHF's commitment to the health concerns of active dogs.

In this free, 40-minute webinar, available at www.akcchf.org/webinars, Dr. Canapp discusses the recent progress in the use of regenerative medicine to treat orthopedic injuries in dogs, and also identifies areas where further research is needed. Designed for both lay and scientific audiences, Dr. Canapp explains the different types of therapy that fall under the category of regenerative medicine, while presenting the stories of three canine clients whose lives were drastically improved through this exciting and innovative treatment.

Buyer, a 10-year-old Border Collie, who is featured in the webinar, would have occasional lameness on his front right leg during and after his agility competitions. According to Buyer's owner, Tasha Merrill of Philadelphia, PA, initial treatments were rest, chiropractic care and acupuncture. When these options provided no long-term improvement, they were referred to Dr. Canapp at Veterinary Orthopedic Sports Medicine Group in Annapolis Junction, MD.

"Regenerative medicine has extraordinary potential to change the way we treat both acute injury and chronic disease in dogs."



Dr. Canapp and his team performed a gait analysis and found that Buyer had a shortened step length and decreased pressure on the right forelimb at a walk and a trot. During a physical exam of his forelimb, they discovered that Buyer had restrictions and discomfort during what should have been a normal and comfortable range of motion. While X-rays showed no abnormality due to the soft-tissue nature of the injury, an arthroscopy showed significant inflammation and disruption of Buyer's right shoulder tendon. Upon realizing the extent of Buyer's injury, Dr. Canapp presented Merrill with two options: complete shoulder reconstruction surgery or enrollment into the regenerative medicine clinical trial with stem cell therapy. Merrill decided to enroll Buyer in the clinical trial. After just six months of physical therapy following the treatment, Buyer was back in competition and went on to obtain two Master Agility Champion titles, or MACHs. Five years post-treatment, Buyer continues to thrive. "We could not be happier with the results," said Merrill. "I would enroll in this clinical trial again in

Story continued on page 9

UPDATE FROM THE CEO

(cont. from page 1)

deep-chested breeds that are believed to be prone to this condition. We have had tremendous response to this initiative, and are on our way to funding up to half a million dollars in important research to study this devastating condition. You can support CHF's Bloat Initiative at www.akcchf.org/bloat.

The 2013 biennial National Parent Club Canine Health Conference, generously supported by Nestlé Purina, is just around the corner on August 9–11, 2013, in St. Louis, Missouri. If you haven't registered yet, please do so soon. Registration is now open to all at www.akcchf.org/npccchc. Keynote Speaker Dr. Brian

Hare will present on the "Genius of Dogs," offering revolutionary new insights into dog intelligence and the interior lives of our smartest pets. Hope to see you there!

We are taking another giant step forward in fulfilling the CHF mission to fund sound, scientific research to advance the health of all dogs and their owners. If you haven't heard, the AKC Canine Health Foundation and the Golden Retriever Foundation have just announced the joint funding of nearly \$1.5 million in canine cancer research. Please see page 7 for all the details. 🐾

Bloat Initiative Update

In January the AKC Canine Health Foundation (CHF) announced a major effort to tackle the devastating condition commonly known as bloat. The Bloat Initiative addresses the need for both education and research. A Request for Proposal (RFP) was also released in January, and researchers were invited to submit projects for funding consideration.

In response to the RFP, CHF received nine Letters of Intent from top researchers across the country. The five strongest proposals were chosen to submit full applications. These grants will delve deeply into the pathophysiology of bloat, including investigating the role of glucose levels and gastric emptying, the gastrointestinal microbiome and gastric dysrhythmia in the development of disease. Investigators have proposed to use cutting-edge techniques and several will take a "multi-omics" approach with the hope of helping breeders make informed breeding decisions and mitigate the risk of bloat in their dogs.

"Bloat is devastating for dog owners when it occurs. Through this major funding effort, researchers, for the first time, will have the resources they need to work toward establishing the causes and pre-dispositions for bloat," said Dr. Shila Nordone, Chief Scientific Officer of CHF. "Once we understand why bloat occurs, we will have better treatment options and possibly be able to prevent the syndrome from occurring in the first place."

The five full applications will undergo peer review—evaluation by other experts in the field of study—and final funding approval will be made this fall by the Foundation's Board of Directors.

CHF is grateful to our supporters, large and small, for doing their part to help us fight bloat. If you would like to contribute toward the Bloat Initiative, please visit us at www.akcchf.org/bloat. 🐾

CHAMPION (\$50,000+)

- Collie Health Foundation
- Irish Setter Club of America Foundation
- Greyhound Club of America
- Saint Bernard Club of America

LEAD (\$25,000 – \$49,999)

- The Basset Hound Club of America
- German Shepherd Dog Club of America
- Newfoundland Club of America Charitable Trust

CHARTER (\$10,000 – \$24,999)

- Akita Club of America
- American Black & Tan Coonhound Club
- American German Shepherd Dog Charitable Foundation
- Briard Club of America Health and Education Trust
- Gordon Setter Club of America
- Greater Swiss Mountain Dog Club of America
- Weimaraner Club of America

SPONSORS (\$2,500 – \$9,999)

- American Bloodhound Club
- English Springer Spaniel Field Trial Association
- English Springer Spaniel Foundation
- Flat-Coated Retriever Foundation
- Great Pyrenees Club of America
- Kuvasz Fanciers of America
- The Poodle Club of America Foundation
- The Rhodesian Ridgeback Club of the United States
- Scottish Deerhound Club of America
- TarTan Gordon Setter Club
- Versatility in Poodles



You can help dogs live longer, healthier lives.

Text **DOG** to **20222**
now to make a \$5 donation.*

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CHF and the Golden Retriever Foundation Jointly Fund Groundbreaking Canine Cancer Research Projects

The AKC Canine Health Foundation (CHF) and the Golden Retriever Foundation (GRF) embark on a new journey of finding answers to canine cancer by announcing the joint funding of nearly \$1.5 million in canine cancer research. The Foundations have worked together to select two outstanding canine cancer research projects that will potentially make real progress in the fight against canine cancer. The research results are expected to significantly improve the understanding and diagnosis of canine cancer so that dogs live longer, healthier lives.

"These grants are an exciting step forward in the field of cancer research for dogs," said Dr. Shila Nordone, CHF's Chief Scientific Officer. While the research grants will primarily focus on Golden Retrievers, both projects emphasize a better understanding of the mechanism of how cancer begins and spreads, resulting in research that will be applicable across all breeds of dogs. Nordone added that, "These results will have a One Health application, impacting human medicine as well."

The research will be conducted through a collaborative team effort of top scientists, bringing unique synergy of talent and resources together for a greater outcome. Throughout all fields of science, collaborative grants are now believed to be critical to drive scientific discovery from the bench to the bedside faster and more cost effectively. According to Dr. Chand Khanna, DVM, PhD, of the Pediatric Oncology Branch of the National Cancer Institute, "Given the imperative to deliver scientific advances to patients, there is an increasing need for the development of collaborative research efforts that include a diversity of perspectives from basic and clinical research." The grants chosen for funding meet this new research paradigm. In addition, a portion of the funded research will be done in cooperation with the animal health industry with the hope of driving diagnostic tests and novel therapeutic products to market faster and more efficiently.

The two funded teams will commence their work later in 2013 with anticipated completion dates in 2016. Dr. Jaime Modiano of the University of Minnesota, Dr. Matthew Breen of North Carolina State University and Dr. Kerstin Lindblad-Toh of the Broad Institute



of MIT and Harvard will focus their efforts on the establishment of genetic risk alleles, defining the gene expression profile and the role of cellular activation in lymphoma and hemangiosarcoma. Dr. Jeffrey Bryan of the University of Missouri, Dr. Anne Avery of Colorado State University and Dr. Heather Wilson-Robles of Texas A&M University will focus on discovery of novel protein, blood and epigenetic biomarkers to enhance diagnosis and treatment of cancer in dogs. To read summaries of the grants, see page 7.

The process, from the initial partnership between CHF and the GRF, to the selection of these research teams was a three-year undertaking. Submitted applications were required to include at least three component projects and were reviewed by the foremost experts in the field of veterinary oncology. The partnership between CHF and the GRF is an exciting avenue in canine cancer research. "Working with the GRF on this critical funding program has been a productive and enjoyable effort from start to finish," said Nordone. Nancy Talbott, President of the Golden Retriever Foundation, added, "We are excited to see the results from this funded research, and we are confident the results will help move canine cancer research forward in a meaningful way."

Dog lovers are encouraged to support these grants. Donations to CHF can be made at <http://support.caninehealthfoundation.org/cancer>, and dog clubs or organizations that wish to sponsor these grants should contact chfgrants@akcchf.org. Donations to the GRF can be made at <http://goldenretrieverfoundation.org/Donatetoday.php>. Donations to these grants will make a substantial impact on canine cancer research, helping all dogs live longer, healthier lives. 🐾



Cancer Research Grants

The AKC Canine Health Foundation (CHF) is pleased to be partnering with the Golden Retriever Foundation (GRF) to fund nearly \$1.5 million in canine cancer research grants. These grants, detailed below, will have broad impact on all dogs and will also have application to human medicine.

1918-G: Discovery of Novel Protein, Blood and Epigenetic Biomarkers of Lymphoma Risk, Classification and Prognosis in Golden Retrievers

Investigators/Institutions: Dr. Jeffery N. Bryan, DVM, MS, PhD, University of Missouri, Columbia; Dr. Anne Avery VDM, PhD, Colorado State University; Dr. Heather Wilson-Robles, DVM, Texas A&M University

Total Grant Amount: \$404,813

Grant Period: June 1, 2013 – May 31, 2016

Lymphoma strikes 1 in 8 Golden Retrievers, making them one of the most commonly affected breeds. Dr. Jeffrey Bryan (University of Missouri), in collaboration with Dr. Anne Avery (Colorado State University) and Dr. Heather Wilson-Robles (Texas A&M University), will improve diagnostic, classification and prognostic ability using state-of-the-art technology to characterize the B-cell lymphomas of Golden Retrievers. Through joint CHF/GRF funding, these investigators will identify aberrant epigenetic (DNA methylation) changes in lymphoma cells to develop biomarkers of each class of lymphoma, and in turn, identify new therapy targets for affected Golden Retrievers. More significantly, because DNA methylation changes occur so early in the process of cancer formation, these investigators hypothesize that they could serve as biomarkers of risk, allowing medicine or diet to prevent lymphoma in Golden Retrievers before it develops. Finally, they propose to fully phenotype cancer stem cells in lymphoma by surface markers and DNA methylation changes for the purpose of targeting those cells that feed cancer metastasis. Individually, each project advances a current frontier of research. By performing them in parallel, the discoveries made in each project can be combined, correlated and translated into biomarkers of risk, diagnosis and prognosis to advance the prevention and management of lymphoma in Golden Retrievers. Based on data from other species, these investigators expect epigenetic changes to occur across all breeds, and anticipate this study will open the door for a deeper understanding of cancer in all dogs.

1889-G: Developing Markers to Diagnose and Guide Cancer Treatment in Golden Retrievers Based on Newly Discovered Heritable and Acquired Mutations

Investigators/Institutions: Dr. Jaime F. Modiano, VMD, PhD, University of Minnesota; Dr. Matthew Breen, PhD, North Carolina State University; Dr. Kerstin Lindblad-Toh, PhD, Broad Institute of MIT and Harvard.

Total Grant Amount: \$1,061,137

Grant Period: June 1, 2013 – May 31, 2016

Lymphoma and hemangiosarcoma are major health problems in Golden Retrievers, causing both suffering and premature death. After years of collaboration, Dr. Jaime Modiano (University of Minnesota), Dr. Matthew Breen (North Carolina State University) and Dr. Kerstin Lindblad-Toh (Broad Institute of MIT and Harvard) have made several groundbreaking discoveries: 1) They have identified several regions of the genome that contain genetic heritable risk factors for lymphoma and hemangiosarcoma, and 2) They have identified somatic mutations in tumors that occur recurrently in both cancers, some of which are linked to duration of remission when treated with standard of care. These results indicate that a few heritable genetic risk factors account for as much as 50% of the risk for these cancers. These investigators now believe their findings offer the potential to develop strategies for risk assessment in individual dogs, as well as the potential to manage risk across the population as a whole. Further, these inherited risk factors and tumor mutations point to pathways that have been implicated in the pathogenesis of lymphoma and hemangiosarcoma, and thus should inform the development of targeted CHF/GRF therapies. Through joint CHF/GRF funding, these investigators will identify precise mutations for the heritable genetic risk factors and will validate markers (mutations) that can be used to determine risk at the heritable loci in a large, independent population of Golden Retrievers from the USA and from Europe. Their ultimate goal is to develop robust risk prediction tools, and hopefully, an accompanying DNA test. As has been the case with most genetic-based studies, data are expected to be transferable across all breeds, enabling the future search for cancer risk factors in all dogs to be rapid and focused. 🐾

thought I knew. When I get that feeling, it's like a little voice telling me to check my logic...I may have missed something."

Dr. Modiano:

"Rarely. I love what I do. If you let curiosity guide you through science, you find new answers at every turn. If you are impatient or set unattainable goals, like 'curing a disease in a set time frame,' then you will not be able to avoid frustration. The saying that 'Science moves at its own pace' is entirely true. Sometimes it is amazingly fast, but mostly, it is very incremental."

Dr. Bertocci:

"Yes. Given the iterative nature of research and the need to pass through failure before achieving success, it is very easy to become frustrated. Again it all goes back to the mindset and having proper expectations of the intensive time that must be devoted to making inroads toward tackling a research question. As Thomas Edison said, 'genius is 1% inspiration and 99% perspiration!'"

Do you consider moments of failure to be good or bad for biomedical research?

Dr. Lloyd:

"It's neither good nor bad...it's merely a natural part of good, solid, objective scientific endeavor. Science is logical and rational...frustration, anxiety, fear, even joy...they're the emotional components that make the science valuable to human and animal health."

Dr. Modiano:

"Getting unexpected answers is actually the single most significant driver of innovation in science. That is how paradigms change—when the unexpected result forces you to reconsider assumptions, you open your mind to discovery. "

Dr. Bertocci:

"Moments of failure are essential to biomedical research. That is how we learn about a topic area. Even a study that fails to uphold your hypothesis is important, as it provides a building block for future research and will often spark additional questions or lines of inquiry."

How do you advise your students or residents when they experience a round of failure in the lab?

Dr. Lloyd:

"Your last failure will always lead to your next success."

Dr. Modiano:

"I actually encourage them to tackle challenging experiments that will test them and their ability to question dogma early on so they can develop their intrinsic instinct of curiosity, and I give them the freedom to explore in a non-threatening environment. If they try a new experiment that they can't explain, they don't have to talk to me about it until they generate more data to help them understand what the experiment was trying to tell them. But I also encourage them to talk to me or other more senior members of the lab before they spend far too much time on trivial distractions. It is a delicate balance that is different for every student. However, developing a sense of why we do science and how to look at data early on in their career usually means they are better prepared to be independent (and successful) when they leave the lab."

Dr. Bertocci:

"It's all about setting expectations from the outset. Students coming into research are usually accustomed to a very structured environment where they receive a homework problem that is due on a given date, and they must complete it by that due date. If you study and attend class, you can achieve a positive outcome. Conducting research is very different in that it is an unstructured environment that you can't really put a neat box around. No matter how hard you study the field and how much time you devote to the effort, you may not answer your research question. Many students have difficulty making this transition to an unstructured environment that requires self-motivation and time management. Additionally, in research, no one path is the 'right' path. It is your job as a researcher to first define the need, the path or methods that are most likely to yield success, and then implement the methodology using an iterative approach where the problem is broken into tiny bite-sized pieces. I find that the most important point in advising students conducting research is to help them realize success occurs in very small increments." 🐾



Kudos

Excellent work from the **American German Shepherd Dog Charitable Foundation**, donating \$13,000 toward five research program areas!

Many thanks to **Rex Gibson** for a gift to benefit the health of all dogs!

Hats off to **Toby's Foundation** for their donation of \$12,500 for Grant 1615, bringing their total support for epilepsy research to \$37,500!

Many thanks to **Diveda Smith** for her contribution for hemangiosarcoma research.

More tails are wagging thanks to **Kathleen M. Harper** for her donation toward our Canine Athlete Initiative!

A special thanks to the **Great Pyrenees Club of America** for their sponsorship toward two research grants within our oncology (hemangiosarcoma and osteosarcoma) program areas, totaling \$5,000.

Dogs are living longer, healthier lives thanks to a gift from **Audrey McNiff**.

A special thanks to the **Bichon Frise Club of America** for their generous donation of \$2,500 toward Grant 1762 for research in the musculoskeletal program area.

Our sincere gratitude to **Westie Foundation of America** for their \$23,000 gift supporting five different research studies.



CHF Releases Regenerative Medicine Webinar

(cont. from page 4)

a heartbeat. This research is so important. I've had a lot of dogs with physical problems like this and it is great to see progress in treatment options."

"Regenerative medicine has extraordinary potential to change the way we treat both acute injury and chronic disease in dogs. Early evidence shows these techniques have real promise in helping canine patients recover from injury. Our job as a foundation is to fund research that will provide owners and veterinarians with solid, evidence-based medicine," said Dr. Shila Nordone, CHF Chief Scientific Officer. "We are pleased to partner with Dr. Canapp to share the emerging technology available to dog lovers throughout the world, and we look forward to a long-term research partnership with Dr. Canapp and collaborators to firmly establish best practices with regenerative medicine technology."

In 2012, CHF established the Canine Athlete Initiative (CAI), www.akcchf.org/canineathlete, which focuses on the health needs of active dogs. The CAI provides grants for cutting-edge research into orthopedic concerns, proper nutrition and conditioning to achieve maximum performance while preventing injury, and innovative rehabilitation techniques. The CAI also educates the public on the joys of participating in canine athletic events, as well as the value of preventive examinations and optimal nutrition to keep all dogs at the top of their game.

Dr. Canapp completed a combined DVM and Masters of Clinical Science in Surgery at Kansas State University. He is a Diplomate of the American College of Veterinary Surgeons and is certified in canine rehabilitation, stem cell therapy and tibial-plateau-leveling osteotomy or TPLO therapy. Dr. Canapp has been named a charter Diplomate in the newly recognized American College of Veterinary Sports Medicine and Rehabilitation (ACVSMR).

CHF webinars are released several times each year and feature key opinion leaders in the field of canine health. To download the free webinar "Regenerative Medicine for Canine Orthopedic Conditions," visit www.akcchf.org/webinars, or to make a donation to support this and other canine health research, visit www.akcchf.org/donate. 🐾

New Acorn Grants

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

Dermatology and Allergic Disease Program Area

01746-A: Discovery of the Genetic Cause of Lethal Acrodermatitis

Principal Investigator: Dr. Margret L. Casal, DVM, PhD

Institution: University of Pennsylvania

Total Grant Amount: \$12,000

Grant Period: 6/1/2013 – 5/31/2014

Project Abstract: Lethal acrodermatitis (LAD) is a rare but significant disease of Bull Terrier dogs in the United States, Canada and Europe. Affected dogs present with a highly arched palate and inflamed footpads that cause constant pain and predispose dogs to secondary illness. Earlier studies suggested that this disease is caused by a defect in zinc transport/metabolism, but subsequent studies failed to replicate those results. Dr. Casal's laboratory, in collaboration with Dr. Catherine André's laboratory, has sequenced almost all of the genes currently known to participate in zinc metabolism, but have not yet found a mutation. Drs. Casal and André will conduct a genome-wide association study to identify the gene(s) involved with this disease. Their goal is to develop a DNA test to assist breeders in identifying carriers of LAD to plan future breeding, and also potentially identifying a novel gene for a rare form of human acrodermatitis.

General Canine Health and Obesity Program Area

01943-A: In Support of Our Working Dogs: Medical Surveillance of Dogs Deployed to the World Trade Center and the Pentagon 2013-2014

Principal Investigator: Dr. Cynthia M. Otto, DVM PhD

Institution: University of Pennsylvania

Total Grant Amount: \$12,960

Grant Period: 6/1/2013 – 5/31/2014

Project Abstract: In its 12th year, the 9/11 Medical Surveillance Study continues to follow the surviving dogs. Of the initial group consisting of 95 deployed and 55 non-deployed search and rescue dogs, nine deployed dogs and 12 control dogs remain. As these dogs age, Dr. Otto will be placing emphasis on health issues occurring in later years of life. Dr. Otto's goal is to obtain a complete picture of causes of death and incidences of cancer so that the long-term impact of September 11 will become visible. This vital



information will provide the most inclusive understanding of the impact of the deployment on long-term canine health, and will be critical to the future tactics employed in search & rescue missions.

Neurology Program Area

01928-A: A Novel Technique to Reveal the Multiple Genes Associated with Canine Epileptoid Cramping Syndrome

Principal Investigator: Dr. Gary S. Johnson, DVM, PhD

Institution: University of Missouri, Columbia

Total Grant Amount: \$12,960

Grant Period: 6/1/2013 – 5/31/2014

Project Abstract: Canine epileptoid cramping syndrome (CECS) is a common episodic movement disorder in Border Terriers. The episodes are unpleasant and stressful to both the dogs and their owners. Previous studies based on the premise that most or all of the CECS results from a single genetic cause have failed. Variability in the frequency, duration and age-at-onset of the CECS episodes support the suspicion that CECS may be a group of diseases rather than one distinct disease. Using well-phenotyped dogs, Dr. Johnson will employ a novel genetic analysis, whole genome alignment, to reveal the genes associated with CECS. The purpose of Dr. Johnson's research is to create a DNA marker test to assist breeders in their efforts to eliminate or mitigate the risk of CECS in future generations of Border Terriers.

Oncology Program Area

01929-A: Arginine Dependence: Identification of Cancer's Achilles Heel

Principal Investigator: Dr. Carlos O. Rodriguez Jr, DVM, PhD

Institution: University of California, Davis

Total Grant Amount: \$9,720

Grant Period: 5/1/2013 – 10/31/2013

Program Abstract: Arginine is a nonessential amino acid. This means that some normal cells in the body can make their own arginine and once they make it, put it into circulation for other cells of the body to use for such purposes as making proteins. Interestingly, it has been



shown that many tumor cells cannot make their own arginine and thus are dependent on normal cells in the body to make it for them. The reason for this dependence is that these cancer cells have very low or no quantities of the enzyme machinery needed to make their own arginine. This led to the belief that cancer cells may be sensitive to the depletion of arginine and the development of an arginine-destroying tumor-targeting enzyme: pegylated arginine deiminase (PEGADI). PEGADI has entered clinical trials in humans and has proven clinical utility in the treatment of

hepatocellular carcinoma and melanoma and is currently being evaluated in prostate carcinoma. The purpose of Dr. Rodriguez's study is to determine the status of arginine-synthetic enzyme in archived biopsy specimens of canine melanoma, lymphoma and bladder/prostate cancer. The data obtained from this study will determine which canine cancers lack the arginine-synthetic enzymes and will inform future clinical trials in dogs utilizing PEGADI to target the cancers' Achilles heels: arginine dependence. 🐾



Weekend Companion Turned Seizure Alert Dog and Dock Diving Champ *(cont. from page 3)*

And so Team Brainwaves was born. Catherine and Corey participate and compete in all three dock diving events: big air, where the dog jumps out into a pool to retrieve a bumper and the length of his jump off the dock is recorded; speed retrieve, a timed event where dogs retrieve a bumper at the far end of a pool; and extreme vertical, where the dog jumps vertically into the air and the height of his jump is measured. Catherine is particularly proud of their accomplishments in extreme vertical. Catherine taught Corey how to do this event and they have been working to increase Corey's jump height. Their personal best is currently 5'6". Catherine is one of the few youth handlers to participate in this event. In fact, she and Corey have been so successful that they have been invited to the DockDogs World Championships to participate in extreme vertical.

While Catherine continues to serve as Corey's exclusive handler at all dock diving events, the whole family participates in making sure Corey is healthy and able to compete in his events. "In addition to lots of exposure to water, there's a lot of dry land conditioning," said Robin. "Adam, Catherine's dad, takes Corey on regular runs. I take Corey to a local dog park with hills. And everyone spends a lot of time playing fetch with Corey, which helps in the speed retrieve competitions." Corey also recently lost five pounds in order to keep him as trim and healthy as possible for his extreme vertical competition. Corey is seen regularly by a veterinarian, but besides a few broken nails, Corey has remained injury free.

Maintaining the overall health of an active dog is a priority for CHF. CHF understands that active dogs may participate in events like dock diving, agility or field

trials, but they may also be a loyal companion on a morning run or a best friend who never tires playing fetch. Through the Canine Athlete Initiative (CAI), CHF is leading the way in the field of canine sports medicine research, ensuring that dogs are able to stay healthy and active through proper conditioning, diet, exercise and if necessary, rehabilitation. Catherine says the best part of participating in dock diving events is having the opportunity to "see your dog having fun. I don't like seeing dogs left at home, not getting exercise."

Robin marvels at the person Catherine has become. "Before Corey came into our lives, Catherine was quiet and felt different because of her epilepsy. Dock diving has opened Catherine up and it's been a confidence builder." That confidence, according to Robin, has translated to school and has helped Catherine become a leader in local dock diving circles. "Catherine will speak with anyone about dock diving. In addition to participating in events, she loves to volunteer, and she's helped teach others about the sport." Catherine and Corey were recently voted "Most Inspiring" team by the entire dock diving community, and Catherine was voted Youth Handler of the Year for 2011 and 2012 by Dixie Dock Dogs.

Catherine, according to Robin, has been seizure-free for nearly a year. Corey has provided the Hentz family with so much more than peace-of-mind. They've not only added a new member to their family, but they've been able to watch Catherine become independent, and they've found a routine of normalcy that benefits everyone. When asked what Corey means to her, Catherine simply responds, "I love him. He's my best friend." 🐾



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