Happy New Year from the AKC Canine Health Foundation! Together, we are advancing the health of all dogs and their owners. Because of your generous contributions, the Foundation has increased its funding of research grants and educational programs for 2012. We are announcing 21 new Oak grants. This new research will advance our understanding of canine cancers, lymphoma, melanoma, and osteosarcoma, and will expand our understanding of other canine diseases such as epilepsy, liver disease, dermatitis, and inflammatory diseases of the canine respiratory tract.

Samantha Wright, CHF’s Program Manager, will be contacting Health Liaisons to assist you in understanding the new grants and encouraging support. The details of all the new grants are listed on page 6.

With the New Year, we are energized as we move forward with the recently announced joint venture of the AKC Canine Health Foundation (CHF) and the Golden Retriever Foundation (GRF) to fund a $1 million canine cancer research project by 2013. The Foundations are partnering to solicit, review and ultimately select a canine cancer research project focusing on golden retrievers and potentially benefiting the health of all dogs.

“Cancer is the number one cause of death in golden retrievers, so it’s important for us to support this type of research,” said David Kinghorn, GRF past president. CHF is very excited to partner with GRF in this large funding initiative that will help the golden retrievers and all dogs live longer, healthier lives.

2012 is the time to renew our commitment to clipping weight circles and sending them into Nestlé Purina. Parent Club Partnership Program (PCPP) participants who are proactive and clip the weight circles off Purina dog food bags and send them in are directly benefiting research to (continued on page 9)
Intervertebral Disk Disease (IVDD)

Overview of intervertebral disk disease

Intervertebral disk disease is degeneration and protrusion of the intervertebral disk that results in compression of the spinal cord, spinal nerve, and/or nerve root. It is a common cause of spinal cord disease in dogs.

The intervertebral discs (the cushion that resides in the space between adjacent spinal vertebrae) are subject to a number of degenerative conditions and forces that predispose them to bulge or rupture over time. This rupture leads to two types of damage to the spinal cord, compression and concussion.

Compression is the physical pressure exerted over time against the spinal cord which leads to slow degeneration and loss of neurons (nerve cells). Intervertebral disc rupture that is purely compressive usually begins slowly and leads to gradual worsening of neurologic function. Contraction force is the physical damage caused by a rapidly extruded disc impacting the spinal cord causing profound swelling and degeneration and loss of neurons. Predisposing forces are usually rapidly progressive and have an acute onset. Most intervertebral disc ruptures are a combination of compressive and concussive forces that lead to the rapid degeneration of nervous tissue in the spinal cord.

Breeds at risk

Chondrodystrophic (dwarfed) breeds of dogs with a short, stout appearance—ie: Dachshund, Beagle, Shih Tzu, Lhasa Apsos, and Pekingese—are most commonly affected. Other chondrodystrophic breeds that may be affected by IVDD include Gorgis, Cocker Spaniels, Pekingese, Shih Tzu and Poodles. Nonchondrodystrophic breeds that are commonly affected by IVDD include the German Shepherd, Labrador Retriever and Doberman Pinschers.

Obese dogs of predisposed breeds are especially likely to suffer from IVDD.

After researching a breed of dog to add to her family, Helen Tjader decided on Cardigan Welsh Corgis. Her greatest concern about possible genetic conditions that affect this breed was hip dysplasia. None of her research indicated that Cardigan Welsh Corgis were at high risk of developing IVDD. Ieuan was a happy dog, full of pep. He was never overweight and was always in excellent condition with good muscle tone, facts that were noted by every veterinarian Ieuan visited over the years.

Shortly after Ieuan’s 7th birthday, he suffered a ruptured disc in his back and was diagnosed with IVDD. Ieuan underwent successful surgery at Tufts University Hospital in North Grafton, MA and Ms. Tjader followed the post-op recovery plan set out by the veterinary surgeon. Ieuan improved and recovered nearly all function in his hind limbs with only a slight, occasional ‘knocking’ in one back paw. In an effort to prevent injury, Ms. Tjader had always made sure Ieuan followed the advice of the breeder and veterinarians to avoid stairs. The only stairs Ieuan encountered regularly were the two leading into Ms. Tjader’s home—stairs that the veterinarian, after Ieuan was well recovered—indicated would be ok for him to handle. Unfortunately, one evening Ieuan came up the two stairs into Ms. Tjader’s home and was suddenly in pain. After consultation with an emergency room veterinarian and Ieuan’s regular veterinarian, Ms. Tjader declined more surgery and opted instead to begin a slow and cautious recovery plan similar to what Ieuan had experienced a few months earlier. Sadly, Ieuan’s pain grew much worse over the weekend and after returning to the emergency veterinarian, it was agreed that there was no hope for recovery.

(continued on page 3)

Symptoms

The observable signs of IVDD vary. While the following list of symptoms associated with IVDD is not exhaustive, affected dogs may show one or more of the following signs which can be sudden, intermittent or gradual in onset:

- Neck and/or back pain and stiffness (reluctance to move the neck and head)
- Limped stance
- Abdominal tenderness or tenseness
- Arched back (hunched posture, pelvic girdle abnormally kyphotic)
- Sensitivity to touch (possible aggression)
- Weakness, stiffness, and/or sensitivity to movement (voluntary or unexpected)
- Impaired, incomplete or inappropriate urination
- Laminar and/or paralysis in one or more limbs
- Dragging one or more legs when walking
- “Racing over” or “knuckling over” when walking or standing
- Stilted gait; tentative gait
- Resistance to rise and/or collapse
- Tremors, trembling, shaking
- Lack of coordination (“ataxia”)
- Abnormal reflexes

Acute traumatic injury is not the same as IVDD, although the symptoms can be very similar. IVDD involves a degenerative process and does not result merely from sudden trauma, although sudden trauma can cause rupture or herniation of an intervertebral disk in a dog whose disks already are weakened by IVDD.

Treatment

Definitive diagnosis of IVDD is made by a veterinarian through physical exam and x-rays. In less severe cases medication may be provided for pain relief with a combination of crate rest. If IVDD has progressed and the dog has ruptured a disc, surgery is the normal course of treatment, along with pain medication and crate rest. In any case, it is recommended that if your dog seems to be suffering from IVDD symptoms a veterinarian is consulted to determine the best course of treatment in order to help the dog live comfortably and free from pain.

In less severe cases medication may be provided for pain relief with a combination of crate rest. If IVDD has progressed and the dog has ruptured a disc, surgery is the normal course of treatment, along with pain medication and crate rest. In any case, it is recommended that if your dog seems to be suffering from IVDD symptoms a veterinarian is consulted to determine the best course of treatment in order to help the dog live comfortably and free from pain.

References

The Merck Veterinary Manual

American College of Veterinary Surgeons (ACVS)

WigglesLess

PetWave

http://www.acvs.org/AnimalOwners/

http://www.bootcamp.com/

http://www.wiggleless.com/

http://www.petswave.com/

http://www.intervertebral-disc-disease.com/

http://www.intervertebral-disc-disease.com/

http://www.symptoms.aspx

Ms. Tjader hopes that by sharing Ieuan’s story, more dog owners will understand that while keeping your dog fit and healthy are important steps, awareness of genetic conditions like IVDD is critical in order to seek appropriate medical care and consultation. As Ms. Tjader discovered, IVDD can affect many different breeds of dogs and canine health alone is not always an accurate indicator of the presence of a degenerative, genetic disease. “Ieuan was a wonderful dog,” said Ms. Tjader, “above and beyond all our expectations as a pet and I will never forget him.”

Discoveries WINTER 2011
WHAT IS POSTURE AND WHY SHOULD WE CARE ABOUT IT?

This article is the first in a four part series. This series is being contributed by Dr. Karen Gellman, DVM, PhD and Dr. Judith M. Shoemaker, DVM.

Dr. Gellman provides postural rehabilitation continuing education for veterinarians in addition to a variety of other special clinical skills. She can be reached at equinesportsmed@mac.com.

When we think about the activities of our dogs usually we picture their play, their “jobs,” or their quiet repose on our laps or couch. However, in all animals the ability to stand quietly at rest is critically important for health and soundness. Many dog owners don’t realize that the reason their dogs flop down on the ground as soon as they come to rest may be that they have postural problems that make it uncomfortable or tiring to stand up for very long. In some ways, standing is harder than moving. Think about riding a bicycle—the faster you go, the easier it gets. We have many mechanisms for balance in motion that are not available to us for standing. What does it take to just stand up? A lot, actually!

Running animals, including humans, have multiple centers in the brain that are devoted to postural control. Their job is to coordinate signals from many parts of the body about where the limbs, trunk, and head are located in space, relative to each other, and to the ground. It’s like a big air traffic control center where unconscious decisions are made about standing and moving based upon information from the feet, the joints, the muscles, the inner ear, the eyes, and the jaw. The information is coordinated, analyzed and then sent to the movement centers of the brain to generate stance or gait. Many of us know that when someone has an inner ear infection their balance and coordination can be affected, but some of the other inputs for stance and balance are not quite as widely known. For instance, we are highly dependent upon our eyes to maintain equilibrium. This is why some people and dogs can getcar sick when riding in the back seat. Under most circumstances, the eyes can see level surfaces that give visual clues to the terrain being traveled. But when watching scenery rush by from a car, the body perceives motion visually and is not able to register the ground surface, resulting in queasiness from mismatched information.

Much of the postural information the body uses is related to gravity or “knowing where down is.” It seems pretty simple to know where down is, but when it goes wrong big trouble ensues! The postural control system is a complex system in which small changes to the input can have far reaching changes in the output. For instance, you can turn off a large part of your own postural stability by clenching your hands in a fist with the tips of your fingers tucked in against your thumb. Get a pal and try this. Stand neutrally, with your hands at your sides in a fist and then ask a friend to try and push you off balance from front or behind. Feel your body’s responses to resisting the external forces and think about which muscles you are using. Now switch your hand position so that the pads of your fingers are flat on the heel of your palm. Try again to resist your friend’s attempts to push you over. Again, feel your body’s response. Quite different! In the second instance you are more stable, able to resist the force of being pushed with very little effort.

This is an example of how our “fore-feet” are programmed to give information to our brain about the ground surface. If we had four legs and the pads of our front toes were stretched flat on the ground, like the flat fingered hand, our brain would conclude that we had contacted a ground surface that was appropriate to support our bodies. This sets off a cascade of reflexes to enable standing: the extensor muscles of the leg switch on, making it straight to stand on; the trunk muscles switch on, holding the trunk and spine firm; and the head is held in an appropriate position for standing; our stance stabilizers are at work.

Why are all animals, including humans, posturally programmed to stand up straight? Because it is the most economical way to stand. Dogs, like humans and horses, are large, fast animals compared with most vertebrates. Comparative biomechanics has shown that the larger an animal is, the lower its metabolic rate. This means that large animals have less metabolic energy per pound of body weight to devote to body maintenance. Large, fast animals have solved this “problem” by minimizing the metabolic energy required to support their own weight through anatomical adaptations. They have long, straight legs that support body weight in a vertical column. When the limbs are in position correctly—like the legs of a table—the only muscles working are slow twitch postural muscles, which are strategically placed to stabilize joints without a lot of costly energy. However, when the legs are misplaced, or are very crooked, many muscles must be recruited to keep the dog standing.

Normal neutral posture in dogs is like a table, with a limb at each corner. Dog show competitors are very familiar with this posture; it is “stacking” the dog for the judge to examine, with (continued on page 5)
Focus on Research

Below is a list of the new OAK research grants approved for funding in September of 2011. These research projects commenced in 2012. Visit our website at www.akcchf.org for more detailed information about any of our research grants and to make a donation.

Grant 1557: High-Resolution Immunohistochemistry of Histocytic Malignancies and Development of a Targeted Assay to Screen for Expression Level Changes
Dr. Matthew Breen, PhD; North Carolina State University

PROJECT GOAL: The goal of this project is to narrow down the search for genes and proteins that play a key role in Histocytic Malignancies and thus move a step closer to developing targeted therapies for canine patients diagnosed with this devastating disease.

Grant 1559: Evaluation ofGS-9739 in Canine Cutaneous lymphoma
Dr. Douglas H Thamm, VMD; Colorado State University

PROJECT GOAL: this clinical trial aims to determine if the novel cancer drug GS-9739 is effective in fighting canine cutaneous T cell lymphoma.

Grant 1572: Targeting Neutrophil Activation to Develop Novel Drugs to Treat Respiratory Tract Inflammation in Dogs
Dr. Samuel L Jones, DVM, PhD; North Carolina State University

PROJECT GOAL: this research group has developed a new compound called the AK4 peptide. The goal of the project is to determine if AK4 peptide can be used to treat serious inflammatory diseases of the canine respiratory tract.

Grant 1577: Fine Mapping of Loci for Transitional Cell Carcinoma in the Scottish Terrier, West Highland White Terrier, and Shetland Sheepdog
Dr. Elaine Ottendere, PhD; National Human Genome Research Institute

PROJECT GOAL: The goal of this project is to determine the region of canine transitional cell carcinoma, a type of bladder cancer, in three breeds of dogs with higher risk for the disease.

Grant 1584: Confirmation of Cylindrical Granuloma Deficiency in Dogs
Dr. Dominique J. Seiffert, DVM, PhD; Western University of Health Sciences

PROJECT GOAL: The goal of this project is to understand the relationship between genetics, body characteristics and Canine Cylindrical Granuloma Deficiency (CGD) in dogs. Identifying which dogs are predisposed to the disease is a crucial first step to reducing risk or delaying onset of CGD.

Grant 1585: Phase I Study of Involved-Field Radiotherapy (IFRT) for Advanced Stage Canine Lymphoma
Dr. Michael Deveau, DVM, MS; Texas A&M University

PROJECT GOAL: The goal of this Phase I clinical trial is to determine the safety of treating canine lymphoma with Involved-Field Radiotherapy using helical tomotherapy. This treatment is being used in human medicine and needs to be evaluated for use in veterinary medicine.

Grant 1586: Genome Wide Association Study (GWAS) for Susceptibility to Adenitis in Havanesse Dogs
Dr. Sandra N. Koch, DVM; University of Minnesota

PROJECT GOAL: The ultimate goal of this study is to develop DNA-based tests for susceptibility to the inflammatory skin disease Adenitis in canines. These tests could be used for diagnostic confirmation; in breeding decisions to help reduce the incidence of the disease; and potentially develop more specific therapies for the disorder.

Grant 1591: Discovery of Genomic Susceptibility loci in Atopic Dermatitis using a Genome-Wide Association Study in West Highland White Terriers
Dr. Ratafia J Olby, VethMB, PhD; North Carolina State University

PROJECT GOAL: this research team will conduct a genome wide association study testing for Atopic Dermatitis in Westies to identify chromosomal regions associated with the disease. The long-term goal is to develop genetic tests that can be used by breeders to decrease the prevalence of this condition.

Grant 1592: Investigation into the Genetics of Scottish Terrier Camp: Sequencing of Associated Chromosomal Regions
Dr. Ratafia J Olby, VethMB, PhD; North Carolina State University

PROJECT GOAL: following up on previous research funded by OAK, the goal of this project is to use deep sequencing techniques to identify genetic mutations associated with Scottie camp.

Grant 1594: Genetic Analysis of Familial Osteosarcoma in the Bassett Hound
Dr. Robert E. Johnson, DVM, PhD; Iowa State University

PROJECT GOAL: The purpose of this study is to develop a test that will help breeders identify dogs with a high incidence of osteosarcoma.

Grant 1595: Identification of Genomic Susceptibility loci in Atopic Dermatitis using a Genome-Wide Association Study in Scottish Terriers
Dr. Kurt Zimmerman, DVM, PhD; Virginia-Maryland Regional College of Veterinary Medicine

PROJECT GOAL: this research group will use a combination of functional and genetic tests to try understand why Scottish Terriers are predisposed to developing atypical Hyperadrenocorticism and how best to treat and screen for the disorder.

Grant 1601: Uncovering the Initial Step Associated with the Development of Cataracts in West Highland White Terriers
Dr. Peter A.J. Leegwater, PhD; University of Utrecht

PROJECT GOAL: Intrathecal porcine ciliary protein is a liver disease that is hereditary in Irish Wolfhounds. The goal of this project is to identify the genes responsible for the disorder and develop genetic tests that will help breeders reduce the incidence of the disease.

Grant 1602: Longitudinal Study Investigating the Progression and Pathogenesis of Atypical Hyperadrenocorticism in Scottish Terriers
Dr. N. L. Sivasubramaniam, DVM; University of Utrecht

PROJECT GOAL: this research group will evaluate the use of the drug Cyproheptadine to prevent or treat this complication in hopes of improving the veterinary ophthalmologists options for restoring long-term vision.

Grant 1615: Identification of Genomic Susceptibility loci in Atypical Hyperadrenocorticism in Scottish Terriers
Dr. Ned E. Patterson, DVM, PhD; University of Minnesota

PROJECT GOAL: this study is to evaluate promising biomarkers for canine hyperadrenocorticism and develop a DNA-based test that will help breeders identify dogs with high risk of developing the disease.

Grant 1620: Clinical and Laboratory Safety Studies of TCR Peptides in Canine Atopic Dermatitis
Dr. Daniel A. Gingerich, DVM; ImuLan Bio Therapeutics, LLC

PROJECT GOAL: The purpose of this study is to develop a test for canine atopic dermatitis.

Grant 1621: Identification of Genomic Susceptibility loci in Atypical Hyperadrenocorticism in Scottish Terriers
Dr. Heather Chandler, PhD; Ohio State University

PROJECT GOAL: the goal of this study is to develop a test that will help breeders identify dogs with a high risk of developing the disease.

Grant 1651: Serum Antibody Response to vaccination in Dogs with Idiopathic Epilepsy
Dr. Stephen A Johnston, PhD; Iowa State University

PROJECT GOAL: The purpose of this study is to evaluate promising biomarkers for canine atopic dermatitis and develop a DNA-based test that will help breeders identify dogs with high risk of developing the disease.

Grant 1657: Defining New Thymus Lymphocytes for Osteosarcoma through Genome Wide Screening and Comparative Oncology
Dr. Carl Walkley; St. Vincent’s Institute of Medical Research

PROJECT GOAL: This research group will use an innovative genetic approach that enables genome-wide discovery of the genetic variations in Greyhounds to assess tumor risk for osteosarcoma. Findings on the genetic risk for osteosarcoma would lead to rapid development of therapies and clinical trials for dogs with translation to human medicine.
Spotlight on Genetic Tests: Musladin-Leuke Syndrome in the Beagle

Musladin-Leuke Syndrome (MLS), previously known as Chinese Beagle Syndrome, is a genetic disease in Beagles that affects the development and structure of connective tissue. It involves multiple body systems, including bone, heart, skin and muscle. The disease resembles human stiff skin syndrome. Beagles with MLS are born with several defects characterized by short outer toes on the front and sometimes all four feet, high set creased ears on a flat skull with extra cartilage in them, slant narrowed eyes and very thick tight skin with little scruff. Such pups are small in stature with a very stiff gait. Seizures have also been noted in affected dogs.

Breeders worked with Dr. Mark Neff and provided the necessary DNA samples for his team to identify the genetic mutation responsible for Musladin-Leuke Syndrome as well as document the phenotypic presentation of the disease. The researchers also developed a genetic test for the mutation.

The mode of inheritance for Musladin-Leuke Syndrome is homozygous recessive. When breeders or owners submit a sample for testing, they will receive results identifying their dog in one of these three categories:

CLEAR: the dog has two copies of the normal gene and will neither develop MLS, nor pass a copy of the MLS gene mutation to any of its offspring.

CARRIER: the dog has one copy of the normal gene and one copy of the mutant gene that causes MLS. It will not develop MLS but will pass on the mutant gene to 50% (on average) of its offspring.

AFFECTED: the dog has two copies of the mutation and is affected with MLS.

Breeders can reduce the incidence of MLS by testing their breeding stock and making breeding decisions that avoid producing offspring with two copies of the mutation. The test can also be used by Beagle owners to confirm diagnosis if there is a question about whether a dog is affected.

To order the test kit visit the University of California, Davis veterinary Genetics Laboratory at http://www.vgl.ucdavis.edu/services/MLS.php.

Taken from the Musladin-Leuke Syndrome webpage maintained by Salenko Beagles in the UK (http://www.salenko.co.uk/MLS/) and the University of California, Davis Veterinary Genetics Laboratory (http://www.vgl.ucdavis.edu/services/MLS.php).
Champion of Canine Health: Joye Neff

Since she was little, Joye Neff has grown up with dogs. It wasn’t until 1985, though, when she got her first Bernese Mountain Dog, that her love for the breed was fully recognized. After her best friend got a Berner, she decided to go to the same breeder and it was love at first sight. Joye’s love for the breed remains true today and she devotes her time and energy supporting canine health research.

Joye has been called a fundraising “guru” for her success in helping raise money for canine health, education, and rescue. Those familiar with Joye appreciate her passion to help the Berner breed. Through this passion, she has supported the AKC Canine Health Foundation and the club for their DAF.

Each year, Joye helps raise money at the Bernese club specialty. She has served as co-chair of their health auction and is also on the Health Auction permanent committee each year. At the specialty, she collects items for the auction donated by vendors who are sympathetic to the cause. Joye also helps Pat Long, owner of Berner-L, with Longshots Photography to raise money for the breed. Over the past two years, Joye has raised more than $89,000 for health projects benefiting Bernese Mountain Dogs.

Most recently, Joye helped raise over $58,000 for Histioctic Sarcoma (HS), formerly known as Malignant Histiocytosis (MH). Joye achieved 100% participation from every regional club in the USA, and donations from the Bernese Mountain Dog Club of America and the Bernese Mountain Dog Club of Canada. Additionally, two regional clubs in Canada, members of the Australian Club, and the BMD Club of Great Britain also made donations. Histio is a type of cancer common in the breed, and one that often strikes them young. Joye has lost one Berner at 4 years of age and a second at 7 years old. According to Joye, if you have been in the breed longer than a year, you have either been directly affected by it, or you know someone who has lost a dog to Histio.

Joye lives in Pittsburg, PA with her husband, Bill; her first female Berner, Breeze; and their German Shorthaired Pointer, Will.

Kudos

Outstanding work from the Westie Genome Barks Podcast Series.

Mr. George Pappas expressed his support by donating $5,000 towards the Berner Lover DAF for research to benefit the breed.

Kudos

Outstanding work from the Westie Foundation of America, Inc. for supporting Grant 1663-A for $3,000.00.

Westminster Kennel Club Dog Show Poster Will Benefit the AKC Canine Health Foundation

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If you would like assistance or have questions please call us at 1-888-682-9696.
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What is Posture and Why Should We Care about it?

Musladin-Leuke Syndrome in the Beagle

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