

## **Canine Health Conference Features Research Updates**

The AKC Canine Health Foundation held its 2015 National Parent Club Canine Health Conference sponsored by Nestle Purina PetCare August 7-9 in St. Louis, where specialists from around the country brought their audience up to date on advances in research to improve lives of our dogs. Just a few highlights:

**Cognitive Decline in Senior Dogs:** Scientists know that the brain's use of glucose, its main fuel, becomes less efficient starting around age 6 in dogs. As the brain continues to age, some dogs may develop problems resembling human dementia and show signs such as house soiling, phobias, vocalizing, and reduced activity, play, interest in walks, and response to their human family. One speaker noted that brain scans of senior dogs with cognitive problems resemble those of early Alzheimer's disease in humans. Because the brain also can use ketones (products of fat metabolism) as fuel, researchers at the Nestle Research Center studied whether medium chain triglycerides (MCTs) in the diet of aging dogs could improve cognition. MCTs are found in foods such as coconut oil, and unlike most fats, they are converted by the body into ketones regardless of the amount of carbohydrate in the diet. In a study of 12 dogs fed MCTs and 12 "control" dogs, dogs eating the MCT-supplemented diet performed better on cognitive tests than those fed the same diet without MCTs. While research continues, Purina now offers a new Pro Plan "Bright Mind" food for senior dogs.

**Regenerative Medicine for Sporting Injuries:** You may have seen Dr. Chris Zink's presentation at the 2015 PCA Foundation Seminar in Salisbury, where she discussed the exciting new field of regenerative medicine to heal injuries in our performance dogs (see article in the next newsletter about her talk on this work and the whether-when-how of spay/neuter). Scientists have achieved promising results using adult stem cells, which can generate many different tissues, augmented by platelet rich plasma, which has proteins that promote healing and growth factors that help stem cells do their job. Conference speakers illustrated how this work is advancing for treatment of tendon injuries such as supraspinatus tendinopathy (akin to rotator cuff injuries) and potentially treating more complex problems involving joints, such as the osteoarthritis of aging.

**Cancer:** Several speakers talked about frontiers of technology that are revolutionizing the fight against cancer. One, for example, reported on promising efforts using an altered virus to attack tumor cells in canine osteosarcoma. Another studying canine lymphoma discussed epigenetics, how our experiences may affect our DNA. His team is studying the role of DNA "methylation," which affects whether a gene is actually used, and how methylation changes resulting from influences such as environmental toxins can promote genesis of cancer. Though they can't change underlying genetics, researchers think they can learn how to correct epigenetic "disregulations" that put a cell on the road to malignancy. Speakers emphasized that no single treatment can be expected to cure every cancer and that therapy in both humans and dogs will increasingly involve personalized medicine targeting an individual's unique cancer.

**Bloat/Torsion:** Scientists supported by the AKC CHF Bloat Initiative are working to end the nightmare of bloat/torsion by unraveling its causes, and PCAF has donated \$22,500 to help fund this important work. Because incidence of bloat varies among breeds and families within a breed, suggesting a genetic component, researchers are searching for genes that may increase

risk. Another group assessing risk recently found that the gastrohepatic ligament supporting the stomach is longer (perhaps allowing more motion) in breeds prone to bloat compared with breeds considered "not bloat-prone." While this finding may help explain breed predispositions, why does an individual dog bloat? Researchers are now looking at stomach motility, changes in gut microbial populations caused by environmental influences such as stress, and other factors that could play a role. Speaker Dr. Elizabeth Rozanski emphasized that breeders of large dogs prone to bloat can make a big difference **now** by educating puppy buyers about the possibility of gastropexy and to recognize what is happening and take fast action if their dog ever bloats, as modern bloat/torsion treatment has vastly improved survival in dogs treated before damage is too extensive. Dr. Rozanski has graciously agreed to review bloat/torsion information PCAF will prepare and make available to Standard Poodles breeders through PCA's affiliate clubs.

**Trouble in Microbe City:** Several speakers, including those who discussed advances in research on inflammatory bowel disease, allergies and atopic dermatitis, emphasized the growing understanding of our normal community of bacteria that live in the gut and on our skin and play a critical role in protecting us from disease. As one speaker said, "Some of my best friends are germs." This "normal flora" varies from person to person (maybe why some people taste better to mosquitoes) and from dog to dog, and scientists are teasing out changes (and causes) in normal flora that can contribute to many health issues. Remedies already include such a simple step as using probiotics during and after courses of antibiotics, which aim to kill bacteria causing infections but can also kill friendly gut and skin microbes.

**Degenerative Myelopathy:** Researchers studying DM have begun joining forces with scientists studying ALS (Lou Gehrig's Disease) in humans, as research has shown that the two conditions have similar pathology. They are making headway in their quest for "biomarkers" that will allow them to definitely diagnose DM, which initially can resemble many other spinal issues, before a dog dies and diagnosis has to be confirmed at autopsy. Although DM cannot currently be cured, the researchers will soon begin a preliminary clinical trial exploring use of "antisense oligonucleotides" to stop excess production of an enzyme that accumulates to cause DM. Although a DNA test is available for the DM mutation, speaker Dr. Joan Coates emphasized that this mutation is very common, and many dogs carry two copies of the mutation, including large percentages in some breeds that have no cases of DM. So the disorder seems to involve additional genes (and possibly other factors) now being investigated. Test results showing two copies of the DM mutation do not mean a dog is "affected," just that it's at increased risk if DM is seen in that breed. When asked how to use this test for Poodles, in which DM is reported but uncommon, leading geneticists suggested testing for the mutation only if a dog has close relatives with autopsy-confirmed DM, suggesting that other involved genes, as yet unidentified, may be more common in that line.

**Idiopathic Epilepsy:** Speakers discussed research on new drugs for treatment and ways to predict seizures in a dog whose epilepsy was under control with drugs so it could be treated only when a seizure was imminent, helping avoid drug side effects. Under a CHF grant, Canine Epilepsy Research Consortium researchers have been comparing genome scans of non-epileptic dogs and dogs with epilepsy, with results so far pointing to polygenic inheritance, where a number of genes having a small effect add up to the tipping point, probably combined with other factors such as environment, to cause disease. As more dogs are added to the study, and as DNA technology continues to advance, the researchers hope they can identify key genes

involved. Another presenter spoke of the "bottom line" goal of quality of life for owners and dogs with epilepsy, emphasizing work under way to identify environmental factors such as diet that may help control frequency and severity of seizures.

Submitted by Pat Forsyth for the PCA Foundation