

## **AKC CANINE HEALTH FOUNDATION NATIONAL PARENT CLUB HEALTH CONFERENCE SUMMARY**

The arch in St. Louis is known as the "Gateway to the West". On August 12, 2011, when I attended the AKC Canine Health Foundation Parent Club meeting, it should have been renamed the "Gateway to the Future". I had the privilege of representing the BCCA at this meeting where researchers from across the nation presented the results of their investigations designed to advance the health of our canine companions. There are absolutely amazing things occurring in animal health, but the word that kept cropping up throughout the weekend was "translational relevance". This refers to is the proliferation of discoveries that are occurring in canines that can be translated into advances in human medicine. We learned that dogs are one of the best genetic matches for human comparison, much better than the typical lab rat, and that the canine world needs to capitalize on this to be able to tap financial resources from human medicine which are more abundant.

The conference began with a presentation of the history of veterinary medicine and canine research by Dr. Donald Smith of Cornell. He made the point that veterinary medicine had its roots in equine care as horses and mules were the primary form of transportation, and were the mainstay of the farm and the agrarian economy. Most of the research that was performed in the early 20<sup>th</sup> century concerned diseases of livestock poultry and horses. The companion animals at that stage were essentially considered expendable. Physicians on the other hand used dogs to study comparative physiology and pathology, and to develop surgical techniques for humans. It wasn't until after WWII that the domestic canine began to receive better veterinary attention, and it wasn't until the 1960's that clinical specialties and board certifications began. The irony is that although 80% of veterinarians are involved in the treatment of companion animals, 80% of the government sponsored research goes to diseases of production and farm animals, and to public health. It has only been in the last two decades that major corporations, foundations, and individual donors have begun to devote resources for companion animal health. Recent advances in molecular biology, genetics, and the mapping of the canine and human genome have spurred a quantum leap in both prevention of disease, and therapy for it. The recognition of the similarity between canine and human conditions has been an outgrowth of this progress, and what has emerged is a better understanding of why canine research is so critical. In fact, Dr. Smith employed the term "Zooeyia" to describe the benefits that canines bestow on humans.

Dr. Mark Neff was the next presenter, and he had a unique outlook on the interaction of human vs. canine as he discussed the links in the neuronal networks that create mental illness and how there are parallels in the canine world. His theme was understanding the inherited predispositions for various

behaviors in the canine world, such as herding, will at some point be useful in finding the genetic connections for maladaptive behaviors in humans.

Nestle Purina was the sponsor of this event, and their researchers presented information with regard to nutritional ways of enhancing the immune system. They have developed a probiotic formula called "FortiFlora" which their research suggests will enhance the immune system in a significant manner.

Dr. Albert Jergens of Iowa State presented on Canine IBD (inflammatory bowel disease). He noted that the research results suggest there is interplay between genetic factors and the bacteria that are present in the gut which results in the disease. He and his colleagues have developed a biomarker that permits them to assess whether or not various therapies are likely to be effective.

One of the more fascinating presentations of the day was given by Dr. Joan Coates from the University of Missouri regarding degenerative myelopathy, a disease caused by a gene mutation in certain breeds of canines that is akin to Lou Gehrig's disease in humans. She has located the mutation in the canine, and was able to translate that into the genetic location in humans. Although at this point there is no "cure" for the disease, there is hope that canine patients will assist researchers in finding medicines that will also work on humans.

Saturday was devoted to the ongoing research in cancer. The initial speaker of the day was one of the premier researchers in oncology, Dr. Jaime Modiano. He spoke about the molecular genetics of cancer, and the ways in which his lab is beginning to identify some of the genetic components of the different types of cancers, breed associated vulnerabilities, and the differences that the breed may have on tumor behavior. He also spoke about two new drug treatments, one targeting mast cell tumors, and the other for immune-based cancers. His home base is the University of Minnesota, which produces an excellent newsletter that details the progress being made at that institution. It can be found at [www.cvm.umn.edu/accr](http://www.cvm.umn.edu/accr).

Dr. Matthew Breen, a professor of genomics, and a biochemist at UNC, reported on the progress that his group has made putting together what he called a "genomics toolbox". He and his team have been collecting tissue and blood samples from animals affected with cancer, as well as those related to them who have been cancer free. They have looked at these samples as a way to define changes to the genome that occur in order to determine how each type of cancer changes the structure differently in hopes of then finding a way to influence these changes in a more positive way. He believes that if we can understand the effect of cancer on the canine genome we will be much closer to understanding human cancers.

Nicola Mason from the University of Pennsylvania presented information on using antibody fragments to target cancers. Although this treatment has been used in human medicine, this is one case where it is not trans-species, and thus far the therapy has not been effective in canines. That said, she did relate that they have managed to put together a "library" of canine derived antibody fragments. These fragments have been utilized in dogs with hemangiosarcoma to bind and neutralize a substance in the body that stimulates the growth of blood vessels in and around tumors, which is what the tumor feeds on. This is the first targeted biological antibody therapy to be employed in dogs to retard the growth of tumors. She also supplied the following web address which details the clinical trials are being done [www.clinicaltrials.gov](http://www.clinicaltrials.gov).

Dr. Thamm of Colorado State spoke about the way in which clinical trials are conducted and why it is so economically advantageous to use canines for these trials. He estimated that the cost to test a therapy on canines is only a fourth or less of what it would cost to do the same test on humans.

Dr. Middleton of Nestle Purina talked about the role of Vitamin D in the formation of cancers. His research has shown that higher levels of vitamin D in the blood is associated with reduced incidence, recurrence, and greater survival in various types of cancers. He also speculated that vitamin D may be involved in the occurrence of autoimmune disorders.

The segment of the conference on cancer concluded with some information about how drugs come to the point of being trialed and the challenges in this type of research.

Dr. Kathryn Meurs of NC State spoke on her work at identifying the genes responsible for Dilated Cardiomyopathy and the subsequent genetic tests that have been developed. Although the disease process is the same, it appears that in different breeds the causative genes are different. In Dobermans it appears to be an autosomal dominant gene, however in Great Danes it is sex linked on the X chromosome. She also discussed the fact that in other breeds although they also have the same mutation they do not show the disease, and apparently have some type of moderating gene, which speaks to the complexity of the genetic research that is being done.

The most poignant and moving presentation was at the end of the day when Dr. Cynthia Otto presented her longitudinal study of the search and rescue dogs who were present at the World Trade Center and the Pentagon on 9/11, as well as the Staten Island Landfill in the months following the attack. There was total silence in the room while her slide show flashed pictures from the scenes. It was made more poignant by the fact that Dr. Otto herself was there at the time with her own search and rescue canines. For the past ten years she has been

following the health of the dogs who worked those locations. The results of her study were unexpected and heartening. She found that the dogs coped with adverse conditions with minimal morbidity. The most common problems reported at the time were cuts and scrapes most of which were minor. The handlers did at that time employ preventative care such as eye washes and hydration, but surprisingly, respiratory problems were rare or minimal. These dogs have been followed regularly for the past ten years, and there has been no evidence of pulmonary problems that were significantly different from the control dogs who were not present at the scene. At this 10 year anniversary 73% of the dogs who were in attendance are now deceased but the median age at death was 12.2 years old and in the control group the median age was only 11.7. In both groups cancer was common, but the working dogs showed no evidence of lead, mercury, PCB's or other organic toxins in their tissues upon necropsy. It is remarkable that under such adverse conditions our canine heroes fared so well.

The closing sessions were "breakout" sessions for small group interaction with various experts. Fund raising techniques, the CHF grant process, how to incorporate genetic tests into a breeding program, and using health surveys were some of the topics discussed.

I came away from this conference with an incredible feeling of awe and respect at the depth of the knowledge and dedication those engaging in the research have. I also took away from it a profound joy that I own and love Bearded Collies, as our breed appears to have less of the devastating diseases present in other breeds. Although we are not free from cancers and AI issues, Beardies seem to be, relatively speaking, a healthy breed.

Submitted by  
Karen Drummond, Ph.D.  
BCCA Health Committee Chair