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NEWS & EVENTS

MU CVM Researcher Part of Team Receiving Funds for Groundbreaking Canine Cancer Study

The AKC Canine Health Foundation (CHF) and the Golden Retriever Foundation (GRF) announced the joint funding of nearly \$1.5 million in canine cancer research. The foundations worked together to select two 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. The research will be conducted through collaborative team efforts of top scientists, bringing unique synergy of talent and resources together for a greater outcome.

Receiving a grant totaling \$404,813 is a research project led by Dr. Jeffrey Bryan of the University of Missouri College of Veterinary Medicine, Dr. Anne Avery of Colorado State University and Dr. Heather Wilson-Robles of Texas A&M University. The study will focus on discovery of novel protein, blood and epigenetic biomarkers to enhance diagnosis and treatment of cancer in dogs.

Lymphoma strikes one in eight golden retrievers, making them one of the most commonly affected breeds. Through the investigation, the researchers expect to 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, they may serve as biomarkers of risk, allowing medicine or diet to prevent lymphoma in golden retrievers before it develops. Another component of the study aims to fully phenotype cancer stem cells in lymphoma by surface markers and DNA methylation changes for the purpose of targeting cells that feed cancer metastasis. The discoveries made in each segment of the study 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.

The CHF and GRF also funded a collaborative study by 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. They will focus their efforts on the establishment of



Dr. Jeffrey Bryan

genetic risk alleles, defining the gene expression profile and the role of cellular activation in lymphoma and hemangiosarcoma.

"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.

"These results will have a One Health application, impacting human medicine as well," Nordone added.

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. 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.

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