Testimony of Rustin M. Moore, DVM, PhD, Diplomate American College of Veterinary Surgeons, and Dean of The Ohio State University College of Veterinary Medicine
Before the Ohio Senate General Government and Agency Review Committee
Supporting SB 164 – October 2, 2019

Good afternoon Chair Schurig, Vice Chair Rulli, Ranking Member O'Brien and members of the Ohio Senate General Government and Agency Review Committee, thank you for the opportunity to provide proponent testimony before you today regarding Senate Bill 164 introduced by Senator Tim Schaffer. This bill would designate the month of July as Hank Kabel Sarcoma Awareness Month.

The College of Veterinary Medicine is one of 15 colleges at Ohio State with scientists who are members of one or more research program in The Ohio State University Comprehensive Cancer Center (OSUCCC). The OSUCCC has five highly interactive cancer research programs: Cancer Control, Leukemia Research, Molecular Biology and Cancer Genetics, Molecular Carcinogenesis and Chemoprevention and Translational Therapeutics. Scientists in these programs conduct basic laboratory studies, translational research and clinical trials.

The OSUCCC is one of only 50 comprehensive cancer centers designated by the National Cancer Institute (NCI) and one of only a few institutions nationally funded by the NCI to conduct both phase I and phase II clinical trials on novel anticancer agents sponsored by the NCI. The OSUCCC researchers are advancing the understanding of cancer and translating that knowledge into new treatments, moving us closer to achieving our vision of a cancer-free world.

During my testimony I hope to convince you of the importance of sarcomas, a type of cancer involving connective tissues (including fat, blood vessels, nerves, bones, muscles, deep skin tissues, and cartilage) that afflicts pets and people. Raising awareness of the occurrence and incidence of sarcoma cancers in people and pets is important in helping to find better treatments and possibly cures, through comparative, cooperative and interdisciplinary research and clinical trials.

Cancer is a major health burden in pet dogs, accounting for approximately 30% of deaths across all breeds. As such, pet dogs with cancer are becoming increasingly recognized as a resource for studying the potential of new anticancer drugs and therapies, which are under development and in the pipeline for use in people with cancer. Naturally occurring cancers in pet dogs and humans share many features, including appearance under the microscope, genetic abnormalities and response and eventual resistance to chemotherapy and radiation therapy. Unlike rodent models, tumors in dogs arise spontaneously in the presence of an intact immune system and the biological behavior of canine cancers closely recapitulates that found in the human counterpart, including the spread or metastasis of cancer. Furthermore, the large size of dogs and the ability to use many of the standard treatment approaches used in people make dogs with spontaneous cancer a more closely related model of the human disease in which to evaluate new surgical approaches or novel chemotherapeutic agents that helps to guide clinical trials in humans. Such studies are referred to as comparative clinical trials as they use knowledge gained in dog studies to help insure that human studies are more time efficient, cost effective and successful.

One component of cancer burden in dogs is their significantly higher incidence of sarcomas as compared to humans. Sarcomas comprise approximately 10-15% of malignant tumors in dogs, with 20% of these tumors originating in the bone and the other 80% occurring in soft tissues, known as soft tissue sarcomas (STS). The total number of canine sarcomas occurring in the United States annually is estimated to be 7,700 to 31,800 based on an estimated overall cancer incidence of 99.3–272.1 per 100,000 dogs with an estimated canine population in the US of 78 million. For comparison, it is estimated that there will be 12,390 STS diagnosed in adults and children in the United States in 2017 and approximately 200 cases of osteosarcoma in adolescent children.

This increased incidence of sarcomas in dogs led to canine osteosarcoma being an important research tool in the development of surgical approaches for osteosarcomas in people. An understanding of the pathophysiological and molecular characteristics of these naturally occurring canine sarcomas holds great promise for effective incorporation into drug development strategies, for evaluation of target modulation or blockage measures associated with therapeutic response, including killing tumors and/or preventing spread to other locations (metastasis) distant from the primary tumor. These data serve to supplement other preclinical data and bolster clinical investigations in tumor types for which there is a paucity of human patients for clinical trials.

Because it is estimated there are >10,000 new cases of osteosarcoma diagnosed in dogs each year, this provides a large pool of subjects to evaluate new therapies that can benefit both the canine and human populations. It is now clear from prior research that dog and human osteosarcoma are very closely related: both get the disease in the long bones (legs and arms), both are at high risk for spread of the tumor, and both have very similar changes in genes that are abnormal in the tumor cells. Studies performed in dogs with this disease have helped to shape the use of surgery techniques to save legs in people with osteosarcoma. Surgical oncologists at the Ohio State University Veterinary Medical Center are leading a cutting-edge clinical trial investigating a novel form of thermal ablation, called microwave ablation in dogs with osteosarcoma to develop this therapy for limb-sparing surgeries and improve the functionality of reconstructed limbs. Data from this clinical trial will be used to guide the application of this treatment in human sarcoma patients. While the current chemotherapy treatments used to treat this disease have dramatically improved outcome, approximately 30-40% of affected people and over 90% of affected dogs still die from the spread of osteosarcoma.

Researchers from Nationwide Children's Hospital and the Ohio State College of Veterinary Medicine have partnered to study the genetic changes that occur in osteosarcoma tumors in dogs and compare them with that found in human osteosarcoma to identify shared targets and ultimately bring new therapies to this cancer. Additionally, the Ohio State College of Veterinary Medicine is participating in a multicenter clinical trial effort in dogs with osteosarcoma led by the Comparative Oncology Trials Consortium at the National Cancer Institute to assess novel therapies to treat metastasis (tumor spread). Data from this clinical trial will be used to guide the next study in children with osteosarcoma. Ultimately, the goal of performing comparative cancer studies is to change how novel treatments for sarcoma are developed and tested so that these improved approaches can be more successfully moved from the bench to the bedside, thereby impacting outcomes in both humans and animals.

July is known nationally as Sarcoma Awareness Month. Yet sarcoma is still considered to be the "forgotten cancer" because of the relatively lower incidence in people compared to other types of cancer. Efforts to encourage research and drug development are made more challenging due to a lack of awareness and understanding. Raising awareness at the state level through recognizing July as Sarcoma Awareness Month in Ohio could help this remove the description of this type of tumor as the forgotten cancer. I am in full support of raising awareness of the importance of sarcoma cancers in pets and people and the value of collaboration between researchers and clinicians in the search for new and more effective treatments to extend life, improve quality of life, and hopefully one day find a cure for both people and pets affected by this disease. The greatest value of this would be to raise general public awareness of sarcoma cancers in pets and people, the interplay between them, and to unify with the existing national efforts during Sarcoma Awareness Month.

Thank you again for the opportunity to provide testimony. I would be pleased to answer any questions you may have.