

SPOTLIGHT ON Purdue University College of Veterinary Medicine

Advancing animal health and welfare through research

Purdue's comparative approach to advancing animal health

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A translational, comparative medicine approach to research distinguishes scientific discovery in the Purdue University College of Veterinary Medicine (PVM). Since its opening in 1959, the college has built an enduring legacy of research that seeks to improve the understanding and treatment of animal diseases while also advancing human medicine. One of the best examples is the college's cancer research program.

In the 1970s, the Purdue Comparative Oncology Program (PCOP) was born as veterinary scholars uncovered new knowledge about the treatment of animal cancers while also lighting the way toward better prospects for human cancer treatment. An especially impactful example was the observation of dramatic bladder cancer regression in dogs when the only drug they were receiving was piroxicam, an analgesic used to treat arthritis. Follow-up research led to the development of one of the most widely used cancer treatments in pet dogs worldwide. Along the way, the research went beyond dogs into planning and securing funding for a human clinical trial. Inspired by PCOP's track record, a couple whose own dog benefitted from the program recently gave \$10 million to establish the Evan and Sue Ann Werling Comparative Oncology Research Center and create an endowment to provide unrestricted support for promising cancer research and clinical trials.

Another example of comparative cancer research targets glioma, a brain tumor with a poor prognosis in both canines and humans. Dakota, a French Bulldog with glioma, was brought to Purdue from Texas for a novel treatment and received state-of-the-art cancer care while also contributing to cancer research with the potential to benefit both canines and humans.

The college's research enterprise also impacts many other areas of medicine vital to animals large and small as well as people. Influenza viruses cause disease in humans, pigs, poultry, and a variety of other species. A longstanding Purdue research program is aimed at developing vaccines that offer broad protection against pandemic and seasonal strains of influenza. The approach is based on the use of human and bovine adenovirus vectors engineered to express influenza viral proteins that elicit a robust immune response.

Bovine health is the focus of research on the link between subclinical hypocalcemia and hyperketonemia with systemic inflammation in cows. These population-based studies are performed to better understand risk factors and mitigation strategies to decrease the impact of metabolic diseases on the health and performance of dairy cows.

Improving the health of horses is the mission of Purdue's Equine Sports Medicine Center, which was established in the mid-1990s. Since then, more than 70 research projects have led to many discoveries benefitting horses across the globe. Motivated by a lifelong love affair with horses, a Purdue veterinary alumnus has made his own financial commitment to the program, which is now named the Donald J. McCrosky Equine Sports Medicine Center in recognition of his \$3 million gift to support equine studies and the training of the next generation of equine researchers.

Influencing today's students to consider research careers is the focus of a longstanding Purdue Veterinary Medicine tradition of celebrating scholarship in the college during the annual PVM Research Day and through the Veterinary Scholars Summer Research Program. These opportunities enable veterinary and undergraduate students to work on independent research projects with a faculty mentor and explore careers in clinical, diagnostic, and basic biomedical research.

Purdue veterinary research benefitting animals also involves the expertise of the specialists who work in the Animal Disease Diagnostic Laboratory, where a diagnostic panel was developed that makes it possible to screen for 22 different vector-borne pathogens in a single test. Designed to be used on cats and dogs, it is the only test of its kind and utilizes a novel approach that incorporates next-generation sequencing.

As these examples illustrate, today's Purdue veterinary scholars are carrying out the vision of the college's founding faculty by embracing the concept of one health as they pursue research that advances animal and human health together.