SPOTLIGHT ON
University of Florida Veterinary Medicine
Advancing animal health and welfare through research

Great challenges, great minds meet at University of Florida College of Veterinary Medicine

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Established in 1976, the University of Florida College of Veterinary Medicine (UFCVM) leverages the strengths of a Top 5 public university with land-grant roots in UF's Institute of Food and Agricultural Sciences and a preeminent health-care system at UF Health. These affiliations provide an opportunity for unique collaborations and alliances unavailable to most veterinary colleges, enhancing not only the possibilities for scientific discovery by faculty, but also the learning environment and career potential for our doctors of veterinary medicine and graduate students, the biomedical scientists of tomorrow.

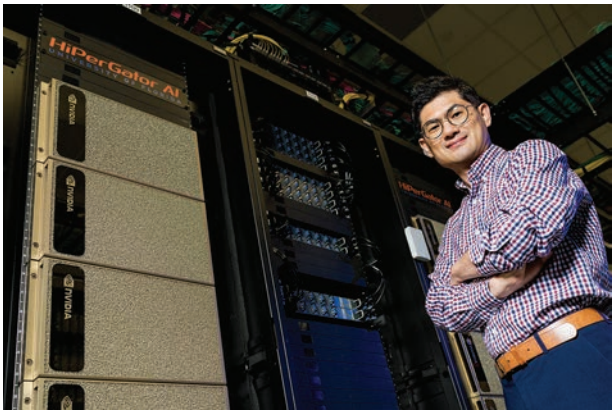
Building on a long history of creative and transformative research and development, UFCVM investigators are meeting and embracing challenges in the prevention and treatment of animal diseases by implementing approaches powered by artificial intelligence (AI). At the forefront of this endeavor, a partnership between UF and NVIDIA, who have invested $50 million in UF innovation in AI, enables CVM researchers to apply supercomputing and machine learning to solve today's problems with tomorrow's technology. Key examples of important advances are:

- Identification of genes responsible for canine tumorigenesis
- First-of-kind development of robotic 3-D CT for horses, enabling imaging of highly dense tissues
- Mathematical modeling of oncogenesis and tumor progression
- Mitigation of antimicrobial use for improved bovine reproductive health
- Risk assessment and outcome prediction in animal stifle injuries

With the aid of UF's supercomputing and AI capacity, CVM investigators are determining how the manipulation of microbiota can prevent or mitigate persistent barriers to optimal health in animals both big and small. The application of AI techniques is leading to important advances, such as:

- Improving dairy cow uterine microbiota to prevent metritis
- Augmenting gastrointestinal microbiota to combat dysbiosis and maintain animal health
- Optimizing the dermal microbiome to resolve dermatitis
- Manipulating bee microbiota to improve hive health

As an adjunct to the use of AI in veterinary biomedical research, CVM investigators apply state-of-the-art molecular and computational approaches to discovery and translational research that lead to novel animal health vaccines, therapeutics, and diagnostics. Key examples of this transformational and innovative work include the following:



Dr. Jon Kim directs UF's Intelligent Comparative Oncology Lab.

- Vaccines for *Clostridium perfringens*, *Campylobacter*, and *Salmonella* for use in poultry
- Bacteria-vectored vaccines for fish
- Mucosal livestock vaccines for brucellosis
- Vaccine and phage intervention for livestock melioidosis and improved surveillance
- Vaccines for hemangiosarcoma and osteosarcoma
- Therapeutics for feline kidney stones
- Employment of innovative biosensors to detect foodborne pathogens
- Molecular and genomic identification of viruses infecting aquatic animals
- Genomic characterization and improved detection of tick-borne and vector-borne pathogens

Meeting great challenges in animal health requires great minds and great passion, as exemplified by our CVM investigators. Our dynamic, multidisciplinary teams apply advanced technologies and investigative approaches, including AI, to derive novel solutions and open new insights in disease processes. Gaining this new information will accelerate the development of tomorrow's solutions, today.