With over a century of foundational research in animal and human health, the Cornell University College of Veterinary Medicine (CVM) builds on its legacy of addressing current and emerging health issues. Research success has become more dependent than ever on working across disciplines and institutions. CVM values collaborative networks among researchers within Cornell and at other veterinary colleges and with scientists throughout the world. Whether focused on animal health, addressing current human and public health challenges, or prevention of future pandemics, biomedical research meets critical societal needs.

Targeted internal grant programs provide a foundation for animal health and comparative studies. The newly established Cornell Margaret and Richard Riney Canine Health Center complements the longstanding internal grants programs of the Feline Health Center, the Harry M. Zweig Memorial Fund for Equine Research, and college-allocated funding. The Cornell Margaret and Richard Riney Canine Health Center unites more than 50 researchers across the college, including scientists at CVM’s Baker Institute for Animal Health, leading investigations in canine cancer, genetics and genomics, infectious diseases, immunology, and beyond. For 2022, the center will provide between $800K to $1M in support of canine health-related research at Cornell. Recent projects of center faculty include that of Dr. Pip Johnson, who investigated the relationship between magnetic resonance imaging results and histological margins for canine intracranial tumors.

Cornell Feline Health Center-funded projects span basic and applied projects. For example, work led by Dr. Gary Whittaker identified a unique genetic signature of the transformation of the relatively benign feline enteric coronavirus (FECV) to the highly pathogenic and deadly feline infectious peritonitis (FIPV), a leading cause of death in cats. This discovery holds the promise of an improved diagnosis of FIP in cats and an understanding on how FECV transforms to FIPV.

Projects funded by the Zweig Fund for Equine Research include Dr. Heidi Reesink’s investigation of treatments for traumatic joint injury and osteoarthritis—in particular, how synovial fluid glycans and glycoproteins are altered in these conditions—with the ultimate goal of developing novel therapeutic strategies.

Public and Ecosystem Health

The COVID-19 pandemic required rapid adaptation to maintain momentum in existing research programs and to explore new areas. It also underscores the importance of the inter-relationships of people, domestic animals, wildlife, and the environment in preventing pathogen spillover and devastating epidemics. CVM’s role in developing diagnostic laboratory capacity to meet university and regional human COVID-19 testing needs, led by Dr. Diego Diel, was an extension of methods used for the detection and investigation of SARS-CoV-2 in animals. For example, Dr. Diel collaborated with researchers at several institutions to demonstrate SARS-CoV-2 transmission in white-tailed deer. Using college BSL-3 facilities and mouse models, Dr. Hector Aguilar-Carreño and research collaborators identified a novel small molecule that may prevent SARS-CoV-2 infection and decrease disease severity.

At a population level, Dr. Steve Osofsky, director of the Cornell Wildlife Health Center, and colleagues investigate the impact of land-use policy on livestock agriculture, the health of wildlife populations, and human livelihoods—all as related to sustainable economic development. College investigators were recently joined by Dr. Raina Plowright, a member of our new Department of Public and Ecosystem Health and principal investigator for the Bat One Health Research Group, which focuses on transmission of pathogens between species and the prevention of pathogen spillover.

The Cornell research environment is characterized by investment through New York State, donor-supported animal health programs, institutional funds, low barriers to cross-campus and external collaboration, and a wide breadth of scientific disciplines. Preparedness to respond to animal health emergencies allowed quick adaptation to support COVID-19 research and diagnostic service. Using a multidisciplinary approach, we will extend lessons learned from the pandemic to tackle complex problems, help prevent future pandemics, and continue fundamental research that will benefit the lives of humans and animals everywhere.