Faculty and staff in Iowa State University’s Veterinary Diagnostic Laboratory (VDL) have been on the cutting edge of innovation for decades. With a caseload that is well over 100,000 cases/year, it is essential to be on the lookout for new and better ways to do their jobs and advance the diagnostic capabilities to protect animal health globally.

Those innovations will be dramatically improved when phase 1 of a new facility opens this fall, befitting the nation’s top VDL, which sees the largest food animal caseload in the country if not the world. The $75 million project is just the first of a planned 2-phase construction project. Funding from the Iowa Legislature and the federal American Rescue Plan Act of 2021 has been secured for the $66.5 million phase 2 project.

The new VDL is critical to support and protect the agriculture industry and food supply of Iowa as well as the US. It also plays a major role in protecting the health of companion animals, wildlife, and public health. The new facility will keep the nationally recognized lab at the cutting edge of protecting animals and humans from both known and unknown threats.

Examples of the innovations are already on display. VDL researchers are developing and validating a web-interface model for real-time analysis and visualization of animal health threats. “We are well positioned to apply sophisticated machine-learning methods to deliver novel approaches and information to alert Iowans about rising health threats,” said team leader Dr. Giovani Trevisan. “The products generated will provide stakeholders a much-needed powerful computational tool to detect known, new, and emerging pathogens coupled with an easy-to-use web-visualization interface.”

Another VDL researcher, Dr. Orhan Sahin, and his team are developing next-generation detection and sampling platforms for zoonotic pathogens in the food chain. They are using robotics, machine learning, microbiology, and sensor technologies to address this urgent need for developing this technology that could be easily adapted for real-time monitoring of on-farm health and environmental status.

Research conducted by Dr. Phil Gauger in the veterinary diagnostic laboratory has looked at bioinformatics analysis of influenza A viruses circulating in swine, while describing the genetic and antigenic diversity that has affected the ability to control the virus with biosecurity methods and current vaccines. Utilizing data in the VDL information management system, influenza monitoring in swine is now automated.

In addition, with a new world-class facility, the sky’s the limit for VDL researchers. “Whether it’s developing and applying new cutting-edge diagnostic tests and strategies or identifying new emerging pathogens such as porcine epidemic diarrhea virus, Iowa State has set the standard for innovation in diagnostic medicine,” said Dr. Dan Grooms, the Dr. Stephen G. Juelsgaard Dean of Veterinary Medicine. “I can only imagine what our extraordinary scientists and diagnosticians can do in the facility we have built and will continue to build.”