

WVDL Annual Report 2021

“Infectious diseases are our business, public health pandemics included”

This 2021 annual report showcases the successes and challenges for our team working in Madison and Barron. Our dedication and efforts had a global impact and in 2021, most importantly right here in Wisconsin.

From the Director – Wisconsin and National Impact: Delivering results to veterinarians
KP headshot

The WVDL is accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD) and continues to be a National Animal Health Laboratory Network (NAHLN) Level 1 laboratory. We support many of our team members to volunteer in various AAVLD activities to improve quality, workforce, IT systems, public health, government relations, and science for diagnostic testing in North America.

As a NAHLN Level 1 laboratory, we are part of a coalition that is learning from previous outbreaks and the current COVID-19 pandemic to better prepare for future threats such as African Swine Fever and Foot and Mouth Disease Virus. Threats are no longer limited to animal health issues as our work to support human and animal COVID-19 testing has spotlighted veterinary diagnostic laboratories as critical resources for public health.

We are lucky to work with the talented and dedicated veterinarians in Wisconsin and value our role as a key factor to manage the animal health challenges that present daily. Building on this foundation of excellence, WVDL is expanding our market for infectious disease testing and is a trusted source for high quality diagnostics with expert customer service to help interpret results for animal health management. We have begun national marketing campaigns for targeted cattle diagnostic testing and continue to grow our transmissible spongiform encephalopathy (TSE) testing services for states across the country.

WVDL remains to be a marquis resource for diagnostic testing for export of animals and animal genetics. Much of this testing is for bovine genetics and we are developing testing for swine genetics, especially for local facilities. The agriculture economies are growing and North American animal genetics companies are leaders in international market development. WVDL is proud to be a partner with our clients for efficient and effective testing to keep global animal genetics supply chains robust so that we can deliver healthy and productive food producing animals were the world needs them most.

Advancing WVDL by Embracing the Wisconsin Idea

In 2021, WVDL made significant investments into our team and infrastructure to maintain excellent service to our internal and external stakeholders. Most notably was the culmination of years of effort for the successful funding of a \$9.9 million dollar renovation and expansion of our facility in Barron, WI by the State of Wisconsin. This project will include a Biological Safety Level 3 (BSL-3) Laboratory. A BSL-3 space is critical to serve Wisconsin poultry industries and veterinarians while safeguarding our staff and surrounding livestock. The current facility, built in 1991, will be modernized for safe and efficient workflows and provide much needed working space for the only full service veterinary diagnostic laboratory in northwestern Wisconsin. We wish to thank the countless hours dedicated by our colleagues and agricultural organizations to help us make this project a reality.

We are in the last sprint phase of transitioning to a new laboratory information management system (LIMS). Our old LIMS, UVIS, is no longer supported and we are looking forward to a vast improvement in data and workflow with our new LIMS, iLES. David LaBeause is the Project Manager and Technical Lead and has been working for about 2 years now with his development team to get us where we are today. Development of the LIMS included a deep dive into the workflow and processes at WVDL. This coincided with a reorganization of the diagnostic sections for bacteriology and virology testing to strengthen our organizational structure to support sustainable growth of the WVDL.

The testing section reorganization started with a grass roots effort facilitating discussions with the entire team in 2019. We found 66 items that were bottlenecks to efficient workflows and pinch points to our quality system improvements. Those 66 items were distilled down to 17 topics that were all found to have the same root cause of having duplicate systems for testing modalities for viruses and bacteria. The formal organizational chart restructure occurred in July, 2021 with staff assigned to primary and secondary sections in bacteriology, virology, molecular diagnostics, and serology.

Dr. Nicole Aulik is the Section Head for bacteriology, serology, and Barron technical services.

Dr. Ailam Lim is the Section Head for virology and molecular diagnostics.

Through our partnership with the Wisconsin State Laboratory of Hygiene, a CLIA certified laboratory unit (WWCL) was formed in June 2020 and started to provide testing service since August 2020. We continue to operate the dedicated COVID-19 human testing laboratory for UW-Madison Campus. Cumulatively, we have run over 300,000 tests as a critical tool to maintain the teaching, research and service mission of the University of Wisconsin-Madison. Our work has been highlighted in a few publications:

Performance of an Antigen-Based Test for Asymptomatic and Symptomatic SARS-CoV-2 Testing at Two University Campuses - Wisconsin, September-October 2020. Pray, IW, et al, (Jan 2021) *Morbidity and Mortality Weekly Reports*.

Severe Acute Respiratory Syndrome Coronavirus 2 Transmission in Intercollegiate Athletics Not Fully Mitigated With Daily Antigen Testing. Moreno GK, et al. (July 2021) *Clinical Infectious Disease*.

WVDL Molecular Diagnostics has been busy with animal COVID-19 testing as well, collaborating with the CDC, USDA, and Wisconsin Department of Agriculture, Trade, and Consumer Protection. Specifically, collaborative work with the CDC has proven the susceptibility of dogs and cats to SARS-CoV-2 due to close contact with infected humans. This prompted guidelines from CDC and AVMA for protecting pets welfare when owners are diagnosed with COVID-19 and are highlighted in these publications:

SARS-CoV-2 B.1.1.7 variant of concern detected in a pet dog and cat after exposure to a person with COVID-19, USA. Hamer, SA et al. (May 2021) *Transboundary and Emerging Diseases*.

Low SARS-CoV-2 Seroprevalence and No Active Infections among Dogs and Cats in Animal Shelters with Laboratory Confirmed COVID-19 Human Cases among Employees. Cossaboom CM, et al. (Sept 2021) *Biology*.

One Health Investigation of SARS-CoV-2 Infection and Seropositivity among Pets in Households with Confirmed Human COVID-19 Cases – Utah and Wisconsin, 2020. Goryoka GW, et al. (Sept 2021) *Viruses*.

WVDL has took part of a Vet-LIRN laboratory group to develop standardized protocols for whole genome sequencing of bacterial isolates. We are also working with 6 other laboratories to develop training and analysis pipelines for bacterial whole genome and antimicrobial resistance gene identification. The deliverable of these projects will provide basic protocols to laboratories that new to this technology and a publication is currently in press:

Multi-laboratory evaluation of the Illumina iSeq platform for whole genome sequencing of *Salmonella*, *Escherichia coli*, and *Listeria*. Mitchell PK, et al. (2021) *Microbial Genomics*.

For 2022, we will continue to foster a growth mindset for our team to overcome the obstacles that became evident or increased in significance in 2020 and 2021. We will embrace our new systems and workflows to improve efficiency while supporting high quality diagnostic testing. We will also continue to develop our new and existing administrative team members while fostering the next generation of leaders and scientists who are eager to step up for WVDL.

Investing in the development of our team in 2021:

\$13,000 for professional development courses taken by 24 staff members.

\$26,000 for graduate level coursework completed by 6 staff members.

At a Glance

1. Total test counts: 572,000 (0.5% increase)
 - a. 333,000 Export
 - b. 47,000 CWD
 - c. 58,000 Poultry
 - d. 134,000 Clinical Disease
2. Total revenue: \$14,331,000 (11% increase)
3. Number of employees: 126 total employees, 29 are students

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3. Nicole Aulik, PhD

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