



Legislative Fiscal Bureau

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Joint Committee on Finance

Paper #818

Veterinary Diagnostic Laboratory -- Microbiologists and Bioinformatician Positions (UW System)

[LFB 2023-25 Budget Summary: Page 671, #22 and #23]

CURRENT LAW

1999 Act 107 transferred the Wisconsin Animal Health Laboratory along with related funding, positions and the incumbents from the Department of Agriculture, Trade and Consumer Protection (DATCP) to a Veterinary Diagnostic Laboratory Board attached to the UW System and increased funding and staffing for the lab effective July 1, 2000. The Board contains representatives of state and federal governments, the University, and five nongovernmental members representing Wisconsin animal agriculture, who are appointed by the Governor, with terms varying in length from two years to four years. The Board operates a central animal health laboratory in Madison and a regional facility in the city of Barron. These laboratories provide animal health surveillance, diagnostic services, and testing, including those tests required by federal and state laws for disease control and the interstate movement of animals.

DISCUSSION POINTS

1. The Wisconsin Veterinary Diagnostic Laboratory (WVDL) is a National Animal Health Laboratory Network (NAHLN) Level 1 laboratory (the highest tier laboratory based on laboratory capability and capacity). A cooperative effort between the U.S. Department of Agriculture (USDA) and the American Association of Veterinary Laboratory Diagnosticians (AAVLD), the NAHLN is a nationally coordinated network of federal, state, and university-associated animal health laboratories. The network laboratories provide animal health diagnostic testing, methodology research and development, and expertise in order to detect biological threats to animal agriculture and protect the nation's food supply and public health. According to the USDA, NAHLN laboratories regularly provide testing for surveillance programs for such diseases as bovine spongiform encephalopathy

(BSE), classical swine fever (CSF), chronic wasting disease (CWD), scrapie, influenza A virus of swine (IAV-S) and swine pseudorabies virus (PRV). In addition, NAHLN labs assist with preparedness for disease outbreaks by providing staff trained in testing for avian influenza, exotic Newcastle disease, foot and mouth disease, and vesicular stomatitis virus.

A. Microbiologists

2. The WVDL is the sole provider of diagnostic testing for CWD (an infectious prion disease) as well as foreign animal disease (FAD) surveillance, investigation, and outbreak response for Wisconsin. Providing CWD diagnostic testing supports Department of Natural Resources (DNR) efforts to manage CWD. In addition, the diagnostic testing provides hunters with important food safety information. Assembly Bill 43/Senate Bill 70 would provide \$352,400 GPR (\$261,000 salary and \$91,400 fringe) in 2023-24 and \$469,800 GPR (\$348,000 salary and \$121,800 fringe) annually beginning in 2024-25 with 6.0 GPR microbiologist positions beginning in 2023-24 to improve capacity and response to annual CWD and FAD surveillance surge testing.

3. Each year, the WVDL provides testing for 16,000 to 24,000 whitetail deer samples. Generally, the lab provides CWD testing weekly from March through October and daily from November through February (testing for veterinarian submitted tissue from captive herds is available daily year-round). Fees for CWD testing range from \$20 for tissue samples of wild deer to \$68.87 for whole-head hunter-submitted samples. Approximately 75% of samples are submitted within a four to six-week period following the November nine-day gun deer hunting season. During this testing surge, the CWD diagnostic facility operates for 20 hours per day, seven days per week. Currently, the WVDL hires seasonal microbiologists and technicians during this surge and some permanent staff work overtime hours. However, in 2021, the WVDL director indicates they were unable to fully staff the laboratory, and this seasonal labor shortage led to an increase in CWD testing turnaround time from nine to 19 days. In 2022, utilizing short-term seasonal staff required onboarding and management of 27 staff for three months including 16 seasonal microbiologists and 11 permanent staff working overtime.

4. According to the WVDL director, the cost and uncertainty of searching, screening, hiring, onboarding, training and then off boarding approximately 25% of staff on an annual basis is not a sustainable long-term model. The director estimates that in fall, 2023, the lab will need 22 temporary seasonal microbiologists as less than five WVDL staff will be able to work overtime hours due to Federal Labor Standard Act limitations on overtime compensation. The director indicates the additional six microbiologists proposed would serve multiple roles and fill unique workforce challenges for seasonal surges. This would include decreasing testing turnaround time to a week or less to provide quicker results to Wisconsin hunters. The positions would also be cross-trained for diagnostic testing so that they could be utilized to provide sustainable services to maintain Wisconsin agricultural industry testing services to support the poultry, dairy, and bovine genetics industries in the event of a FAD outbreak, such as was done with avian flu in 2022. WVDL responded to the avian flu outbreak for four months from March to July, 2022. During that time, same-day testing of samples required extended business hours seven days per week conducting testing for DATCP to facilitate disease management and business continuity for the poultry industry.

5. Another example of an FAD outbreak that WVDL has responded to recently is Seneca

Valley Virus, a foot and mouth disease-like virus affecting swine. According to WVDL, the lab has conducted testing for Wisconsin pork processors for the disease an average of 40% of business days during a given year over the last three years. This testing requires rapid same-day tests to minimize delays at slaughter facilities. Providing the full 6.0 positions would ensure WVDL would be able to continue to respond to known disease outbreaks as well as emerging disease outbreaks and provide consistent services to Wisconsin agricultural industries.

6. As DNR has primary responsibility for managing CWD in Wisconsin, it could be argued that DNR should pay for a portion of CWD testing. Under current law, \$5 of each bonus deer permit sold in a county where CWD has been confirmed in a wild deer is deposited in a continuing appropriation for CWD management and testing. As of May 30, 2023, approximately \$920,600 was available from this appropriation. The Committee could consider a one-time transfer of \$411,100 to the state lab from the DNR CWD management appropriation. This would provide funding for 3.00 microbiologist project positions for the 2023-25 biennium. [Alternative A2]

B. Bioinformatician

7. According to the National Institutes of Health, the ability of public health laboratories to generate high-quality genome sequence data enables these labs to identify pathogenic strains, determine the relatedness among outbreak strains, and analyze genetic information regarding antimicrobial-resistant genes. Whole Genome Sequencing (WGS) is a laboratory procedure that determines the order of bases in the genome of an organism in one process using various sequencing techniques such as Sanger sequencing (as used in the human genome project), shotgun approach, or Next Generation Sequencing (NGS). NGS refers to high-throughput (involving very large quantities of data) DNA sequencing technologies which sequence many fragments of DNA in parallel. This enables scientists to read hundreds of millions of DNA fragments. NGS generates large quantities of DNA sequencing data, and is both less expensive and less time-consuming than traditional Sanger sequencing.

8. The WVDL has the gene sequencing equipment necessary and trained staff who can utilize the equipment to generate large quantities of genome sequence data. The process involves microbiologists processing samples to obtain quality nucleic acids from the samples or isolate bacteria and viruses. Then additional work is done to prepare DNA libraries that can be used for sequencing, which generates large quantities of data. The director indicates that a bioinformatician is needed to analyze the molecular sequencing data using computing. Assembly Bill 43/Senate Bill 70 would provide \$91,100 GPR in 2023-24 and \$121,500 GPR in 2024-25 with 1.0 GPR position for a bioinformatician (\$67,500 salary and \$23,600 fringe in 2023-24 and \$90,000 salary and \$31,500 fringe in 2024-25).

9. With a bioinformatician in place to analyze genome sequence data, the WVDL would be able to offer fee-for-service testing for a variety of diseases. The director indicates that current microbiologists would be utilized until it is financially feasible to add additional microbiologists with program revenue. The specific fees would be determined based on costs, peer laboratory fees, and approval by the WVDL Board of Directors. According to the WVDL, the WGS and NGS tests the WVDL lab would put in place would screen for specific diseases as well as for more than one disease at a time. WGS are used on known pathogens, one at a time. They are useful to identify virus and

bacteria pathogen lineage and changes and provide useful information for disease epidemiology. Sequences are also helpful in determining difficult serotypes and the presence of specific genes, such as the genes that encode antimicrobial resistance. NGS, also called metagenomics, looks for all pathogens in a sample and the director indicates this will be a key factor for future diagnostics, especially for specimens that showed negative results on known targeted tests and for finding new pathogens and emerging diseases.

10. The WVDL director indicates it is difficult to predict how much revenue would be generated by the WGS and NGS tests that would be analyzed by the bioinformatician. Similar to many of the lab's diagnostic services for agribusiness, it may not generate profitable margins in the first five years, but would ideally generate 20% to 30% profit margins by the 10-year mark to allow the lab to add additional microbiologists and grow the program.

ALTERNATIVES

A. Microbiologists

1. Provide \$352,400 (\$261,000 salary and \$91,400 fringe) in 2023-24 and \$469,800 (\$348,000 salary and \$121,800 fringe) annually beginning in 2024-25 with 6.0 microbiologist positions beginning in 2023-24 to improve capacity and response to annual chronic wasting disease (CWD) and foreign animal disease (FAD) surveillance surge testing.

ALT A1	Change to Base Funding	Positions
GPR	\$822,200	6.00

2. Provide a one-time transfer of \$411,100 SEG from the DNR CWD management appropriation under s. 20.370(1)(hs) to the veterinary diagnostic laboratory general operations appropriation under s. 20.285(1)(fj), which would fund 3.0 PR positions in 2023-24 and 2024-25.

ALT A2	Change to Base Funding	Positions
SEG	-\$411,100	0.00
PR	<u>411,100</u>	<u>3.00</u>
Total	\$0	3.00

3. Take no action

B. Bioinformatician

1. Provide \$91,100 in 2023-24 and \$121,500 in 2024-25 with 1.0 position for a bioinformatician (\$67,500 salary and \$23,600 fringe in 2023-24 and \$90,000 salary and \$31,500

fringe in 2024-25).

ALT B1	Change to Base	
	Funding	Positions
GPR	\$212,600	1.00

2. Take no action.

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