

WISCONSIN VETERINARY DIAGNOSTIC LABORATORY

ANNUAL REPORT 2023-2024

TO SUSTAIN AND IMPROVE ANIMAL AND PUBLIC HEALTH



**Wisconsin Veterinary
Diagnostic Laboratory**
UNIVERSITY OF WISCONSIN-MADISON



MOLLY MACNAB, MOLECULAR DIAGNOSTICS



EMRI GREEN HEALTH SERVICES
HYDERABAD, INDIA

A WORD FROM THE DIRECTOR

I am always delighted to talk about our team and their work and engagement with our stakeholders and clients. This is my 5th year as the Director of the WVDL and each year gets more interesting with growth and new challenges for our laboratories in Madison and Barron. Thank you for taking time to read about some of our accomplishments in 2023 and learn about our goals for 2024.

We continue to be a critical tool to help Wisconsin manage emerging diseases and foreign animal disease outbreaks. The 2022 highly pathogenic avian influenza outbreak continues in 2024 to affect Wisconsin poultry producers and unfortunately, we are finding significant negative implications to the health of other domestic and wildlife species. Our collaborative work with wildlife agencies is also continuing to grow with Wisconsin DNR and many other states in the fight against CWD in cervids.

We are excited to be industry leaders in diagnostic testing to facilitate export of bovine germplasm and will continue to work to expand international markets with our partners.

We look forward to hearing from veterinarians in Wisconsin and around the world every day to sustain and improve public and animal health and productivity.

How can we help you in 2024?

KEITH POULSEN, DVM PHD
DIRECTOR, WVDL



THE BACTERIOLOGY SECTION WITH BUCKY BADGER

AAVLD ACCREDITED NAHLN LEVEL 1 LABORATORY

WVDL is accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD) and is a National Animal Health Laboratory Network (NAHLN) Level 1 laboratory. We are looking forward to our site visit in April 2024 to renew our 5-year accreditation.



CWD SAMPLES READY FOR TESTING

MISSON

To deliver high-quality veterinary diagnostics and exemplary customer service to promote animal and public health and the vitality of the State and National agricultural economy.

VISION

To be a globally elite veterinary diagnostic lab.

CORE VALUES

- Respect**
- Integrity**
- Trust**
- Accountability**

BY THE NUMBERS IN FY2023

9.4% **↑** TOTAL OPERATIONAL REVENUE

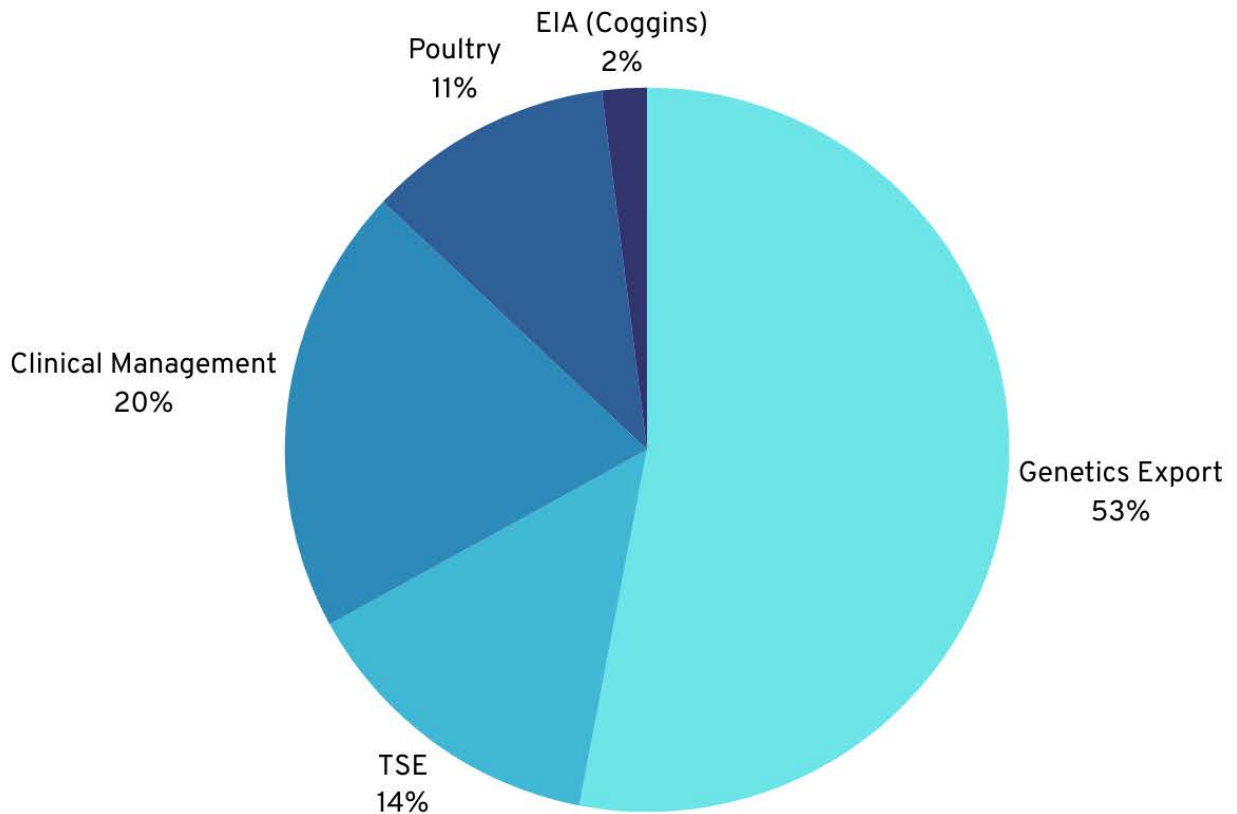
635,000 TOTAL TESTS

33% STATE TAXPAYER FUNDED

\$26 PER \$1 RETURN ON INVESTMENT

FOR TAXPAYERS TO THE WISCONSIN ECONOMY DURING FOREIGN ANIMAL DISEASE OUTBREAKS. THE ROI IS \$13 PER \$1 OF TAXPAYER DOLLARS SPENT DURING LOW THREAT PERIODS.

CASELOAD BY CATEGORY



Funded by the National Animal Disease Preparedness and Response Program (NADPRP) in the Farm Bill, WVDL led formation of the **Bovine Germplasm Movement Plan (BGMP)**. We worked closely with Dr. Danelle Bickett-Weddle, President of Preventalytics to develop and exercise the guidance document.

The planning group included Dr. Charles Brown (PEAK), Dr. Darlene Konkle (WI State Veterinarian, Kurt Grajkowski (DATCP), and Drs. Ailam Lim and Keith Poulsen (WVDL).

Formation of the BGMP started by gathering stakeholders from industry, NAHLN diagnostic laboratories, and state and federal veterinarians in May of 2022 to define needs and gaps. Our objectives were to build and exercise a business continuity plan for the bovine genetics industries in the event of a foot and mouth disease outbreak in North America.

Working groups met for the following 18 months to write the BMGP for bovine embryo and semen movement. We exercised the draft plan in December 2023 and will publish the BGMP on www.securemilksupply.org and www.securebeef.org.



STATE AND FEDERAL ANIMAL HEALTH OFFICIALS, INDUSTRY REPRESENTATIVES, AND NAHLN DIAGNOSTICIANS DISCUSSING INDUSTRY NEEDS FOR THE BGMP IN MADISON, WISCONSIN.



DR. DONALD SOCKETT, DR. ANDREA FOLEY, DR. ANDREA POHLY, DR. MAGGIE HIGHLAND,
DR. PHIL BOCHSLER, AND ASHLEE MACDONALD

INCREASE VISIBILITY AND INFLUENCE OF THE WVDL WITH A REPUTATION OF EXCELLENCE

15

peer reviewed
publications by WVDL
staff and students

13

abstracts and research
presentations by WVDL
staff and students at
national and
international meetings

4

resolutions written and
passed by USAHA and
AAVLD for consideration
by USDA

WVDL PEER REVIEWED PUBLICATIONS

J. Sheriddan, R. Dimon, T. Klumpyan, H. Daniels, M. Bernard-Donals, **R. Kutz** and A Wendt. (2022) Eliminating Bullying in the University: The University of Wisconsin-Madison's Hostile & Intimidating Behavior Policy. Emerald Insight. Discover Journals, Books and Case Studies.

Allen C, **Ellis A, Liang R, Lim A**, Newbury S. Prolonged persistence of canine distemper virus RNA, and virus isolation in naturally infected shelter dogs. (2023) PLoS One. PMID: 36662900

Alvarez Narvaez S, **Lim A**, et al. Optimized conditions for Listeria, Salmonella and Escherichia whole genome sequencing using the Illumina iSeq100 platform with point-and-click bioinformatic analysis. (2022) PLoS One. PMID: 36449522

Elsmo EJ, Wünschmann A, Beckmen, KB, Broughton-Neiswanger LB, Buckles EL, Ellis J, Fitzgerald SD, Gerlach R, Hawkins S, Ip HS, Lankton JS, Lemley EM, Lenocho JB, Killian ML, Lantz K, Long L, Maes R, Mainenti M, Melotti J, Moriarty ME, Nakagun S, Ruden RM, Shearn-Bochsler V, Thompson D, Torchetti MK, Van Wettene AJ, Wise AG, **Lim AL**. Pathology of natural infection with highly pathogenic avian influenza virus (H5N1) clade 2.3.4.4b in wild terrestrial mammals in the United States in 2022. (2023) Emerging Infectious Disease. PMID37987580

Holschbach C, **Breuer B, Pohly A**, Crawford C, **Aulik N**. (2023) Multi-drug resistant Salmonella Dublin cultured from cryopreserved Holstein semen. Vet Rec Case Reports. <https://doi.org/10.1002/vrc2.791>

Burciaga S, Trachsel J, **Sockett D, Aulik N**, Monson M, Anderson C, S Bearson. Genomic and phenotypic comparison of two variants of multidrug-resistant Salmonella enterica serovar Heidelberg isolated during the 2015-2017 multi-state outbreak in cattle. (2023) Front in Microbiol. PMID: 37928690

Stapley ED, **Breuer R**, Burton AJ. Successful use of intravenous and oral levetiracetam in a goat to control refractory seizures secondary to suspected polioencephalomalacia. (2023) J Am Vet Med Assoc. PMID: 37922713

Sockett D, Breuer R, Smith L, Keuler NS, Earleywine T. (2023) Investigation of brix refractometry for estimating bovine colostrum immunoglobulin G concentration. Front Vet Sci. PMID: 37818390

Breuer R, Wiley C, Dohlman T, Smith JS, McKeen T, Kreuder AJ. (2023) Comparison of turbidometric immunoassay and brix refractometry to radial immunodiffusion for assessment of colostrum immunoglobulin concentration in beef cattle. J Vet Int Med. PMID: 37596893

Kreuder AJ, **Breuer R**, Wiley C, Dohlman T, Smith JS, McKeen T. (2023) Comparison of turbidometric immunoassay, refractometry, and gamma-glutamyl transferase to radial immunodiffusion for assessment of transfer of passive immunity in high-risk beef calves. J Vet Int Med. PMID: 37549250

Deering K, Clarke LL, Lennix SV, Layne E, Long L, Businga N. (2023) Follicular dysplasia and hair loss in white-tailed deer (*Odocoileus virginianus*). Vet Path. PMID: 37408382

Locke S, Pempek J, Meyer R, Portillo-Gonzalez R, **Sockett D, Aulik N**, Habing G. (2022) Prevalence and sources of Salmonella lymph node infections in special-fed veal calves. J Food Protection. PMID: 35146524

Nichols M, Stevenson M, Klos R, Elbadawi L, **Sockett D, Aulik N**, Patton E, Trees E, Francois-Watkins L, Gambino-Shirley K, Wagner D, Classon A, Folster J, Chen J, Stapleton S, Davis J, Lombard J. (2022) Multidrug resistant outbreak of Salmonella Heidelberg related to dairy calf exposure. Foodborne Pathol Dis. PMID: 34989634

Mitchell P, **Aulik N, Lim A, Cooper J**, Goodman L. (2022) Multi-laboratory evaluation of the Illumina iSeq platform for whole genome sequencing of Salmonella, Escherichia coli and Listeria. Microbial Genomics. PMID: 35113783

Pilch H, **Aulik N, Sockett D**, Czuprynski C. (2023) Survival of bovine associated serotypes of Salmonella enterica in bedding sand. J Dairy Sci. PMID: [PMCID: PMC10039248](https://pubmed.ncbi.nlm.nih.gov/37922713/)

EXPAND WVDL'S SERVICE ARRAY TO LEVERAGE EXISTING EXPERTISE AND RESPOND TO CUSTOMER NEEDS

We held our annual Bovine Genetics Export meeting in December and had record turnout with 3 guest speakers and great discussions about the current and future challenges for market demand and diagnostics required for export health certificates.

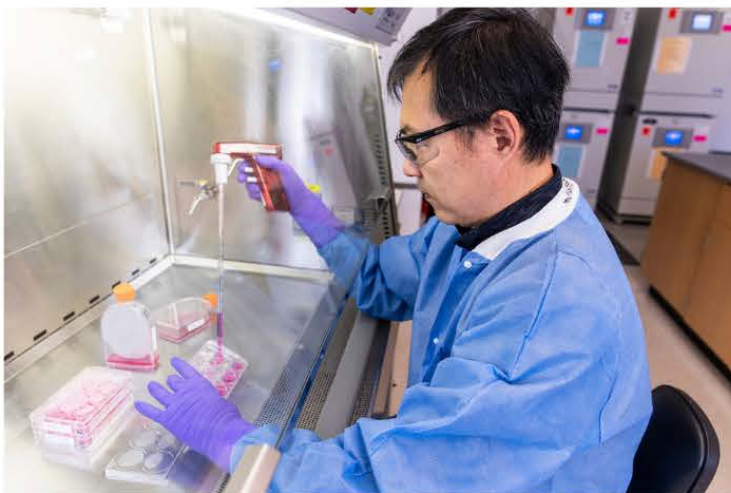
WVDL gained new capacities for digital pathology with a high volume digital slide scanner. This equipment was funded by a NAHLN capacity building grant from the current Farm Bill.

The Molecular Diagnostics Section was busy with development and improvement of over 10 assays for better clinical utility and added capacity for the swine genetics industry in Wisconsin with same day testing services.

The Bacteriology Section continues to have high caseload for *Protetheca* culture and *Salmonella* culture with serotyping and sensitivity. The section validated multiple new media and reagents to stabilize the consumables supply chain and ability to offer important regulatory diagnostic cultures.

The Serology Section validated several new testing kits to provide high quality and efficient testing to qualify animals and germplasm for export. We continue to work with our partners at USDA for validation and licensure of additional ELISA and AGID kits .

With UW-River Falls students, the Barron team held a swine and poultry health conference in River Falls with Michael Perry as the keynote speaker. Our next conference will focus on small ruminant health.



RUBIN LIANG, VIROLOGY



DR. ANDREA POHLY, DIAGNOSTIC PATHOLOGIST

RECRUIT, DEVELOP, ENGAGE, AND RETAIN HIGH-CALIBER AND DIVERSE TEAM MEMBERS AT WVDL



98/18

98 full time staff at the Madison and Barron laboratories. 18 seasonal staff are hired and trained the CWD laboratory that runs 7 days per week in November and December.

\$64,500

Invested in professional development for WVDL staff in FY2023.

7.2%

Unplanned turnover and 5 retirements in 2022.

\$14,800

Invested in tuition reimbursement for staff in graduate degree and professional certificate programs in FY2023



WVDL IS LOOKING TO CONTINUE OUR DECADE LONG STREAK OF RECORD BREAKING YEARS IN 2024 AND 2025!

Quality diagnostic testing with exceptional customer service is how WVDL keeps Wisconsin and our partners around the world moving forward.

We look forward to working with you to improve and sustain animal and public health.

WWW.WVDL.WISC.EDU