



ANNUAL REPORT

MONTANA DEPARTMENT OF LIVESTOCK
Montana Veterinary Diagnostic Laboratory

Mission Statement

To serve the State of Montana by providing high quality, accurate, financially accessible and timely veterinary diagnostic testing, results and consultation; to assist state animal health officials in the diagnosis, control, and prevention of animal disease; and to contribute to state and national efforts to protect both animal and public health.



FISCAL YEAR 2023

July 1, 2022 through June 30, 2023

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Fig. 1—Sheep (Pexels.com)

LAB DIRECTOR'S STATEMENT

The Montana Veterinary Diagnostic Laboratory (MVDL) had a busy year in fiscal year 2023 with the addition of multiple new test offerings in order to better serve our clients. Overall testing numbers for the year were fairly consistent with the prior year in most lab sections. The outbreak of highly pathogenic avian influenza continued throughout FY 2023 and the MVDL continued to support the national effort to mitigate the impact of the disease. This report contains a summary of test data from all sections of the Montana Veterinary Diagnostic Laboratory with the exception of the Montana Central Milk Laboratory.

Over the course of the last year, the MVDL was able to upgrade or replace many pieces of critical lab equipment as a result of generous funding from the USDA. The MVDL is part of the National Animal Health Laboratory Network and this federal funding is provided by the USDA to support infrastructure of member labs throughout the country on an annual basis. This source of funding is critical for the MVDL to maintain its current level of service and expand our operational capabilities.

During FY 2023 the MVDL staff completed the building design for construction of a new veterinary diagnostic lab facility. The new building will be located just north of our current location on the Montana State University campus and will be a combined lab complex with the Department of Agriculture's analytical lab and the Montana State University wool lab. Construction is currently underway with a completion deadline of October 2, 2025. The new lab was designed to increase the operational capabilities of the MVDL well into the future and will feature significantly more square footage relative to the current facility and improvements in biosecurity.

As we head into FY2024, we will continue to focus on improving our business operations and the level of service for our clients. We would like to express our gratitude to all our clients for their continued business and support and look forward to providing your diagnostic testing needs in the future.

Sincerely,

A handwritten signature in blue ink, appearing to read 'G. Juda', is positioned above the typed name.

Gregory Juda, PhD
Lab Director
Montana Veterinary Diagnostic Laboratory

DIAGNOSTIC LAB STAFF FY2023

Administration

Gregory Juda, PhD.....Lab Director
Steve Smith, DVM, DACVPLead Veterinary Pathologist
Jonathon Sago, DVM, DACVP..... Veterinary Pathologist
Erika Schwarz, DVM, MPH, PhD, DACVM Veterinary Microbiologist

Administrative Support

Tess Moore..... Quality Manager
Raelynn Hagan Front Office
James Torreano..... Front Office
Lauren Larios.....Histology/Front Office

Clinical Pathology

Mathilde Buenrostro..... Technician
Courtney Cass Technician

Histology

Dan Zou, PhD..... Technician

Microbiology

Kaylee Krantz..... Technician
Colleen Matzke, MS Technician

Milk Laboratory

Zvakanaka G Masarirambi..... Technician
Erin Burns Technician

Molecular Diagnostics

Aracely Ospina-Lopez, MS..... Technician
Nathaniel “Zeb” Antonioli..... Technician

Serology

Antonio Fuentes Sanchez..... Technician
Diana Durnal Technician
Doug Knopp..... USDA Microbiologist

Virology

Sarah Horak..... Technician
Brian Eilers, MS Technician

Fig. 2—Stacked Rocks (Pexels.com)

BUDGET AND FUNDING

Montana Veterinary Diagnostic Laboratory (MVDL) is funded by multiple sources including fee income from tests performed, Montana State General Funds, Montana State Special Revenue (livestock head tax), and federal grant funds. Fee income of approximately 50% is typical for state-run diagnostic test laboratories across the country.

Although a substantial portion of MVDL’s budget is supplied by fee income, the State of Montana, the livestock industry, and the National Animal Health Laboratory Network (NAHLN) are also significant contributors to funding annual lab operations and allow the laboratory to better fulfill our mission and serve Montana. The following graph and table detail the sources and amounts contributed to our operational budget for FY2023.

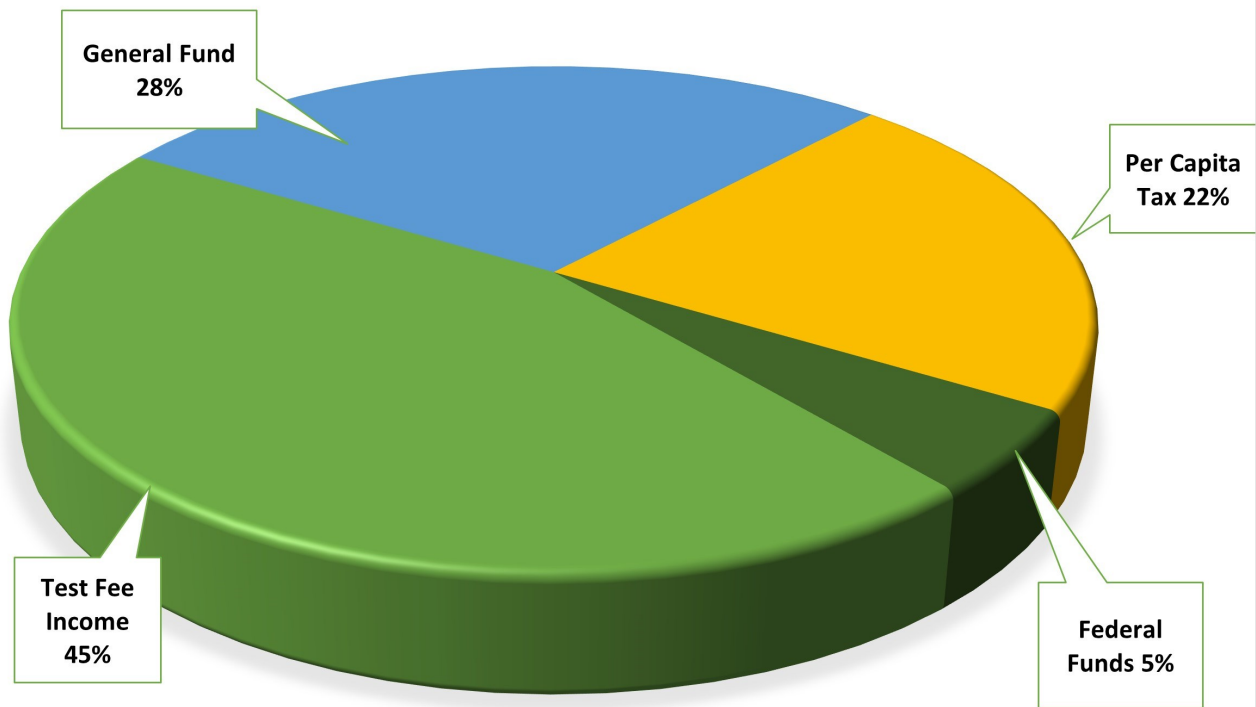


Fig. 3—MVDL Funding Sources

2023 Fiscal Year Lab Funding Sources	
Test Fee Income	\$1,595,248
General Fund	\$1,006,596
Per Capita Tax	\$774,261
Federal Funds	\$187,779
Total Operational Budget	\$3,563,884

NAHLN MEMBER LAB

Montana Veterinary Diagnostic Lab (MVDL) is a member of the National Animal Health Laboratory Network (NAHLN), a nationwide consortium of animal diagnostic labs coordinated by the US Department of Agriculture. The purpose of NAHLN is to support US animal agriculture by supporting early detection, rapid response, and appropriate recovery from high-consequence animal diseases.

As a member lab, the MVDL receives federal grant money on an annual basis to support the purchase of critical infrastructure including equipment, training, and/or supplies. This funding has substantially increased MVDL operational capabilities via the purchase of equipment and supplies utilized throughout the laboratory in support of NAHLN scope disease testing. The MVDL has the capability to perform testing on behalf of the NAHLN for nine different high impact animal diseases including:

- ◆ Foot and Mouth Disease
- ◆ Classical Swine Fever
- ◆ Vesicular Stomatitis
- ◆ Avian Influenza (IAV-A)
- ◆ Swine Influenza (IAV-S)
- ◆ Pseudorabies
- ◆ Newcastle Disease (Avian Paramyxovirus)
- ◆ African Swine Fever
- ◆ Chronic Wasting Disease

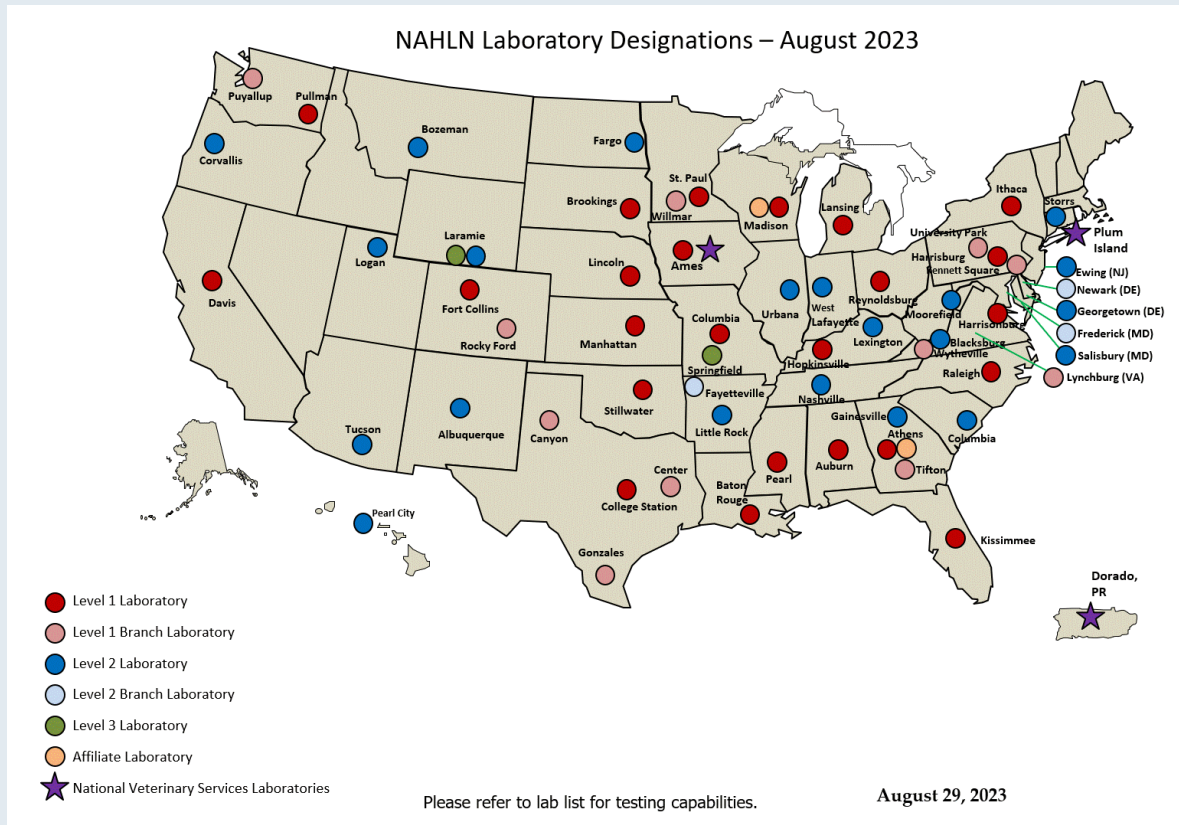


Fig. 4—NAHLN map (USDA)

ACCESSION AND TESTING DEMOGRAPHICS FY23

An accession is a specimen or group of specimens from either a single animal or a herd, belonging to one owner, from a single submitter. Accessions are sometimes referred to as “cases”. Multiple individual tests may be performed on a single accession or specimen. The following graphs represent the percentage of accessions and total tests performed by species with domestic cattle representing the highest percentage of our total individual tests. A comparison of FY22 and FY23 accession and testing numbers is provided.

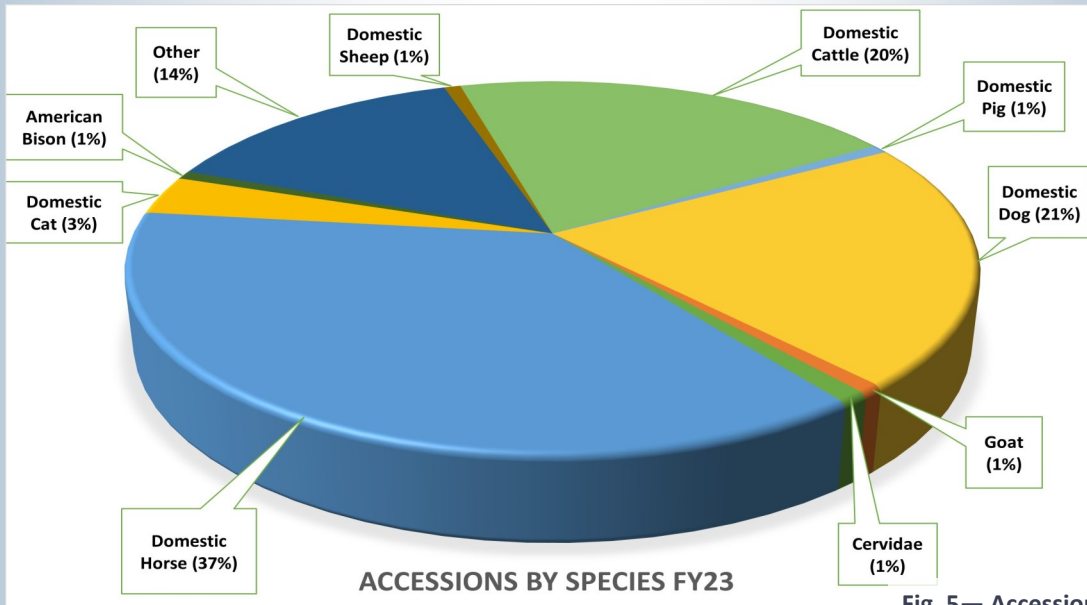


Fig. 5— Accessions by Species

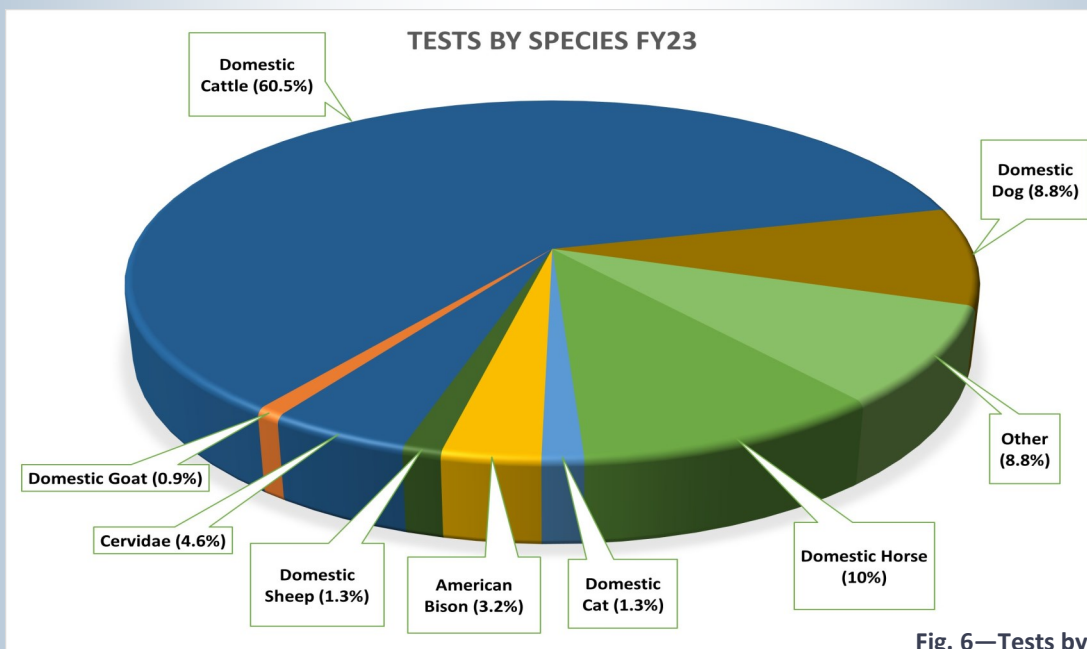


Fig. 6— Tests by Species

Year-Over-Year Accessions and Testing Data:

	FY2022	FY2023
Total Accessions	20,878	21,179
Total Tests	163,802	159,349

F Y 2 3 R A B I E S S U M M A R Y

One critical public health function of the Montana Veterinary Diagnostic Laboratory (MVDL) is rabies testing within the State of Montana. During FY23, nine bats and two skunks tested positive. The majority of rabies testing in bats and identification of positive samples occurs during warmer months, when bats are more active. Causes of an unsuitable test result typically involve lack of an appropriate anatomic test sample (brain stem and cerebellum) or decomposition of the tissue to be tested.

Species	Negative	Positive	Unsuitable	Total
Bat	134	9	15	158
Black Bear	3	0	1	4
Bobcat	3	0	0	3
Brown Bear (Grizzly)	2	0	0	2
Bushy-tailed Woodrat	2	0	0	2
Common Raccoon	17	0	1	18
Coyote	4	0	0	4
Domestic Cat	102	0	0	102
Domestic Cattle	10	0	0	10
Domestic Dog	127	0	3	130
Domestic Goat	4	0	0	4
Domestic Horse	12	0	0	12
Domestic Sheep	2	0	0	2
Ferret	1	0	0	1
Mountain Lion	3	0	1	4
Mouse	2	0	0	2
Muskrat	4	0	2	6
Prairie Dog	1	0	0	1
Rat NOS	1	0	0	1
Red Fox	1	0	1	2
Rodent (NOS)	0	0	1	1
Squirrel	2	0	0	2
Striped Skunk	9	2	4	15
Vole	1	0	0	1
Weasel	2	0	0	2
Total	449	11	29	489



Fig. 7—Bat (MT FWP)

F Y 2 3 B R U C E L L A S U M M A R Y

Several of our highest volume tests are for *Brucella abortus*, and these also serve our public health mission. The following table represents the *B. abortus* tests performed by the Montana Veterinary Diagnostic Laboratory (MVDL). In FY23, the MVDL performed 98,491 tests for *B. abortus*, which represented over 50% of the MVDL’s total testing volume for the fiscal year. This testing serves as the cornerstone of a robust surveillance program for brucellosis in southwest Montana.

Tests by Month	FPA	BAPA	CF	Card	SPT	STT	Rivanol	Total
July	1,401	282	33	0	2	4	0	1,722
August	2,583	358	10	123	3	9	0	3,086
September	9,856	479	51	15	8	5	2	10,416
October	21,417	719	17	32	4	40	0	22,229
November	23,989	859	17	3	2	15	0	24,885
December	11,774	429	82	29	5	17	0	12,336
January	6,040	463	1	21	3	5	0	6,533
February	1,396	440	0	15	1	7	0	1,859
March	3,291	638	0	18	4	16	0	3,967
April	2,230	568	16	17	3	51	0	2,885
May	4,966	543	4	7	6	22	0	5,548
June	2,510	471	2	7	16	19	0	3,025
Total Tests	91,453	6,249	233	287	57	210	2	98,491

- * **FPA: Fluorescent Polarization Assay**
- * **BAPA: Buffered Acidified Plate Antigen Test**
- * **CF: Complement Fixation Test**
- * **Card: Standard Card Test**
- * **SPT: Standard Plate Test**
- * **STT: Standard Tube Test**

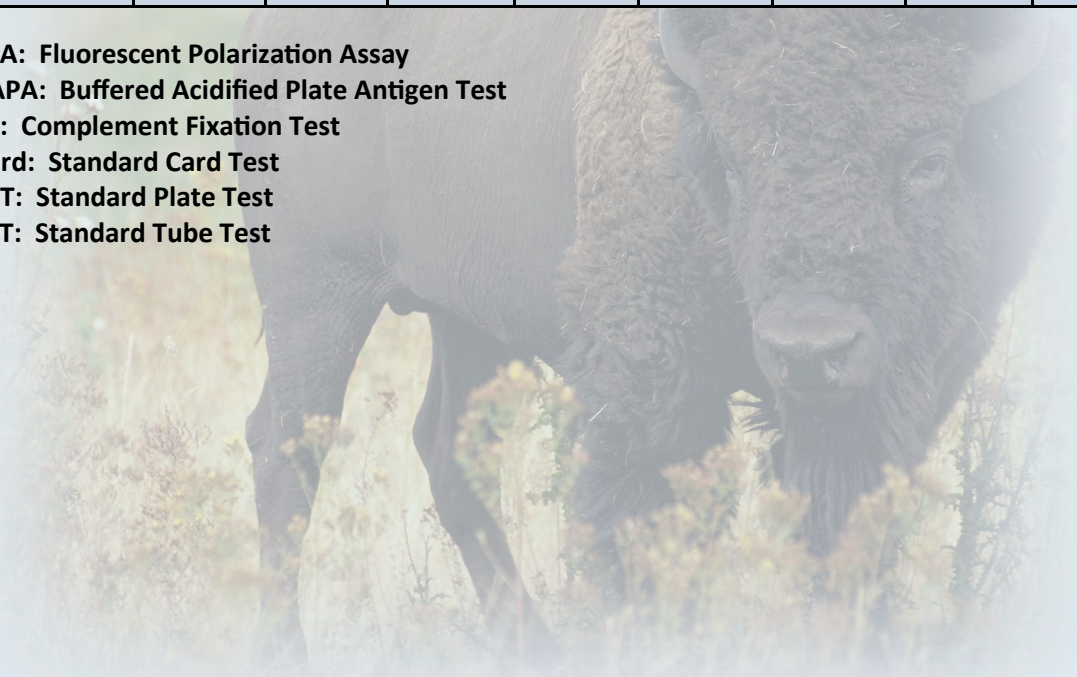


Fig. 8—Bison (Pexels.com)

F Y 2 3 C W D S U M M A R Y

In 2020, the MVDL began testing for chronic wasting disease (CWD) on behalf of Montana Fish Wildlife and Parks and began testing for the State of North Dakota in 2022. This testing program helps serve the MVDL’s mission of protecting public health for Montana hunters. The following data represents the CWD tests performed by the MVDL in FY23. The testing numbers below do not include re-tests for suspected positive samples (our standard practice) in order to more accurately reflect the actual number of animals tested.

Tests by Month	WT Deer	Mule Deer	Elk	Cervidae (Not Specified)	Total Tests
July	5	4	0	2	11
August	3	0	0	3	6
September	25	9	23	38	95
October	352	214	138	92	796
November	1,439	1,443	674	914	4,470
December	1,236	835	333	818	3,222
January	133	73	50	55	311
February	89	31	24	44	188
March	37	19	10	101	167
April	9	4	1	120	134
May	4	1	0	140	145
June	1	0	1	7	9
Total Tests	3,333	2,633	1,254	2,334	9,554

Species	Total Tests	Total Positives
White-tailed (WT) Deer	3,333	192
Mule Deer	2,633	71
Elk	1,254	1
Cervidae (not specified)	2,334	28
Total	9,554	292

Fig. 9—Elk (Pexels.com)

P R O F I C I E N C Y T E S T I N G

Montana Veterinary Diagnostic Laboratory (MVDL) technicians perform routine proficiency testing as a means of maintaining compliance with applicable regulations and assuring the integrity of MVDL testing methods and competency of personnel. The following table summarizes proficiency tests completed in FY23. In addition to proficiency testing, MVDL staff routinely participate in state and national exercises designed to increase preparedness for responding to a foreign animal disease outbreak.

FY2023 MVDL Proficiency Testing Participation	Lab Section
African Swine Fever virus PCR	Molecular Diagnostics
Anaplasmosis cELISA	Serology
Antibiotic and Bacterial Enumeration	Milk Program
Avian Influenza virus PCR	Molecular Diagnostics
Avian Influenza virus ELISA	Serology
Avian Paramyxovirus	Molecular Diagnostics
Bacterial Identification (Terrestrial)	Clinical Microbiology
Bluetongue virus ELISA	Serology
<i>Brucella canis</i> Serology	Serology / Virology
<i>Brucella abortus</i> - SPT, BAPA, STT, CF, Riv, CARD, FPA	Serology
Chemistry Analysis	Clinical Pathology
Classical Swine Fever virus PCR	Molecular Diagnostics
Foot and Mouth Disease virus PCR	Molecular Diagnostics
Equine Infectious Anemia AGID and ELISA	Serology
Electronic Messaging - FMD, PRV, ASF, CSF, IAV, VSV	VADDS/MVDL
Endocrinology Analysis	Clinical Pathology
Feline leukemia virus (FeLV) SNAP	Virology
Feline coronavirus SNAP	Virology
Feline immunodeficiency virus (FIV) SNAP	Virology
Heartworm ELISA	Virology
Hematology Analysis	Clinical Pathology
Interlaboratory Comparison	Clinical Pathology
Mycobacterium avium subsp. ptb (Johnes) ELISA	Serology
Mycobacterium avium subsp. ptb (Johnes) PCR,	Molecular Diagnostics
Mycobacterium avium subsp. ptb (Johnes) PCR, Pooled	Molecular Diagnostics
Parasite Identification	Clinical Microbiology
Pseudorabies virus gB ELISA	Virology
Clinical Pathology Quality Control	Clinical Pathology
Rabies virus DFA	Virology
Salmonella Enteritidis PCR	Molecular Diagnostics
Salmonella Group D Culture and Serotyping	Clinical Microbiology
Toxoplasma gondii Antibody ELISA	Virology
Urinalysis	Clinical Pathology
Urine Identification	Clinical Pathology
Vesicular stomatitis virus PCR	Molecular Diagnostics
Vesicular stomatitis virus CF	Serology
Virulent Newcastle Disease virus PCR	Molecular Diagnostics

Fig. 10—AAVLD logo

Fig. 11—VLA logo (VLA)

T E S T D A T A — S E R O L O G Y

Montana Veterinary Diagnostic Laboratory (MVDL) provides a comprehensive suite of serology test methods, with the majority of tests supporting the Brucellosis surveillance program (managed by the Animal Health Bureau of the Department of Livestock) and screening for Equine Infectious Anemia. The following table details the number of individual tests conducted in fiscal years 2022 and 2023 by test type.

Test Type	FY22	FY23
<i>Brucella abortus</i> FPA (plate)	98,581	91,546
<i>M. avium</i> subsp. <i>paratuberculosis</i> ELISA	5,782	7,564
<i>Brucella abortus</i> BAPA	4,909	6,273
Equine Infectious Anemia (EIA) AGID (total)	5,291	5,062
Anaplasmosis cELISA	1,016	2,415
Equine Infectious Anemia (EIA) ELISA (total)	2,071	2,038
<i>Brucella ovis/canis</i> ELISA	1,078	1,488
<i>Brucella ovis</i> ELISA	480	633
<i>Brucella abortus/suis</i> CF	583	467
<i>Brucella abortus</i> Card	197	287
<i>Brucella abortus</i> STT	213	210
CAE/OPP cELISA	397	104
Bluetongue virus (BTV) ELISA	272	103
Epizootic Hemorrhagic Disease (EHD) AGID	218	99
<i>Brucella abortus</i> FPA (tube)	103	92
<i>Brucella abortus</i> SPT	52	59
<i>Brucella abortus</i> Rivanol	2	2
<i>Salmonella</i> Pullorum/Gallinarum MAT	40	1
<i>Brucella canis</i> RSAT	264	0
<i>Brucella canis</i> 2ME-RSAT	51	0
Serology Total	121,600	118,443

TEST DATA — VIROLOGY

Montana Veterinary Diagnostic Laboratory (MVDL) provides a broad spectrum of virology related diagnostics. The following table details the number of individual tests conducted in fiscal years 2022 and 2023 by test type. Chronic Wasting Disease and *Leptospira* testing are also represented in the table below as these tests are performed by the virology lab section.

Test Type	FY22	FY23
Chronic Wasting Disease (CWD) ELISA	9,090	9,792
Bovine viral diarrhea virus (BVDV) ELISA	2,627	1,590
<i>Leptospira</i> (5 Routine Serovars)	1,392	1,088
Bovine leukemia virus (BLV) ELISA	686	878
Pseudorabies virus ELISA	179	495
Rabies DFA - Small Animal	471	455
<i>Brucella canis</i> Indirect Fluorescent Antibody (IFA)	0	237
Bovine herpesvirus 1 (BHV-1) SN	595	183
Bovine viral diarrhea virus (BVDV) - Virus Isolation	77	135
Bovine viral diarrhea virus (BVDV) SN	398	132
Parainfluenza virus Type 3 (PI3) SN	419	104
Bovine respiratory syncytial virus (BRSV) SN	354	102
<i>Leptospira</i> (7 Routine Serovars)	210	87
Heartworm ELISA	70	80
Giardia Rapid Immunoassay (SNAP)	100	78
Vesicular stomatitis virus (VS Ind) SN	59	54
Vesicular stomatitis virus (VS NJ) SN	59	54
<i>Neospora caninum</i> ELISA	22	39
<i>Coxiella burnetii</i> (Q Fever) ELISA	25	37
Rabies DFA - Large Animal	32	29
Feline Infectious Peritonitis (FIP) ELISA	49	25
FIV Rapid Immunoassay (SNAP)	0	21
Canine distemper virus Fluorescent Antibody (FA)	10	18
Feline Leukemia Virus Rapid Immunoassay (SNAP)	6	15
West Nile virus (WNV) IgM ELISA	18	13
<i>Leptospira hardjo</i> MAT	13	12
Rapid Visual Pregnancy Test (Ruminant)	8	12
<i>Leptospira</i> FA	14	11
Heartworm Rapid Immunoassay (SNAP)	0	10
Ruminant Abortion Serology Panel	0	10

TEST DATA — VIROLOGY (CONT'D)

Test Type	FY22	FY23
<i>Leptospira Pomona</i> MAT	34	9
Equine herpesvirus (EHV) SN	0	6
Bovine viral diarrhea virus (BVDV) FA	3	5
FeLV/FIV Combo Rapid Immunoassay (SNAP)	25	4
<i>Leptospira Icterohaemorrhagiae</i> MAT	6	4
Canine Parvovirus Rapid Immunoassay (SNAP)	6	4
Feline Panleukopenia Virus FA	3	3
FELV/FIV/Heartworm Combo Rapid Immunoassay (SNAP)	30	3
Canine parvovirus FA	1	3
Equine viral arteritis (EVA) virus SN	1	3
<i>Leptospira canicola</i> MAT	1	2
<i>Leptospira grippotyphosa</i> MAT	6	1
Bovine respiratory syncytial virus (BRSV) FA	2	1
Feline enteric coronavirus (FeCV/FIP) FA	1	1
Equine Abortion Serology Panel	0	1
<i>Neospora caninum</i> ELISA	0	1
Relaxin Small Animal Pregnancy Test	0	1
<i>Toxoplasma gondii</i> Antibody ELISA	0	1
Parainfluenza virus Type 3 (PI3) HI	54	0
Bovine herpesvirus 1 (BHV-1) FA	2	0
Canine herpesvirus FA	1	0
Virology Total	17,159	15,849



Fig. 12—Biological Safety Cabinet (Pexels.com)

TEST DATA — MICROBIOLOGY

The Montana Veterinary Diagnostic Laboratory offers a wide range of clinical microbiology services including microorganism isolation and identification. Additional services rendered by the microbiology lab section include antibiotic sensitivity screening and parasite identification. The following table lists the number of microbiology related tests performed in fiscal years 2022 and 2023.

Test Type	FY22	FY23
Aerobic Culture	1,549	1,585
<i>Campylobacter sp.</i> Culture	1,244	1,206
<i>Trichomonas foetus</i> Culture	935	973
Small Animal Antibiotic Sensitivity	611	605
Fecal Flotation	642	587
<i>Salmonella</i> Enteritidis Culture	298	366
Gram Stain	155	247
Additional Isolate - Aerobic	288	215
<i>Mycoplasma sp.</i> Culture	136	147
Equine Antibiotic Sensitivity	118	141
<i>Salmonella sp.</i> Culture	87	139
<i>Cryptosporidium</i> Examination	47	133
<i>Brucella sp.</i> Culture	89	112
Neonatal Diarrhea Panel	46	111
Clostridial Rule-Out	53	103
Bovine Antibiotic Sensitivity	61	67
Abortion Workup (all species)	58	55
Anaerobic Culture	69	39
Dermatophyte Culture	36	20
Direct Microscopic Exam	26	18
Liver Fluke Sedimentation	5	16
Mastitis Antibiotic Sensitivity	10	14
Fecal Occult Blood Test	12	13
Fungal Culture	26	10
Microfilarial Identification	1	5
<i>Trichinella</i> - Pepsin Degradation	5	3
Ectoparasite Exam	3	3
Endoparasite Exam	5	2
<i>Giardia</i> antigen ELISA	7	0
Additional Isolate - Anaerobic	3	0
<i>Giardia</i> Exam	3	0
Acid Fast Exam	1	0
Clinical Microbiology Total	6,639	6,935

TEST DATA

MOLECULAR DIAGNOSTICS (PCR)

Molecular diagnostics is an emerging area in the field of veterinary diagnostics due to the sensitivity and specificity of these testing methods. Montana Veterinary Diagnostic Laboratory (MVDL) has a robust molecular diagnostics division that provides diagnostic testing for many potentially high consequence animal pathogens. The following table lists the total number of tests performed in fiscal year 2022 and 2023 within the molecular diagnostics section of the laboratory.

Test Type	FY22	FY23
<i>Tritrichomonas foetus</i> Individual PCR	1,668	1,360
<i>Tritrichomonas foetus</i> Pooled PCR	1,522	1,609
<i>Salmonella</i> Enteritidis PCR Screen	1,136	1,167
<i>M. avium</i> subsp. <i>paratuberculosis</i> Pooled PCR	668	562
Influenza A virus (Avian/Swine) Matrix Protein PCR	501	477
<i>M. avium</i> subsp. <i>paratuberculosis</i> PCR	320	476
Bovine Viral Diarrhea Virus Individual PCR	86	205
Bovine Rotavirus / Coronavirus Multiplex PCR	51	130
Avian Influenza H5 Subtyping PCR	125	93
Bovine Viral Diarrhea Virus Pooled PCR	57	59
<i>E. coli</i> K99 PCR	12	47
Avian Influenza H7 Subtyping PCR	12	5
Rabbit Hemorrhagic Disease Virus PCR	4	4
Classical Swine Fever Virus PCR	2	2
African Swine Fever Virus PCR	2	2
Swine Influenza Virus N1 Subtyping PCR	0	1
Avian Paramyxovirus-1 Matrix Protein PCR	6	0
Foot and Mouth Disease Virus PCR	1	0
Vesicular Stomatitis Virus Multiplex PCR	1	0
Molecular Diagnostics Total	6,174	6,199

Fig. 13—Lab bench (MVDL)

TEST DATA CLINICAL PATHOLOGY

Clinical Pathology at the Montana Veterinary Diagnostics Laboratory (MVDL) helps aid in disease diagnosis, treatment, and prevention via laboratory testing of blood and other biological fluids for a wide range of large and small animals. The following table lists the total number of tests performed in fiscal years 2022 and 2023 within the Clinical Pathology section of the laboratory (table continues on next page).

Test Type	FY22	FY23
Small Animal Chemistry Panel (Canine)	713	394
Small Animal Complete Blood Count	668	390
Large Animal Chemistry Panel	404	325
Large Animal CBC/Differential	309	278
Urinalysis	274	247
Canine Clinical Profile	462	222
Large Animal Profile	259	215
Canine Thyroid Panel	380	186
Cortisol	200	168
Phenobarbital	144	150
Canine Total T4	184	139
Small Animal Chemistry Panel (Feline)	193	97
Total T4	147	96
Dexamethasone Suppression Test	84	77
Nitrate	68	68
ACTH Stimulation	85	61
Feline Clinical Profile	86	41
ALT	37	33
Cholesterol	37	33
Fluid Analysis	32	31
Thyroid Panel	79	26
PLI	41	22
Electrolytes	13	17
Equine Fitness Profile	12	17
Canine Health Screen	21	12
Small Animal Renal Panel	18	11
Prothrombin Time	18	11
Activated Partial Thromboplastin Time	15	11
Pancreatic Lipase Immunoreactivity	2	10
Free T4	13	8
TSH	6	8
Small Animal Hepatic Panel	34	7

CLINICAL PATHOLOGY (CONT'D)

Test Type	FY22	
Bile Acids	27	7
Coombs Test	3	7
Blood Count	5	6
Total T3	2	6
Feline Health Screen	4	5
Bovine IgG	3	5
Feline Infectious Anemia	21	4
Feline Geriatric Panel	11	4
Equine IgG	9	4
Small Animal Pre-anesthetic Panel	2	4
Magnesium	2	4
Calcium	0	4
Large Animal Health Screen	6	3
Small Animal Pre-Anesthetic Profile	2	3
Phosphorous	0	3
Feline Profile	21	2
Reticulocyte Count	3	2
Gamma-glutamyl Transferase (GGT)	1	2
Nitrate (Semi Quantitative)	0	2
Potassium	0	2
Creatinine	3	1
Canine Endocrine Panel	2	1
BUN	2	1
Fibrinogen (Heat Precipitation)	2	1
Glucose	1	1
Canine Thyroid Panel	0	1
Feline Anemia Panel	0	1
Hemotropic Parasite Screen	2	1
Sodium	0	1
AST/CKI	3	0
Blood Cross Match	3	0
Direct Bilirubin	2	0
Creatine Kinase	2	0
AST	1	0
ALP	1	0
Clinical Pathology Total	5,184	3,490

TEST DATA — HISTOLOGY

The Histology section of the laboratory provides sample processing for microscopic evaluation of tissues by pathologists. Histochemical stains help identify specific tissue and cellular components. The following table reports the number of cases that included routine (H&E) histologic processing and the number of individual special stains prepared during fiscal years 2022 and 2023.

Test Type	FY22	
Hematoxylin & Eosin (number of cases)	2,134	2,079
Acid Fast (Ziehl-Neelsen)	168	102
Grocott's Methenamine Silver	40	59
Gram (Brown & Brenn) HC	62	53
Giemsa	48	48
Acid Fast (Fite's)	29	26
Duplicate H&E	135	20
Toluidene Blue	4	9
Purl's Prussian Blue	10	8
PAS	11	7
Warthin-Starry	12	5
Decalcification/ keratin treatment	23	4
Masson's Trichrome	19	4
Rhodanine	2	3
Congo Red	2	3
Von Kossa	7	2
Melanin Bleach	4	1
Fontana Masson	2	1
Mucicarmine	0	1
Steiner & Chapman	0	1
CWD Tissue Processing	16	0
Alcian Blue	1	0
Turnbull Blue	1	0
Histology Total	2,730	2,436

S E R V I C E D A T A — P A T H O L O G Y

The Montana Veterinary Diagnostic Laboratory offers a full spectrum of pathology services including large and small animal necropsies, abortion investigation, cytology, histopathology for surgical biopsies and necropsies, and other ancillary testing. Our board certified pathology staff is always available for consultation upon request. The following table shows a summary of pathology services performed in fiscal years 2022 and 2023.

Service	FY22	FY23
Histopathology (biopsy/mail-in)	2,015	1,999
Cytology	289	286
Necropsy (Livestock)	104	103
Necropsy (Other Species)	67	63
Case Material Return	34	42
Insurance/Legal case (hourly fee)	9	15
Spinal Cord Removal (Large Animal)	3	2
After Hours Carcass Receiving	1	1
Spinal Cord Removal (Small Animal)	1	0
Pathology Total	2,523	2,511



Fig. 16—Microscope (Pexels.com)



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