



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

July 1, 2020 through June 30, 2021

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Fig. 1—Sheep (Pexels.com)

LAB DIRECTOR'S STATEMENT

The 2021 fiscal year was challenging for many individuals and businesses across the state as a result of the SARS-CoV-2 pandemic. Despite these challenges, the MVDL was able to maintain its full suite of diagnostic testing services with no impact on operational throughput. I am very proud of our dedicated staff at the MVDL and thankful for the excellent supporting staff in other branches of the Department of Livestock that made this possible. 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 FY21, the MVDL expanded its role in supporting the broader mission of Public Health for the State of Montana. Throughout the fall/winter season of FY21, the MVDL performed over 8000 tests for Chronic Wasting Disease (CWD) on behalf of Montana Fish Wildlife and Parks and Montana hunters. This was our first year performing CWD testing and we were extremely pleased with the success in bringing these operations online and our ability to provide timely results. During the majority of FY21, MVDL also provided indirect support for the State's SARS-CoV-2 testing response by way of lending a high-throughput sample extraction unit to the Department of Public Health's central testing lab in Helena. This allowed DPH to immediately increase testing throughput for the State's SARS-CoV-2 testing program.

The Montana Veterinary Diagnostic Lab spent a significant amount of time in FY21 preparing to offer a number of new diagnostic tests which will be made available in July of 2021. A new Bovine Viral Diarrhea Virus (BVDV) SNAP test will significantly reduce turnaround time on single-animal testing for this virus and is more affordable than our current BVDV PCR test. An Equine Viral Arteritis (EVA) virus neutralization test will be offered and we are also making available a *Giardia* SNAP test that is USDA approved and will cost approximately half of our currently offered *Giardia* ELISA test. Additionally, we will be offering an ELISA-based ruminant pregnancy test and a *Coxiella burnetii* (Q-Fever) ELISA. MVDL also now has USDA approval to perform a Rabbit Hemorrhagic Disease Virus-2 PCR test for surveillance and confirmatory purposes.

Other tests currently in development at MVDL include a *Mycoplasma bovis* PCR test, a *Coxiella/Chlamydophila* PCR test, and a *Clostridium perfringens* Typing PCR test. These PCR tests will be offered once development and verification are completed. All new MVDL test offerings are a result of feedback received from our clients and technical input from our in-house expert veterinary microbiologist, Dr. Erika Schwarz-Collins.

As we head into FY2022, we will continue to evaluate and improve our business operations with a focus on delivering timely and accurate results, customer service, and ease of use for our clients. We would like to thank all our clients for their continued business and look forward to providing your diagnostic testing needs in the future.

Sincerely,



Gregory Juda, PhD
Lab Director
Montana Veterinary Diagnostic Laboratory

DIAGNOSTIC LAB STAFF FY2021

Administration

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

Administrative Support

Tess Moore..... Quality Manager
Cathy Ortega Front Office
Michelle Reynolds Front Office
Lauren Larios..... Pathology/Administrative Assistant

Clinical Pathology

Cecilia Esparza, CLSClinical Laboratory Technologist
Katie Arenas Technician

Histology

Dan Zou, PhD..... Technician

Microbiology

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

Milk Laboratory

Julie Armstrong Technician
Erin Burns Technician

Molecular Diagnostics

Aracely Ospina-Lopez, MS..... Technician
Daniel Arenas, MS Technician

Serology

Antonio Fuentes Sanchez..... Technician
Diana Durnal Technician

Virology

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

Fig. 2—Stacked Rocks (Pexels.com)

B U D G E T A N D F U N D I N G

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 FY2021.

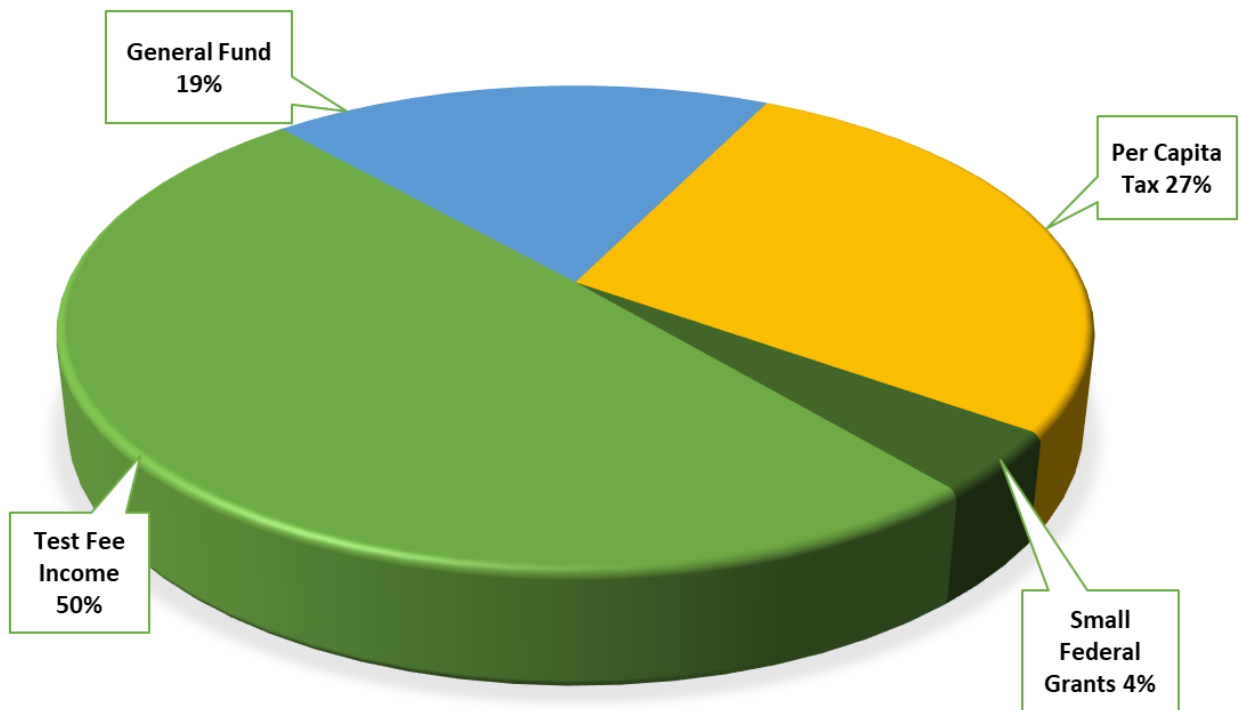


Fig. 3—MVDL Funding categories

2021 Fiscal Year Lab Funding Sources	
Test Fee Income	\$1,600,708
General Fund	\$605,718
Per Capita Tax	\$889,418
Small Federal Grants	\$131,000
Total Operational Budget	\$3,226,844

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 been critical to MVDL operational capabilities via the purchase of equipment utilized within the Molecular Diagnostics and Pathology lab sections and most recently for chronic wasting disease testing. The MVDL has the capability to perform NAHLN testing 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

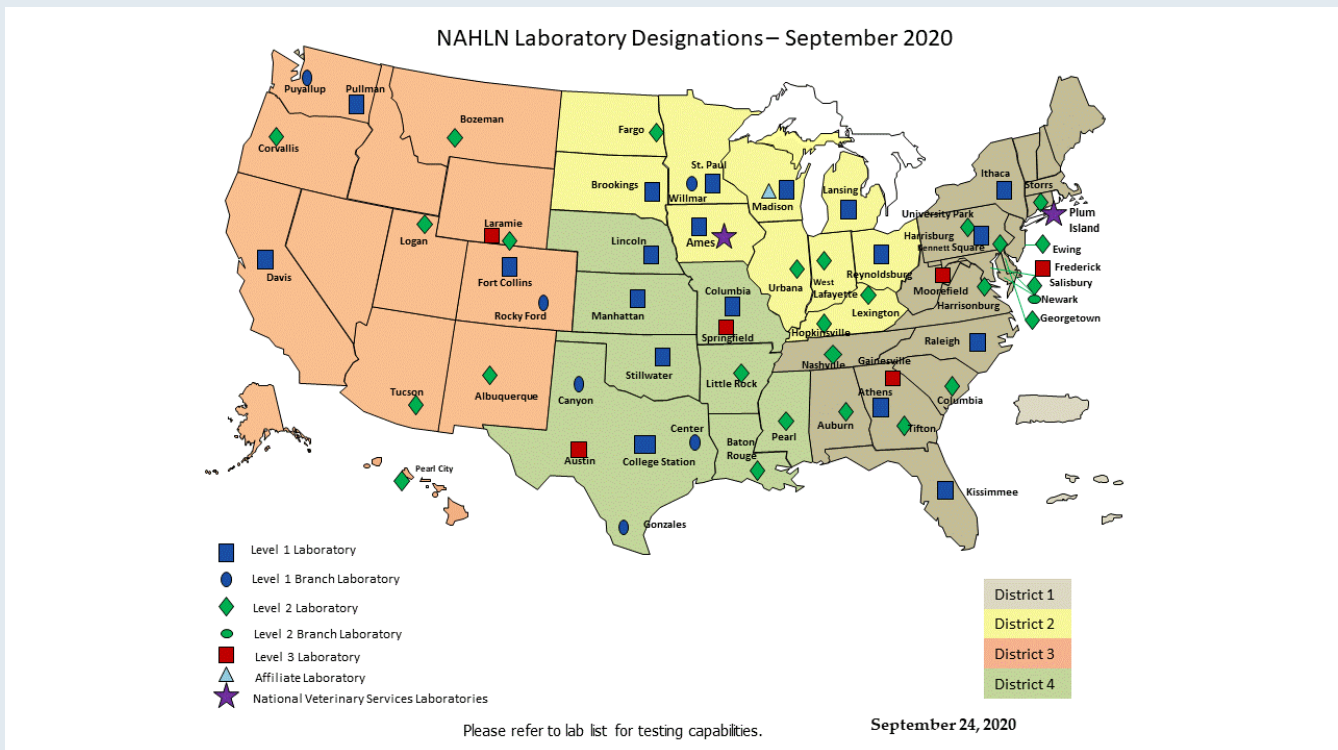


Fig. 4—NAHLN map (USDA)

ACCESSION AND TESTING DEMOGRAPHICS FY21

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 testing. A comparison of FY20 and FY21 accession and testing numbers is provided

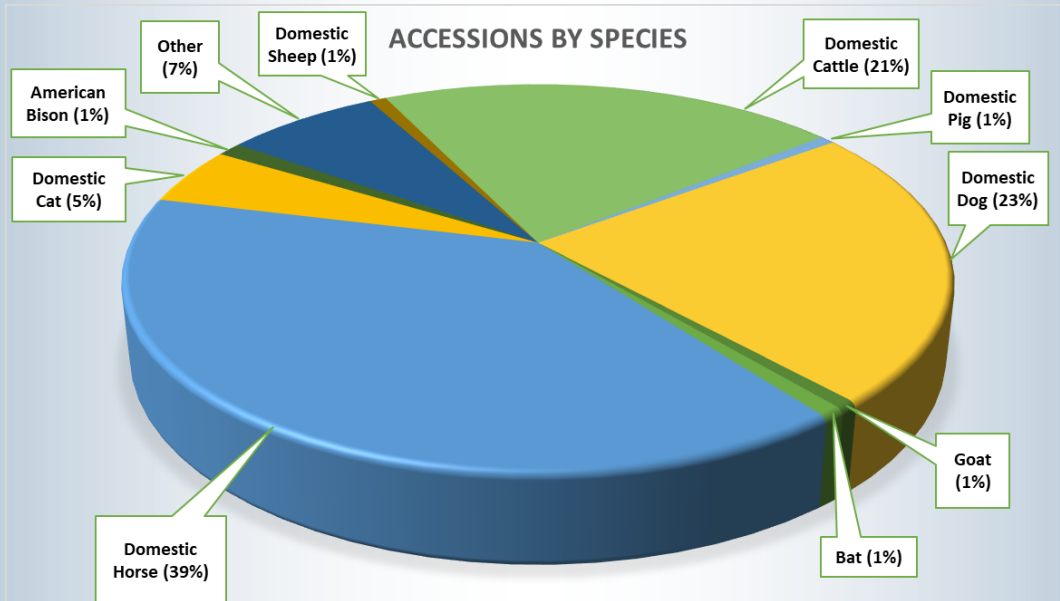


Fig. 5— Accessions by Species

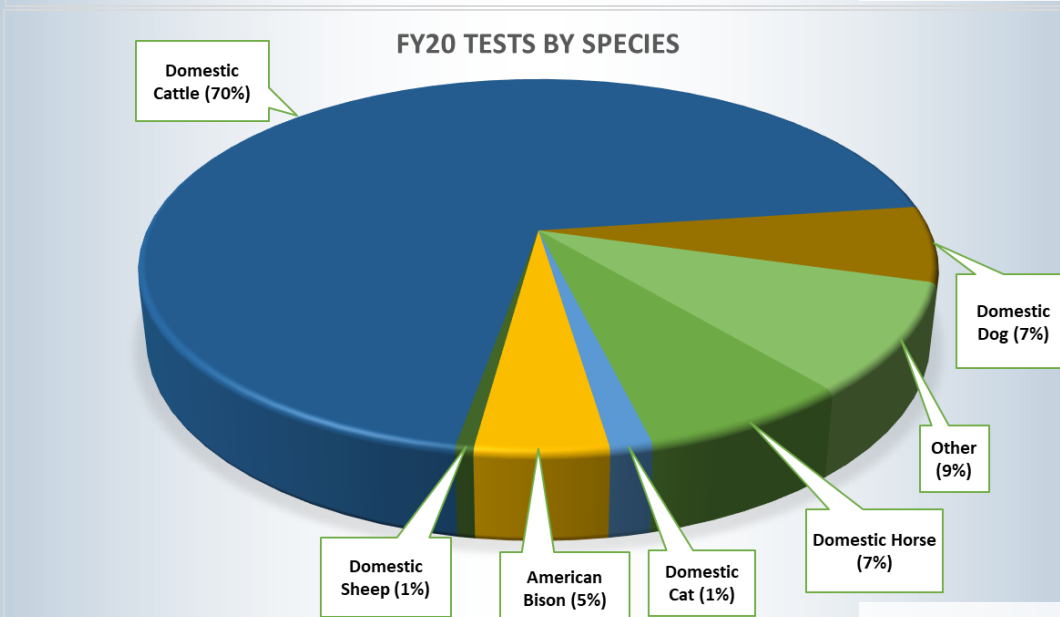


Fig. 6— Tests by Species

Year-Over-Year Accessions and Testing Data:

	FY2020	FY2021
Total Accessions	18,913	19,710
Total Tests	171,613	191,438

F Y 2 1 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 Fiscal Year 2021, 13 bats and three 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	131	13	22	166
Black Bear	1	0	0	1
Brown Bear (Grizzly)	1	0	0	1
Bushy-tailed Woodrat	2	0	0	2
Cottontail Rabbit	1	0	0	1
Coyote	2	0	0	2
Domestic Cat	88	0	2	90
Domestic Cattle	8	0	0	8
Domestic Dog	105	0	2	107
Domestic Goat	5	0	0	5
Domestic Horse	7	0	0	7
Fox	4	0	0	4
Gray Wolf	1	0	0	1
Mountain Lion	0	0	1	1
Raccoon	8	0	1	9
Squirrel	4	0	0	4
Striped Skunk	10	3	1	14
Total	378	16	29	423



Fig. 7—Bat (MT FWP)

F Y 2 1 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 *Brucella* tests performed by the Montana Veterinary Diagnostic Laboratory (MVDL). In FY2021, the MVDL performed 115,222 tests for *Brucella abortus* which represented approximately 50% of the MVDL’s total testing volume, which includes a robust surveillance program for brucellosis in southwest Montana.

Tests by Month	FPA	BAPA	CF	Card	SPT 1:50	STT 1:50	Rivanol	Total
July	2,712	400	59	21	1	10	0	3,203
August	3,527	252	53	1	4	10	0	3,847
September	10,540	261	43	2	0	9	0	10,855
October	23,701	290	76	0	1	32	0	24,100
November	28,371	335	48	18	0	10	0	28,782
December	17,807	403	136	56	6	22	0	18,430
January	6,342	456	78	0	0	23	0	6,899
February	2,925	333	78	30	0	18	1	3,385
March	3,147	503	117	26	7	17	0	3,817
April	3,094	666	144	26	2	41	0	3,973
May	4,940	414	49	19	3	16	0	5,441
June	1,872	457	89	50	4	18	0	2,490
Total Tests	108,978	4,770	970	249	28	226	1	115,222

- * **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**

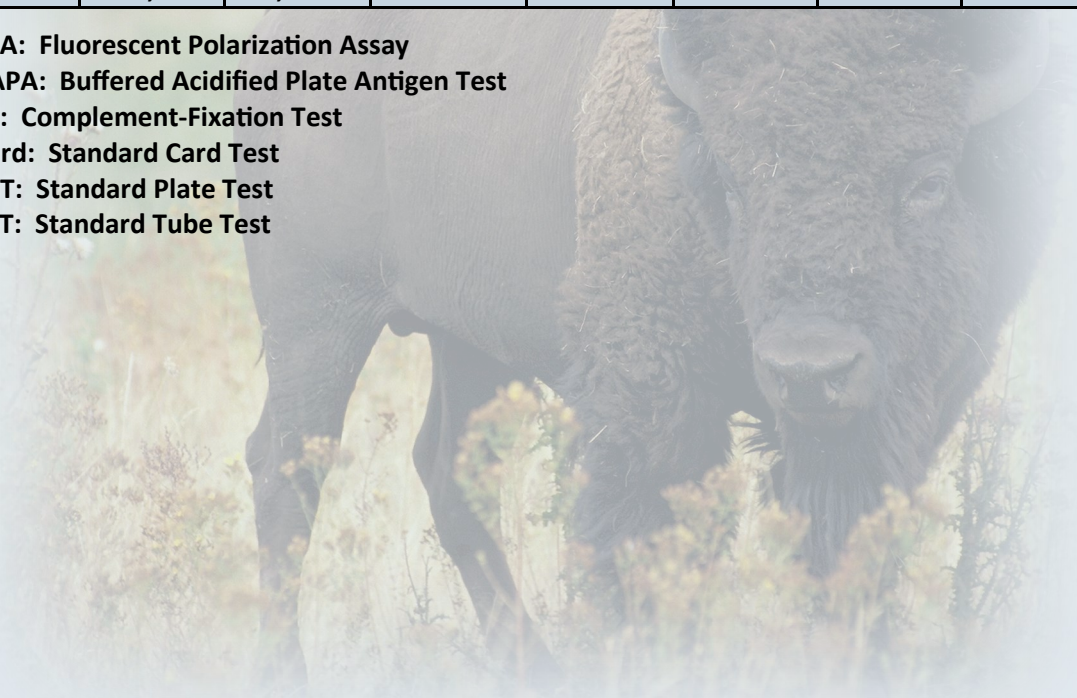


Fig. 8—Bison (Pexels.com)

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 personnel. The following table summarizes proficiency tests completed in FY2021.

FY2021 MVDL Proficiency Testing Participation	Lab Section
African Swine Fever virus PCR	Molecular Diagnostics
Anaplasmosis cELISA	Clinical Serology
Antibiotic and Bacterial Enumeration	Milk Program
Avian Influenza virus PCR	Molecular Diagnostics
Avian Influenza virus AGID/ELISA	Clinical Serology
Avian Paramyxovirus	Molecular Diagnostics
Bacterial Identification Terrestrial	Clinical Microbiology
<i>Brucella canis</i> Sero	Clinical Serology
<i>Brucella ovis</i> ELISA	Clinical Serology
<i>Brucella abortus</i> - SPT, BAPA, STT, CF, Riv, CARD, FPA	Clinical Serology
Chemistry Analysis	Clinical Pathology
Classical Swine Fever PCR	Molecular Diagnostics
Foot and Mouth Disease PCR	Molecular Diagnostics
Equine Infectious Anemia AGID	Clinical Serology
Electronic Messaging - FMD, PRV, ASF, CSF, IAV, VSV	Information Technology - VADDS
Endocrinology Analysis	Clinical Pathology
Feline Leukemia virus SNAP	Clinical Virology
Feline Coronavirus SNAP	Clinical Virology
Feline Immunodeficiency virus SNAP	Clinical Virology
Heartworm ELISA	Clinical Microbiology
Hematology Analysis	Clinical Pathology
Johnes ELISA	Clinical Serology
Johnes PCR, Direct, Individual	Molecular Diagnostics
Johnes PCR, Pooled	Molecular Diagnostics
Parasitological Identification	Clinical Microbiology
Clinical Pathology Quality Control	Clinical Pathology
Rabies virus DFA	Clinical Virology
<i>Salmonella</i> PCR	Molecular Diagnostics
<i>Salmonella</i> Group D and Serotype	Clinical Microbiology
Urinalysis	Clinical Pathology
Urine Identification	Clinical Pathology
Vesicular Stomatitis virus PCR	Molecular Diagnostics
Vesicular Stomatitis virus CF	Clinical Serology
Virulent Newcastle Disease virus PCR	Molecular Diagnostics



Fig. 9—AAVLD logo (AAVLD)



Fig. 10—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 2020 and 2021 by test type.

Test Type	FY20	FY21
<i>Brucella abortus</i> FPA	69,681	106,695
<i>Brucella abortus</i> BAPA	11,020	15,754
<i>M. avium</i> subsp. paratuberculosis ELISA	4,417	5,712
EIA AGID (total)	4,985	4,966
EIA ELISA (total)	1,723	2,042
Anaplasma cELISA	1,241	1,308
<i>Brucella abortus/suis</i> CF	1,090	966
<i>Brucella ovis</i> ELISA	594	714
CAE/OPP cELISA	174	307
Bluetongue ELISA	1,063	268
<i>Brucella abortus</i> Card	328	247
<i>Brucella abortus</i> STT (1:50)	173	224
<i>Brucella canis</i> RSAT	101	194
<i>Brucella ovis/canis</i> ELISA	0	72
<i>Salmonella Pullorum</i>	735	64
Avian Influenza AGID	139	34
<i>Brucella abortus</i> SPT (1:50)	18	27
<i>Brucella canis</i> 2ME-RSAT	3	23
<i>Brucella abortus</i> FPA (tube)	0	6
<i>Brucella abortus</i> Rivanol	10	1
<i>Brucella abortus</i> RAP	16,116	0
<i>Brucella abortus</i> STT (1:25)	1	0
EHD AGID	476	0
Serology Total	114,088	139,624

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 2020 and 2021 by test type. Chronic Wasting Disease is represented in the table below as the testing is performed by the virology lab section.

Test Type	FY20	FY21
Chronic Wasting Disease ELISA	0	8,275
<i>Leptospira</i> (5 Routine Serovars)	1,777	1,448
Bovine Viral Diarrhea Virus ELISA	2,052	1,437
Bovine Leukemia Virus ELISA	966	935
Bovine Herpesvirus 1 SN	1,069	790
Bovine Viral Diarrhea Virus SN	729	600
Bovine Respiratory Syncytial Virus SN	847	539
Parainfluenza-3 HI	808	524
Rabies - Small Animal	472	403
Pseudorabies ELISA	252	260
<i>Leptospira</i> (7 Routine Serovars)	164	152
Heartworm ELISA	72	80
Bovine Viral Diarrhea Virus Isolation	78	74
FELV/FIV Combo Rapid Immunoassay (SNAP)	89	68
Feline Infectious Peritonitis ELISA	52	57
Vesicular Stomatitis (Ind) SN	33	44
Vesicular Stomatitis (NJ) SN	33	44
<i>Leptospira Pomona</i> MAT	4	35
FELV/FIV/Heartworm Combo Rapid Immunoassay (SNAP)	0	28
Rabies - Large Animal	22	20
<i>Leptospira</i> Fluorescent Antibody	13	16
<i>Neospora caninum</i> ELISA	0	13
West Nile Virus IgM ELISA	17	13
<i>Leptospira grippotyphosa</i> MAT	4	11
Bovine Parainfluenza-3 Virus Fluorescent Antibody	0	9
Bovine Viral Diarrhea Virus Fluorescent Antibody	1	8
<i>Leptospira Icterohaemorrhagiae</i> MAT	9	8
Canine Parvovirus Rapid Immunoassay (SNAP)	9	7
Canine Distemper Virus Fluorescent Antibody	14	3

TEST DATA — VIROLOGY (CONT'D)

Test Type	FY20	FY21
Canine Parvovirus Fluorescent Antibody	3	3
Feline Leukemia Virus Rapid Immunoassay (SNAP)	9	3
Feline Panleukopenia Virus Fluorescent Antibody	4	1
<i>Leptospira autumnalis</i> MAT	0	1
<i>Leptospira bratislava</i> MAT	0	1
<i>Leptospira hardjo</i> MAT	1	1
Bovine Herpesvirus 1 Fluorescent Antibody	2	0
Bovine Leukemia Virus AGID	59	0
Canine Herpesvirus Fluorescent Antibody	2	0
<i>Leptospira canicola</i> MAT	3	0
Virology Total	9,669	15,911



Fig. 11—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 2020 and 2021.

Test Type	FY20	FY21
<i>Campylobacter</i> Culture	1,471	1,466
Aerobic Culture	1,515	1,375
<i>Tritrichomonas foetus</i> Culture	1,094	1,113
Fecal Flotation	793	606
Small Animal Antibiotic Sensitivity	516	441
<i>Salmonella enteritidis</i> Culture	323	347
Additional Isolate - Aerobic	194	301
Gram Stain	205	165
Equine Antibiotic Sensitivity	113	145
<i>Mycoplasma</i> Culture	132	140
<i>Salmonella</i> Culture	226	127
<i>Giardia</i> antigen ELISA	112	94
<i>Brucella</i> Culture	119	88
<i>Cryptosporidia</i>	129	70
Bovine Antibiotic Sensitivity	71	55
Clostridial Rule-Out	0	48
Abortion workup - all species	74	37
Anaerobic Culture	5	28
Dermatophyte Culture	29	27
Direct Microscopic Exam	6	15
Occult Blood Test	10	15
Fungal Culture	11	11
Mastitis Antibiotic Sensitivity	22	10
Ectoparasite Exam	11	6
Acid Fast Exam	0	4
Endoparasite Exam	4	4
Liver Fluke Sedimentation	20	4
Microfilarial identification	3	4
<i>Trichinella</i> - Pepsin Degradation	3	4
Additonal Isolate - Anaerobic	0	3
<i>Coccidia</i> Smear	1	0
Electronic Somatic Cell Count	1	0
Clinical Microbiology Total	7,213	6,753

TEST DATA

MOLECULAR DIAGNOSTICS (PCR)

Molecular diagnostics is an emerging area in the field of veterinary diagnostics due to the sensitivity and selectivity 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 2020 and 2021 within the molecular diagnostics section of the laboratory.

Test Type	FY20	FY21
<i>Tritrichomonas foetus</i> Individual PCR	1,828	1,669
<i>Tritrichomonas foetus</i> Pooled PCR	1,499	1,510
<i>Salmonella enteritidis</i> PCR Screen	1,024	1,061
<i>M. avium</i> subsp. paratuberculosis PCR	518	452
<i>M. avium</i> subsp. paratuberculosis Pooled PCR	247	439
Avian Influenza A Matrix	1	103
Bovine Rotavirus / Coronavirus Multiplex PCR	121	75
Bovine Viral Diarrhea Virus Pooled PCR	93	62
<i>E. coli</i> K99 PCR	12	20
Bovine Viral Diarrhea Virus Individual PCR	27	14
Rabbit Hemorrhagic Disease Virus PCR	0	3
Avian Paramyxovirus-1 Matrix PCR	1	1
Foot-and-Mouth Disease PCR	2	1
African Swine Fever PCR	130	0
Avian Influenza H5	1	0
Avian Influenza H7	1	0
Classical Swine Fever PCR	2	0
Molecular Diagnostics Total	5,507	5,410



Fig. 12—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 2020 and 2021 within the clinical pathology section of the laboratory (table continues on next page).

Test Type	FY20	FY21
Small Animal Chemistry Panel (canine)	936	1,132
Small Animal Complete Blood Count	996	1,063
Canine Clinical Profile	645	712
Large Animal Chemistry Panel	373	446
Canine Thyroid Panel	331	407
Large Animal CBC/Differential	377	323
Small Animal Chemistry Panel (feline)	249	296
Canine Total T4	218	282
Large Animal Profile	300	265
Urinalysis	288	249
Total T4	217	237
Cortisol	177	221
Phenobarbital	126	133
Feline Clinical Profile	116	127
ACTH Stimulation	192	120
Dexamethasone Suppression	189	95
PLI	56	81
Thyroid Panel	63	59
Feline Infectious Anemia	59	57
Feline Profile	53	54
Nitrate	55	44
Canine Health Screen	24	40
ALT	16	37
Cholesterol	17	37
Free T4	66	37
Fluid analysis	31	36
Clin Path comment	14	31
Small Animal Hepatic Panel	16	28
Small animal Pre-anesthetic Panel	13	27
Small Animal Renal Panel	18	23
Prothrombin Time	14	17
Activated Partial Thromboplastin Time	16	16

CLINICAL PATHOLOGY (CONT'D)

Test Type	FY20	FY21
Bile Acids	29	30
Total T3	6	15
Coombs	4	9
Electrolytes	22	9
Equine Fitness Profile	4	9
Expanded Electrolytes Pan	2	9
Feline Geriatric Panel	4	9
Feline Health Screen	18	9
Large Animal Health Scree	6	8
TSH	9	8
Blood Count	5	6
Equine IgG	4	4
Fibrinogen (Heat Precipitation)	1	3
Magnesium	4	3
Bovine IgG	7	2
Calcium	5	2
Canine Endocrine Panel	1	2
CSF analysis	4	2
Feline Anemia Panel	4	2
Phosphorous	3	2
Reticulocytes	0	2
Amylase	1	1
Direct Bilirubin	1	1
Gamma-glutamyl Transferase	3	1
Glucose	0	1
Albumin	3	0
ALP	1	0
AST	2	0
BUN	3	0
Creatine Kinase	3	0
Creatinine	3	0
Globulin	1	0
Individual Chemistry Tests	27	0
Potassium	4	0
Sodium	4	0
Total Bilirubin	2	0
Total Protein	2	0
Urinalysis with Culture/Sensitivity	102	0
Clinical Pathology Total	6,565	6,881

T E S T D A T A — H I S T O L O G Y

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 2020 and 2021.

Test Type	FY20	FY21
Hematoxylin & Eosin (number of cases)	2,095	2,082
CWD Tissue Processing	162	336
Duplicate H&E	12	220
Acid Fast (Ziehl Neelsen)	39	95
Gram (Brown & Brenn) HC	61	67
Giemsa	31	55
GMS	27	44
Masson's Trichrome	15	20
Acid Fast (Fite's)	9	19
Decalcification/ keratin treatment	25	16
Purl's Prussian Blue	8	14
Warthin-Starry	15	14
PAS	40	9
Von Kossa	10	8
Gram (Brown and Hopps)	2	3
Melanin Bleach	12	3
Rhodanine	1	2
Alcian Blue	2	1
Mucicarmine	0	1
Steiner & Chapman	3	1
Van Gieson	1	1
Additional per slide	36	0
Congo Red	6	0
Fontana Masson	2	0
Gimenez	1	0
Hallâs Bilirubin HC	3	0
Luxol Fast Blue	1	0
Macchiavello	1	0
Toluidene Blue	14	0
Histology Total	2,634	3,011

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 2020 and 2021.

Service	FY20	FY21
Histopathology (biopsy/mail-in)	1,965	1,991
Cytology	312	303
Necropsy (Livestock)	98	98
Neonatal Diarrhea Panel	104	68
Necropsy (Other Species)	83	55
Case Material Return	32	31
Insurance/Legal case (hourly fee)	10	21
Spinal Cord Removal (Large Animal)	1	3
Spinal Cord Removal (Small Animal)	3	1
After Hours Carcass Receiving	1	0
Pathology Total	2,609	2,571



Fig. 15—Microscope (Pexels.com)



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