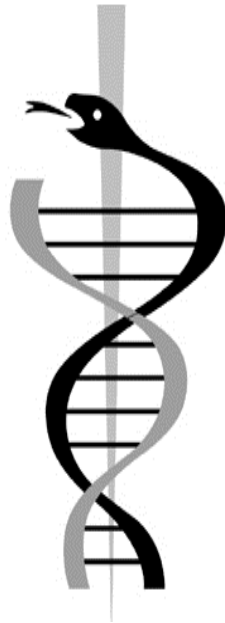


**COLORADO STATE UNIVERSITY
VETERINARY DIAGNOSTIC LABORATORIES**

ANNUAL REPORT 2016



**COLORADO STATE UNIVERSITY
VETERINARY DIAGNOSTIC LABORATORIES
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**ARKANSAS VALLEY
Animal Disease Diagnostic Laboratory
27847 Road 21/Rocky Ford, CO 81067
Phone 719/254-6382 Fax 719/254-6055
WESTERN SLOPE
Animal Diagnostic Laboratory
425-29 Road/Grand Junction, CO 81504
Phone 970/243-0673 Fax 970/242-0003**

MISSION STATEMENT

The mission of Colorado State University Veterinary Diagnostic Laboratories is to provide timely, accurate, and pertinent animal disease diagnostic services and educational outreach to veterinarians, animal industries, and animal interests. The Diagnostic Laboratories also will strive to meet the goals of the College of Veterinary Medicine and Biomedical Sciences, and the University, by contributing to research to develop new approaches to disease identification, investigation, and prevention and by contributing to the education of professional veterinary medical, graduate, undergraduate, and postdoctoral students.

VISION

To be a globally recognized leader in veterinary laboratory diagnostics.

VALUES

Accountability
Collaboration
Team
Transparency
Respect
Continuous Improvement

MESSAGE FROM THE DIRECTOR

Every year, we assemble a summary of the activities of the CSU Veterinary Diagnostic Laboratories. We hope you find this information interesting and of use. The activities of the faculty and staff are listed by the calendar year 2016. The testing and disease statistics are by the fiscal year July 1, 2015 to June 30, 2016. Data from all three laboratories of the system are included, although listed separately. Our goal, as always, is to provide quality timely service and meet our Mission as stated above. Please do not hesitate to contact us about this annual report (or any other issue).

Respectfully,



Director, CSU Veterinary Diagnostic Laboratories
Helping animals, people, and the planet

VETERINARY DIAGNOSTIC LABORATORY PERSONNEL

FORT COLLINS	Barbara Powers, DVM, PhD, DACVP Kristy Pabilonia, DVM, PhD, DACVM	Laboratory Director Assistant Laboratory Director
Avian Diagnostics	Kristy Pabilonia, DVM, PhD, DACVM Ted Anderson Sean McCluskey Cristy Dice Jeruesha Nichols Jenna Oxenhandler	Avian Section Head Archivist/Research Associate Archivist/Research Associate Avian Program Coordinator Avian Program Specialist Avian Program Specialist
Bacteriology	Open Denise Bolte Cindy Hirota Mike Russell	Bacteriology Section Head Laboratory Technician Laboratory Technician Laboratory Technician
Chemistry/Toxicology	Dwayne Hamar, PhD Kevin Daniels Thomas Davis	Chem/Tox Section Head Laboratory Technician Laboratory Technician
Clinical Pathology	Linda Vap, DVM, DACVP Paul Avery, DVM, PhD, DACVP Andrea Bohn, DVM, PhD, DACVP Amy MacNeill, DVM, PhD Christine Olver, DVM, PhD, DACVP A. Russell Moore, MS, DVM	Clinical Pathology Section Head Clinical Pathologist Clinical Pathologist Clinical Pathologist Clinical Pathologist Clinical Pathologist
Endocrinology/Special Serology	Mike Lappin, DVM, PhD, DACVIM Melissa Brewer Jennifer Hawley Arianne Morris	E/SS Section Head Research Associate Research Associate Research Associate
Histology	Todd Bass Amy Boyd Wendy Cottrell Bruce Cummings Grant Evans Joe McDowell	Laboratory Manager Laboratory Technician Laboratory Technician Laboratory Technician Laboratory Technician Laboratory Technician
Molecular Diagnostics	Kristy Pabilonia, DVM, PhD, DACVM Kirsten Reed Christina Weller Kristie Rice	Molecular Section Head Laboratory Technician Laboratory Technician Laboratory Technician
Office Staff	Connie Heighes Janice Inman Tracy Baszler Carrie Schmer Tina Kane Pete Grabel Krista Kirkpatrick Michelle McHugh Lisa Monzingo Nancy Ault Evan Casey Alysia Cozza Cassandra Grothe Carolyn Laughlin Tracy Toberman Michelle Miller Cindy Arrieta Lori Bowker Lisa Jackson Julie Wright	Business Officer/Asst to Director Accounting/Grant Manager Computer Services Team Lead Computer Services Office Manager/Client Services Client Services/Phone Client Services/Phone Client Services/Phone Office Manager/HR Liaison Office Manager/Sample Receiving Sample Receiving Sample Receiving Sample Receiving Sample Receiving Sample Receiving Reception/Administrative Assistant Transcription/Administrative Assistant Transcription/Administrative Assistant Transcription/Administrative Assistant Transcription/Administrative Assistant

DIAGNOSTIC LABORATORY PERSONNEL-cont.

Parasitology	Ashley McGrew, DVM, PhD, DACVM Jason Williams	Parasitology Section Head Research Associate
Pathology	Barbara Powers, DVM, PhD, DACVP Gary Mason, DVM, PhD, DACVP Tawfik Aboellail, MVSc, PhD, DACVP Patricia Cole, DVM, PhD, DACVP Colleen Duncan, DVM, MSc, PhD, DACVP, DACVPM EJ Ehrhart, DVM, PhD, DACVP Chad Frank, DVM, MS, DACVP Sushan Han, DVM, PhD, DACVP Paula Schaffer, DVM, MS, DACVP Terry Spraker, DVM, PhD, DACVP Charlie Davis, DVM Lee DeBuse Katherine Luntsford Zachary Desmond Chad Hopkins Lisa Wolfe	Pathologist/Director Pathology Section Head Pathologist Pathologist Pathologist Pathologist Pathologist Case Coordinator Laboratory Technician Laboratory Support Laboratory Technician Laboratory Technician Laboratory Support QA Manager QA Assistant Manager
Quality Assurance	Dwayne Hamar, PhD Kevin Daniels	TSE Section Head Laboratory Manager Laboratory Technician
TSE Laboratory	Barbara Powers, DVM, PhD, DACVP Kathi Wilson Leah Powers	Virology Section Head Laboratory Technician Laboratory Technician
Virology	Christie Mayo, DVM, PhD Monica Estay Andrew Freistaedter Christina Gates	
ROCKY FORD Laboratory	Gene Niles, DVM, MS Loxi Proctor Jennifer Boden Dayla Pearl Carol Aragon Jane Carman-Wharry	Laboratory Director Laboratory Support Laboratory Technician Laboratory Technician Laboratory Technician Microbiologist
GRAND JUNCTION Office Staff Laboratory	Raye Walck, DVM Antonia Histia Martina Svetlik Katherine Wadsworth Scott Mullin	Laboratory Director Administrative Assistant Laboratory Support Laboratory Support General Labor

AWARDS, HONORS, AND SERVICE MILESTONES - 2016

<u>5 Years of Service</u>	<u>10 Years of Service</u>	<u>25 Years of Service</u>	<u>30 Years of Service</u>
Evan Casey Chad Frank Sushan Han	Tawfik Aboellail Connie Heighes Antonia Histia (WS) Janice Inman Dayla Pearl (RF)	Nancy Ault	Barbara Powers

EXTERNAL ADVISORY COMMITTEE MEMBERS

Member / Industry Representing:

Dr. Donald Beckett-USDA/APHIS	755 Parfet, Suite 136	Lakewood, CO 80215
Dr. Joan Bowen-Small Ruminant	5036 ECR 60	Wellington, CO 80549
Mr. Norm Brown-Equine	8167 NCR 11	Wellington, CO 80549
Dr. Gregg Dean-MIP Dept Head	CSU Dept of MIP	Fort Collins, CO 80523
Mr. Ernie Etchart-Sheep	58751 Loesch Road	Montrose, CO 81402
Mr. Terry Fankhauser-Exec Dir/CCA	8833 Ralston Road	Arvada, CO 80002
Dr. Karen Fox-CPW	317 W. Prospect Road	Fort Collins, CO 80526
Dr. Mike Gotchey-Equine	1878 Lincoln Avenue	Steamboat Springs, 80487
Dr. Tim Hackett-VTH Director	CSU VTH	Fort Collins, CO 80523
Dr. Marv Hamann-Mixed Practice	183 Domingo Drive	Pueblo West, CO 81007
Dr. Jennifer House-Public Health Vet	CO Dept of Public Health & Environment	Denver, CO 80246-1530
Dr. Wayne Jensen-ClinSci Dept Head	CSU Dept of Clinical Science	Fort Collins, CO 80523
Dr. Ron Kollars-Small Animal	1336 W. Elizabeth	Fort Collins, CO 80521
Dr. Larry Mackey-Large Animal	PO Box 336204	Greeley, CO 80632
Dr. Leesa McCue-Mixed Animal	124 Main Street	Limon, CO 80828
Dr. Del Miles-Beef Cattle	5626 W. 19th Street, Suite A	Greeley, CO 80634
Ms. Kellee Mitchell-CO Livestock Assoc.	2425 35 th Ave, Suite 202	Greeley, CO 80634
Dr. Paul Neilson-Sheep	P.O. Box 656, 338 E. Market Street	Meeker, CO 81641
Dr. Keith Roehr-State Vet	CO Dept of Agriculture	Broomfield, CO 80021
Mr. Kenny Rogers-CCA	5151 CR 34	Yuma, CO 80759
Dr. Mark Stetter-Dean, CVMBS	CSU CVMBS	Fort Collins, CO 80523
Dr. Lou Swanson-Extension	CSU Extension	Fort Collins, CO 80523
Dr. Jessica Timian-Small Animal	3550 S. Jason Street	Englewood, CO 80110
Dr. Richard Wheeler-Mixed Animal	CSU Dept of Clinical Sciences	Fort Collins, CO 80523

Our External Advisory Committee members volunteer their time to meet with us annually and assess our progress as well as provide input to our future directions. We are most grateful for their time and advice, and hope they feel that they are an integral part of the diagnostic laboratories.

RESIDENTS

The Diagnostic Laboratories in conjunction with the Department of Microbiology, Immunology, and Pathology provides hands-on educational experiences to senior Professional Veterinary Medical Students in the areas of Pathology, Microbiology, and Parasitology. We also are educating the next generation of veterinary pathologists and microbiologists. Below is a listing of our residents.

Pathology Residents

Kendra M. Andrie, DVM, MS
Michael J. Betley, DVM
Alex D. Byas, DVM
Benjamin Curtis, DVM
Lauren J. Harris, VMD
Laura Hoon-Hanks, DVM
Caitlyn Martinez, DVM
Samantha J. McDonnell, DVM
Emily Rout, DVM
Allison Vilander, DVM

Microbiology Resident

Anna Fagre, DVM

Comparative Lab Animal Medicine

Katie Knapek, DVM
Jennifer Kopanke, DVM
Erin Lee, DVM
Brian Smith, DVM

EXTERNAL ADVISORY COMMITTEE MEETING – 2016



Back Row: Raye Walck (Western Slope Director), Dean Mark Stetter (Dean of CVMBS), Linda Vap (Section Head), Ron Kollars (Small Animal), Chad Frank (Pathologist), Karen Fox (CPW), Karen Rogers (Feedlot), Norm Brown (Equine), Ashley McGrew (Section Head), Connie Heighes (Business Officer), Christie Mayo (Section Head), Kellee Mitchell (CO Livestock Association), Gregg Dean (Section Head), and Tracy Baszler (IT Services).

Front Row: Gene Niles (Rocky Ford Director), Marv Hamann (Mixed Practice), Kenny Rogers (CO Cattlemen's Association), Dwayne Hamar (Section Head), Leesa McCue (Mixed Animal), Gary Mason (Section Head), Joan Bowen (Small Ruminant), Kristy Pabilonia (Section Head), Keith Roehr (State Veterinarian), Jennifer House (Public Health Veterinarian), Larry Mackey (Large Animal), Barb Powers (VDL Director), Jessica Timian (Small Animal), Tim Hackett (VTH Director), Don Beckett (USDA/APHIS), Charlie Davis (Case Coordinator), and Richard Wheeler (Mixed Practice).

Attended, but not in photograph: Cristy Dice (Avian), Wayne Jensen (Department Head), Wenjing Jiang (IT Services), Kacie Reed (IT Services), Terry Spraker (Pathology), and Christina Weller (Research Associate).

Absent: Ernie Etchart (Sheep Industry), M. H. Gotchey (Equine), Michael Lappin (Section Head), Del Miles (Beef Cattle), Paul Neilson (Mixed Practice), and Lou Swanson (CSU Extension).

DIAGNOSTIC LABORATORY FACULTY TEACHING CONTRIBUTIONS - 2016

B2462	Parasitology and Vector Biology - A. McGrew
MIP400D	Capstone in Microbiology: Microbial Diversity/Ecology (Marine Parasitology) - A. McGrew
MIP420	Medical and Molecular Virology - C. Mayo
MIP462	Parasitology and Vector Biology - A. McGrew
MIP540	Biosafety in Research Laboratories - K. Pabilonia, A. McGrew
MIP612	Applied Immunology - K. Pabilonia
MIP636	Mechanisms of Viral Infection and Disease - T. Aboellail
MIP555	Principles and Mechanisms of Disease - T. Aboellail, P. Cole, C. Frank, S. Han, G. Mason
MIP765	Comparative Neuropathology - T. Aboellail, C. Frank
MIP778	Pathobiology of Laboratory Animals - G. Mason
MIP786A	Practicum--Comparative Gross and Histologic Pathology - T. Aboellail, P. Cole, C. Duncan, C. Frank, S. Han, G. Mason, P. Schaffer, T. Spraker
MIP786B	Practicum--Surgical Pathology - T. Aboellail, P. Cole, C. Duncan, C. Frank, S. Han, G. Mason, P. Schaffer, T. Spraker
MIP786C	Practicum for Clinical Pathology Residents - P. Avery, A. Bohn, A. MacNeill, A.R. Moore, C. Olver, L. Vap
MIP792C	Bioanalytical and Microscopy Seminar - T. Aboellail, P. Avery, A. Bohn, P. Cole, C. Duncan, C. Frank, S. Han, G. Mason, A. MacNeill, AR Moore, C. Olver, P. Schaffer, T. Spraker, L. Vap
MIP792D	Seminar Anatomic Pathology - T. Aboellail, P. Cole, C. Duncan, C. Frank, S. Han, G. Mason, P. Schaffer, T. Spraker
MIP796V	General Pathology Group Study - T. Aboellail
MIP796V	Surgical Pathology - B. Powers
VM601	Perspectives in Veterinary Medicine - T. Spraker
VM603	Veterinary Science: Research and Methods - C. Mayo, K. Pabilonia
VM606	Veterinary Immunology - S. Han
VM610	Foundations Veterinary Medicine - C. Duncan, S. Han
VM611	Foundations of Veterinary Medicine - C. Mayo
VM639	Veterinary Virology - C. Mayo
VM640	Biology of Disease I - G. Mason
VM648/VS648	Food Animal Production and Food Safety - K. Pabilonia
VM707	Emerging Infectious Diseases - C. Duncan, K. Pabilonia
VM710	Foundations in Veterinary Medicine - A. McGrew
VM711	Foundations in Veterinary Medicine/C. Duncan, T. Spraker
VM714	Veterinary Preventive Medicine - C. Duncan
VM724	Bioanalytic Pathology - P. Avery, A. Bohn, P. Cole, A. MacNeill, AR Moore, C. Olver, L. Vap
VM741	Biology of Disease II - T. Aboellail, P. Cole, C. Duncan
VM742	Biology of Disease III - T. Aboellail, P. Cole, C. Duncan, S. Han, G. Mason, T. Spraker
VM751	Veterinary Clinical Toxicology - D. Hamar
VM786A	Junior Practicum—Food Animal Diagnostics and Surgery - G. Mason
VM786A	Junior Practicum--Diagnostic Veterinary Pathology - A. McGrew
VM786A	Junior Practicum—Emerging and Exotic Diseases of Animals - C. Duncan, K. Pabilonia
VM786B	Senior Practicum--Clinical Service Necropsy Block - T. Aboellail, P. Cole, C. Duncan, C. Frank, S. Han, G. Mason, P. Schaffer, T. Spraker
VM796V	Dermatopathology - P. Cole
VS/ANEQ313	Prevention and Control of Livestock Diseases - K. Pabilonia
VS581	Global Veterinary Public Health - C. Duncan

SCIENTIFIC PUBLICATIONS BY FACULTY MEMBERS AND STUDENTS – 2016

Clagett DO, **Han S**, Johnston MS. Malignant plasma cell neoplasia in ferrets: A review of six cases. *Journal of Exotic Pet Medicine*. (Accepted May 2016).

Curran K, Lana SE, **Schaffer PA**, **Frank CB**, Hamil L, Burton JH, Bromberek JL, **Ehrhart EJ**, **Han S**, **Avery, PR**. Expression levels of cMYC and BCL2 in canine diffuse large B-cell lymphoma. *Veterinary and Comparative Oncology*. 2016.

Davy J, Forero L, T.T., **Mayo CE**, Drake D, Maas J, Oltjen J. Efficacy of selenium supplementation methods in California yearling beef cattle and resulting effect on weight gain. *California Agriculture*, 70(4). 2016.

Emerson SE, Callan RJ, Barrell EA, Huebner KL, **Vilander AC**, **Frank CB**. What's your diagnosis: bovine pyelonephritis. *Journal of the American Veterinary Medical Association*. October 2016.

Engel S, Hilling KM, **Meuten TK**, **Frank CB**, Marolf AJ. Glioblastoma Multiforme with Hypodipsic Hypernatremia in a Seven-Month-Old Golden Retriever. *Journal of the American Animal Hospital Association*, 52(5), 319-24. 2016.

Fisher S, Burgess W, Hines KD, **Mason GL**, Owing JR. Inter-strain difference in CO₂-induced pulmonary hemorrhage in mice. *Journal of American Association for Laboratory Animal Science*. 55, 811-815. 2016.

Fox KA, Marolf AJ, Rouse MN, Wooten KS, LeVan KI, **Spraker TR**, Quackbush SL. Experimental Transmission of Bighorn Sheep Sinus Tumors to Bighorn sheep (*Ovis canadensis canadensis*) and Domestic Sheep. *Veterinary Pathology*. November 2016.

Griffin LR, Rawlinson JE, McDonald HG, **Duncan CG**. Mandibular osteopathy in a Hagerman horse, *Equus simplicidens* (Equine, Mammalia), from Hagerman Fossil Beds National Monument (Idaho, USA). *International Journal of Paleopathology*, 12, 41-45. 2016.

Hackett E, Twedt D, Gustafson D, **Cole P**. Hepatic disease of horses in the Western United States. *Journal of Equine Veterinary Science* 45(32-38). 2016.

Han S, Garner MM. Soft tissue mineralization in captive two-toed sloths (*Coloepus* sp.). *Veterinary Pathology*. 53(3), 659-665. 2016.

Hoon-Hanks LL, **Rout ED**, **Vap LM**, **Aboellail TA**, Hassel DM, Nout YS. Reactive mesothelial hyperplasia associated with chronic peritonitis in a 20-year-old Quarter horse. *Canadian Veterinary Journal*. May ;57(5):492-6. 2016.

Linke LM, Wilusz J, **Pabilonia KL**, Fruehauf J, Magnuson RJ, Olea-Popelka FJ, Triantis J, Landolt G, Salman M. Inhibiting avian influenza virus shedding using a novel RNAi antiviral vector technology: proof of concept in an avian cell model. *AMB Express*, 6(1), 16. 2016.

Lippolis K, Ahola JK, **Mayo CE**, Fischer M, Callan RJ. Effects of two-stage weaning with nose flap devices applied to calves on cow body condition, calf performance, and calf humoral immune response. *Journal of Animal Science*, 94(2), 816-23. 2016.

Lyons ET, Kuzmina TA, **Spraker TR**, DeLong RL. Parasitological examination of northern elephant seal (*Mirounga angustirostris*) pups for presence of hookworms (*Uncinaria* spp.) on San Miguel Island, California. *Helminthologia* 53,2:191-194. 2016.

Malmberg JL, Howerth E, **Powers BE**, **Schaffer PA**. Acanthomatous ameloblastoma with atypical foci in five dogs. *Journal of Veterinary Diagnostic Investigation*. 2016.

SCIENTIFIC PUBLICATIONS - 2016 - continued:

Marley LK, Repenning P, **Frank CB**, Hackett ES, Nout-Lomas YS. Transendoscopic Electrosurgery for Partial Removal of a Gastric Adenomatous Polyp in a Horse. *Journal of Veterinary Internal Medicine*, 30(4), 1351-5. 2016.

Mayo CE, Mullens B, Gibbs P, MacLachlan, N. Overwintering of Bluetongue virus in temperate zones. *Veterinaria Italiana*, 52(3-4), 243-246. 2016.

Mayo CE, Shelley CN, James M, Ian G, David H, Christopher B. A deterministic model to quantify risk and guide mitigation strategies to reduce bluetongue virus transmission in California dairy cattle. *PLOS ONE*, 11(11). 2016.

McDermott E, **Mayo CE**, Gerry A, Mullens B. Trap placement and attractant choice affect capture and create sex and parity biases in collections in the biting midge, *Culicoides sonorensis*. *Medical and Veterinary Entomology*, 30(3), 293-300. 2016.

McGuire A, Miedema K, Fauver JR, Rico A, **Aboellail TA**, Quackenbush SL, Hawkinson A, Schountz T. Maporal Hantavirus causes mild pathology in Deer Mice (*Peromyscus maniculatus*) *Viruses*. 8 (10), 286. 2016.

Moore AR, Coffey E, **Hamar D**. Diagnostic Accuracy of Wright Giemsa and Rhodanine Stain Protocols for Detection and Semi-quantitative Grading of Copper in Canine Liver Aspirates. *Veterinary Clinical Pathology*, 45(4), 689-697. 2016.

Moore AR, Coffey E, Leavell SE, **Krafsur GM**, **Duncan CG**, Dowers KL, **Santangelo KS**. Canine bicavitary carcinomatosis with transient needle tract metastasis diagnosed by multiplex immunocytochemistry. *Veterinary Clinical Pathology*, 45(3), 495-500. 2016.

Nichols TA, **Spraker TR**, Gidlewski T, **Cummings B**, Kong Q, Balchandran A. Dietary Magnesium and Copper Affect Survival Time and Neuroinflammation in Chronic Wasting Disease. *Prion*. 1933-6896. 2016.

Nichols TA, **Spraker TR**, Gidlewski T, Zabel M. Dietary Magnesium and Copper Affect Survival Time and Neuroinflammation in Chronic Wasting Disease, *Prion Impact Factor*: 2.24. May 2016.

Pedersen K, **Anderson TD**, Bevins SN, **Pabilonia KL**, Whitley PN, Virchow DR, Gidlewski, T. Evidence of leptospirosis in the kidneys and serum of feral swine (*Sus scrofa*) in the United States. *Epidemiology and Infection*, 145(1), 87-94. 2016.

Pedersen K, Miller RS, **Anderson TD**, **Pabilonia KL**, Lewis JR, Mihalco RL, Gortazar C, Gidlewski T. Limited antibody evidence of exposure to *Mycobacterium bovis* in feral swine (*Sus scrofa*) in the USA. *Journal of Wildlife Diseases*. 2016.

Phillips AT, Rico AB, Stauff CB, Hammond SL, **Aboellail TA**, Tjalkens RB, Olson KE. Entry sites of Venezuelan and western equine encephalitis viruses in the mouse central nervous system following peripheral infection. *Journal of Virology*, (June); 90(12): 5785-96. 2016.

Ramos-Vara JA, **Frank CB**, Dusold D, Miller MA. Immunohistochemical detection of Pax8 and Napsin A in canine thyroid tumours: comparison with thyroglobulin, calcitonin, and thyroid transcription factor 1. *Journal of Comparative Pathology*, 155(4), 286-298. 2016.

Ruedig E, **Duncan CG**, Dickerson B, Williams M, Gelatt T, Bell JJ, Johnson, TE. Fukushima-derived radiocesium in subsistence-consumed northern fur seal and wild celery. *Journal of Environmental Radioactivity*, 152, 1-7. 2016.

Schaefer AM, Reif JS, Guzmán EA, Bossart GD, Ottuso P, Snyder J, Medalie N, Rosato R, **Han S**, Fair PA, McCarthy PJ. Toward the identification and experimental culture of *Lacazia loboi* from Atlantic Bottlenose Dolphin (*Tursiops truncatus*). *Medical Mycology*. April 2016.

SCIENTIFIC PUBLICATIONS - 2016 - continued:

Spraker TR, White PA. Shaggy Lamé Fox Syndrome in Pribilof Island Arctic Foxes (*Alopex lagopus pribilofensis*), Alaska. *Veterinary Pathology*. 2016.

Stringer EC, Cossaboon C, **Han S**, Taylor-Cousar J. Sinusitis, bronchiectasis, and flatus in a Sumatran Orangutan (*Pongo abelii*): Could this be cystic fibrosis? *Journal of Zoo and Wildlife Medicine*. 47(1), 347-350. 2016.

Stringer E, **Han S**, Larsen S. Cutaneous vitiligo associated with hypovitaminosis D in Malayan flying foxes (*Pteropus vampyrus*) and island flying foxes (*Pteropus hypomelanus*). *Veterinary Record Case Reports*. 4(epub), 1-7. 2016.

Vilander AC, **Niles GA**, **Frank CB**. Bovine fetal cerebral candidal abscess in a case of abortion associated with bovine viral diarrhoea virus. *Journal of Comparative Pathology*, 154(2-3), 161-164. 2016.

Vinayak A, **Frank CB**, Gardiner DW, Mankin KT, Worley DR. Malignant anal sac melanoma in dogs: eleven cases (2000-2015). *Journal of Small Animal Practice*. 2016.

Wendland TM, **Duncan CG**, Marolf AJ, Duerr FM. Evaluation of pacing as an indicator of musculoskeletal pathology in dogs. *Journal of Veterinary Medicine and Animal Health*, 8(12):207-13. 2016.

ABSTRACTS, POSTERS, PROCEEDINGS, AND SCIENTIFIC PRESENTATIONS - 2016

Berner M, Ballweber LR, **McGrew AK**. "Comparison of three diagnostic tests for the detection of *Cryptosporidium* in dairy calves", Celebrate Undergraduate Research and Creativity Showcase. March 2016.

Duggan SB, **Schaffer PA**, Clements W. "Effects of petroleum hydrocarbons on stream communities." Colorado Parks and Wildlife (Southwest Aquatic Biology Day Workshop). May 2016.

Duggan SB, **Schaffer PA**, Clements W. "Effects of petroleum hydrocarbons on stream communities in West Creek, Colorado." Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Fort Collins, CO. April 2016.

Duggan SB, **Schaffer PA**, Clements W. "Effects of petroleum hydrocarbons on stream communities in West Creek, Colorado." Society of Environmental Toxicology and Chemistry. Abstract and oral presentation. Orlando, FL. November 2016.

Duncan C. "Adapting cumulative effects perspectives and human determinants of health to inform wildlife health management". Wildlife Disease Association Annual Meeting. 2016.

Duncan C. "Adapting the concept of human determinants of health to caribou to inform health management". North American Caribou Workshop. 2016.

Duncan C. "Evaluation of Factors Influencing Accelerometry Activity Data in Dogs", Veterinary Orthopedic Society Meeting. 2016.

Duncan C. "Expanding the scope of wildlife health research: opportunities for Alaska parks". Centennial Science and Stewardship Symposium. 2016.

Duncan C. "Plague in the Western United States", Colorado State University Spring Conference. Fort Collins, CO. April 2016.

Duncan C. . "Polar bears as a sentinel for emerging wildlife zoonoses: past and present occurrence of *Brucella* spp., *Coxiella burnetii*, and *Toxoplasma gondii* in the southern Beaufort Sea population". Alaska Marine Science Symposium. 2016.

Duncan C. "Polar bears as a sentinel for emerging wildlife zoonoses: past and present occurrence of *Brucella* spp., *Coxiella burnetii*, and *Toxoplasma gondii* in the southern Beaufort Sea population". International Bear Association Meeting. 2016.

Duncan C. . "Polar bears as a sentinel for emerging wildlife zoonoses: past and present occurrence of *Brucella* spp., *Coxiella burnetii*, and *Toxoplasma gondii* in the southern Beaufort Sea population". The Wildlife Society Meeting. 2016.

Fagre A. "Serosurvey for infectious pathogens in horses in Colorado", CVMBS Research Day. Fort Collins, CO. January 2016.

Fagre AC, Pabilonia KP, Landolt G, Mayo CE. "Vesicular stomatitis virus in Colorado horses: seroprevalence and associated risk factors", American Association of Veterinary Laboratory Diagnosticians. Greensboro, NC. October 2016.

Hamar D. "What's that Green Stuff?" AAVCT Meeting. October 2016.

Han S, Mansfield KM, Wilson-Welder J. "Pathology of Treponeme-Associated Hoof Disease in Washington State USA Elk", American Association of Zoo and Wildlife Veterinarians International Conference, Zoo and Wildlife Pathology Workshop. Atlanta, GA. July 2016.

ABSTRACTS, POSTERS, PROCEEDINGS, SCIENTIFIC PRESENTATIONS – continued – 2016

Hoon-Hanks L, Frank CB, Edmondson E. "Primary meningeal rhabdomyosarcoma of the spinal cord of a young dog with neuromelanocytosis and multiple cutaneous neurofibromas: a case report", American College of Veterinary Pathologists Meeting. New Orleans, LA. December 2016.

Mayo CE. "A deterministic model to quantify risk and guide mitigation strategies to reduce bluetongue virus transmission in California dairy cattle", American Association of Veterinary Laboratory Diagnosticians. Greensboro, NC. October 2016.

Mayo CE. "Congenital Vector-Borne Diseases in Ruminants: Timing and Pregnancy Outcomes". Maternal Infection & Pregnancy Outcomes Mini Symposium. December 2016.

Mayo CE. "Landscape-level spatial patterns of *Culicoides sonorensis* and bluetongue virus in Colorado", International Congress of Entomology. September 2016.

Mayo CE, Fagre A. "Vesicular stomatitis virus in Colorado horses: seroprevalence and associated risk factors", American Association of Veterinary Laboratory Diagnosticians. Greensboro, NC. October 2016.

Mayo CE, Garcia T. "Whole genome phylogenetic analyses of Bluetongue virus in Colorado ruminants reveals genomic diversity and viral dissemination across the Western U.S.". American College of Veterinary Pathologists. New Orleans, LA. December 2016.

Mayo CE, Lee JS. "A genomic analysis of historical and contemporary blue tongue virus isolates", CSU CVMBS Research Day. Fort Collins, CO. January 2016.

Mayo CE, Lee JS. "Sorting out segmented evolution: genomic diversity of bluetongue virus in California and across the USA", Rocky Mountain Virology Conference. September 2016.

Niles GA. "Bovine Abortion Cases Diagnosed at the Rocky Ford VDL", Colorado Veterinary Medical Association Annual Convention. Loveland, CO. September 2016.

Niles GA. "Bovine Polioencephalomalacia". Colorado Veterinary Medical Association Annual Convention. Loveland, CO. September 2016.

Niles GA. "Milkweed Toxicosis", Arkansas Valley Research Center Annual Meeting. November 2016.

Niles GA. "Poison Plants in SE Colorado". Purgatorie Watershed Toxic Plant Workshop. December 2016.

Pabilonia KL. "Agar gel immunodiffusion assays", Avian Influenza Diagnostics and Biosafety Training Course, Irbid, Jordan. March 2016.

Pabilonia KL. "Avian disease differential diagnosis", Foreign Animal Disease Diagnostician Response Training Course. November 2016.

Pabilonia KL. "Avian influenza virus", Poultry Production Biosecurity Symposium. April 2016.

Pabilonia KL. "Avian influenza virus ecology and evolution", Avian Health and Highly Pathogenic Avian Influenza Response Training. April 2016.

Pabilonia KL. "Avian influenza virus scientific updates", Avian Influenza Diagnostics and Biosafety Training Course. Irbid, Jordan. March 2016.

Pabilonia KL. "Commercial Poultry Production", Avian Health and Highly Pathogenic Avian Influenza Response Training. April 2016.

Pabilonia KL. "Diagnostic test selection and results interpretation", International Wildlife Surveillance and Monitoring Workshop. May 2016.

ABSTRACTS, POSTERS, PROCEEDINGS, SCIENTIFIC PRESENTATIONS – continued – 2016

Pabilonia KL "Diagnostic test selection and sample collection", Avian Influenza Diagnostics and Biosafety Training Course. Irbid, Jordan. March 2016.

Pabilonia KL. "Diagnostic testing at NAHLN laboratories", Emergency Response and Surveillance Preparedness Annual Meeting. June 2016.

Pabilonia KL "Diagnostic testing methods and results interpretation", Avian Health and Highly Pathogenic Avian Influenza Response Training. April 2016.

Pabilonia KL "Hemagglutination assays", Avian Influenza Diagnostics and Biosafety Training Course. Irbid, Jordan. March 2016.

Pabilonia KL "Laboratory quality management", Avian Influenza Diagnostics and Biosafety Training Course. Irbid, Jordan. March 2016.

Pabilonia KL "Molecular techniques - PCR and sequencing", Avian Influenza Diagnostics and Biosafety Training Course. Irbid, Jordan. March 2016.

Pabilonia KL. "Poultry euthanasia, necropsy and diagnostic sampling", Avian Health and Highly Pathogenic Avian Influenza Response Training. April 2016.

Pabilonia KL. "Poultry necropsy and sample collection", Avian Influenza Diagnostics and Biosafety Training Course. Irbid, Jordan. March 2016.

Robison P, **McGrew A**, **Schaffer P**, Peers G, and Ghalambor CK. Effects of metacercarial load on migration into brackish water for the Trinidadian guppy (*Poecilia reticulata*). Rocky Mountain Conference of Parasitology. Ogalla, NE. September 2016.

Spraker TR. "A Review of Chronic Wasting Disease in The USA". Workshop of Chronic Wasting Disease in Norway. Trondheim, Norway. July 2016.

Spraker TR. "Diseases and Parasites in Northern Fur Seals". European Multicolloquium of Parasitology. Turku, Finland. July 2016.

Spraker TR. International Wildlife Disease Workshop: International Wildlife Training Course. Necropsy Techniques/Tissue Collections; Foreign Animal Diseases and Capture Myopathy. National Wildlife Research Center. Fort Collins, CO. August 2016.

Spraker TR. "Review of Chronic Wasting Disease in the USA". Workshop addressing Chronic Wasting Disease in Norway. Trondheim, Norway. July 2016.

Spraker TR. "The 2015 Epidemic of Tularemia in the Western United States". College of Veterinary Medicine. RACE. Fort Collins, CO. April 2016.

Spraker TR. "Update on Chronic Wasting Disease in the United States". College of Veterinary Medicine. RACE. Fort Collins, CO. April 2016.

Spraker TR, Mason GL. Wildlife Service's Disease Biologist's Workshop: USDA/APHIS Wildlife Services training for Wildlife Biologist - necropsy techniques and tissue collection in birds and mammals. National Wildlife Research Center. Fort Collins, CO. June 2016.

Spraker TR, Kuzmina TA. Diseases and Parasites of Northern Fur seals. European Multicolloquium of Parasitology. Turku, Finland. July 2016.

Yzeta de Avila K, Ballweber LR, **McGrew AK**, Salman MD. "Onchocerca lupi: An emerging parasite in the US southwest region", 77th Annual Conference for Veterinarians. Fort Collins, CO. April 2016.

PRESENTATIONS/OUTREACH TO PUBLIC - 2016

Duggan SB, **Schaffer PA**, Clements W. "Effects of petroleum hydrocarbons on stream communities." Oral presentation to Trout Unlimited (Western Colorado). April 2016.

Duncan CG. Wildlife Necropsy Laboratories. Sitka, AK. 2016.

Mason GL. Necropsy demonstration for 4-H students. Fort Collins, CO. 2016.

Niles GA. "Poison Plants Affecting Horses and Cattle in SE Colorado", Upper Huerfano Conservation District Meeting. Walsenburg, Co. July 2016.

Powers BE, Davis C. Update from CSU Veterinary Diagnostic Laboratories. Colorado Cattlemen's Association. Colorado Springs, CO. June 2016.

Walck R. Bovine pneumonia. Mesa County Cattlemen's Association. Mesa County Fairgrounds. Grand Junction, CO. December 2016.

ONGOING FUNDED CONTRACTS AND GRANTS - 2016

Bowen RA (PI), **Han S** (Co-I), **Pabilonia KP** (Co-I). "Agricultural Animal Pathology in Nicaragua". United States Agency for International Development. 8/1/13-8/1/16. \$7,350.

Bowen RA (PI), Hansen T (Co-PI), **Mayo CE** (Co-PI), Van Campen H (Co-PI), Winger QA (Co-PI), Bouma GJ (Co-PI), Tjalkens RB (Co-PI). "Effect of Maternal Influenza A Virus Infection on Placental Gene Expression and the Fetal Immune System". College of Veterinary Medicine & Biomedical Sciences, College Research Council. 7/1/16-6/28/17. \$25,000.

Clements WH, Duggan SB, **Schaffer PA**. "Development and Validation of Rapid Assessment Techniques for Determining Effects of Petroleum Hydrocarbons on Stream Communities". Colorado Parks and Wildlife. 8/1/15-7/31/16. \$169,466.

Duerr FM (PI), **Duncan CG**, Nelson-Ceschin TL, Chard CA, Ruch Gallie RA, Torres-Henderson CR, Kogan LR, Stockman J. "Does Smartphone-based Canine Activity monitoring promote physical activity and health in dogs and people?" Eldred Foundation. 11/1/16-10/31/19. \$99,150.

Duncan CG (PI). "A Multidisciplinary Approach to Defining Wildlife Health: Biological, Ecological, and Social Determinants of the Health of Wildlife Populations in Nat", DOI-NPS-National Park Service, Federal. 9/21/15-12/31/17. \$31,500.

Duncan CG (PI). "Canadian Wildlife Health Cooperative", University of Saskatchewan, Foreign Higher Education. 2/1/16-3/31/17. \$16,021.

Duncan CG (PI), Johnson VA. "Integration of Northern Fur Seal (*Callorhinus ursinus*) Health Metrics into Ongoing Vital Rates Monitoring. Department of Commerce - National Oceanic and Atmospheric Administration. 7/1/16-6/30/19. \$63,520.

Ehrhart EJ, Schaffer PA. "Pathology Residency Training Program to Support the Morris Animal Foundation Golden Retriever Lifetime Study". Morris Animal Foundation. 6/1/16-5/31/21. \$300,000.

Fox K (PI), Wolfe LL, **Han S (Co-PI)**, Bergman EJ. "Preliminary Investigations of Hoof Overgrowth in Cervids in Colorado. Colorado Parks and Wildlife. 4/1/14-4/1/16. \$7,281.

Han S (PI). "Denver Zoological Foundation Pathology Task Order 4". Denver Zoological Foundation, Domestic Foundations. 1/1/13-12/31/18. \$240,611.

Hansen T (PI), Bowen RA (Co-PI), Winger QA (Co-PI), Bouma GJ (Co-PI), Van Campen H (Co-PI), **Mayo CE (Co-PI)**. "PRECIP:Maternal Viral Infection: Is Pregnancy at Risk?" CSU Vice President for Research Pre-Catalyst for Innovative Partnerships (PRECIP) Program. 3/1/16-4/28/17. \$5,000.

Linke, LM (PI) and **Pabilonia KL (Co-PI)**. Contract, "Protective Effects of *Saccharomyces Cerevisiae* Fermentation Product Supplementation Against Avian Influenza Virus in Commercial Layers". Diamond V. Mills, Inc. 1/5/16-1/4/17. \$59,570.

MacLachlan NJ, Coffey LL, Weimer BC, **Mayo CE**. "Bluetongue Virus Infection of Ruminants in California: Pathogenesis and Epizootiology", USDA NIFA AFRI Center for Food Animal Health. 1/1/14-1/1/16. \$18,500.00.

Mayo CE (PI). Cooperative Agreement, "Completion of Salmonella Enterica Isolation and Serotyping". USDA-APHIS-Animal Plant Health Inspection Service, Federal. 9/30/15-9/29/17. \$15,000.

Mayo CE (PI). "Tools for Next Generation Sequencing Technologies - Transforming Research and Veterinary Diagnostics". Office of Vice President of Research. 9/1/16-9/1/17. \$8,000.

Mayo CE (PI), Nout-Lomas YS, **Frank CB**, Stenglein MD, Lee JS, Garcia T. "Diagnosis of Equine Neurologic Disorders Using Next-Generation Sequencing". College of Veterinary Medicine & Biomedical Sciences, Center for Companion Animal Studies. 4/30/15-5/1/16. \$3,500.

Mayo CE (PI), **Pabilonia KP** (Co-PI), Stenglein MD (Co-PI). "Establishing an archive with high consequence animal pathogens and applying a novel translational, multidisciplinary approach to diagnosis and genetic characterization" Office of Vice President of Research, CSU. 9/1/16-2/30/17. \$100,000.

ONGOING FUNDED CONTRACTS AND GRANTS - 2016 - continued:

Mayo CE, Stenglein MD. "Genetic diversity of bluetongue virus populations & influence of alternate host transmission on viral evolution", CVMBS College Research Council, USDA. 7/1/15-6/30/17. \$88,664.36.

McGrew A (PI). "Advancements in Marine Parasitology: Optimization and Comparison of Diagnostic Techniques, Survey of Common Practices, and Development of Educational Tools". National Center for Veterinary Parasitology. \$8,103.

Pabilonia KL (PI). "Alaska Wildlife Disease Surveillance". United States Geological Survey. Alaska Science Center. 8/28/15-6/29/17. \$96,290.

Pabilonia KL (PI). "Avian Health Cooperative Agreement 2015-2016". USDA/APHIS. 4/1/15-3/31/16. \$254,375.

Pabilonia KL (PI). "Avian Health Program 2016-2017. USDA/APHIS". 4/1/16-3/31/17. \$254,375.

Pabilonia KL (PI). "CSU-VDL Participation in the Veterinary Laboratory Investigation and Response Network - Supplemental Funding". US Department of Health & Human Services-FDA. 9/1/12-8/31/17. \$9,999.

Pabilonia KL (PI) and Powers B (Co-PI). "CSU-VDL Participation in the Veterinary Laboratory Investigation and Response Network - VDL Cooperative Agreement and Supplemental Funding". HHS-FDA, Federal. 9/1/12-8/31/17. \$87,500.

Pabilonia KL (PI). "Leptospirosis Surveillance in Feral Swine, Coyotes, Raccoons, and Other Species: A Cooperative Agreement". USDA/APHIS. 1/1/16-12/31/16. \$99,999.

Pabilonia KL (PI). Cooperative Agreement, "National Wildlife Disease Tissue Archive 2015-2016". USDA/APHIS-Animal Plant Health Inspection Service. 9/14/15-9/26/16. \$150,000.

Pabilonia KL (PI). Cooperative Agreement, "National Wildlife Disease Tissue Archive". USDA/APHIS Animal Plant Health Inspection Service, Federal. 9/27/14-9/26/16. \$150,000.

Pabilonia KL (PI). Cooperative Agreement, "National Wildlife Disease Tissue Archive". USDA/APHIS Animal Plant Health Inspection Service, Federal. 9/27/16-9/27/17. \$199,928.

Powers B (PI). "Classical Swine Fever Surveillance". USDA/APHIS. 4/1/15-12/31/15. \$41,250.

Powers B (PI). "Classical Swine Fever Surveillance". USDA/APHIS. 4/1/16-12/31/16. \$37,400.

Powers B (PI) and Pabilonia KL (Co-PI). Cooperative Agreement, "National Animal Health Laboratory Network—CO Animal Diagnostic Laboratory". USDA/NIFA-National Institute of Food and Agriculture, Federal. 8/15/12-8/14/16. \$752,000.

Powers B (PI) and Pabilonia KL (Co-PI). Cooperative Agreement, "National Animal Health Laboratory Network—CO Animal Health Diagnostic Laboratory 2016-2017". USDA/APHIS-Animal Plant Health Insp Service. 5/1/16-4/30/17. \$326,622.

Powers B (PI) and Pabilonia KL (Co-Invest). Contract, "USDA Equine Enhanced Passive Surveillance Pilot Project – Laboratory Connectivity". USDA/APHIS. 6/6/14-2/28/16. \$14,625.

Spraker TR (PI), Duncan CG (Co-PI). Cooperative Agreement, "Technical Assistance for Veterinary Pathology and Diagnostic Services for NPS Wildlife Species", DOI-NPS-National Park Service, Federal. 5/3/16-2/28/19. \$95,000.

Spraker TR (PI). "Population Monitoring of Arctic Foxes. US Department of Defense, Center for Environmental Monitoring of Military Lands. 8/17/16-2/16/18. \$92,500.

Spraker TR (PI). "Technical Assistance for NPS Co-op Agreement". National Park Service. 9/1/13-7/31/17. \$419,000.

Spraker TR (PI). "Wildlife Disease Outbreak Investigation". National Park Service. 6/5/14-8/30/17. \$377,550.

STATE OR NATIONAL COMMITTEES - 2016

Aboellail TA. *Member, American Association of Veterinary Laboratory Diagnosticians*

Aboellail TA. *Member, American College of Veterinary Pathologists*

Aboellail TA. *Member, Colorado Veterinary Medical Association*

Aboellail TA. *President, Middle East Division, C.L. Davis Foundation for Advancing Training in Anatomic and Comparative Pathology*

Cole PC. *Member, American Association of Veterinary Laboratory Diagnosticians*

Cole PC. *Member, American College of Veterinary Pathologists*

Cole PC. *Member, American Veterinary Medical Association*

Cole PC. *Member, Colorado Veterinary Medical Association*

Dice C. *Co-Coordinator, Colorado State Agency for the National Poultry Improvement Plan*

Duncan CG. *Member, American Association of Veterinary Laboratory Diagnosticians*

Duncan CG. *Member, American College of Veterinary Pathologists*

Duncan CG. *Member, American College of Veterinary Preventive Medicine*

Duncan CG. *Member, Colorado Veterinary Medical Association*

Duncan CG. *Member, North Pacific Research Board Science Committee*

Frank CB. *Member, American Association of Veterinary Laboratory Diagnosticians*

Frank CB. *Member, American College of Veterinary Pathologists*

Frank CB. *Member, American Veterinary Medical Association*

Frank CB. *Member, Colorado Veterinary Medical Association*

Frank CB. *Member, NIH and NCI Comparative Brain Tumor Consortium*

Hamar D. *Member, American Association of Veterinary Laboratory Diagnosticians*

Han S. *Member, American Association of Veterinary Laboratory Diagnosticians*

Han S. *Member, American Association of Zoo Veterinarians*

Han S. *Member, American College of Veterinary Pathologists*

Han S. *Member, Colorado Veterinary Medical Association*

Han S. *Member, Wildlife Disease Association*

Mason GL. *Member, American Association of Veterinary Laboratory Diagnosticians*

Mason GL. *Member, American College of Veterinary Pathologists*

Mason GL. *Member, Colorado Veterinary Medical Association*

Mayo C. *Member, American Association of Veterinary Laboratory Diagnosticians*

Mayo C. *Member, Entomological Society of America*

Mayo C. *Member, United States Animal Health Association*

Mayo C. *Member, Virology Committee, American Association of Veterinary Laboratory Diagnosticians*

McGrew AK. *Member, American Association of Veterinary Parasitologists Education Committee*

McGrew AK. *Member, American Association of Veterinary Parasitologists Finance Committee*

McGrew AK. *Member, American Association of Veterinary Parasitologists Historian Committee*

McGrew AK. *Member, American Society for Parasitologists*

McGrew AK. *Member, Colorado Veterinary Medical Association*

McGrew AK. *Member, International Association of Aquatic Animal Medicine (IAAAM) Student Liaison Committee*

STATE OR NATIONAL COMMITTEES - continued:

Niles G. *Member, American Association of Veterinary Laboratory Diagnosticians*

Niles G. *Member, Colorado Veterinary Medical Association*

Pabilonia KL. *Accreditation Committee, American Association of Veterinary Laboratory Diagnosticians*

Pabilonia KL. *Secretary/Treasurer, American Association of Veterinary Laboratory Diagnosticians*

Pabilonia KL. *Co-Coordinator, Colorado State Agency for the National Poultry Improvement Plan*

Pabilonia KL. *Member, AAVLD/USAHA Joint Special Committee on the National Animal Health Laboratory Network*

Pabilonia KL. *Member, American Association of Veterinary Laboratory Diagnosticians*

Pabilonia KL. *Member, American College of Veterinary Microbiologists*

Pabilonia KL. *Member, American Veterinary Medical Association*

Pabilonia KL. *Member, Colorado Egg Producers*

Pabilonia KL. *Member, Colorado Veterinary Medical Association*

Pabilonia KL. *Member, United States Animal Health Association, Transmissible Diseases of Poultry Committee*

Pabilonia KL. *Member, USDA Live Bird Marketing System Working Group*

Pabilonia KL. *Member, USDA National Poultry Improvement Plan General Conference*

Pabilonia KL. *Member, USAHA, Committee on Salmonella*

Powers BE. *Co-Chair, AAVLD/USAHA Joint Special Committee on the National Animal Health Laboratory Network*

Powers BE. *Co-Chair, Government Relations Committee, American Association of Veterinary Laboratory Diagnosticians*

Powers BE. *Member, American Association of Veterinary Laboratory Diagnosticians*

Powers BE. *Member, American College of Veterinary Pathologists*

Powers BE. *Member, Animal Health and Welfare Committee, Colorado Cattlemen's Association*

Powers BE. *Member, American Veterinary Medical Association*

Powers BE. *Member, Board of Directors, Colorado Veterinary Medical Association*

Powers BE. *Member, Colorado Livestock Association*

Powers BE. *Member, Colorado Veterinary Medical Association*

Powers BE. *Member, Government Coordinating Council, USDA/FDA/DHS*

Powers BE. *Member, United States Animal Health Association*

Schaffer PA. *Member, American College of Veterinary Pathologists*

Spraker TR. *Member, American Association of Veterinary Laboratory Diagnosticians*

Spraker TR. *Member, American College of Veterinary Pathologists*

Spraker TR. *Member, Colorado Veterinary Medical Association*

Spraker TR. *Member, Wildlife Disease Association*

Walck R. *Member, American Association of Equine Practitioners*

Walck R. *Member, American Association of Veterinary Laboratory Diagnosticians*

Walck R. *Member, American Veterinary Medical Association*

Walck R. *Member, Colorado Veterinary Medical Association*

ONGOING DIAGNOSTIC LABORATORY INVESTIGATIONS

Below is a list of disease surveillance and investigation projects that the Diagnostic Laboratory personnel are conducting. Many projects serve teaching and research functions, as well as outreach and service. It is worth noting that many projects involve research that would be either very expensive or impossible to do under laboratory conditions. The collaboration with producers or other government agencies usually involves a large “in-kind” contribution of animal procurement, care, and facilities costs. The list excludes simple investigations directed at making a field diagnosis.

Livestock and Poultry

- Race horse catastrophic bone failure
- Trichomonas beef-herd investigations
- Respiratory disease in llamas/alpacas
- Digital photography to aid in diagnosis during bovine field necropsies
- Antimicrobial susceptibility patterns of *E. coli* and *Salmonella* in domestic animals
- Teaching hospital nosocomial infections
- *Salmonella* in commercial and backyard poultry flocks
- Avian influenza in the U.S. and Asia
- Syndrome surveillance in equine and cattle

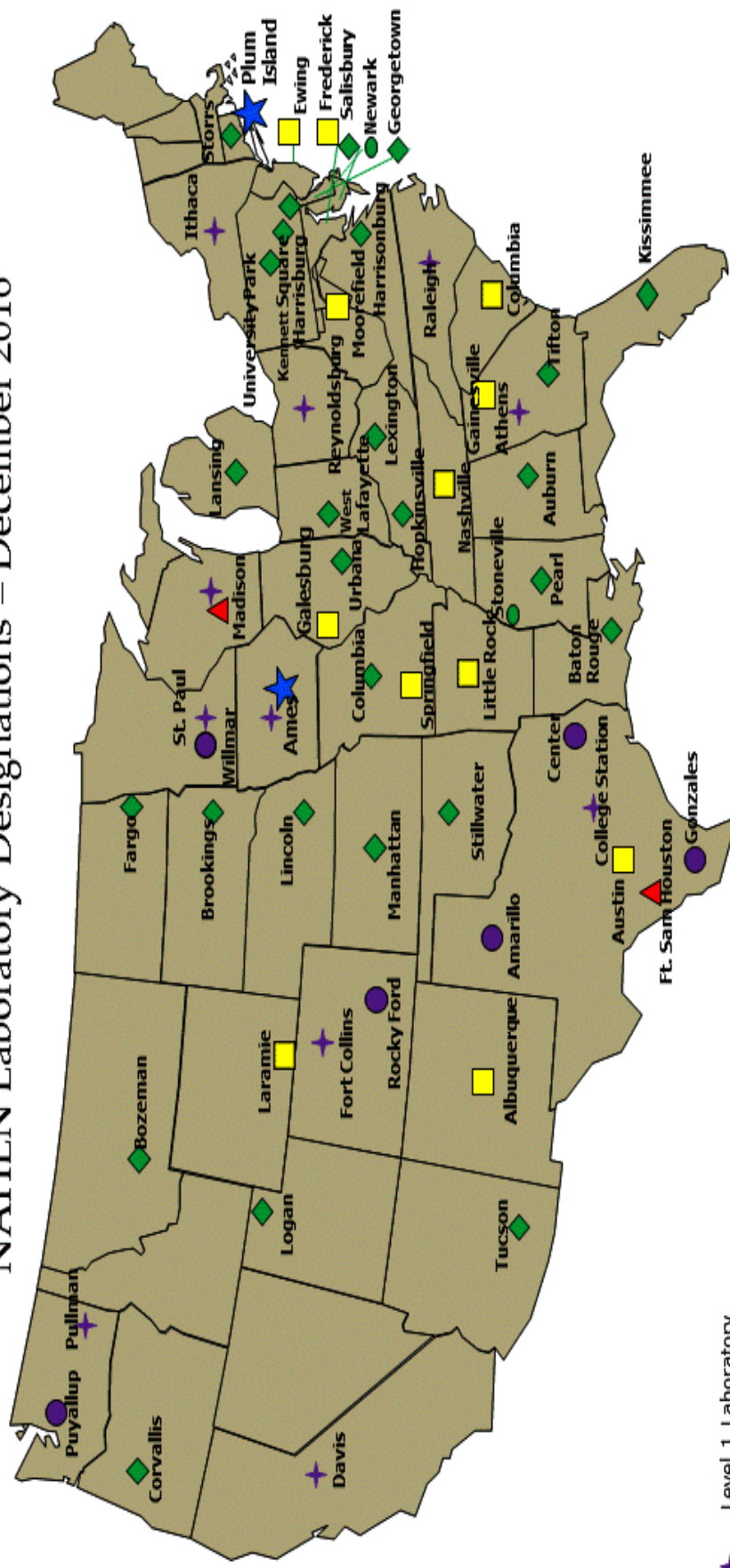
Small Animals

- MRSA investigations and documentation
- Canine liver disease
- Multiple oncology projects with many VTH and extramural clinicians and students
- Comparative pathology of brain tumors and radiation effects of treatment for brain tumors

Wildlife and Epidemiology

- Marine mammal mortalities
- Wildlife disease surveillance: the role of diagnostic laboratories
- Exotic Newcastle disease and avian influenza surveillance in wild birds
- Isolation and characterization of avian influenza viruses from wild birds
- Prevalence and epidemiology of avian influenza viruses in domestic duck populations in Indonesia
- Exotic/Zoo pathology
- Transmissible Spongiform Encephalopathy
 - Chronic wasting disease of deer and elk surveillance
 - Chronic wasting disease of deer and elk pathogenesis
 - Bovine (BSE) surveillance: USDA reporting
 - Scrapie surveillance: USDA reporting

NAHLN Laboratory Designations – December 2016



- ✦ Level 1 Laboratory
- Level 1 Branch Laboratory
- ◆ Level 2 Laboratory
- Level 2 Branch Laboratory
- Level 3 Laboratory
- ▲ Affiliate Laboratory
- ★ National Veterinary Services Laboratories



Please refer to lab list for testing capabilities.

December 19, 2016

2016 PROFICIENCY TESTS COMPLETED

Disease	Test	Section	Administering Agency
Avian Influenza Virus	AGID	Fort Collins Avian Diagnostics	NVSL/NPIP
Avian Influenza Virus - Matrix, H5, H7	Real-time RT-PCR	Fort Collins BSL3	NVSL
Avian Paramyxovirus-1, vNDV	Real-time RT-PCR	Fort Collins BSL3	NVSL
Bovine Leukosis Virus	AGID	Fort Collins Virology	NVSL
Bovine Leukosis Virus	AGID	Rocky Ford	NVSL
Bovine Spongiform Encephalopathy	ELISA	Fort Collins TSE	NVSL
Bluetongue Virus	AGID	Fort Collins Virology	NVSL
Bluetongue Virus	AGID	Rocky Ford	NVSL
Brucellosis	Card Test	Fort Collins Bacteriology	CO Dept of Ag
Brucellosis	Card Test	Rocky Ford	CO Dept of Ag
Contagious Bovine Pleuropneumonia	Real-time PCR	Fort Collins BSL3	FADDL
Contagious Equine Metritis	Culture	Fort Collins Bacteriology	NVSL
Classical Swine Fever Virus	Real-time RT-PCR	Fort Collins BSL3	FADDL
Equine Infectious Anemia	AGID	Fort Collins Virology	NVSL
Equine Infectious Anemia	AGID	Rocky Ford	NVSL
Equine Infectious Anemia	AGID	Western Slope (Grand Junction)	NVSL
Foot-and-Mouth Disease Virus	Real-time RT-PCR	Fort Collins BSL3	FADDL
Johne's (<i>M. avian</i> paraTB)	Direct PCR from feces	Fort Collins Bacteriology	NVSL
Johne's (<i>M. avian</i> paraTB)	Direct PCR from feces	Rocky Ford	NVSL
Johne's (<i>M. avian</i> paraTB)	ELISA	Fort Collins Bacteriology	NVSL
Johne's (<i>M. avian</i> paraTB)	ELISA	Rocky Ford	NVSL
Johne's (<i>M. avian</i> paraTB)	Solid Media	Fort Collins Bacteriology	NVSL
Johne's (<i>M. avian</i> paraTB)	TREK	Fort Collins Bacteriology	NVSL
Lead (Blood)	Graphite Furnace Atomic Absorption Spectrophotometry	Fort Collins Chemistry/Toxicology	Wisconsin State Laboratory of Hygiene
Lumpy Skin Disease Virus	Real-time PCR	Fort Collins BSL3	FADDL
Piroplasmosis	cELISA	Fort Collins BSL3	NVSL
Pseudorabies Virus	ELISA	Fort Collins BSL3	NVSL
Quantitative Coliforms	IDEXX Colilert	Rocky Ford	NSI
<i>Salmonella</i> Group D	Culture/PCR	Fort Collins Bacteriology/Molecular	NVSL/NPIP
<i>Salmonella</i> spp. (dog feces)	Culture/PCR	Bacteriology/Molecular	Vet LIRN
Scrapie	Immunohistochemistry	Fort Collins TSE	NVSL
Swine Influenza Virus H1N1	Real-Time RT-PCR	Fort Collins BSL3	NVSL
Vesicular Stomatitis Virus	Complement Fixation	Fort Collins BSL3	NVSL

**COLORADO STATE UNIVERSITY
VETERINARY DIAGNOSTIC LABORATORIES
2015-16 ACCESSION STATISTICS**

FORT COLLINS

	15-16	14-15	13-14	12-13	11-12	10-11	09-10
Accessions	109,831	101,226	91,843	89,289	89,176	86,202	108,938
Tests Performed	408,880	403,721	380,808	374,314	391,040	330,372	339,123

BY SECTION

	15-16	14-15	13-14	12-13	11-12	10-11	09-10
Administrative	5,297	4,796	3,182	4,333	7,634	7,386	45,903
Avian	15,905	11,067	6,738	7,245	6,911	6,140	6,234
Bacteriology	56,928	47,879	47,014	52,946	60,637	29,138	27,237
BSL3	4,018	3,380	3,864	1,862	2,819	3,990	10,698
Chemistry	4,602	5,053	4,840	4,883	4,863	4,919	8,515
Clinical Path	11,279	10,033	8,610	7,997	7,822	8,244	9,314
Endocrinology	3,802	3,542	2,967	2,783	2,948	2,680	3,218
Histology	173,340	195,673	177,361	171,743	165,130	155,159	85,900
M. Diagnostics	7,407	6,333	22,354	5,943	4,268	4,088	2,555
Necropsy	1,942	2,291	1,781	1,870	1,686	1,762	1,678
Parasitology	9,957	10,754	8,616	8,138	8,050	8,435	6,524
Pathology	38,352	36,530	33,143	33,114	33,414	32,001	37,527
Special Sero	10,806	10,342	8,388	8,067	8,052	9,026	14,441
TSE	33,375	24,484	23,278	31,627	32,259	20,192	33,976
Virology	31,870	31,564	28,672	31,763	44,547	37,212	45,018

The Fort Collins Laboratory had an increase in accessions (8.5%) and an increase in number of tests (1.3%). There were increases in administration (send-outs and media), avian, bacteriology, BSL3, clinical pathology, endocrinology, molecular diagnostics, pathology, special serology, TSE, and virology while chemistry, necropsy, histology, and parasitology decreased.

ROCKY FORD

	15-16	14-15	13-14	12-13	11-12	10-11	09-10
Accessions	9,493	9,819	9,118	9,922	11,281	12,948	13,808
Tests Performed	124,618	138,041	133,387	195,954	170,404	107,971	92,219

BY SECTION

	15-16	14-15	13-14	12-13	11-12	10-11	09-10
Administrative	24,929	27,799	21,639	22,507	20,512	15,504	3,634
Bacteriology	4,914	7,195	10,991	38,253	8,334	3,213	2,361
Chemistry	708	928	686	892	634	560	895
Clin Path	277	321	386	368	474	585	746
Endocrinology	150	99	118	205	185	146	242
Parasitology	19,011	19,273	16,274	17,636	19,858	17,006	16,839
Pathology	610	490	263	288	220	593	356
Virology	74,019	81,936	83,030	115,805	120,187	70,348	67,145

The Rocky Ford Laboratory had a decrease in accessions (-3.3%) and a decrease in the number of tests performed (-9.7%). There were decreases in all sections but pathology.

WESTERN SLOPE

	15-16	14-15	13-14	12-13	11-12	10-11	09-10
Accessions	3,117	2,848	2,726	2,710	2,847	3,195	3,608
Tests Performed	21,660	19,174	16,940	17,828	18,784	19,488	24,073

BY SECTION

	15-16	14-15	13-14	12-13	11-12	10-11	09-10
Administrative	2,830	2,407	2,423	2,266	2,619	1,981	3,736
Bacteriology	10,475	9,035	8,998	10,791	11,181	11,288	12,906
Clinical Path	19	14	19	14	52	109	138
Parasitology	3,964	3,533	3,077	2,297	2,533	2,961	3,120
Pathology	620	558	649	661	790	918	918
Virology	3,752	3,627	1,780	1,799	1,608	2,225	2,838

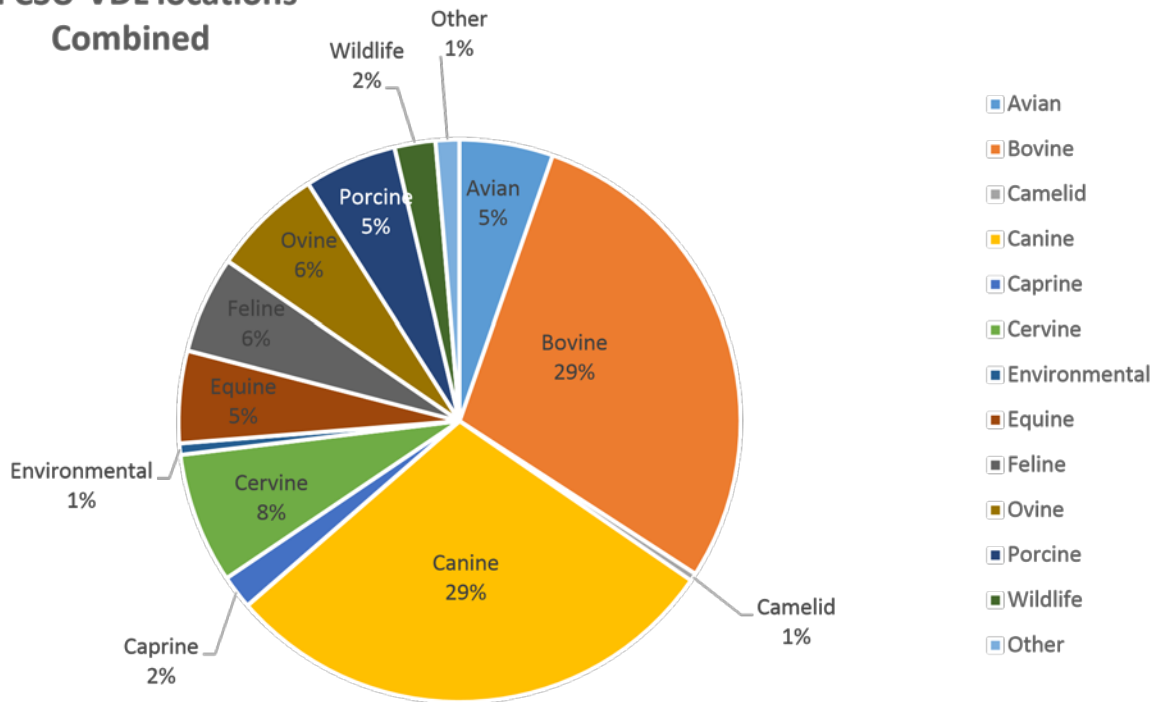
The Western Slope Laboratory had an increase in accessions (9.4%) and an increase in the number of tests performed (13.0%). There was an increase in all sections.

ALL LABS

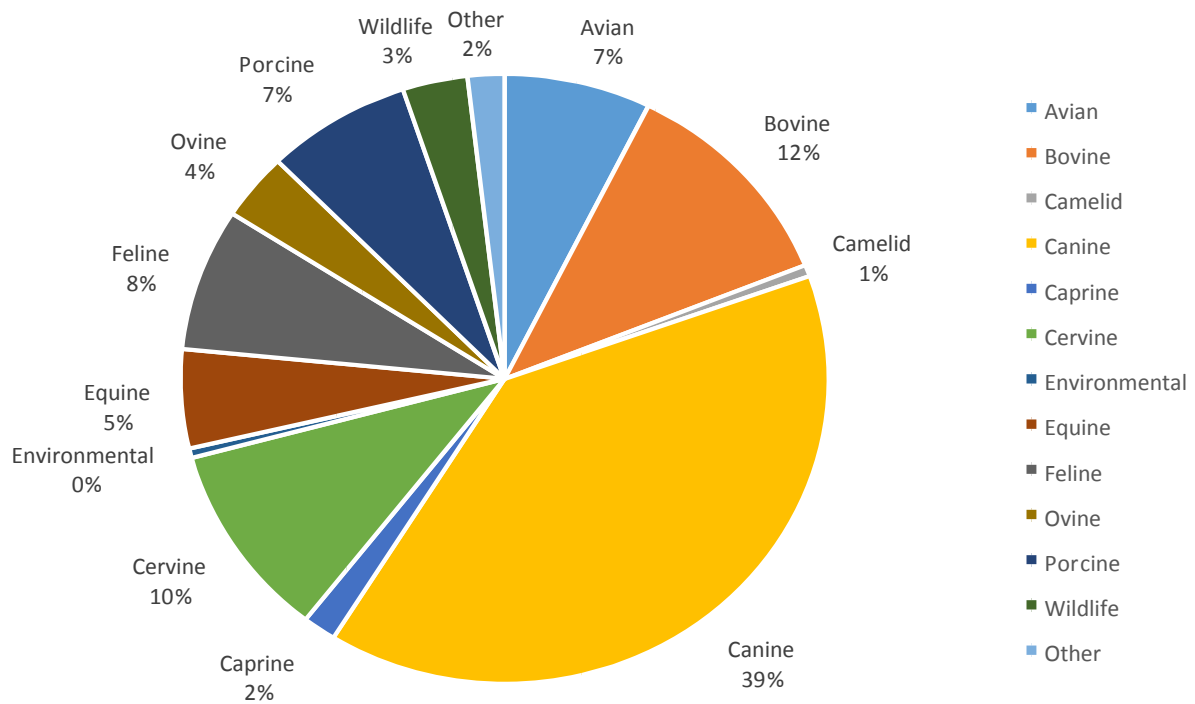
	15-16	14-15	13-14	12-13	11-12	10-11	09-10
Accessions	122,441	113,893	103,687	101,921	103,304	102,345	126,354
Tests Performed	555,158	560,936	531,141	588,096	580,228	457,831	455,415

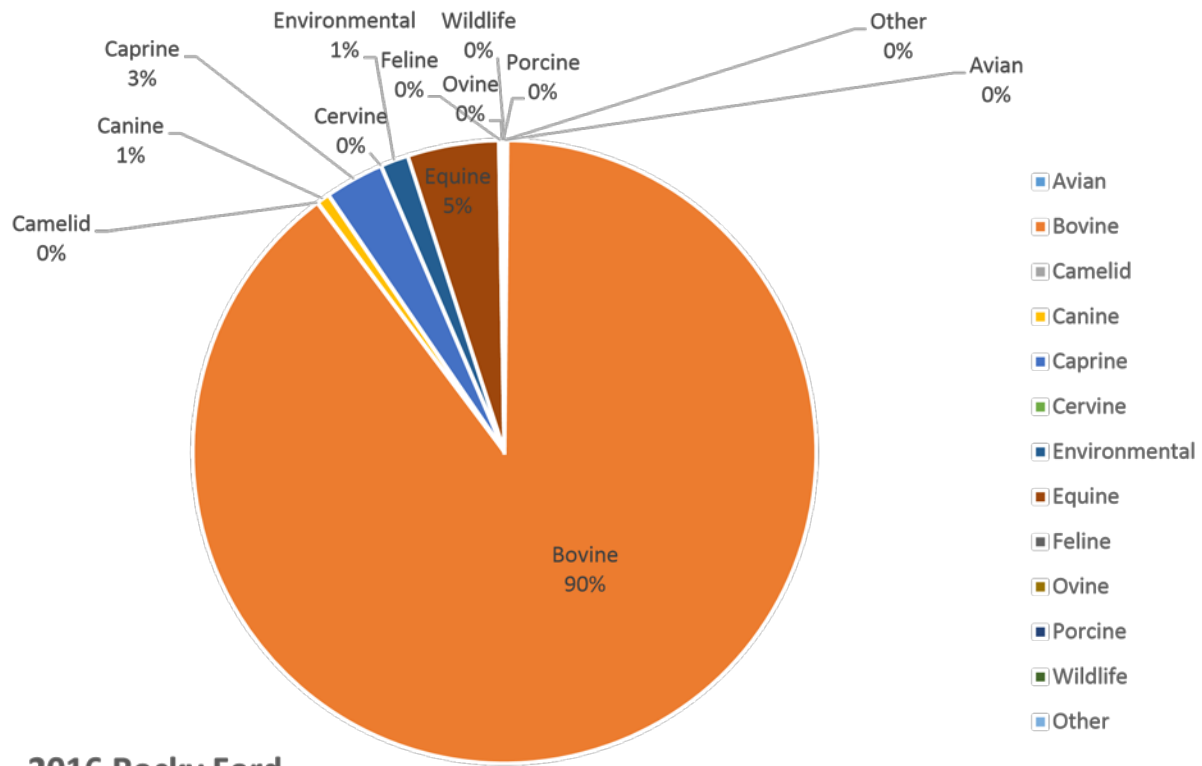
All laboratories combined had an increase in number of accessions (7.5%), and a slight decrease in the number of tests performed (-1.0%).

**2016 Species
by Test Graph
All CSU-VDL locations
Combined**

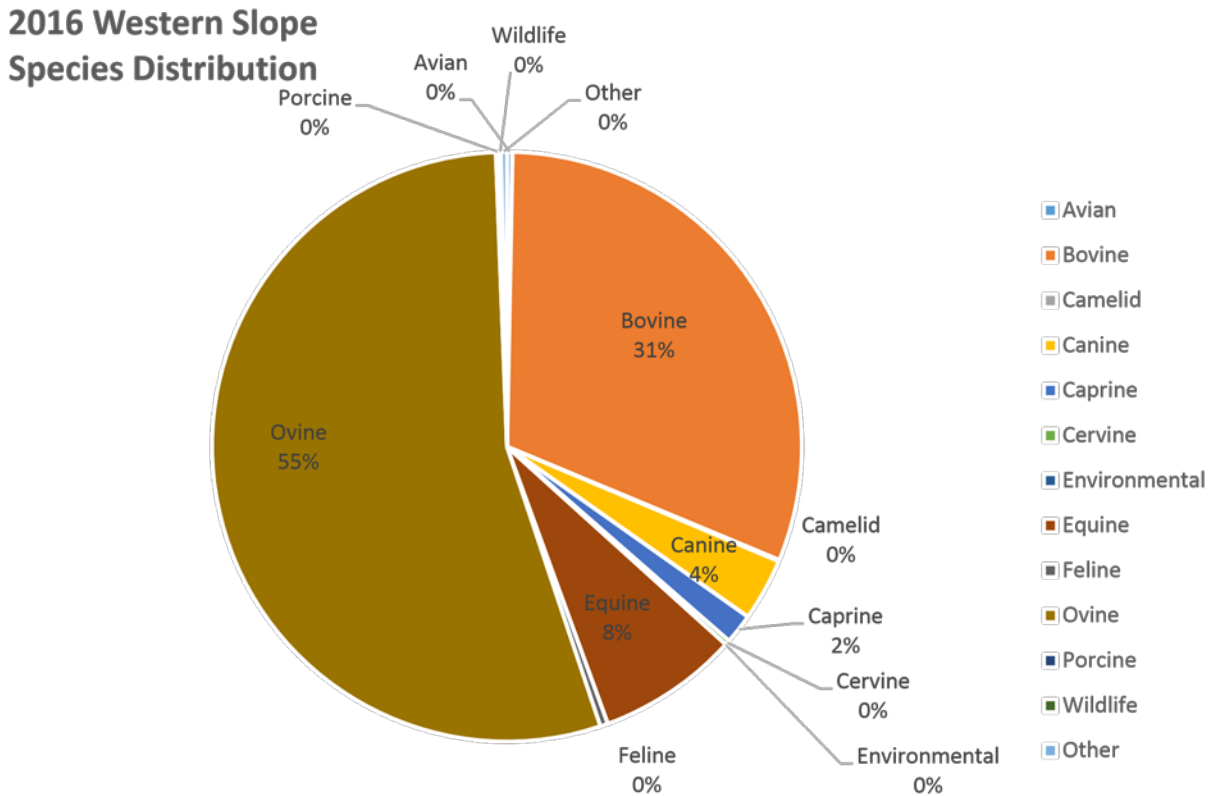


**2016 Fort Collins
Species Distribution**





**2016 Rocky Ford
Species Distribution**



**2016 Western Slope
Species Distribution**

PATHOLOGY

The table below indicates the number of necropsies performed for the listed species. The first column is cases derived from the Veterinary Teaching Hospital (VTH) and the second column is cases from the state or region. The next two columns are the totals for the last two fiscal years and the final column is the percent change from the fiscal year 15/16 compared to fiscal year 14/15. Cases from the VTH decreased by 22 (-2.4%), while cases from the state and region increased by 8 (0.8%).

NECROPSY

Species	VTH 7/15-6/16	State/Region 7/15-6/16	TOTAL 7/15-6/16	TOTAL 7/14-6/15	% Change
Bovine	105	63	168	165	1.8
Equine	107	61	168	180	-6.7
Porcine	10	30	40	17	135.3
Ovine/Caprine	35	82	117	103	13.6
OLA*/OSA*	113	35	148	87	70.1
Canine	374	285	659	720	-8.5
Feline	118	79	197	231	-14.7
Avian	51	199	250	235	6.4
Wildlife/ Exotics	1	182	183	206	-11.2
TOTAL	914	1016	1930	1944	-0.7

*OLA = Other Large Animal

*OSA = Other Small Animal

78 Canine/Feline/Equine Legal or Insurance Cases (compared to 120 in FY14-15).

TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHY TESTING

Test	# Tests 7/15-6/16	# Tests Positive (%)	Number 7/14-6/15	% Change
Captive Elk Surveillance	1,461	35 (2.4)	1,165	25.4
CWD Surveillance	3,168	158 (5.0)	1,665	90.3
CWD—ELISA CO & Others*	13,591	115 (0.8)	7,638	77.9
USDA TSE (Scrapie)	9,456	0 (0.0)	4,720	100.3
USDA BSE	5,699	0 (0.0)	9,296	-38.7
TOTAL	33,375	NA	24,484	36.3

*1,441 Colorado only [94 (6.5%) positive]

The top table indicates the number of abortion screens for the listed species for the last two fiscal years. The last column of the top table indicates the percent change of fiscal year 15/16 from fiscal year 14/15. The bottom table indicates the number of specific diagnoses or causative agents identified for abortions in fiscal year 15/16. The last column of the bottom table indicates the number and percentage of abortions with undetermined cause.

ABORTION SCREENS

Species	Number 7/15-6/16	%	Number 7/14-6/15	% Change
Bovine	115	54.2	94	22.3
Equine	29	13.7	7	314.3
Porcine	9	4.2	6	50.0
Ovine	22	10.4	24	-8.3
Caprine	21	9.9	11	90.9
Camelid	2	0.9	3	-33.3
Other	14	6.6	31	-54.8
TOTAL	212	100.0	176	20.5

Species	Number Examined	Viral (%)	Bacterial (%)	Other (%)	Undeter- mined(%)
Bovine	115	15 (13.0) ^a	19 (16.5) ^b	14 (12.2) ^c	67 (58.3)
Equine	29	1 (3.4) ^d	6 (20.7) ^e	3 (10.3) ^f	19 (65.5)
Porcine	9	4 (44.4) ^g	0 (0.0)	0 (0.0)	5 (55.6)
Ovine	22	5 (22.7) ^h	12 (54.5) ⁱ	0 (0.0)	5 (22.7)
Caprine	21	0 (0.0)	2 (9.5)	3 (14.3) ^j	16 (76.2)
Camelid	2	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)
TOTAL	198	25 (12.6)	40 (20.2)	20 (10.1)	113 (57.1)

^a 4 with IBR, 11 with BVD

^b 1 Campylobacter, 1 Salmonella

^c 2 Neospora, 2 congenital, 5 nitrate toxicity, 3 locoweed, 2 suspect toxicity

^d 1 EHV

^e 5 *Streptococcus zooepidemicus*

^f 3 Umbilical torsion

^g 4 PRRS

^h 5 Cache Valley Fever

ⁱ 6 Campylobacter, 1 Listeria

^j 1 Coxiella

The top table indicates the number of diarrhea screens performed in the last two fiscal years. The last column of the top table indicates the percent change of fiscal year 15/16 compared to fiscal year 14/15. The bottom table indicates the determined causes of the diarrhea over the number of times the agents were tested for, and the percentages of detection of the agent are given in parentheses. In many cases, more than one agent was detected.

DIARRHEA SCREENS

Species	Number 7/15-6/16	%	Number 7/14-6/15	% Change
Bovine	122	71.9	133	-8.3
Equine	15	3.8	7	114.3
Porcine	2	0.0	0	100.00
Ovine/Caprine	9	3.8	7	28.6
Canine	25	11.3	21	19.0
Feline	11	5.9	11	0.0
Cervids	5	2.2	4	25.0
Other	5	1.1	2	150.0
TOTAL	194	100.0	185	4.9

Species	Rota	Corona	E. coli	Salmonella	Clostridia	Cryptosporidia and/or Giardia	Other	Undeter- mined
Bovine	32 (26.2)	7 (5.7)	10 (8.2)	12 (9.8)	12 (9.8)	19 (15.6)	5 ^a (4.1)	25 (20.5)
Equine	0 (0.0)	0 (0.0)	1 (6.7)	2 (13.3)	2 (13.3)	1 (6.7)	1 ^b (6.7)	8 (53.3)
Ovine/ Caprine	2 (22.2)	0 (0.0)	2 (22.2)	0 (0.0)	0 (0.0)	0 (0.0)	8 ^c (88.9)	0 (0.0)
Porcine	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 ^d (50.0)	1 (50.0)
Canine	0 (0.0)	0 (0.0)	1 (4.0)	0 (0.0)	4 (16.0)	9 (36.0)	6 ^e (24.0)	10 (40.0)
TOTAL	34 (19.7)	7 (4.0)	14 (8.1)	14 (8.1)	18 (10.4)	29 (16.8)	21 (12.1)	44 (25.4)

^a Johne's disease (1), Coccidia (4)

^b Strongyles (1)

^c Coccidia (7), strongyles (1)

^d Coccidia (1)

^e Parvovirus (5), yeast (1)

The first two columns of the top table indicate the number of biopsies performed for each of the listed species for the Veterinary Teaching Hospital (VTH) and the state or country. The last three columns indicate the total for the last two fiscal years and the percent change of fiscal year 15/16 compared to fiscal year 14/15. The VTH cases increased by 15 cases (0.9%) while the state/country cases increased by 3,226 cases (8.9%). The bottom table indicates the number and percentage of certain diagnoses given for both the VTH and state/country. Some cases had more than one diagnosis.

BIOPSY

SPECIES	VTH 7/15-6/16	State/Country 7/15-6/16	Total 7/15-6/16	Total 7/14-6/15	% Change
Canine	1,384	30,070	31,454	28,565	10.1
Feline	118	4,467	4,585	4,109	11.6
Other/Exotics	21	536	557	656	-15.1
Avian	3	107	110	111	-0.9
Equine	87	487	574	573	0.2
Bovine	6	344	350	322	8.7
Porcine	0	13	13	8	62.5
Ovine/Caprine	3	73	76	139	-45.3
Camelid/Cervine	2	33	35	30	16.7
TOTAL	1,624	36,130	37,754	34,513	9.4

*Of this total, 317 were 2nd opinion consultations from outside the laboratory, and 182 were dermatology-specific cases.

Diagnosis	VTH (%)	State/Country (%)	TOTAL (%)
Benign Tumor	443 (27.3)	10,616 (29.4)	11,059 (29.3)
Sarcoma	465 (28.6)	11,172 (30.9)	11,637 (30.8)*
Carcinoma	245 (15.1)	4,465 (12.4)	4,710 (12.5)
Skin Disease	203 (12.5)	3,422 (9.5)	3,625 (9.6)
Liver Disease	113 (7.0)	4,817 (13.3)	4,930 (13.1)
GI Disease	112 (6.9)	3,019 (8.4)	3,131 (8.3)

* 3,809 (32.7%) of these were mast cell tumors. There were 97 mast cell tumor profiles and 1,065 c-Kit mutation PCR's.

- There were 476 biopsies referred from the Rocky Ford Branch Laboratory in fiscal year 15/16 compared to 336 in fiscal year 14/15 (41.7% increase).

UTERINE BIOPSIES

The top table indicates the number of uterine biopsies for the last two fiscal years, and the percent change of fiscal year 15/16 compared to fiscal year 14/15. The bottom table indicates the distribution and percentages of the different grades given to the uterine biopsies.

Species	Number 7/15-6/16	%	Number 7/14-6/15	% Change
Equine	598	100.0	627	-4.6
Other	0	0.0	2	-100.0
TOTAL	598	100.0	629	-4.6

Grade	Number	%
1A	154	25.8
1B	225	37.6
2A	111	18.6
2B	94	15.7
3A	12	2.0
3B	0	0.0
NA/Unknown	2	0.3

HISTOLOGY

The table below lists the number of slides, special stains, and immunohistochemical (IHC) stains performed by the Histology Laboratory (not including Scrapie or CWD).

Procedure	Number 7/15-6/16	%	Number 7/14-6/15	% Change
H&E Slides/Biopsy & Necropsy	154,636	89.2	172,969	-10.6
H&E Slides/Research	9,889	5.7	16,538	-40.2
Special Stains	7,094	4.1	4,806	47.6
IHC Stains		% of IHC		
Actin	5	0.3	10	-50.0
BVD	50	2.9	17	194.1
CD3/CD79a or PAX-5	760	44.2	538	41.3
CD18	189	11.0	145	30.3
c-Kit	87	5.1	85	2.4
Chromogranin	20	1.2	23	-13.0
Cytokeratin	107	6.2	76	40.8
Desmin	89	5.2	89	0.0
DOG-1	70	4.1	75	-6.7
FIP	33	1.9	32	3.1
Factor VIII	37	2.1	26	42.3
Leptospirosis	5	0.3	11	-54.5
Melan A	81	4.7	54	50.0
MUM-1	50	2.9	60	16.7
Synaptophysin	30	1.7	34	-11.8
Vimentin	81	4.7	72	12.5
Other	27	1.6	13	107.7
Subtotal IHC	1,721		1,360	26.5
TOTAL	173,340	100.0	195,673	-11.4

BACTERIOLOGY

This table lists the different cultures and other selected tests performed by the bacteriology or molecular diagnostics sections. The total number of tests performed in fiscal year 15/16 is compared to the total number of tests performed in fiscal year 14/15. The last column is the percent change between the fiscal years.

Test	Number 7/15-6/16	Number Positive (%)	Number 7/14-6/15	% Change
Aerobic Culture	5,808	NA	6,055	-4.1
Aerobic & Anaerobic Culture	2,076	NA	1,644	2.6
Fecal Culture	4,651	NA	3,396	37.0
Clostridial Fecal Culture	349	173 (49.6)	431	19.0
PCR Clostridial Genotype	10	10 (100.0)	20	-50.0
Clostridial Perfringens/ Difficile Toxin	47	3 (6.4)	53	-11.3
PCR <i>E. coli</i> Multiplex	1	0 (0.0)	13	-92.3
Mycobacterial Culture/PCR	153	13 (8.5)	162	-5.6
Blood Culture	82	NA	95	-13.7
Campylobacter Culture	483	1 (0.2)	390	23.8
Mycoplasma Culture	205	43 (21.0)	193	6.2
CEM Culture	100	0 (0.0)	72	38.9
Strep equi PCR	90	9 (10.0)	51	76.5
Fungal Culture	582	81 (13.9)	507	14.8
PCR Leptospirosis	397	12 (3.0)	364	9.1
Antimicrobial Susceptibility	6,993	NA	7,055	-8.8
Environmental Culture (Swiffer)	1,657	140 (8.4)	1,086	52.6
MRSA Culture	5	1 (20.0)	10	-50.0
Acid-fast or Gram stain	41	NA	15	173.3
TOTAL	23,730	---	21,612	9.8

* 10 type A, 0 type C, 0 type E

The table below lists a breakdown of selected culture tests by species.

SPECIES	Aerobic Culture	Aerobic/ Anaerobic Culture	Fecal Culture	Clostridial Fecal Culture	Mycoplasma Culture	Fungal Culture	TOTAL 7/15-6/16	%
Bovine	338	66	631	141	40	1	1,217	8.9
Equine	621	193	2,884	27	0	48	3,773	27.6
Porcine	45	4	27	6	4	0	86	0.6
Ovine/ Caprine	162	24	208	19	1	4	418	3.1
Camelid	22	8	86	2	0	3	121	0.9
Canine	3,135	1,474	146	43	110	337	5,245	38.4
Feline	900	191	21	14	37	134	1,297	9.5
Avian	133	5	562	5	0	0	705	5.2
Cervine	74	9	11	9	1	4	108	0.8
Non-Animal	94	2	1	0	0	1	98	0.7
Other	284	100	74	83	12	50	603	4.4
TOTAL	5,808	2,076	4,651	347	205	582	13,671	100.0

The table below lists the serology tests performed in the bacteriology section with the number of tests performed in fiscal year 15/16 compared to the number of tests performed in fiscal year 14/15. The last column is the percent change between the fiscal years. In the middle column are selected results for some of the serologic tests.

TEST	Number 7/15-6/16	Positive (%)	Number 7/14-6/15	% Change
Mycobacterium paratuberculosis (ELISA)	2,830	Suspect- 17 (0.6) Positive- 77 (2.7) Strongly Positive-30 (1.1)	2,977	-4.9
M. paratuberculosis AGID	283	5 (1.8)	229	23.6
Brucella abortus	138	0 (0.0)	132	4.5
Brucella canis	152	4 (2.6)	131	16.0
Leptospirosis (5 serovars)	4,370 x 5=21,850 ^a	3,630 (16.6)	3,213 x 5=16,065	36.0
Lepto bratislava	3,542	1,283 (36.2)	2,725	30.0
Aspergillosis	88	1 (1.1)	109	-19.3
Blastomycosis	78	0 (0.0)	106	-26.4
Coccidioidomycosis	135	14 (10.4)	152	-11.2
Histoplasmosis	79	0 (0.0)	102	-22.5
Cryptococcus	299	32 (10.7)	247	21.1
IgG Estimate	10	NA	11	-9.0
IgG Quantitation	371	NA	132	131.1
IgA & IgM Quantitation	126	NA	144	-12.5
Protein Electrophoresis	172	NA	154	11.7
Immunofixation	37	NA	17	117.6
ANA Titer	16	3 (18.8)	25	-36.0
TOTAL	30,206	--	23,458	28.8

^a 314 (30.6%) bovine, 1 (5.0%) camelids, 418 (14.5%) canine, 197 (25.4%) equine, 3 (0.2%) other, and 2,697 (17.5%) porcine had titers \geq 1:100.

FOOD SAFETY DIAGNOSTIC TESTING

The table below lists the food safety (including pregnancy tests) diagnostic testing for the last two fiscal years and the percent change between the two fiscal years.

Test Performed	Number 7/15-6/16	Number 7/14-6/15	% Change
Milk Culture	1,503 ^a	975	54.2
Bovine Pregnancy Test	1,018 ^b	723	40.8
Milk Mycoplasma Culture/PCR	340 ^c	175	94.3
Milk Bacteria ID	264 ^d	195	35.4
Milk Bacteria ID & Mycoplasma Culture	145 ^e	692	-79.1
Milk Bulk Tank Screen	51 ^f	73	-30.1
Milk Somatic Cell Count	168	36	366.7
Milk Plate Count & Coliform Count	16	122	-86.9
Milk Campylobacter or Listeria	83	60	38.3
Milk Beta-Lactam and/or Tetracycline Residue	30	0	100.0
Aerobic Feed Culture	1	2	-50
Raw Milk Panel	94	NA	NA
Milk Q-fever ELISA	13	NA	NA
TOTALS	3,726	3,053	22.0

^a 8 (0.5%) Mycoplasma positive, 38 (2.5%) *Staphylococcus aureus* positive

^b 919 (90.3%) positive

^c 7 (2.1%) positive

^d 17 (6.4%) *Staphylococcus aureus* positive, 40 (15.2%) Streptococcus positive

^e 3 (2.1%) *Staphylococcus aureus* positive and 1 (0.7%) Mycoplasma positive

^f 15 (29.4%) *Staphylococcus aureus* positive and 0 (0.0%) Mycoplasma positive

VIROLOGY

These tables indicate the number of different tests done for viruses by virology and molecular diagnostics for the last two fiscal years, and the last columns indicate the percent change of fiscal year 15/16 compared to fiscal year 14/15. The middle column of some tables indicate the number (and percentage) of positive tests.

BOVINE VIRAL/OTHER DIAGNOSTICS

Virus Name	Test Performed	Number 7/15-6/16	Number Positive (%)	Number 7/14-6/15	% Change
BVDV	VI	163	6 (3.7)	119	37.0
BVDV	PCR	664	8 (1.2)	624	6.4
BVDV	IHC	50	0 (0.0)	17	194.1
BVDV	FA	429	22 (5.1)	381	12.6
BVDV	cELISA or SNAP	1,492	6 (0.4)	568	162.7
IBRV	VI	163	0 (0.0)	119	37.0
IBRV	FA	298	23 (7.7)	254	17.3
BHV	PCR	568	4 (0.7)	686	-17.2
BRSV	VI	163	0 (0.0)	119	37.0
BRSV	PCR	21	0 (0.0)	15	40.0
BRSV	FA	75	1 (1.3)	74	1.4
PI3	VI	163	0 (0.0)	119	37.0
PI3	FA	75	0 (0.0)	76	-1.3
Coronavirus	FA	131	4 (3.1)	153	-14.4
Rotavirus	ELISA	130	51 (39.2)	154	-15.6
Chlamydia	PCR	0	0 (0.0)	1	-100.0
Bluetongue	PCR	661	0 (0.0)	1,429	-53.7
EHD	PCR	129	1 (0.8)	187	-31.0
Mycoplasma	PCR	118	56 (47.5)	110	7.3
OHV-2	PCR	10	1 (10.0)	8	25.0
BLV	PCR	145	10 (6.9)	106	36.8
TOTALS	--	5,159		4,962	4.0

BOVINE VIRAL SEROLOGY

Virus Name	Test Performed	Number 7/15-6/16	Number 7/14-6/15	% Change
BVD-I	SN	352	1,186	-70.3
BVD-II	SN	352	729	-51.7
BRSV	SN	128	42	204.8
IBR	SN	270	831	-67.5
PI-3	SN	112	61	83.6
VSV (2 strains)	SN	254	244	4.1
BLV	AGID	143 ^a	481	-70.3
BT/EHD	AGID	751 ^b	59	1172.9
TOTALS		2,362	3,633	-35.0

^a 11/143 (7.7%) positive

^b 190/751 (25.3%) positive

EQUINE VIRAL DIAGNOSTICS

Virus Name	Test Performed	Number 7/15-6/16	Number Positive (%)	Number 7/14-6/15	% Change
EHV-1	VI	4	0 (0.0)	2	100.0
EHV-1	FA	1	0 (0.0)	1	0.0
EHV-1/-4	PCR	276	4 (1.4)	240	15.0
Influenza	PCR	28	1 (3.6)	39	-28.2
West Nile	PCR	25	2 (8.0)	7	257.1
EVA	PCR	36	0 (0.0)	21	71.4
Western Equine Encephalitis	PCR	11	1 (9.1)	NA	NA
Rotavirus	ELISA	18	2 (11.1)	12	50.0
TOTALS		399	--	322	23.9

EQUINE VIRAL SEROLOGY

Virus Name	Test Performed	Number 7/15-6/16	Number 7/14-6/15	% Change
EHV-1	SN	72	85	-15.3
EHV-4, EHV-3	SN	45	33	36.4
EVA	SN	112	86	30.2
Influenza/A1&A2	HI	14	23	-39.1
EIA	AGID or ELISA	4,683 ^a	4,450	5.2
VSV	SN(2 strains)	332	14	2271.4
West Nile	IgM ELISA	60 ^b	52	15.4
TOTALS		5,318	4,743	12.1

^a Zero positive (0.0%)

^b 16/60 (26.7%) positive

PORCINE VIRAL/OTHER DIAGNOSTICS

Virus Name	Test Performed	Number 7/15-6/16	Number Positive (%)	Number 7/14-6/15	% Change
Influenza	PCR	0	0 (0.0)	0	0.0
Mycoplasma	PCR	21	19 (90.5)	2	950.0
Rotavirus	ELISA	1	0 (0.0)	1	0.0
PPV	FA	21	0 (0.0)	10	1.1
PRRS	PCR	1	0 (0.0)	4	-75.0
TGE	FA	1	0 (0.0)	1	0.0
VSV (2 strains)	SN	0	NA	32	-100.0
TOTALS		45	--	50	-10.0

OVINE/CAPRINE/CAMELID/CERVID/WILDLIFE VIRAL/OTHER DIAGNOSTICS

Virus Name	Test Performed	Number 7/15-6/16	Number Positive (%)	Number 7/14-6/15	% Change
BVDV	VI	0	0 (0.0)	1	-100.0
BVDV	FA/cELISA	177	3 (1.7)	156	13.5
BVDV	PCR	328	0 (0.0)	368	-10.9
BVD	SN	182	NA	271	-32.8
BRSV	FA/PCR	9	0 (0.0)	32	-71.9
BRSV	SN	0	NA	33	-100.0
IBR	FA/PCR	23	2 (8.7)	28	-17.9
IBR	SN	11	NA	29	-62.1
PI3	FA	9	0 (0.0)	12	-25.0
PI3	SN	0	NA	103	-100.0
BT	AGID	57	12 (21.1)	149	-61.7
BT	PCR	24	0 (0.0)	12	100.0
EHD	AGID	47	7 (14.9)	896	-94.8
EHD	PCR	4	0 (0.0)	11	-63.6
EHV	FA/PCR	2	0 (0.0)	2	0.0
EHV	SN	16	NA	0	100.0
Coronavirus	FA	11	0 (0.0)	3	266.7
Rotavirus	ELISA	28	2 (7.1)	16	75.0
OPP	AGID	307	44 (14.3)	73	320.5
OPP	PCR	21	3 (14.3)	16	31.3
CAE	AGID	638	14 (2.2)	559	14.1
CAE	PCR	82	30 (36.6)	122	-32.8
Caprine Herpes	PCR	0	0 (0.0)	5	-100.0
Chlamydia	PCR	203	0 (0.0)	50	306.0
Mycoplasma	PCR	104	11 (10.6)	119	-12.6
OHV-2	PCR	6	2 (33.3)	11	-45.5
West Nile	PCR	9	0 (0.0)	16	-43.8
VSV	SN(2 strains)	2	NA	30	-93.3
TOTAL		2,300		3,123	-26.4

FELINE VIRAL/OTHER DIAGNOSTICS

Virus Name	Test Performed	Number 7/15-6/16	Number Positive (%)	Number 7/14-6/15	% Change
FHV-1 (Herpes)	PCR	94	13 (13.8)	97	-3.1
FHV-1	VI	0	0 (0.0)	0	0.0
Calicivirus	PCR	39	14 (35.9)	44	-11.4
FPV (Panleukopenia)	FA/SNAP/PCR	25	14 (56.0)	31	-19.4
FeLV	ELISA	108	2 (1.9)	97	11.3
FIV	ELISA	108	4 (3.7)	97	11.3
FIV	PCR	15	8 (53.3)	16	-6.3
Chlamydia	PCR	85	11 (12.9)	68	25.0
Mycoplasma	PCR	91	22 (24.2)	73	24.7
Corona/FIP	PCR/FA	55	3 (5.5)	31	77.4
Influenza	PCR	0	0 (0.0)	2	-100.0
TOTALS		620		556	11.5

FELINE VIRAL SEROLOGY

Virus Name	Test Performed	Number 7/15-6/16	Number 7/14-6/15	% Change
FIP	IFA	65	42	54.8
FCV (Calici)	SN	198	203	-2.5
FHV (Herpes)	SN	212	206	2.9
FPV (Panleukopenia)	HI	1,187	1,125	5.5
TOTALS		1,662	1,576	5.5

CANINE VIRAL/OTHER DIAGNOSTICS

Virus Name	Test Performed	Number 7/15-6/16	Number Positive (%)	Number 7/14-6/15	% Change
CDV (Distemper)	FA	127 ^a	30 (23.6)	262	-51.5
CDV	PCR	1,331 ^b	239 (18.0)	983	35.4
CCV (Corona)	FA	27	0 (0.0)	27	0.0
CPV (Parvo)	FA/SNAP/PCR	38	10 (26.3)	60	-36.7
CHV (Herpes)	VI	0	0 (0.0)	0	0.0
CHV	FA/PCR	26	2 (7.7)	35	-25.7
ICH (Adenovirus)	PCR	5	0 (0.0)	5	0.0
Influenza	PCR	16	0 (0.0)	18	-11.1
Mycoplasma	PCR	47	10 (21.3)	33	42.4
TOTALS		1,617	--	1,423	13.6

^a 92/127 (72.4%) are raccoons or other exotics/wildlife, 29 (31.5%) positive.

^b 26/1,331 (2.0%) are raccoons or other exotics/wildlife, 13 (50.0%) positive.

CANINE VIRAL SEROLOGY

Virus Name	Test Performed	Number 7/15-6/16	Number 7/14-6/15	% Change
CDV	SN	8,931	8,243	8.3
CDV IgG/IgM	IFA	230	236	-2.5
CHV	SN	125	118	5.9
CPV	HI	8,191	7,821	4.7
Influenza	HI	10	22	-54.5
TOTALS		17,487	16,440	6.4

RABIES TESTING

Species	Number 7/15-6/16	Number Positive	Number 7/14-6/15
Bat	70	7	96
Bovine/Llama/Caprine/Ovine	31	0	22
Canine	133	0	128
Coyote/Fox	15	0	29
Deer/Elk	8	0	4
Equine/Burro	29	0	12
Feline	77	0	95
Lynx/Mt Lion	5	0	8
Bear	6	0	6
Rabbit/Rodent/Unknown	10	1	15
Raccoon	129	21	137
Skunk	28	3	56
TOTALS	541	32	608

AVIAN DIAGNOSTICS

The table below indicates the number of different tests done by the Avian Diseases Section for the last two fiscal years and the last column indicates the percent change of fiscal year 15/16 compared to fiscal year 14/15. The middle column indicates the number (and percent) of positive tests. Necropsy is also listed in Pathology.

Agent Name	Test Performed	Number 7/15-6/16	Number Positive (%)	Number 7/14-6/15	% Change
Influenza	AGID/Elisa	2,017	NA	2,645	-23.7
Influenza	PCR	9,356	NA	4,096	128.4
Any	VI	525	NA	14	3650.0
Infectious Bronchitis	ELISA	39	39 (100.0)	0	100.0
West Nile	PCR	22	4 (18.2)	23	-4.3
APMV-1	PCR	34	4 (11.8)	187	-81.8
Chlamydia	PCR	35	4 (11.4)	13	169.2
Mycoplasma (MG/MS)	PCR	236	69 (29.2)	41	475.6
Mycoplasma	Serology	276	36 (13.0)	225	22.7
Pullorum/ Typhoid	Serology	2,312	NA	2,437	-5.1
Salmonella Mortality/Egg/ Environmental	Culture	760	NA	1,113	-31.7
Salmonella Enteritidis	PCR	0	NA	8	-100.0
Newcastle Disease	Serology or PCR	43	NA	8	437.5
Any	Necropsy	250	NA	235	6.4
TOTALS		15,905		11,045	44.0

BSL3 / REGULATORY TESTING

Below are tests performed in the BSL3 (Biosafety Level 3) section, usually in conjunction with testing through the National Animal Health Laboratory Network (NAHLN) overseen by the United States Department of Agriculture or with the Laboratory Response Network overseen by the Center for Disease Control. The last column indicates the percent change of test numbers of FY 15/16 compared to FY 14/15.

Agent Name	Test Performed	Number 7/15-6/16	Number Positive	Number 7/14-6/15	% Change
Classical Swine Fever	PCR	728	0 (0.0)	865	-15.8
H1N1 Influenza	PCR	19	6 (31.6)	8	137.5
Q Fever (<i>Coxiella burnetii</i>)	ELISA	277	35 (12.6)	317	-12.6
Q Fever (<i>Coxiella burnetii</i>)	IFA	83	NA	507	-83.6
Q Fever (<i>Coxiella burnetii</i>)	PCR	301	1 (0.3)	144	109.0
Piroplasmosis (<i>B. caballi</i> ; <i>T. equi</i>)	cELISA	604	1 (0.2)	1,101	-45.1
Vesicular Stomatitis	Complement Fixation or PCR	788	255 (32.4)	4	19,600.0
<i>Francisella tularensis</i>	PCR	254	30 (32.4)	117	117.1
<i>Yersinia pestis</i>	PCR	163	9 (5.5)	78	109.0
<i>Bacillus anthracis</i>	PCR	13	0 (0.0)	10	30.0
<i>Brucella</i> sp.	PCR	25	0 (0.0)	143	-82.5
Pseudorabies	ELISA	14	0 (0.0)	16	-12.5
Foot & Mouth Disease	PCR	0	NA	0	0.0
Rinderpest	PCR	0	NA	0	0.0
Contagious Bovine Pleuropneumonia	PCR	0	NA	0	0.0
Lumpy Skin Disease	PCR	0	NA	0	0.0
Salmonella spp	PCR	748	89 (11.9)	46	1526.1
OTHER	RNA Extraction & Sequencing	1	NA	24	-92.2
TOTAL		4,018	--	3,380	18.9

PARASITOLOGY

This table indicates the number of different tests done for the last two fiscal years. The last column indicates the percent change of fiscal year 15/16 compared to fiscal year 14/15.

Test	Number 7/15-6/16	% of Total	Number 7/14-6/15	% Change
Trich - Culture Food Animal	601	5.4	556	8.1
Trich - PCR Food Animal	809 (individual) 276 (pools of 5)	9.7	656 (individual) 239 (pools of 5)	21.2
Trich - Culture Small Animal	2	0.1	11	-81.8
Trich - PCR Small Animal	70	0.6	88	-20.5
<i>Neospora</i> Serology	746	6.7	481	55.1
<i>Toxoplasma</i> Serology	288	2.6	196	46.9
Knott's Test	22	0.2	33	-33.3
Heartworm Serology	768	6.9	777	-1.2
<i>Ehrlichia</i> / <i>Lyme</i> / <i>Ana plasma</i>	1,542 (514 each)	13.8	1,443 (481 each)	6.9
Parasite ID	26	0.2	42	-38.1
Fecal Exam	3,424	30.7	4,189	-18.3
<i>Giardia</i> ELISA/IFA	791	7.1	417	89.7
<i>Cryptosporidium</i> AF/IFA	975	8.7	610	59.8
Baermann	403	3.6	452	-10.8
Fluke exam	8	0.1	8	0.0
<i>Giardia</i> / <i>Crypto</i> PCR	16	0.1	49	-67.3
Soil Analysis (includes feed, water, sediment)	12	0.1	22	-45.5
Occult Blood	31	0.3	42	-26.2
Strongyle/ Nematode PCR	37	0.3	93	-60.2
Bovine <i>Coccidia</i> ID	58	0.5	33	75.8
Special Request/ Other	260	2.3	350	-25.7
Cestode PCR Screen	6	0.1	35	-82.9
TOTAL	11,171	100.0	10,821	3.2

PARASITOLOGY

The following tables indicate the results of fecal examinations for the listed host group. Results are given as the number of samples positive over the number of fecal specimens examined with the percentages in parentheses.

COMPANION ANIMAL/EXOTICS FECAL EXAMINATIONS

Species	Ascarids	Hookworms	Whipworms	Coccidia	Lungworms / <i>Strongyloides</i>	Other
Canine (includes wild species)	7/1166 (0.6)	16/1166 (1.4)	7/1166 (0.6)	19/1166 (1.6)	0/19 (0.0)	5/1166 (0.4)
Feline (includes wild species)	2/163 (1.2)	0/163 (0.0)	0/163 (0.0)	5/163 (3.1)	1/16 (6.3)	1/163 (0.6)
Reptiles/Zoo/Other	36/96 (37.5)	2/96 (2.1)	7/96 (7.3)	17/96 (17.7)	0/0 (0.0)	2/96 (2.1)

FOOD & FIBER ANIMALS/EQUINE FECAL EXAMINATIONS*

Species	Ascarids	Coccidia	Strongyles	<i>Nematodirus</i>	<i>Trichuris</i>	Tapeworms	Other	Lungworms
Bovine	NA	262/537 (48.8)	330/537 (61.5)	20/537 (3.7)	38/537 (7.1)	47/537 (8.8)	3/537 (0.6)	0/3 (0.0)
Ovine/ Caprine	NA	277/343 (80.8)	239/343 (69.7)	143/343 (41.7)	76/343 (22.2)	59/343 (17.2)	3/343 (0.9)	0/5 (0.0)
Camelids	NA	77/142 (54.2)	55/142 (38.7)	32/142 (22.5)	23/142 (16.2)	3/142 (2.1)	15/142 (10.6)	0/0 (0.0)
Cervids/ Wildlife/Zoo	0/445 (0.0)	57/445 (12.8)	330/445 (74.2)	23/445 (5.2)	15/445 (3.4)	89/445 (20.0)	27/445 (6.1)	15/364 (4.1)
Equine	12/488 (2.5)	0/488 (0.0)	200/488 (41.0)	NA	NA	6/488 (1.2)	2/488 (0.4)	0/4 (0.0)

* More than 1 species in many samples

37 Strongyle PCR were performed on bovines. There were 37/37 (100.0%) *Cooperia*, 29/37 (78.4%) *Haemonchus*, 24/37 (64.9%) *Oesophagostomum*, 28/37 (75.7%) *Ostertagia*, and 11/37 (29.7%) *Trichostrongylus*.

PARASITOLOGY

The following table indicates the results of fecal tests for *Cryptosporidium* and *Giardia* using various methods.

Species	<i>Giardia</i> (Fecal Exam)	<i>Giardia</i> or <i>Cryptosporidium</i> (PCR)	<i>Giardia</i> (IFA)	<i>Cryptosporidium</i> (Acid-fast)	<i>Cryptosporidium</i> (IFA)
Canine	22/1166 (1.9)	0/0 (0.0)	52/315 (16.5)	1/77 (1.3)	25/315 (7.9)
Feline	1/163 (0.6)	0/0 (0.0)	1/52 (1.9)	0/4 (0.0)	2/52 (3.8)
Bovine/Caprine/ Ovine/Porcine	10/924 (1.1)	NA	0/17 (0.0)	27/85 (31.8)	0/17 (0.0)
Camelids	0/142 (0.0)	NA	0/2 (0.0)	0/0 (0.0)	0/2 (0.0)
Equine	0/488 (0.0)	NA	3/21 (14.3)	0/0 (0.0)	0/32 (0.0)
Reptiles/Zoo/ Wildlife/Other	5/541 (0.9)	1/16 (6.3)	54/384 (14.1)	3/9 (33.3)	17/384 (4.4)

The following table indicates the results for serology, molecular diagnostics and other tests for the listed host group. Results are given as the number of positive tests over the number of tests performed with the percentages in parentheses.

Species	Trich Culture	Trich PCR	Neospora	Knott's Test	Heartworm	<i>Ehrlichia</i> / <i>Lyme</i> / <i>Anaplasma</i>	<i>Toxoplasma</i> IgG
Bovine	0/601 (0.0)	21/1083 (1.9)	8/169 (4.7)	NA	NA	NA	0/0 (0.0)
Canine	0/0 (0.0)	0/3 (0.0)	23/415 (5.5)	7/22 (31.8)	2/710 (3.0)	25/1,533 ^b (1.6)	NA
Feline	0/2 (0.0)	14/67 ^a (6.0)	1/4 (25.0)	NA	0/58 (0.0)	0/9 (0.0)	NA
Avian/Zoo/ Other/Wildlife	NA	0/2 (0.0)	7/158 (4.4)	NA	0/0 (0.0)	0/0 (0.0)	54/288 (18.8)

^a Includes all trichomonads

^b 5 Anaplasmosis, 12 Ehrlichia, 8 Lyme positive

CHEMISTRY/TOXICOLOGY

The top table indicates the number of tests for nutrients or elements performed for the last two fiscal years. The last column of the top table indicates the percent change of fiscal year 15/16 compared to fiscal year 14/15. The bottom table indicates the results of testing for copper for the given species and tissue sample.

Nutrient	Number 7/15-6/16	%	Number 7/14-6/15	% Change
Copper	2,538	61.6	2,690	-5.7
Zinc	384	9.3	521	-26.3
Iron	463	11.1	443	4.5
Selenium	316	7.7	382	-17.3
Other trace minerals (Mo,Co,Mn)	90	2.2	179	-49.7
Vitamin A	97	2.4	96	1.0
Vitamin E	120	2.9	212	-43.4
Macro elements (Ca,Mg,K,Na, P,Cl)	98	2.4	13	653.8
Special Request	16	0.4	3	433.3
TOTAL	4,122	100.0	4,539	-9.2

COPPER

Species	Tissue	TOTAL	Results
Bovine	Serum	119	58 < 0.6 ppm (deficient)
Bovine	Liver	54	1 < 40 ppm (deficient) 7 > 600 ppm (toxic)
Canine	Liver	2,116	308 > 1,500 ppm (toxic)

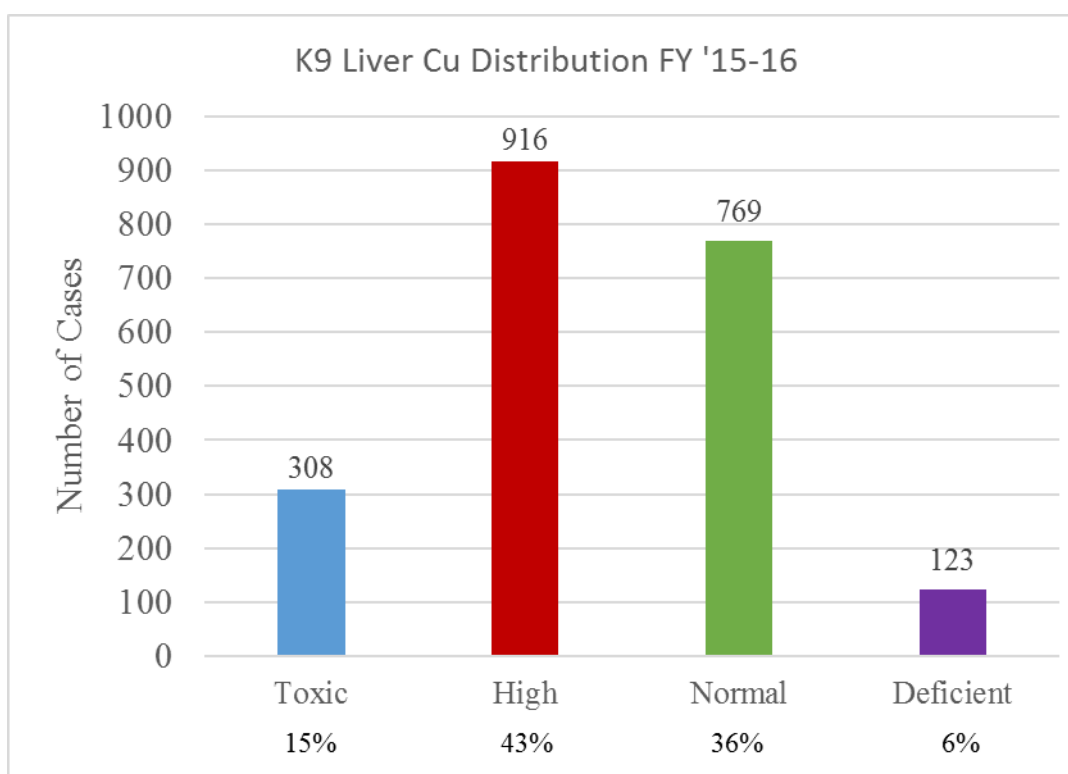
There were 138/392 (35.2%) canine liver iron > 2000ppm

CHEMISTRY/TOXICOLOGY

This table lists the number of tests for toxicants for the last two fiscal years. The last column of the table indicates the percent change of fiscal year 15/16 compared to fiscal year 14/15.

Toxicant	Number 7/15-6/16	%	Number 7/14-6/15	% Change
Calculi	41	8.3	60	-31.7
Bromide	179	36.2	193	-7.3
Cadmium	3	0.6	1	66.7
Cholinesterase	10	2.0	12	-16.7
Cyanide	5	1.0	2	150.0
Nitrate/Nitrite	85	17.2	75	13.3
Strychnine	7	1.4	0	100.0
Sulfate/Sulfur	3	0.6	0	100.0
Arsenic	17	3.4	23	-26.1
Lead	141	28.5	124	13.7
Mercury	4	0.8	23	-82.6
Other	0	0.0	1	-100.0
TOTAL	495	100.0	514	-3.7

There were 13 cases of lead toxicity and 6 cases of strychnine poisoning.



SPECIAL SEROLOGY

The top table indicates the number of tests performed for the listed species for the last two fiscal years. The percent change of fiscal year 15/16 compared to fiscal year 14/15 is given in parentheses. Toxo stands for Toxoplasmosis and RMSF stands for Rocky Mountain Spotted Fever. The bottom table indicates the number of positive results over the total number of tests done, with the percent in parentheses.

Species	Toxo IgG/M 7/15-6/16	Toxo IgG/M 7/14-6/15 (%change)	Toxo CSF IgG/M 7/15-6/16	Toxo CSF IgG/M 7/14-6/15 (% change)	RMSF IFA 7/15-6/16	RMSF IFA 7/14-6/15 (%change)
Canine	3,314	2,997 (10.6)	25	74 (-66.2)	110	72 (52.8)
Feline	5,020	5,002 (0.4)	10	20 (-50.0)	NA	NA
TOTAL	8,334	7,999 (4.2)	35	94 (-62.8)	110	72 (52.8)

Species	Positive Toxo IgG	Positive Toxo IgM	Positive Toxo CSF IgM	Positive RMSF IFA
Canine	341/3,314 (10.3)	268/3,314 (8.1)	2/25 (8.0)	5/110 (4.5)
Feline	603/5,020 (12.0)	587/5,020 (11.7)	0/10 (0.0)	NA
TOTAL	944/8,334 (11.3)	855/8,334 (10.3)	2/35 (5.7)	5/110 (4.5)

The table below indicates the number of PCR tests done in the Special Serology section for the last two fiscal years. The number of positive results and the percentages in parentheses is given in the third column. The last column indicates the change in the number of tests from fiscal year 15/16 compared to fiscal year 14/15.

TEST	Number 7/15-6/16	Number Positive (%)	Number 7/14-6/15	% Change
IgG Bartonella	55	28 (50.9)	61	-9.8
PCR Bartonella	216	5 (2.3)	271	-20.3
PCR Cryptosporidia	20	5 (25.0)	11	81.8
PCR Giardia	18	5 (27.8)	13	38.5
PCR <i>M. haemocanis</i> / <i>M. haematoparvum</i>	90	3 (3.3)	98	-8.2
PCR <i>M. haemofelis</i> / <i>M. haemominutum</i>	146	11 (7.5)	156	-6.4
PCR <i>Neospora caninum</i>	142	1 (0.7)	138	2.9
PCR <i>Toxoplasma gondii</i>	594	1 (0.2)	534	11.2
PCR Ehrlichia/Wolbachia/ Anaplasma/Neorickettsia	756	13 (1.7)	552	37.0
PCR Ehrlichia/ Anaplasma/Neorickettsia	126	1 (0.8)	321	-60.7
PCR Equine Fungal	14	3 (21.4)	9	55.6
PCR Rickettsia sp.	126	0 (0.0)	158	-20.3
<i>E. canis</i> IFA	24	2 (8.3)	21	14.3
TOTAL	2,327	--	2,343	-0.7

CLINICAL PATHOLOGY

The Clinical Pathology Service is directed by the Veterinary Teaching Hospital, but samples from non-Veterinary Teaching Hospital patients are processed through the Diagnostic Laboratory. The table indicates the number of tests performed for the given species for non-Veterinary Teaching Hospital cases only. Fiscal year 15/16 is compared to fiscal year 14/15 and the percent change is given in parentheses. Overall, there were 11,279 tests in fiscal year 15/16 compared to 10,333 tests in fiscal year 14/15, an increase of 12.4%.

Species	CBC 7/15-6/16	CBC 7/14-6/15 (% change)	Chemistry Panel 7/15-6/16	Chemistry/Panel 7/14-6/15 (% change)	Fluid & Cytology 7/15-6/16	Fluid & Cytology ^a 7/14-6/15 (% change)	Other 7/15-6/16	Other 7/14-6/15 (% change)
Canine	1,618	1,545 (4.7)	585	506 (15.6)	5,375	4,533 (18.6)	779	553 (40.9)
Feline	349	277 (26.0)	153	130 (17.7)	1,047	882 (18.7)	199	182 (9.3)
Equine	296	425 (-30.4)	317	412 (-23.1)	116	118 (-1.7)	49	36 (36.1)
Bovine/ Ovine/ Caprine	60	58 (3.4)	91	88 (3.4)	62	8 (675.0)	3	5 (-40.0)
Other	30	114 (-73.7)	31	49 (-36.7)	72	43 (67.4)	6	22 (-72.7)
Avian/ Reptile	8	11 (-27.3)	27	8 (237.5)	6	6 (0.0)	0	0 (0.0)
TOTAL	2,361	2,430 (-2.8)	1,204	1,193 (0.9)	6,678	5,590 (19.5)	1,036	798 (29.8)

^a There were 1,127 additional site cytologies in FY 15/16 compared to 907 in FY 14/15.

- There were 3,207 submissions of tissue for PCR to detect lymphoid malignancies (compared to 2,670 in FY 14/15), and 5,677 submissions for flow cytometry (compared to 4,643 in FY 14/15), an increase of 20.1% and 22.3%, respectively.

ENDOCRINOLOGY

This table indicates the number of tests performed for the listed species for the last two fiscal years. The percent change from fiscal year 15/16 compared to fiscal year 14/15 is given in parentheses. TDM stands for therapeutic drug monitoring, and is primarily for phenobarbital. *

Species	Pituitary Adrenal Axis	Pituitary Thyroid Axis	Insulin	Total 7/15-6/16	Total 7/14-6/15 (% change)	TDM 7/15-6/16	TDM 7/14-6/15 (% change)
Equine	276	26	157	459	398 (15.3)	1	0 (100.0)
Canine	1,089	1,266	23	2,378	2,345 (1.4)	230	261 (-11.9)
Feline	3	544	1	548	521 (5.2)	8	11 (-27.3)
Other	0	3	0	3	3 (0.0)	2	3 (-33.3)
TOTAL	1,368	1,839	181	3,388	3,267 (3.7)	241	275 (-12.4)

* There were 186 tests for progesterone, 185 canine and 1 equine.

ROCKY FORD

Agent Name	Test Performed	Number 7/15-6/16	Number Positive	% Positive	Number 7/14-6/15	% Change
BLV	ELISA or PCR	310	52	16.8	735	-57.8
BVD	FA	223	5	2.2	203	9.9
BVD PCR Pools	PCR	1,656	176	10.6	1,668	-0.7
BVD Control Program	PCR	57,979	NA	NA	62,515	-7.3
BVD	SNAP/C-ELISA	6,440	182	2.8	6,522	-1.3
IBR	FA	163	19	1.2	110	48.2
BT	ELISA	85	2	2.4	99	-14.1
Rota	ELISA	53	14	2.6	37	43.2
Corona	FA	37	3	1	34	8.8
BRSV	FA	38	6	1.6	29	31.0
PI3	FA	37	3	8.1	29	27.6
<i>B. abortus</i>	Card Test	41	0	0.0	30	36.7
<i>M. paratuberculosis</i>	ELISA or PCR	45	9	20.0	69	-34.8
Trichomonas	Culture	145	0	0.0	202	-28.2
Trichomonas	PCR	3,764	125	3.3	3,902	-3.5
Trichomonas pooled	PCR	2,723	50	1.8	2,724	0.0
Trichomonas control program	PCR	-	NA	NA	-	-
Other Parasites	Fecal Float Exam	12,169	NA	NA	12,002	1.4
CAE	PCR/cELISA/AGID	202	NA	NA	135	49.6
OPP	PCR/AGID	720	23	3.2	249	189.2
		627	4	0.6	131	378.6
EIA	AGID	5,077	0	0.0	5,191	-2.2
EIA	ELISA	547	0	0.0	646	-15.3
Campylobacter	Culture	10	2	20.0	31	-67.7
Various Bacteria	Culture	1,054	NA	NA	1,481	-28.8
Milk Bacteria	Culture	2,951	NA	NA	2,977	-0.9
Antimicrobial Suscept.	Culture/FAST	626	NA	NA	NA	NA
Ruminant Pregnancy Test	ELISA	112	77	68.8	127	-11.8
Nitrate	ISE or EMQ Strip	547	NA	NA	806	-32.1
Water Chemistry Panels	Spec./Titration	136	NA	NA	110	23.6
Various	Clinical Pathology	277	NA	NA	321	-13.7
Total T4	ELISA	148	NA	NA	99	49.5
Various	Necropsy	122	NA	NA	104	17.3
TOTAL		99,064	-	-	105,746	-6.3

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WESTERN SLOPE

Test Performed	Number 7/15-6/16	Number Positive	% Positive	Number 7/14-6/15	% Change
Aerobic culture	399	NA	NA	471	-15.3
Anaerobic culture	73	NA	NA	90	-18.9
Milk culture	146	NA	NA	24	508.3
Ruminant Pregnancy Test	811	776	95.7	51	1490.2
Antibiotic susceptibility	278	NA	NA	237	17.3
Fungal culture	0	0	0.0	12	-100.0
Campylobacter culture	25	1	4.0	27	-7.4
Mycoplasma culture & other	29	0	0.0	25	16.0
<i>B. ovis</i> ELISA	8,777	353 positive 263 indeterminate	4.0 positive 3.0 indeterminate	8,140	7.8
<i>B. abortus</i>	0	0	0.0	0	0.0
<i>M. paratuberculosis</i>	0	0	0.0	2	-100.0
EIA (Coggins)	2,001	0	0.0	1,739	15.1
CAE AGID/ELISA	118	20	16.9	99	19.2
OPP AGID/ELISA	118	0	0.0	92	28.3
BVD cELISA/SNAP	196	3	1.5	105	86.7
BVD PCR	1,317	0	0.0	1,587	-17.0
Trichomonas Culture/PCR	3,869	0	0.0	3,435	12.6
Fecal exam	93	NA	NA	79	17.7
Neospora Serology	0	0	0.0	2	-100.0
Chemistry/Endocrinology	0	NA	NA	7	-100.0
Necropsy*	99	NA	NA	75	32.0
Histopathology	463	NA	NA	483	-4.1
Cytology/Clin Path	19	NA	NA	14	-35.7
TOTAL	18,831	NA	NA	16,796	12.1

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