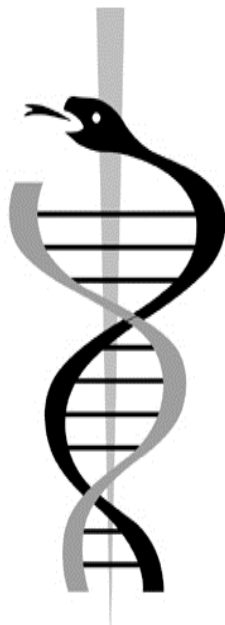


# **COLORADO STATE UNIVERSITY VETERINARY DIAGNOSTIC LABORATORIES**

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## **ANNUAL REPORT 2009**

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Diagnostic Laboratories  
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Fax 970/297-0320  
email: [dlab@colostate.edu](mailto:dlab@colostate.edu)  
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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 81501  
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 Laboratory 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 post-doctoral students.

### MESSAGE FROM THE DIRECTOR:

*Every year, we assemble a summary of the activities of the CSU Veterinary Diagnostic Laboratory. We hope you find this information interesting and of use. The activities of the faculty and staff are listed by the calendar year 2009. The testing and disease statistics are by the fiscal year July 1, 2008 to June 30, 2009. 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,

*Barbara E. Pomas*

## DIAGNOSTIC LABORATORY PERSONNEL

### FORT COLLINS

#### Office Staff

Barbara Powers, DVM/ PhD/DACVP

Director

Jay Kammerzell

Business Manager

Carrie Schmer

Computer Services

Helen Koh

Computer Services

Nancy Ault

Office Manager/Receiving

Elaine Andersen

Word Processing/Special Projects

Lisa Wolfe

Sample Receiving

Mary Lindburg

Word Processing/Admin Asst

LeeAnn Mitchell

Client Services

Lisa Monzingo

Asst. Business Manager

Connie Heighes

Accounting

Katie Leber

Client Services/Phone

Kim Speaker

Sample Receiving

Tina Kane

Office Manager/Client Services

Deidra Triplet

Client Services/Phone

Deanna Bishop

Sample Receiving

Ivy Ho

Sample Receiving

Jan Roberts

Word Processing

Kaye Williams

Word Processing

John Maulsby, DVM

Case Coordinator

#### Avian Diagnostics and BSL3 Operations

Kristy Pabilonia, DVM/DACVM

Section Head

Christina Weller

Microbiologist

Sarah Millonig

Avian Program Assistant

Nicole Malone

Avian Program Assistant

Jeruesha Nichols

Avian Program Assistant

Katie Slota

Avian Program Assistant

#### Chemistry/Toxicology

Dwayne Hamar, PhD

Section Head

Cathy Bedwell

Chemist

#### Endocrinology & Special Serology

Mike Lappin, DVM/PhD/DACVM

Lab Supervisor

Melissa Brewer

Research Associate

Jennifer Hawley

Research Associate

Arienne Morris

Research Associate

#### Microbiology

Hana Van Campen, DVM/PhD/DACVM

Virology Section Head

Doreene Hyatt, PhD

Bacteriology Section Head

Denise Bolte

Microbiologist

Monica Estay

Microbiologist

Cindy Hirota

Microbiologist

Jean Muirhead

Microbiologist

Mike Russell

Microbiologist

Barbara Traut

Microbiologist

Anita Schiebel

Microbiologist

Gayle Thompson

Microbiologist

Christina Gates

Microbiologist

Kathi Wilson

Microbiologist/TSE Testing

Leah Powers

Lab Assistant/TSE Testing

Cheryl Greenwood

Lab Assistant

#### Molecular Diagnostics

Jeanette Bishop

Research Associate

#### Parasitology

Lora Ballweber, DVM/MS

Section Head

Stacey Elmore

Lab Technician

#### Pathology

Barbara Powers, DVM/PhD/DACVP

Pathologist/Director

EJ Ehrhart, DVM/PhD/DACVP

Pathologist

Gary Mason, DVM/PhD/DACVP

Pathologist/Section Head

## DIAGNOSTIC LABORATORY PERSONNEL, cont.

	Pat Schultheiss, DVM/PhD/DACVP	Pathologist
	Terry Spraker, DVM/PhD/DACVP	Pathologist
	Tawfik Aboellail, BVSc/MVSc/PhD/DACVP	Pathologist
	Debra Kamstock, PhD/DVM/DACVP	Pathologist
	Lee DeBuse	Lab Technician
	Annie McAfee	Lab Technician
	Dennis Madden	Lab Coordinator
	Erik K. Themm	Lab Assistant
Clinical Pathology	Andrea Bohn, DVM/PhD/DACVP	Clinical Pathologist
	Paul Avery, DVM/PhD/DACVP	Clinical Pathologist
	Christine Olver, DVM/PhD/DACVP	Clinical Pathologist/Section Head
Histology	Linda Vap, DVM/DACVP	Lab Coordinator
	Todd Bass	Lab Supervisor
	Grant Evans	Lab Technician
	Matthew Garber	Lab Technician
	AnaMario Benavides	Lab Technician
	Bruce Cummings	Research Associate
Quality Assurance	Dwayne Hamar, PhD	QA Manager
	Christina Weller	QA Asst Manager
<b>ROCKY FORD</b>		
Office Staff	James Kennedy, DVM/MS	Director
Laboratory	Carol Knudsen	Lab Assistant
	Loxi Proctor	Lab Assistant
	Jennifer Boden	Lab Technician
	Dayla Pearl	Lab Technician
	Jane Carman-Wharry	Microbiologist
	Laura Mendenhall	Admin Asst
<b>GRAND JUNCTION</b>		
Laboratory	John Andrews, DVM/PhD/DACVP	Director, ½ time
	Don Kitchen, DVM/PhD/DACVP	Director, ½ time
	Kim Hannafious	Microbiologist
	Cheryl Thomas	Microbiologist
	Antonio Histia	Admin Asst
	Fred Crippen	General Laborer

## AWARDS, HONORS AND SERVICE MILESTONES, 2009

### 5 Years of Service

Deanna Bishop  
Leah Powers

### 10 Years of Service

### 20 Years of Service

Carol Knudsen  
Loxi Proctor  
Cindy Hirota

### 25 Years of Service

Jane Carman-Wharry  
Anita Schiebel

### 30 Years of Service

Lee Ann Mitchell

## EXTERNAL ADVISORY COMMITTEE MEMBERS

### Member/Industry Representing

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Dr. Joan Bowen/Small Ruminant	5036 ECR 60	Wellington, CO 80549
Mr. Norm Brown/Equine	8167 NCR 11	Wellington, CO 80549
Dr. Keith Roehr/State Vet	CO Dept of Agric	Denver, CO 80215
Mr. Terry Fankhauser/Exe Dir/CCA	8833 Ralston Road	Arvada, CO 8000
Dr. Mike Gotchey/Equine	1878 Lincoln Avenue	Steamboat Springs, CO
Dr. Bob Davies/Wildlife/CDOW	6060 Broadway	Denver, CO 80216
Dr. Marv Hamann/Mixed Practice	183 Domingo Drive	Pueblo West, CO 81007
Mr. Ed Hansen/Beef Cattle	4554 CR 74E	Livermore, CO 80636
Dr. Dean Hendrickson/VTH Director	CSU VTH	Fort Collins, CO 80523
Dr. Ron Kollers/Small Animal	1336 W. Elizabeth	Fort Collins, CO 80521
Dr. Elisabeth Lawaczeck	CO Dept of Public Health & Environment	Denver, CO 80216
Dr. Paul Lunn/Clin Sci Dept Head	VTH/Dept of Clinical Sciences	Fort Collins, CO 80523
Dr. Larry Mackey/Large Animal	PO Box 336204	Greeley, CO 80632
Dr. Leesa McCue/Mixed Animal	PO Box 388	Limon, CO 80828
Dr. Del Miles/Beef Cattle	5626 W. 19th Str, Suite A	Greeley, CO 80634
Dr. Mike Miller/Wildlife/CDOW	317 W. Prospect	Fort Collins, CO 80526
Dr. Roger Perkins/USDA/AVIC/APHIS	755 Parfet, Suite 136	Lakewood, CO 80215
Mr. Kenny Rogers/CCA	5151 CR 34	Yuma, CO 80759
Dr. Steve Wheeler/Small Animal	3550 S. Jason Street	Englewood, CO 80110
Dr. Deb Young	CSU Extension	Fort Collins, CO 80523

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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 grateful for their time and advice, and hope they feel that they are an integral part of the laboratory.

The Diagnostic Laboratory 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

Charles Halsey, DVM  
Brett Webb, DVM  
Karen Fox, DVM  
Shannon McLeland, DVM  
Gopi Palanisamy, DVM  
Deanna Dailey, DVM  
Brendan Podell, DVM  
Amy Miller, DVM (Clinical Pathology)  
Michael Wiseman DVM (Clinical Pathology)  
Laura Brandt, DVM (Clinical Pathology)  
Maureen Emanu, DVM (Clinical Pathology)  
Julie Rysleff, DVM (Clinical Pathology)  
Matt Feirer, DVM (Clinical Pathology)

### Microbiology

Laurie Baeten, DVM

### Comparative Lab Animal Medicine

Cristina Marie Weiner, DVM  
Elizabeth Magden, DVM  
Matt Rosenbaum, DVM  
Wynona Burgess, DVM

## DIAGNOSTIC LABORATORY FACULTY TEACHING CONTRIBUTIONS, 2009

EH446	Environmental Toxicology/G. Mason
ERH510	Cancer Biology/E. Ehrhart
IU193	Introduction to Parasites/L. Ballweber
MB334	Food Microbiology/D. Hyatt, T. Spraker
MB335	Food Microbiology Laboratory/D. Hyatt
MB400F	Capstone in Microbiology/H. Van Campen
MB420	Medical and Molecular Virology/H. Van Campen
MB540	Biosafety in Research Laboratories/K. Pabilonia
MB636	Mechanisms of Viral Infection and Disease/H. Van Campen, T. Aboellail
MBCC192	Infectious diseases of Animals/H. Van Campen
MB700	Topics in Virology/H. Van Campen
MIP420	Medical and Molecular Virology/H. Van Campen
MIP555	Principles and Mechanisms of Disease/P. Schultheiss, G. Mason, T. Aboellail, E. Ehrhart, C. Duncan
MIP760	Mechanisms of Bacterial Pathogenesis/G. Mason
MIP778	Pathobiology of Laboratory Animals/E. Ehrhart, G. Mason
MIP786A	Practicum--Comparative Gross and Histologic Pathology/E. Ehrhart, D. Hyatt, G. Mason, P. Schultheiss, T. Spraker, T. Aboellail, H Van Campen, D. Kamstock, C. Duncan
MIP786B	Practicum--Surgical Pathology/E. Ehrhart, G. Mason, P. Schultheiss, T. Spraker, T Aboellail, D. Kamstock, C. Duncan
MIP786C	Practicum for Clinical Pathology Residents/C. Olver, P. Avery, A. Bohn
MIP792AC	Bioanalytical and Microscopy Seminar/E. Ehrhart, G. Mason, P. Schultheiss, T. Spraker, T. Aboellail, D. Kamstock, C. Duncan
MIP792D	Seminar Anatomic Pathology/E. Ehrhart, G. Mason, P. Schultheiss, T. Spraker, T. Aboellail, D. Kamstock, C. Duncan
MIP796V	General Pathology Group Study/T. Aboellail
MIP796V	Surgical Pathology/B. Powers, D. Kamstock
MIP615	Ophthalmological Histopathology/E. Ehrhart
MIP796V	Dermatopathy/P. Schultheiss
VM601	Perspectives in Veterinary Medicine/T. Spraker, K. Pabilonia
VM639	Veterinary Virology and Parasitology/H. Van Campen, L. Ballweber
VM640	Biology of Disease I/G. Mason, E. Ehrhart
VM648	Food Animal Safety and Production/K. Pabilonia
VM650	Veterinary Microbiological Laboratory Techniques/H. Van Campen
VM707	Emerging Infectious Diseases/K. Pabilonia , C. Duncan
VM722	Veterinary Pharmacology/L. Ballweber
VM724	Bioanalytic Pathology/P. Schultheiss
VM741	Biology of Disease II/P. Schultheiss, G. Mason, T. Spraker, E. Ehrhart, T. Aboellail, C. Duncan
VM742	Biology of Disease III/G. Mason, P. Schultheiss, T. Spraker, E. Ehrhart, H. VanCampen, D. Kamstock, T. Aboellail
VM751	Veterinary Clinical Toxicology/D. Hamar
VM786A	Junior Practicum--Food-Animal Diagnostics and Surgery/G. Mason
VM786A	Junior Practicum—Food Animal Obstetrics/L. Ballweber
VM786A	Junior Practicum—Small Animal Procedures/L. Ballweber
VM786A	Junior Practicum—Emerging and Exotic Diseases of Animals/K. Pabilonia

**TEACHING CONTRIBUTIONS, cont.**

VM786B	Senior Practicum--Clinical Service Necropsy Block/E. Ehrhart, D. Hyatt, G. Mason, P. Schultheiss, T. Spraker, H. Van Campen, T. Aboellail, D. Kamstock
VM786FV	Senior Practicum—Food Animal Clinical Block/D. Hyatt
VM796V	Dermatopathology/P. Schultheiss
VS626	Infertility and Genital Diseases/H. Van Campen
VS642	Ophthalmology/E. Ehrhart
VS703	Post-Graduate Veterinary Medicine/E. Ehrhart
VS780	Cancer Biology Clinical Practicum/E. Ehrhart

**SCIENTIFIC PRESENTATIONS, PROCEEDINGS, AND ABSTRACTS  
BY FACULTY AND STAFF MEMBERS, 2009**

**Aboellail T, Porter B, Fox K.** Perineal squamous cell carcinoma including a new variant of giant cell carcinoma in Boer goats. American Association of Veterinary Laboratory Diagnosticians Annual Conference. San Diego, CA. October, 2009.

**Baeten L, Pabilonia K, Weller C, Bishop J, Spencer K, Ballweber L.** Comparison of assays for the detection of *Tritrichomonas foetus* in bovine preputial scrapings. American Association of Veterinary Laboratory Diagnosticians Annual Conference. San Diego, CA. October 2009.

**Baeten L, Pabilonia K, Duncan, C.** We have all of these samples . . . now what? How to get the best bang for your buck at the diagnostic lab. Wildlife Disease Association Annual Conference. Blaine, WA. August 2009.

**Ballweber LR.** Death by praziquantel: Tapeworm and trematode parasites of dogs and cats. Wild West Veterinary Conference. Reno, NV. October 2009.

**Ballweber LR.** Let's see everything that's there: Improving the quality and value of fecal exams. 146<sup>th</sup> American Veterinary Medical Association Annual Convention. Seattle, WA. July 2009.

**Ballweber LR.** Making sense of it all: Interpreting and understanding diagnostics. 146<sup>th</sup> American Veterinary Medical Association Annual Convention. Seattle, WA. July 2009.

**Ballweber LR.** The “other” parasitic diseases of dogs and cats. Wild West Veterinary Conference. Reno, NV. October 2009.

**Ballweber LR.** Understanding how patient-side diagnostic tests work. Wild West Veterinary Conference. Reno, NV. October 2009.

**Ballweber L, Gasbarre L, Stromberg B, Dargatz D, Rodriguez J.** Parasitic gastrointestinal nematode control practices in US cow-calf operations – insights from the USDA National Animal Health Monitoring Systems. World Association for the Advancement of Veterinary Parasitology and the American Association of Veterinary Parasitologists, joint meeting. Calgary, Alberta, Canada. August 2009.

**Ballweber L, Bowman D, Blagburn B, Little S.** An update on selected zoonotic diseases of companion animals– Current state of the understanding of implications of toxoplasmosis. World Association for the Advancement of Veterinary Parasitology and the American Association of Veterinary Parasitologists, joint meeting. Calgary, Alberta, Canada. August 2009.

**Ballweber LR.** Canine and feline cryptosporidiosis and giardiasis. Central Veterinary Conference-West. San Diego. CA. November 2009.

**Ballweber LR.** Flea control: Does the environment really matter? Central Veterinary Conference-West. San Diego, CA. November 2009.

**Ballweber LR.** *Neospora caninum*. Central Veterinary Conference-West. San Diego, CA. November 2009.

**Ballweber LR.** Parasitic zoonoses of wildlife. Central Veterinary Conference-West. San Diego, CA. November 2009.

**Ballweber LR.** Some not-so-unusual tapeworms of dogs and cats. Central Veterinary Conference-West. San Diego, CA. November 2009.



**Ballweber LR.** Who's knocking at the door? Parasites you probably didn't hear about in vet school. Central Veterinary Conference-West. San Diego, CA. November 2009.

Brandt L, **Ehrhart E**, Charles B, Bohn A. The identification and localization of renal proteins within the dog and cat kidney using immunohistochemistry. American College of Veterinary Pathologists Annual Meeting. Monterey CA. December 2009.

**Dailey D**, Rao S, Hill A, **Kamstock D**. Seasonal and geographical patterns associated with and characteristics of canine viral squamous papilloma. American Association of Veterinary Laboratory Diagnosticians Annual Conference. San Diego, CA. October 2009.

Dewell RD, **Hyatt DR**, Salman MD. Comparison of bacterial growth and inhibition between commercially available raw and pasteurized milk inoculated with important milk-borne pathogens. Symposium of the International Society for Veterinary Epidemiology and Economics. Durban, South Africa. August 2009.

**Duncan CD**. Bovine Viral Diarrhea Virus in cervids of Colorado. Symposium of the International Society for Veterinary Epidemiology and Economics. Durban, South Africa. August 2009.

**Duncan CD**. Raccoons as sentinels of zoonotic disease in Colorado. Symposium of the International Society for Veterinary Epidemiology and Economics. Durban, South Africa. August 2009.

**Elmore SA**, O'Hara TM, **Ballweber LR**. Molecular evidence of *Neospora caninum* in arctic fox (*Alopex lagopus*) from Alaska. World Association for the Advancement of Veterinary Parasitology and the American Association of Veterinary Parasitologists, joint meeting. Calgary, Alberta, Canada. August 2009.

Gasbarre L, **Ballweber L**, Stromberg B, Dargatz D, Rodriguez J, Zarlenga D. Effectiveness of current antihelminthic treatment programs on reducing fecal egg counts in US cow-calf operations. World Association for the Advancement of Veterinary Parasitology and the American Association of Veterinary Parasitologists, joint meeting. Calgary, Alberta, Canada, August 2009.

Glassner KW, **Kamstock DA**. Clinical, microscopic, and phenotypical characterization of neoplastic and non-neoplastic feline hepatic lymphocytic diseases. College of Veterinary Medicine and Biomedical Sciences Research Day, Fort Collins, CO. February 2009.

**Halsey CH**, **Powers BP**, **Kamstock DA**. Feline intestinal sclerosing mast cell tumor: 50 cases (1997-2008). American College of Veterinary Pathologists Annual conference, Monterey, CA. December 2009.

Hansen TR, Smirnova N P, **Van Campen H**. Fetal and maternal gene expression during BVDV fetal infection. Bovine Virus Diarrhea 2009 Meeting. Phoenix, AZ. January 2009.

Hoffman A, Dubielzig R, Tawansy K, **Ehrhart E**, Charles B, Schobert C. Neovascular proliferative vitreoretinopathy reminiscent of retinopathy of prematurity: A morphologic and immunohistochemical study in cats. American College of Veterinary Ophthalmologists 40th Annual Conference. Chicago IL. November 2009.

Huston JE, Huston CL, **Ballweber LR**, Anderson JD, Carter J. Serologic status for *Neospora caninum* and performance differences of calves in a Mississippi beef cattle herd. International Symposium on Veterinary Epidemiology and Economics (ISVEE XII). Durban, South Africa. August 2009.

**Kamstock DA**, Withrow SJ. Implementation of a standardized approach for histopathological evaluation of oncological biopsy specimens. American College of Veterinary Pathologists Annual Meeting. Monterey, CA. December 2009.

**Kennedy JA**. Voluntary BVD Control, Can It Work? Western States Veterinary Conference. Las Vegas, NV. February 2009.

Kirk C, Beckman K, Burek K, Follman E, Goddard-Coding C, Bammler T, Farin F, Beyer D, Eaton D, **Ballweber LR**, Knott K, O'Hara T. Serology, molecular epizootiology, and toxicogenomics for arctic fox (*Alopex lagopus*)

and polar bears (*Ursus maritimus*) of northern Alaska. New Mexico Bioinformatics Symposium. Santa Fe, NM. March 2009.

Kraft S, Lana, S, Bachand A, **Ehrhart E**, Ireland, L, Cunkelman A, Serkova N. Metabolic profiles of multicentric canine lymphoma by nuclear magnetic resonance spectroscopy. Veterinary Cancer Society Annual Meeting. Austin, TX. October 2009.

Maulsby, J, **Van Campen H**. What's new at the dlab?. Colorado Veterinary Medical Association Fall Meeting, Keystone, CO. September 2009.

Mejia JC, Hoffman EM, Colitz CMH, Jack SW, **Ballweber L**, Rodriguez M, Renner MS, Schmitt T, Dalton LM, Osborn S, Gearhart SA, Croft LA, Dold C, Clemons-Chevis CL. Use of rebound tonometry as a diagnostic tool to diagnose glaucoma in the captive California sea lion. International Association for Aquatic Animal Medicine. San Antonio, TX. May 2009.

Mejia-Fava JC, **Ballweber L**, Colitz C, Clemons-Chevis CC, Croft L, Dalton L, Dold C, Gearhart S, Hoffman E, Osborn S, Jack SW, Renner M, Schmitt T, Rodriguez M, Romano T, Tuttle A. Use of rebound tonometry as a diagnostic tool to diagnose glaucoma in the captive California sea lion. American College of Veterinary Ophthalmologists. Chicago, IL. November 2009.

**Pabilonia, KL**. Avian influenza – Global impacts on human and animal populations. Rocky Mountain Regional Center of Excellence Conference on Bioterrorism and Emerging Infectious Diseases. Denver, CO. January 2009.

**Pabilonia, KL**. Avian influenza – Global impacts on human and animal populations. Rocky Mountain Regional Center of Excellence Conference on Bioterrorism and Emerging Infectious Diseases. Fort Collins, CO. March 2009.

**Pabilonia, KL**. Avian Influenza – Global impacts on human and animal populations. Rocky Mountain Regional Center of Excellence Conference on Bioterrorism and Emerging Infectious Diseases. Bozeman, MT. April 2009.

**Pabilonia, KL**. Collecting and submitting diagnostic samples. CSU Annual Conference for Veterinarians. Fort Collins, CO. January 2009.

**Pabilonia, KL**. Diagnosis and control of poultry diseases. Iraq Animal Health Association Meeting. Baghdad, Iraq. May 2009

**Pabilonia, KL**. Influenza Diagnostic Testing. Bangladesh Livestock Institute. Dhaka, Bangladesh. 2009.

**Pabilonia, KL**. Public Health Impacts of Influenza Viruses. US Northern Command Surgeon's Conference. Colorado Springs, CO. March 2009.

**Pabilonia, KL**, Bowen RA. Surveillance and research activities on avian influenza in Indonesia. USDA-Wildlife Services Emergency Response and Surveillance Preparedness Conference. Fort Collins, CO. June 2009.

**Pabilonia, KL**, Slota KE, Smith EI, Bowen RA. Characterization of urban chicken and upland gamebird populations. United States Animal Health Association Annual Conference. San Diego, CA. October 2009.

**Powers, B**. The Critical Importance of Quality Assurance in a Laboratory Emergency Response. American Veterinary Medical Association Annual Conference. Seattle, WA. July 2009.

Rolland RM, Panuska C, Peters I, Best PB, Thornton M, Gillett R, **Ballweber LR**. *Giardia* and *Cryptosporidium* in North Atlantic and Southern right whales (*Eubalaena glacialis* and *E. australis*) Society of Marine Mammalogy 18<sup>th</sup> Biennial Conference on the Biology of Marine Mammals. Quebec City, Quebec, Canada. October, 2009.

Santoni BG, Melik R, Unal M, Pergoz NK, **Kamstock DA**, Ryan SD, Dernell WS, Demir HV, Puttlitz CM. Development and biocompatibility characterization of a bioMEMS sensor for monitoring the progression of Fracture healing. The ASME 2009 Summer Bioengineering Conference. Lake Tahoe, CA. June 2009.

Scorza VA, Lappin MR, **Ballweber LR**. 2009. Genotyping of *Giardia duodenalis* Isolates of mammals (dogs, cats, bobcats and cattle) by the  $\beta$ -giardin, glutamate dehydrogenase, and triose phosphate isomerase genes. III International *Cryptosporidium* and *Giardia* Conference. Orvieto, Italy. October, 2009.

Seelig D, **Mason G**, Telling G and Hoover E. Trafficking of CWD prions via the autonomic nervous system. Prion 2009 Thessalonika-Chaldiki, Greece. September 2009.

**Slota, KE**, Hill, AE, Bowen, RA, Keefe, TJ, **Pabilonia, KL**. Upland gamebird facilities in the United States: The potential for interactions among humans, wild birds, and domestic birds. Wildlife Disease Association Annual Conference. August 2009.

**Spraker T**. Fur seals and foxes. Emergency Response and Surveillance Preparedness. Wildlife Services/USDA/APHIS. Fort Collins, CO. June 2009.

**Spraker T**. Hookworm enteritis in California sea lions and northern fur seals of Southern California. Annual Meeting International Association of Aquatic Animal Medicine. San Antonio, Texas. May 2009.

**Spraker T**. Mapping of the obex and peripheral tissues in elk with Chronic Wasting Disease. American Association of Veterinary Laboratory Diagnosticians Annual Conference. San Diego, CA. November 2009.

**Spraker T**. Obex scoring in elk with Chronic Wasting Disease and how it relates to the length of time an elk has been infected. American College of Veterinary Pathologists Annual Meeting. Monterey, CA. December 2009.

**Spraker T**. Shaggy lame fox syndrome—An immuno-mediated disease of arctic foxes. Annual Meeting International Association of Aquatic Animal Medicine. San Antonio, Texas. May 2009.

**Spraker T**. The spread of the abnormal isoform of the prion associated with Chronic Wasting Disease, mapping of the obex and peripheral tissues in elk with Chronic Wasting Disease. Third International Chronic Wasting Disease Symposium. Park City, UT. July 2009.

**Spraker T**. Tumors and teeth problems with arctic foxes on Shamy Islands, Alaska. Annual Meeting International Association of Aquatic Animal Medicine. San Antonio, TX. May 2009.

**Spraker T**. Workshop: Emergency Response and Surveillance Preparedness. Wildlife Services/USDA/APHIS, Fort Collins, CO. June 2009.

Stromberg B, Gasbarre L, **Ballweber LR**, Dargatz D, Rodriguez J, Zarlenga D. A representative evaluation of the parasites present in the US cow-calf population. World Association for the Advancement of Veterinary Parasitology and the American Association of Veterinary Parasitologists, joint meeting. Calgary, Alberta, Canada. August 2009.

Tangtrongsup S, Scorza AV, **Ballweber LR**, Reif JS, Salman MD, Lappin MR. Prevalence of *Giardia* spp. infection in dogs in Chiang Mai, Thailand: preliminary findings. CVMBBS Research Symposium. Fort Collins, CO February 2009.

Tangtrongsup S, Scorza AV, **Ballweber LR**, Reif JS, Salman MD, Lappin MR. Prevalence and molecular analysis of *Giardia* spp. infection in dogs in Chiang Mai, Thailand: preliminary findings. American College of Veterinary Internal Medicine Forum. Montreal, Canada. June, 2009.

**Van Campen H**. Epidemiology and control of BVD in the U.S. Proceedings of the 7<sup>th</sup> International Pestivirus Symposium. Uppsala, Sweden. 2009.

**Van Campen H.** Hepatitis, pneumonia and mortality in neonatal dairy calves. Colorado Veterinary Medical Association Meeting. Keystone, CO. September 2009.

**Van Campen H,** Prante D, **Bishop J,** Gates C, **Powers BE.** Hepatitis and mortality in neonatal calves co-infected with Bovine Herpesvirus-1 and Bovine Viral Diarrhea Viruses. American Association of Veterinary Laboratory Diagnosticians Annual Meeting. San Diego, CA. October 2009.

**Van Campen H, Schultheiss P,** Gates C, **Bishop J. Schiebel A, Maulsby J, Powers BE.** Increased number of Bovine Herpesvirus-1 (IBR) and Bovine Viral Diarrhea Virus (BVDV) combined abortions (2002 to 2009). American Association of Veterinary Laboratory Diagnosticians Annual Meeting. San Diego, CA. 2009.

## SCIENTIFIC PUBLICATIONS BY FACULTY MEMBERS, 2009

Angers R, Seward T, Napier D, Green M, Hoover E, **Spraker T,** O'Rourke K, Balachandran A, Telling G. Chronic wasting disease prions in elk antler velvet. *Emerging Infectious Disease*, May 2009.

Aronsohn MG, Dubiel B, Roberts B, **Powers BE.** Prognosis for acute nontraumatic hemoperitoneum in the dog: A retrospective analysis of 60 cases (2003-2006). *J Am Anim Hosp Assoc.* 45:72-77, 2009.

**Ballweber LR.** Ecto- and endoparasites of new world camelids. *Vet Clinics N Amer Food Animal Practice, Alpaca and Llama Health Management* 25:295-310, 2009.

**Ballweber LR.** *Taenia crassiceps*-associated subcutaneous cysticercosis in an adult dog. *Vet Rec.* 165:693-694, 2009.

**Ballweber LR,** Panuska C, Huston CL, Vasilopoulos RJ, Pharr GT, Mackin AJ. Prevalence of and risk factors associated with shedding of *Cryptosporidium felis* in domestic cats of Mississippi and Alabama. *Vet Parasitol.* 160:306-310, 2009.

Carlson B, Nightingale K, **Mason G,** Ruby J, Choat W, Loneragan G, Smith G, Sofos J, Belk K. *Escherichia coli* O157:H7 strains that persist in feedlot cattle are genetically related and demonstrate an enhanced ability to adhere to intestinal epithelial cells. *Applied and Environmental Microbiology* 75(18):5927-37, 2009.

Devitt JJ, Maranon DG, **Ehrhart EJ,** Bachand AM, Lana SE, LaRue SM. Correlations between numerical chromosomal aberrations in the tumor and peripheral blood in canine lymphoma. *Cytogenet Genome Res.* 124(1):12-8, 2009.

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Sedacca CD, Campbell TW, Bright JM, **Webb BT**, **Aboellail TA**. Chronic cor pulmonale secondary to pulmonary atherosclerosis in an African Grey Parrot. *J Am Vet Med Assoc* 234(8), 2009.

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## PRESENTATIONS/OUTREACH TO THE PUBLIC, 2009

**Andersen, E.** Colorado WINS for a Better Colorado. Video about state employees.

**Andrew JJ.** Disease problems in Colorado cattle. Update and case reviews. Pfizer Cattlemen's Meeting. Gateway, CO. July 2009.

**Baeten L.** Common diagnostic test methods and use in wildlife. National Wildlife Disease Program. USDA-WS, National Wildlife Research Center. Fort Collins, CO. June 2009

**Baeten L.** Common diseases of urban wildlife. National Military Fish and Wildlife Association. Fort Carson, Colorado Springs, CO. June 2009.

**Baeten L.** Common diseases of wildlife in Colorado. SVM Annual Open House. April 2009.

**Baeten L.** Common non-zoonotic diseases of urban wildlife. Colorado Wildlife Control Officer Association. Denver, CO. February 2009.

**Baeten L.** Wildlife diseases that concern the public. CSU Veterinary Technician Conference. Colorado State University. Fort Collins, CO. January 2009.

**Ballweber LR.** Alpaca Breeder's of the Rockies, Fecal Parasite Examination. Lab, including "What goes into making a good fecal float". Fort Collins, CO. June 2009.

**Ballweber LR.** Heartworm disease. National Public Radio "Critter Patter." 2009.

**Ballweber LR.** More than just pets: Understanding the risks of vector borne diseases. Companion Animal Parasite Control. Denver, CO, June; Grand Junction, CO, June; Eugene, OR, July 2009.

**Ballweber LR.** "Parasitic gastrointestinal nematode control practices in US cow-calf operations – insights from the USDA National Animal Health Monitoring Systems". Intervet Schering-Plough Animal Health Cattle Anthelmintics Roundtable Meeting, Banff, Canada. August 2009.

**Kennedy JA.** Veterinary medicine and veterinary diagnostics. Bent Prowers Cattlemen's Organization. 2009.

**Pabilonia KL.** H1N1 Influenza Virus. Interagency Influenza Coordinating Committee. Denver, CO. August 2009.

**Pabilonia KL.** The National Poultry Improvement Plan. United Peafowl Convention. Fort Collins, CO. September 2009.

**Pabilonia KL.** Poultry health and disease management. 4-H Annual Livestock Day. Fort Collins, CO. January 2009.

**Pabilonia KL.** Backyard poultry flocks. National Public Radio "Critter Patter." December 2009.

**Pabilonia KL.** Public health concerns surrounding avian influenza outbreaks in developing countries. Interagency Influenza Coordinating Committee. Denver, CO. January 2009.

**Powers BP.** Diagnostic medicine center. National Public Radio, "Critter Patter." October 2009.

**Van Campen H.,** IBR abortions on the increase. Colorado State University and Pfizer Animal Health Beef Forum. Fort Collins, CO. September 2009.

**Van Campen H.** Prevention and control of BVD in beef herds. Green River Grazing Association. LaBarge, WY. April 2009.

## **ON-GOING FUNDED CONTRACTS AND GRANTS, 2009**

**Ballweber LR. (PI).** Abaxis Service Contract. Abaxis. 4/27/09-4/26/11. \$22,126.

**Ballweber LR. (PI).** Using Genomics to Define and Control Parasites. USDA-ARS. 09/08-09/09. \$50,000.

**Ballweber LR. (PI).** Laboratory Analysis Services. Institute of Arctic Biopsy/University of Alaska/Fairbanks. 01/08-12/31/09. \$13,750.

**Ehrhart E. (PI).** Immunohistochemistry Core. Varian Research Partners Grant Program. 11/01/05-04/30/09. \$37,503.

**Ehrhart E. (Co-Invest).** Provoking Antitumor Immune Responses with FAS Ligand. S. Lana (PI). Apoplogic. 05/01/07-08/31/09. \$202,006.

**Ehrhart E. (Co-Invest).** Stereotactic Radiation Therapy for Feline Oral Squamous Cell Carcinomas Using Molecular Pathology. SM LaRue (PI). Morris Animal Health Foundation. 10/1/09-9/30/12. \$131,819.

**Ehrhart E. (Co-Invest).** Erectile Dysfunction Following Radiation Therapy—A Canine Model. SM LaRue (PI). Varian Medical Systems, Inc. 1/15/09-7/15/10. \$383,146.

**Ehrhart E. (Co-Invest).** Molecular Pathology of Feline Oral Squamous Cell Carcinoma. SM LaRue (PI). Robert H. Winn Foundation. 3/1/09-2/28/10. \$5,808.

T. Eckstein, F. Garry, A.M. Hess, **D.R. Hyatt.** Evaluation of a Newly Developed Approach to Detect Cattle with Johne's Disease and to Predict Disease Development. USDA/CSREES. 9/01/09-8/30/11. \$200,000.

A. Franklin, J. Carlson, H. Sullivan, J. Homan, G. Linz, M. Bodenchuck, R. Gilliland, **L. Ballweber, D.R. Hyatt.** Role of European Starlings (*Sturnus vulgaris*) in the Transmission of *Salmonella enterica* and Coccidia to Cattle in the Texas Panhandle. USDA/APHIS/WS/NWRC. \$215,900. Collaborator. 12/2008-12/2011.

**D.R. Hyatt, M.D. Salman.** Comparison of Bacterial Growth and Inhibition between Commercially Available Raw and Pasteurized Milk Inoculated with Important Milk-Borne Pathogens. Colorado State University, College Research Council. \$20,500. PD. 07/01/2008-06/30/2009.

**Mason G. (Invest).** US Collaboration in Emerging Viral and Prion Diseases. E. Hoover (PI). NIH NO1 A125941. 9/30/02-9/29/09. \$8,409,847.

**Mason G. (PI).** ACVP/STP Coalition for Veterinary Pathology Fellows. ACVP/STP Coalition. 12/31/05-06/30/09. \$144,020.

**Pabilonia K. (Invest).** Zoonotic Avian Influenza: The Human-Animal Interface in the US and Asia. Centers for Disease Control and Prevention. 9/30/06-9/29/10. \$2,618,847.

**Pabilonia K. (PI).** Avian Influenza Detection for Wild Bird Samples. USDA/APHIS. 9/1/08-8/31/10. \$30,000. .

**Pabilonia K. (PI).** Notifiable Avian Influenza National Poultry Improvement Plan Surveillance Program. USDA/APHIS. 4/1/09-3/31/10. \$100,000.

**Pabilonia K. (PI).** Notifiable Avian Influenza in the Live Bird Marketing System. USDA/APHIS. 4/1/09-3/31/10. \$140,000.

**Pabilonia K. (PI).** Notifiable Avian Influenza National Poultry Improvement Plan Surveillance Program for Upland Gamebirds. USDA/APHIS. 4/1/09-3/31/10. \$60,000.

**Pabilonia K. (PI).** Wild Bird Tissue Archiving and Genotyping. USDA/APHIS. 5/1/09-4/30/10. \$103,469.

**Pabilonia K. (PI).** National Poultry Improvement Plan Low Pathogenicity Avian Influenza Monitored Program for Commercial Table Egg Layers, Broilers and Turkeys. APHIS/USDA. 9/30/08-9/30/10. \$30,000.

**Pabilonia K. (PI).** Live Bird Marketing System and Noncommercial Poultry Early Detection on High Pathogenicity Avian Influenza. USDA/APHIS. 1/1/08-3/31/09. \$54,000.

**Pabilonia K. (PI).** National Poultry Improvement Plan High Pathogenicity Avian Influenza Surveillance Program for Upland Gamebirds. USDA/APHIS. 1/1/08-3/31/09. \$42,000.

**Pabilonia K. (PI).** National Poultry Improvement Plan High Pathogenicity Avian Influenza Surveillance Program for Commercial and Subpart E Poultry. USDA/APHIS. 1/1/08-3/31/09. \$44,000.

**Pabilonia K. (PI).** Wildbird Tissue Archiving and Genotyping. USDA/APHIS. 4/1/08-3/31/09. \$108,799.

**Powers B. (PI).** National Animal Health Laboratory Network--Core Animal Diagnostic Laboratory. Co-Invest **K. Pabilonia, D. Hyatt** and **D. Hamar.** USDA. 07/01/08-06/30/09. \$300,000.

**Powers B. (PI).** National Animal Health Laboratory Network—Core Animal Diagnostic Laboratory. Co-Invest **K. Pabilonia, D. Hyatt** and **D. Hamar.** USDA. 09/01/09-08/30/10. \$298,000.

**Powers B. (PI).** Classical Swine Fever Surveillance. USDA. 04/01/08-12/31/09. \$125,120.

**Powers B. (PI).** NAHLN IT Integration. USDA. 09/01/08-12/31/09. \$47,501.

**Powers B. (PI).** Classical Swine Fever. Foot and Mouth Disease and Pseudorabies Surveillance. USDA/APHIS. 9/01/09-3/31/10. \$66,847.

**Spraker T. (PI).** Veterinary Diagnostics for Wildlife Species. National Park Service. 08/1/04-09/30/09. \$111,400.

**Spraker T. (PI).** Dissemination of Abnormal Prion Protein in White-Tailed Deer and Elk with Naturally Infected with Chronic Wasting Disease. ARS/USDA. 06/19/08-09/30/09. \$26,970.

**Spraker T. (PI).** Shemya Island Foxes: Analysis of Necropsy Samples. DOD-US Air Force. 5/1/08-7/31/09. \$40,000.

**Spraker T. (PI).** Chronic Wasting Disease. USDA/APHIS. 9/24/08-9/23/10. \$31,680.

**Spraker T. (PI).** Chronic Wasting Disease Diagnostic Services. National Park Service. 9/25/07-3/31/11. \$34,000.

**Spraker T. (PI).** Technical Assistance to the National Park Service Wildlife Health Team. 06/15/07-06/01/10. \$383,439.

**Van Campen H. (Invest).** Maternal and Fetal Response to Fetal Persistent Infection with BVDV. TR Hansen (PI). USDA/CSREES. 10/1/08-9/30/11. \$100,000.

**Van Campen H. (co-PI).** Genetics of Cattle Health. M. Enns (PI). Pfizer Inc. 8/1/08-12/31/09. \$1,117,000.

## STATE OR NATIONAL COMMITTEES, 2009

Aboellail T, Ballweber L, Duncan C, Hamar D, Hyatt D, Kamstock D, Andrews J, Mason G, Pabilonia K, Powers BE, Schultheiss PC, Kitchen D, Spraker TR, Kennedy J, Van Campen H. Members, American Association of Veterinary Laboratory Diagnosticians

Aboellail T, Ballweber L, Duncan C, Ehrhart EJ, Pabilonia K, Andrew J, Kamstock D, Kennedy J, Mason G, Powers BE, Kitchen D, Schultheiss PC, Spraker T, Van Campen H. Members, Colorado Veterinary Medical Association

Aboellail T, Duncan C, Ehrhart EJ, Mason G, Kamstock D, Kitchen D, Andrews J, Powers BE, Schultheiss PC, Spraker TR. Members, American Collage of Veterinary Pathologists

Ballweber L, Powers BE, Kennedy J, Schultheiss PC, Van Campen H. Members, American Veterinary Medical Association

Ballweber L. President, American Association of Veterinary Parasitologists



Ballweber L. President-Elect, American Association of Veterinary Parasitologists

Ballweber L. Member, American Society of Parasitologists.

Ballweber L. Member, American Association of Wildlife Veterinarians

Ballweber L. Member, World Association for the Advancement of Veterinary Parasitology

Ballweber L. Member, Parasitology Committee, American Association of Veterinary Laboratory Diagnosticians

Ballweber L. Task Force on Small Animal Vaccines and Parasite Control. Colorado Veterinary Medical Association

Ehrhart E. Member, American College of Veterinary Pathologists Training Committee

Ehrhart E. Member, American College of Veterinary Pathologists Oncology Initiative

Hamar D. Member, Publication, Membership, Veterinary Analytical Toxicology and Quality Systems Subcommittees, American Association of Veterinary Laboratory Diagnosticians

Hyatt D, Van Campen H. Members, American Society of Microbiology

Hyatt D. Member, International Association for Food Protection

Hyatt D. Member, Bacteriology Committee and Anaerobic Bacteriology Subcommittee. American Association of Veterinary Laboratory Diagnosticians

Hyatt D. Co-Chair and Member, Antimicrobial Susceptibility Subcommittee. American Association of Veterinary Laboratory Diagnosticians

Hyatt D. Member, Colorado Laboratory Forum

Kennedy J. Chair; Ballweber LR (member), Colorado Department of Agriculture *T. fetus* Task Force

Kennedy J. Member, American Association of Bovine Practitioners

Kennedy J. Member, Academy of Veterinary Consultants

Kennedy J, Powers B, Van Campen H. Members, Colorado Cattlemen's Association.

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

Pabilonia K. Member, United States Animal Health Association, Committee on Animal Emergency Management

Pabilonia K. Chair, Colorado Avian Influenza Task Force

Pabilonia K. Chair, Program Committee, American Association of Veterinary Laboratory Diagnosticians

Pabilonia K. Member, Methods Technical Working Group, National Animal Health Laboratory Network

Pabilonia K. Member, USDA Live Bird Marketing System Working Group

Pabilonia K. Chair, Publications Committee, American Association of Veterinary Laboratory Diagnosticians

Powers BE. Member, Foundation Committee American Association of Veterinary Laboratory Diagnosticians

Powers BE. Chair, Committee on Advocacy and Outreach, Colorado Veterinary Medical Association

Powers BE. Member, Government Coordinating Council

Powers BE. Member, Colorado Livestock Association

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

Powers BE. Member, Board of Directors/Colorado Veterinary Medical Foundation

Powers BE. Accreditation Committee, American Association of Veterinary Laboratory Diagnosticians

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

Powers BE. Member, Awards Committee, American Association of Veterinary Laboratory Diagnosticians

Spraker TR, Ballweber L. Member, Wildlife Disease Association

Van Campen H.. Member, American Society for Virology

Van Campen H. and Pabilonia K. Member, American College of Veterinary Microbiologists

Van Campen H. Member, Colorado Chapter of the Wildlife Society

Van Campen H. Member, Rocky Mountain Branch of the American Society for Microbiology

Van Campen H. Member, Committee on Education, Colorado Veterinary Medical Association

Van Campen, H. Editorial Board. American Association of Veterinary Laboratory Diagnosticians

## ON-GOING 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. Those with student involvement are indicated by PVM, MS, PhD. 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*

- IBR abortions in cattle and relation to MLV vaccines
- Race horse catastrophic bone failure
- Genetics of beef cattle health (MS)
- Respiratory disease in neonatal calves
- Multiple aspects of BVD diagnosis, pathogenesis, epidemiology and prevention (PhD)
- BVD in farmed elk
- Trichomonas beef-herd investigations
- Anthelmintic resistance in cattle
- Respiratory disease in llamas/alpacas
- Necrotoxicogenic *E. coli* in horses
- Digital photography to aid in diagnosis during bovine field necropsies
- Spatial epidemiology to predict risk of establishment of rift valley fever in US
- Antimicrobial susceptibility patterns of *E. coli* and Salmonella in domestic animals
- Johnes disease diagnosis and immunopathogenesis of cattle
- Teaching hospital nosocomial infections
- Characterization of backyard poultry flocks in the US (PVM/MS)

### *Small Animals*

- Infectious diseases in animal shelters
- MRSA investigations and documentation
- Canine liver disease and iron accumulation
- Multiple oncology projects with many VTH and extramural clinicians and students

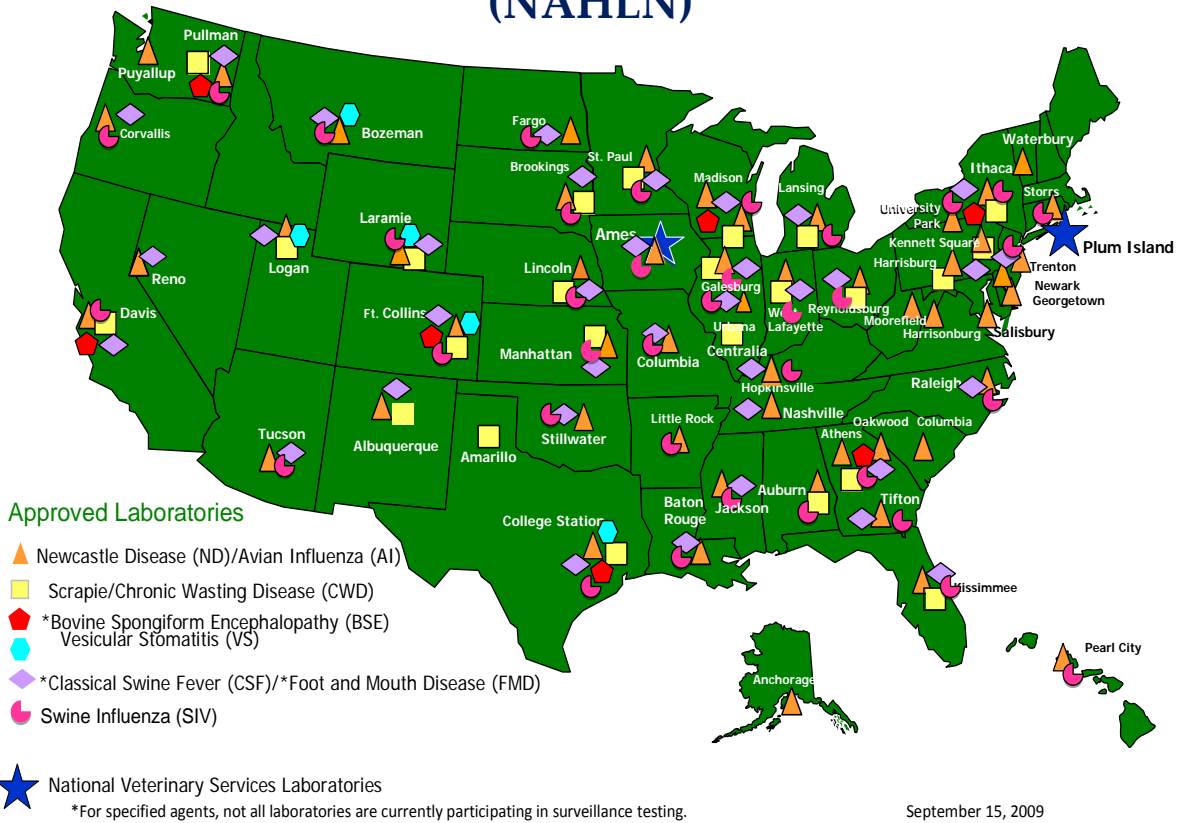
### *Wildlife and Epidemiology*

- Transmissible Spongiform Encephalopathy
  - Chronic wasting disease of deer and elk surveillance
  - Chronic wasting disease of deer and elk Pathogenesis (MS/PhD)
  - Bovine (BSE) surveillance: USDA reporting
  - Scrapie surveillance: USDA reporting
- BVD in deer: diagnosis, epidemiology and pathology
- Patterns and causes of skin cancer in sea turtles
- Incidence of Baylisascaris in raccoons
- Zoonotic diseases in raccoons
- Patterns of mortality in re-introduced Lynx in Southern Colorado (CDOW collaboration)
- Marine mammal mortalities
- Wildlife disease surveillance: the role of diagnostic laboratories
- Exotic Newcastle Disease and Avian Influenza Surveillance in wild birds and domestic poultry (PVM/MS)
- Isolation of avian influenza viruses from wild birds
- Prevalence and epidemiology of avian influenza viruses in domestic duck populations in Indonesia (PhD)
- Characterization of upland game bird facilities (MS)

## 2009 PROFICIENCY TESTS COMPLETED

Disease	Test	Section	Administering Agency
Avian Influenza Virus	AGID	Fort Collins Avian Diagnostics	NVSL
Avian Influenza Virus - Matrix, H5, H7	Real-time RT-PCR	Fort Collins BSL3	NVSL
Avian Paramyxovirus-1, vvNDV	Real-time RT-PCR	Fort Collins BSL3	NVSL
<i>Bacillus anthracis</i>	Culture	Fort Collins Bacteriology	CDPHE
<i>Bacillus anthracis</i>	Culture	Fort Collins Bacteriology	LRN/CDC
<i>Bacillus anthracis</i>	Real-time PCR	Fort Collins BSL3	LRN/CDC
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
Brucella abortus	Culture	Fort Collins Bacteriology	CDPHE
Brucellosis	Card Test	Fort Collins Bacteriology	CO Dept. of Ag
Brucellosis	Card Test	Rocky Ford	CO Dept. of Ag
Brucellosis	FPA Test	Rocky Ford	CO Dept. of Ag
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
<i>Francisella tularensis</i>	Real-time PCR	Fort Collins BSL3	LRN/CDC
<i>Francisella tularensis</i>	Culture	Fort Collins Bacteriology	LRN/CDC
Johne's	ELISA	Fort Collins Bacteriology	NVSL
Johne's	ELISA	Rocky Ford	NVSL
Lead (Blood)	Graphite Furnace Atomic Absorption Spectrophotometry	Fort Collins Chemistry/Toxicology	Wisconsin State Laboratory of Hygiene
Leptospira	Micro-agglutination	Fort Collins Bacteriology	NVSL
Mycobacterium avium. subsp. Paratuberculosis	Solid Media	Fort Collins Bacteriology	NVSL
Mycobacterium avium. subsp. Paratuberculosis	TREK Liquid Media	Fort Collins Bacteriology	NVSL
Pseudorabies Virus	Latex Agglutination	Fort Collins Virology	NVSL
Pseudorabies Virus	Latex Agglutination	Rocky Ford	NVSL
Pseudorabies Virus	Virus Neutralization	Fort Collins Virology	NVSL
Scrapie	Immunohistochemistry	Fort Collins TSE	
Vesicular Stomatitis Virus	Complement Fixation	Fort Collins BSL3	NVSL
<i>Yersinia pestis</i>	Culture	Fort Collins Bacteriology	CDPHE
<i>Yersinia pestis</i>	Real-time PCR	Fort Collins BSL3	LRN/CDC
<i>Yersinia pestis</i>	Culture	Fort Collins Bacteriology	LRN/CDC

# National Animal Health Laboratory Network (NAHLN)



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**COLORADO STATE UNIVERSITY  
VETERINARY DIAGNOSTIC LABORATORY  
2008-09 ACCESSION STATISTICS**

**FORT COLLINS**

	<b>08-09</b>	<b>07-08</b>	<b>06-07</b>	<b>05-06</b>	<b>04-05</b>	<b>03-04</b>
<b>Accessions</b>	100,624	111,123	131,750	209,952	197,256	101,523
<b>Animals</b>	151,372	161,213	152,965	266,791	254,087	144,775
<b>Tests Performed</b>	314,507	319,930	341,400	372,231	345,102	237,452

***BY SECTION***

	<b>08-09</b>	<b>07-08</b>	<b>06-07</b>	<b>05-06</b>	<b>04-05</b>	<b>03-04</b>
<b>Administrative</b>	44,838	46,148	41,006	40,889	42,344	38,539
<b>Avian</b>	5,067	6,935	5,497	4,275		
<b>Bacteriology</b>	19,169	17,368	17,665	17,533	17,353	18,520
<b>Bacti-Serology</b>	10,591	10,671	11,965	15,514	15,396	14,721
<b>BSL3</b>	445					
<b>Chemistry</b>	7,984	7,849	8,038	10,564	11,383	8,923
<b>Clinical Path</b>	9,392	9,106	9,158	9,161	7,971	8,064
<b>Endocrinology</b>	2,843	2,762	2,742	2,769	2,875	2,753
<b>Food Safety</b>	2,284	2,699	4,016	4,585	3,288	6,538
<b>Histology</b>	76,570	75,210	76,159	10,800	5,782	10,230
<b>M. Diagnostics</b>	3,398	3,571	4,574	4,531		
<b>Necropsy</b>	1,543	1,609	1,526	1,567		
<b>Pathology</b>	35,746	38,149	41,441	35,206	35,041	35,567
<b>Parasitology</b>	7,876	7,289	5,132	6,852	5,161	5,023
<b>Special Sero</b>	13,989	14,853	14,852	13,904	13,858	12,511
<b>TSE</b>	25,078	30,440	50,106	135,206	124,572	33,660
<b>Virology</b>	4,328	5,140	6,762	14,288	23,053	10,159
<b>Viro Serology</b>	43,366	39,209	40,625	44,577	37,025	32,214

This represents a 9.4% decrease in accessions, a 6.1% decrease in number of animals tested and a 1.7% decrease in number of tests performed compared to the previous year. Bacteriology and Virology/Serology increased, while other sections decreased, stayed the same or increased slightly.

## GRAND JUNCTION

	08-09	07-08	06-07	05-06	04-05	03-04
<b>Accessions</b>	3,528	3,799	3,479	2,728	2,715	3,049
<b>Animals</b>	16,879	16,366	16,395	15,208	14,945	14,061
<b>Tests Performed</b>	20,408	19,585	19,131	17,822	16,672	16,159

### *BY SECTION*

	08-09	07-08	06-07	05-06	04-05	03-04
<b>Administrative</b>	2,147	1,523	1,191	777	864	937
<b>Bacteriology</b>	1,292	1,410	1,266	674	492	547
<b>Bacti-Serology</b>	8,765	9,119	9,446	9,322	8,935	7,797
<b>Chemistry</b>	187	123	102	14	27	62
<b>Clinical Path</b>	104	4	1		0	
<b>Endocrinology</b>	5	4			0	3
<b>M. Diagnostics</b>	234					
<b>Pathology</b>	1,005	1,071	774	219	256	357
<b>Parasitology</b>	3,453	2,988	2,894	2,740	2,807	2,862
<b>Virology</b>	567	469	554	371	333	269
<b>Viro-Serology</b>	2,619	2,874	2,903	3,705	2,958	3,325

This represents a 7.1% decrease in accessions, a 3.1% increase in number of animals tested, and a 4.2% increase in number of tests performed compared to the previous year. Increases in Clinical Pathology and Parasitology are most noticeable.



## ROCKY FORD

	08-09	07-08	06-07	05-06	04-05	03-04
<b>Accessions</b>	13,248	13,461	10,483	10,801	10,496	10,537
<b>Animals</b>	111,150	102,111	118,594	101,646	33,515	22,690
<b>Tests Performed</b>	122,581	112,542	125,328	108,970	40,163	26,935

### BY SECTION

	08-09	07-08	06-07	05-06	04-05	03-04
<b>Administrative</b>	4,024	4,363	3,648	1,951	1,174	710
<b>Bacteriology</b>	1,483	1,438	1,461	1,788	1,570	1,332
<b>Bacti-Serology</b>	762	2,199	1,723	2,227	1,355	614
<b>Chemistry</b>	740	817	809	887	913	1,107
<b>Clin Path</b>	738	805	799	872	824	521
<b>Endocrinology</b>	251	346	336	285	346	350
<b>Histology</b>	68	30	5	4	32	4
<b>Pathology</b>	423	479	424	524	1,897	1,439
<b>Parasitology</b>	19,635	19,227	3,872	3,882	1,807	1,966
<b>Virology</b>	78,403	73,470	98,627	84,407	13,912	4,438
<b>Viro-Serology</b>	16,054	9,368	13,678	12,127	16,333	14,454

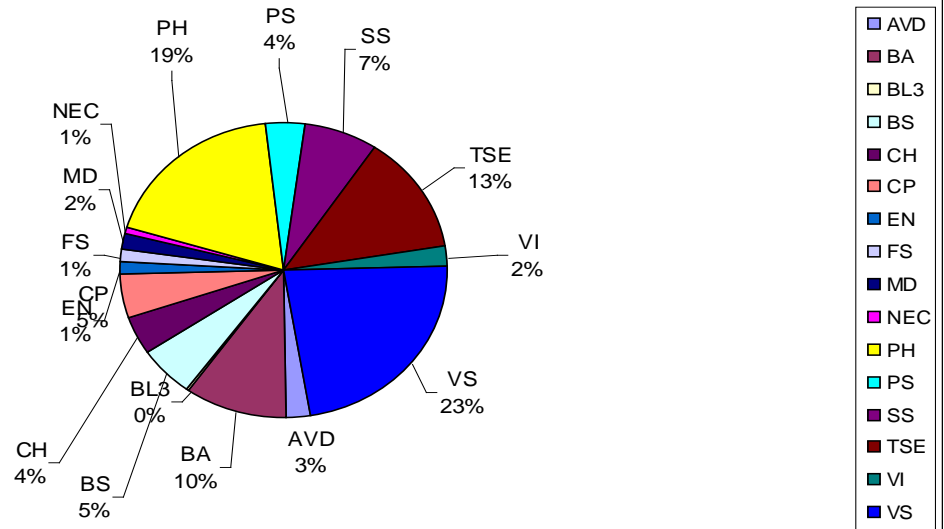
This represents a 1.6% decrease in accessions, a 8.9% increase in animals tested and a 8.9% increase in number of tests performed compared to the previous year. Increases in virology and virology/serology are most noticeable.

### ALL LABS

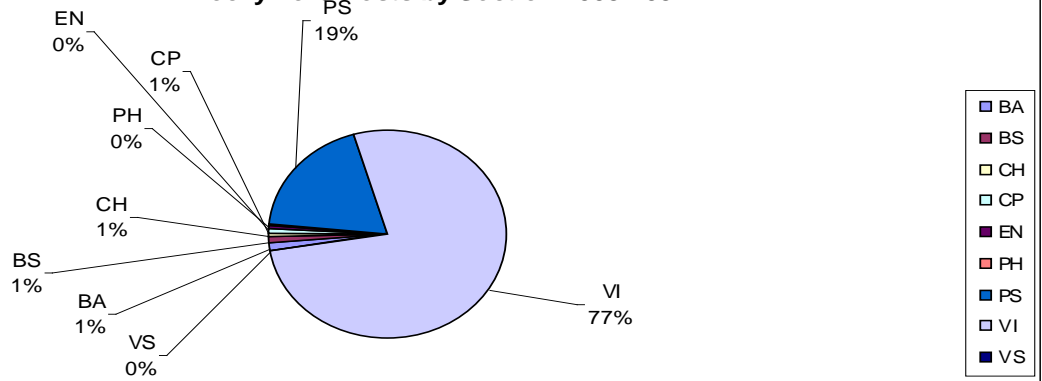
	08-09	07-08	06-07	05-06	04-05	03-04
<b>Accessions</b>	117,400	128,383	145,712	223,481	210,467	115,109
<b>Animals</b>	279,401	279,690	287,954	383,645	302,547	181,526
<b>Tests Performed</b>	457,976	452,057	485,769	499,023	401,937	280,546

Overall, for all laboratories, this represents a 8.6% decrease in accessions, a 0.1% decrease in number of animals tested and a 1.3% increase in number of tests compared to the previous year.

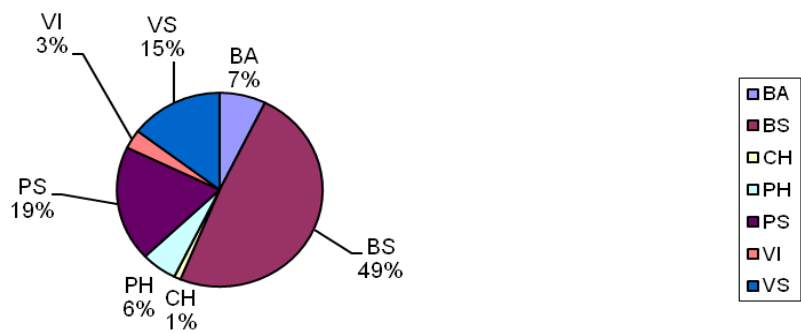
**Fort Collins Tests by Section 2008 -09**

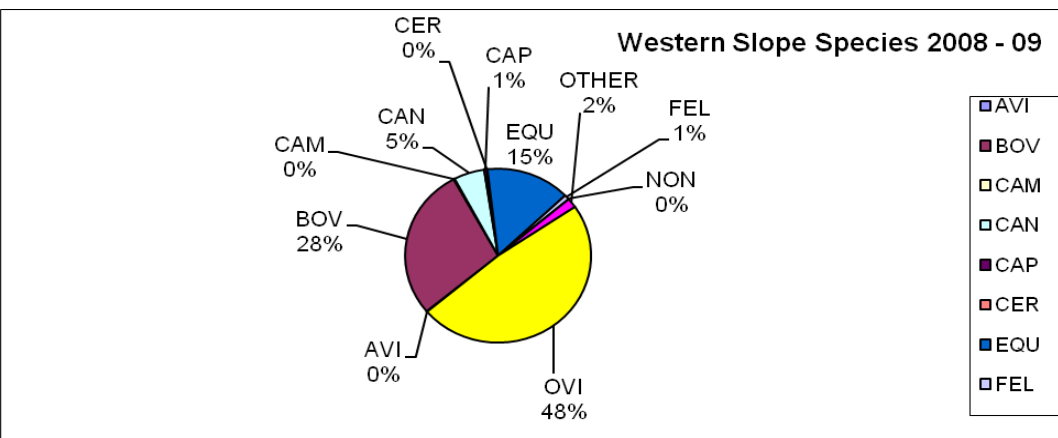
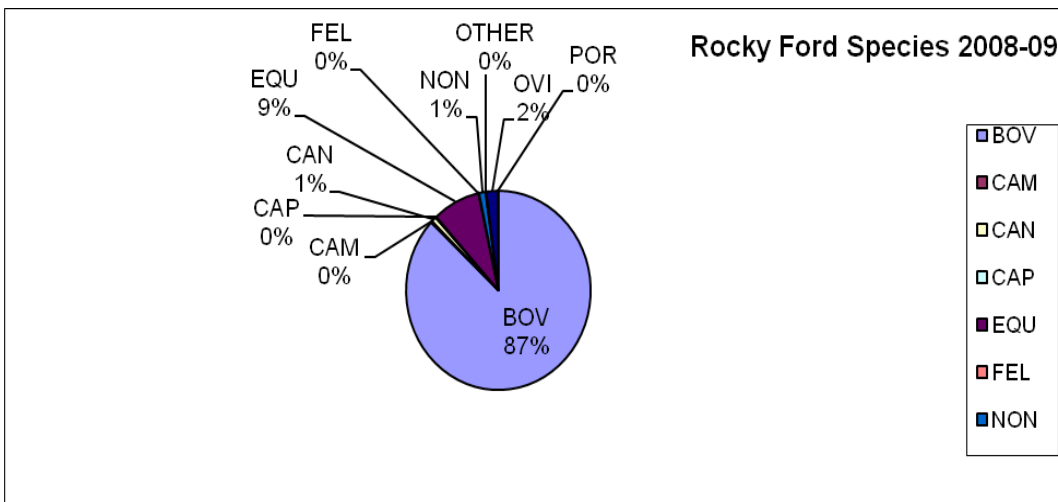
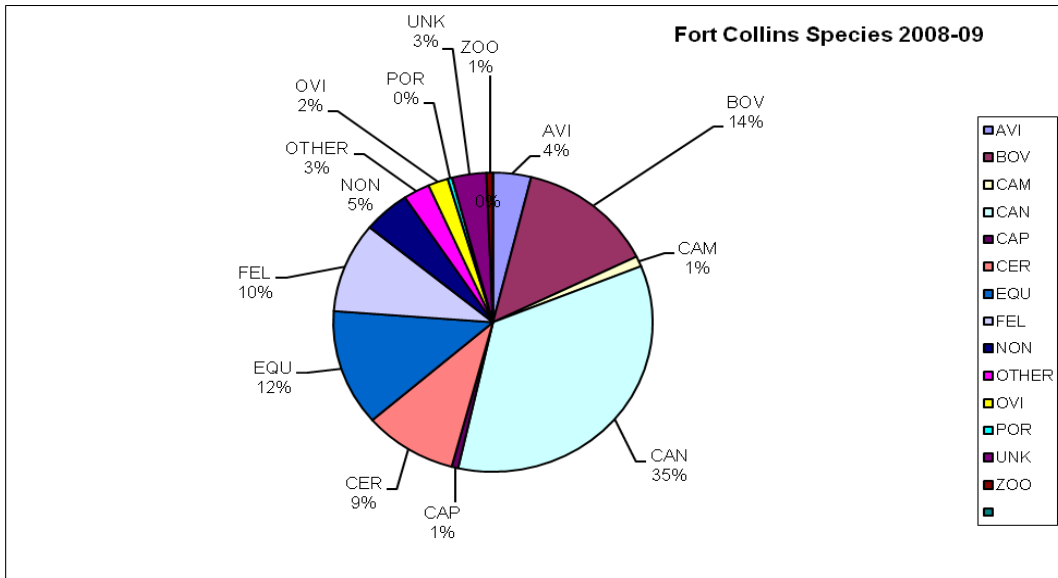


**Rocky Ford Tests by Section 2008 - 09**



**Western Slope Tests by Section 2008 - 09**





## 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 08/09 compared to fiscal year 07/08. Cases from the VTH decreased by 101 (-12.5%), while cases from the state and region decreased by 23 (-2.6%).

### NECROPSY

<b>Species</b>	<b>VTH 7/08-6/09</b>	<b>State/Region 7/08-6/09</b>	<b>TOTAL 7/08-6/09</b>	<b>TOTAL 7/07-6/08</b>	<b>% Change</b>
Bovine	61	93	154	170	-9.4
Equine	121	61	182	187	-2.7
Porcine	5	6	11	18	-38.9
Ovine/Caprine	13	31	44	102	-56.9
OLA*	27	33	60	76	-21.1
Canine	317	372	689	636	8.3
Feline	92	104	196	207	-5.3
Other Small Animal	29	14	43	74	-41.9
Avian	25	68	93	102	-8.8
Wildlife/Zoo	20	83	103	127	18.9
<b>TOTAL</b>	<b>710</b>	<b>865</b>	<b>1,575</b>	<b>1,699</b>	<b>-7.3</b>

\*OLA = Other Large Animal

### TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHY TESTING

<b>Test</b>	<b># Accessions 7/08-6/09</b>	<b># Samples 7/08-6/09</b>	<b># Samples Positive</b>	<b>Number 7/07-6/08</b>	<b>% Change</b>
Captive Elk Surveillance	1,523	3,381	24	2,547	32.7
CWD Surveillance	860	2,300	233**	2,078	10.7
CWD—ELISA CO & Others*	9,776	11,006	185	11,349	-3.0
USDA TSE	75	4,322	7	5,870	-26.4
USDA BSE	5,898	5,898	0	9,005	-34.5
<b>TOTAL</b>	<b>18,132</b>	<b>26,907</b>	<b>NA</b>	<b>30,849</b>	<b>-12.8</b>

\*5,675 Colorado only, including Fort Collins and Grand Junction Laboratories

\*\*185 of these are confirmations of ELISA positive tests

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 08/09 from fiscal year 07/08. The bottom table indicates the number of specific diagnoses or causative agents identified for abortions in fiscal year 08/09. The last column of the bottom table indicates the number and percentage of abortions with undetermined cause.

### ABORTION SCREENS

Species	Number 7/08-6/09	%	Number 7/07-6/08	% Change
<b>Bovine</b>	64	66.7	86	-25.6
<b>Equine</b>	19	19.8	20	-5.0
<b>Porcine</b>	0	0.0	0	0.0
<b>Ovine</b>	0	0.0	11	-100.0
<b>Caprine</b>	5	5.2	10	-50.0
<b>Camelid</b>	5	5.2	17	-70.6
<b>Other</b>	3	3.1	2	50.0
<b>TOTAL</b>	<b>96</b>	<b>100.0</b>	<b>146</b>	<b>-34.2</b>

Species	Number Examined	Viral (%)	Bacterial (%)	Other (%)	Undeter- mined(%)
<b>Bovine</b>	64	30(46.9) <sup>a</sup>	4(6.3)	9(14.1) <sup>b</sup>	23(35.9)
<b>Equine</b>	19	3(15.8) <sup>c</sup>	4(21.1)	1(5.3) <sup>d</sup>	11(57.9)
<b>Porcine</b>	0	0(0.0)	0(0.0)	0(0.0)	0(0.0)
<b>Ovine</b>	0	0(0.0)	0(0.0)	0(0.0)	0(0.0)
<b>Caprine</b>	5	0(0.0)	1(20.0) <sup>e</sup>	0(0.0)	4(80.0)
<b>Camelid</b>	5	0(0.0)	1(20.0)	0(0.0)	4(80.0)
<b>TOTAL</b>	<b>92</b>	<b>33(35.9)</b>	<b>10(10.9)</b>	<b>10(10.9)</b>	<b>35(38.0)</b>

<sup>a</sup>4 BVD, 3 IBR, 23 both IBR and BVD

<sup>b</sup>6 Neospora, 3 nitrates

<sup>c</sup>3 EHV

<sup>d</sup>Umbilical strangulation

<sup>e</sup>1 Coxiella (Q fever)

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 08/09 compared to fiscal year 07/08. 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 7/08-6/09	%	Number 7/07-6/08	% Change
<b>Bovine</b>	66	52.0	105	-37.1
<b>Equine</b>	10	7.9	19	-47.4
<b>Porcine</b>	0	0.0	5	-100.0
<b>Ovine/Caprine</b>	3	2.4	3	0.0
<b>Canine</b>	25	19.7	30	-16.7
<b>Feline</b>	11	8.7	15	-26.7
<b>Cervids</b>	4	3.1	2	100.0
<b>Other</b>	8	6.3	9	-11.1
<b>TOTAL</b>	<b>127</b>	<b>100.0</b>	<b>188</b>	<b>-32.4</b>

Species	Rota	Corona	E. coli	Salmonella	Clostridia	Cryptosporidia	Other	Undetermined
<b>Bovine</b>	19/66(28.8)	4/66(6.1)	5/66(7.6)	16/66(24.2)	4/66(6.1)	20/66(30.3)	14/66(21.2) <sup>a</sup>	11/66(16.7)
<b>Equine</b>	2/10(20.0)	0/10(0.0)	0/10(0.0)	1/10(10.0)	2/10(20.0)	0/10(0.0)	2/10(20.0) <sup>b</sup>	3/10(30.0)
<b>Ovine/ Caprine</b>	0/3(0.0)	0/3(0.0)	0/3(0.0)	0/3(0.0)	1/3(33.3)	1/3(33.3)	1/3(33.3) <sup>c</sup>	0/10(0.0)
<b>Camelid</b>	0/6(0.0)	0/6(0.0)	0/6(0.0)	0/6(0.0)	1/6(16.7)	0/6(0.0)	0/6(0.0)	5/6(83.3)
<b>Canine</b>	0/25(0.0)	0/25(0.0)	1/25(4.0)	1/25(4.0)	3/25(12.0)	0/25(0.0)	4/25(16.0) <sup>d</sup>	16/25(64.0)
<b>TOTAL</b>	<b>21/110(1.8)</b>	<b>4/110(3.6)</b>	<b>6/110(5.5)</b>	<b>18/110(16.4)</b>	<b>11/110(10.0)</b>	<b>21/110(19.1)</b>	<b>21/110(19.1)</b>	<b>35/110(31.8)</b>

<sup>a</sup>Coccidia (6) or BVD(8)

<sup>b</sup>Strongyles

<sup>c</sup>Tapeworms

<sup>d</sup>Parasites (3) and parvovirus (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 08/09 compared to fiscal year 07/08. The VTH cases decreased by 128 cases (-9.3%) while the state/country cases decreased by 2,425 cases (-7.4%). The bottom table indicates the number and percentage of certain diagnoses given for both the VTH and state/country.

### BIOPSY

<b>SPECIES</b>	<b>VTH 7/08-6/09</b>	<b>State/Country 7/08-6/09</b>	<b>Total 7/08-6/09</b>	<b>Total 7/07-6/08</b>	<b>% Change</b>
<b>Canine</b>	1,061	24,424	25,485	27,068	-5.8
<b>Feline</b>	108	4,303	4,411	5,183	-14.9
<b>OSA</b>	11	193	204	221	-7.7
<b>Avian</b>	7	47	54	101	-46.5
<b>Equine</b>	50	617	667	751	-11.2
<b>Bovine</b>	2	174	176	319	-44.8
<b>Porcine</b>	1	8	9	8	12.5
<b>Ovine/Caprine</b>	2	96	98	72	36.1
<b>Other/Unknown</b>	11	358	369	303	21.8
<b>TOTAL</b>	<b>1,253</b>	<b>30,220</b>	<b>31,473</b>	<b>34,026</b>	<b>-7.5</b>

\*Of this total, 444 were 2<sup>nd</sup> opinion consultations from outside the Laboratory, and 247 were dermatology-specific cases.

<b>Diagnosis</b>	<b>VTH(%)</b>	<b>State/Country (%)</b>	<b>TOTAL (%)</b>
<b>Benign Tumor</b>	393(22.8)	9,235(34.0)	9,628(33.4)
<b>Sarcoma</b>	484(28.0)	7,589(28.0)	8,073(28.0)*
<b>Carcinoma</b>	248(14.4)	3,408(12.6)	3,656(12.7)
<b>Skin Disease</b>	146(8.5)	2,362(8.7)	2,508(8.7)
<b>Liver Disease</b>	228(13.2)	2,442(9.0)	2,670(9.2)
<b>GI Disease</b>	227(13.2)	2,105(7.8)	2,332 (8.1)

\*2,610 (32.3%) of these were mast cell tumors.

- There were 282 biopsies referred from the Rocky Ford Branch Laboratory. Of these, 196 (69.5%) were canine, 20(7.1%) were feline, 52(18.4%) were equine and 14(5.0%) were other species.

## UTERINE BIOPSIES

The top table indicates the number of uterine biopsies for the last two fiscal years, and the percent change of fiscal year 08/09 compared to fiscal year 07/08. The bottom table indicates the distribution and percentages of the different grades given to the uterine biopsies.

Species	Number 7/08-6/09	%	Number 7/07-6/08	% Change
Equine	699	99.6	772	-9.5
Other	3	0.4	3	0.0
<b>TOTAL</b>	<b>702</b>	<b>100.0</b>	<b>775</b>	<b>-9.4</b>

Grade	Number	%
1A	222	31.6
1B	267	38.0
2A	90	12.8
2B	99	14.1
3A	17	2.4
3B	0	0.0
NA/Unknown	7	1.0

## HISTOLOGY

The table below lists the number of slides, special stains and immunohistochemical (IHC) stains performed by the Histology Laboratory.

Procedure	Number 7/08-6/09	%
H&E Slides/Biopsies (non-VTH only)	54,363	74.4
H&E Slides/Research	11,471	15.7
H&E Slides/Necropsy (estimated)	4,725	6.5
Special Stains	1,732	2.4
IHC Stains		
BVD	20	0.0
CD3/CD79a	209	0.3
CD18	103	0.1
c-Kit	23	0.0
Chromagranin	17	0.0
Cytokeratin	72	0.1
Desmin	32	0.0
FIP	22	0.0
Factor 8	40	0.1
Leptospirosis	67	0.1
Melan A	29	0.0
Neospora	5	0.0
Synaptophysin	14	0.0
Vimentin	57	0.1
Other	32	0.0
<b>TOTAL</b>	<b>73,033</b>	<b>100.0</b>



## BACTERIOLOGY

This table lists the different cultures and selected other tests performed by the bacteriology, molecular diagnostics or avian sections. The total number of tests performed in fiscal year 08/09 is compared to the total number of tests performed in fiscal year 07/08. The last column is the percent change between the fiscal years.

Test	Number 7/08-6/09	Number Positive %	Number 7/07-6/08	% Change
Aerobic Culture	5,187	NA	5,622	-7.7
Aerobic & Anaerobic Culture	1,631	NA	1,649	-1.1
Fecal Culture	3,227	NA	3,058	5.5
Clostridial Fecal Culture	238	109(45.8)	348	-31.6
PCR Clostridial Genotype	10 <sup>a</sup>	10(100.0)	27	-63.0
Clostridial perfringens/ Toxin	117	20(17.1)	113	3.5
PCR <i>E. coli</i> multiplex	1	0(0.0)	4	-75.0
Mycobacterial Culture	104	6(5.8)	58	79.3
Blood Culture	90	NA	65	38.5
Campylobacter Culture	417	0(0.0)	339	23.0
Mycoplasma Culture	276	42(14.9)	294	-6.1
CEM Culture	547	0(0.0)	272	101.1
Fungal Culture	395	169(42.8)	327	20.8
PCR Leptospirosis	92	0(0.0)	151	-39.1
Antimicrobial Susceptibility	5,982	NA	5,837	2.5
Environmental Culture	1,466	158(10.8)	1,109	32.2
Poultry Salmonella Mortality or Environmental	385	184(47.8)	178	116.3
Plate Counts	118	NA	NA	NA
MRSA Culture	101	6(5.9)	NA	NA
<b>TOTAL</b>	<b>20,384</b>	<b>NA</b>	<b>19,451</b>	<b>4.8</b>

<sup>a</sup>5 type A, 2 type Beta, 1 type entero, 2 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 7/08-6/09	%
<b>Bovine</b>	487	40	736	71	66	10	1,410	12.9
<b>Equine</b>	1,206	236	1,760	80	1	92	3,375	30.8
<b>Porcine</b>	20	2	2	0	1	0	25	0.2
<b>Ovine/ Caprine</b>	110	17	105	6	6	4	248	2.3
<b>OLA</b>	56	17	161	8	1	4	247	2.3
<b>Canine</b>	2,203	1,039	161	39	147	196	3,785	34.6
<b>Feline</b>	754	177	38	10	43	50	1,072	9.8
<b>OSA</b>	30	30	9	8	0	0	77	0.7
<b>Avian</b>	73	11	214	4	1	3	306	2.8
<b>Zoo/Wildlife</b>	103	23	7	7	2	3	145	1.3
<b>Non-Animal</b>	46	22	22	4	0	18	112	1.0
<b>Unknown</b>	99	17	12	1	8	15	152	1.4
<b>TOTAL</b>	<b>5,187</b>	<b>1,631</b>	<b>3,227</b>	<b>238</b>	<b>276</b>	<b>395</b>	<b>10,954</b>	<b>100.0</b>

The table below lists the serology tests performed in the bacteriology and avian sections with the number of tests performed in fiscal year 08/09 compared to the number of tests performed in fiscal year 07/08. 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 7/08-6/09	Positive (%)	Number 7/07-6/08	% Change
<b>Mycobacterium paratuberculosis (ELISA)</b>	3,692	Suspect-34(0.9) Low pos-14(0.4) Pos-28(0.8) Strong Pos-61(1.7)	4,389	-15.9
<b>M. paratuberculosis AGID</b>	73	9(12.3)	172	-57.6
<b>Brucella abortus</b>	655	0(0.0)	429	52.7
<b>Brucella canis</b>	237	7(3.0)	98	141.8
<b>Leptospirosis (5 serovars)</b>	825x5=4,125 <sup>a</sup>	696(16.9)	705x5=3,525	17.0
<b>Lepto Bratislava</b>	127	14(11.0)	109	16.5
<b>C Titer</b>	5	NA	4	25.0
<b>Fungal Panel</b>	109	NA	136	-19.9
<b>Aspergillosis</b>	123	3(2.4)	146	-15.8
<b>Blastomycosis</b>	111	0(0.0)	138	-19.6
<b>Coccidiomycosis</b>	133	12(9.0)	170	-21.8
<b>Histoplasmosis</b>	111	2(1.8)	137	-19.0
<b>Cryptococcus</b>	170	18(10.6)	178	-4.5
<b>IgG Estimate</b>	27	NA(-)	40	-32.5
<b>IgG Quantitation</b>	310	NA(-)	331	-6.3
<b>IgA&amp;IgM Quantitation</b>	216	NA(-)	50	332.0
<b>Protein Electrophoresis</b>	87	NA(-)	67	29.9
<b>Immunoelectrophoresis</b>	31	NA(-)	17	82.4
<b>ANA Titer</b>	35	3(8.6)	33	6.1
<b>TOTAL</b>	<b>10,377</b>	<b>--</b>	<b>10,169</b>	<b>2.0</b>

<sup>a</sup> 451 bovine, 9 equine, 214 canine, 14 porcine, and 8 feline had titers  $\geq 1:100$

The table below lists the food safety diagnostic testing for the last two fiscal years and the percent change between the two fiscal years.

Test Performed	Number 7/08-6/09	Number 7/07-6/08	% Change
Milk Culture	63	283	-77.7
Mycoplasma screen	287 <sup>a</sup>	1,150	-75.0
Milk Mycoplasma Culture/PCR	84 <sup>b</sup>	19	342.1
Milk Culture Screen	1,246	1,256	-0.8
Aerobic feed culture	365	7	5,114.3
<b>TOTALS</b>	<b>2,045</b>	<b>2,715</b>	<b>-24.7</b>

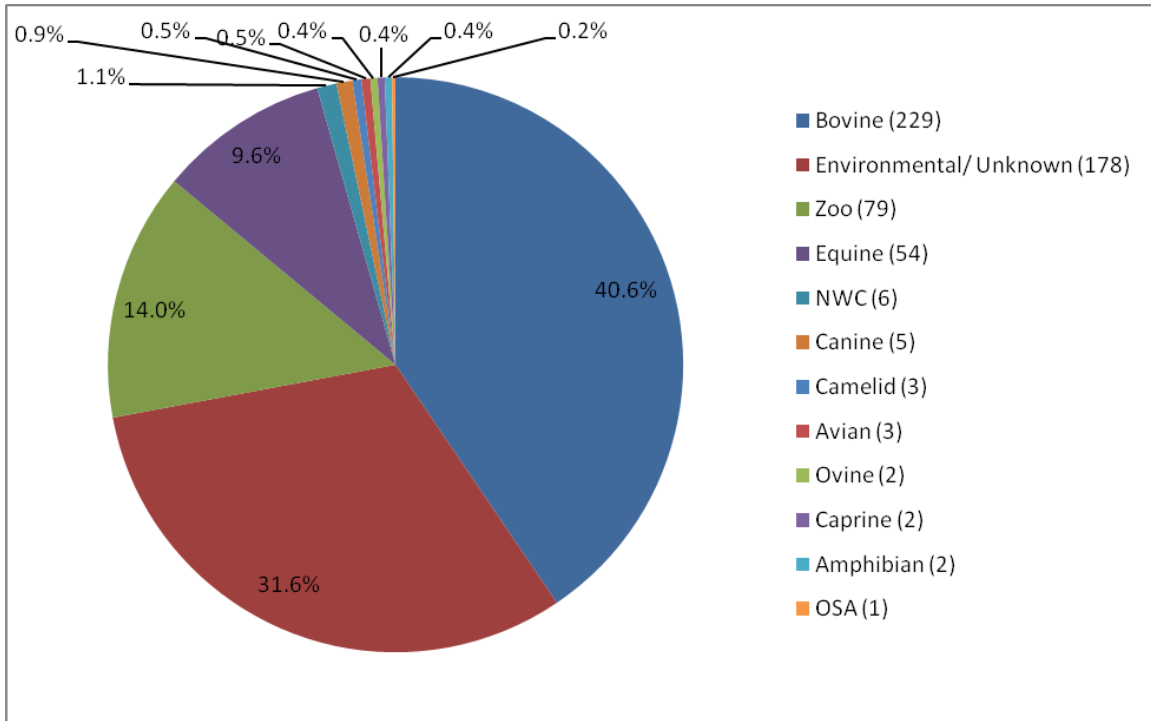
<sup>a</sup>1/282 (0.4%) positive

<sup>b</sup>40/84 (47.6%) positive *M. bovis*.

Salmonella isolations at the CSU-VDL between July 1, 2008 and June 30, 2009. The number of isolates from each animal species is given for the previous year in parenthesis for comparison. Serotypes found for 2008-2009 are in bold script, while those serotypes found in previous years are not in bold.

Species	# Isolated This Year [2007/08] {2006/07} (2005/06)	Serotypes
Amphibian	2 [1] {0} (0)	Montevideo, Kisarawe
Avian	3 [1] {5} (2)	Typhimurium, Senftenberg, Thompson, Newport
Bovine	229 [235] {160} (113)	Agona, Anatum, <b>Barranquilla</b> , Bredeney, <b>Cerro</b> , <b>Cubana</b> , <b>Dublin</b> , <b>Give</b> , <b>Havana</b> , <b>Infantis</b> , <b>Kentucky</b> , <b>London</b> , <b>Mbandaka</b> , <b>Meleagridis</b> , <b>Montevideo</b> , <b>Muenchen</b> , <b>Muenster</b> , <b>Newport</b> , Reading, Schwarzengrund, <b>Typhimurium</b> , <b>Uganda</b> , Heidelberg, Pomona, Senftenberg, Soerenga, 9,12:nonmotile
Camelid (Alpaca)	3 [11] {8} (0)	Newport, Typhimurium, Give
Canine	5 [4] {3} (8)	<b>Newport</b> , <b>Infantis</b> , <b>Dublin</b> , <b>Senftenberg</b> , Anatum, Kiambu, <b>Montevideo</b> , Typhimurium, Agona, Mbandaka, Schwarzengrund
Caprine	2 [0] {1} (1)	<b>Mbandaka</b> , Newport
Equine	54 [54] {22} (10)	<b>Berta</b> , <b>Braenderup</b> , <b>Newport</b> , <b>Rubislaw</b> , <b>Saintpaul</b> , <b>Typhimurium</b> , <b>Mbandaka</b> , <b>Montevideo</b> , <b>Muenster</b> , <b>Havana</b> , <b>Infantis</b> , <b>Schwarzengrund</b> , Amsterdam, Give var 15+, 34+, Oranienburg, Putten, Senftenburg, 6,8:e,h:-, Untypable, 4,12:i,-, Enteritidis, 8,20:-:z6, 6,7:r:-, Meleagridis, Connstatt
Feline	0 [1] {3} (4)	Newport, Tennessee, Untypable, Typhimurium
Environmental/ Unknown	178 [185] {150} (50)	<b>Cerro</b> , <b>Meleagridis</b> , <b>Muenchen</b> , <b>Muenster</b> , <b>Sandiego</b> , <b>Kokomlemlé</b> , <b>Newport</b> , <b>Norwich</b> , <b>Panama</b> , <b>Senftenber</b> , <b>Altona</b> , <b>Bareilly</b> , <b>Infantis</b> , <b>Kentucky</b> , <b>Mbandaka</b> , <b>Montevideo</b> , <b>Oranienburg</b> , <b>Taksony</b> , <b>Typhimurium</b> , <b>Uganda</b> , <b>Serotype III 61,-:1,5,7</b> , Give, 9,12:nonmotile, Dublin, Untypable, <b>4,12:I,-</b> , Enteritidis, Johannesburg, Putten, Schwarzengrund,
New World Camelid	6	<b>Dublin</b> , <b>Sandiego</b> , <b>Typhimurium</b>
Ovine	2	<b>Serotype III 61,-:1,5,7</b>
Zoo (Seal lions)	79 [28] {1} (0)	<b>Montevideo</b> , <b>Newport</b> , <b>Typhimurium</b> , <b>Reading</b> , <b>Saintpaul</b>
Porcine	0 [3]	
Other small animal (fox)	1	<b>Enteritidis</b>

**Salmonella Isolations by Animal Species – 07/01/08-06/30/09**



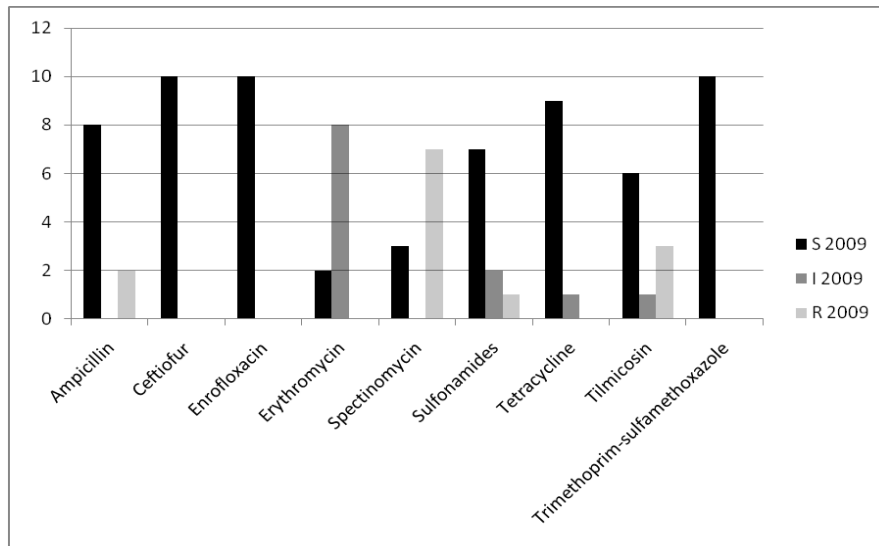
**Methicillin resistant *Staphylococcus aureus***

The Colorado State University Veterinary Diagnostic Laboratories have been screening *Staphylococcus aureus* for resistance to methicillin for the past few years. Historically, methicillin resistant *Staphylococcus aureus* (MRSA) are resistant to all beta-lactam antimicrobials including the cephalosporins and carbapenems. With the zoonotic potential of these organisms, and the increasing reports of the transmission of MRSA from human owners to animals, this cumulative profile was generated of the *Staphylococcus aureus* isolated from canine and feline samples. Also included is the percent of those isolates susceptible to oxacillin (the screening drug for methicillin resistance).

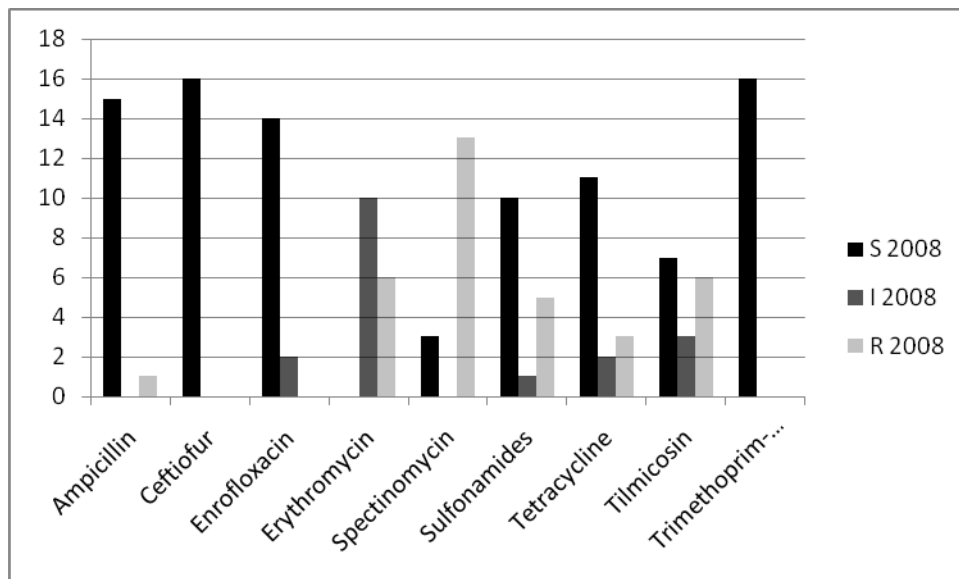
Year	Canine		Feline	
	Number isolated	Percent susceptible	Number isolated	Percent Susceptible
2001-02	47	85	7	100
2002-03	54	80	13	92
2003-04	66	73	10	90
2004-05	50	60	6	67
2005	46	54	11	91
2006	67	64	15	80
2007	63	73	17	88
2008	77	74	10	100
2009*	69	78	11	91

From 7/1/08-6/30/09 there were 27 isolates of *Staphylococcus aureus* from horses. Of those 27 isolates, 81% were susceptible to oxacillin.

Bovine *Mannheimia haemolytica* Susceptibility Test Results 7/1/08-06/30/09 (10 isolates)



Bovine *Mannheimia haemolytica* Susceptibility Test Results 7/1/07-06/30/08 (16 isolates)



## VIROLOGY

These tables indicate the number of different tests done for viruses by the virology and molecular diagnostics for the last two fiscal years, and the last columns indicate the percent change of fiscal year 08/09 compared to fiscal year 07/08. The middle column of some tables indicate the number (and percentage) of positive tests.

### BOVINE VIRAL DIAGNOSTICS

Virus Name	Test Performed	Number 7/08-6/09	Number Positive	Number 7/07-6/08	% Change
BVDV	VI/VI ELISA	217	9(4.1)	278	-21.9
BVDV	PCR	122	17(13.9)	302	-59.6
BVDV	IHC	20	0(0.0)	181	-88.9
BVDV	FA	505	118(23.4)	569	-11.2
BVDV	Capture ELISA	1,310	37(2.8)	2,305	-43.2
IBRV	VI	217	0(0.0)	273	-20.5
IBRV	FA	438	175(40.0)	557	-21.4
BHV	PCR	72	41(56.9)	14	414.3
BRSV	VI	217	0(0.0)	273	-20.5
BRSV	PCR	10	1(10.0)	4	150.0
BRSV	FA	102	6(5.9)	164	-37.8
PI3	VI	217	0(0.0)	273	-20.5
PI3	FA	109	4(3.7)	140	-22.1
Coronavirus	FA	168	11(6.5)	50	236.0
Rotavirus	ELISA	158	48(30.4)	54	192.6
Chlamydia	PCR	9	0(0.0)	11	-18.2
Bluetongue	PCR	76	0(0.0)	152	-50.0
Mycoplasma	PCR	77	35(45.5)	74	4.1
OHV-2	PCR	6	2(33.3)	105	-94.3
BLV	PCR	766	37(4.8)	8	9475.0
<b>TOTALS</b>		<b>4,165</b>	<b>--</b>	<b>4,968</b>	<b>-16.2</b>

### BOVINE VIRAL SEROLOGY

Virus Name	Test Performed	Number 7/08-6/09	Number 7/07-6/08	% Change
BVD-I	SN	1,584	597	165.3
BVD-II	SN	1,540	585	163.2
BRSV	SN	1,039	198	424.7
IBR	SN	1,383	533	159.5
PI-3	SN	1,038	221	369.7
VSV (2 strains)	SN	114	110	3.6
BLV	AGID	53	46	15.2
BT	AGID	32	75	-57.3
<b>TOTALS</b>		<b>6,783</b>	<b>2,365</b>	<b>186.8</b>

<sup>a</sup>10/53(18.9%) positive

<sup>b</sup>9/32(28.1%) positive

### EQUINE VIRAL DIAGNOSTICS

Virus Name	Test Performed	Number 7/08-6/09	Number Positive(%)	Number 7/07-6/08	% Change
<b>EHV-1</b>	VI	12	0(0.0)	51	-76.5
<b>EHV-1</b>	FA	39	1(2.6)	24	62.5
<b>EHV-1/-4</b>	PCR	151	11(7.3)	190	-20.5
<b>Influenza</b>	PCR	29	7(24.1)	43	-32.6
<b>West Nile</b>	PCR	6	0(0.0)	4	50.0
<b>EVA</b>	PCR	45	2(4.4)	17	164.7
<b>Rotavirus</b>	ELISA	20	2(10.0)	16	25.0
<b>VSV(2 strains)</b>	CF	16	0(0.0) <sup>^</sup>	18	-11.1
<b>TOTALS</b>		<b>318</b>	<b>--</b>	<b>363</b>	<b>-12.4</b>

### EQUINE VIRAL SEROLOGY

Virus Name	Test Performed	Number 7/08-6/09	Number 7/07-6/08	% Change
<b>EHV-1</b>	SN	206	479	-57.0
<b>EHV-4,EHV-3</b>	SN	363	224	62.1
<b>EVA</b>	SN	7,067 <sup>a</sup>	7,804	-9.4
<b>Influenza/A1&amp;A2</b>	HI	119	248	-52.0
<b>EIA</b>	AGID or ELISA	5,199 <sup>b</sup>	5,537	-6.1
<b>VSV</b>	SN(2 strains)	74	234	-68.4
<b>West Nile</b>	IgM ELISA	106 <sup>c</sup>	236	-55.1
<b>TOTALS</b>		<b>13,134</b>	<b>14,762</b>	<b>-11.0</b>

<sup>a</sup>3,960/7067 (56.0%) titer>1:10

<sup>b</sup>Zero positives

<sup>c</sup>4/106(3.8%) positive

### PORCINE VIRAL DIAGNOSTICS

Virus Name	Test Performed	Number 7/08-6/09	Number Positive (%)	Number 7/07-6/08	% Change
<b>Influenza</b>	PCR	2	0(0.0)	4	-50.0
<b>Mycoplasma</b>	PCR	4	3(75.0)	4	0.0
<b>Rotavirus</b>	ELISA	1	0(0.0)	0	100.0
<b>PRV/PRRS</b>	VI	0	0(0.0)	2	-100.0
<b>PRRS</b>	PCR	7	0(0.0)	6	16.7
<b>TGE</b>	FA	3	0(0.0)	9	-66.7
<b>Classical Swine Fever</b>	PCR	36	0(0.0)	18	100.0
<b>TOTALS</b>		<b>53</b>		<b>43</b>	<b>146.5</b>

## OVINE/CAPRINE/LLAMA/CERVID VIRAL DIAGNOSTICS

Virus Name	Test Performed	Number 7/08-6/09	Number Positive(%)	Number 7/07-6/08	% Change
BVDV	VI	12	0(0.0)	38	-68.4
BVDV	FA/IHC	49	0(0.0)	119	-58.8
BVDV	PCR	725	1(0.1)	1,052	-31.1
BVD	SN	318	NA	995	-68.0
BRSV	SN	109	NA	175	-37.7
BRSV	FA/PCR	13	0(0.0)	14	-7.1
IBR	FA/PCR	34	2(5.9)	72	-52.8
IBR	SN	3	NA	50	-94.0
PI3	FA	6	0(0.0)	7	-14.3
PI3	SN	109	NA	141	-22.7
BT	AGID	43	16(37.2)	116	-62.9
BT	PCR	10	0(0.0)	66	-84.8
EHD	AGID	25	1(4.0)	68	-63.2
EHD	PCR	2	0(0.0)	27	-92.6
EHV	FA/PCR	23	0(0.0)	42	-45.2
Coronavirus	FA	18	0(0.0)	4	350.0
Rotavirus	ELISA	21	1(4.8)	6	250.0
OPP	AGID	149	45(30.2)	99	50.5
OPP	PCR	12	1(8.3)	2	500.0
CAE	AGID	437	24(5.5)	454	-3.7
CAE	PCR	47	11(23.4)	53	-11.3
CAE	cELISA	0	0(0.0)	7	-100.0
Caprine Herpes	PCR	4	0(0.0)	1	-75.0
Chlamydia	PCR	30	3(10.0)	59	-49.2
Mycoplasma	PCR	108	36(33.3)	74	45.9
OHV-2	PCR	5	1(20.0)	5	0.0
Q Fever	PCR	383	4(1.0)	32	1096.9
West Nile	PCR	7	0(0.0)	9	-22.2
<b>TOTAL</b>		<b>2,702</b>		<b>3,787</b>	<b>-28.7</b>

## FELINE VIRAL DIAGNOSTICS

Virus Name	Test Performed	Number 7/08-6/09	Number Positive(%)	Number 7/07-6/08	% Change
FHV-1	PCR	287	70(24.4)	360	-20.3
FHV-1	VI	0	0(0.0)	1	-100.0
Calicivirus	PCR	127	47(37.0)	134	-5.2
FPV	SNAP/PCR	32	10(31.3)	14	128.6
FeLV	ELISA	66	2(3.0)	90	-26.7
FIV	ELISA	66	4(6.1)	90	-26.7
FIV	PCR	21	11(52.4)	34	-38.2
Chlamydia	PCR	287	4(1.4)	361	-20.5
Mycoplasma	PCR	68	17(25.0)	71	-4.2
Corona/FIP	PCR	49	13(26.5)	53	-7.5
<b>TOTALS</b>		<b>1,003</b>	<b>--</b>	<b>1,208</b>	<b>-17.0</b>



### FELINE VIRAL SEROLOGY

Virus Name	Test Performed	Number 7/08-6/09	Number 7/07-6/08	% Change
<b>FIP</b>	IFA	114	136	-16.2
<b>FCV</b>	SN	885	1,024	-13.6
<b>FHV</b>	SN	896	1,052	-14.8
<b>FPV</b>	HI	841	947	-11.2
<b>TOTALS</b>		<b>2,736</b>	<b>3,159</b>	<b>-13.4</b>

### CANINE VIRAL DIAGNOSTICS

Virus Name	Test Performed	Number 7/08-6/09	Number Positive (%)	Number 7/07-6/08	% Change
<b>CDV</b>	FA	255*	97(38.0)	126	102.4
<b>CDV</b>	PCR	186	41(22.0)	116	60.3
<b>CCV</b>	FA	11	1(9.1)	2	450.0
<b>CPV</b>	SNAP/PCR	102	11(10.8)	48	112.5
<b>CHV</b>	VI	4	0(0.0)	5	-20.0
<b>CHV</b>	FA/PCR	21	0(0.0)	35	-40.0
<b>ICH</b>	PCR	10	1(10.0)	8	25.0
<b>Influenza</b>	PCR	19	1(5.3)	23	-17.4
<b>Mycoplasma</b>	PCR	30	6(20.0)	29	3.4
<b>TOTALS</b>		<b>638</b>	<b>--</b>	<b>392</b>	<b>62.8</b>

\*65 are raccoons or other exotics/wildlife, 28(43.1%) positive.

### CANINE VIRAL SEROLOGY

Virus Name	Test Performed	Number 7/08-6/09	Number 7/07-6/08	% Change
<b>CDV</b>	SN	7,423	8,226	-9.8
<b>CDV IgG/IgM</b>	IFA	262	228	14.9
<b>CHV</b>	SN	151	183	-17.5
<b>CPV</b>	HI	7,355	7,906	-7.0
<b>Influenza</b>	HI	57	115	-50.4
<b>TOTALS</b>		<b>15,248</b>	<b>16,658</b>	<b>-8.5</b>

## RABIES TESTING

Species	Number 7/08-6/09	Number Positive	Number 7/07-6/08
Bat	64	10	76
Bovine/Llama/Caprine/Ovine	16	0	5
Canine	84	0	51
Coyote/Fox	30	0	18
Deer/Elk	1	0	2
Equine/Burro	12	0	10
Feline	85	0	64
Lynx/Mt Lion	21	0	19
Bear	2	0	5
Rabbit/Rodent/Unknown	3	0	7
Raccoon	26	0	36
Skunk	44	9	24
<b>TOTALS</b>	<b>388</b>	<b>19</b>	<b>317</b>

## 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 08/09 compared to fiscal year 07/08. The middle column indicates the number (and percent) of positive tests. Salmonella testing is also listed in Bacteriology and Necropsy is also listed in Pathology.

Agent Name	Test Performed	Number 7/08-6/09	Number Positive (%)	Number 7/07-6/08	% Change
Influenza	AGID/HI	1,064	NA	1,808	-41.2
Influenza	PCR	3,303	NA	3,384	-2.4
Any	VI	2	0(0.0)	20	-90.0
Beak & Feather	PCR	0	0(0.0)	2	-100.0
West Nile	PCR	19	4(21.1)	29	-34.5
APMV-1	PCR	6	3(50.0)	460	-98.7
Chlamydia	PCR	15	2(13.3)	17	-11.8
Mycoplasma	PCR	24	6(25.0)	83	-91.6
Mycoplasma	Serology	4	1(25.0)	14	-71.4
Pullorum/ Typhoid	Serology	2,072	0(0.0)	1,742	18.9
Salmonella Mortality/Envir- omental	Culture	385	184(47.8)	178	116.3
Any	Necropsy	93	NA	102	-8.8
<b>TOTALS</b>		<b>6,987</b>		<b>7,839</b>	<b>-10.9</b>

## 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 08/09 compared to fiscal year 07/08.

Test	Number 7/08-6/09	% of Total	Number 7/07-6/08	% Change
<b>Trich - Culture Food Animal</b>	1,451	19.8	2,757	-90.0
<b>Trich - PCR Food Animal</b>	407	5.6	1,326	-225.8
<b>Trich - Culture Small Animal</b>	42	0.6	46	-9.5
<b>Trich - PCR Small Animal</b>	61	0.8	58	5.2
<i>Neospora</i> <b>Serology</b>	404	5.5	287	40.8
<i>Toxoplasma</i> <b>Serology</b>	88	1.2	66	33.3
<b>Knott's Test</b>	10	0.1	5	100.0
<b>Heartworm Serology</b>	342	4.7	330	4.2
<i>Ehrlichia/Lyme/ Anaplasma</i> <b>Panel</b>	345	4.7	246	40.2
<b>Parasite ID</b>	41	0.6	41	0
<b>Fecal Exam</b>	2,769	37.8	1,798	54.0
<i>Giardia</i> <b>ELISA/IFA</b>	423	5.8	200	111.5
<i>Cryptosporidium</i> <b>AF/IFA</b>	431	5.9	428	7
<b>Baermann</b>	183	2.5	22	731.8
<b>Fluke exam</b>	45	0.6	0	-
<b>Miscellaneous</b>	49	0.7	1	0
<b>Soil Analysis (includes feed, water, sediment)</b>	228	3.1	13	1653.8
<b>TOTAL</b>	<b>7,319</b>	<b>100.0</b>	<b>7,765</b>	<b>-6.1</b>

## 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
<b>Canine (includes wild species)</b>	12/500 (2.4)	5/500 (1.0)	3/500 (0.6)	23/500 (4.6)	1/20 (5.0)	0/500 (0.0)
<b>Feline (includes wild species)</b>	2/246 (0.8)	64/246 (26.0)	0/246 (0.0)	17/246 (6.9)	0/4 (0.0)	0/246 (0.0)
<b>Reptiles/Zoo</b>	-	-	2/10 (20.0)	3/10 (10.0)	-	1/10 (10.0)
<b>Avian (wild &amp; domestic)</b>	1/173 (0.6)	-	-	23/173 (13.3)	-	2/173 (1.2)

<sup>3</sup>dash = not applicable

### FOOD & FIBER ANIMALS/EQUINE FECAL EXAMINATIONS

Species	Ascarids	Coccidia	Strongyles	<i>Nematodirus</i>	<i>Trichuris</i>	Tapeworms	Other	Lungworms
<b>Bovine</b>	- <sup>a</sup>	631/1080 (58.4)	583/1080 (54.0)	115/1080 (10.6)	56/1080 (5.2)	70/1080 (6.5)	0/1080 (0.0)	-
<b>Ovine / Caprine</b>	-	20/46 (43.5)	18/46 (39.1)	12/46 (26.1)	3/46 (6.5)	1/46 (2.2)	0/46 (0.0)	-
<b>Camelids</b>	-	160/268 (59.7)	41/268 (15.3)	78/268 (29.1)	23/268 (8.6)	0/268 (0.0)	50/268 (18.7)	-
<b>Cervids / Wildlife</b>	-	99/139 (71.2)	95/139 (68.3)	11/139 (7.9)	11/139 (7.9)	5/139 (3.6)	24/139 (17.3)	5/152 (3.3)
<b>Equine</b>	1/183 (0.5)	2/183 (1.1)	53/183 (29.0)	-	-	0/183 (0.0)	0/183 (0.0)	-

<sup>a</sup>dash = not applicable

## PARASITOLOGY

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

Species	<i>Giardia</i> (Fecal Float)	<i>Giardia</i> (Fecal Ag)	<i>Giardia</i> (IFA)	<i>Cryptosporidium</i> (Acid Fast)	<i>Cryptosporidium</i> (IFA)
<b>Canine (includes wild species)</b>	31/500 (6.2)	4/27 (14.8)	19/136 (14.0)	0/22 (0.0)	21/139 (15.1)
<b>Feline (includes wild species)</b>	2/246 (0.8)	0/3 (0.0)	3/60 (5.0)	0/1 (0.0)	4/60 (6.7)
<b>Bovine</b>	2/1080 (0.2)	-	-	0/1 (0.0)	-
<b>Camelids</b>	3/268 (1.1)	-	0/2 (0.0)	0/2 (0.0)	0/2 (0.0)
<b>Equine</b>	0/183 (0.0)	-	0/1 (0.0)	0/3 (0.0)	0/1 (0.0)
<b>Reptiles/Zoo/Wildlife</b>	0/139 (0.0)	-	7/171 (4.1)	1/6 (16.7)	3/171 (1.8)

<sup>a</sup>dash = not applicable

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	Knotts Test	Heartworm	<i>Ehrlichia</i> / <i>Lyme</i> / <i>Anaplasma</i>	<i>Toxoplasma</i>
<b>Bovine</b>	12/1451 (0.8)	93/407 (22.9)	54/314 (17.2)	- <sup>a</sup>	-	-	-
<b>Canine</b>	0/7 (0.0)	1/1 (100.0)	7/82 (8.5)	3/10 (30.0)	9/333 (2.7) <sup>b</sup>	7/342 (2.0)	-
<b>Feline</b>	3/30 (10.0)	8/59 (13.6)	-	-	0/7 (0.0)	-	-
<b>Avian/Zoo</b>	-	-	0/8 (0.0)	-	0/3 (0.0)	-	4/81 (4.9)

<sup>a</sup>dash = not applicable

<sup>b</sup> does not include discordant results

## 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 08/09 compared to fiscal year 07/08. The bottom table indicates the results of testing for copper for the given species and tissue sample.

Nutrient	Number 7/07-6/08	%	Number 7/07-6/08	% Change
<b>Copper</b>	1,894	32.6	1,967	-3.7
<b>Zinc</b>	462	7.9	648	-28.7
<b>Iron</b>	388	6.7	411	-5.6
<b>Selenium + GSH.Px</b>	752	12.9	963	-21.9
<b>Molybdenum</b>	54	0.9	76	-28.9
<b>Vitamin A</b>	611	10.5	54	1,031.5
<b>Vitamin E</b>	835	14.4	355`	135.2
<b>Macro elements (Ca,Mg,Mn,K, Na,P,Cl)</b>	589	10.1	343	71.7
<b>Bone Matrix</b>	0	0.0	729	-100.0
<b>Non-Esterified Fatty Acids</b>	10	0.2	0	100.0
<b>Special Request</b>	217	3.7	575	-62.3
<b>TOTAL</b>	<b>5,812</b>	<b>100.0</b>	<b>6,121</b>	<b>-5.0</b>

## COPPER

Species	Tissue	TOTAL	Results
<b>Bovine</b>	Serum	127	110 < 0.6ppm (deficient)
<b>Bovine</b>	Liver	104	11 < 40ppm deficient 0 > 600ppm toxic
<b>Canine</b>	Liver	1,145	62 > 1,500ppm (toxic)

There were 98/351 (27%) 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 08/09 compared to fiscal year 07/08.

<b>Toxicant</b>	<b>Number 7/08-6/09</b>	<b>%</b>	<b>Number 7/07-6/08</b>	<b>% Change</b>
<b>Calculi</b>	149	18.5	124	20.2
<b>Bromide</b>	127	15.8	168	-24.4
<b>Cadmium</b>	29	3.6	3	866.7
<b>Cholinesterase</b>	8	1.0	14	-42.9
<b>Cobalt</b>	5	0.6	4	25.0
<b>Cyanide</b>	3	0.4	3	0.0
<b>Nitrate/Nitrite</b>	150	18.6	177	-15.3
<b>Strychnine</b>	10	1.2	17	-41.2
<b>Sulfate/Sulfur</b>	30	3.7	8	275.0
<b>Arsenic</b>	59	7.3	10	490.0
<b>Lead</b>	171	21.2	107	59.8
<b>Mercury</b>	43	5.3	13	230.8
<b>Alpha- Mannosidase or Swainsonine</b>	8	1.0	12	-33.3
<b>Anticoagulant Screen</b>	12	1.5	NA	NA
<b>Other</b>	1	0.1	2	-50.0
<b>TOTAL</b>	<b>805</b>	<b>100.0</b>	<b>662</b>	<b>21.6</b>

There was 1 positive Strychnine from 10 samples.

There were 8 cases of lead toxicity.

## 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 08/09 compared to fiscal year 07/08 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 7/08-6/09	Toxo IgG/M 7/07-6/08 (%change)	Toxo CSF IgG/M 7/08-6/09	Toxo CSF Ig G/M 7/07-6/08 (% change)	RMSF IgG 7/08-/09	RMSF IgG 7/07-6/08 (%change)
<b>Canine</b>	1,916	1,984 (-3.4)	73	84 (-13.1)	36	51 (-29.4)
<b>Feline</b>	4,337	4,490 (-3.4)	13	22 (-40.9)	NA	NA
<b>Llama/ Other/Unk</b>	7	3 (133.3)	0	0	0	0
<b>TOTAL</b>	<b>6,260</b>	<b>6,477 (-3.4)</b>	<b>86</b>	<b>106 (-18.9)</b>	<b>36</b>	<b>51 (-29.4)</b>

Species	Positive Toxo IgG	Positive Toxo IgM	Positive Toxo CSF IgM	Positive RMSF IgG
<b>Canine</b>	139/1,916 (7.3)	79/1,916 (4.1)	1/73 (1.4)	1/36 (2.8)
<b>Feline</b>	731/4,337 (16.9)	234/4,335 (5.4)	1/13 (7.7)	NA
<b>Llama/Other/ Unknown</b>	1/7 (14.3)	0/7 (0.0)	0/0 (0.0)	0
<b>TOTAL</b>	<b>871/6,260 (13.9)</b>	<b>313/6,258 (5.0)</b>	<b>2/86 (2.3)</b>	<b>1/36 (2.8)</b>

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 08/09 compared to fiscal year 07/08

Test	Number 7/08-6/09	Number Positive (%)	Number 7/07-6/08	% Change
PCR Bartonella	113	3(2.7)	145	-22.1
PCR Fever Panel	49	NA	46	6.5
PCR Cryptosporidia	45	9(20.0)	49	-8.2
PCR <i>M. haemocanis</i> / <i>M. haematoparvum</i>	117	2(1.7)	87	34.5
PCR <i>M. haemofelis</i> / <i>M. haemominutum</i>	366	41(11.2)	326	12.3
PCR <i>Neospora caninum</i>	43	1(2.3)	48	-10.4
PCR <i>Toxoplasma gondii</i>	83	0(0.0)	77	7.8
PCR Ehrlichia/ Anaplasma/Neorickettsia	134	8(6.0)	142	-5.6
PCR <i>Rickettsia</i> sp.	50	1(2.0)	NA	NA
<i>E. canis</i>	47	2(4.3)	23	104.3
<b>TOTAL</b>	<b>1,047</b>	<b>--</b>	<b>943</b>	<b>11.0</b>



## 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 08/09 is compared to fiscal year 07/08 and the percent change is given in parentheses.

Species	CBC 7/08-6/09	CBC 7/07-6/08 (%change)	Chemistry Panel 7/08-6/09	Chemistry Panel 7/07-6/08 (%change)	Fluid & Cytology 7/08-6/09	Fluid & Cytology <sup>a</sup> 7/07-6/08 (%change)	Other 7/08-6/09	Other 7/07-6/08 (%change)
<b>Canine</b>	1,251	1,003 (24.7)	946	764 (23.8)	2,472	2,477 (-0.2)	680	674 (0.9)
<b>Feline</b>	268	296 (-9.5)	192	280 (-31.4)	571	587 (-2.7)	272	309 (-12.0)
<b>Equine</b>	403	702 (-42.6)	400	611 (-34.5)	131	182 (-28.0)	67	77 (-13.0)
<b>Bovine</b>	37	75 (-50.7)	51	135 (-62.2)	2	5 (-60.0)	9	3 (200.0)
<b>Other</b>	393	176 (123.3)	399	149 (167.8)	36	54 (-33.3)	183	63 (190.5)
<b>Avian/ Reptile</b>	67	37 (81.8)	48	39 (23.1)	5	7 (-28.6)	2	0 (100.0)
<b>TOTAL</b>	<b>2,419</b>	<b>2,289 (5.7)</b>	<b>2,036</b>	<b>1,978 (2.9)</b>	<b>3,217</b>	<b>3,312 (-2.9)</b>	<b>1,213</b>	<b>1,126 (7.7)</b>

<sup>a</sup>There were 676 additional site cytologies in FY08/09 compared to 642 in 07/08.

- There were 1,648 submissions of tissue for PCR to detect lymphoid malignancies (compared to 1,560 in FY07/08), and 930 submissions for flow cytometry (compared to 653 in FY07/08).

## 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 08/09 compared to fiscal year 07/08 is given in parentheses. TDM stands for therapeutic drug monitoring.

Species	Pituitary Adrenal Axis	Pituitary Thyroid Axis	Insulin	Total 7/08-6/09	Total 7/07-6/08 (% change)	TDM 7/08-6/09	TDM 7/07-6/08 (% change)
<b>Equine</b>	159	68	142	369	387(-4.7)	0	0(0.0)
<b>Canine</b>	573	1,275	14	1,862	1,904(-2.2)	213	223(-4.5)
<b>Feline</b>	6	435	0	441	425(3.8)	14	9(55.6)
<b>Other</b>	4	16	129	149	16(831.3)	1	2(-50.0)
<b>TOTAL</b>	<b>742</b>	<b>1,794</b>	<b>285</b>	<b>2,821</b>	<b>2,732(3.3)</b>	<b>228</b>	<b>233(-2.1)</b>

**ROCKY FORD**

<b>Agent Name</b>	<b>Test Performed</b>	<b>Number 7/08-6/09</b>	<b>Number Positive</b>	<b>% Positive</b>	<b>Number 7/07-6/08</b>	<b>% Change</b>
<b>BLV</b>	AGID	179	104	58.1	114	57.0
<b>BVD</b>	FA	98	14	14.3	219	-55.3
<b>BVD PCR pools</b>	PCR	1,872	105	5.6	1371	36.5
<b>BVD Control Program</b>	Samples pooled	73,078	356	N/A	66373	10.1
<b>BVD</b>	C-ELISA	7,089	0	5.0	5932	19.5
<b>IBR</b>	FA	86	1	0.00	121	-28.9
<b>BT</b>	AGID	8	8	12.5	12	-33.3
<b>Rota</b>	ELISA	11	1	72.7	0	0.0
<b>Corona</b>	FA	12	3	8.3	2	500.0
<b>BRSV</b>	FA	27		11.1	28	-3.6
<b><i>B. abortus</i></b>	Card Test	99	0	0.00	52	90.4
<b><i>M. paratuberculosis</i></b>	ELISA	106	6	5.7	1,518	-93.0
<b>Trichomonas</b>	Culture	413	3	0.7	3,845	-89.3
<b>Trichomonas</b>	PCR	2,798	241	8.6	4,532	-38.3
<b>Trichomonas pooled</b>	PCR	3,181	90	2.8	2,258	N/A
<b>Trichomonas control program</b>	Samples pooled	12,899		N/A	8,315	N/A
<b>PRV</b>	LAT	21	0	0.00	11	90.9
<b>PPV</b>	FA	0	0	N/A	0	0.0
<b>PRRS</b>	ELISA	35	2	5.7	1	3,400.0
<b>CAE</b>	AGID or	140	17	12.1	170	-17.7
<b>OPP</b>	ELISA AGID	1,968	74	3.8	3,860	-49.0
<b>EIA</b>	AGID	7,777	2	0.0	7,556	2.9
<b>EIA</b>	ELISA	550	1	0.2	605	-9.1
<b>West Nile</b>	ELISA	17	1	5.9	28	-39.2
<b><i>B. canis</i></b>	RSAT	20	0	0.0	99	-79.8
<b>CPV</b>	Fecal ELISA	12	4	33.3	11	9.1
<b>FELV</b>	ELISA	0	0	0.0	0	0.0
<b>FIV</b>	ELISA	1	0	0.0	8	-87.5
<b>Feline Corona</b>	C-ELISA	0	0	N/A	0	0.0
<b>TOTAL</b>		<b>112,497</b>			<b>107,041</b>	5.1

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**WESTERN SLOPE**

<b>Test Performed</b>	<b>Number 7/08-6/09</b>	<b>Number Positive</b>	<b>% Positive</b>	<b>Number 5/07-6/08</b>	<b>% Change</b>
<b>Aerobic culture</b>	622	NA	NA	648	-4.0
<b>Anaerobic culture</b>	62	NA	NA	74	-16.2
<b>Milk culture</b>	26	NA	NA	55	-52.7
<b>Antibiotic susceptibility</b>	361	NA	NA	392	-7.9
<b>Fungal culture</b>	43	NA	NA	25	72.0
<b>Campylobacter culture</b>	34	3	(0.9)	NA	NA
<b>Mycoplasma culture</b>	21	0	(0.0)	NA	NA
<b>Bovis ELISA</b>	8,197	679 positive 138 suspect	8.3 positive 1.7 suspect	9,060	-9.5
<i>B. abortus</i>	102	0	0.0	NA	NA
<i>M. paratuberculosis</i>	19	1	5.3	NA	NA
<b>EIA (Coggins)</b>	2,256	0	0.0	2,433	-7.3
<b>CAE AGID</b>	45	4	8.9	10	350.0
<b>West Nile ELISA</b>	2	0	0.0	10	-80.0
<b>BVD cELISA &amp; PCR</b>	285	3	1.1	208	37.0
<b>Bluetongue AGID</b>	17	NA	NA	NA	NA
<b>FA BVD</b>	129	49	38.0	63	104.8
<b>FA BRSV</b>	17	0	0.0	17	0.0
<b>FA IBR</b>	90	21	23.3	29	210.3
<b>FA P13</b>	25	0	0.0	9	177.8
<b>FA Corona</b>	15	0	0.0	NA	NA
<b>FA EHV</b>	9	0	0.0	1	800.0
<b>Trichomonas Culture/PCR</b>	3,382	20	0.6	2,841	19.0
<b>Fecal exam</b>	39	NA	NA	45	-13.3
<b>Neospora Serology</b>	8	0	0.0	9	-11.1
<b>Chemistry</b>	178	NA	NA	116	53.4
<b>Necropsy</b>	127*	NA	NA	93	36.6
<b>Histopathology</b>	849	NA	NA	831	2.2
<b>Uterine Biopsy</b>	16	NA	NA	26	-38.5
<b>Cytology</b>	104	NA	NA	99	5.1
<b>TOTAL</b>	<b>17,080</b>	<b>NA</b>	<b>NA</b>	<b>17,086</b>	<b>0.0</b>

\*76.4% Food Animal/Equine, 17.3% Wildlife, 6.3% Pets.

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