Colorado State University Veterinary Diagnostic Laboratories

LabLines

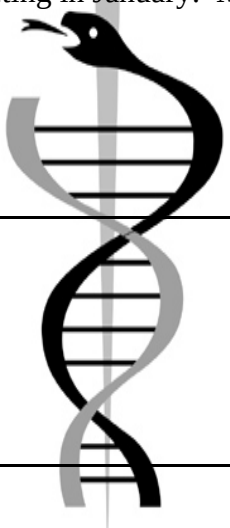
Volume 10, Number 2 **Fall/Winter 2005**

Letter from the Director

Welcome to the Fall/Winter Edition of LabLines. As I write this, our first snow is gently falling and work at the Diagnostic Laboratory continues at a brisk pace. Inside, you'll find many updates on various diseases and disease surveillance programs we are involved with. In this edition, we also have to say a sad farewell to some of our faculty and staff, most notably to Dr. John Cheney who has retired after more than 42 years at Colorado State University. We also welcome many new staff members and new pathology residents. Look inside for more information on these comings and goings.

Our fiscal year ended June 30. Our annual statistics showed a dramatic increase in the volume of laboratory work, including a 194% increase in accessions to 197,256 and a 143% increase in number of tests performed to a total of 345,102. Much of this is attributable to testing for bovine spongiform encephalopathy (102,890 tests July 1, 2004 to June 30, 2005). As state funding for our laboratory continues to decline, we had to institute a minor price increase effective July 1, 2005. With the continued hard work and dedication of our faculty, staff, students and volunteers, we have been able to maintain financial stability with assistance from the United States Department of Agriculture. Through grants, we have been able to offset state budget cuts and even acquire some new equipment.

It was great pleasure to see many of you at the annual Colorado Veterinary Medical Association meeting in September in Keystone. I am honored and humbled by the award of "Veterinarian of the Year" that you gave me. I look forward to seeing you soon at either annual conference or Winter Leadership Meeting in January. Meanwhile, we hope you enjoy this issue of LabLines.



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STATE TASK FORCE FORMED TO ADDRESS AVIAN FLU; GROUP WILL PROVIDE SURVEILLANCE FOR AND EDUCATION ABOUT THE DISEASE

A statewide task force focused on avian influenza has begun work on addressing the threat of the disease spreading to Colorado through a number of sources, such as migratory birds, and will be providing resources, education and information to the public and professionals.

The task force will oversee a plan developed in 2004 by the Colorado State University Veterinary Diagnostic Laboratory, Colorado Department of Agriculture and the Colorado Department of Public Health and Environment to establish a surveillance program for the disease. To-date, the Diagnostic Laboratory has tested 1,000 birds from more than 150 privately owned flock sites in Colorado for avian influenza. The task force will work to secure funding to expand these current surveillance efforts to monitor for avian flu in wild birds as well as to provide education for the public, including bird owners, hunters, and veterinarians.

The task force is comprised of experts from Colorado State, Colorado Department of Agriculture, Colorado Division of Wildlife, US Fish and Wildlife Service, US Department of Agriculture Veterinary Services and Wildlife Services, Colorado Department of Public Health and Environment, Colorado Veterinary Medical Association and the Colorado Livestock Association.

Kristy Pabilonia is the coordinator of statewide avian surveillance and testing at Colorado State University Veterinary Diagnostic Laboratory. Migratory birds, such as wild ducks and geese, pose a risk of bringing avian influenza to Colorado. Our current surveillance program focuses on people who may own a small flock of birds (chickens, turkeys, waterfowl, or game birds such as pheasants or quail) on their property, known as backyard flocks. This task force will expand the program to look at migratory waterfowl that travel into the state from other regions and countries.

The task force also will work to extend protocols for additional surveillance of wild fowl and to train key professionals across the state including veterinarians, people in the animal industry and government workers about the clinical signs of the diseases in birds and measures that can be taken to protect fowl from contracting and spreading avian influenza. We'll focus on educating people who have the most contact with backyard flocks and wild birds about the signs and symptoms of the disease. We also will provide on-line education for a variety of audiences—hunters, bird owners, veterinarians, and others—who are looking for information about the disease, how to help watch for avian flu in our domestic and wild bird populations, and who to contact with reports of sick or dying birds.

The task force is on target to complete plans to expand the current surveillance program by the end of the year.

Bird flu infection is caused by influenza A virus. There are many different combinations of this virus, which cause a range of illness or disease in birds from mild to highly lethal illness. Avian influenza viruses are categorized as either low pathogenic avian influenza or highly pathogenic avian influenza, based on the virus's ability to produce disease. The current outbreak of avian influenza is subtype H5N1, which is a highly pathogenic avian influenza virus. Avian influenza viruses can infect a wide variety of birds including chickens, turkeys, ducks and pheasants. Wild

waterfowl across the globe act as a reservoir, or carrier, for the virus.

Infected birds shed flu virus in their saliva, nasal secretions and feces. Susceptible birds become infected when they contact excretions or surfaces that are contaminated by excretions from sick birds. It is believed that most cases of human infection are a result of an individual's contact with infected poultry or contaminated surfaces. Bird flu viruses generally do not infect humans, but several cases of human infection with the H5N1 avian influenza virus have been reported in Asia. Symptoms of bird flu in humans range from typical flu-like symptoms such as fever, cough, sore throat and muscle aches to pneumonia, severe respiratory diseases and other severe and life-threatening complications.

There is a possible risk of transmission of bird flu to people who have contact with infected birds or surfaces that have been contaminated with excretions from infected birds. In such situations, people should avoid contact with infected birds or contaminated surfaces, and should follow general food safety guidelines when handling and cooking poultry. There currently is no evidence to suggest that H5N1 avian influenza virus is present in the US.

PCR for Avian Flu. Cloacal or tracheal swabs. Fee=$0.00. Contact Dr. Pabilonia for questions regarding any sick birds.

RABIES IN A FEEDLOT CALF

--Hana Van Campen & Randy Basaraba

A 600-pound yearling heifer from a Colorado feedlot exhibited continuous bellowing, head pressing and acted as if it could not drink. The animal was killed and its head was submitted to us May 25, 2005 for rabies examination based on the veterinarian's clinical findings. Examination of the brain for rabies by direct fluorescent antibody (FA) staining revealed positively staining inclusions throughout the section. Negri bodies also were identified by standard hematoxylin and eosin (H&E) staining of histologic sections. Analysis of the rabies virus by the Center for Disease Control (CDC) revealed that the virus most likely came from an infected raccoon. The heifer, which originated from South Carolina, had been on-feed in Colorado for 40 days. Although cases of terrestrial rabies are rare in Colorado (the last case of bovine rabies in Colorado was in 1991) veterinarians should be vigilant about the possibility of rabies. This case illustrates how readily animals are transported from rabies-endemic areas. Further, the duration between the initial inoculation and onset of clinical signs can be lengthy, decreasing suspicion of rabies. In feedlot animals, the differential diagnoses of neurologic disease include *Haemophilus somnus* and other causes of bacterial meningitis, polioencephalomalacia due to elevated sulfate levels in water and feed, lead toxicosis and prior exposure to locoweeds on rangeland.

[NOTE: The only person potentially exposed to the virus during removal of the head was given rabies prophylactic treatment.]

Rabies: Submit head or entire fresh brain. Fee=$60.

HUNTER-HARVESTED MOOSE TESTS POSITIVE FOR CHRONIC WASTING DISEASE

--Barb Powers

In the last week of September, we diagnosed chronic wasting disease (CWD) in a bull moose that was killed by an archer and submitted to one of the Colorado Division of Wildlife's (CDOW) collection stations. We diagnosed CWD using immunohistochemistry (IHC) as it is the only test approved for use in moose. Both the obex and lymph node stained positive for CWD and repeat testing confirmed this result. Fresh tissue saved in storage also tested positive by the rapid BioRad ELISA and genetic testing confirmed that the tissue was a moose.

Until now, CWD had only been found in wild deer and elk. The CDOW had made testing for moose mandatory in 2003. Since 2002, we have tested

more than 288 moose using IHC and until now we have not detected CWD in moose. The moose was killed by a licensed archery hunter in Jackson County, south of Cameron Pass. The hunter was notified and said he was pleased to have the testing system available and was glad to be able to contribute to the on-going research on CWD.

We perform all the testing for CWD for the State of Colorado, serving the CDOW, Colorado Department of Agriculture and veterinarians in the Hunter Assistance Program of the Colorado Veterinary Medical Association.

CHRONIC WASTING DISEASE POSITIVE ELK HERD IN SOUTHERN COLORADO DEPOPULATED

--Barb Powers

On September 6-9, we assisted the Colorado Department of Agriculture (CDA) and the United States Department of Agriculture in the depopulation of a farmed elk herd that had one case of chronic wasting disease (CWD) previously diagnosed by us. The herd had been quarantined and 298 elk had to be killed. Two additional positive elk were found in these 298 elk. We used the rapid ELISA test on both obex and lymph nodes to provide results to the CDA within 24 hours so that only test negative carcasses would be sent to the local landfill, as mandated by the local county commissioners. The two animals that tested positive were digested by alkaline hydrolysis in our tissue digestor. Both CWD positive elk had CWD detected in both the obex and lymph nodes by the BioRad ELISA test, and these were confirmed by immunohistochemistry.

PUG DOG ENCEPHALITIS

--Jamie Bush and Dan Gould

Pug dog encephalitis (PDE) is a neurologic disorder that results in severe, diffuse to multifocal cerebral necrosis in pugs ranging from 9 months to 7 years of age. Most cases, though, occur in pugs less than 2 years of age. Clinical signs generally include severe depression, ataxia and generalized seizures.

Diagnosis of PDE often is based upon breed, clinical signs, cerebrospinal fluid analysis and post-mortem histopathology. A complete blood count and biochemical profile often are unremarkable. Cerebrospinal fluid analysis displays increased total protein and increased numbers of cells, usually small lymphocytes. Typically, a MRI is performed to rule out intracranial neoplasia or other structural damage (eg., trauma, cerebral hematoma). Gross lesions include regional cerebral discoloration, swelling or cavitation. Histopathology reveals a nonsuppurative, necrotizing meningoencephalitis of the cerebrum with moderate to severe perivascular accumulation of lymphocytes, plasma cells and few neutrophils.

There are two forms of PDE -- acute and progressive. The acute form of the disease may present as varying combinations of a multitude of clinical signs. These clinical signs may include a sudden onset of seizures, ataxia, weakness, circling, a head tilt, head pressing, blindness with normal papillary light reflexes, cervical rigidity and cervical pain. These clinical signs progress rapidly and, generally, within five-to-seven days the pug develops uncontrollable seizures which progress to recumbency, coma and death. The progressive form of the disease typically presents as a generalized or partial motor seizure. Initially, the pug is normal following the seizure. The seizures continue to occur at varying intervals but the pug then begins to develop other neurologic clinical signs. Survival is generally weeks to months.

Current research has been directed at determining the cause of PDE, which is currently unknown. Some hypotheses include re-emergence of a latent herpesvirus-1 infection and autoimmune disease.

Treatment is directed at controlling clinical signs and improving quality of life. Corticosteroids, such as oral prednisone, often are used to reduce cerebral inflammation. Medications such as phenobarbital and potassium bromide are used to control seizures.

We are implementing a study to assess prevalence, sex preference and environmental risk factors for PDE. Brains from any pug that dies or is euthanized for any reason, including suspected PDE, are requested. In addition to brains, please submit a brief medical history (including vaccination and deworming history), physical exam findings and any diagnostic results. Veterinarians may submit the whole brain preserved in 10% buffered formalin, or the chilled head or whole body can be submitted for brain removal by Dr. Jamie Bush. Freezing should be avoided. Histopathology will be performed to determine a diagnosis of PDE, and histologic lesions will be characterized. Questionnaires will be sent to the guardians of all pugs to evaluate potential environmental risk factors. Shipping costs will be the responsibility of the pug's guardian. A pathology report of the brain histopathology will be sent to the referring veterinarian and pug guardian.

Please contact Dr. Bush at pugology@ lamar. colostate.edu with any questions or concerns.

NEW LIQUID CULTURE SYSTEM FOR JOHNE'S DISEASE

This summer we received a donation of a new liquid culture system for the more rapid detection of Johne's disease. The "Trek" system is designed to detect the agent of Johne's disease, *Mycobacteria paratuberculosis*, in five weeks compared to the standard 12-16 weeks for routine culture. Comparison studies currently are underway.

METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* IN SMALL ANIMALS

--Doreene Hyatt

We 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. Isolates found in the hospital environment generally are multiple-resistant to other antimicrobials. With the zoonotic potential of these organisms, and increasing reports of 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). As can be seen, the percent of isolates resistant to oxacillin (MRSA) appears to be increasing each year.

	Canine		Feline	
Year	No. Isolated	Percent Susceptible	No. 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 (Jan-Sep)	34	62	8	88

SUSPECTED POISONED BAITS AND SUSPICIOUS SUBSTANCES

--Dwayne Hamar and Cathy Bedwell

Each year we receive a number of calls from animal owners or their veterinarians about suspicious substances found in an area accessible to a pet. Often, no dead animal has been found and no poisoning is known to have occurred. Owners who find suspicious substances in the area accessible to their pet often feel helpless and angry. They usually cannot monitor the pet continuously and are unwilling to restrict the pet's access to the outdoors. The seemingly logical course of action is to submit the suspected poisoned bait or suspicious substance for analysis for toxicants.

Under these circumstances, there are no gross necropsy observations, histopathological abnormalities or clinical signs to suggest specific toxicants, so only the physical appearance of the suspicious substance acts as a guide to testing. For example, commercially available rodent baits often are dyed blue/green or red. Anticoagulants may be pellets or treated grains, whereas strychnine baits are usually dyed grains. Ethylene glycol often is used for malicious poisonings due to its ready availability and ease of introduction into foodstuffs. Items suspected of containing ethylene glycol may be preliminarily tested by placing the substance in a freezer, with failure to freeze indicative of ethylene glycol tainting. Many laboratories offer test panels or "screens" of related toxicants (eg., organophosphate, carbamate, anticoagulant, chlorinated hydrocardon, etc.). However, it should be made clear that these panels will not test for all possible toxicants, and some toxicants must be tested separately. If there are no physical attributes to guide the testing strategy, the owner may request all available panels. This strategy quickly becomes prohibitively expensive, and demonstrating the absence of some toxicants will not prove the absence of all toxicants.

During the last five years, our laboratory received 22 suspected poisoned baits or suspicious substances for analysis. Forty-one tests were performed on these samples, and all of the results were negative except for three cases in which ethylene glycol was detected. Refer to the table below for the tests performed.

Analysis Requested	Toxicant Detected	Toxicant Not Detected
Anticoagulant Screen	0	2
Arsenic	0	3
Cyanide	0	2
Ethylene Glycol	3	13
Mercury	0	1
Pesticide Screen	0	4
Strychnine	0	13

Contact the laboratory for potential analyses and costs of analyses for suspicious substances.

BORDETELLA IN CATS

--Hana Van Campen

Bordetella bronchisepticum is commonly associated with "kennel cough" in dogs. The bacterium can be isolated from the upper respiratory tract of 10% of cats without clinical signs. However, *Bordetella* also is a significant cause of upper respiratory disease and bronchopneumonia in cats. Experimentally, *Bordetella* also has been demonstrated to be a primary pathogen in cats. Young kittens and Persians are thought to be more susceptible to severe *Bordetella* pneumonia.

On average, we isolate *Bordetella* from one to two cases of pneumonia in cats per year. From January 2005 through April 2005, *Bordetella* was cultured from seven cats with severe bronchopneumonia including fatal cases. Fatalities occurred in single cats within a cattery or household to several fatalities during outbreaks in shelters. Fatal cases included Persian kittens and adult domestic shorthaired cats. The cats were reported to develop marked depression acutely, followed by coughing and dyspnea.

On necropsy, cats presented with severe suppurative bronchopneumonia and pulmonary edema. Purulent oculonasal discharge and copious, thick, purulent to frothy material in trachea and upper airways were noted. Lungs were diffusely reddened or mottled with pinpoint-to-1cm foci on the pleura and cut surfaces. Other organisms were co-cultured from some cases including *Mycoplasma* spp. and *Pasteurella* spp. In contrast to some reports, evidence for concurrent feline herpesvirus or calicivirus infection was not found by histopathology or PCR in these cases.

The antimicrobial sensitivity profiles of the *Bordetella* isolates varied from highly resistant (resistant to 9/10 antibiotics) to relatively susceptible organisms (susceptible to 8/10 antibiotics). All *Bordetella* isolates subjected to antibiotic sensitivity testing were susceptible to tetracycline. Veterinarians and shelter staff report,

however, that the cats responded poorly to treatment with doxycycline, and *Bordetella* was cultured from cats treated with this antibiotic. Their observations are consistent with a previous report in which oral treatment with doxycycline did not eliminate shedding and *Bordetella* could be isolated for 19 weeks following experimental inoculation.

Culture: Submit fresh lung tissue or swab. Fee=$15. Antimicrobial susceptibility. Fee=$11.

A BENEFICIAL CASE WITHOUT A DIAGNOSIS

--James Kennedy/Rocky Ford

It is late summer, temperatures have been hovering near 100°F for weeks, and the prospects of cool fall days seem remote. Feedlot pens are dusty and the fall placements are just beginning to show. As you begin your consultation visit at a large feedyard, the yardman informs you a steer that had arrived the night before died and needs to be posted. Necropsy is one of the services you offer as the feedlot consultant as it plays a vital role in designing treatment and vaccinations protocols. Today, the animal presented for post-mortem exam has only been dead a few hours and is in good condition. The necropsy shows an apparent anemia and the presence of a bloody fluid in the thoracic and abdominal cavity. Additionally, there appears to be blood staining of the mesentery and internal organs, but no subcutaneous hemorrhage is observed. The heart, liver and lungs appear normal. However, blood is found in the urine and a small blood clot is removed from one kidney while the colon appears hemorrhagic and inflamed. The rumen is full of hay with no abnormalities; but the spleen appears to be four-to-five times larger than normal. As you review the findings of your post-mortem and the animal's associated history, one disease seems to leap out -- anthrax. You gather your thoughts and remember the following protocol for handling suspected anthrax.

Step 1--When anthrax is suspected, do not open the carcass but aseptically collect a small amount of blood from a superficial vein.

Step 2--Contact the Diagnostic Laboratory for proper shipping procedures.

Step 3--Notify the State Veterinarian's Office and the USDA/APHIS.

Step 4--Place the animals under hold while testing is being conducted.

Step 5--Dispose of the carcass, bedding, and contaminated material by deep burial, remembering to minimize potential scavenging by domestic and wildlife animals (don't forget that flies are scavengers, too).

Step 6--Isolate any sick animals in the herd.

Step 7--Disinfect the area and any equipment used.

Step 8--Practice good sanitary procedures to avoid potential spread to humans or other animals.

In this case, Step 1 had long since passed, but in fairness, anthrax is often below the radar screen and we have all leaped without always thinking of the potential of zoonotic disease. Steps 2 through 8, with the exception of 5, were followed to the letter. However, Step 5 had a "glitch." The rendering company picked up the carcass while calls were being made. The potential for human exposure increased and a timely diagnosis became more critical. The samples were hand-carried to the Diagnostic Laboratory where impression smears were made and bacteria that appeared morphologically similar to *B. anthracis* were noted. Based on a concern for the possibility of anthrax and the human risk factor, public health officials were notified by the Laboratory and the samples were sent by courier for PCR confirmation. The State Public Health Laboratory results were negative for anthrax and further diagnostic testing could not provide a suitable diagnosis for the death of this animal. The case

did serve to remind everyone to always keep in mind the potential zoonotic risk to individuals handling livestock and pets, and the need to establish and follow a prescribed protocol.

NEWS FROM GRAND JUNCTION

We are in the process of interviewing to hire a new director for our branch laboratory in Grand Junction. We hope this process will be complete by January 1. Watch for the next newsletter for more information about our new director. In the meantime, Kim Hannafious and Paula Hammons are "holding down the fort" and continuing to provide diagnostic services to the region.

NEONATAL PUPPY DEATHS CAUSED BY CANINE HERPESVIRUS-1

--Barb Powers and Hana Van Campen

Tissues from a 5-week-old bulldog puppy were submitted for histopathologic evaluation. The diagnosis was canine herpesvirus-1 (CHV-1) infection. The significant histopathologic findings were in lung, spleen, kidney and liver.

> *Section of lung had severe inflammation consisting of marked multifocal infiltrates of neutrophils, alveolar macrophages and an extensive amount of fibrin. Sections of spleen had large areas of hemorrhage and necrosis throughout with marked lympholysis. Sections of kidney had multifocal areas of acute necrosis of the epithelial cells of the renal tubules and multifocal hemorrhage. Sections of liver were characterized by multifocal areas of acute necrosis, minimal inflammation and numerous intranuclear inclusion bodies present throughout.*

Dogs are the principal hosts of CHV-1 and surveys have shown that up to 50% of adult dogs have been infected with the virus. CHV-1 is inhaled or ingested, and remains latent in the trigeminal and sacral ganglia for life. At parturition, the virus is activated from its latent state and is secreted in vaginal secretions of the bitch. Puppies become infected by ingestion of the virus. Disease occurs when CHV-1 spreads systemically and causes rapid cell necrosis and hemorrhages in multiple organs. Several factors determine whether puppies exposed to CHV-1 will develop disease. Maternal immunity transferred transplacentally or via colostrum is protective. Viral replication occurs best at low temperatures (33°C) and so the likelihood of generalized CHV-1 infection may be increased if puppies are chilled or subjected to poor mothering. Recurrence of virus shedding by an infected bitch is unpredictable and subsequent litters may or may not be affected.

PCR for CHV-1 (Test #796)--Submit fresh or formalin-fixed tissues. Fee=$25/sample.
CHV SN (Test #831) -- For infection status--Submit blood or serum. Fee=$12/sample.

NEW TISSUE PROCESSOR FOR CARCASS DISPOSAL

We have installed a new second-generation tissue processor for carcass disposal. This is called a BIO-MEER (Biologic Mass Energy Extraction and Recovery). This larger, 4000-pound unit uses

heat, pressure, potassium hydroxide and mechanical grinding to completely sterilize animal carcasses and destroy all pathogens, including prions. The unique vacuum and grinding systems remove excessive water and reduces the carcass volume to a pasty substance that can be landfilled

or used for compost. We are investigating potential uses of this remnant material as an energy source to be converted to biodiesel/biofuel.

FAREWELL TO DR. JOHN CHENEY

After more than 42 years of service to Colorado State University, Dr. John M. Cheney has retired. While Dr. Cheney was heavily involved in teaching veterinary and microbiology students, he also played a key role in research and service in the Parasitology section of our laboratory. From 1967 to 1972, Dr. Cheney represented the University as Colorado Chief of Party in Kenya and was instrumental in development of curricula leading to the Doctor of Veterinary Medicine degree, development of the livestock sector in Senegal, and the development of the Central Livestock Company to improve local food sources. Upon returning to CSU, Dr. Cheney became once again heavily involved in teaching, service and research in the field of parasitology. He has served as head of the Parasitology Section in the Diagnostic Laboratory since 1972. He served as President of the Colorado Veterinary Medical Association, Colorado Cattlemen's Association, Larimer County Stockgrowers Association and Larimer County Fair Board. In 1988, he was voted Colorado Veterinarian of the Year and was elected to the Contemporary Distinguished Faculty of the, College of Veterinary Medicine and Biomedical Sciences. Dr. Cheney's experiences and contacts with the Colorado and National Cattlemen's Associations have been an invaluable asset to CSU and the Diagnostic Laboratory. He will be missed. We wish him the best of luck in his retirement.

PLEASE NOTE: During the holiday season, there will be some important dates to remember for TRICHOMONAS sample submissions to Parasitology. The week of Dec. 26 to 30 (Christmas), there will be **NO trichomonas samples** accepted for inoculation or incubation.

GET TO KNOW YOUR LABORATORY

Extension/Roger Ellis/DVM/MS

Dr. Roger Ellis is the new Extension Veterinarian for the College of Veterinary Medicine and Biomedical Sciences at Colorado State University. He received his Bachelor of Science degree in Veterinary Science in 1976 and his Doctor of Veterinary Medicine degree in 1979 at Colorado State University. He received the Upjohn Award for distinguished food animal medicine student.

From 1979 to 1996, he practiced in general mixed--primarily food animal--practice in Gothenburg, NE. From 1996 to 2001, he developed a beef and small ruminant specialty practice in Callaway, NE, and managed a 3000-head commercial feeding operation. He participated in dairy calf development and calf/yearling feeding programs, bull and heifer reproductive development programs, beef cow/calf production management, and value-based production programs, along with stocker and intensive grazing systems. In addition, he provided management and health consultation services. In 2001, he managed the health and feed bunk management divisions of a 12,000-head commercial feeding operation in central Nebraska with consultation to associated backgrounding and cow/calf programs. In 2002, Dr. Ellis began graduate studies at the Great Plains Veterinary Educational Center (GPVEC) through the University of Nebraska/Lincoln and received a Master's degree in 2004. During this time, he served as a graduate teaching assistant and then clinical instructor for GPVEC and provided emergency veterinary services for beef and sheep operations at the US Mean Animal Research Center (USDA/ARS) in Clay Center, NE. He also collaborated with research and extension activities while at GPVEC. His area of research was in beef cattle reproduction, particularly yearling beef bulls, and he had investigative interests in infectious diseases, nutrition, biosecurity,

production management and food quality assurance. He is available for assistance at your request!

Residency Training News

Pathology cases presented to us are used, in part, for training the next generation of veterinary diagnosticians.

Drs. Jonathon Arzt and Michelle Dennis recently finished residency training and both achieved Diplomate status as Anatomic Pathologists by successfully completing the American College of Veterinary Pathologists board certification examination in Ames, IA, in September. We are quite proud of these trainees and pleased with their success on the board examination.

Two new anatomic pathology trainees, Drs. Jamie Bush and Colleen Duncan, were appointed to the combined resident/PhD program on July 1, 2005.

Dr. Jamie M. Bush is a 2004 graduate of the Kansas State University College of Veterinary Medicine where she received her DVM. Following her graduation from veterinary school, she worked as an associate veterinarian in a small animal practice in Las Vegas, NV. Her professional interests include pug dog encephalitis and oncology. Outside of work, her hobbies include pug dogs, reading and hiking. She is married to Jason Curtis, who is a police officer with the Fort Collins Police Department. She shares her home with three pugs, two cats and a chinchilla.

Dr. Colleen Duncan is a graduate of the Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Canada. Prior to joining the training program at CSU, she earned an MSc in epidemiology, also from the Western College of Veterinary Medicine. Her thesis work addressed the emergence of *Cryptococcus gattii* in Western Canada. Dr. Duncan's PhD project will study bovine diarrhea virus in wildlife under the mentorship of Dr. Mo Salman in the Department of Clinical Sciences and in collaboration with the Colorado Division of Wildlife.

Sample Entry Area/Client Services

The departure of long-time employee Audrey Galm in the sample entry area brought about some changes in the office. Lisa Wolfe, a long-time CSU employee, who has been working in the sample entry area since August 2004, has stepped in to fill Audrey's vacant position. Lisa's background as a certified vet tech gives her plenty of experience in working with our clients and samples.

Kim Speaker, who has been working as our main receptionist since May 2005, has been persuaded to joint the sample entry team to fill Lisa's old position. Kim has an extensive background working in the animal industry and we are pleased to have her working with us.

Victoria Banks has changed from a half- to full-time status and will be working as our primary receptionist. She will continue some of her former duties but will add phones, data entry, billing, and our quarterly open-case report. We are excited about the change and welcome her in this position.

Teva, Nikki, Kim, Victoria and Lisa

Necropsy Area

Teva Heglin, a full-time vet student from Arizona, joined us Fall 2004. She assists us in our biopsy service area and TSE section.

Nikki Shipka joined the Necropsy area in August. Her responsibilities include accessioning and trimming of biopsy samples. Nikki is originally from Minnesota and came to Colorado in 1998. She graduated with a bachelor's degree in equine

science in Fall 2002. After working as a foaling attendant in California, a small animal technician in Georgia and equine tech in Kentucky, she returned to CSU to pursue veterinary school. Her interests lie in large animal medicine--food and equine--and equine neonatal critical care.

Word Processing Area

Katie and Jan

Katie Edwards joined us June 1 and Jan Roberts in July. They are both responsible for transcribing, faxing, and finalizing histopathology case reports, as well as billing the clients. They have both performed transcription in the past and we welcome their speed and efficiency with our large caseload.

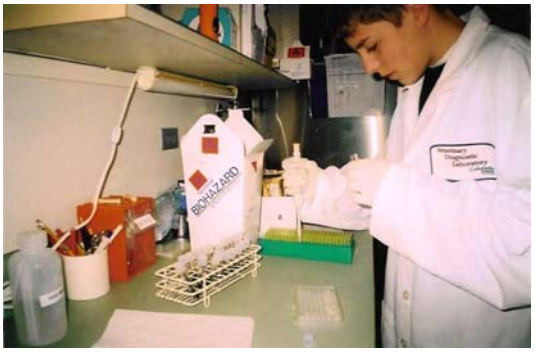
TSE Area

Emma Timmerman and Debbie Beard joined the TSE area in September. Debbie received her BS degree in Microbiology from Oklahoma State University. She has previous experience in clinical and analytical microbiology laboratories. Emma received her BS from the University of Arizona and worked at the University of Arizona Diagnostic Laboratory for the last four years. She returned to CSU to pursue a DVM degree.

Debbie, Leah and Emma

Their responsibilities include sample entry, and tissue preparation for bovine spongiform encephalopathy, chronic wasting disease and scrapie testing. Leah Powers advanced to an intern position for BSE and CWD testing. Leah has been in the TSE section since 2002 and has extensive background working with Dr. Charles Hibler on wildlife and waterborne diseases. Kathi Wilson remains as the TSE section supervisor.

AWARDS GIVEN--Jace Rogers, a student who completed a BVD ELISA project with us in December 2004, received several awards for this project. These awards included Grand Champion at his school's science fair, winner of the Zoology Division at the regional science fair, the CVMA award at the state science fair, and Grand Champion in the Veterinary Science Division at the Larimer County Fair.



WHAT'S IN THIS ISSUE

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