



## University of Wyoming

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## MESSAGE FROM THE PAST DIRECTOR

Some of the best made plans.... Although I thought the September issue of the Newsletter would be my last, I have volunteered to get another out to you before the end of the year.

I am very pleased to announce that Will Laegreid, DVM, PhD has accepted the position of Department Head for Veterinary Sciences and Director of the Wyoming State Veterinary Laboratory. Dr. Laegreid received his DVM and PhD degrees from the College of Veterinary Medicine, Washington State University where he also received residency training in anatomic veterinary pathology. He has held several positions over the course of his career. A few highlights include positions at the USDA, ARS Plum Island Animal Disease Center in Greenport NY; the USDA, ARS Meat Animal Research Center in Clay Center NE; and is currently a professor in the Department of Pathobiology, College of Veterinary Medicine, University of Illinois, Urbana IL. Although moving to Laramie in the winter is a touchy proposition at best, Will plans to start his new position at the end of January 2012. I hope you will take the opportunity to greet and get to know Dr. Laegreid. We are certainly fortunate to have attracted a veterinarian and scientist of Will's stature.

Many of you may have noticed that Dr. Todd Cornish has not been a pathologist on WSVL reports recently. Todd is filling the void as interim Director and Department Head, starting last August and continuing in this position until Dr. Laegreid's arrival. Dr. Cornish is doing a tremendous job in this administrative capacity.

In the September issue I mentioned that Dr. Jeff Adamovicz is our new immunologist, serving as faculty supervisor for the diagnostic and

regulatory serology sections of WSVL. What I didn't mention is that Jeff will also serve as Scientific Director for the newly constructed Biosafety Level-3 (BSL-3) laboratory. Dr. Adamovicz brings his knowledge and many years of experience working in high-security BSL-3 labs that will benefit us all.

Faculty and staff of the WSVL enjoyed seeing many of you again at the Saturday morning session of the WVMA Winter meeting in Casper on Dec. 3. Presentations covered a variety of topics, hopefully of interest to our veterinary clientele and colleagues. It is always a pleasure to contribute to this meeting and thanks to the WVMA for the opportunity.

Thanks to Jonathan Fox for organizing the session and to all presenters for your time and effort. If you have topics related to animal disease and diagnostics you would like us to cover next year, please let us know.

Don Montgomery, Pathologist – WSVL

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## INTERESTING CASES FROM WSVL AND OTHER TIDBITS

### *Mycoplasma bovis* Abortion in a Cow

Investigation of bovine abortion can be frustrating as success rates are low. This is due to a number of factors including a high frequency of advanced autolysis; lack of appropriate tissues, especially placenta which is frequently not found; and because some disease processes leave behind little trace. At the Wyoming State Veterinary Laboratory, we undertake comprehensive testing on bovine fetuses to include microscopic evaluation of tissues, culture for bacteria and trichomonads, testing for nitrate poisoning, and attempts at identifying viral etiologies. The current case involves a group of cows that had been moved from Texas to Wyoming due to the drought. Two cows aborted and samples were submitted

to WSVL for analysis. In one fetus there was a mild non-suppurative leptomeningitis and interstitial pneumonia consistent with an infectious disease process (Figure 1).

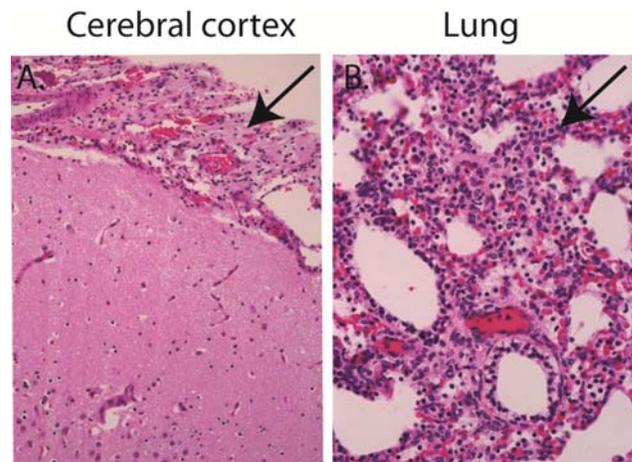


Figure 1: Non-suppurative inflammation in meninges (A) and pulmonary interstitium (B) is consistent with but not specific for *Mycoplasma bovis* pneumonia. Areas of inflammation are shown with an arrow.

As *Mycoplasma spp.* can cause non-suppurative inflammation in lung and other organs we undertook mycoplasma PCR on the fetal tissue. The *Mycoplasma spp.* PCR done in the bacteriology laboratory is actually two separate tests. We do a "general" PCR which detects most *Mycoplasma spp.*, but we also have a more specific *Mycoplasma bovis* PCR which only detects that organism. Both PCRs were positive on this abortion case. The abortion was attributed to the *Mycoplasma bovis* present in tissues as tests for other agents were negative, and because the lesions were consistent with the agent. Mycoplasma PCR was negative on the other case but the fetus was very autolyzed. *Mycoplasma* and *Ureaplasma spp.* are a well-recognized but uncommon cause of abortion in cattle. Mycoplasma species are associated with a number of disease processes in addition to abortion including 'cuffing' pneumonia, arthritis, abscesses, ocular infections and ear infections.

The referring veterinarian reported that both cows were sick and one eventually died; the cause was not identified. Chances of success in identifying



an etiologic diagnosis in a bovine abortion cases are greatly improved when fresh cases are identified and a full range of tissue is submitted. For those producers living close enough to Laramie, there are significant savings that can be made by direct delivery of the whole carcass (and placenta) to the WSVL as price caps apply on necropsy cases.

Jonathan Fox, Pathologist – WSVL  
Ken Mills, Bacteriologist – WSVL

## Rapid ‘Emergency’ EIA Elisa Testing

The WSVL strives to provide the most professional, responsive service to our customers. To meet customer expectations on sample processing we have found it necessary to establish policies on our traditional same-day testing services. Samples received prior to 2PM will be processed on the day received. Samples received after 2 PM may not be routinely examined the same day but will be processed the following business day. We will work very diligently to accommodate emergencies and depending on work load may be able to test samples received after 2 PM. The submitting clinic is requested to call the lab ahead of time for samples delivered after 2 PM or to make special arrangements for emergency sample testing. We will do our best to accommodate such requests on a case by case basis. Thank you for your understanding and helping us serve you better.

Jeff Adamovicz, Faculty Supervisor, Serology – WSVL  
Becky Wills, Regulatory Serology - WSVL  
Rebecca Ashley, Regulatory Serology – WSVL

*In reality, there is rarely such a thing as an “emergency Coggins test”; it is more a failure to plan ahead. Please encourage your clients to plan in advance for EIA testing.*

*D.L. Montgomery, Pathologist - WSVL*

## Canine Dysautonomia – Still a Mystery

The first clinically reported case of canine dysautonomia within the United States was in Wyoming in 1991. The disease was first detailed in the United Kingdom in 1986. The disease is not specific to just dogs, but is seen in cats, sheep, horses, and humans. However, it is widely thought that the cause is not common amongst all species. Dysautonomia is currently considered to be rare; however the WSVL has been receiving an increasing number of cases over the past few years. At this time all of the cases are concentrated east of the continental divide. Typically affected dogs are 24-months and younger and spend an ample amount of time outside (>50%) and have access to pasture lands, cattle, and farm ponds. Also demonstrated in the literature, the affected animals are known to consume wildlife, both as a staple protein in their diet, but also as hunted prey. Progression of the disease is extremely rapid; ranging anywhere from days to weeks from the onset of clinical signs.

The clinical signs seen by some of our clients include the following: vomiting, regurgitation, diarrhea, prolapsed third eyelid, distended bladder, dilated pupils, megaesophagus, and low or absent anal tone. Some pharmacologic diagnostic testing can include diluted pilocarpine (0.05-0.1%) instilled in a single eye. Constriction of the pupil in dogs with dysautonomia will normally take 15-45 minutes after administration. Dogs without autonomic dysfunction will have no reaction to the diluted drops. Also the Schirmer Tear Test can be performed, with a positive result of <15 mm/min on the filter paper. Other pharmacologic testing may include the administration of bethanechol (0.0375 mg/kg) SQ with urination after administration.

Canine Dysautonomia has a greater than 92% fatality rate with only a few known cases of

survival in the state of Wyoming. Cases that result in survival typically present with a decrease in severity of clinical signs compared to dogs with mild clinical signs. The etiology of the disease is currently unknown; however it is commonly thought to be an environmental toxin of some type. Upon histologic evaluation, lesions are seen in the autonomic nervous system (mesenteric ganglia) as well as the brainstem (Figure 2). The WSVL has started a serum bank for future study of this disease. If you feel you have a possible case of canine dysautonomia, we ask that you contact us and send serum samples for analysis. Also, if possible, a tissue block of the adrenal glands and surrounding tissue (i.e. mesenteric ganglia) would be preferred so that diagnosis can be confirmed and recorded.

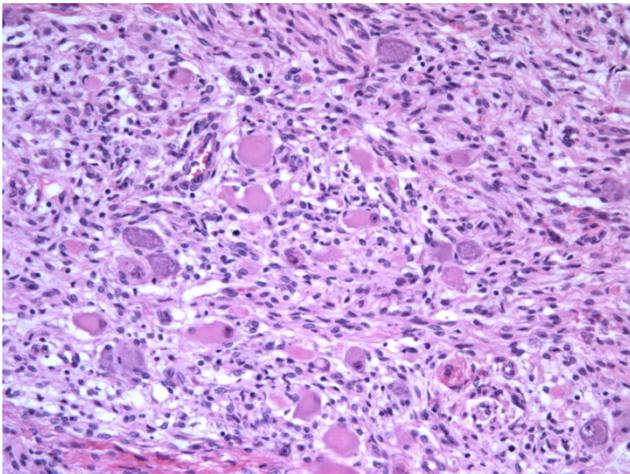


Figure 2. Celiac ganglion from a dog with dysautonomia. Degenerating neurons with bright pink (eosinophilic) cytoplasm (chromatolysis with loss of Nissl substance) and contracted dark-staining nuclei are prominent. *Photograph courtesy of DL Montgomery.*

For further information on this study, please do not hesitate to contact us.

Brant Schumaker, Epidemiologist – WSVL  
Donal O’Toole, Pathologist - WSVL  
Katie Drumhiller, Undergraduate Student - UWYO  
Noah Hull, Undergraduate Student – UWYO

*“This is an excellent, but often unrecognized, example of ways the faculty and staff of the Department of Veterinary Sciences and Wyoming State Veterinary Laboratory involve interested undergraduate students in disease*

*investigations pertinent to the citizens of Wyoming. Without your support these efforts in preparing students for careers in animal health and disease investigation would not be possible.”*

*D.L. Montgomery, Pathologist - WSVL*

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## FROM THE WYOMING DEPARTMENT OF HEALTH

### Rabies in a Barn Cat — Wyoming, 2011

September 20, 2011 the Wyoming State Veterinary Laboratory confirmed a case of rabies in a male neutered barn cat aged 16-17 years. This case was the first laboratory-confirmed case of rabies in a Wyoming cat since 2001. The owner had been feeding the cat a special food due to his age; the cat was also thought to be partially deaf. In the last few months, the owner noticed the cat to be slightly lethargic, even though he was eating and drinking as usual. On September 18 when the owner went to put the cat in the crate to eat his food, the cat yowled and bit the owner twice; this was reported unusual behavior for this cat. The cat continued to eat his food, but appeared weak with some hind limb ataxia. The owner sought medical care for the bite wound and was started on post exposure rabies prophylaxis due to the cat’s unknown rabies vaccination status and high prevalence of skunk rabies in the area. The owner had observed a continued progression of the cat’s hind limb ataxia, so the cat was taken to a local veterinary clinic to be euthanized on September 19.

The local veterinarian observed the cat to be obtunded and ataxic, worse on the hind limbs. Due to suspicions that the cat may have rabies, the veterinarian did not perform a full neurologic exam. The cat showed no aggression until put in an anesthesia induction machine; the cat became severely aggressive attacking the machine’s tubing and cage. The cat was humanely euthanized with injectable pentobarbital and the head was sent for rabies testing at the Wyoming State Veterinary



Laboratory. The direct immunofluorescent antibody (DFA) test on the cat's brain sample was positive for rabies virus; additional testing is being completed to determine which rabies variant infected the cat.

Rabies is an acute zoonotic viral encephalitis that can occur in all mammals and is caused by lyssaviruses in the Rhabdovirus family. Transmission occurs when the saliva from the infected animal is introduced into tissues, usually through a bite. The incubation period is variable and can range from a few days to years; usually the period is 3-8 weeks. There are no pathognomonic clinical signs of rabies. In mammals, the most consistent clinical signs include behavioral change and unexplained progressive paresis. Rabid mammals can present in a furious or dumb form. Furious rabies is when aggression is the primary clinical sign; these animals will bite, scratch, and attack suddenly. Dumb rabies is characterized by progressive paralysis.

Since 1975, wildlife have accounted for >80% of the reported rabid animals in the United States<sup>1</sup>. The main reservoirs in the United States are raccoons, skunks, bats, and foxes. In Wyoming, the primary rabies reservoirs are skunks and bats.

In cats, rabies can be mistaken for other causes of central nervous system (CNS) dysfunction. Other disease processes that can produce similar clinical signs are encephalitis (viral, immune-mediated, protozoal, rickettsial, bacterial, and fungal); pseudorabies; toxicity (lead); hypoglycemia; neoplasia; or trauma<sup>2</sup>. Cat bites to persons occur at a higher rate than dog bites in Wyoming. A phone survey completed in 2007 showed that cat bites occur 9 times more frequently than dog bites<sup>3</sup>. Even though there have only been 3 reported and laboratory-confirmed cases of rabies in

Wyoming cats since 2000, rabies needs to be on the differential diagnosis list for any cat presenting with neurologic signs.

Veterinarians, veterinary technicians, owners, animal control officers, and any other person handling stray or sick cats needs to take the necessary precautions when exposed to a cat with an unknown vaccination status. To prevent rabies exposures to persons, cats and dogs should receive rabies vaccination in accordance with the National Association of State Public Health Veterinarians (NASPHV), the Centers for Disease Control and Prevention, and the American Veterinary Medical Association recommendations<sup>4,5,6</sup>.

The precautions include:

1. Vaccination of all individuals at high risk for exposure to rabies
2. Vaccination of all owned cats, dogs, and horses
3. Safe animal handling practices when capturing a stray animal to minimize the chance of being bitten
4. To include rabies as a differential on all cases of unexplained progressive paralysis or unexplained aggression

Free consultation on rabies related issues can be obtained by calling the State Public Health Veterinarian Office at 307-777-5825 or by calling the Public Health 24/7 All Hazards Response Line at 1-888-996-9104.

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K. Pride, K. Musgrave, K Bisgard  
Wyoming Department of Health

### **The Human Teeth Sheep Castration Technique and *Campylobacter jejuni* Infections**

Wyoming Department of Health epidemiologists routinely interview individuals with an illness involving a reportable disease to determine possible exposures that could have caused the illness. In June of 2011, interviews of two individuals with laboratory-confirmed cases of enteritis caused by *Campylobacter jejuni* determined that they likely acquired their illness while participating in a multiday event involving the castration and tail docking of 1,600 lambs at a Wyoming sheep ranch. Both individuals reported using a castration technique where a knife was used to cut the scrotum and then the individuals used their teeth to pull and remove the testicles. Ten other individuals assisting in the work, who did not castrate using their teeth, did not develop illness. Other possible exposures, such as the consumption of unpasteurized milk or undercooked poultry were investigated and ruled out. The patients resided

in separate houses and did not share food or water. The *C. jejuni* isolated from the two patients was determined to be identical by pulsed-field gel electrophoresis (PFGE) confirming that the patients were likely infected from a common source. In addition, *C. jejuni* isolated from the feces of one of the lambs in the herd had a PFGE pattern indistinguishable from the two human isolates. The PFGE pattern was considered to be extremely rare, lending evidence that the lambs were the likely source of the infections. This appears to be the first report of human campylobacteriosis acquired during lamb castration where teeth are used in the castration process. Although not an uncommon practice, especially on large sheep ranches, this study indicates there is a risk of illness for those using this technique. The two patients recovered after bouts of diarrhea, abdominal cramps, fever, nausea, and vomiting. One of the patients was hospitalized for a day. Severe illnesses due to *C. jejuni*, including deaths, have been reported in the literature. To avoid illness, other techniques for lamb castration should be utilized.

#### **Reference**

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*Happy Holidays*