Wyoming State Veterinary Laboratory Newsletter Vol 2(#1): February, 2001
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WSVL News

Message from the Director:

Calving season is upon us. Although the WSVL has noticed an increase in case numbers related to the season, it is too early to detect disease trends. We will keep you informed.

In order to improve communications, this letter will become a quarterly. We will keep the letter short. In doing that, we will often point to our new WYOVET WEB site for details. Also, to better communicate with you, an Internet interface for our client reports has been developed. Clients may access their cases on the net via security password. This will minimize paperwork and allow clients to access information at any time. This program has been tested in 3 clinics around the state. This program is now available to clients. If you are interested in having Internet access to your cases, please call the laboratory for a user-name and password. Comments and suggestions about this service are requested.

As many of you have noticed, a lot of information, and misinformation has been propagated in the popular press regarding Chronic Wasting Disease recently. Thus, Dr. Beth Williams in this laboratory prepared a short note on what is happening with CWD for the WEB page. In addition, we diagnosed a case of Q-Fever in goats from the Northeastern corner of Wyoming. Dr. Todd Cornish has prepared a note that also can be found on our WEB page.

Skunk-origin rabies continues to spread. We have identified 8 skunks from the Farson area of Sweetwater County as having skunk-origin rabies. Apparently it is establishing itself in that area. Dr. Ken Mills and I, and Dr. Jim Logan, the Wyoming State Veterinarian, held informational programs with Dr. Marvin Applequist in Farson and with veterinarians and Sweetwater County officials in Rock Springs to discuss rabies awareness.

On the business front, the University of Wyoming invested $200,000 this winter to replace obsolete equipment in this laboratory. This support, along with a similar infusion of funds and grants last year, is allowing us to replace some critical pieces of equipment in a nick of time. Although this modernization effort is not finished, we are encouraged by support from you and the University as we work through this challenge. We will keep you posted on our progress.

Please come by to visit if you find yourself in Laramie. As always, your comments and suggestions are appreciated.

Frank Galey DVM, PhD, Diplomate ABVT, Director, Wyoming State Veterinary Laboratory
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Notes from Necropsy

We here at the WSVL know the importance of obtaining results quickly for you and your clients, especially during the busy calving season. In order to obtain those expeditious results we suggest that, if at all possible, your diagnostic samples be shipped via UPS. To further insure quality processing of your samples a few guidelines should be followed when filling out an accession form. Pertinent information to include is:

- Veterinarian name, address, & phone number
- Owner's name, address, & phone number
- Clinical history
- Kind & number of specimens submitted
- Test or tests that need to be performed

For more detailed information regarding paperwork and sampling visit our web site. Thank you:
Rod Rogers, Necropsy Manager

Endemic Potomac Horse Fever due to *Ehrlichia risticii* in riparian areas of SW Wyoming

For the last few years Dr. Mark Isom and other practitioners in western Wyoming have seen a seasonal diarrhea of adult horses on specific drainages of the Green River. Horses respond well to daily intravenous treatment with oxytetracycline. Dr. Isom's suspicion that the disease was Potomac Horse Fever (PHF) was confirmed earlier this year when he sent samples to the WSVL from an unvaccinated horse with typical signs. Samples were positive by PCR at the UC Davis laboratory of Drs. John Madigan and Nicola Pusterla. We are interested in knowing from Wyoming practitioners whether they see PHF and, if so, whether WSVL should offer a test in-house for the disease.

PHF is a seasonal (May - October) noncontagious disease in horses caused by a rickettsial organism, *Ehrlichia risticii*. Clinical signs are fever, lethargy and diarrhea. Some horses develop colic, laminitis and abortion. Typically the disease occurs in horses kept along riparian areas during summer months. There is evidence that the agent infects horses when they ingest infected digenic trematodes of snails. For most horses the disease is transient, although some occasionally die of PHF. The main histological lesion is acute superficial colitis. Laboratory confirmation of the clinical diagnosis in live horses is problematical because the agent is hard to isolate, requiring up to 1 month in culture. The indirect fluorescent test (IFA) test frequently produces false positive reactions and there is considerable inter-laboratory variation in results. Even when acute and convalescent serum samples are available from affected horses, only a minority of animals seroconvert. Some laboratories will make a positive diagnosis of PHF based on titer alone (e.g., a titer of 40 or greater is considered "positive"). Several laboratories in the United States also offer a PCR test to detect ehrlichial DNA. In our experience, some laboratories report positive results on tissues from horses that die of diseases other than PHF.

The test used by the Davis laboratory is based on a 16S rRNA gene of *E. risticii*. It has been validated for at least 8 isolates of *E. risticii*, an important point since there is antigenic variation among some strains of this agent. Researchers at the Davis laboratory are interested in establishing the natural life cycle of *E. risticii*. They would like to work with veterinary practitioners who have, or may have, endemic foci of infection in their area. You can contact Dr. Pusterla at the Department of Medicine and Epidemiology, Davis (phone: 530 752 2371).

Further Reading:

- Madigan JE, Rikihisa Y, Palmer JE, DeRock E, Mott J, 1995, Evidence for a high rate of false-positive results with the indirect fluorescent antibody test for Ehrlichia risticii antibody in horses. J Am Vet Med Assoc. **207**:1448-53
- Kanter M, Mott J, Ohashi N, Fried B, Reed S, Lin YC, Rikihisa Y: 2000, Analysis of 16S rRNA and 51-kilodalton antigen gene and transmission in mice of ehrlichia risticii in virgulate trematodes from *Elimia livescens* snails in Ohio. J Clin Microbiol **38**:3349-3358.
- Madigan JE, Pusterla N, Johnson E, Chae JS, Pusterla JB, Derock E, Lawler SP: 2000, Transmission of *Ehrlichia risticii*, the agent of Potomac horse fever, using naturally infected aquatic insects and helminth vectors: preliminary report. Equine Vet J **32**:275-279

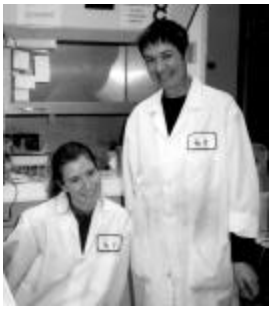
Donal O'Toole, MVB, MRCVS, PhD, FRCPath, DipI. ECVP. Dr O'Toole is a diagnostic pathologist with the WSVL. He is interested in malignant catarrhal fever in animals. He has also developed a niche in tumor biopsy diagnosis. Dr. O'Toole became an American citizen on 8 Jan 2001. Email: dot@uwyo.edu

WSVL Histology Staff are Busy

Some of the busiest of the WSVL staff are the histologists. Paula Jaeger (right in photo) is a certified histotechnologist who manages the daily histology laboratory activities. She is the one who ensures the pathologists can do their job at the microscope. Paula came to us from the local human hospital in Laramie. During her tenure she has been responsible for many improvements in the service. Paula brought on line a succession of immunohistochemical techniques, most importantly a method to detect PrP^{res}, abnormal infectious forms of proteins responsible for diseases such as chronic wasting disease in mule deer and elk, and scrapie in sheep. The WSVL is now one of only 4 USDA-certified laboratories charged with confirming diagnoses of scrapie.

In addition to her regular duties, Paula trained two people to pass the national histotechnologist certification exam in the past year. One, Kim Benson, was recently hired by the local human hospital. Paula also mentored Amy Carr, a graduate student at UW (at left in photo).. Amy is an extraordinarily hard worker who routinely embeds WSVL accessions at 6:00 AM before going to do her research. She passed this difficult exam at her first attempt.

Currently Paula is training our new hire into the histology laboratory, Ms. Linda Mickley, who has a background in experimental histology and in years past worked at Johns Hopkins.



Wyoming State Veterinary Laboratory Announces New Web Site

Wyoming residents can now access up-to-date information on animal health, animal disease and food quality on the Internet at the new WSVL Web site, "Wyovet," the Wyoming Animal Health and Disease Information Network. The site has information about submission of samples to the laboratory for examination, along with disease information and alerts. A case access feature on Wyovet will allow veterinarians to access their diagnostic cases 24 hours a day via a secure link.

Another feature of Wyovet Web site is a study guide for the Wyoming Beef Quality Assurance (BQA) Program. This guide enables beef producers, veterinarians and extension educators in the process of becoming certified in proper beef inspection procedures. The BQA Program is designed to prevent residues and eliminate defects in beef, thereby increasing consumer confidence in the product. Relevant links to other animal health agencies and organizations are included on Wyovet to provide added resources about animal health questions.

The Wyovet Web site is a cooperative effort of WSVL, UW CES, the Wyoming Livestock Board, the Wyoming Veterinary Medical Association and the Wyoming Beef Council. Funding was provided by WSVL, CES and the Beef Council. The Web site is located at **http://wyovet.uwyo.edu**. Please contact Dr. LynnWoodard (UW Extension Veterinarian) at (307) 742-6638 with questions or comments.

Dermatologic Pathology

We have received skin (ear notch) samples from 5 cattle herds for immunohistochemistry (IHC) testing for BVDV. So far approximately 450 calves and heifers have been tested, with two positives detected. At this point we are recommending that clients submit blood from IHC positive calves for virus isolation and blood from IHC positive heifers or adult animals for BVDV ELISA to confirm the IHC findings, so we can get a better idea about the sensitivity and specificity of the IHC test. The available literature reports that IHC and the other techniques are equally reliable, but we'd like to confirm this in our laboratory. Please call ahead of time if submitting skin (ear notch) samples for BVDV IHC. These samples should be fixed in formalin immediately after collection, protected from freezing temperatures for 24 hours, and shipped to arrive at the lab within 48-72 hours of collection for optimal results.

Recent Cases and Trends

Cattle:

On the **BVD** IHC front, we have received skin samples from 3 herds, about 400 in total, with 2 positives. It is recommended that clients submit blood from positives or "suspects" from the IHC for the BVDV ELISA, so we can get a better idea about how sensitive/specific the IHC is. This step is essential for being sure of the reliability of the new quick skin test. The literature (one report!) says they're equally sensitive and specific for PI animals or acutely infected animals. Please call if submitting skin samples for IHC. Those samples should be fixed in formalin and shipped to arrive at the laboratory within 72 hours of biopsy.

The WSVL diagnosed late term **sarcocystosis** abortion in two 24 month heifers. No hair loss in the dams, but the owner has had one cow die of CNS signs last week, and has another cow with posterior weakness at the moment. The animals came from a herd of 350 animals in Southern Wyoming.

Eleven bulls have been diagnosed with **trichomoniasis** since the first of January, 2001. All of the bulls were from the central part of Wyoming.

Small ruminants:

The WSVL received samples from several goats that aborted from Northeastern Wyoming. Placenta samples had lesions suggestive of Chlamydia or *Coxiella burnetti* infection. Chlamydia isolation was negative. Followup immunohistochemistry testing supported infection with *Coxiella burnetti* or "**Q-Fever**". Q-Fever has not been previously reported in animals from Wyoming. Approximately 50% of the goats in the herd of approximately 275 pregnant animals suffered abortion or stillbirth. Q-Fever may cause infection in humans as well and is a reportable disease. A follow-up investigation was carried out in conjunction with public health officials. Please call the WSVL or see the website if you are interested in information about Q-Fever.

Small/Companion Animals:

Two puppies that died at 3 weeks of age from **canine herpesvirus** infection were examined. In addition to herpes, the puppies had large numbers of ***Toxacara canis*** ova in their feces. This parasite can encyst in dogs, and then become activated during pregnancy. The resultant migrating parasites can move into the puppy in-utero (visceral larval migrans), and ultimately, can cause serious disease including death.

What's the Flap about Chronic Wasting Disease?

It seems like the media has just found chronic wasting disease (CWD), a transmissible spongiform encephalopathy that occurs in mule deer, white-tailed deer, and elk. So you may have seen articles about CWD juxtaposed with stories about bovine spongiform encephalopathy (a.k.a. "mad cow disease") and young hunters with Creutzfeldt-Jakob Disease in newspapers (the Casper-Star Tribune, Wall Street Journal, Denver Post, New York Times, etc), magazines (Field and Stream), and on TV (CBS, Fox). Unfortunately, with some exceptions, the information is often inaccurate and sometimes misleading. Here, briefly, are facts about CWD.

CWD is not new - it was first recognized in captive mule deer in Colorado in the late 1960s, it was diagnosed as a spongiform encephalopathy in 1997, and the first paper describing the disease was published in 1980. CWD occurs in the southeastern corner of Wyoming, northeastern corner of Colorado, and one case of CWD has been found in a mule deer in extreme western Nebraska in the corner with Wyoming and Colorado. The overall prevalence in deer in the endemic area is approximately 4-6 % and it seems to be remaining relatively stable over the last few years. The prevalence is higher in a few hunt areas where up to about 15 % of deer show evidence of infection. CWD prevalence in elk is less than 1%. Our diagnostic tests are highly sensitive and the infections are picked up quite early in the disease, well before any clinical signs are apparent. A number of research projects are currently underway, but to date there is no evidence that CWD is naturally transmitted to cattle However, 3 of 13 cattle were susceptible to CWD when the agent was inoculated directly into the brain - an obviously abnormal route of transmission. The Centers for Disease Control and Prevention in Atlanta investigated three cases of Creutzfeldt-Jakob Disease in young patients that had hunted and/or consumed venison. The results of that investigation were that these patients had the sporadic form of the disease and that there was no link to CWD. The public health authorities continue to monitor CWD and some simple precautions are suggested for hunters in the CWD endemic area (don't harvest sick animals, wear rubber or latex gloves when dressing the carcass, avoid handling or eating the brain, spinal cord, and lymph nodes, and bone the meat). The studies of CWD are an example of excellent cooperation between various governmental agencies including the universities, diagnostic laboratories, wildlife management agencies, and public and animal health agencies. See our website for more about CWD.

Dr. Beth Williams DVM, PhD, Diplomate ACVP is diagnostic pathologist with WSVL. She is internationally recognized for her work with CWD. Email: storm@uwyo.edu.

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To: