*Wyoming State Veterinary Laboratory Newsletter Vol 2(#3):July, 2001*
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# *WSVL News*

## Message from the Director:

I enjoyed visiting with many of you with the Wyoming Stock Growers Association in Sheridan and the Wyoming Veterinary Medical Association in Jackson Hole. The drought was on everyone's mind. Much of the state is short of water. Pasture and hay supplies are limited. During the WSGA meeting, we had a workshop about drought. Secretary of Agriculture, Ron Micheli discussed governmental processes in a drought situation. Dr. Doug Hixon of our Animal Science Department discussed how to manage animals to minimize the impacts of drought in terms of finding alternative feeds and weaning strategies. Dr. Tom Thurow, from our Renewable Resources Department discussed the need to develop pro-active plans to meet a possible extended drought, should that occur. I discussed health impacts of drought (summarized on our WEB Page).

The laboratory is developing new, DNA-based polymerase chain reaction (PCR) tests. This modern, highly sensitive and accurate technique will test for fragments of genetic material from difficult-to-identify pathogens. Testing is now available for the different types of *Clostridium* toxins ("purple gut") and confirmation of *Tritrichomonas foetus* ("Trich") for $20 each. Contact Drs. Ken Mills or Bill Jolley in this laboratory for more information. We are now working on DNA tests for the different types of lepto and for the toxins of *E. coli*. The *E. coli* test may cost quite a bit more when it is available as it involves multiple strips of DNA. Robin Schamber and Amy Boerger-Fields in our genetics laboratory have been spearheading this effort along with Drs. Mills, Jolley, and Cornish. PCR tests for viral pathogens being developed include EHV-1, BRSV, and BVD assays.

The summer is bringing a couple of changes to the laboratory. Ella Nelson, our very popular and capable leader in the State-Federal Cooperative laboratory has decided to retire after about 43 years of service (see below). Ella's enthusiasm, willingness to help you, and capability will be missed. We will be having a barbecue in Ella's honor on Tuesday evening, the 31 of July here at the laboratory at 5 PM. If you wish, please come by. Call if you can attend so we can be sure we have plenty of food. The fate of the State-Federal Laboratory, which does all of our brucellosis and EIA testing, is in the hands of the USDA. We are very hopeful that Dr. Coombs, our AVIC, and his superiors will help us continue this service in Wyoming.

I have been asked to assume the role of Dean of the College of Agriculture at the end of the summer. We will be allowed to immediately search for a new director. You will be represented during the search. This was a bit of an unexpected twist, but in the long run, having two people interested in animal health in the University administration should be good for the laboratory. We have undertaken a number of initiatives designed to modernize the laboratory, do a better job of marketing our services, and improve our staff salaries. I will continue to pursue those issues. Until the new director is found, Dr. Ken Mills has agreed to fill the position of Director of the WSVL on an interim basis. Ken, whom many of you know, has been acting ably in the capacity of Associate Director of the lab and his client-orientation, experience, and enthusiasm will serve us all well.

If you have ideas that can help us improve service, please let us know. Also, feel free to contact any of our Advisory Council Members if you have additional suggestions (see our WEB site for council members. Have a good summer. Thank you again for your much-appreciated support.
*Dr. Frank Galey, Director, Wyoming State Veterinary Laboratory* FGaley@uwyo.edu

## Bat rabies virus in skunks

People who have heard me give presentations on rabies may remember me making a statement like "Bat rabies virus has never been shown to establish itself in a terrestrial animal population". That statement is no longer true. During the last year there have been a number of rabid skunks identified around Flagstaff, Arizona and the virus has been identified by CDC as bat origin virus. In Wyoming most cases of skunk rabies are due to North Central skunk rabies virus that we have

seen active since 1983. The exceptions have been two skunks in the late 80s from the Star Valley and one in Teton county in 2000. All of these skunks were infected with a bat rabies virus but the virus did not establish itself in the skunk population and we put out press releases indicating that these were isolated cases and not to expect more cases. From now on we will need to temper our statements and not make any hard and fast predictions. In light of these cases in Arizona we will probably do more virus typing on rabid skunk brains. Also, people that are currently in areas that don't have skunk rabies should be aware that it is possible for the bat virus to infect skunks and then become established. Keep in mind that rabid bats can be found in all parts of Wyoming.
*Dr. Ken Mills, PhD is the Bacteriologist and rabies expert for the WSVL.* **kmills@uwyo.edu**

## Ear notch samples for BVDV immunohistochemistry

- Cost: $15/slide for up to 5 skin samples/slide. Submitting in bulk thus reduces cost to $3/animal (i.e., 5 skin samples = $15; 10 skin samples = $30, 100 skin samples = $300, etc.). So, if only ONE sample of skin is submitted it is still $15, since the same technical work is involved as for processing FIVE samples.
- Submit ear notch samples in 10% neutral buffered formalin. Red top tubes containing formalin are often used. Skin samples should be small enough to allow easy retrieval from the tube.
- Number samples from animals on each tube sequentially (1 – 50, etc.). Keep a sheet with the sequential numbers and each animal's corresponding ear tag. This reduces the risk of transcriptional errors of the wrong ear tag number.
- Turnaround time for testing is 7 working days from the time we receive it. Samples are cut in, processed into paraffin wax, cut and processed by immunohistochemistry using a specific antibody for BVDV strains, and read by a veterinary pathologist.
- If you have a large batch to submit (>300 samples) please let us know in advance.
- The report will identify animals as either BVDV-antigen POSITIVE or BVDV-antigen NEGATIVE. An animal that is antigen positive was infected at the time of testing. If you want confirmation that the animal is persistently infected, this is best done by a second skin sample or by virus isolation, PCR testing or detection using a BVD ELISA on blood.
- DO NOT OVERFIX SAMPLES. Samples should not be held in formalin for more than 7 days, or test sensitivity may suffer. If you have a large batch to submit and can't get it collected and mailed within a week, please submit in batches of 50, 100, or more samples.
- ENSURE THE MARGIN OF THE EAR IS INCLUDED with the sample. Samples of skin have to be digested to unmask antigen. Having the margin between convex and concave portion of the pinna helps ensure samples will not break apart during this enzymatic step.
- THIS TECHNIQUE IS CURRENTLY POPULAR AS A METHOD FOR IDENTIYING PI CALVES IN A HERD. It is well to remember that to data only one peer-reviewed study has been done on the technique. The sensitivity and specificity of the test as report by Dr. Njaa *et al* merits confirmation by other groups and laboratories. We are in the process of comparing the ear notch method with virus isolation. If you have a herd where BVD is diagnosed by any method, and you and your client are interested in participating in the comparison study, please contact Dr. Todd Cornish or Dr. Donal O'Toole at the WSVL.

Njaa BL, et al.: 2000, Diagnosis of persistent bovine viral diarrhea virus infection by immunohistochemical staining of formalin-fixed skin biopsy specimens. J Vet Diagn Invest 12:393-9.
*Dr. Donal O'Toole, Veterinary pathologist, WSVL*

## Paralysis outbreak in horses from northern Wyoming (News Release from 7/18/01)

An outbreak of staggering and paresis is occurring in horses from Johnson County. Over 40 of approximately 180 horses have been affected. Seven horses have been euthanized. Initial cases appeared in early July. Clinical signs reported by the attending veterinarian included staggering, rear leg weakness, and dribbling urine. Severely affected horses became recumbent.

The initial investigation centered on botulism from affected feed, the environment, or infection with equine herpesvirus type 1 (EHV-1). Early testing of serum could not rule out botulism, and the difficult-to-grow herpesvirus was not isolated. Botulism was subsequently ruled out by further testing. Additional, polymerase chain reaction tests at Colorado State University demonstrated that at least one horse had EHV-1 in its blood.

EHV-1 infection causes outbreaks of respiratory disease, abortion, and/or neurological disease. Clinical signs of the neurological form of EHV-1 disease include gait abnormalities, hind limb weakness to paralysis, recumbent or downer horses, loss of bladder control, and, in some cases, complete paralysis and death. Like most herpesviruses, EHV-1 causes latent infections with shedding of virus precipitated by stress or a change in environment. The virus is very contagious between horses and can be transmitted by fresh secretions or aerosol from horse to horse. The virus is not long-lived in the environment (outside the horse).

Vaccination for EHV-1 with approved, killed vaccine products, when applied according to label instructions may help prevent abortions. However, EHV-1 vaccines are not effective against neurological diseases. Vaccinated horses may have an increased risk of neurological disease when compared with unvaccinated animals.

Large outbreaks of EHV-1-associated neurological disease, such as the one currently reported, have occurred in the past, with losses of up to 40 % of affected animals. The disease may affect multiple individuals on a property over several weeks occurring in several waves. Over half of exposed horses may develop neurological disease. Most affected horses recover.

The reasons some horses, or groups of horses, develop the neurological form of EHV-1 infection are unknown. Proposed reasons include a neurotropic subtype of virus, a population of horses that is uniquely predisposed to such infections, or perhaps a vaccine reaction. Typical lesions in the brain and spinal cord of affected horses involve damage to blood vessels, which suggests that there may be an autoimmune process that is responsible for damage.

Given the highly contagious nature of this disease, it is recommended that affected herds be quarantined for at least three weeks after the last affected animal has recovered. Contaminated instruments, clothing, boots, and tack used with exposed horses should be cleaned and disinfected between different groups of horses to avoid transmitting the virus. Feed and water that have been in contact with affected horses should not be shared with unexposed animals.

Investigation of the current outbreak of neurological disease and paralysis in horses from northern Wyoming is ongoing. The primary suspect as the cause of the outbreak is infection with equine herpesvirus type 1. Controlling the outbreak will require efforts to minimize the inter-mingling of horses and elimination of practices that might carry virus between premises. For more information about EHV-1 infection, or any other potentially serious neurological diseases of horses (e.g. botulism, rabies, or the encephalitis virus diseases), contact your local veterinarian.
*Dr. Todd Cornish, WSVL Pathology and Dr. Frank Galey, WSVL Director*

## Recent Cases and Trends

*Bordetella bronchiseptica* was isolated from a domestic ferret. This organism can cause infections in ferrets, especially in animals that are exposed to dogs. It usually starts as an upper respiratory infection but can progress to pneumonia and be difficult to treat.

A white foal had Lethal White Overo syndrome (ileocolic aganglionosis). This disease results from a paint x paint cross (probably Overo paint x Overo paint, although the owners were aware of what an Overo was). The foal colicked soon after birth and died within ~2 days. The University of California, Davis can do genetic testing on stallions and mares (need hair samples with roots attached) to detect carriers of the defective gene for folks with any interest.

We diagnosed 3 cases of equine aural plaques/aural papillomas. This syndrome is caused by papillomavirus infection. The interesting thing about these is they do NOT tend to regress over time like other papillomas in horses. In addition, they are often bilateral (both ears).

We are diagnosing the first cases of pasteurellosis (*Mannheimia haemolytica* pneumonia) in calves for the season. Histology testing can only suggest the cause. So in cases of pneumonia, clients are encouraged to submit fresh lung tissue in order to rule out other agents (including *Haemophilus somnus*, etc.). The fresh lung can also be tested to detect underlying viral problems (esp. BRSV).

Two cases of cryptosporidiosis have been identified in dairy calves from different places. In both cases the diagnosis had to be made based upon histology testing as feces were not submitted for parasitology. In cases of scours/diarrhea be sure to submit fresh feces or loop of colon with feces in addition to the fixed, histology samples to allow for a satisfactory work-up.

## Ella Nelson to Retire

Ella Nelson, the popular leader of our State-Federal Cooperative Laboratory (brucellosis, Coggin's tests etc), has decided to retire. Ella joined the state laboratory in "about 1958". She did it all, telling me, "I was the Chief cook and bottle washer!" Her tasks included histology, secretarial/receptionist duties, and dishwashing for the whole operation. At that time the director was Dr. John Ryff. She also joined Drs. John Weibel and Harold Breen. George Thomas ran the Federal (Bangs) Laboratory section then. At the time, the laboratory was located in an old, converted barn, which was behind the current Territorial Prison Museum across the road from the current laboratory. Ella helped design, and then moved into, the "round building" at our current site in 1963 (total cost was $150,000). Ella joined George Thomas in the brucellosis laboratory the following year (1964). She made another move, into our current building, in 1985.

After working for 20 years with George, Ella took charge of the brucellosis lab in 1984, a position she has held until she retires at the end of this month (July, 2001). Ella has lots of stories to tell. She has seen "Oh, I don't know, 10 or 11" Federal, Area Veterinarians in Charge and countless State Veterinarians. If you aren't able to come by and help us honor Ella in July, feel free to call or drop by to congratulate her any time. We will miss Ella's enthusiasm and have all learned a great deal about caring for clients from her. Best of Luck, Ella!

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**To:**