

Wyoming State Veterinary Laboratory – Department of Veterinary Sciences September 2002

MESSAGE FROM DIRECTOR

On September 6, 2002, the first scientific meeting of the **Wyoming Wildlife/Livestock Disease Research Partnership** was held at the Radisson Inn in Casper. The Partnership was established to utilize existing personnel and facilities of the state, identify funding sources, enhance wildlife and livestock disease research, and to understand, manage, control and preempt shared diseases impacting wildlife, livestock or people. The bill that created the **WW/LDRP** was introduced by Representative Doug Samuelson, who attended the meeting. It provides \$200,000 of state money to kick start the program. The **WW/LDRP** board is charged with accepting funding from all sources, including federal, state and local governments and private donations to carry out the purposes of the partnership.

The money is available to individuals and institutions willing to conduct research pertinent to wildlife and livestock. Proposals must be submitted to the **WW/DDR** board for evaluation.

The Casper meeting was designed to showcase the partnership. Approximately 100 people attended, including state officials, veterinarians, wildlife biologists, ranchers, wild game processors, and elected representatives. Presentations were made on **rabies** (Dr. Ken Mills), **sylvatic plague** (Dr. Beth Williams), **Pasteurella pneumonia** in bighorn sheep (Dr. Beth Williams), **brucellosis** in elk and bison (Dr. Walt Cook), West Nile Virus (Mr. Terry Creekmore), **hemorrhagic diseases** of wild ungulates, sheep and cattle (Dr. Todd Cornish), **transmissible spongiform encephalopathies**, including CWD (Dr. Beth Williams), and **CWD** in Wyoming (Dr. Terry Kreeger). This represents an encouraging development and a recognition that the solution to problems like brucellosis in wildlife can only be found by applied research and that the solutions will come about by having veterinarians, stockmen and wildlife managers all on the same page.

As the map in this newsletter shows, **West Nile virus** arrived in Wyoming in August. Positive results consist of 35 horses and seven birds. Most cases are in the eastern third of the state, with Goshen County the hot spot (39 of 64 confirmed horses; 61%). As of September 16 2002, there were 1,295 human cases of **West Nile virus** infection in the United States, with 54 deaths. There are 4,634 confirmed cases in horses. People who find dead birds (especially jays, crows, and magpies) should contact Terry Creekmore at the laboratory (307 742 6681, ext. 105). He will determine if the sample is usable and in some cases contact someone locally to make the pickup. Consultation on WNV information and testing for horse owners and veterinarians is available from Dr. Cornish at (307) 742-6638. There are weekly updates on

the distribution of WNV in Wyoming at the Wyoming Department of Health's web site <http://wdh.state.wy.us/WNV/WNV.htm>. Click on link to *National West Nile Maps*, then click on Wyoming in the map of the US to see the distribution of cases by county. We do not yet have a confirmed human infection in the state. There have been 15 human positives in nine counties in Nebraska, and 13 human positives in nine counties in South Dakota.

On 3 September and after a national search, I took over as director of the WSVL and head of the Department of Veterinary Sciences. This creates a vacancy in one of our three pathology positions. To plug the gap until the search for a new pathologist is complete (probably by July 2003) **Dr. Charlotte Quist** will read some of our surgical pathology cases. There is a brief bio of Dr. Quist in the newsletter.

As new director, my door is open. If there are issues you need to discuss, tests you want made available, beefs, compliments or suggestions about how we can improve our service, please let me know. I will be happy to see you in person here or at your clinic, visit with you on the phone, or communicate with you via email (DOT@uwyo.edu). As I go around the state, I will try to visit you in your clinics to discuss whether you are getting the service you need from the laboratory.

*Donal O'Toole MVB PhD MRCVS DipECVP FRCPath
September 15, 2002*

WNV IN MAMMALS OTHER THAN HORSES AND PEOPLE

There are reports from several US veterinary laboratories of WNV infection in mammals other than horses. These include a positive fox squirrel (Michigan), gray squirrels, a juvenile captive wolf and a dog (Illinois), mountain goats and a Suffolk ewe (Nebraska), and an adult alpaca (Iowa). Affected animals presented with CNS signs, and histological lesions of encephalitis. Confirmation has been on CNS tissues by immunohistochemistry and PCR. Losses in gray squirrels are substantial in Chicago and downstate Illinois. The dog was reported to be immunocompromised.

If you see central nervous signs in domestic animals and wildlife, other than in horses, corvids and raptors, please keep WNV in mind as a differential diagnosis. The disease is cropping up in unusual species but a consistent theme is CNS disease. If you contact Dr. Cornish in advance, WSVL can test for these provided you indicate a suspicion on the accession form that WNV is one of your rule-outs. The amount of antigen detected by IHC in species other than birds can be vanishingly small, hence the value of doing both tests (IHC and PCR) on samples.

DO'T September 17, 2002

AXILLARY-PECTORAL MYOSITIS IN HORSES ASSOCIATED WITH *C. PSEUDOTUBERCULOSIS* (“PIGEON FEVER” “DRYLAND DISTEMPER” “COLORADO STRANGLES”)

Corynebacterium pseudotuberculosis was isolated from horses in Laramie, Goshen and Uinta counties that had firm swelling of the brisket, axilla or ventrum. We have since heard of another four horses with a similar presentation, bringing to six the number of confirmed or suspected cases of pigeon fever. The seven horses are from six premises, most in the Cheyenne locality (photo). Horses will respond to antibiotic treatment and drainage, but some cases recur over successive years.

Pigeon fever (“dryland distemper,” Colorado strangles”) is a relatively rare disease seen in arid parts of the country. Typically, cases occur in autumn and early winter, with the highest incidence in September - November. Horses present lame and may be febrile, although none of the Wyoming cases seen so far had a fever. Abscesses are usually in deep muscles of the brisket but they may occur elsewhere, including in internal organs. According to one study, most horses (91.4%) have a single episode of infection, without recurrence in subsequent years. Overall case fatality is low (3.9%), and is considerably lower for horses with external abscesses (0.8%) than in horses with internal abscesses (40.5%).

Outbreaks of this disease are worse in some years than in others, and this may be a “pigeon fever year.” The reason for periodic upswings in the disease is unknown. The organism is a resident in soil and the role of carrier horses vs. insects is unclear. Some owners claim the disease is due to carrier horses coming onto premises.

If you suspect a case, diagnosis can be made by the typical clinical appearance and by culture of the organism. This bacterium occurs in goats and sheep, but the strains of *C. pseudotuberculosis* causing myositis in horses appear to be phenotypically and genotypically distinct.

Further reading:

Hall K, McCluskey BJ, Cunningham W: 2001, *Corynebacterium pseudotuberculosis* infections (Pigeon Fever) in horses in Western Colorado: an epidemiological investigation. *J Equine Vet Sci* 21: 6, 284 - 286.
Doherr MG, Carpenter TE, Wilson WD; Gardner IA: 1999, Evaluation of temporal and spatial clustering of horses with *Corynebacterium pseudotuberculosis* infection. *Am J Vet Res* 60: 3, 284 - 291.
Doherr MG, Carpenter TE, Hanson KMP, Wilson WD, Gardner IA: 1998, Risk factors associated with *Corynebacterium pseudotuberculosis* infection in California horses. *Prevent Vet Med* 35: 4, 229 - 239.
Aleman M, Spier SJ, Wilson WD, Doherr M: 1996, *Corynebacterium pseudotuberculosis* infection in horses: 538 cases (1982-1993). *J Am Vet Med Assoc* 209: 4, 804-809.

DO'T
September 17, 2002

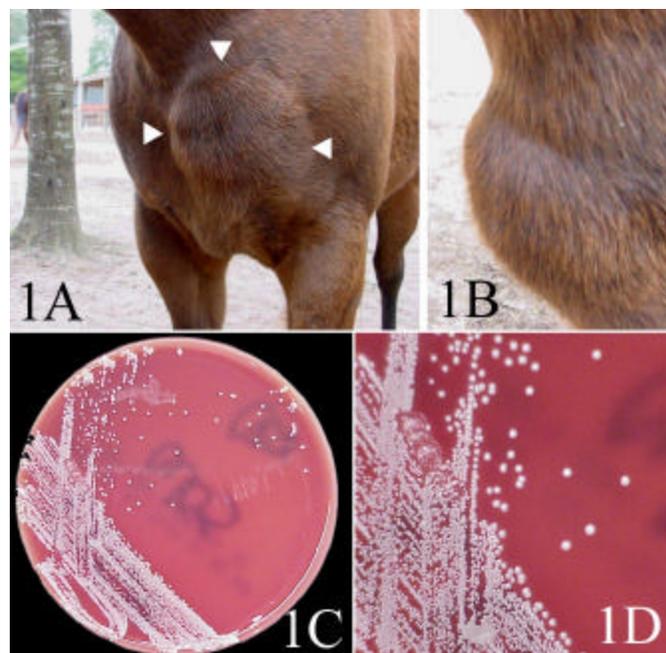


Figure 1A - D: Anterior (1A) and lateral view (!B) of intact, relatively early swelling due to *C. pseudotuberculosis* in a horse. These lesions will frequently rupture and discharge purulent exudate. Images reproduced with permission from Terry Rich. The organism (1C and D) forms small waxy hemolytic colonies on culture and is sensitive to most antibiotics.

POTOMAC HORSE FEVER CASES CONFIRMED IN NORTHERN WYOMING

THE FOLLOWING PRESS RELEASE WAS ISSUED ON SEPTEMBER 13 TO NEWSPAPERS ABOUT PHF IN NORTHERN WYOMING:

Cases of potentially fatal **Potomac horse fever** (PHF) have been diagnosed for the first time in northern Wyoming, and University of Wyoming (UW) veterinary sciences experts and veterinarians in the state are urging horse owners to take the outbreak seriously and to vaccinate their animals.

Two cases of the bacterium-caused disease have been confirmed in Cowley, and other horses in the Powell area showing symptoms like severe diarrhea, dehydration, anorexia, colic, depression and fever have died. Although PHF has affected some six to eight horses a year for the past several years in the Fort Bridger and Kemmerer areas in southwestern Wyoming, UW Veterinary Sciences professor Ken Mills says this is the first time it has been diagnosed in any other area of the state.

Dr. Donal O’Toole, director of the Wyoming Veterinary Diagnostic Laboratory, issued a statewide newsletter to veterinarians to inform them about PHF and to inquire about possible outbreaks throughout Wyoming. It is

not considered contagious like some bacteria-caused diseases such as salmonella. However, it could possibly spread from horse to horse if an animal were to inadvertently consume the feces of an affected horse.

Although results are mixed about the effectiveness of intravenous oxytetracycline, the antibiotic of choice for treating the disease, Mills and veterinarians Mark Isom of the Fort Bridger area and Lyle Bischoff of Powell all recommend that symptomatic horses be treated with it (and with supportive fluids, if necessary) and that healthy horses be vaccinated just in case. Even if they survive, horses with PHF can develop laminitis (swelling of the hooves), rendering them essentially helpless. "Some people up here have been vaccinating their horses for years even though we hadn't run across Potomac horse fever before," said Bischoff. "After this a lot more people will probably think about doing it."

Primarily occurring in late summer or early fall in mainly adult horses, PHF is thought to be transmitted by some type of aquatic insect or snail. The first known outbreaks of the disease were diagnosed more than 20 years ago at racetracks along the Potomac River. Since then it has caused horse deaths in 32 states, primarily in the eastern part of the US, and in Canada. No cases have been reported at this time in nearby states like Montana and Colorado. Outbreaks have been documented in the past in Idaho.

Mills reports that the UW vet lab is not currently conducting PHF testing but that it will have the capability to do so in the near future. "We'll add this to our lab function in response to the increased case numbers," he said. "It's the kind of situation where if we look for it, we may find more cases."

Because PHF is normally associated with areas near water, Bischoff, owner of Powell Veterinary Services, says he didn't immediately think of the fever when he began treating horses in the Cowley and Lovell areas for severe diarrhea. Testing of blood/fecal samples from two of the afflicted animals, however, confirmed PHF. He now suspects that horses he has seen suffering from similar symptoms in previous years were probably also victims. "A lot of them could be getting it and just fighting it off," he said.

The cases of PHF that Isom of the Uinta Veterinary Clinic has treated in the past five to six years tended to be near the waters of Blacks Fork, Hams Fork and along the Green River area near Kemmerer. Generally an average of one horse a year in those areas has died. Perhaps due to the severe drought, Isom says, there have been no PHF cases reported this year near his practice.

The horse deaths in Cowley and Lovell involved pregnant mares that were also nursing foals. "Maybe they were giving everything they had to the babies," Bischoff said, and lacked the strength to fight PHF. "A three-month-old foal died, too, but we saved a five-month foal." A pony south of Powell died from diarrhea, but two horses in Greybull responded to medication. "It could be in the whole Basin up here," he said of the spread of the disease. "If you are seeing the signs, start treating," he advised horse owners. "If a horse responds in just a couple of days, then you know that's what it probably had. If they are going to respond, they generally do

so real fast."

The first cases confirmed for Isom were "a couple of big, strong, healthy geldings," he recalled. "They weren't stressed and were in very good condition. I have not been able to see a pattern. I would have thought that young horses would be more susceptible, but that doesn't always seem to be the case." The horses he has treated have come from different ranches miles and towns apart. "I encourage people to vaccinate. It's about the only thing you can do," Isom said. "Consult your vet early if a horse develops it. The quicker you start to treat them, the better the results you get."

Meanwhile, Mills said he and his colleagues at the vet lab will be working to gather more information about the incidence of PHF in Wyoming. "We probably don't have a really good picture of what we're dealing with. It's not like we have been looking for it in an organized manner." Once the cases of the disease are charted, he said, it will be easier to assess how well any affected horses are responding to antibiotics.

Luckily, Mills said, Potomac horse fever is worse in warmer and wetter areas of the country where bugs are a problem year-round. "It should really fade away by October in Wyoming."

ZOONOTIC SALMONELLOSIS IN WYOMING

The Wyoming Department of Health Public Health Laboratory (PHL) and the Wyoming State Veterinary Laboratory (WSVL) have been cooperating on tracking human and veterinary **Salmonella** isolates throughout the state using a state-of-the-art technique, Pulse Field Gel Electrophoresis (PFGE). PFGE can determine if isolates of the same serotype are genetically related and possibly from the same source. During the past three years, numerous isolates have been serotyped and characterized using this technique. In 2002, 50 human Salmonella isolates and three from horses, one from a bird and one recovered from a lizard were DNA fingerprinted using PFGE. In 2001, 67 human Salmonella isolates, one avian and one bovine isolate were characterized. In 2000, 62 human Salmonella isolates were tested. A database of these isolates has been created and is available for use in investigations of Salmonella infections.

In 2001, an investigation of a Salmonella outbreak in a Wyoming County involving a gecko, a pet store, and two families demonstrated the unique capabilities of PFGE. Isolates from the gecko and the family members were shown to be indistinguishable using PFGE; whereas the pet store isolates were unrelated. The gecko and both families had *Salmonella braenderup*. In September PFGE proved the relatedness of an isolate from a human specimen and a WSVL equine isolate from the same Wyoming County.

These connections provide valuable information in the tracking of disease between humans and animals.

*Dr. Ken Mills
September 17, 2002*

DR. CHARLOTTE QUIST WILL SOON BE READING SOME OF YOUR SURGICAL PATHOLOGY SUBMISSIONS

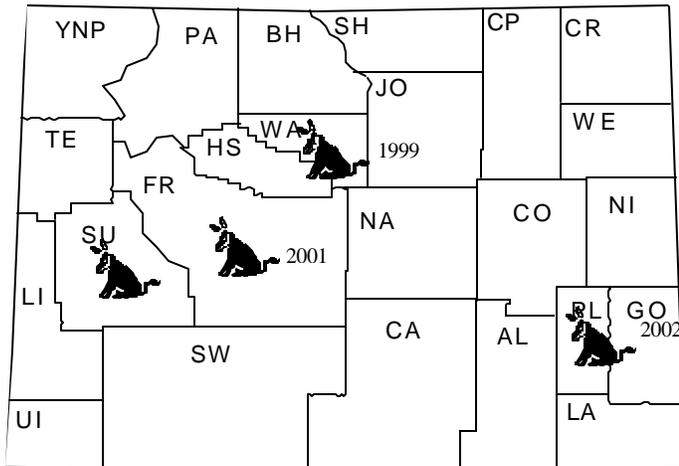
Until the WSVL identifies and hires a new pathology faculty member, Dr. Charlotte Quist will be providing some cover for the laboratory. Some of you may know Dr. Quist. She obtained her D.V.M. from Colorado State University in 1980 and then spent 10 years in private veterinary practice, mostly in Wyoming and Colorado. She received a Ph.D. from the University of Georgia in veterinary pathology in 1995. Her research topic was the immune response of white-tailed deer to the hemorrhagic disease viruses. She became a Diplomate of the American College of Veterinary Pathologists (1997).

Dr. Quist's first position after leaving private practice in 1990 was at the National Wildlife Health Center in Madison, Wisconsin. In 1991, she began a pathology residency and PhD program at University of Georgia. Between 1991 and 2001, Dr. Quist also served as a diagnostic pathologist for Southeastern Cooperative Wildlife Disease Study (SCWDS). In addition to diagnostic duties in the pathology department and at SCWDS, she was involved in research projects on hemorrhagic disease, aflatoxins in deer and wild turkeys, leptospirosis in deer, and paratuberculosis in Key deer. Upon completion of her graduate program in 1995, she worked as a diagnostic pathologist for the Athens Veterinary Diagnostic Laboratory until 2001. Currently, Dr. Quist and her husband, Dr. Victor Nettles, have a pathology and wildlife disease consulting business, Wildlife Health Associates, Inc., in Dillon, Montana.

EIA-POSITIVE HORSE IN WHEATLAND

An asymptomatic 20-year old quarter horse that was bled at sale before being shipped to Colorado tested positive for EIA on the AGID test in September. The horse was from the Wheatland area. This is the first positive EIA we have had in the state for about two years. Below is a map with dates of where we have seen EIA in the past 10 years.

EIA cases in WY 1999 - 2002

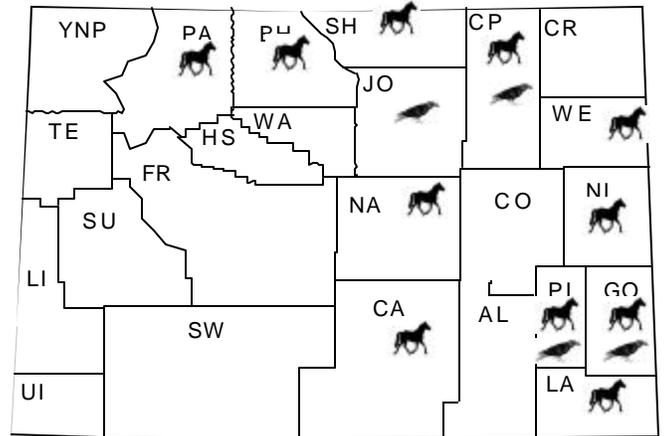


Rabies Positives 1/1/02 - 8/31/02
9 Pos Skunks, 5 Pos Bats
437 Total Exams



For more information contact Dr. Ken Mills or Amy Boerger-Fields at 742-6638

WNV in Wyoming 30 Sept 2002



NEW FACES AT THE LABORATORY

Katie Bardsley will be taking over as the **head technician in the parasitology/clinical pathology laboratory**. Katie comes to us from the Wyoming Game and Fish Laboratory, where she has worked successively as a microbiologist, biologist and certified fish health inspector since 1997. Katie has also worked at the Oregon diagnostic laboratory as a virology technician, at the USDA's Arthropod-Borne Animal Disease Research Laboratory in Laramie, and in the Pathology Department at Colorado State University. She did her Master's work with Dr. Bill Jolley in our department (*Dirofilaria immitis* in Wyoming. M.S. Thesis. Department of Veterinary Sciences, University of Wyoming, 1991) and has seven peer-reviewed papers to her credit. We are very fortunate to have drawn her back to the veterinary laboratory.

Debra Silverman is a new hire into the histology laboratory. We have expanded this unit to three people, due to the increase in pathology accessions, particularly BVDV and CWD samples. Debra will be a histotechnologist working with Paula Jaeger, who is the laboratory manager, and Leslie Vieyra. Debra comes to us from Dr. Ostlund's laboratory at NVSL in Ames, where she performed ELISA and AGID tests plus virus isolation. She is a certified veterinary nurse and worked for some years as a research technician and oncology assistant at the veterinary teaching hospital at CSU.

DETECTING BVDV PI CALVES

As I promised at the WVMA summer meeting, we will shortly be making recommendations about which is the best test to use to detect calves that are persistently infected with BVDV. We are very grateful to Drs. Danny Miller and Jim Briddle for working with us on two premises to compare the merits of several methods to detect PI. These findings will be presented by Drs. Cornish and Van Olphen at the joint annual meeting of the US Animal Health Association and the Association of Veterinary Laboratory Diagnosticians in October.

I will leave it to Todd and Alberto to make final recommendations, but the following are preliminary comments.

- The PBS ELISA (ear notch collected into PBS solution) and the formalin fixed IHC methods (ear notch collected into fixative) are of comparable sensitivity. We get excellent agreement between the two tests.
- ELISA on samples of ear tissue in PBS: \$4 each. For PBS ELISA: \$3.33/sample (should be in batches of 6). Turnaround on the PBS ELISA is faster, since it does not require extensive tissue processing.
- If you get positives, you can do one of two things. You can cull the positive immediately, although this may mean you will cull some acutely infected animals as well as PIs. Alternatively, you can isolate and retest the positives in 30 days to establish their status.
- You do NOT have to use red top vials for submitting these tissue samples. As long as the tube has a snap cap (NOT screw top) with a volume of 10 ml, it will work. If you shop around, you can find suitable snap cap containers for 20 – 30 cents from companies like Fisher Scientific and VWR.
- The laboratory does not supply PBS or NBF-filled containers, unless we are looking at a herd that is of specific research interest to Dr. Van Olphen or Dr. Cornish.
- Once we know how much testing is, and whether veterinarians wish to use the PBS method rather than IHC, we may hire a part-time person to help with the volume of testing and accelerate turn around.

- We have obtained an IHC machine from DAKO to do IHC staining for BVDV. This will increase our capacity and improve turnaround.

Wyoming County Veterinary Coordinators Wanted

The Wyoming Department of Health in conjunction with the Wyoming Livestock Board has announced the availability of 15 – 20 positions for county veterinary coordinators (CVC). CVCs serve as points of contact to facilitate communication between the state veterinarian and public health officials with the public, other veterinarians, the media, and other public agencies. The commitment is 5 – 10 hours per month. Practicing and retired veterinarians are invited to apply. The positions are unpaid, but CVCs will receive specialized training in bioterrorism and disaster preparedness, and will be compensated for travel time and travel-associated expenses. Some, if not all, of the training can provide continuing education credits for veterinary licensure.

Please contact **Dr. Kathy Orloski**, Wyoming State Public Health Veterinarian at 307 777 8622 or **Doug Leinert** at 307 777 6437 if you are interested. **Applications should be postmarked by Oct 15 2002.**

ANAPLASMOSIS TESTING FOR US RUMINANTS EXPORTED TO CANADA

The Canadian Food Inspection Agency requires that ruminants exported from the US must be test-negative for anaplasmosis. The CFIA requires that the test be done using the VMRD, Inc. Anaplasma Antibody Kit, carried out in a US federal laboratory or a USDA- approved laboratory. This test replaces the complement fixation test (CF) as the only acceptable diagnostic test for ruminants shipped to Canada as of September 15, 2002. Here's the catch. At this time the only laboratory running the test is NVSL. The WSVL offers this test, but we do not know how long it will take us to be approved by the USDA. At the moment we can run the VMRD cELISA test for diagnostic purposes, but not for transportation (to Canada) for regulatory serology purposes. These samples must go to NVSL

*Becky Wills
30 SEPT 2002*

COGGINS CORNER

Most of you are already aware that the tubes provided by the regulatory serology lab are intended for the collection of bovine brucellosis samples only. Thank you for not using those tubes for the collection of EIA, *B. ovis* or trichomoniasis samples. Bangs tubes are not sterile and detergent residues

can interfere with ELISA tests.

The boxes provided for brucellosis samples are also not to be used for shipping of samples other than brucellosis. These boxes are an expensive shipping method for the WSVL and for veterinarians when shipping small numbers of blood tubes. We have an alternative method which we believe will save money for everyone. When shipping 5-10 blood tubes, please use small styrofoam mailers with an over jacket mailer and place inside a plastic mailing envelope. This allows for protection of samples, prevents leaks, and allows for the inclusion of paper work. It costs between \$.80-\$1.95 (USPS) depending on weight. We will provide a bulk amount of mailers with overjackets to you. As we receive your samples we will collect at least 8 mailers before returning them to you. This will save us money by returning them in bulk rather than one at a time. We will provide you with a few initial plastic envelopes along with purchasing information. Note: When you are shipping large numbers of EIA samples please feel free to use the boxes that hold 40 tubes.

Thanks and please call us if you have any questions or suggestions.

Lynn Woodard, DVM and Becky Wills
Regulatory Serology Laboratory 742 6681 ext. 142

WEB-BASED ACCESS TO YOUR DIAGNOSTIC REPORTS

Due to a security concern, the Information Technology unit of the University closed off the port that the Case Access site is on, resulting in the ever-helpful "Page Not Available" and other error messages.

We will be moving the site to a different port as soon as possible. To get around this, go through the main site, WyoVet (<http://wovet.uwyo.edu/>) and re-bookmark the Case Access site. It is a good idea to hit the reload/refresh when on the main page of WyoVet to be sure you aren't looking at a cached copy of the page with the old address for Case Access.

Todd Bleifuss, Dept. Vet. Sci. Computer Specialist

RECENT PUBLICATIONS FROM THE DEPARTMENT OF VETERINARY SCIENCES

D. O'Toole, H. Li, C. Sourk, D. H. Montgomery, T.B. Crawford: 2002, Malignant catarrhal fever in a bison (*Bison bison*) feedlot 1994–2000. *J Vet Diagn Invest* 14 (3): 183–193.

R Norrdin, K Hoopes, D O'Toole: 2002, Bone lesions in the hemochromatosis of Salers cattle. *Vet Pathol* 39: 64.

Burns, R., Williams, E.S., O'Toole, D., Dubey, J.P.: Toxoplasmosis in a captive colony of black-footed ferrets (*Mustela nigripes*)(1992 – 1998): clinical signs, serology and pathology. *J Zoo Wildl Med*. Submitted

D. O'Toole, A.A. Pérez de León, C. Hearne, L. McHolland, L. Yun and W. Tabachnick: 2002, Papular dermatitis induced in guinea pigs by the biting midge *Culicoides sonorensis* (Diptera: Ceratopogonidae). *J Vet Diagn Invest*. In press.

D. O'Toole, JD Fox: 2002, Chronic hyperplastic and neoplastic lesions ("Marjolin's ulcer") at hot-brand sites in adult beef cattle. *J Vet Diagn Invest*. In press.

S. Simon, H. Li, D. O'Toole, T. B. Crawford, and L. Oaks: 2002, CD8+ Lymphocytes are predominant infected cells in brain vascular lesions of cattle and bison with sheep-associated malignant catarrhal fever. Submitted.

Williams, E. S., and M. W. Miller. 2002. Chronic wasting disease in deer and

elk in North America. *Revue Scientifique and Technique* 21: 305-316.

Wolfe, L. L., M. M. Conner, T. H. Baker, V. J. Dreitz, K. P. Burnham, E. S. Williams, N. T. Hobbs, and M.W. Miller. 2002. Evaluation of antemortem sampling to estimate chronic wasting disease prevalence in free-ranging mule deer. *J Wildl Management* 66: 564-573.

Miller, M. W., and E. S. Williams. 2002. Detecting PrP^{CWD} in mule deer by immunohistochemistry of lymphoid tissues. *Vet Rec* 151: in press.

Williams, E. S., M. W. Miller, T. J. Kreeger, R. H. Kahn, and E. T. Thorne. 2002. Chronic wasting disease of deer and elk: A review with recommendations for management. Invited review, *J Wildl Management* 66: 551-563.

Cook, W.E., E.S. Williams, E.T. Thorne, T.J. Kreeger, G. Stout, K. Bardsley, H. Edwards, G. Schurig, L.A. Colby, F. Enright, and P.H. Elzer. 2002. *Brucella abortus* strain RB51 vaccination in elk. I. Efficacy of reduced dosage. *J Wildl Dis* 38:18-26.

Williams, E.S., T. Yuill, M. Artois, J. Fischer, and S.A. Haigh. 2002. Emerging infectious diseases in wildlife. *Scientific and Technical Review International Office of Epizootics* 21: 139-157.

O'Rourke, K.I., J.V. Duncan, J. Logan, A.K. Anderson, D.K. Norden, E.S. Williams, B.A. Combs, R.H. Stobart, G.E. Moss, and D.L. Sutton. 2002. Active surveillance for scrapie by third eyelid biopsy and genetic susceptibility testing of flocks of sheep in Wyoming. *Clini Diagn Lab Immunol* 9: 966-971.

Williams, E.S. 2002. Scrapie and chronic wasting disease. *In Prion diseases*. B. Ghetti (ed.). Clinics of North America: Laboratory Medicine, Harcourt Health Sciences. In press.

Williams, E.S. 2002. The transmissible spongiform encephalopathies: Disease risks for North America. *In Emerging diseases of food animals*. J.J. England (ed.). Veterinary Clinics of North America: Food Animal Practice, Harcourt Health Sciences. In press.

OUT AND ABOUT: RECENT PRESENTATIONS BY DEPARTMENT OF VETERINARY SCIENCES PERSONNEL

T. Cornish, D. O'Toole, A. van Olphen, L. Woodard, D. Miller, and J. Cavender: 2002, A comparison of ear notch immunohistochemistry, ear notch antigen capture ELISA test, and virus isolation for the detection of calves persistently infected with bovine viral diarrhoea virus. AAVLD national meeting, St. Louis, MO. Nov 2002.

Williams ES: 2002, Information on Chronic Wasting Disease for Meat Processors. Colorado and Wyoming Association of Meat Processors, Laramie, Wyoming.

Williams ES: 2002, Wildlife Diseases in the West. 2002. Rocky Mountain Regional Association of Microbiologists Meeting, Laramie, Wyoming.

Williams ES: 2002, Wildlife Diseases of Importance to Veterinarians. 2002. Zoological Medicine Club, Colorado State University, School of Veterinary Medicine, Fort Collins, Colorado.

Williams ES: 2002, US Department of Agriculture, Training Session on Wildlife Diseases, 2002, Chronic Wasting Disease, Athens, Georgia.

Williams ES: 2002, National Public Radio, Interview on Science Friday on CWD.

Williams ES: 2002, International Association for Food Protection, Special session on TSEs, 2002, San Diego, California.

Wyoming Wildlife Disease Partnership Symposium, 2002, Sylvatic Plague and Chronic Wasting Disease, Casper, Wyoming.

A Transmissible Spongiform Encephalopathy of the Wild: Chronic Wasting Disease in North America, Plenary Speaker, 2002, International Conference on Transmissible Spongiform Encephalopathies, Edinburgh, Scotland.

D. O'Toole, J. Dennis, L. Steadman, W.C. Russell: 2002, Maple syrup urine disease (hereditary neuraxial edema) lacking recognized branched chain α -keto acid gene mutations in a Gelbvieh x Red Angus herd. AAVLD national meeting, St. Louis, MO. Nov 2002.

D. O'Toole: Diseases associated with drought. Dept An Sci Field Day, 21 September 2002.

D. O'Toole: Agro-terrorism in Wyoming. Thinking the unthinkable. Annual joint conference, Wyoming Environmental Health Association, Wyoming Food Safety Coalition, Wyoming Public Health Association, Gillette, WY Sept 24 2002.