Wyoming State Veterinary Laboratory Newsletter

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307-742- 6681 **Ext. 191**)

MESSAGE FROM THE DIRECTOR

WEST NILE VIRUS - WYOMING 2003

The current situation with WNV in Wyoming is reviewed in this issue of the newsletter. This includes the cumulative number of confirmed cases at the end of August, the experience of a Riverton veterinary practice with clinical disease in horses, and a précis of the clinical signs as reported by Porter *et a.l* in J Am Vet Med Assoc earlier in the year. Dr. Cornish provides information on test and test interpretation on horses, the sort of samples we require for diagnosis, and serological testing on species other than horses.

There were several noteworthy developments regarding WNV in its second season in the state. The laboratory identified fatal WNV infection in sage grouse, a species that experienced population decline in Wyoming over the past 50 years and for which a conservation plan was recently developed. The disease is having an effect on raptor populations, with confirmed infections in multiple species, as well as a case in an emu. West Nile virus infection occurred in two dogs with neurological disease, one in Casper and another in Douglas. At the time of writing both appear to be recovering. The occurrence of WNV in dogs is not surprising since they are experimentally susceptible and there are several reports of neurological and subclinical infection in dogs infected in the United States, including one fatal case with encephalitis and myocarditis. If you are presented with dogs or species other than horses that have distinct neurological signs, keep WNV in mind as a differential diagnosis. Currently we do not have in-house serological testing capability for species other than dogs. If you have a case in a dog and are suspicious, please contact Dr. Cornish to discuss the merits of laboratory confirmation.

At the request of the Wyoming Department of Health, the laboratory now provides more specific information to the state about the location of WNV-infected animals. We now give that information to a *1-mile radius* of the affected horse, whereas previously it was given out as cases per *county*, and then by local *town*. When we confirm a case of WNV, you may be contacted by the laboratory for permission to share the owner's name and location with the Wyoming Department of Health.

Some Wyoming county health departments want to use the location of WNV-positive animals for mosquito spraying efforts. WNV in horses is not a reportable disease in Wyoming, but may be soon. If and when that happens we are required to pass on the owner's name and address to the Wyoming Department of Health, in the same way that we convey positive rabies results. The press release on why this change was made is on our web site.

Donal O'Toole

WEST NILE VIRUS

Field experience with clinical signs of WNV infection in horses in Riverton area

I solicited the following from Dr. Glen and Gunda Gamble in G Bar G Veterinary Service so they could share their experience of WNV in horse with other Wyoming veterinarians.

Drs. Glen Gamble and Gunda Gamble
27 August 2003.

The illnesses we observed and treated in connection with WNV at G Bar G Veterinary Service in Fremont County have been multifactorial and complex. We had 15 positive cases from August 7 - 26 this year. One case was treated by the owner. The rest were in our care either at the clinic or the owner's property. Of 15 affected horses, only one was euthanized. Three cases were in vaccinated horses. Twelve were in unvaccinated horses.

Prevailing clinical signs are varying degrees of proprioceptive deficits (1 in front limbs, 4 in hind limbs, and 8 on all fours), somnolence in 11, intense pain with fasciculations in 9, muscle cramping in 11, and blatant headaches in nearly all. Pain is the main issue we have to address therapeutically in order to alleviate the majority of symptoms.

We observed dog-sitting in 4 cases, hind limb paralysis in 2, and lateral recumbency in 7. Hind limb paralysis responded to treatment in 1 case, and in the other there was no response over 24 hours. That horse displayed severe headache, cyanosis, abdominal pain and fear. The owner of the animal opted for euthanasia.

Sweating with subsequent dehydration occurred in 8 cases, although body temperatures never registered above 102° F. Dehydration is another manifestation that we treated with aggressive IV fluid therapy.

We observed lateral recumbency in 7 cases, two of which were due to hind limb paralysis. In one case, stupor was so severe that the horse ceased to breath on several occasions for brief periods. In the same case muscle trauma from recumbency was so marked that CPK activity was off the scale. The CPK activity fell to 285 I/U after 36 hours of fluid therapy. In the light of somnolence in many horses, they also appear to be hyperesthetic. They jerk away when approached, jump unnaturally when injected, and overreact to loud noises.

All horses we deal with appear to have intense headache. They display photophobia, blepharospasm, pinning of the ears, and head pressing.

We observed bladder paralysis in one case that required catheterization of the bladder every 3 – 4 hours for 36 hours. The horse later became recumbent, somnolent and developed high muscle enzyme activities. The horse was fully recovered two weeks later.

Only one horse was unable to prehend food or to eat. Although it desired to do so, the horse was unable to open its mouth to prehend. Most affected horses were willing to eat and drink, in spite of ataxia or lateral recumbency.

Problems with WNV testing of horses

Horses that test positive for WNV by IgM capture ELISA are infected, but not all become ill. In horses that become ill and demonstrate appropriate clinical signs (abnormal gait, ataxia, paresis/paralysis, muscle fasciculation, etc.), the most useful postmortem samples to submit for confirmation of WNV neurologic disease are:

- Fresh and fixed brain
- Fresh and fixed spinal cord (preferably cervical, thoracic, and lumbar cord)

Histopathology is useful to demonstrate encephalitis and/or myelitis consistent with WNV infection. Both PCR and immunohistochemistry (IHC) can be applied to attempt to demonstrate the presence of virus in lesions.

Neither PCR nor IHC are very sensitive in horses, however. More than half of all true WNV-positive horses will be missed by these tests. This is due to the sparse amount of virus present, and the patchy distribution of virus in brain and spinal cord. Virus isolation may be more sensitive, but we are not performing this test on a routine basis due to the risk to laboratory personnel. If you have questions about WNV testing or need more information, please contact Dr. Cornish at the laboratory.

Dr. Todd Cornish
Pathology

Equine WNV Submissions

Please include the following information on all equine WNV submissions:

- Signalment (age, breed, sex)
- Horse's name
- Owner's name and address (at a minimum, county and township, or landmark)
- Clinical signs
- Vaccination history
- Travel history

We will be reviewing equine WNV cases at the end of the season to track trends, determine clinical outcomes and try to establish what variables affect outcome (age, breed, vaccination history, etc.). To that end, the more information we have now, the better we will be able to follow up on cases down the road. Sometime this fall we will be contacting all veterinarians with positive WNV cases to obtain further information. Your cooperation at that time will be greatly appreciated.

The WNV crew is Dr. Cornish, Terry Creekmore, and Kami Severs

Dr. Todd Cornish

WNV Serology in Other Species

We do not perform serology testing for WNV on species other than horses, as commercial reagents for ELISA or other tests are not available for many other domestic animal species. These samples are referred to one of several laboratories in the country performing serum/virus neutralization tests or ELISA tests that require a week to 10 days to perform.

The tests are expensive (minimum charge of $32 with shipping) and interpreting results of these tests is difficult - exposure to WNV is common in many domestic and wild animal species, but clinical disease is rare in species other than humans, horses, and birds. Dogs, cats, and most livestock species can be infected with WNV, but the odds of WNV causing clinical disease in these animals is low. The bottom line is that we can provide serological testing for species other than horses, but the costs and benefits of such testing should be carefully evaluated before submitting samples.

If you have further questions or would like more information about WNV in animals other than horses and birds, please call Dr. Cornish at the laboratory

Dr. Todd Cornish
Pathology

WNV in FL and GA horses
Clinical signs, sequelae and labor atory testing

- Mortality rate (symptomatic horses): 30%
- Mortality rate (recumbent horses): 71%

- Major neurological signs:
  - ✓ Weakness: 94%
  - ✓ Dysmetria: 82%
  - ✓ Ataxia: 72%
  - ✓ Mentation↓: 67%
  - ✓ Fasciculations: 61%
  - ✓ Cranial nerve signs: 44%
  - ✓ Cataplexy/narcolepsy: 35%
  - ✓ Aggression: 9%
  - ✓ Seizures: 4%
  - ✓ Dysphagia 2%
- Non-neurological signs:
  - ✓ Fever: 65%
  - ✓ Anorexia: 57%
  - ✓ Bruxism: 20%
- Sequelae >6 months after illness
  - ✓ Complete recovery 84%
  - ✓ Residual signs:
    - Weakness 5%
    - Pelvic limb problem: 5%
    - Illness precluded use: 10%
- Affected horses with negative IgM test: 6.5%
- Affected horses CSF positive for EPM: 53%
- Virus culture positive (brain/spinal cord): 25%
- PCR positive (brain/spinal cord): 25%
- IHC positive (brain/spinal cord): 67%

Source: Porter et al: 2003, West Nile virus encephalomyelitis in horses: 46 cases (2001). J Am Vet Med Assoc 222 (9): 1241 – 1247

Where are WNV-positive horses by county?

We have this on the web site, updated weekly. Go to disease updates page

http://wyovet.uwyo.edu/WSVL/updates.htm

scroll to "Current West Nile Virus Cases in Wyoming," and click on "WNV." If this does not open for you, right click on the link and save it to your desktop, and open it from there. This is updated each Friday.

SAFE HANDLING OF MICOTIL

A report put out by the Nebraska Department of Labor has made several recommendations about safe handling of Micotil. The report was prepared in response to the death of a young Nebraska rancher in March this year. There have been several deaths due to either deliberate injection or accidents in the US. Major recommendations are:

- Veterinarians and animal health distributors, prior to releasing Micotil, should require the purchaser to sign a product information fact sheet that indicates Micotil can be fatal in humans, and that there is no antidote for this medication
- Users of syringe-loaded medications should practice safe handling procedures during all phases of animal treatment.
- Veterinarians/cattlemen, when practical, should consider using another less-hazardous antibiotic.
- All companies/agencies responsible for the manufacture and/or approval of veterinary medicines and supplies should continue to devise new products that will reduce unintentional human exposure to accidental needlesticks/injections.

I have a copy of the report on this accident, and can send clients one if they wish to read it or share with clients as a cautionary tale.

TESTS AND TESTING

1 - PRICES!

The WSVL new price list for 2003 is in effect and on the WSVL web site. We increased some prices modestly – our last price increase was in 2001. Histology charges were increased from $18 to $20 for the first 1 – 3 slides of a submitted sample. We re-jigged some 0f our PCR test costs so we recover, at a minimum, our costs to run the test and to pay royalties to proprietary companies. These prices are

OK-ed by the laboratory's advisory committee, then by the University of Wyoming.

2 - T3 AND T4 TESTING

Due to the high cost of the T3 reagent and low number of requests, we will no longer offerT3 testing.

We continue to offer the T4 test in various species, including dogs and cats.

3 - BACTERIAL IN CONTAMINATED WOUNDS

We will be making a couple of changes in our culturing techniques that you should be aware of. The occurrence and significance of mixed bacterial infections in wounds is becoming recognized as an important factor affecting rates of healing. Many times laboratories have utilized standard culturing techniques on wounds that favor the isolation of ***aerobic*** bacteria. At the WSVL that has certainly been the case. We normally set up aerobic cultures on wounds and then inoculate an enrichment broth that allows the growth of aerobes and anaerobes. If a significant aerobe was isolated on the original plates we did not do a sub-culture out of the broth so we would not identify any anaerobes in a mixed wound infection.

The effect on you as a practitioner is that samples coming into the WSVL from now on that indicate they are from a wound will be processed slightly differently. We will do a direct stain to see if we can see organisms, which provides an indication of the relative amount of bacteria. If bacteria on visible on a direct exam there are probably 10^5 to 10^6 bacteria per gram of material. Bacteria at this level will not allow the healing process to continue. The second change is the addition of an ***anaerobic culture*** on the material. Sometimes an aerobe utilizes the oxygen in a wound, which sets it up for growth of an anaerobe. It is this combination of infectious agents with their different pathogenic factors that causes the wound to resist treatment.

The addition of an anaerobic culture will increase the cost. The additional information will justify the charge. If you decide you want ONLY anaerobic culturing done on wounds, please indicate this clearly on the accession form.

Dr. Ken Mills
Bacteriology Section

P. G. Bowler et al: 2001, Wound Microbiology and Associated Approaches to Wound Management. Clin Microbiol Rev 14 (2): 244 – 269

"Applying these principals to treatment of compound fracture, bearing in mind that it is from the vitality of atmospheric particles that the mischief arises, it appears that all that is requisite is to dress the wound with some material capable of killing these septic germs, provided that any substance can be found for this purpose yet not too potent as caustic."

Joseph Lister (1867)
"On a new method of treating compound fracture, abscess, and so forth; with observations on the conditions of suppuration"
Lancet 1: 326, 357, 507

4 - B. OVIS SEROLOGY

The ELISA antigen we use for *B. ovis* serology is supplied by the USDA, but they have developed problems with some of their cultures and are not currently producing antigen. They also don't know when they will be up and running again, which means as soon as our current antigen supply is exhausted we are out of business until the USDA provides us with more. Since they supply all laboratories running this test, the effect could be widespread. Some laboratories have a stockpile and will continue testing until they are out too.

Samples sent to the WSVL will be forwarded to other labs until this situation is resolved so you can anticipate delays in getting results. We are sorry for any inconvenience this may cause.

Dr. Ken Mills
Bacteriology Section

5 - HEARTWORM IN WYOMING

Canine heartworm, *Dirofilaria immitis*, is a parasitic roundworm commonly found in many canid species and some unnatural hosts, such as ferrets and cats. It is the most important filarial parasite of domestic animals in the USA. Mosquitoes transmit the worm from host animals with patent infections (adult male AND female worms present, and producing offspring) to other infected and uninfected animals. Some animals harbor occult infections (only male OR female worms are present, not both), and do not provide the larval forms necessary for infection of mosquitoes.

Endemic heartworm is typically prevalent in warm, humid, oxygen-rich areas, usually at altitudes less than about 5000 feet above sea level. The mosquito species best suited to transmit the worm are less common at higher altitudes than other, less suitable species. Mosquitoes infected with 6 or more heartworm larvae have been proven likely to die within a few days to a week, when compared with uninfected mosquitoes at the higher altitudes.

Heartworm-infected dogs identified by WSVL diagnostic parasitology staff can usually be traced to or from an endemic area, which includes states throughout the Midwest, south and western United States. A few endemic infections probably occur within Wyoming in some of the lower elevations in the State for several reasons, some of which are noted below.

With the mosquito season near its peak in August and early September, veterinarians may find the following facts useful regarding diagnosis and control of canine heartworm infections:

- Dogs older than 1 year of age, imported to Wyoming from heartworm-endemic areas warrant analysis of serum, plasma or whole blood for antigens produced by the adult worms.
- Native Wyoming dogs transported to a heartworm-endemic area DURING MOSQUITO SEASON should be treated with an avermectin, selamectin or milbemycin oxime within 30 days of arrival in the area.
- Native Wyoming dogs may acquire heartworm in Wyoming, especially at one of the lower altitudes

where major rivers exit the state, IF a wild or domestic canid with a patent infection has provided a source of infection for mosquitoes in the area. This will occur only during mosquito season.

- Animals suspected of having been exposed should be tested for infection before being treated with any of the larvacides, including ivermectin, milbemycin oxime, selamectin, diethylcarbamazine or moxidectin.
- Infected animals are not expected to have circulating microfilaria in the blood until about 6 months after transmission from an infected mosquito.
- Recently infected dogs may yield a false negative result with one of the antigen tests.
- Microfilaria found in the blood of symptomless canines should be identified to species, because a nonpathogenic filarial worm, *Dipetalonema reconditum*, is also common in American dogs.

Seasonal factors and developmental periods should be considered by dog owners and veterinarians dealing with potential heartworm infection diagnosis and prevention.

Dr. Bill Jolley
Parasitology Section

"Chemical agents, in contrast to antibodies, may be harmful to the body… [Getting a] "bulls eye," such as antibodies permit, are no longer possible so we must always be aware of the fact that these agents are able to act on other parts of the body, as well as on the parasite. Therefore….we have no choice but to learn how to shoot better."

Paul Ehrlich (1908)

NOTEWORTHY CASES

Mycobacterium infection in a young dog

Cases of mycobacterial infection in domestic animals in Wyoming are rare. We occasionally diagnose *Mycobacterium avium* complex (MAC) in old hens, and *M. avium* ssp. *paratuberculosis* in sheep and beef cattle (Johne's disease). MAC infections occur sporadically in wildlife. We recently had a case of MAC infection in a dog.

A veterinarian in Wyoming was presented with a 3 year old castrated Shih Tzu dog. He diagnosed non-regenerative anemia, and detected splenomegaly. Splenectomy was performed and samples of fixed spleen submitted to the laboratory. The dog had severe diffuse granulomatous splenitis with large numbers of acid-fast mycobacteria in macrophages. We had no fixed spleen from which to attempt identification of the organism by PCR and/or culture. This was unfortunate, since the owner worked at a local hospital with respiratory patients, and there was a possibility of a reverse zoonosis (dog infected by owner) due to *M. tuberculosis*, the cause of human tuberculosis.

Samples of fixed spleen were sent to Dr. Bruce Thomsen's unit at the National Veterinary Services Laboratories in Ames, where they were tested by PCR for various mycobacteria, including *M. avium* complex, *M. avium* ssp. *intracellulare*, *M. tuberculosis*, and *M. bovis*. Fortunately the sample had been in fixative for a short period (<7 days). The diagnosis was splenetis due to infection with a member of *M. avium* complex.

Infection of dogs with the avian tubercle bacterium is rare, since they are innately resistant. MAC organisms remain viable in soil, dust, water and carcasses for extended periods (up to 2 years). There is no evidence that MAC can be transmitted from dogs to people. Disease in dogs can be generalized, and some breeds (bassett hounds and miniature schnauzers) are more commonly infected. Skin and serological testing is problematical, and definitive testing is done by tissue biopsy, as in this case.

The Wyoming Department of Health was contacted about the case and the family was tested for tuberculosis with negative results. The dog was put to sleep at the owner's request due to clinical deterioration.

Eggers JS et al: 1997, Disseminated *Mycobacterium avium* infection in three miniature schnauzer litter mates. J Vet Diagn Invest. 9(4): 424 - 427.

"Because of the quite regular occurrence of the tubercle bacilli, it must seem surprising that they have never been seen before. This can be explained however by the fact that the bacilli are extremely small structures…[and] mixed with finely granular detritus in such a way that they are completely hidden."

Robert Koch (1882)
Die Ätiologie der Tuberkulose
Berliner Kinlischen Wochenschrift 15: 221 - 230

Encephalitozoonosis in rabbits with exposure to heart transplant recipient

In a second case with human health implications, the laboratory was submitted the carcass of a rabbit that died in the owner's back yard. The owner requested that the animal be checked for any disease that might be transmissible to people. There was a child in the house on long-term immunosuppression therapy following major organ transplantation.

The rabbit had disseminated infection with *Encephalitozoon cuniculi* (encephalitozoonosis), a relatively common protozoan in rabbits. Opportunistic *E. cuniculi* infections are reported in immunosuppressed patients, although encephalitozoonosis due to other *Encephalitozoon* spp. (*E. hellem and E. intestinalis*) are more common and increasingly recognized in AIDS and organ transplant patients. Although the risk of infection was low, we recommended that the owner contact her child's physician and the Wyoming Department of Health. The companion rabbit was euthanized and examined.

Rabbits, dogs and infected people shed spores via the urine. Spores are hardy but can be inactivated by various

disinfectants (2% phenol; 10% formalin; 70% ethyl alcohol). The owner was given advice about decontaminating the environment in which the rabbits were kept. There have been at least 12 human patients reported in the literature, all of whom had AIDS. Nine presented with disseminated infection involving the kidneys, sinuses, lungs, brain and conjunctiva. Albendazole is reported to be an effective therapy. The child in the Wyoming case was treated with albendazole as a precaution.

Fournier S et al: 2000, Disseminated infection due to *Encephalitozoon cuniculi* in a patient with AIDS: case report and review. HIV Med. 1(3):155-61.

"Now they are bringing, bedded in melting ice
the new heart,
like some mighty trophy
from the Eightieth Olympiad of Calamities
Atrium is sewn to atrium,
aorta to aorta,
three hours of eternity
coming and going.
And when the heart begins to beat
and the curves jump
like synthetic sheep
on the green screen
it's like a model of a battlefield
where Life and Spirit
have been fighting

And both have won."

"Heart Transplant" (fragment), Miroslav Holub
Intensive Care, Oberlin College Press

German shepherd dermatofibromatosis

The pathologists see some tumors such as histiocytomas with wearying familiarity, so it is welcome at times to nail the diagnosis for an unusual mass with major clinical implications.

A recent case in point was a 7-year old German shepherd with multiple hard lesions in skin of the head and neck. One mass was submitted for histopathology. The diagnosis was nodular dermatofibrosis.

Nodular dermatofibrosis of the German shepherd is a rare, inherited syndrome associated with the presence of multiple benign areas of dermal and subcutaneous fibrosis. The significance of the finding is that skin lesions may precede or coincide with unilateral or bilateral renal adenomas or adenocarcinomas. The veterinarian was advised to check the dog for renal tumors. Enlarged and abnormally shaped kidneys can be palpated in 60% of affected dogs, and detected by radiography in 86%. Renal lesions, including metastases, are the main reason for euthanasia and death.

Moe L, Lium B.: 1997, Hereditary multifocal renal cystadenocarcinomas and nodular dermatofibrosis in 51 German shepherd dogs. J Small Anim Pract. 38(11): 498 - 505.

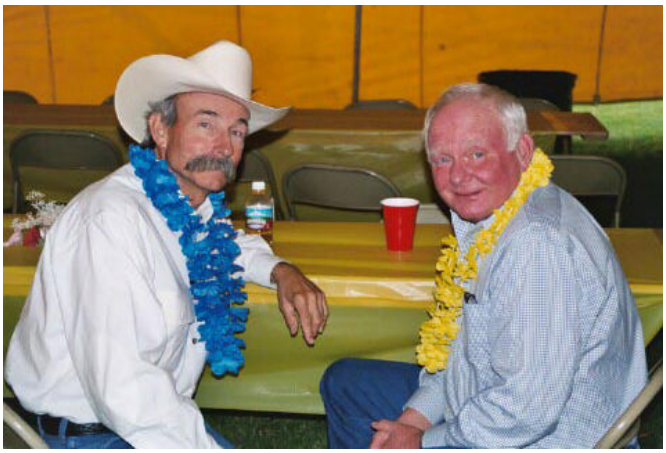
NEW PATHOLOGIST

The University of Wyoming has offered the position to a well-known, highly experienced pathologist, and we are finalized arrangements at the time this newsletter. All going well, he will be on-board at the start of November.

Thank you for you patience and the reduced turnaround times on mailed in samples. This should be fixed soon.

BAXTER BLACK AT THE WYOMING STATE VETERINARY LABORATORY

Baxter Black, veterinarian and entertainer, honored us by coming to a retirement party for Dr. Lynn Woodard in late July at the laboratory. In addition to several long poems, he entertained us with veterinary stories and anecdotes.



Drs. Baxter Black and Lynn Woodard, WSVL, 31 July 2003

"Q: What is your definition of a cowboy?
A: Someone who can replace a uterine prolapse in a range cow in a three section pasture with nothing but a horse and a rope."

Dr. Walt Cook, a veterinarian with the Wyoming Game and Fish Department, entertained the crowd when he and his band sang the following song to mark Dr. Woodard's long affiliation with the laboratory.

Mamas Don't Let Your Babies Grow up to be like Woodard.

Woodard ain't easy to love and he's harder to hold
He'd rather sell you some hay but he acts likes its gold
Pretty young students and old grumpy deans know how to ruin his day
No we don't understand him and he didn't die young
So he'll probably just ride away

Chorus:
Mamas don't let your babies grow up to be like Woodard
Don't let 'em ride Appys while they're just a kid
It'll make 'em hate rodeos - with Lynn it sure did

Mamas don't let your babies grow up to be like Woodard
'Cause he'll never stay home but he's got the answer
Use vaccines if you're a rancher

Verse 2:

Woodard likes good lookin' women and Old Irish WhiskeyStock market money, his cattle, and a farm in Kentucky
Them that don't know him won't know it
But us that do know that he can write a good yarn
If you can't find him that's just because
He's having a smoke behind the barn

Dr. Walt Cook
To the tune:
Mama don't let your sons grow up to be cowboys

A new classroom in the Department of Veterinary Sciences, which operates the WSVL, is named the Woodard classroom in Lynn's honor.

"Incidentally, I am only coming to Princeton to do research, not to teach. There is too much education altogether, especially in American schools. The one way of educating is to be an example – if one can't help it, a warning example."

Albert Einstein
Letter to a young girl (1934)
Ideas and Opinions, Modern Library

CAROL HEARNE AWARD

Carol Hearne, the laboratory's electron microscopist, was recently given one the Microscopy Society of America's top awards. This was the MSA's Diatome Award for best poster presentation at the 2003 Microscopy and Microanalysis Meeting in San Antonio, Texas.

Carol's poster dealt with a case of avian pox in a bluejay. The case was particularly challenged since the bird was submitted in an autolytic state to the laboratory, and the only lesion identifiable was hepatic necrosis. Jackie Cavender in Virology grew up an unusual virus from the tissues. Carl was able to generate a series of beautiful electron micrographs that documented the presence of classical avipox viral inclusions in cell culture.

[images of avipox inclusions from Carol]

Carol has been an electron microscopist for more than 23 years. She is one of the most experienced people of her tribe working in a diagnostic veterinary laboratory in North America. She estimates that during her career she examined in excess of 50,000 grids as part of her job, most of which has been at the WSVL. Her skill in recognizing viral particles at an ultrastuctural level is extraordinary, and many of you will know Carol from her conscientious work in diagnosis difficult cases, particular parvoviral enteritis and coronviral infections in calves.

CE Hearne, JL Cavender, D O'Toole: 2003, Diagnosis of avipox in a bluejay (*Cyanocitta cristata*) with hepatic necrosis using negative contrast electron microscopy and ultramicrotomy of cell cultures. Annual meeting, Microscopy Society of America, San Antonio, TX, August 2003

"You can observe a lot by watching."

Yogi [Lawrence Peter] Berra
Attributed

PLANNING FOR THE FUTURE

The Department of Veterinary Sciences 5-year plan is on the Web. It details the development of the department and the WSVL over the next five years. I welcome your comments. The plan is posted at:

http://www.uwyo.edu/AgCollege/Strategic_Issues_files/DeptVetSci_plan_draft.htm

The College of Agriculture, the academic home of the Department of Veterinary Sciences in the University of Wyoming, is also planning for the next five years. The latest draft of the college's plan is on its web page at:

http://www.uwyo.edu/AgCollege/Strategic_Issues_files/Strategic_Issues_Main.htm

Please send comments to Dean Galey if there are overarching issues about the plan and the College that you wish to comment on.

The laboratory's 2002 annual report and past issues of this newsletter are posted at:

http://wyovet.uwyo.edu/WSVL/news_index.htm

ROUND AND ABOUT

Recent presentations and publications by Dept Vet Sci faculty

M. Miller, E. S. Williams: Horizontal prion transmission in mule deer. Nature. 4th Sept 2003.

J. E. Jewell, J. Pahl, L. L. Wolfe, M. W. Miller, E. S. Williams: 2003, Genetic Variation in the Prion Protein of Free-Ranging CWD Positive and Negative Mule Deer (*Odocoileus hemionus*). Wildlife Disease Assoc. Annual Meeting, August 14, 2003, Saskatoon, SK (abst.)

S. Adams, M. Miller, J. Jewell, P. Bochsler, K. O'Rourke, and T. McGuire: 2003, Field Study Validation of a Commercial High -Throughput Chronic Wasting Disease Diagnostic Test for White-tail and Mule Deer. In preparation.

D. O'Toole, H. Li, T. B. Crawford: 2003, Malignant catarrhal fever in wildlife and domestic species (invited). Diseases at the Interface Between Domestic Livestock and Wildlife Species, USDA sponsored meeting, July 17-18, 2003, Scheman Conference Center, Ames, IA.

E. S. Williams: 2003, Chronic wasting disease (invited). Diseases at the Interface Between Domestic Livestock and Wildlife Species, USDA sponsored meeting, July 17-18, 2003, Scheman Conference Center, Ames, IA.

E. S. Williams 2003. Chronic Wasting Disease: What do we know? Washington, D.C. CJD Foundation TSE Symposium. Invited.

E. S. Williams, E.S. 2003. Chronic Wasting Disease and Wildlife Management The Wildlife Society, Regional Student Conclave, Laramie, Wyoming, March, 2003. Invited.

E. S. Williams 2003. Infectious disease risks of translocation and re-introduction of wildlife Dutch Society for Wildlife Health, Rotterdam, The Netherlands. Invited

E. S. Williams, 2003. Chronic wasting disease: What do we know? Canadian Chronic Wasting Disease Symposium. Edmonton, Alberta, Canada. Invited.

E.S. Williams 2003. Wildlife diseases in the western states: Past, present, and future. Colorado Wildlife Society, Fort Collins, Colorado. Invited.

D. O'Toole, J. Dennis, L. Steadman, T. Bottiglieri: 2003, Congenital status spongiosis of Gelbvieh-cross calves is distinct from Maple Syrup Urine Disease. European Society of Veterinary Pathology/British Society of Toxicological Pathologists, 21st annual meeting Dublin, Ireland, 10th -13th September 2003

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D. O'Toole: 2003, Regulatory issues and CWD laboratory wastes. NIAA annual meeting, Cincinnati, OH. Invited. April 2003. Abstr.

D. O'Toole, C. Quist, T. Berry: 2003, Acute carprofen (Rimadyl) hepatotoxicity in a bitch. AAVLD national meeting, San Diego, CA October 2003.

D. O'Toole: 2003, 1.5 days of talks to diagnosticians and equine veterinarians on various topics at the Animal Health Center, Abbotford, BC, 23 – 24 January 2003 [invited]. Random thoughts about diagnostic laboratories; transmissible spongiform encephalopathies; rabies; West Nile virus in horses and birds; equine surgical pathology; adverse reactions to veterinary biological products; malignant catarrhal fever.

J. Monfre, T. B. Crawford , H. Li , D. O'Toole: 2003, Bison with chronic OvHV-2 infection: clinical outcome, lesions, and capacity to infect susceptible sheep. AAVLD national meeting, San Diego, CA October 2003.

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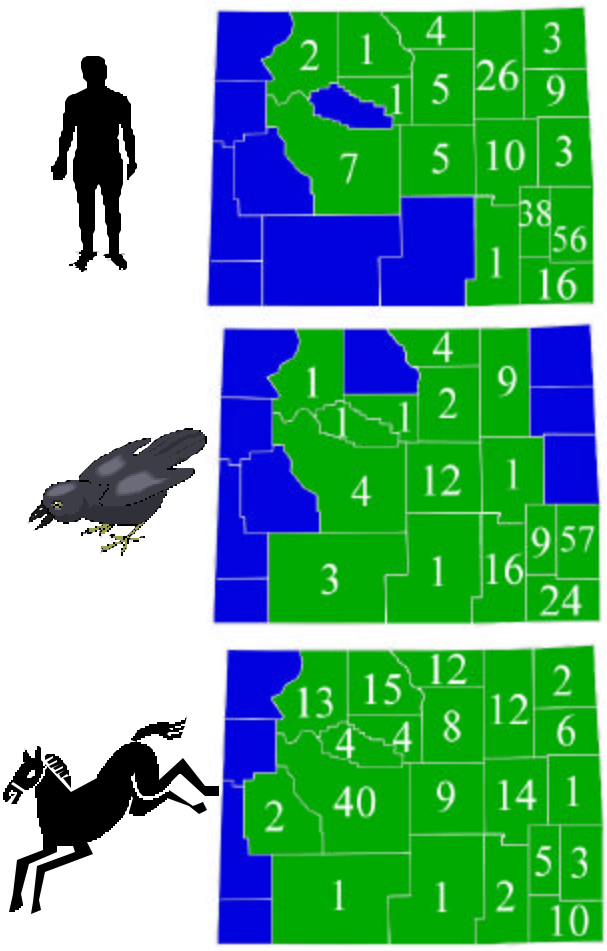

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