

# The NCVDLs REPORT



Accredited by the American Association of Veterinary Laboratory Diagnosticians

## Veterinary News and Information From North Carolina's Diagnostic Laboratories

### From The Director by David T. Marshall, DVM

At this writing, the General Assembly has just completed compromise on a budget bill, and the Governor has signed it with his approval. While these biennial budgets typically never provide the stakeholders with all of their needs, the laboratory system did well in protecting itself from major negative impact while also securing two expansion items of importance. The plusses include a new expansion position for a Veterinary Pathologist, as well as a \$292,000 expansion allocation to purchase 4 new autoclaves. Three of these autoclaves will replace existing aged units, while the other will be to equip our new BSL 2+ molecular suite at Rollins that is currently in the design and contractor bid process. On the negative side, we failed to secure a \$1.25 million capital request to study and design a much needed expansion of the Rollins facility, a request that has been before the General Assembly for the past two sessions but has failed to gain momentum. In addition, the budget bill identifies the elimination of over \$10 million of vacant positions state government wide. We do not know what percentage of that will be the responsibility of the Department of Agriculture, but I feel certain that the lab system will have to contribute a position or two to that cause. We should be able to withstand that impact with minimal effect on operations.



The development of our Quality Assurance/Quality Control program continues to progress nicely. Despite the resignation of our Quality Assurance manager in early July, to date we have: 1) developed our Quality Manual and laboratory quality procedures, 2) developed and fully implemented equipment QC and procedures system wide, 3) completed and implemented standard operating procedures for testing services at two of the four branch facilities, and 4) completed initial audits and corrective actions within all of the major sections at Rollins. This has been a painstaking and laborious process, with much work yet to be completed. We can feel satisfied, however, that the effort has been well worth it as we can now prove validation and accuracy of our testing results and reports, and provide clients with the assurances needed to make informed decisions on their animal health issues.

In September of this year (exact date to be determined at this writing), we will host a four member review team from the American Association of Veterinary Laboratory Diagnosticians (AAVLD) for a one week accreditation review site visit. This visit will be a follow up to our last visit in 2004. The review team will assess the entirety of operations, including staffing, quality assurance, resources, budget, facilities, and employee education and training. Unlike past years, they will also review each individual branch lab on a site visit, as well as interview our

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- ◇ Bovine Rabies

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Please e-mail [NCVDL@ncmail.net](mailto:NCVDL@ncmail.net) with any comments and/or suggestions concerning The NCVDLs Report

### Holiday Closings...

Labor Day - Sept. 3

Our laboratories will be closed on the above listed days.

Newsletter editor-

Jeremi Clark

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**From the Director** (continued)

Laboratory Advisory Committee and selected clients. We feel quite comfortable that the outcome of this review will be favorable, and look forward to hosting them and show off the good work and service that we provide our clients.

We were fortunate to be able to identify funds in last year's budget to provide some much needed renovations to the Rollins facility. Included in this was painting and carpeting of the front office area, wallpapering and carpeting of our conference room/library (as well as securing a conference table in used but good condition), and other miscellaneous laboratory enhancements. In addition, we are in the bid process for a new after hours drop off cooler, and were able to install a "like new" downdraft table in histology that was donated from an RTP biotechnology company. A vacant walk in cooler in the Serology lab was also converted into much needed office space. All of these enhancements have improved the work environment and added to the appearance of the facility.

Effective August 31, 2007, we are eliminating our in house Toxicology/Chemistry services and will contract these analyses out to another AAVLD accredited laboratory. This move was necessitated for a variety of reasons, including aged equipment, underclassified positions within the section which are not consistent with AAVLD accreditation requirements, and the retirement of a veteran section director. Specific information about this change can be found elsewhere in this newsletter, as well as on our NCVDLs web site (<http://www.ncvdl.com/>). We do plan to absorb the cost of certain tests for diagnostic cases within our laboratory budget, but will be passing along the cost for the majority of testing to the client. This action is an unfortunate but necessary step in the development of our quality program within the laboratory system. We do plan on approaching the General Assembly in the next long session with a comprehensive request for boarded positions and equipment funding in order to reestablish the service.

In branch laboratory news, it appears that the renovation project at the Arden facility is finally about to clear the intensive Office of State Construction and Department of Insurance approval process, with actual work to begin in a month or so. This project will involve new HVAC duct work and mold abatement, bathroom and necropsy floor renovation, painting, and handicapped facility modifications. We anxiously await the completion of these much needed renovations. In addition, bacteriology services at the Elkin lab will be redirected to the Rollins facility in the final step of centralizing these services for efficiency reasons.

In July, we met with the director of the State Laboratory of Public Health (SLPH) and entered into an agreement to provide backup support and continuity of operations assistance for human and animal rabies testing, in the event that their facility should be rendered inoperable. We always appreciate the opportunity of assisting our "One Medicine" DHHS partners in protecting our citizens' public health.

Thanks for all of your support, and please don't hesitate to contact me at any time with input and feedback.

Regards,

David Marshall, D.V.M.  
Director



**Diagnostic Laboratory Advisory Committee**

Dr. Jim Floyd	NCSU- College of Veterinary Medicine
Mr. Larry Wooten	N.C. Farm Bureau
Dr. Richard Kirkman	Private Veterinary Practitioner
Dr. Gene Erickson	NCDA&CS Veterinary Diagnostic Laboratory System
Dr. Rick Sharpton	Perdue, Inc
Dr. Shannon Jennings	Carroll's Foods
Dr. Leslie Wolf	DHHS- State Public Health Laboratory
Dr. Karen Post	NCDA&CS Veterinary Diagnostic Laboratory System
Dr. Eric Gonder	Goldsboro Milling
Dr. Mary Ann McBride	NCDA&CS Veterinary Division
Mr. Jeff Turner	Murphy Brown, L.L.C.
Dr. Randy Jones	Livestock Veterinary Services
Dr. Jennifer Haugland	NCDA&CS Veterinary Diagnostic Laboratory System
Dr. Gene Nemechek	GIS-Hog Slats
Dr. David Marshall	NCDA&CS Veterinary Division
Dr. Betsy Sigmon	Creature Comforts Animal Hospital

**Client Corner****Section Closure and Centralization of Services** by Dr. Karen Post**Chemistry/Toxicology Section Closure**

With the impending retirement of the laboratory section supervisor, antiquated equipment, and lack of funds to purchase new equipment and attract a board- certified toxicologist, in keeping with the American Association of Veterinary Laboratory Diagnosticians accreditation requirements, management has been forced to make this difficult decision. All chemistry, toxicology and nutritional testing will be outsourced to the Toxicology Laboratory at the Pennsylvania Animal Disease Diagnostic Laboratory System. Please call the Rollins Laboratory (919-733-3986) for test availability, specimen requirements and pricing. Although specimens requiring these tests may still be submitted to our laboratories, we will assess a \$15 shipping and handling fee in addition to the charge for the cost of outsourcing these tests.

**Centralization of Bacteriology Services**

Also, effective September 1, 2007, bacteriology services will no longer be offered by the NCVDLs branch laboratory at Elkin. Due to the full implementation of our laboratory Quality Assurance Program, the additional costs associated with increased quality control measures make it less cost-effective for us to perform bacteriology at our satellite facilities. To avoid delays in test results, clients that have submitted specimens for culture to the Elkin Laboratory should now submit their specimens directly to the Rollins Laboratory.

**Section Closure and Centralization of Services** (Continued)**United States Postal Service**<sup>1</sup>

Rollins Laboratory  
1031 Mail Service Center  
Raleigh, NC 27699-1031

**United Parcel Service/Federal Express**<sup>2</sup>

Rollins Laboratory  
2101 Blue Ridge Road  
Raleigh, NC 27607

<sup>1</sup> The United States Postal Service does not deliver to this address on Saturdays. Any specimens received by the state Mail Service Center after 7am on Friday will be delivered to Rollins Laboratory the following Monday.

<sup>2</sup> The United Parcel Service does not deliver to this address on Saturdays. Please contact your local United Parcel Service representative to determine shipping and delivery times.

For time sensitive specimens, it is best not to use the US Postal Service for delivery, as the sorting and distribution of specimens at this central location result in delivery delays to the laboratory.

**Who to Call at Rollins Laboratory?** by Dr. Karen Post

Rollins Laboratory  
919-733-3986

**Virology Queries:** Kim Bennett or Kim Howle, Virology Laboratory Supervisor/Assistant Supervisor or Dr. Gene Erickson, Veterinary Virologist

**EIA (Coggins test) Queries:** Kim Bennett or Kim Howle, Virology Laboratory Supervisor/Assistant Supervisor or Denise House, Medical Laboratory Technician

**Bacteriology Queries:** Sandy Murphy or Karen Surratt, Bacteriology Laboratory Supervisor/Assistant Supervisor, Dr. Karen Post, Veterinary Bacteriologist, Assistant Director

**Molecular Diagnostic Queries:** Beverly Wood or Gina Lombardi, Molecular Diagnostic Laboratory Supervisor/Assistant Supervisor (e.g. PCR test results)

**Specimen Shipping Information:** Deloys Lee, Receiving section supervisor

**Bacterial Serology Queries:** Jennifer Pruitt, Serology Laboratory Supervisor or Dr. Karen Post, Veterinary Bacteriologist, Assistant Director (e.g. Brucellosis, Mycoplasmosis test results)

**Billing Queries:** Amy Dean, Accounts Receivable Processing Assistant

**To Order Forms or Blood Boxes and Tubes:** Front Office staff will transfer phone call to Receiving section laboratory assistants

**Food Animal Disease and Management Queries** (Beef, Dairy, Small Ruminants, Swine) :Dr. Peter Moisan



### **Requesting Tests - Tips for Our Clients** by Dr. Jennifer Haugland

The new User's Guide has been available and we hope you will find it easy to use when trying to determine which diagnostic tests to request. If unsure, you may leave the "tests requested" column blank on the General Submission Form and laboratorians will use their discretion in assigning diagnostic tests. However, in order for them to do so, it is imperative that the submitter provide a complete history **and** a list of differential diagnoses. Without such information, it is very difficult to determine a course of action. When a submission form has incomplete information, the submitter will be contacted to "fill in the blanks" and this will result in specimen processing delays which in turn, delay test results.

Please note there may be several different tests available for some disease agents, such as, BVD virus. Therefore, be sure to specify the test method you desire (e.g. molecular detection, virus isolation or serum neutralization).

If you have not received or have misplaced our User's Guide, please contact the Rollins Laboratory at 919-733-3986 for another copy. In a few months the User's Guide will also be available at the NCVDLs web site, [www.ncvdl.com](http://www.ncvdl.com).

Please also feel free to call and speak to one of the veterinarians or laboratory supervisors with questions regarding diagnostic tests.

## **Disease Trends**

### **Canine Parvovirus** by Dr. Mahogany Wade

What's the big scare about canine parvovirus? Recently, Wake County has reported an increase in the number of parvovirus outbreaks in puppies in area shelters. So what exactly is this virus? Parvovirus is the most common cause of severe diarrhea seen in puppies; it can affect unvaccinated adults as well. This highly contagious virus is transmitted via ingestion of contaminated feces directly or indirectly (i.e. the pet walks in a contaminated area and later licks its paws). The virus attacks and destroys the intestinal epithelial cells, resulting in lethargy (may be first seen), vomiting, inappetence, and diarrhea within 3 to 10 days post-exposure. The feces often contain blood and may smell bad due to the increased amount of protein. Severely affected puppies/dogs may die due to dehydration or shock (hypovolemic, septic).

Any unvaccinated canine can be infected with parvovirus, however Rottweilers, Doberman Pinchers, Pitbulls, German Shepherds and Dachshunds are more susceptible. It can be detected in the feces via an ELISA test. However, the test may yield a false negative if the puppy is no longer shedding virus in the feces, in very early post exposure, or if viral particles are thoroughly coated with antibodies (thus interfering with test chemicals). Rollins Veterinary Diagnostic Laboratory has diagnosed the virus in numerous puppies, in which the ELISA test was negative at the veterinary hospital. Therefore, if a negative ELISA is obtained, veterinarians should institute treatment in canines that are highly suspicious for the virus.

While parvoviral enteritis can be treated, the response to therapy depends on the severity of the infection. Severely affected puppies may not survive, despite aggressive therapy. Treatment consists of withholding food and water, parenteral fluid therapy and antibiotics, vitamin B1 and potassium supplementation, antiemetics, and treating concurrent gastrointestinal parasitism. Transfusions (blood, plasma, colloid, or polymerized hemoglobin) may be indicated. Glucose levels should be monitored, especially in toy-breed puppies because they have a predisposition to develop hypoglycemia.

So how does one protect their pet from this virus?

- 1- Ensure that the puppy (or dog) is *adequately* vaccinated by a veterinarian. Serial vaccinations are indicated and should be followed according to protocol.



### **Canine Parvovirus** (Continued)

- 2- Keep unvaccinated puppies (or dogs) isolated from environmental factors (ie. other canines, dog parks, and high volume dog areas) until they are fully vaccinated.

It is important to realize that parvovirus can remain in the environment up to 7 months or more. In order to kill the virus, indoor surfaces including food and water bowls must be cleaned with bleach (1:30 dilution) or a commercial product specifically labeled for use against parvovirus. Toys, bedding and hands must be disinfected as well. Only fully vaccinated dogs should be allowed in the environment. Dogs that survive this virus generally have lifelong immunity to reinfection.

Is there any zoonotic potential? In other words, can this virus be transmitted to humans? This one of the most frequently asked questions regarding the illness. No, the virus is specific to canines and is not transmitted humans (or other animals).

### **Review of Equine Abortion/Stillbirth Cases Submitted in 2007** by Dr. Jennifer Haugland

Between January 1 and July 15 of 2007, the North Carolina Veterinary Diagnostic Laboratory System received 12 aborted or stillbirth foals for necropsy and diagnostic testing. 83% (10) were received at the Rollins Laboratory and the other 2 were submitted to the Elkin Laboratory. Two were stillbirths and the gestational ages of the remaining cases were evenly split between mid- and late- gestation (180 days to 315 days). Cases were generally evenly submitted with 1 case submitted in the months of January and March; 2 cases were submitted in the months of May and June; and 4 cases were submitted in April. Various breeds were represented: Miniature Horse, American Saddle Horse, Tennessee Walking Horse, Donkey, Arabian, Thoroughbred, Mustang, and grade. A diagnosis was reached in all 12 cases. Two cases were ruled as non-infectious and the causes of deaths were dystocia (stillbirth) and umbilical cord torsion. In a third case, the cause of fetal death was blunt trauma to the thorax (lacerated lungs and hemothorax) from a fall the mare had 5 days prior to abortion; however, there was evidence of severe mycotic placentitis. The remaining 9 cases (8 abortions and 1 stillbirth) had diagnoses of bacterial placentitis. In 7 cases, the etiological agent(s) were identified.

<b>Bacteria Isolated</b>	<b>Tissues</b>	<b>Lesions</b>
<i>Klebsiella pneumoniae</i>	placenta	placentitis
<i>Klebsiella pneumoniae</i>	placenta, lung	placentitis, pneumonia
<i>Pasteurella caballi</i> and <i>Streptococcus suis</i>	amniotic fluid, stomach con- tents, liver, lung	placentitis, pneumonia
<i>Streptococcus dysgalactiae</i> ss. <i>equisimilis</i>	placenta	placentitis, pneumonia
<i>Klebsiella</i> sp and non- fermenting gram negative rod	stomach contents	
<i>Staphylococcus xylosum</i>	stomach contents, liver, lung	placentitis
<i>Streptococcus equi</i> ss. <i>zooepidemicus</i>	placenta	placentitis, pneumonia, adrenal necrosis
alpha-hemolytic <i>Streptococcus</i>	stomach contents, liver, lung	
<i>Streptococcus dysgalactiae</i> ss. <i>equisimilis</i>	placenta	placentitis, pneumonia
alpha-hemolytic <i>Streptococcus</i> – colony type 1	stomach contents, lung	adrenal necrosis
alpha hemolytic <i>Streptococcus</i> – colony type 2	placenta	



### **Review of Equine Abortion/Stillbirth Cases Submitted in 2007** (Continued)

The various bacteria identified in these cases are normal inhabitants of either the genital mucosa or the intestines, and their presence in the uterus would suggest uterus infection before or after conception. Possible scenarios to consider are mild metritis prior to breeding, infection at the time of breeding, and poor conformation of the vaginal vault.

A definitive diagnosis achieved in 100% of the submitted equine abortion/stillbirth cases is exceptional when compared to the typical abortion diagnosis rate of 50-60% in equine cases. A large part of this success is due to prompt submission of a freshly aborted fetus by the veterinarian or owner and the inclusion of the placenta in every case.

### **Pet food Toxicity in North Carolina** by Dr. Marti Hanes

***FOR IMMEDIATE RELEASE -- Dayton, OH -- March 16, 2007 -- In response to the recent Menu Foods, Inc. nationwide recall of wet pet foods, P&G Pet Care has announced a voluntary recall in the United States and Canada on specific 3 oz., 5.5 oz., 6 oz. and 13.2 oz. canned and 3 oz. and 5.3 oz. foil pouch "wet" cat and dog food products manufactured by Menu Foods Inc. Emporia, Kansas plant with the code dates of 6339 through 7073 followed by the plant code 4197. This voluntary recall is part of a larger product recall by Menu Foods Inc., a contract manufacturer that makes a small portion of canned and foil pouch 'wet' cat foods for Iams and Eukanuba as well as other non-P&G brands. There have been a small number of reported cases of cats from the US (none in Canada) becoming sick and developing signs of kidney failure.***



**Figure 1:** X400 Crystals in Urine.

You may have been listening to the radio or searching the web, when you received the initial information concerning the pet food recall beginning in March. Since then, the veterinary diagnosticians and pathologists at the North Carolina Diagnostic Laboratory System (NCVDLS) have been receiving calls and samples from concerned customers in the state.

Several compounds have been found in animal feed in recent years, including aflatoxin and fumonsin produced by fungal contamination of grains. This Pet food recall was unique in the breadth and depth of its affect on the companion animal food industry. First, the compound was ADDED, and secondly so many brands from "almost generic" to "top-shelf" products were involved. It appears that melamine was introduced through wheat gluten from a specific supplier from China.

FDA officials traced the melamine to two Chinese plants, which had been supplying American distributors since last summer. The Menu food's recall was initially limited to specific items that contain wheat gluten, in cans and foil pouches, produced on specific dates and times between November 8, 2006, and March 6, 2007 in three of Menu's plants. Soon many other companies filed recalls.

Later, Agency officials said that some contaminated products, sold by pet food manufacturers as scraps, were fed to hogs in the Carolinas, New York, California and Utah, and that some of those animals tested positive for melamine. They said that a contaminated shipment of feed had been sent to a Missouri chicken farm as well. NC State officials investigated and determined that only one small independent hog producer in NC had been identified as receiving "feed fines" and adding them to the pig diets. Rapid risk assessment led to the sequestration and final resolution of the hogs exposed in North Carolina.

**Pet food Toxicity in North Carolina** (Continued)

Meanwhile, NCVDLs veterinary diagnosticians and pathologists in Raleigh, Arden, Monroe, Elkin and Rose Hill were scrambling to learn as much as was available concerning the pet food toxicosis. At first, it was released that a rodenticide, aminopterin, was responsible. In a news conference March 30, 2007, the FDA announced that laboratory testing identified the presence of melamine in food samples from the recalled lots.

Melamine is a unique compound, not previously reported to be an additive in pet food. Melamine is not highly toxic in general, has been used to make durable plastic household products, cleaning products, hard, stain-resistant laminates, flame-retardant foam and in soundproofing products. Melamine at high doses, however, causes a diuretic affect in dogs and cats, as well as the development of crystals in their urine. Minimal toxicologic research has been conducted or published on melamine. It appears that cats are highly sensitive, perhaps due to their unique hepatic metabolism.

Clients were advised by veterinarians and the NCVDLs to follow the instructions given by the AVMA, ACVIM and AAVID. Suspected cases were to be reported to the FDA by the client. Adverse effects or deaths of pets conclusively linked to eating the contaminated foods were reported to the FDA at <http://www.fda.gov/opacom/backgrounders/complain.html>. The FDA has posted answers to frequently asked questions about the recall at <http://www.fda.gov/cvm/MenuFoodRecallFAQ.htm>

As of April 26, 2007, FDA had received over 17,000 consumer complaints relating to this poisoning and those complaints included reports of approximately 1950 deaths of cats and 2200 deaths of dogs. The FDA on May 10 said it had more than 18,000 calls, and of those, about half of the 8,000 entered into the system had been reporting a dead pet. FDA officials stressed the reports were unconfirmed, and said a report on the deaths and illnesses of pets would not be available until fall of 2007. Other sources also supported higher numbers, including state numbers from the Oregon State Public Health Veterinarian (45 dead, April 18) and the Michigan State Veterinary Association (52 dead, April 16), as well as a sampling of all U.S. and Canadian veterinarians from the independent Veterinary Information Network (VIN). The VIN sets a range for probable deaths at 2,000 to 7,000, based on survey of VIN member veterinarians. VIN puts the cost of veterinary care for these animals at between \$2-20 million.

Back at the Rollins Laboratory, cases fitting the "case description" began to arrive in late March and by mid June, submissions of suspected cases of melamine toxicosis stopped. Curious to see how North Carolina was affected by the tainted food, we looked at records only of animals submitted to the NCVDLs facilities. Certainly commercial diagnostic companies and state laboratories have received tissues from affected animals in North Carolina, so in no way do we feel this data is all inclusive. Computerized records at NCDVLS were "data-mined" for cases submitted as possible "tainted food" victims. Additional cases were identified after histopathology revealed lesions consistent with melamine toxicosis in animals that had been submitted for unknown cause of death.

Approximately 36 cases were reviewed from our computer database. The animals had been submitted for necropsy to several laboratories within the NCVDLs and we received just kidneys from several veterinarians in the area. The inclusive dates were from January through June of 2007. Twelve (12/36) cases demonstrated appropriate lesions of melamine associated toxicosis when examined histologically. Ten of the twelve cases were Domestic Shorthair Cats (DSH). Of the cats, seven were male cats. The age of cats that had been submitted to NC Diagnostic Laboratories ranged from 5 months to 15 years, 7 of those cats were under 6 years of age. Both dogs were male, Lab or Lab-shepherd mix and between the ages of 5 and 8 years.



### **Pet food Toxicity in North Carolina** (continued)

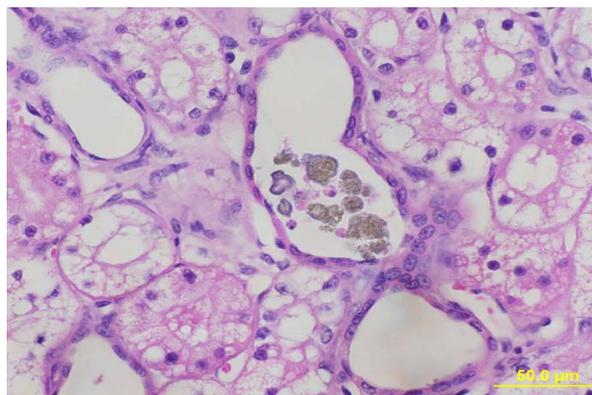
Case#	Date	Species	Breed	Age(yr)	Sex	Accession #
1	3/26/07	Feline	DSH	4.0	F	Elkin 07-009261
2	3/29/07	Feline	DSH	5.5	M/N	Rollins 07-009860
3	4/02/07	Feline	DSH	8.0	M	Arden 07-010048
4	4/10/07	Feline	DSH	2.0	M/N	Rollins 07-011077
5	4/16/07	Canine	Lab	8.0	M	RoseHill 07-009678
6	4/16/07	Canine	LabX	5.0	M	Rollins 07-011768
7	4/16/07	Feline	DSH	0.5	F	Rollins 07-011734
8	4/16/07	Feline	DSH	0.5	F/S	Rollins 07-011728
9	4/19/07	Feline	DSH	3.0	F/S	Rollins 07-012265
10	5/17/07	Feline	DSH	1.0	M	Elkin 07-015502
11	5/21/07	Feline	DSH	8.0	M/N	Rollins 07-015660
12	6/18/07	Feline	DSH	15.0	M	Arden 07-018449

The pathologist's diagnoses for most suspected cases of melamine toxicosis in dogs and cats were:

**Kidney: Severe acute tubular (renal) necrosis with the presence of intratubular crystals.**

The crystals had to be differentiated from crystals created during ethylene glycol toxicity, and crystals associated with other chronic diseases of the kidney. Pictures were posted on the American Association of Veterinary Laboratory Diagnosticians website to aid in differentiation. (Figures 1, 2).

Several companies and state laboratories offer analysis of kidney melamine or cyanuric acid (a metabolic byproduct) or feed. The Toxicology Laboratory of the California Animal Health and Food Safety Laboratory has assisted the FDA with the analysis of pet food samples related to the recall (see next page).



**Figure 2:** X400 Crystals in Kidney Tubule

Menu Foods' massive recall of pet food may cost the company at least \$45 million, and that doesn't take into account the drop in future sales or legal settlements not covered by insurance, the Ontario-based company estimates. According to the Menu Food website:

"If Menu Foods product is the cause of sickness or death, Menu Foods will take responsibility". Please keep copies of all your veterinary records and receipts for pet food purchases, as well as, vet bills. On May 24, 2007, a United States federal court issued an order that, for the time being, prevents Menu Foods from having direct contact with individual pet owners. "In light of the order, we regret that we cannot communicate with potential claimants at this time. As soon as the court permits, we intend to resume efforts to resolve claims directly with pet owners. We will post additional information when we are able." [www.menufoods.com/recall](http://www.menufoods.com/recall).

Current information can be obtained from the **FDA web site:**

<http://www.fda.gov/oc/opacom/hottopics/petfood.html>

The AVMA WEBSITE is [http:// www.avma.org/aa/menufoodsrecall/default.asp](http://www.avma.org/aa/menufoodsrecall/default.asp)

**Pet food Toxicity in North Carolina** (continued)**California Animal Health and Food Safety Laboratory****Pet Food Recall Information**

The Toxicology Laboratory of the California Animal Health and Food Safety Laboratory has assisted the FDA with the analysis of pet food samples related to the recall.

1. If you are a pet owner whose pet shows any signs of illness, contact your veterinarian as soon as possible.
2. If you are a veterinarian and feel that a pet fits the case definition, contact the CAHFS Toxicology Laboratory at (530) 752-6322 for further information.
3. Save all suspect food samples (opened and unopened). Testing of food samples is offered and priority of testing depends on the specific case. CAHFS laboratory will make arrangements with the veterinarian for submission of food samples
  - a. Opened food samples should be frozen, and a minimum of 10 oz should be saved
  - b. Unopened food samples (cans, pouches, or bags) can be stored as indicated on the packaging (usually at room temperature)
4. In the unfortunate event that your pet has died, contact your veterinarian to arrange for a complete post-mortem examination.
5. Sample collection for possible toxicology analyses include the following:
  - a. Live animal: urine (5ml ideal), serum and blood (2 to 3 ml if possible)
  - b. Post-mortem: urine (5ml ideal), kidney, liver, and stomach contents (as much as possible for tissue and stomach contents samples)
6. All samples should be saved frozen. Currently, CAHFS is accepting food, urine, and kidney samples for melamine analyses. Priority will be given to cases in which renal failure is present but no food is available for testing.
7. Currently, there is no information available regarding melamine kinetics. Thus, we do not know how long after food ingestion melamine can still be detected in urine.
8. Cost of Testing:

In-state cost per test is \$100.00

Out-of-state cost per test is \$200.00

9. Shipping and Submission: All samples should be sent to the Davis Laboratory Please see the shipping brochure here: [http://www.cahfs.ucdavis.edu/shipping\\_packaging\\_supplies\\_docs/shippingbrochure3fold.pdf](http://www.cahfs.ucdavis.edu/shipping_packaging_supplies_docs/shippingbrochure3fold.pdf)

**Pet food Toxicity in North Carolina** (continued)

**The American Association of Veterinary Laboratory Diagnosticians issued the following protocol (April 17):**

**Proposed protocol for testing dead animals with nephrotoxicosis possibly associated with adulterated pet food.**

1. If possible, serum and urine should be taken antemortem for a chemical analysis and urinalysis including sediment examination. Typical crystals should be birefringent with polarized light.
2. Information regarding the pet food involved-such as brand, lot number, and UPC-should be recorded. Samples of all food should be held by the client, or the attending veterinarian.
3. A standard necropsy should be performed, using the judgment of the pathologist/veterinarian in charge, with particular attention paid to the urinary system. Photographs of pertinent lesions are recommended.
4. Samples of all important organs should be preserved in fixative. Lung, heart, liver, spleen, kidney, urinary bladder, adrenal gland, pancreas, thyroid/parathyroid, ileum, and brain are suggested, but others may be needed, depending on the lesions observed. Sections should be no thicker than 4 mm and fixed at fixative: tissue ratio of 10:1. In addition, samples of kidney, liver, fat, and urine should be taken, frozen, and held for future testing when a specific toxicologic assay is developed (as much tissue as is practical should be frozen and saved).
5. If possible, sections of kidney should also be preserved in 100 percent (absolute) ethanol and/or snap-frozen in OCT medium to preserve crystals that might be washed away by prolonged formalin fixation.
6. All fixed tissues should be processed and embedded in paraffin within one to two days of fixation to best preserve crystal integrity. Routine H&E stains appear adequate to demonstrate crystals and renal tubular lesions, though Gomori's silver stain or polarized light may be used to highlight the crystals. Crystals can be viewed with or without staining on frozen or fixed sections.
7. Testing for other possible causes or contributing diseases should also be pursued, as a substantial proportion of the cases appears to be multifactorial. Examples include parvoviral enteritis, chronic tubulointerstitial disease, lymphosarcoma, or ethylene glycol toxicosis.

## Interesting Cases

**A Cluster of Bovine Rabies Cases in Western North Carolina** by Dr. Richard Oliver

Early in my veterinary education, I, like so many others, took as gospel any “tip” relative to an observation made by some experienced and respected clinician. And one such sage offering that was frequently uttered was “They come in 3s”, referring to those “not uncommon”, but certainly NOT common cases that cross our paths. Such was the situation in May 2007 at the Western Animal Diagnostic Laboratory (WADDL) with the submission of three cases involving rabies in cattle.



### **A Cluster of Bovine Rabies Cases in Western North Carolina** (Continued)

On May 11, 2007 a 3 month old mixed breed beef heifer from a farm in Rutherford County presented with a 3 day history of staggering, fever (105.4), and tenesmus prior to being found dead that morning. A gross necropsy examination was uneventful. Brain tissue shipped to the North Carolina State Laboratory of Public Health (NCSLPH) was positive for rabies virus on direct fluorescent antibody test (DFAT).

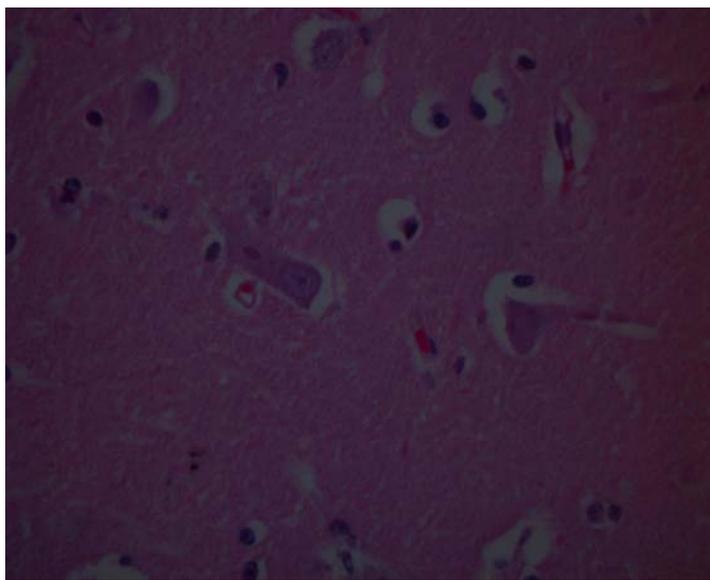
Later, that same day (May 11, 2007), WADDL received a 5 month old Angus heifer from a farm in Catawba County. The calf had been found dead on the evening of May 10, 2007 following a two-day clinical history of "slow movement, drooped ears, lowered head, slobbering, and some increased vocalization". The case coordinator reported significantly advanced post mortem autolytic change at necropsy with no definitive gross tissue alterations observed.

On May 17, 2007 a 30 month old Angus heifer from the same Catawba County farm as that of the above 5 month old, was submitted to WADDL with a history of abnormal behavior which the herdsman began to notice on May 16, 2007. He described the heifer as "Bawling like something was cutting out her insides" and "...acting haywire". Other observations included ptialism and attempting to mount numerous other cattle. A systematic necropsy examination was performed. No significant gross tissue alterations were found. Brain tissue tested positive for rabies by DFAT at the NCSLPH. In the state of North Carolina, the NCSLPH is the sole source of rabies testing.

Histopathological evaluation of brain tissue from the index case (Rutherford County farm) at the Rollins Laboratory (NCVDLS) identified subacute, multifocal encephalitis of moderate magnitude characterized by gliosis and intracytoplasmic inclusion bodies, consistent with rabies encephalitis. Histopathological evaluation of brain tissue from each of the cattle from the Catawba County farm, performed at the Rollins Laboratory, was also consistent with a diagnosis of rabies on demonstration of myriad eosinophilic intracytoplasmic inclusion bodies (Negri bodies) in neurons of the cerebrum, brain stem, hippocampus, and cerebellum. Inflammatory cells were minimal in number in the 5-month-old calf from the Catawba County farm.

Following the confirmation of rabies in the heifer from Catawba County, the case coordinator of the previous submission from this farm arranged for formalin-fixed brain tissues to be submitted to the Centers for Disease Control and Prevention (CDC) where rabies virus antigen was detected by the formalin-fixed direct fluorescent antibody (FFDFA) test.

On May 14, 2007, a calf from the Catawba County farm, having left the premises on April 10, 2007, was found dead on a farm in Georgia where the calf's dam had been transported for an embryo transfer procedure. The attending veterinarian was notified of the necropsy findings from WADDL. Histopathological diagnosis of tissues submitted from a field necropsy was reported as "Acute Suppurative Portal Hepatitis" by the UGA



**Figure 3:** High magnification photomicrograph of bovine cerebral neuron with distinctive eosinophilic intracytoplasmic inclusion body.

**A Cluster of Bovine Rabies Cases in Western North Carolina** (Continued)

CVM Athens Diagnostic Laboratory. (Report date May 24, 2007) No brain tissue was submitted for evaluation.

On follow up history the owner of the Catawba County herd reported turning his cattle out onto a “new” pasture in March 2007 and observing, at that time, that a family of skunks was active in that pasture. Wildlife species are the reservoir for maintenance of the rabies virus (CDC reports 90% of reported rabies cases are in wildlife) and, in the eastern United States, the raccoon strain of the rabies virus is the predominant concern. It has spread over most of North Carolina within the past decade. While raccoon rabies can infect virtually any mammal, it is spread and maintained in the wild through raccoons. Skunks act as a major reservoir of rabies in a few eastern North Carolina counties.

Rabies occurs at a current rate of about one human case per year in the United States.

Though rabies affects only a small number of humans, it remains a disease of great concern because of the fear of the clinical features. This fear is instilled by the general knowledge of the horrific clinical signs and the nearly uniform fatal outcome that makes it of far greater importance to the human population than warranted by the incidence.

Costs associated with detection, prevention, and control of rabies exceed \$300 million annually.

Clinical signs are similar in all species but vary widely in individual cases. A “furious” and a “dumb” or paralytic form are generalized terms used historically to characterize the clinical presentation of rabies encephalitis. With cattle, in particular, the clinical signs of rabies are often vague and confusing. In the “furious” form there may be continuous and loud bellowing, pawing at the earth, and belligerence toward humans or other livestock. With cattle, however, more often than not, there are no “furious” signs. Drooling is not seen in all cases. The most consistent sign observed and reported is **tenesmus**, with more or less constant straining for many hours as if to defecate. Another frequently reported observation is knuckling over on the hind fetlocks. Common (and reasonable) differentials in cattle rabies cases include indigestion, milk fever, acetoneemia, and listeriosis. The clinical course in cattle, as in most species, is rarely longer than 5 days, and usually shorter. There are no pathognomic gross lesions in rabies. Important pathological changes are microscopic.

Histopathologic changes consist of nonsuppurative polioencephalomyelitis with craniospinal ganglioneuritis. There is wide species variability with respect to the severity of the inflammatory response, and the response is often minimal in cattle. The magnitude of inflammation does not correlate to the severity of central nervous system signs. The presence of Negri bodies – single or multiple intracytoplasmic, eosinophilic, ovoid inclusions - is indicative but not definitively diagnostic of rabies infection. These inclusions are often present in numbers inversely proportional to the degree of inflammation.

While rabies transmission usually occurs via bite by a carnivorous animal, and is very seldom transmitted by herbivores, it is stressed that the virus is shed in the saliva in all infected animals. As a result, all suspect animals should be handled by attendants with due care.



## Departmental News

### ROLLINS LABORATORY

**Bacteriology...** Welcomes two new Medical Technologists and one Medical Technician: Heather Keener Durand, Elizabeth Ortiz and Catherine Tancrelle, respectively.

**Molecular...** Rob L'Heureux has accepted a position as Medical Laboratory Technologist, transferring from Bacteriology.

**Quality Assurance and Safety...** LouAnn Risser has resigned her position as Quality Assurance Manager. Ghazala Jawad attended an intensive 3 day course for ISO 17025 training.

**Serology...** Katie Wilkins has accepted a position as Medical Laboratory Technologist I, transferring from Bacteriology.

### ROSE HILL LABORATORY

Kelly Cottle recently joined the Rose Hill staff as a Veterinary Laboratory Assistant.

### ELKIN LABORATORY

Welcomes Bonita Harrell as a Medical Laboratory Technician; assigned to their busy avian serology laboratory.



## Employees of the Quarters

*Congratulations Deloys!*

We would like to congratulate Deloys Lee who was named the Spring Employee of the Quarter. Deloys has been employed at the Rollins Laboratory since 1978! She is currently a Medical Laboratory Technologist and has the huge responsibility of processing all laboratory specimens for accessioning into the laboratory for diagnostic testing, a job which she performs with great accuracy and enthusiasm. Deloys is an anointed writer and seamstress. She also collects clocks, angels, pillows, and baskets.



*Congratulations Tomekia!*

We would also like to congratulate Tomekia Pittman who was named the Summer Employee of the Quarter. Tomekia is a Medical Laboratory Assistant at Rollins and has the sole responsibility of preparing microbiological media for the busy Bacteriology Laboratory. She has done an exemplary job of both implementing "operation clean sweep" and good laboratory practices in the media preparation section and put forth a major effort to clean and re-organize to utilize laboratory space to its fullest to ready her section for the upcoming AAVLD site visit. Demonstrating that she is a team-player, in her spare time, she has also re-organized the washroom and assisted Histology in their efforts. Tomekia enjoys shopping, going to the movies and church, spending time with her daughter, and listening to music.



## Veterinary Staff

### Rollins Laboratory (919) 733-3986

**Director**

Dr. David Marshall

**Assistant Director**

Dr. Karen Post

**Veterinary Diagnosticians**

Dr. Jennifer Haugland

Dr. Stacy Robinson

Dr. Mahogany Wade

**Veterinary Pathologists**

Dr. Tahseen Abdul-Aziz

Dr. Peter Moisan

Dr. Steven Rushton

Dr. Martha Hanes

**Veterinary Microbiologist**

Dr. Gene Erickson

### Arden Laboratory (828) 684-8188

**Director**

Dr. Richard Oliver

**Veterinary Diagnostician**

Dr. David Drum

### Elkin Laboratory (336) 526-2499

**Director**

Dr. Darrell Rector

**Veterinary Diagnostician**

Vacant

### Monroe Laboratory (704) 289-6448

**Director**

Dr. Kim Hagans

**Veterinary Diagnostician**

Dr. Reg Ridenhour

### Rose Hill Laboratory (910) 289-2635

**Director**

Dr. Carlton Rouse

**Veterinary Diagnostician**

Vacant Position

