Dr. Angela Ellis

Dr. Ellis is one of the newest members of the diagnostic lab team and has been a faculty anatomic pathologist at the Athens Veterinary Diagnostic Laboratory since August 2005. She received her BS from Furman University in 1996 and her DVM in 2001 from the College of Veterinary Medicine, University of Georgia in 2001. She completed a residency in anatomic pathology and doctoral research program at the UGA College of Veterinary Medicine and received her PhD in 2008. Her doctoral dissertation focused on West Nile virus in wild birds and mortality in raptors. Her diagnostic and research interests include ocular pathology, infectious diseases, and pathology of wildlife and exotic species. Ongoing projects include a study of diffuse iris melanomas in cats and collaborative projects with faculty at the Southeastern Cooperative Disease Study involving the characterization of Trypanosoma cruzi in wildlife species. She recently completed a course in diagnosis of foreign animal diseases at Plum Island.

Dr. Debra Miller

Dr. Miller is an Associate Professor in the Department of Pathology at UGA and has been a veterinary pathologist at the VDL in Tifton since 2000. Dr. Miller was raised on a dairy farm in central Wisconsin. Her love of the outdoors lead her to a career in wildlife. She has a BS in Wildlife, Biology and Resource Management from the UW-Stevens Point, MS in Wildlife Ecology, DVM and PhD from Mississippi State. She attended the University of Miami for residency training in comparative pathology where her wildlife investigations expanded to aquatic animals. She collaborates with researchers in Tennessee, Florida and Alaska on ranaviruses in amphibians, mercury effects in leatherback sea turtles, and reproductive/toxicological studies in marine mammals. She is an Assistant Editor for Journal of Wildlife Diseases and chairs the Editorial Board committee for The Association of Reptile and Amphibian Veterinarians (ARA). Dr. Miller enjoys the Tifton community and working with the veterinary clientele of the VDL.

Message from the Directors

Jeremiah (Jerry) T. Saliki and Murray E. Hines II

We are very pleased to present the fourth issue of our newsletter! We want to inform you of the status of the laboratories and our continuous effort to provide the highest level of service to veterinarians, animals, farmers, and pet owners of the state of Georgia.

Both laboratories are continuing efforts to reduce costs without cutting services or instituting employee layoffs. However, due to rising operational costs, reduced state funding, and future additional budget reductions, the diagnostic laboratories are facing a tough period. Our recent modest fee adjustments have offset a small portion of the budget shortfalls. The possibility of additional fee increases cannot be ruled out going forward. The quality and timeliness of the results we deliver to you is critically important.

The Tifton Laboratory has now fully migrated to the UVIS laboratory information system. We wish to thank you for your patience and continued support during this transition period. Internet retrieval of case results and account information via the diagnostic laboratories website (www.vet.uga.edu/dlab) is available for clients of the Athens Laboratory, and the Tifton Laboratory will follow suit in the near future. Future upgrades to the website will include online bill pay and online submission of accessions for both laboratories. In the face of serious budget shortfalls, these improvements are only possible because of the dedication and hard work of our faculty and staff. We remain confident that with your support and our ongoing efforts we will emerge from these trying economic times stronger and better prepared to continue serving your needs for accurate and affordable diagnostic services.

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Two more state-mandated unpaid furlough days are scheduled for March 8 and April 30, 2010. On these days, the Athens and Tifton laboratories will only have small skeleton crews. Case turn-around time may be delayed as a result and we ask for your patience and understanding in these difficult times.

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ATHENS VETERINARY DIAGNOSTIC LABORATORY

Hellos

• Christina Still, a former research graduate student with Dr. Sanchez, is now a research Laboratory Technician III for our Molecular Infectious Diseases Research Laboratory.
• Bryan Center came aboard as our new Laboratory Technician III in Necropsy and will also be working in the Histology Trimming Laboratory.
• We have new temporary employees: Cody Jordan and Truth Price (a Federal Work Study student) are assisting in electronic archiving of medical documents, while Erin Casey is a new research assistant to Dr. Krimer.

Goodbyes

• Pauline Groh graciously retired in December 2009 from her position as a Laboratory Manager in the Histology Trimming Laboratory, after working at UGA for 10 years.
• Terry Bennett left the Serology section to accept another job within the UGA system.

Kudos

• Dr. Murray E. Hines II was appointed permanent Laboratory Director, effective October 1, 2009.
• Dallas Ingram, section chief of Virology and Serology, received her master’s degree from Valdosta State University in Biology last semester. Her thesis title is “Effects of Commercial Poultry Operations on Diseases in Wild Turkeys (Meleagris gallopavo) in South Georgia.”
• Dallas Ingram, Kristi Goins, Michelle Farrar and Julie Musgrove in Serology were re-certified for brucellosis and Johne’s disease serological testing.
• Ingrid Fernandez, Sara Bates, Paula Bartlett and Rachel Steffens in Molecular Diagnostics successfully completed the 2009 national proficiency tests for foot-and-mouth disease and hog cholera.

TIFTON VETERINARY DIAGNOSTIC INVESTIGATIONAL LABORATORY

Kudos

• Dr. Murray E. Hines II was appointed permanent Laboratory Director, effective October 1, 2009.
• Dr. Sreekumari Rajeev will be promoted to associate professor in the Department of Infectious Diseases effective July 1, 2010.
• Dallas Ingram, section chief of Virology and Serology, received her master’s degree from Valdosta State University in Biology last semester. Her thesis title is “Effects of Commercial Poultry Operations on Diseases in Wild Turkeys (Meleagris gallopavo) in South Georgia.”
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• Dallas Ingram, Kristi Goins, Michelle Farrar and Julie Musgrove in Virology successfully completed the 2009 national proficiency tests for foot-and-mouth disease and hog cholera.
• Jill Johnson in Virology successfully completed the 2009 national proficiency test for foot-and-mouth disease.
• Cindy Watson, Gail Clifton, Teri Register, Jill Johnson and Candice Jackson in Bacteriology passed the 2009 AA VLD Bacteriology Inter-Laboratory Quality Assurance Survey with 100% accuracy.
• Pam Currin and Gulnaz Shaikh, and Rachel Steffens in Serology were re-certified for brucellosis and Johne’s disease serological testing.
• Ingrid Fernandez, Sara Bates, Paula Bartlett and Rachel Steffens in Molecular Diagnostics successfully completed the 2009 national proficiency tests for foot-and-mouth disease and hog cholera.

PERSONNEL HIGHLIGHTS

Leatherback sea turtles (Dermochelys coriacea) are the largest of the sea turtles, growing to over six feet in length, yet at hatching the turtle will easily fit in the palm of your hand. Pollutants from anthropogenic sources are among the threats marine turtles face and the pollutant of concern to us is mercury. Mercury enters the ocean through industrial sources and natural geologic processes and can bioaccumulate within the body through time and with progression up the food chain. The body may use selenium to detoxify mercury in the liver. In some species, as bodily mercury levels rise in vivo, selenium concentrations may become exhausted resulting in selenium deficiency. In birds and reptiles, mercury and selenium also may be transferred from females to their offspring via the yolk.

Thus far, blood mercury and selenium concentrations have been documented in small numbers of nesting leatherback sea turtles from the coasts of Africa and Trinidad, but levels have not been reported in hatchlings. Further, there is no research to advance our understanding of maternal transfer of selenium and mercury in leatherbacks. It is likely that as hatchlings develop in ovo, mercury and selenium concentrations may increase as a result of water and gas exchange between the egg and the nest environment. Therefore, the environment, as well as maternal input, may contribute to mercury and selenium loads in hatchlings. The source(s) of mercury and selenium in leatherbacks have not been documented, but we hypothesize that they accumulate from both water and their prey (pelagic jellyfish).

The University of Georgia Veterinary Diagnostic and Investigational Laboratory and Florida Atlantic University (FAU) have been collaborating on a large-scale study to investigate mercury and selenium levels in leatherback nesting females and their hatchlings. The goal of this study is to gain insight into the possible role that mercury might play in affecting hatching success. Concurrently, we are documenting basic blood parameters to be used by diagnosticians and biologists for population studies to assess maternal hatching health and to assess the relationships of these parameters to nest success. Additionally these baseline parameters may aid assessments during rehabilitation in stranded or injured turtles.

Dr. Jeannette Wynken of FAU, a well-known turtle biologist, has been studying the sea turtles for over 25 years. Justin Perrault, an FAU doctoral student, has expanded and conducted much of this study. For the past three summers, veterinary students have assisted Perrault with field collections and learned firsthand the value of veterinarians and biologists working together on wildlife studies. Thus far the students have come from the University of Tennessee (Erica Eeds and Randi Timmons) and UGA (Laura Bryan and Annie Page). In 2007 and 2008, students traveled to Florida to assist Perrault. This past summer, Page, class of 2011, traveled to St. Croix to participate in the study. Page has stated that this experience has strengthened her passion to pursue her career in conservation medicine.

To date we have collected two years of data on this study and are nearly finished with our third year of data collection. These data will elucidate the role of mercury and selenium in hatching success but it also will advance our understanding of the hematological and biochemical profiles of this endangered species. For more information on the leatherback sea turtle study, contact Dr. Debra Miller (229-386-3340) at the VDLIL in Tifton.
HELP US HELP YOU!
TIPS FROM THE ADMINISTRATIVE & RECEIVING STAFF

The Administrative and Receiving staff wants to make communicating with us as easy as possible. Here are a few reminders to make daily communication a breeze! Please call us for further details, to activate your Athens Laboratory online account, or to find out about pre-paid shipping. Athens: 706-542-5568; Tifton: 229-386-3340.

Account Issues
• When sending your payment via check, please remember to put your Account Number on it so we can credit the correct account.
• If you prefer to charge your invoice, both the Athens and Tifton labs accept major credit cards by telephone.
• Both laboratories offer pre-paid shipping at a reduced rate to clients submitting diagnostic samples. Call for more information on this our program.

Privacy Policy: Disclosing Information
We are not legally allowed to disclose any information directly to your client. When calling in to check on results, please have the Doctor’s License Number or Accession Number available. This helps verify to whom we are speaking. In the event a client calls for information, we will always direct them to call your office.

Website and Results Online
Want faster access to results and your account balance? Activate your Athens D-Lab online account by calling us at 706-542-5568. Unfortunately this cannot be done on the web; DO NOT submit your information online. We are currently working on resolving minor client access problems that have been identified.

Our Web site, http://www.vet.uga.edu/dlab, recently underwent a face-lift to provide richer, more current and more user-friendly content. More updates are planned, including a comprehensive test list which provides specific turn-around times and what samples to send.

What would you like to see online? Please provide us with feedback on how we can improve our system to better serve you?

Submission Reminders
• New Doctors - Congratulations on your new hire! If there is a new doctor at your clinic, even if they have submitted from other clinics, please include their first and last name and license number on the submission form. Without this information, we cannot input the case into our system and there may be a delay in receiving results.

• Submission forms - Please fill out submission forms completely, including all owner and patient information, tests requested and any relevant history. Calling your clinic not only slows down sample processing, but it is also a burden on your staff’s time when they answer your call.

• FAXing - If faxing submission forms to the Athens laboratory please use 706-583-0654. If faxing submission forms to the Tifton laboratory please call 229-386-7128.

• Syringes - We cannot accept syringes with the needle still attached; this is dangerous for our staff. Please attach a sterile cap, or preferably transfer the sample to a tube.

• Biopsies - Biopsy samples should never be submitted in plastic bags; this is both hazardous and messy. Please submit biopsy samples in screw-top jars. Do not use baby food jars because lids will leak. Avoid jars that are too small to hold enough formalin. Do not use jars that have narrow necks as fixed tissue can be impossible to remove whole through the narrow opening.

• Blood samples - Please use appropriate packing materials (bubble wrap, Styrofoam peanuts, etc.) to prevent glass tubes from breaking. It is critical to submit blood samples on ice, especially during the hot summer months.

• Fresh tissues - Fresh tissue samples may be submitted double bagged and always packaged on ice.

• Swabs & Fluids - Please always indicate from where a swab was taken (e.g. ear, skin, wound, etc.) and what type of fluid is submitted (e.g. pleural, peritoneal, cystic mass, etc.).

We’d love to hear from you!
Please send all questions, concerns, or comments regarding Administration and Receiving to our business managers:

Athens: Lightsey, Wendy; Counkle, Natasha
Tifton: Liburd, Renae; Hall, Dan

The Doctor’s License Number or Accession Number is required for all samples submitted to the Athens and Tifton labs.

Toxicity Due to Nandina domestica in Cedar Waxwings (Bombycilla cedrorum)
by Moges Woldemeskel (DVM, PhD, DACVP) & Eloise L. Styer (PhD)

Many cedar waxwings were found dead in a yard in Thomas County, Georgia, in April, 2009. Five of these submitted to the Tifton Veterinary Diagnostic and Investigational Laboratory, were examined grossly and microscopically.

On gross examination, the gastrointestinal tract of these birds were distended by intact and partly digested berries of Nandina domestica Thunb. (Heavenly Bamboo). These berries were the only ingesta present within the digestive tract of these birds. In all the examined birds, there were gross pulmonary, mediastinal, and tracheal hemorrhages. Microscopically, several tissues and organs including the lungs, liver, kidney, proventriculus, ventriculus, uvea of the eye, heart, the meninges and the brain were diffusely congested and hemorrhagic. The congestion, hemorrhage and edema were very marked in the lungs.

The gross and microscopic findings are consistent with lesions associated with cyanide toxicity. N. domestica berries may contain large quantities of cyanogenic compounds. For most cultivars of N. domestica, cyanogenesis is the most important intoxication factor.

As seen in these cedar waxwings, birds that die from cyanide chemical toxicity multiple tissues or organs, particularly the lungs, may be hemorrhagic and edematous, and congested with blood. Cyanide is a mitochondrial toxin that impairs cellular respiration, causing morbidity or mortality within a very short time.

During winter and spring, when the food supplies are low or out of season, cedar waxwings migrate in huge numbers from their breeding grounds in the northern U.S. and southern Canada into the more southerly regions, where they feed almost exclusively on fruits. They often eat voraciously, until they can hold no more, and may become intoxicated from eating large quantities of over-ripe fruit.

N. domestica produce vast quantities of bright red berries, which last through the winter into the spring in this region, attracting hungry birds whose food is in short supply during this time of the year. Toxicity associated with N. domestica has not been previously reported in the cedar waxwings. However, due to their voracious feeding behavior, these birds had eaten toxic doses of the readily available berries of N. domestica.

New Tests
• Both laboratories have PCR’s for influenza viruses including novel H1NI swine influenza, canine influenza, and avian influenza.

• Triechomomas foetus PCR is available for bovine preputial and vaginal washes, and for feline fecal samples. For samples submitted to Tifton, please submit in Trichomonas media. Call 229-386-3340 to obtain TM media and instructions for inoculation and transport to Tifton.

Athens:
• Individual PCR tests ($22) are available for canine adenovirus 1 & 2, feline panleukopenia virus, Borrelia bronchiseptica (kennel cough), reptile adenosivirus, Anaplasma marginale, and Babesia sp.

• The Tick-Borne Disease Panel ($80) includes Anaplasa sp., Ehrlichia sp., Borrelia burgdorferi (Lyme’s disease), Rickettsia sp., and Babesia sp.

• The Canine Diarrhea Panel ($95) includes Campylobacter sp., Salmonella sp., Lawsonia intracellularis, Clostridium difficile toxin A and B, and canine parvovirus.

• The Canine Respiratory Disease Panel ($95) includes Bordetella bronchiseptica, canine adenovirus, influenza, distemper virus, Mycoplasma spp. and coronavirus.

Tifton:
• The equine, avian and canine West Nile Virus IgM ELISA is being re-offered only if specifically requested at a cost of $20 per sample. Otherwise a routine serum neutralization (SN) test which detects IgM and IgG antibodies and EE IgE will be performed.

• Endocrinology tests includes: T4, FT4, FT3, T3, TSH-3, Digoxin, Estradiol, Testosterone, Progesterone, Cortisol (ACTH Stim. and Dex. Suppression), Insulin, Vitamin B12, Folate, FSH and LH. Contact Anita Merrill for more information (229-386-3340).

• Special chemistry tests include: Fructosamine, Phenobarbital, Bile Acid, Iron and UIBC, IgG by RID and Serum Protein Electrophoresis. Contact Anita Merrill for information (229-386-3340).
What samples should I submit to the laboratory?

1. EDTA-blood? Yes! The distemper virus has a high tropism for white blood cells. Therefore, buffy coat cells are a very good sample for CDV diagnosis. Based on our experience, buffy coat cells separated from EDTA-blood are often an excellent sample for distemper diagnosis. The submission of EDTA-blood is strongly recommended.

2. Conjunctival smears? No. Most textbooks recommend the submission of conjunctival smears for fluorescent antibody (FA) staining. Our experience over the years has been that submitted conjunctival smears are often full of mucus but contain few or no cells. Therefore, conjunctival smears are not recommended. However, nasal swabs may be useful for PCR testing if submitted fresh. Therefore, buffy coat cells are a very good sample for CDV diagnosis. 

3. Serum? No. Detection of CDV antibodies in serum is not useful for diagnosis, except in unvaccinated dogs older than 4 months. Even in this group, paired serum samples need to be submitted - one collected at presentation and one collected 2-3 weeks later. A four-fold or greater rise in antibody titer between the "acute" and "convalescent" serum samples confirms the diagnosis of CDV. A positive antibody titer on a single sample from an unvaccinated dog confirms CDV infection but does not determine when it occurred. Serum antibody titers are also useful for ascertaining the vaccination status of a dog.

4. Cerebrospinal fluid? Yes! Antibody molecules are normally too large to penetrate the blood-brain barrier so antibodies resulting from vaccination or non-CNS infection will not be detectable in CSF. Positive antibody titers in CSF can confirm the diagnosis of cerebral distemper. The virus can also be detected in CSF using PCR. If the CSF tap needs to be clean but the most rewarding specimen for ante-mortem diagnosis of canine distemper. Submit about 6 ml of EDTA-blood (purple top tube) from suspect distemper dogs. If cerebral distemper is suspected, a CSF sample submitted along with serum (clotted blood) can lead to a definitive diagnosis.

When should I collect samples?

For antigen detection (FA, PCR, or virus isolation), the optimum time for sample collection is during the height of the febrile response, when nasal discharge is still serous or sero-mucoid. This is also the best time to collect the "acute" sample if paired serology is envisaged. Convalescent serum samples should be collected 2-3 weeks following the acute sample and CSF samples can be collected whenever CNS signs are observed.

Introduction

Canine distemper virus (CDV) infects and causes disease in domestic dogs and many wild carnivores, including coyotes, ferrets, foxes, lions, mink, raccoons, and skunks. Although sustained vaccination of domestic dog populations has greatly reduced the incidence of canine distemper, the disease is still prevalent worldwide and now occurs in sporadic outbreaks. Young puppies between 3 and 6 months of age are more susceptible to infection and undergo more severe disease than adult dogs. However, non-vaccinated older dogs are also highly susceptible to infection and disease.

The ante-mortem diagnosis of canine distemper based on clinical signs is challenging because of the many other diseases that mimic the clinic signs. Laboratory testing is required to confirm a suspicion of canine distemper. Submission of the optimal samples assures that the laboratory can produce reliable results for CDV testing.

Neurons of a dog infected with canine distemper virus. (Photo by Dr. Uriel Blas-Machado)