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# Diagnostic Update

## Newsletter Commences

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We are pleased to announce that the Atlantic Veterinary College (AVC) Diagnostic Services Laboratory will be mailing a diagnostic update newsletter to all our clients on a semi-annual basis. Issues will feature short articles on diagnostic tests, new analyzers or updates on disease situations. Staff profiles and updates on current activities within our laboratory will also occasionally be offered. A future goal is to have the newsletter available on the AVC Diagnostic Services Laboratory website. We hope this newsletter will complement the existing services offered by our laboratory and we invite comments at any time. Let us know what you think!

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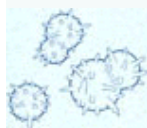
## Welcome to Dr. C. Anne Muckle



In September of 2006, we were pleased to welcome Dr. C. Anne Muckle as Acting Director of Diagnostic Services and Clinical Bacteriologist. She had previously done a 3 month locum as a Clinical Bacteriologist in the Diagnostic Services Laboratory earlier in 2006.

Anne has a DVM (1979), MSc (1981) and PhD (1983) from the Ontario Veterinary College, University of Guelph. She previously was the head of the Office International des Epizooties (OIE) Reference Laboratory for Salmonellosis, Laboratory for Foodborne Zoonoses, Public Health Agency of Canada in Guelph, Ontario. Dr. Muckle is an OIE designated expert on Salmonella.

Anne is available for consultations with clients for specific clinical bacteriology results or for discussion of broader issues in Diagnostic Services. She can be contacted at (902) 566-0821 (laboratory), or (902) 566-6476 (office), or by email [cmuckle@upei.ca](mailto:cmuckle@upei.ca)



## **The Presence of *Ixodes scapularis* ticks and the Potential for Lyme Disease on Prince Edward Island**

*By Barbara Horney, Veterinary Clinical Pathologist*

Over the past 17 years, the Atlantic Veterinary College (AVC) Diagnostic Services Laboratory has received submissions of ticks from Prince Edward Island (PEI) for identification. The ticks have been typically found on dogs or cats. Those identified as *Ixodes scapularis* are usually forwarded to the National Microbiology Laboratory in Winnipeg to be tested for the presence of *Borrelia burgdorferi*, the causative agent of Lyme disease. Culture of this bacteria from the tick was the method used in earlier years, but a polymerase chain reaction (PCR) technique replaced this method in the late 1990s. Here is a short summary of the data:

### *Ixodes scapularis* ticks submitted:

- From 1989 to 2002, there were ~5-10 *Ixodes scapularis* ticks from PEI submitted to the Diagnostic Services Laboratory each year.
- During 2003, there was a marked increase (72) in *Ixodes scapularis* tick submissions from PEI. Smaller increases in submissions continued in 2004 (26) and 2005(29). Again in 2006 there was a substantial increase (77) in submissions.

### Identification of *Borrelia burgdorferi* in submitted ticks:

- Approximately 10 % of the submitted ticks were positive for this bacteria in the years 1991 and 1998-2000. In the years 1994 and 1998, approximately 30 % of the ticks were positive for the bacteria. No organisms were identified in submitted ticks in 1992-1993, 1995-1997 and 2001-2002.
- From 2003 to 2006, 15-26 % of the ticks submitted were found to carry the bacteria.

### Seasonality of tick submissions:

- *Ixodes scapularis* ticks are usually submitted during two periods in the year: spring and early summer (May to early July) and again in the fall (late September to early December).

### Other comments:

Prince Edward Island does not have a resident deer population, which are the preferred host of adult *Ixodes scapularis* ticks. Most of the ticks submitted have been adult females. We do not know if these ticks are endemic on PEI or not, but it is most likely that the ticks are brought to the Island on migrating birds. This data should be considered as passive surveillance, and the actual number of ticks in PEI each year is unknown. Periodic requests by AVC to local veterinarians for submission of suspicious ticks, occasional decreased or waiving of the charge for tick identification and media coverage on Lyme disease may have resulted in increased submissions at some times over the years. Based on this information, it is considered possible for a dog to contract Lyme disease on PEI. Although the risk for dogs is considered low, the actual risk is unknown.

### For further information on *Ixodes scapularis* ticks and Lyme disease:

- ACVIM Small Animal Consensus Statement on Lyme Disease in Dogs: Diagnosis, Treatment, and Prevention. Meryl P. Littman, Richard E. Goldstein, Mary A. Labato, Michael R. Lappin, and George E. Moore. J Vet Intern Med, 2006; 20:422-434.
- Lyme disease fact sheet produced by the Public Health Agency of Canada and Health Canada:  
[http://www.phac-aspc.gc.ca/id-mi/lyme-fs\\_e.html](http://www.phac-aspc.gc.ca/id-mi/lyme-fs_e.html)  
[http://www.hc-sc.gc.ca/iyh-vsv/diseases-maladies/lyme\\_e.html](http://www.hc-sc.gc.ca/iyh-vsv/diseases-maladies/lyme_e.html)

## How to get the most Bang for your Biopsy Buck

*By Andrea Bourque and Les Gabor, Veterinary Anatomic Pathologists*

Clinicians and owners often place high expectations on biopsy submissions. From an owner's perspective, a biopsy is an expensive undertaking. Obtaining good quality tissue biopsy samples often requires general anesthesia, surgery and variable amounts of patient discomfort and aftercare.

Less sensitive tests often end with recommending biopsy, which places significant pressure on all involved to come to a final diagnosis. The tissue biopsy is often seen as the "end of the line" as far as diagnostic testing goes. Yet what can be expected of a biopsy? A slide of a tissue biopsy contains a 5 um slice, usually less than 1 cm x 1cm in size. The key to biopsy interpretation is the change in normal tissue architecture, so if an inappropriate sample is submitted with little normal tissue, interpretation becomes difficult. Most importantly, the pathologist needs to interpret findings based on the whole clinical picture. For example, a skin mass removed from a dog may have histological features resembling a histiocytoma. However, if the clinician points out in the history that the dog is covered in similar nodules, a diagnosis of cutaneous histiocytosis or possibly cutaneous lymphoma must be considered. Pathologists sitting at their microscopes are looking only at one small piece of the diagnostic puzzle. Without knowledge of pertinent clinical history, we can only go so far with our interpretations.

The AVC has been receiving biopsies for many years and the quality of submissions is generally excellent. Therefore, we need only remind clinicians of a few general comments:

1. ALWAYS submit in 10% neutral buffered formalin.
2. At all costs, prevent freezing.
3. Do not cut tissue masses in half. Submit masses whole unless they are very large (>6 cm in greatest thickness).
4. Fix samples in adequate amounts of formalin. In a perfect world, the volume ratio of formalin to tissue would be 10:1. If this is not feasible, a minimum of 5-7:1 should be attempted. You can place tissue samples immediately in the large volume of formalin for 24 hours, then transfer to a smaller container containing less formalin for shipping.
5. Do not add more than one specimen to a container - the potential for serious confusion exists. Label each specimen as to where it was taken from.
6. In cases of skin biopsies, try to take a specimen of adjacent clinically normal skin.
7. Do not send samples in glass bottles as they often break and leak formalin. Plastic screw top bottles placed in a sealable plastic bag are recommended.
8. Send submission sheets with a full clinical history, signalment and working diagnoses in a separate plastic bag. Be sure to describe the duration, location and appearance of the lesions.

Please feel free to phone ((902)566-0864) if you wish to discuss case results or if you have questions regarding taking appropriate samples in a case. Even if we cannot answer all calls immediately, efforts are made to contact the clinician as soon as possible. In most cases, these discussions provide valuable information for both parties and make for a more accurate diagnosis of the case material in question.

Thank you for using our service, and we look forward to hearing from you in the future.

## Hemostasis Update

*By Linda Ruschkowski, Registered Medical Technologist*

Diagnostic Services has some exciting new instruments and projects in progress to aid in the assessment of hemostasis in animals. We are pleased to provide you with a brief update on our new technology as well as reminding you of some things that never change!

First, we would like to remind you of the proper procedures for obtaining a sample for coagulation (PT, APTT) or fibrinolytic (FDP) testing. Adhering to these procedures is very important for the accuracy of the results.

1. Draw a blood sample into a 3.2 % blue topped sodium citrate vacutainer tube via a clean venipuncture using a vacutainer sleeve. Three ml and 5 ml tubes are available commercially and either are acceptable. Make sure that the tube has filled to the maximum vacuum draw, as the ratio of anticoagulant to blood is crucial. Gently rock the tube back and forth 10 times to mix the blood well; do not shake! If there are any clots or the sample has not filled the tube fully with the vacutainer draw, the results will be suspect and it is necessary to start again with a fresh venipuncture procedure.
2. Immediately centrifuge the tube and withdraw the plasma.
3. Place the plasma in a plain red topped tube and label it as usual along with stating that it is "citrated plasma". Do not put it into another blue-topped tube or the ratio of anticoagulant to plasma will be altered and affect results.
4. Immediately freeze the plasma and send the sample to us, ensuring that it remains frozen during shipment by packing well with a freezer pack.
5. If you have any questions, please don't hesitate to call us ((902)-566-0859). Remember,

remove that plasma and freeze ASAP!

We also are pleased to announce that we have a new coagulation machine called the SStart® 4. This instrument is made by Diagnostica Stago. This instrument detects a clot by way of the newest technology of viscosity-based detection. This method eliminates interference from lipemia, icterus or other optically turbid samples or reagents.<sup>a</sup> Because this is a different technology than the old machine and method, the reference intervals have changed slightly:

canine	PT	5.4-11.8 seconds
	APTT	9.4-14.8 seconds
feline	PT	8.4-14.7 seconds
	APTT	10.8-16.9 seconds

These reference intervals will still be refined with time and those for cattle and horses are still under review. We are also pleased to offer FDP testing on the same blue-topped sodium citrate plasma sample submitted for PT and APTT testing. In the past, the FDP test required immediate analysis and was therefore unavailable to our off-Island clients. If volume permits, we can even send the sample off for further testing, such as for von Willebrands factor or specific factor analysis.

<sup>a</sup> <http://www.stago-us.com/pages/products.php?section=instruments&action=view&id=4>

## Staff Focus

### Veterinary Clinical Pathologist

Dr. Cornelia (Cora) Gilroy was welcomed to the team of veterinary clinical pathologists at the Diagnostic Services Laboratory in August of 2005. Her busy position includes diagnostic duty and teaching veterinary students and residents. Dr. Gilroy is originally from Victoria, PEI, and she graduated with distinction in the Atlantic Veterinary College (AVC) Class of 1997. She then embarked on a one year small animal



medicine and surgery internship at Alta Vista Animal Hospital in Ottawa, and continued for another year there as a clinical associate. In 1999, Dr. Gilroy returned to PEI and worked in small animal practise at the Southport Animal Hospital in Stratford. She returned to the AVC in 2002 to begin a 3 year residency and graduate program in clinical pathology. She recently passed the certifying examination of the American College of Veterinary Pathologists, becoming a Diplomate in September of 2006. Outside of work, Dr. Gilroy enjoys spending time with her husband, Ian, and two young sons, Jarod and Seth. The family also includes the two cats, Licorice and Brie. She is a past council member of the PEI Veterinary Medical Association and is involved in many local community events.

### Congratulations to Dr. Yason!

Dr. Carmencita V. Yason has recently become board certified as a Diplomate of the American College of Veterinary Microbiologists (ACVM). Dr. Yason is a Diagnostic Virologist who runs the Regional Diagnostic Virology Services (RDVS) at the Atlantic Veterinary College. A highlight of the RDVS will be presented in the next issue of Diagnostic Update.

**Reader Feedback:** The *Diagnostic Update* group invites comments or suggestions for future topics in the newsletter. Please submit your comments to *Dr. Cora Gilroy* ( [cgilroy@upe.ca](mailto:cgilroy@upe.ca)), Diagnostic Services, Atlantic Veterinary College, UPEI, Charlottetown, PE, C1A 4P3 and they will be forwarded appropriately.