

Diagnostic Forum

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A Quarterly Newsletter from the Indiana Animal Disease Diagnostic Laboratory at Purdue University



www.addl.purdue.edu
765-494-7440

In this issue:

Page 2

- ♦ Meet Our Accessioning Staff

Page 3

- ♦ Meet the Voice Behind the Phone
- ♦ Congratulations

Page 4

- ♦ Diagnostic Tips & Tricks

Page 6

- ♦ Best Practices for Using Swabs for Diagnostic Testing

Page 7

- ♦ Welcome to the ADDL Dr. Bowen
- ♦ New Metals Testing Now Available

Page 8

- ♦ Technical Report: Coccidiosis in Poultry with an Emphasis on Backyard Poultry

From the Director.....

I want to give a warm welcome to Dr. Craig Bowen, our Client Services Veterinarian who joined the ADDL back in April. He has been a great addition to our Accessioning section and we are excited to have him as an integral part of the ADDL team!

On August 12th, the ADDL, West Lafayette conducted a fire drill with a real fire. Routine roofing work was being performed and there had been the smell of hot tar in the building the entire week. Late on Friday afternoon, the smell got considerably worse and was accompanied by an increasing cloudiness inside the building. The fire department was called, a fire alarm was pulled, and everyone evacuated safely into the parking lot.

Many thanks to the Purdue Fire Department crew, Purdue custodial, Zones, and REM staff for putting out the fire (and covering equipment inside the building with plastic), mopping/vacuuming up the water, disinfecting the floors and walls after the 25 year old water came gushing out of the sprinklers, and airing out the building before Monday at 8:00!!!

Just a reminder— with the holiday season fast approaching we want to remind you that the ADDL will be closed from December 23rd through January 1st. Our answering service will be available in the event you need to speak with one of our on call pathologists.

Meet our Accessioning Staff

The accessioning staff is tasked with the first steps in the diagnostic process here at ADDL. While our accessioning staff would like to use “attainment of power” as a definition of accession, our staff “record new items” to our laboratory. Each animal or sample that is delivered or mailed to ADDL is first handled by the accessioning staff. First, submission forms are reviewed for completeness, and phone calls may be made for clarification or missing information. Next, the diagnostic samples are sorted to their respective section of the laboratory (Molecular Diagnostics, Bacteriology, Serology, etc.).

With each submission comes the assigning of an accession number. One unique accession number is assigned to each submission form that is received. The submission form and all diagnostic samples are labeled with this unique number as a method of tracking and identifying the samples. When sending multiple samples to ADDL from different owners or premises, submission forms should be completed with a separate form for each owner or a separate form for each premise. Following these steps will help minimize confusion when results are reported.

In case you wondered, the accession number begins with the letter “A,” “B,” or “S.” An accession number that begins with “S” indicates it is an accession that originated from SIPAC – the Heeke Laboratory in Dubois County. The “B” is assigned to accessions that have requested only serologic testing. Submissions requesting testing from any other section than just serology only will be assigned the “A.” Following the letter will be the two digit year. ADDL operates on the fiscal calendar; therefore, we are utilizing “17” with our current accessions. Now that letter and year have been assigned, the next portion is the hyphen and unique number. These numbers are assigned sequentially starting with one (e.g. “A17-1). For FY 2016, ADDL assigned 18,785 “A” accession numbers, 5,813 “B” accession numbers and 1,706 “S” accession numbers.

The accessioning staff at ADDL is led by Dr. Steve Lenz, Dr. Craig Bowen, Jennifer Hewitt, Shellie Rodarmel and Amy Farrar. For more information on submitting samples to ADDL, you can contact the laboratory at 765-494-7440 or read more on line at <https://www.addl.purdue.edu/SampleSubmission/Guidelines.aspx>



Pictured left to right: Jennifer Hewitt, Amy Farrar, Shellie Rodarmel, Dr. Craig Bowen, Dr. Steve Lenz

Meet the Voice Behind the Phone



Margie Veverka



Meet our ADDL Receptionist

Ever called the Indiana ADDL and wondered who is greeting you on the other end of the line?

The Indiana ADDL Reception area is staffed by Margie Veverka. Margie greets our incoming clients and is a direct link between our clients and laboratory staff. Whether in person or by phone, Margie takes care in putting our clients in contact with the correct department or passing along pertinent information to our dynamically staffed laboratory. Margie has been with the Indiana ADDL for nearly two years.



CONGRATS!

Congratulations to Purdue Veterinary Medicine student Elexa Baron, of the DVM Class of 2018, who won first place in the 2016 American Board of Veterinary Toxicology's (ABVT) Veterinary Student Paper Competition. She received the award for her original research manuscript entitled "MALDI-TOF MS Detection of Poison Hemlock and Jimsonweed Alkaloids." The ABVT Veterinary Student Paper Competition awards are given annually to veterinary students who submit an original manuscript describing case reports, original research studies, or retrospective studies that are of value to veterinary toxicology. In acknowledgement of Elexa's first place achievement, she was presented with a plaque and an award of \$1,000.



Dr. Stephen Hooser, Elexa Baron
and Dr. Christina Wilson

Diagnostic Tips and Tricks

Save time with prefilled submission forms

This diagnostic tip relates to completing the ADDL Submission Form. Did you know that ADDL has eight different submission forms? Each form is specialized to help our clients request the diagnostic testing they want. From avian to swine and serology to biopsy, ADDL has a tailored form to meet your needs. The forms are updated routinely, so make sure to access our website for the latest version. To navigate to our submission forms, just click the “Forms” link on the left side of the screen or go to <https://www.addl.purdue.edu/Forms/Forms.aspx>. All of the forms are posted as .PDF files that can be filled electronically. To access these forms, you must have Adobe Acrobat Reader on your computer.

To save time and cut down on writing, clinics may want to save copies of the forms with prepopulated information. These are just a few of the examples on how veterinarians have utilized our fillable, electronic submission forms:

- Prefilled templates for each producer
- Multi-vet clinic templates that only need the submitting DVM’s information
- Printed forms in the truck and ready for farm calls with vet and clinic information prefilled

If you would like to request prefilled submission forms from the ADDL, please call us at 765-494-7440 and we will be happy to create them for you. Look at the article on the next page for step-by-step instructions on how to create your own prefilled submission forms.

The image displays three overlapping submission forms from the Indiana Animal Disease Diagnostic Laboratories (ADDL). The forms are designed for different types of animal submissions:

- SWINE HERD HEALTH FORM:** This form is for swine and includes sections for herd information, clinical signs, and testing options. It features a table for recording individual animal data.
- RUMINANT SUBMISSION FORM:** This form is for ruminants and includes sections for animal information, clinical signs, and testing options. It also features a table for recording individual animal data.
- AQUATIC SUBMISSION FORM:** This form is for aquatic animals and includes sections for animal information, clinical signs, and testing options. It features a table for recording individual animal data.

Each form includes a section for the submitting veterinarian's information and a section for the ADDL's use only. The forms are designed to be filled out electronically using Adobe Acrobat Reader.



Diagnostic Tips and Tricks

Create your own prefilled submission forms

To get started, navigate to the Forms page of ADDL's website at www.addl.purdue.edu.

- Select the submission form you wish to use.
 - ◊ DO NOT TYPE ON THE FORM YET – it will be lost when you try to save the form.
- If you wish to have saved templates, you must first save the form to your computer.
 - ◊ Depending on your internet browser, you may save the submission form to your computer by:
 - ◆ Clicking the download arrow
 - ◆ Clicking the Save a copy disc
 - ◆ Clicking File -> Save As.
 - ◊ Save the file to the folder of your choice on your computer.
 - ◆ Add the clinic or veterinarian to the file name when you save the form.
 - ◊ Navigate to the folder in which you saved the submission form and open it.
 - ◆ You may now complete as much of the form as you wish to create a clinic or veterinarian template.
 - ◆ When you have finished entering the information, save the file so it can be accessed later.
 - ◊ After you have made your template, you can make additional templates for separate producers if you wish.
 - ◆ Open the file with your template and click File -> Save As and rename the file with the producers name or location.
 - You now have a new file for the producer while preserving your original template.
 - ◆ With the producer file, complete as much of the owner and premises information as you wish and save the end result.

Now that you have created templates for your clinic, veterinarians, and/or producers, you can print copies to have handy for marking the next submission requests or you can access the forms on the computer to complete and print a clean, legible submission form.

One final tip, when working with the form in Adobe Acrobat Reader, you can click and select text on the form to highlight. With the text selected, right click and click "Highlight Text." This will highlight the text in yellow. This can be done for lines that are easily forgotten to complete later such as the "Date Taken" line or to draw attention to the specific tests that are being requested.

BEST PRACTICES FOR USING SWABS FOR DIAGNOSTIC TESTING

For diagnostic tests, affected tissues/liquid are preferred, if available. Swabs can be useful ante-mortem diagnostic tools. To insure a valid result, appropriate swabs and collection systems must be used since the inappropriate swab type/system can nullify a test result or prevent a test being used. Cotton-tipped, wooden-handled swabs are no longer considered acceptable for Molecular Diagnostics or Virology tests. Chemicals used in the processing of both the cotton and the wood are known to inhibit viral growth, and can inhibit some PCR-based tests. Recently, foreign animal disease (FAD) investigations have been delayed or negated because the index samples were collected and submitted in the wrong/incorrect collection system. To insure valid, meaningful test results, Purdue ADDL has developed these recommendations for use of swabs for diagnostic testing.

| DIAGNOSTIC SECTIONS | TEST(S) | ACCEPTABLE COLLECTION SYSTEMS | EXAMPLES OF ACCEPTABLE COLLECTION SYSTEMS |
|------------------------------------|-----------------------------|---|---|
| Bacteriology | Aerobic Culture | Preferred: Commercial bacteriological culture system | Any commercial bacterial collection/transport system (BD CultureSwab™, Remel BactiSwab®, etc). Most include Amies or Modified Stuart's transport media. |
| | | Acceptable: Cotton-tipped, wooden-handled swabs | Swabs must be placed in a leak-proof sterile container, such as a red top tube, with 0.5mL sterile saline to prevent desiccation. |
| | Anaerobic Culture | Commercial ANAEROBIC bacteriological culture system | BD Port-a-Cul™ Starswab® Anaerobic Transport System, Starplex® |
| | Mycoplasma Culture | Dacron (polyester) swab AND Viral/universal transport media (ONLY) | BD Universal Viral Transport Kit Puritan UniTranz-RT® Transport System |
| | | | |
| Molecular Diagnostics (PCR) | For bacteria | Dacron (polyester) swab | |
| | For viruses and mycoplasmas | Dacron (polyester) swab AND Universal transport media (ONLY) | BD Universal Viral Transport Kit Puritan UniTranz-RT® Transport System |
| | | | |
| Virology | Virus isolation | Dacron (polyester) swab AND Universal transport media (ONLY) | BD Universal Viral Transport Kit Puritan UniTranz-RT® Transport System Sterile saline is acceptable if viral transport vials are not available. |

IMPORTANT NOTES:

1. Tissues/liquid are preferred over swabs, if available, and should be submitted in a sterile container with no additives. Sample size >2mL or >2cm³ is adequate to preserve anaerobes.
2. If swabs are used, they should be collected within the first few days of onset of symptoms.
3. Dry swabs will not be processed.

Welcome to the ADDL

Dr. Craig Bowen

The Animal Disease Diagnostic Laboratory is pleased to announce the addition of Dr. Craig Bowen as the ADDL Diagnostic/Client Services Veterinarian. Dr. Bowen joined the ADDL in April, 2016. In this newly created position, he serves as a primary point-of-contact for all clientele of the laboratory in support of diagnostic investigations and animal health programs in Indiana. He assists and communicates with referring veterinarians and clients regarding diagnostic testing and interpretation.



A 2011 graduate of the Purdue College of Veterinary Medicine and native of rural Clinton County, Dr. Bowen comes to ADDL from the Indiana State Board of Animal Health. He served as the District IV field veterinarian, Director of Swine Health Programs, and actively participated in both of the recent Highly Pathogenic Avian Influenza responses. Prior to his time at BOAH, Dr. Bowen worked in private practice with a focus on production medicine. ADDL is excited to have Dr. Bowen return to Purdue. We look forward to utilizing his experience and expertise to benefit and assist you, our clients.

New Metals Testing Available in our Toxicology Section!



| | |
|-----------------------------|------|
| Magnesium (blood) | \$20 |
| Toxic Metals Screen (blood) | \$36 |
| Trace Mineral Screen, Serum | \$42 |
| Trace Mineral Screen, Water | \$42 |

Interested in one of these? Call our office today
for any questions and to learn more!

765-494-7440

Technical report: Coccidiosis in Poultry with an Emphasis on Backyard Poultry

By: Dr. Geoffrey Lossie

Edited by: Dr. Pat Wakenell

Coccidiosis is a protozoal disease of the intestines (or kidneys in geese) caused primarily by parasites in the genus *Eimeria*. There are nine described species of *Eimeria* in chickens and seven in turkeys, but not all of the species are capable of causing disease. It is important to note that coccidia is species specific, meaning that chicken coccidia do not affect turkeys and vice versa. The coccidial life cycle is complex but direct, with infection occurring via fecal-oral transmission. Oocysts (similar to an egg) are shed directly in the feces where they can contaminate feed, water, litter, and soil. Fresh oocysts are not infective until they incubate in the environment for 1-2 days and become sporulated at the proper temperature, moisture, and oxygen levels ¹. Mechanical and biological vectors are important as well. Mice and flies can transport infective oocysts during their normal feeding habits, while other insects such as darkling beetles can ingest the oocysts which can remain infective until the darkling beetle is consumed by a chicken. The most common means of spread, however, is via movement of personnel between pens, houses, or farms that are harboring oocysts on their clothes or boots ⁵. Once oocysts are ingested an asexual and a sexual life cycle are completed that ends with the production of new oocysts that are excreted in the feces. The whole cycle from ingestion to the release of new viable oocysts is 4-6 days ³. Lesions in the gut are produced by destruction of the epithelial cells via development, multiplication, and release of various life cycle stages from the epithelial cells ³. Damage from the continuation of the coccidia life cycle leads to diarrhea, dehydration, weight loss, rectal prolapse and death ⁸. Prevention of coccidiosis is key. Backyard flock owners should routinely clean out their coops/yards to reduce environmental oocyst numbers. Keeping an appropriate density of poultry, feeding commercial feeds that contain amprolium, and soaking the soil with dilute bleach and rototilling on a monthly basis are great ways to prevent outbreaks. A representative fecal sample from the flock should be tested once or twice a year. Amprolium, dosed via the drinking water, is the medication of choice for coccidia with treatment lasting for 5-7 days unless the case is complicated.



Figure 1: Two backyard chickens with coccidiosis in a repurposed swine barn. There are multiple piles of loose stool. Both birds were listless with a hunched posture. This image illustrates the necessity of having appropriate litter that can be regularly cleaned. Photo courtesy of Dr. Pat Wakenell.

Technical report: Coccidiosis in Poultry with an Emphasis on Backyard Poultry continued



Figure 2: Small mobile chicken coop housing numerous birds. In the winter this coop was used to house the birds in the image. This amount of space was inadequate, and the birds developed clinical coccidiosis. Photo courtesy of Dr. Pat Wakenell.

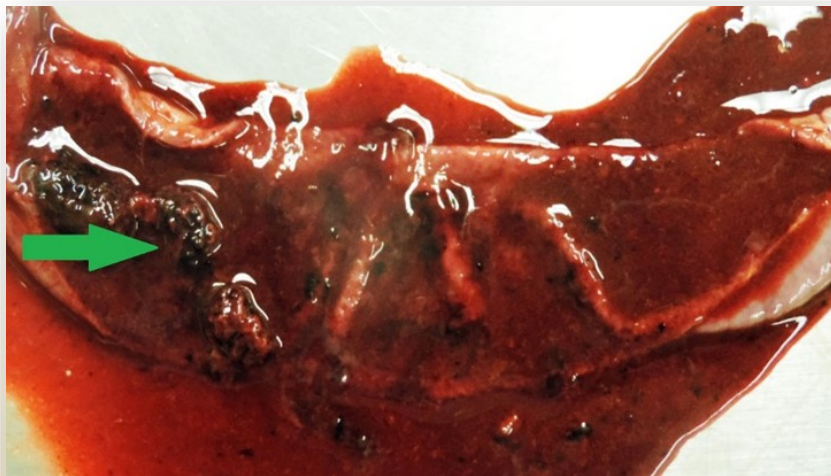


Figure 3: Section of small intestine from a chicken infected with *E. necatrix*. The lumen is full of frank blood with flecks of clotted blood. Note the necrotic, hemorrhagic, debris within the lumen (green arrow).


For the complete article and references, visit www.addl.purdue.edu

Questions? Comments? Concerns?

**We value your opinion. Please
contacts us at:**

Phone 765-494-7440

Email ahighlan@purdue.edu



ADDL Lab Results are available by:

- ◆ Email (call ADDL with your email address)
- ◆ Fax
- ◆ Internet/Web

Non-Profit Organization
U.S. Postage PAID
PURDUE UNIVERSITY

ANIMAL DISEASE DIAGNOSTIC LABORATORY
406 S. UNIVERSITY STREET
WEST LAFAYETTE, IN 47907