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In this issue:

Real-time PCR for the identification and differentiation of neuropathogenic strains of *Equid herpesvirus 1* (EHV-1)

Susy Carman

The AHL is now offering a real-time PCR test for the identification of EHV-1. This PCR also **differentiates neuropathogenic and non-neuropathogenic strains**. Horses with neuropathogenic strains have a greater risk of developing neurologic disease.

For living animals, send 20 mL of EDTA blood or nasal swabs. Send brain and spinal cord from horses presented for post mortem. Tissues from aborted fetuses can also be tested, including thymus, lung, liver, spleen, adrenal and placenta. Tissues from the same animal will be pooled. The charge is **$65 per test**. Turnaround time is 1-3 days. *AHL*

Clostridium difficile culture and toxin testing

Durda Slavic

C. difficile associated diarrhea has been reported in a variety of domestic animals including horses, pigs, dogs and ostriches. The AHL is now offering a culture method for this pathogen. The culture is offered in combination with toxin detection since it has been shown that toxins A and B are essential for disease onset.

The price of culture and toxin detection is $44.50 for food animals and $58.00 for companion animals. Culture is done on fecal samples and turnaround time is 7-14 days. *AHL*

The evolution of the AHL quality program *Grant Maxie*

Why have a quality program? Formerly as a government laboratory, and now as a university laboratory, quality is taken for granted. Of course we produce quality results! However, as expectations of clients have risen over the years, and as proof is needed ("if you don't have a record, then it didn't happen!"), we have formalized our quality program. We need to ensure the credibility of our results – locally, nationally, and internationally. We need mechanisms for dealing with complaints and solving problems ("root cause analysis"). We want to minimize re-work. We need to enhance employee recruitment and retention. We require business sustainability and continuity. Above all, we desire continuous improvement!! Hence, we have a quality program embodied in our quality manual and supported by standard operating procedures (SOPs) and in-house quality control (QC) of validated tests.

The AHL became accredited by the American Association of Veterinary Laboratory Diagnosticians (**AAVLD**) in 1993 and have continued to meet the AAVLD essential requirements. We are audited by AAVLD every 5 years. We are also registered to the **ISO 9001:2000** standard, and have numerous tests under our **ISO/IEC 17025** scope of accreditation, including scrapie resistance genotyping and various Toxicology tests. We are audited annually by our ISO 9001 registrar, and biennially by the ISO/IEC 17025 accrediting bodies (SCC & CAEAL). We are also audited by **CFIA** assessors, e.g., EIAV ELISA.

How do we maintain our various registrations and accreditations? Every staff member lives the quality program every day! One of the requirements of ISO/IEC 17025 is demonstrating continued competence of all staff to do their jobs - we develop and monitor staff skills through proficiency panel testing, internal audits, continuous training, and extensive record-keeping.

We welcome client feedback on the outcome of our quality initiatives! *AHL*

Selected AHL accomplishments in 2007

Honors/Awards

Maxie G. President, American Association of Veterinary Laboratory Diagnosticians, 2007-2008.

New tests

Aleutian mink disease virus, PCR, genotyping
Bedding count, *E. coli* and coliforms
Biopryn bovine pregnancy protein
BLV ELISA, 2-step
BVDV, real-time RT-PCR
Canine TLI
Canine distemper virus, real-time PCR
Canine/Feline parvovirus, real-time PCR
Classical swine fever virus, real-time RT-PCR
Equid herpesvirus 1, real-time PCR
Foot-and-mouth disease virus, real-time RT-PCR, 3ABC antibody ELISA
Heartworm-Ehrlichia-Lyme, ELISA
IHC - Influenza A virus, *Chlamydophila*, CD31, CD61, CK7, CK20, MHC2, *Canine coronavirus*, *Feline parvovirus*, *Neospora*, Uroplakin, Ki67
Influenza A virus, real-time RT-PCR
Mycoplasma bovis, MIC
PCV-2, antibody ELISA
PRRSV, NA/EU, RT-PCR
PRRSV ORF5 sequencing analysis
PRRSV, SD01-08 EU-like, IgG & IgM IFAs
Porcine rotavirus A, FA
Swine influenza virus, real-time RT-PCR
Thyroid free T4, gamma 2-step
Vitamin E, serum

Presentations

Carman S, Cai H, DeLay J, Youssef SA, McEwen BJ, Gagnon CA, Tremblay D, Hazlett M, Lusis P, Fairles J, Alexander HS, van Dreumel T. The emergence of a new strain of Porcine circovirus 2 in Ontario and Quebec swine and its association with severe porcine circovirus associated disease - 2004-2006. OASV Fall Conf, Picton, ON, Oct 11-13, 2007.

Hoff, B. Toxicology update. OAVT Conference, Toronto, ON, Feb, 2007.

Hoff B, Jeong IK, Moore A, Schrier N. Deaths due to tainted petfood on two continents - 2003 & 2007. AAVCT, LV, NV, Oct 19, 2007.

Maxie G. The evolution of veterinary diagnostic laboratory quality programs. Diagnostic Services & Dept Path/Micro lecture series. AVC, UPEI, Nov 19, 2007.

Maxie G, Agnew D, Scott M, Rumbeiha W, Hoff B, Powers B. Pet-food nephrotoxicity in cats and dogs: towards a case-definition. AAVLD 50th Ann Mtg, Reno, Nevada, October 21, 2007.

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Maxie G, Hoff B, Martos P, Moore A. The melamine-cyanuric acid pet food recall. OMAFRA Food Safety Research Program - Forum 2007. Guelph, ON. May 15, 2007.

Maxie G, Hoff B, Martos P, Moore A, Hazlett M, McEwen B, DeLay J, Stalker M, van Dreumel T, Thomson G. The melamine-cyanuric acid pet food recall. CAHLN-CAVP/RCTLSA-ACPV, 6th Ann Mtg, PDS/WCVM, Saskatoon, SK., June 12, 2007.

Maxie G, McEwen B. Why have a quality program? Why validate tests? CAHLN-CAVP/RCTLSA-ACPV, 6th Ann Mtg, PDS/WCVM, Saskatoon, SK., June 12, 2007.

Ojkic D, Watson S, Grgic H, Smith G, Lallier L, Venne D, Bishop R, Nagy É. Comparison of ELISA and AGID tests for the detection of fowl adenovirus specific antibodies. 56th Western Poultry Dis Conf, Las Vegas, Nevada, Mar 27-29, 2007.

Ruotsalo K. The investigative evolution of the melamine-cyanuric acid pet food recall. ACVP/ASVCP mtg, Savannah, GA. Nov 10-11, 2007.

Shapiro J. Update on diseases in Ontario sheep, Kemptville, ON, Jan 2007.

Shapiro J. Equine pathology submissions to the AHL- a 5 year retrospective, Spencerville, ON, Nov 2007.

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Its mission is to inform AHL clients and partners about AHL current activities, and laboratory-based animal disease events and disease trends. *Ideas and opinions expressed herein do not necessarily reflect the opinions of the University or the editor.*

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Selected zoonotic pathogens and diseases identified at the AHL, 2003 - 2007

Beverly McEwen, Durda Slavic, Davor Ojkic, Josepha DeLay, Hugh Cai

Many new, emerging, and re-emerging diseases of people are caused by pathogens originating from animals, or are shared between people and animals. The AHL plays an important role in public health by identifying zoonotic pathogens (Tables 1 and 2). These are numerator data reliant upon submission biases to the diagnostic laboratory and cannot be regarded as population prevalence estimates. Monitoring programs are not included.

The zoonotic pathogens most frequently identified at the AHL since 1999 are *Leptospira spp., Salmonella sp., Streptococcus sp.,* and *Cryptosporidium sp.* Occupational exposure to pigs and horses is a risk factor for *S. suis* and *S. zooepidemicus* infections. Additionally, sporadic cases of dermatophytosis are identified microbiologically and/on on histological sections. For data prior to 2003, please refer to previous editions of the AHL Newsletter.. *AHL*

Table 1. Selected zoonotic pathogens isolated and/or identified at the AHL, 2003-2007

Agent	Bovine	Swine	Equine	Ovine	Caprine	Chicken	Turkey	Canine	Feline	Other	**2007**	2006	2005	2004	2003
Bordetella bronchiseptica		34	4					7	2	10	**57**	68	70	78	84
Borrelia burgdorferi								1			**1**	0	1		
Campylobacter coli/ jejuni/ fetus subsp. fetus				19				7		2	**28**	33	14	26	31
Chlamydophila sp.				2	3						**5**	21	6	6	19
Clostridium difficile	1	6	5					5			**17**				
Coxiella burnetii (Q fever)				3	3						**6**	8	6	4	6
Cryptosporidium sp.	173	1			2					2	**178**	185	201	61	129
Eastern equine encephalitis virus											**0**	0	0	2	10
Giardia sp.								18	3		**21**	36	19	13	10
Listeria monocytogenes	8		2	7						2	**19**	15	16	34	27
Methicillin-resistant *Staphylococcus aureus*			61					2		2	**65**	8	24	133	73
Rabies			1								**1**	0	1	0	0
Salmonella sp.	97	91	149	2	1	70	20	6	5	97	**538**	847	836	640	824
Streptococcus suis	4	319								1	**324**	409	608	447	392
Streptococcus equisimilis		55	25					4		9	**93**	96	82	140	111
Streptococcus zooepidemicus	4	26	150					2	1	9	**192**	168	188	186	211
Toxoplasma sp.				6							**6**	13	6	10	5
West Nile virus										58	**58**	149	100	158	173
Yersinia enterocolitica		4						1			**5**	4	3	8	8

Table 2. *Leptospira spp*. seropositive samples (≥1:320) identified at AHL, 2003– 2007, microscopic agglutination test (MAT)

***Leptospira spp*. serovar**	Bovine	Swine	Equine	Canine	Other & not specified	**2007**	2006	2005	2004	2003
L. autumnalis				40	7	**47**	191	215	226	122
L. bratislava		10	32	33		**75**	292	361	329	151
L .canicola			1	52	1	**54**	36	43	56	17
L. grippotyphosa		8	4	74	11	**97**	208	160	196	76
L. hardjo	7			0		**7**	30	51	60	34
L. icterohaemorrhagiae	5			17	2	**24**	78	58	111	122
L. pomona	15	10	36	37	2	**100**	135	148	128	122
Total	**27**	**28**	**73**	**253**	**23**	**404**	970	1036	1106	644

AHL Lab Reports

RUMINANTS

Appropriate methods of diagnosing mineral deficiencies in animals

Brent Hoff, Nick Schrier

Many minerals are essential for optimal growth, biological function, and productivity in animals. These include; copper (Cu), zinc (Zn), selenium (Se), manganese (Mn), and cobalt (Co), plus the macroelements calcium (Ca), phosphorus (P) and magnesium (Mg), as well as sodium (Na) and potassium (K). Historically, mineral testing has been performed on diets and/or feedstuffs, to ensure adequate dietary concentrations. However, general mineral analysis does not identify chemical forms of minerals, which can alter bioavailability, absorption, utilization and interferences with other minerals. Assessment of trace element status identifies whether current mineral supplementation of livestock is adequate and whether improved productivity is likely to occur with changes in supplementation.

Clinically, a trace mineral deficiency or excess may appear as a primary disease, or may be subtle, manifested as an increased incidence of other diseases. Most of the forages and grains in Ontario are deficient in Se, Cu, Zn, and Mn, and possibly others. Mineral deficiencies are best diagnosed by testing for biological compounds or enzymes dependent upon the particular mineral. Direct quantification from tissues or serum may provide a reliable indication of adequacy or deficiency. Deficiency of an individual mineral may be identified by several different methods, but one method is often more specific than another.

Live animal sampling

The most common samples from live animals are serum and whole blood. It must be remembered that serum must be separated, as some minerals have a higher intracellular content that may falsely increase values if left on the clot. Hemolysis may increase serum concentrations of Fe, Mn, K, Se and Zn. It should be remembered that concentrations of trace elements in liver best represent endogenous stores; however, blood is most frequently analyzed because of relative ease of sampling. Concentrations of trace elements in blood are reduced in clinically deficient animals, but may not reflect marginal status.

Post-mortem animal sampling

A variety of post-mortem animal samples can be analyzed for mineral content. The most common tissue analyzed for mineral content is **liver**, as it is the primary storage organ for many essential minerals. Bone can be used, as it is the primary storage area for Ca, P and Mg. Other post-mortem samples that can be used include urine and ocular fluid. Post-mortem samples should be frozen until analyzed to prevent tissue degradation. Liver samples from animals at slaughter may be a logical method of assessing mineral status in a herd.

How many samples are required?

Reasonable estimates of the status of the herd or flock can be made by representative random sampling. The number of samples required will depend on the variability in the test results among the animals. For most cases, 7-10 samples are required. The animals sampled should be selected at random - selection on condition, breed, etc, may significantly bias the results.

The AHL offers a trace mineral panel and a heavy metal panel for blood/serum, liver and feed samples. The **trace mineral panel** includes: Ca, P, Mg, Na, K, Fe, Cu, Co, Zn, Se, Mn and Mo. Samples are analyzed using our new "state of the art" inductively coupled plasma-mass spectroscopy system (**ICP/MS**) (Figure 1).

Interpretation of results is done using all other findings, including history and pathology results. Please call Dr. Hoff at 519 824-4120, ext. 54527, if you need assistance with one of these cases. *AHL*

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Hoff B, Schrier N, et al. Assessment of trace mineral and vitamin E status in beef cows in Ontario. Can. Vet J 2001;42:384-385.

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Figure 1. AHL ICP mass spectrometer, used for trace mineral panel and toxic metal panel for blood/serum, liver and feed samples.

AVIAN/FUR-BEARING SPECIES

High mortality in young show pigeons

Elizabeth Black, Marina Brash

Multiple submissions of juvenile show pigeons were made to Elfrida Poultry Diagnostic Services and the Animal Health Laboratory with a history of mortality 6 days after attending a large pigeon fanciers' annual show. Interestingly, mortality was restricted to the juvenile birds and in some cases, the fancier lost most of the juveniles that had attended the show. Older birds that had also been at the show were not affected. It was reported that exhibitors using their own litter and/or spent a short time at the show suffered minimal losses.

At necropsy, birds had similar findings of multiple granulomas in lungs and air sacs. **Mycotic pneumonia and airsacculitis** was confirmed on histology. There was no evidence of circoviral infection in bursal tissues examined.

Mycotic infections are acquired from inhalation of fungal spores from the environment and sources include poorly handled litter, inadequately cleaned feed and water containers, and damp, poorly ventilated housing. Litter materials such as shavings are well recognized sources of mycotic infections in other avian species such as turkeys and chickens. Source and composition of the shavings, storage conditions and method of drying are all important factors when choosing good quality bedding material in order to minimize the risk of mold contamination. Two of the most common mishandling situations include litter material that has been stored where it can become wet or, following the purchase of bulk quantities, the litter material is left to sit in a pile instead of being immediately spread out in the barn and allowed to air out and dry before the birds are placed.

In this case, the juveniles were affected and not the adults, even though both were exposed to the same environment at the show. The show buildings were heated so the buildings were warmer than the birds were used to thus likely increasing their respiratory rate. We speculate that the adults have better developed respiratory filtering mechanisms and/or more robust immune systems as we could not identify an underlying immunosuppressive disease process (pigeon circovirus infection) in the juvenile birds. Preventing the development of respiratory fungal infections is preferred since treatment options and success of treatment are limited. Since infection is via inhalation of fungal spores, the risk can be minimized by careful attention to the environment in which birds are housed.

Some **general biosecurity recommendations** for owners for shows include:

- Ensure your pigeons are fully vaccinated for pigeon paramyxovirus-1.
- Inspect the shavings and if you have any concerns, provide your own.
- Supply your own feed and water containers.
- Isolate your birds as much as possible from the other birds at the show.
- Disinfect your hands before handling your birds and ensure others do the same.
- Upon returning home from the show, quarantine your birds from the rest of the flock for at least 2 weeks. *AHL*

Genotyping of Canadian isolates of fowl adenoviruses

Davor Ojkic, Emily Martin, Janet Swinton, Jean-Pierre Vaillancourt, Martine Boulianne, Susantha Gomis
Reprinted from Avian Pathology 2008;37:95-100. URL: http://dx.doi.org/10.1080/03079450701805324

Five hundred and seventy-three clinical submissions with fowl adenovirus (FAdV) involvement were examined to investigate the association of different types of FAdV with clinical problems related to FAdV infection. Samples were received from 2000 to 2006 and originated from seven Canadian provinces. Four hundred and eighty-seven submissions were inclusion body hepatitis (IBH) related, while 86 were not IBH related. Viruses isolated from 287 samples were further analysed by hexon gene loop 1 sequencing. Twenty-seven genotyped FAdVs were from Alberta, 20 from British Columbia, 16 from Manitoba, one from Nova Scotia, 82 from Ontario, 64 from Quebec and 77 from Saskatchewan. Two hundred and forty-six analysed FAdVs were from IBH cases, confirmed by liver histopathology, by FAdV isolation from the liver, or both. Based on hexon gene loop 1 sequencing analysis, FAdVs associated with IBH outbreaks were genetically related to FAdV02 (9 isolates, 99.4%), FAdV08a (100 isolates, 99.4% to 100%) and FAdV11 (98 isolates, 99.4% to 100%). Thirty-nine viruses were 93.7% to 94.3% identical to FAdV07 strain x11a, but the genetic and immunogenic properties of this strain require further investigation. In IBH cases, the co-infection rates for infectious bursal disease virus, infectious bronchitis virus, reoviruses and Newcastle disease virus were 3.47%, 1.04%, 6.25% and 0.69%, respectively. Forty-one genotyped FAdVs were from "non-IBH" cases. Viruses isolated from non-IBH cases consisted of 22 FAdV01, 15 FAdV11, 2 FAdV08a and 1 each of FAdV02 and FAdV04 viruses. Co-infection rates in non-IBH submissions were 50.00% for infectious bursal disease virus, 40.70% for infectious bronchitis virus, 27.91% for reoviruses and 1.16% for Newcastle disease virus. *AHL*

SWINE

IgG and IgM indirect immunofluorescence (IFA) test for SD-01-08 PRRSV *Susy Carman*

The AHL now offers indirect immunofluorescence (IFA) testing for the evaluation of IgG and IgM antibody in swine sera for the South Dakota-European-like strain of PRRSV, using the SD-01-08 strain. This is in addition to similar IFA tests currently offered for both the North American and Lelystad-European strains of PRRSV.

Using the IFA tests, IgG antibody can be detected in pigs as early as 7-11 days post infection, compared to 9-11 days for the ELISA and 9-28 days for virus neutralization. Although IFA antibody arrives early, it persists for a relatively shorter time (4-5 months) compared to ELISA (4 to >10 months) and virus neutralizing antibody (>12 months).

The IDEXX PRRSV ELISA is still the best herd-based test to use for serological monitoring of swine herds. **IFA tests are used to evaluate IDEXX PRRSV ELISA singleton-positive reactors in negative swine herds.**

Currently, only North American strains of PRRSV have been identified in Ontario. Recommendations for routine IFA testing continue to be for the North American strain for PRRSV. Use of individual strains in IFA tests can be important in the early stages of the immune response, which is more specific for a viral strain. PCR testing is important during this time. The later stages of the immune response are broader, so that antibody would be demonstrated using all strains.

All IFA tests are performed at a single 1/20 serum dilution. The result is reported as positive or negative.

These IFA tests will be offered daily on request at a fee of **$9 per test**. *AHL*

HORSES

Ontario Racing Commission Death Registry: 2003-2007 necropsy summaries *Josepha DeLay*

The Ontario Racing Commission Death Registry has been in place since 2003 and continues to provide excellent data regarding the causes of morbidity and mortality in racehorses in this province. Summaries of necropsy submissions to the AHL under this program and diagnoses for these cases are provided below. *AHL*

Table 1. Breed distribution of ORC Death Registry submissions to the AHL, 2003-2007

Year \ Breed	Standardbred	Thoroughbred	Quarter Horse	Total
2003	67 (54%)	58 (46%)	0	**125**
2004	82 (58%)	60 (42%)	0	**142**
2005	59 (54%)	51 (46%)	0	**110**
2006	58 (54%)	47 (44%)	2 (2%)	**107**
2007	66 (54%)	53(43%)	3(3%)	**122**

Table 2. Necropsy diagnoses of ORC Death Registry submissions by body system, 2003-2007

Diagnosis by body system:	2003	2004	2005	2006	2007
Fracture / limbs	53 (42%)	69 (49%)	48 (44%)	42 (39%)	54 (44%)
Fracture / other	10	4	7	13	10
Non-fracture, musculoskeletal	8	6	6	8	6
Gastrointestinal	15	19	17	16	18
Respiratory	21	17	9	11	16
Cardiovascular	5	6	5	5	2
Central nervous system	6	11	7	4	1
Integumentary	0	0	1	2	2
Renal	0	2	0	0	2
Hematopoeitic	2	1	1	0	0
Whole body conditions	1	7	5	2	9
Cause of death undetermined	4	0	4	4	2
Total	**125**	**142**	**110**	**107**	**122**

Equine abortion, 2006/2007

Beverly McEwen, Susy Carman, Durda Slavic

Infectious abortions continue to account for about 1/3 (34%) of equine abortions submitted to the AHL in 2006/2007. **EHV-1 remains the most frequent single abortifacient pathogen identified,** accounting for 13% of all abortion diagnoses. The main cause of non-infectious abortion is umbilical torsion (Table 1).

Ten breeds were represented, with Thoroughbred and Standardbred submissions dominating at 40% and 14% respectively; 24% of the cases did not provide breed information. *AHL*

Table 1. Equine abortion diagnoses, AHL fiscal years, 1998 - 2007

Fiscal year	**98/99**	**99/00**	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**
# Abortion cases submitted	64	89	89	97	92	84	75	68	78
Frequency of abortion of total AHL equine submissions	1.3%	1.7%	1.5%	1.5%	1.1%	0.9%	0.8%	0.8%	1.0%
***Equid herpesvirus 1* (EHV-1)**	9	8	13	10	11	15	8	12	10
Proportion equine abortions EHV-1	14%	9%	15%	10%	12%	18%	11%	18%	13%
Non-viral infectious abortion, combined	17	25	16	21	23	14	10	13	16
Proportion non-viral, infectious abortion	27%	28%	18%	22%	25%	17%	13%	19%	21%
S. zooepidemicus	1	5	1	4	6	3	1	4	1
S. aureus	0	3	0	0	0	0	0	0	0
S. equisimilis	2	0	0	1	2	0	1	0	0
Ehrlichia risticii	0	0	0	0	0	0	0	0	0
Klebsiella sp.	0	0	1	0	0	0	1	0	1
Leptospira sp.	3	0	0	1	1	0	0	0	0
Nocardia sp.	0	0	1	0	0	0	0	0	0
Placentitis	8	7	6	11	13	8	0	5	8
Miscellaneous bacteria/fungi	2	8	0	0	0	2	2	1	4
Mycotic	1	0	1	2	0	1	1	1	1
Lesions compatible with bacterial	0	2	6	2	1	0	4	2	1
Non-infectious causes of abortion, combined	15	21	24	26	18	18	31	15	22
Proportion, non-infectious causes of abortion	23%	24%	27%	27%	20%	21%	41%	22%	28%
Umbilical torsion	8	12	8	15	11	13	19	7	8
Placental edema &/or fibrosis	4	3	8	0	1	0	0	2	4
Placental infarction	0	0	0	0	0	1	0	0	0
Placental mineralization	1	0	0	4	3	0	5	1	2
Placental adenomatous/cystic hyperplasia	0	1	0	0	2	1	0	0	0
Fetal goiter	0	0	1	1	1	1	2	1	1
Dystocia/stillbirth	2	5	7	6	4	3	4	3	4
Congenital anomalies	0	0	0	0	0	0	0	0	0
Twins	0	0	0	0	0	0	1	1	1
Body pregnancy									2
No lesions/idiopathic	24	38	36	42	39	37	28	31	31
Proportion no lesions/idiopathic	38%	43%	40%	43%	42%	44%	37%	46%	40%

* Number of diagnoses may add to more than the number of cases submitted because more than one diagnosis was made in some cases.

COMPANION ANIMALS

The AHL now offers real-time PCR for *Canine distemper virus* (CDV), *Canine parvovirus 2* (CPV-2), and *Feline parvovirus* (FPV)

Susy Carman

The AHL now offers real-time RT-PCR for CDV. Samples to submit include blood (20 mL of EDTA blood) from living animals, or postmortem tissues such as lymph node, lung, intestine and brain. Samples from the same animal will be pooled. The cost is $38 per test.

In addition, the AHL now offers real-time PCR for both CPV-2 and FPV (*Feline parvovirus*/*Feline panleukopenia virus*). Samples to submit include feces from living animals, or postmortem tissues including small intestine with Peyer's patch, mesenteric lymph node, and spleen. Samples from the same animal will be pooled. The PCR test is not influenced by the outpouring of serum antibody into the damaged gut, which can result in false negative antigen detection ELISA results. The cost is **$38 per test**. *AHL*

Coming soon: PCR and culture of *Tritrichomonas foetus* from cat fecal samples

Andrew Peregrine, Hugh Cai, Mary Lake, Rebeccah Travis, Patricia Bell-Rogers

In addition to microscopic examination of fecal smears (wet mounts) for *Tritrichomonas foetus* (Fig. 1), the AHL will provide culture and PCR assay for this parasite beginning on May 1, 2008. The prices will be $25 for culture and $35 for PCR.

Tritrichomonas foetus is a flagellated protozoan parasite that is well known for causing bovine trichomonosis. Recently, this parasite has been reported as a cause of large bowel diarrhea in domestic cats in North America and the United Kingdom. The prevalence of *T. foetus* in domestic cats is unknown. However, a recent study of cats at an international cat show detected the parasite in 36/117 cats, representing 28/89 catteries respectively. Infection may be accompanied by diarrhea that can last from weeks to years. In addition, fecal incontinence, flatulence and tenesmus may be observed.

In the past, *T. foetus* was often not considered in a differential for diarrhea in cats. Furthermore, direct examination of fecal smears has a low level of sensitivity. Recently, **both culture and PCR have been reported to be more sensitive than direct fecal smear examination**. The AHL is currently implementing a culture (Feline InPouchTF^{TM} test kit, BioMed) and PCR assay. Our preliminary validation data showed that results from the PCR assay correlated well with the culture method and that PCR can detect the parasite directly in feline fecal samples. In contrast to culture, which takes 1-10 days to obtain a positive result, the PCR assay is typically more rapid and can detect both live and dead *T. foetus.* For culture procedures, only fresh fecal samples kept at 25 to 35°C can be used.

For sample submission, please contact the AHL Parasitology Laboratory (519 824-4120, ext. 54522). *AHL*

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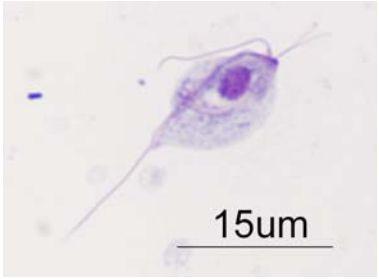

Figure 1. *Tritrichomonas foetus* cultured from the feces of a diarrheic cat

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