Laboratory Services Division
Animal Health Laboratory

UNIVERSITY OF GUELPH

AHL Newsletter

AHL Newsletter, Volume 30, Number 3 September 2026

In this issue:

AHL Newsletter
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The *AHL Newsletter* is published quarterly (March, June, September, December) by the Animal Health Laboratory, Laboratory Services Division, University of Guelph.

Its mission is to inform AHL clients and partners about AHL current activities,and laboratory-based animal disease events and disease trends.

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Update from the Director

The view from the Director's office

As I begin my role as AHL Director, I would like to sincerely thank Dr. Maria Spinato for her many years of exemplary leadership, guidance, and dedication to the Animal Health Laboratory. I wish Maria all the best for a happy, healthy, and fulfilling retirement.

I would also like to thank Dr. Davor Ojkic for providing outstanding leadership and continuity over the past few months in his role as Interim AHL Director.

Having spent much of my professional career at the AHL, I am deeply grateful for the opportunity to contribute to its next chapter. Throughout my career, I have had the privilege of working with many outstanding organizations across both the public and private sectors. When I reflect on the AHL, our exceptional work, talented people, collaborative culture, and meaningful impact on animal health and the agri-food sector, I can say without hesitation that this is the finest organization I have ever worked for. It is both an honour and a privilege to serve as the next AHL Director.

In the years ahead, I look forward to working alongside my AHL colleagues as we build on our strong foundation and continue the laboratory's longstanding tradition of diagnostic excellence and client service. I also look forward to strengthening our productive relationships with partners in veterinary practice, agriculture, public health, academia, and government. At the AHL, we take immense pride in delivering exceptional service to our clients, and I am committed to ensuring that this remains at the forefront of everything we do during this transition and beyond.

Together, we will continue to pursue our vision of being the laboratory partner of choice for our clients while providing high-impact diagnostic services that support agriculture, animal health, and One Health priorities. I look forward to engaging with our clients and partners, learning from their perspectives, and working collaboratively to advance animal health and support a strong and competitive agricultural sector.

Andrew Brooks, Director
Animal Health Laboratory, University of Guelph, Guelph, ON.

Remove old labels when reusing shipping boxes

Tim Pasma, Jen Zoethout

Animal Health Laboratory, University of Guelph, Guelph, ON.

AHL Newsletter 2026;30(3):3.

Purolator has brought it to our attention that old labels, particularly Transportation of Dangerous Goods (TDG) labels, should be removed when reusing boxes for shipping. As packages with TDG labels require special handling, there are extra charges associated with these shipments. In these cases, we will pass the additional charges on to the client.

Access to Your Laboratory Results

Davor Ojkic, Tim Pasma

Animal Health Laboratory, University of Guelph, Guelph, ON.

AHL Newsletter 2026;30(3):3.

Did you know that AHL clients can securely view their laboratory results online through our Laboratory Information Management System client portal?

Our client portal (https://www.uoguelph.ca/ahl/user/login?current=front) gives you instant, 24/7 access to both current and historical test results, so you can review reports, track submissions, and retrieve information when you need it. Whether you need to check recent results or want to look back at previous submissions, the online portal puts the information you need right at your fingertips to support timely decision-making.

If you are not yet using this convenient feature, we encourage you to take advantage of it. To set up your account or reset your login credentials, please contact our Client Services team at ahlinfo@uoguelph.ca.

OAHN Update – September 2026

Mike Deane, Tanya Rossi

Animal Health Laboratory, University of Guelph, Guelph, ON.

This summer, the Ontario Animal Health Network has continued to publish new research project reports, veterinary and producer reports, disease alerts, veterinary resources, and more. Additionally, we have fully updated our OAHN Projects page and have put together a veterinary talk concerning the potentially transmissible melanoma recently found in Lake Memphremagog.

Surveillance of *Rhipicephalus spp.* and *Haemaphysalis longicornis* in dogs in Ontario

There has been an 'uptick' in veterinary reports of brown dog ticks in recent OAHN quarterly reports. These reports have been from dogs across numerous locations in Ontario with no known out of country travel history. All identifications have been completed in-house by veterinary clinic personnel. It is unknown if these identifications are correct. If these are truly reports of brown dog ticks, further epidemiological investigation is warranted to determine exposure source and potential pathogen transmission risks. Led by Dr. Katie Clow, this new project is looking to collect brown dog ticks from veterinarians in Ontario. Learn more here: OAHN Companion Animal Project: Surveillance of Rhipicephalus spp. and Haemaphysalis longicornis in dogs in Ontario (in progress)

To see other completed and in-progress OAHN projects, please click here: OAHN Projects

Exploring a Potentially Transmissible Melanoma in Brown Bullhead: A Science Story with Dr. Cheyenne R. Smith

The OAHN Aquatics Network has organized a talk on Oct. 20, 2026, at 11am-12pm with Dr. Cheyenne R. Smith, from the Eastern Ecological Science Center at Leetown Research Laboratory (USGS). Learn about the discovery of a putative transmissible neoplasia, the approaches being used to confirm its transmissibility, and the broader One Health implications. The speaker will also share insights from their research career. You can find out more and register here: Exploring a Potentially Transmissible Melanoma in Brown Bullhead: A Science Story with Dr. Cheyenne R. Smith

New Veterinary Resource: Vaccination Timing and Intervals for Dogs and Cats

The OAHN Companion Animal network has created a new reference guide for veterinarians. This information summary and references are intended to assist veterinarians with making vaccination decisions for patients based on what evidence is and is not currently available, their professional judgement, and individual considerations for patients and clients within an established veterinarian-client-patient relationship (VCPR). View and download this resource here: Vaccination Timing and Intervals for Dogs and Cats

This resource is only available for veterinarians and RVTs, and to view it you must be registered and logged into OAHN.ca.

New Reports

These are the most recent reports published by OAHN. We publish regularly, so be sure to check back in between newsletters to see what's new. To view any of the veterinary reports below, please click on the link for each report, or go to OAHN.ca and navigate to the species in which you are interested.

Bovine Network - Jan-Mar 2026 Vet Report

- New World screwworm in Texas
- Q1 2026 Bovine data from AHL
- Johne's testing at the AHL
- Johne's disease passive surveillance: Lactanet milk data
- Calf health resources

Companion Animal Network - Veterinary Need-2-Know Update Jan-Apr 2026

- OAHN spring survey and lab data: Key results
- Rabies update: Be bat ready and travel aware!
- Keep a lookout! Summer 2026 hazards
- Anti-parasitics table: 2026 update
- Survey: Antibiotic prescribing practices
- Antiviral stewardship: FIP drugs

Equine Network - Jan-Mar 2026

- Bits N Snips – OAHN disease surveillance; Neonatal Encephalopathy infographic
- Network member reports
- Syndromic and lab surveillance dashboard
- Equine research
- Ontario equine disease surveillance summary

Poultry Network - Mar-May 2026 Vet Report

- *Enterococcus cecorum* in broiler chickens: An ongoing concern
- Poultry veterinary survey highlights – Q2 2026
- Poultry research

Small Ruminant Network - Oct 2025 - Mar 2026 Vet Report

- Animal Health Laboratory summary Oct 2025-March 2026
- Camelid data snapshot, 2024-2025
- Case report: Chronic proliferative rhinitis due to *Salmonella*
- Provincial abattoir slaughter and condemnation data
- Research highlights
- International disease topics of concern

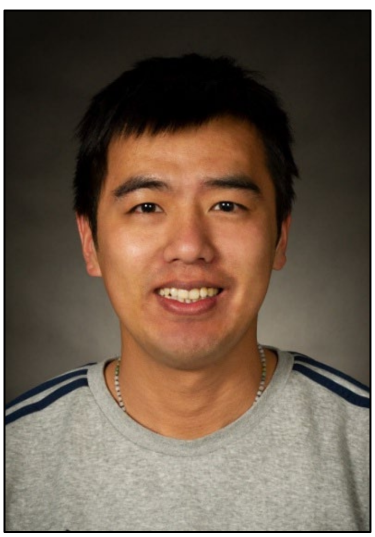
Swine Network - Jan-Mar 2026 Vet Report

- Pseudorabies has been confirmed in the U.S. commercial swine herd for the first time since 2004!
- PED/ PDCoV Cases remain high in 2026 Q1
- OAHN Veterinary clinical impression survey veterinary comments
- Animal Health Laboratory immediately notifiable disease review
- Laboratory diagnostic reports
- Ontario slaughter statistics
- CanSpotASF surveillance update
- OAHN Projects- Now accepting samples!
- Senecavirus A (SVA) Ontario update
- International disease topics of interest summary

Staff highlights

Alanna Turner – new Client Services position

The AHL would like to welcome Alanna Turner as our new Client Services Technician. Alanna has an Honours Bachelor of Science degree from the University of Guelph and a Bachelor of Education degree from Lakehead University. She has worked extensively with large and small animals at the Ontario Veterinary College and various farms. Alanna comes to us from the Specimen Reception unit where she served as a Client Services Representative and previously also worked as a research assistant in the Virology laboratory at the AHL.



Xi Xue – new Scientist position - Virology

The AHL Virology Laboratory is delighted to welcome Xi Xue as our newest Scientist and looks forward to further strengthening our research and diagnostic capabilities. Xi holds both an MSc and a PhD and brings more than 15 years of experience in molecular biology, genomics, and diagnostics, with extensive expertise in next-generation sequencing and PCR. Xi's deep knowledge and technical background will help advance AHL's commitment to delivering innovative solutions for animal virus detection and characterization.

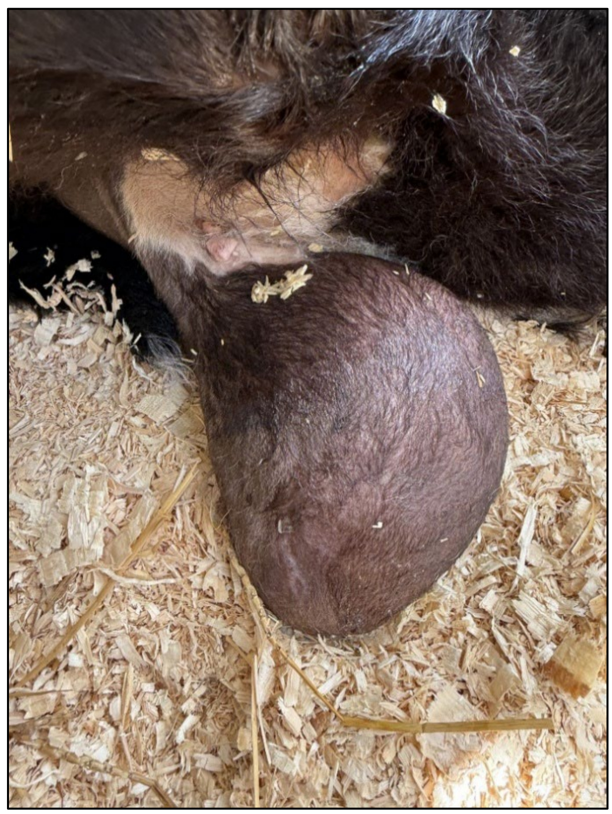
Congenital interstitial cell tumor in an Angus/Holstein calf

Emily Brouwer, Steve Crawford

Animal Health Laboratory, University of Guelph, Guelph, ON (Brouwer), Crawford Veterinary Services, Atwood, ON (Crawford).

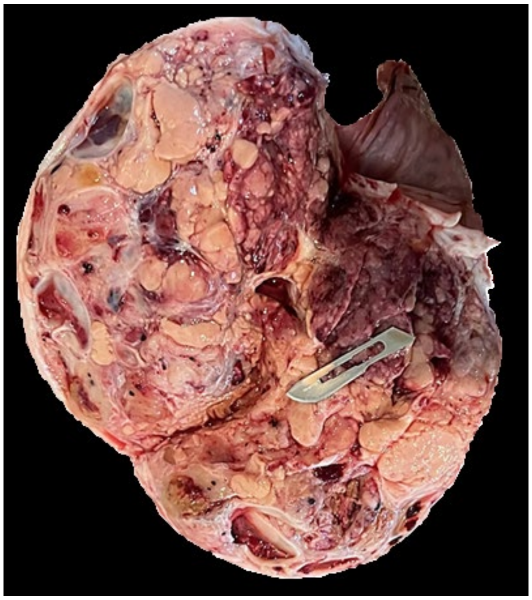
AHL Newsletter 2026;30(3):8.

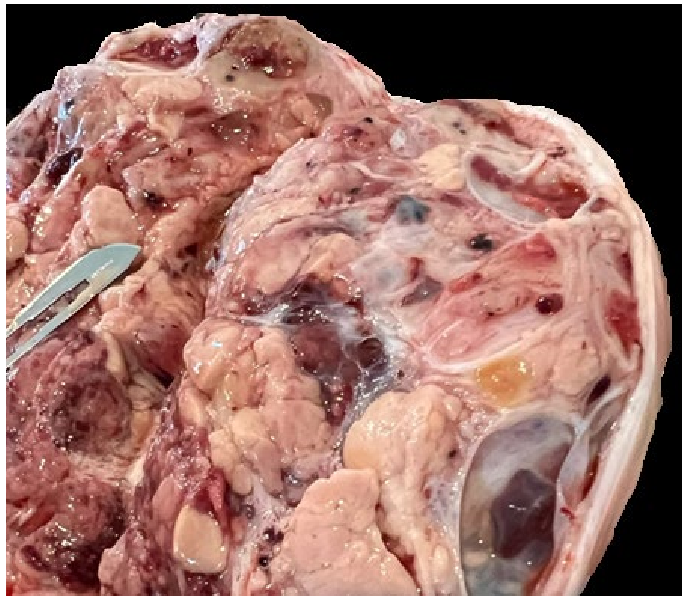
An Angus/Holstein cross calf was presented for examination at approximately three weeks of age due to an enlarged testis **(Fig. 1 & 2)**. The producer reported that the testis had been enlarged since birth, and apart from this abnormality, the calf showed no other significant clinical signs. There was no appreciable change in size since birth, nor did the animal show any significant discomfort. On clinical examination, the calf was diagnosed with unilateral cryptorchidism, with marked enlargement of the descended testis. Due to the absence of external signs of trauma, and the palpable firmness of the testis, possible differential diagnoses of scrotal hematoma and scrotal hernia were ruled out. The animal was routinely castrated, and the testis was incised for examination by the submitting veterinarian prior to subsampling for histology.



Figures 1 and 2. Affected calf with markedly enlarged testis

On gross examination, the testicular architecture was replaced by a multinodular, tan-red mass supported by bands of fibrous connective tissue and separated by cystic spaces containing serosanguinous fluid **(Fig. 3 & 4).**





Figures 3 and 4. Bisected testis. On cut section, the mass is both multinodular and cystic, with thick bands of fibrous connective tissue. There is no recognizable testicular tissue present.

Histologically, the tissue examined was comprised almost entirely of a multinodular, partially encapsulated, expansile mass formed of neoplastic polygonal cells arranged in sheets and cords supported by a fine fibrovascular stroma. Nodules of neoplastic cells were separated by bands of fibrous connective tissue that contained dilated vascular spaces. Neoplastic cells had distinct cell margins, abundant finely granular eosinophilic cytoplasm, and a single round central nucleus with finely stippled to vesicular chromatin and a single prominent nucleolus. There was up to two-fold anisocytosis and anisokaryosis, and there were zero mitotic figures in ten consecutive 400X power fields/2.37 mm2 (**Fig. 5**). Throughout the sections were patches of hemorrhage, or loose aggregates of fibrin and proteinaceous fluid containing mineralized cellular debris and neutrophils. The combined gross and histologic features were diagnostic for an interstitial cell tumor.

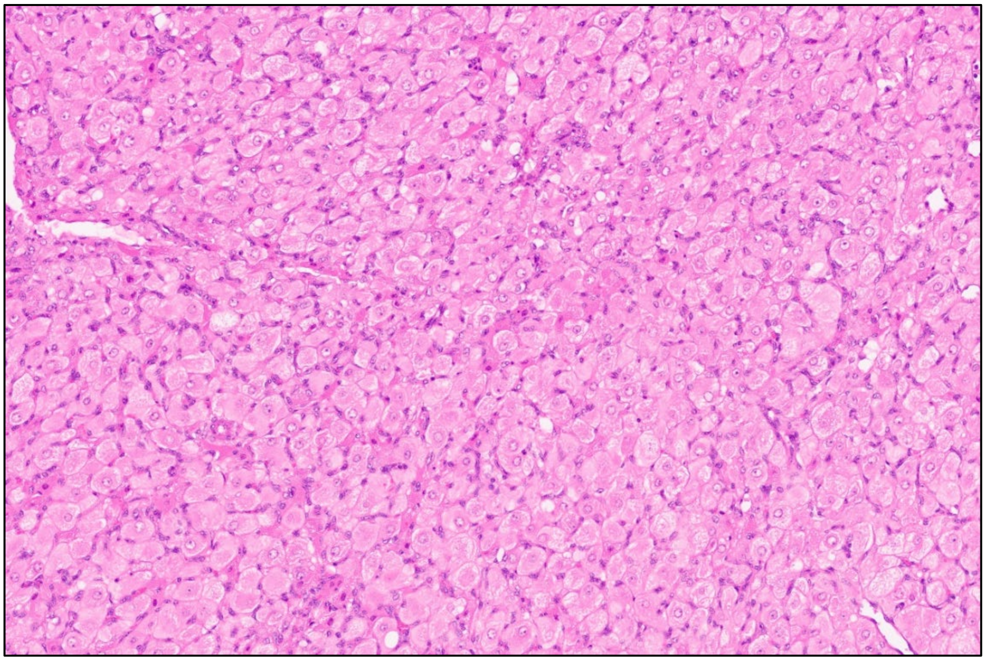


Figure 5. Testicular mass, 10X Hematoxylin & Eosin.

Congenital neoplasms are sporadically reported in cattle, and are typically associated with abortions, or perinatal/neonatal mortality. Most congenital tumors in cattle are malignant lymphomas, mesotheliomas, and embryonal tumors. Overall, tumors of mesenchymal origin predominate. Of congenital tumors reported to arise in the testis in bovines, sertoli cell tumors and yolk sac tumors predominate in this species. The cause of congenital tumors is not well understood, and potential causes include genetic abnormalities, infectious diseases, or toxin exposure.

Interstitial cell tumors are occasionally reported in bovines, particularly Guernseys, and tend to occur in older bulls. These tumors are almost invariably benign, with a slow and expansile growth habit. In Guernsey cattle, there is an association with interstitial cell tumors, thyroid C cell tumors, infertility and hepatic telangiectasis, but a causative relationship has not been established.

This particular tumor is exceptionally rare as a congenital lesion in cattle, with only one single animal case report identified in the literature. This case of congenital interstitial cell tumor was reported as an incidental finding in a 1-month-old, bilaterally cryptorchid shorthorn bull calf who presented to a veterinary teaching hospital for diarrhea and inappetence. There are no reports in the literature of a calf presenting with this tumor in a descended testis. Following castration, this calf is reported to be healthy and thriving.

References

1. Foster, RA and Premanandan, C. Chapter 5: Male Genital System. In: Jubb, Kennedy and Palmer's Pathology of Domestic Animal 7ed, Volume 3. Maxie, MG ed. Elsevier, 2026: 467-508.
2. López A, Ikede B, Ogilvie T. Unilateral interstitial (Leydig) cell tumor in a neonatal cryptorchid calf. J Vet Diagn Invest. 1994 Jan;6(1):133-5
3. Sosa E, Giannitti F, Macías-Rioseco M, et al. Congenital neoplasms in cattle: a literature review and multi-institutional case series. *Journal of Veterinary Diagnostic Investigation*. 2025;37(4):559-573

Trace mineral testing on biopsied liver

Jeffrey Charters, Nadia Pajnic, Ray Sanford, Evan Dunlop and Felipe Reggeti

Animal Health Laboratory, University of Guelph, Guelph, ON.

AHL Newsletter 2026;30(3):11.

Trace mineral status can have a large effect on the health, productivity, and optimal growth of livestock. Too little can result in deficiency-related conditions; too much, and the animals can show signs of toxicity. Currently, the most common antemortem sample to *estimate* the mineral status of an animal is serum; however, interpretation of mineral concentrations in serum can be challenging for many reasons, including homeostatic mechanisms, dietary intake, physiological status, or pre-analytical factors (e.g. sample collection and handling).

As the primary store of many minerals in the body, liver analysis is the preferred method to determine mineral status as hepatic levels more reliably reflect nutritional status. As a result of improved analytical capabilities at the Animal Health Laboratory (AHL), we can now perform accurate and precise analyses on biopsy samples as small as 15 mg. Although more invasive than blood sampling, biopsies still carry little risk to the animal or operator. Our current method for postmortem liver analysis specifies 1 g of tissue and has been reliable for the determination of mineral status. In the past, we have validated this method for copper assessment in small Tru-Cut biopsies. We now have preliminary data validating the method for the entire panel of mineral elements: manganese (Mn), Iron (Fe), cobalt (Co), copper (Cu), zinc (Zn), selenium (Se) and molybdenum (Mo) in small liver biopsies.

Validating the method involved addressing several analytical challenges to ensure agreement between regular 1 g "bulk" samples (typically postmortem) and Tru-Cut biopsies. This was done by obtaining fresh bovine or canine liver and taking bulk samples and their corresponding Tru-Cut biopsies from the same location in various regions of the organ **(Fig. 1)**.

To ensure accurate and precise results, all samples were freeze-dried to completely remove the moisture in the tissues, and results were reported on a dry weight basis. Making an accurate weight measurement for such small samples after drying is critical and requires using very sensitive instrumentation with antistatic features.

The results for each mineral summarized in **(Table 1)** show how well paired freeze-dried bulk-Tru-Cut biopsies compare. Perfect agreement would show a result of 100%. For all minerals, the range is from 91% to 123%, which is satisfactory since the smaller sample size would be statistically less likely to represent the bulk tissue. This much deviation is not abnormal in trace mineral analysis and should not greatly impact the clinical significance of the results.

Our normal 1 g samples and Tru-Cut biopsies showed good agreement across the mineral panel. Data is currently limited, but collection is ongoing to expand the number of observations for further statistical analysis. Preliminary results suggest that liver biopsies are suitable for trace mineral assessment.

To submit biopsy samples for analysis, collect 2 to 3 16-gauge Tru-Cut biopsies - see our previous LabNote (https://www.uoguelph.ca/ahl/ahl-labnote-19-liver-biopsy-procedure-cattle) on biopsy collection for more information. Place them into a plastic container or tube without gauze. Do not add any liquids (e.g. saline or fixative), as they may leach minerals from the tissue. Refrigerate or freeze and submit to the AHL. Results are reported on a dry weight basis with adjusted reference intervals where available.

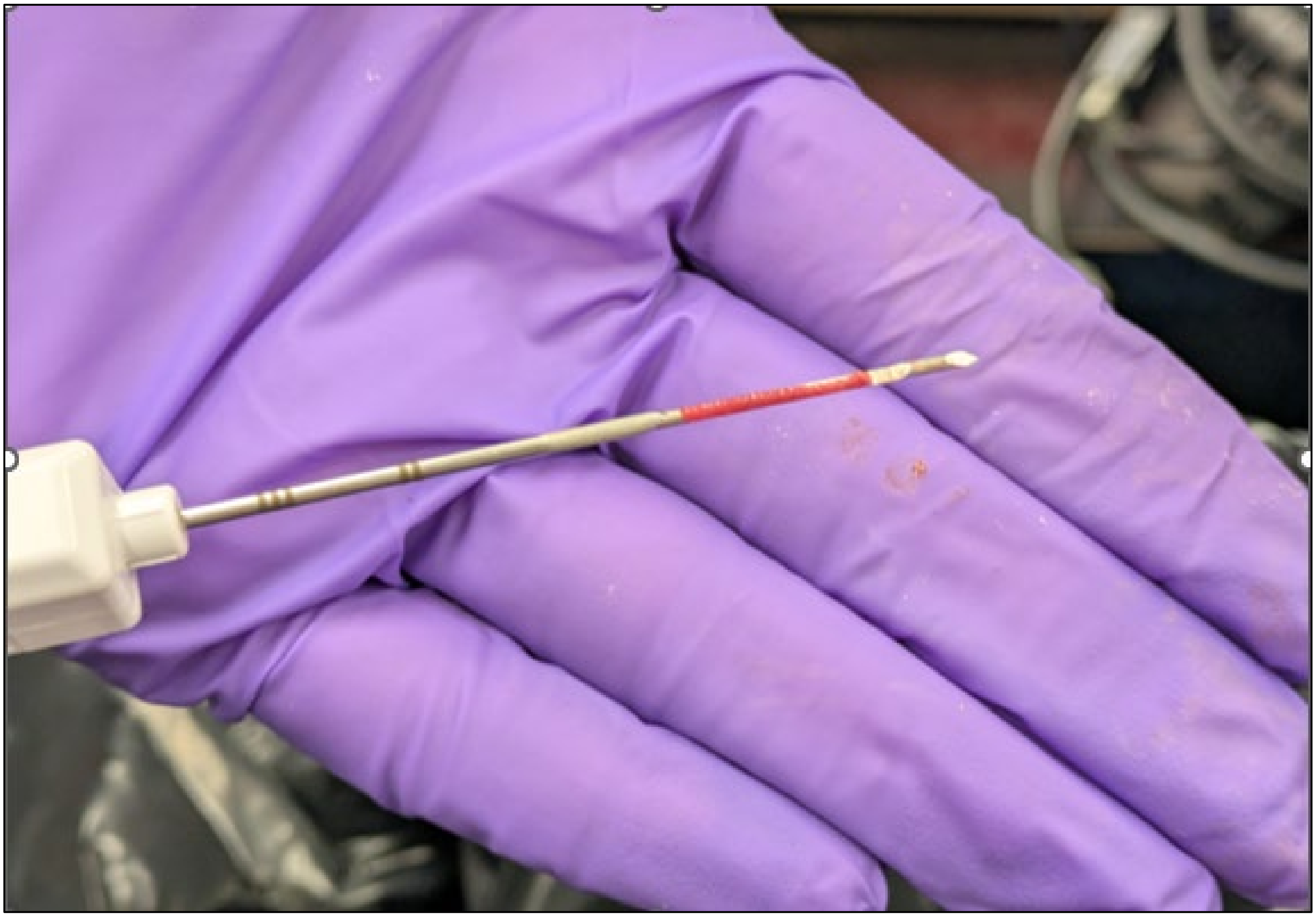


Figure 1. A freshly collected 16-gauge Tru-Cut biopsy sample showing a small core of liver tissue

Table 1. A summary of the relationship between 1 g "bulk" liver samples and Tru-Cut liver biopsies for the elements in the trace mineral panel. RSD = relative standard deviation = standard deviation ÷ mean average.

Sample Name	Mn	Fe	Co	Cu	Zn	Se	Mo
Bulk-Biopsy Pair 01	106%	102%	115%	96%	97%	98%	101%
Bulk-Biopsy Pair 02	102%	121%	114%	94%	93%	99%	104%
Bulk-Biopsy Pair 03	102%	101%	108%	97%	91%	98%	101%
Bulk-Biopsy Pair 04	104%	99%	123%	101%	96%	100%	113%
Bulk-Biopsy Pair 05	107%	109%	109%	96%	96%	93%	104%
Bulk-Biopsy Pair 06	106%	103%	109%	99%	96%	98%	108%
Bulk-Biopsy Pair 07	104%	104%	120%	104%	99%	96%	109%
Bulk-Biopsy Pair 08	104%	100%	118%	99%	95%	97%	105%
Bulk-Biopsy Pair 09	111%	107%	108%	94%	98%	96%	106%
Bulk-Biopsy Pair 10	105%	103%	112%	91%	94%	92%	105%
Average	**106%**	**105%**	**114%**	**97%**	**95%**	**97%**	**106%**
RSD	**2%**	**6%**	**5%**	**4%**	**2%**	**3%**	**3%**
Min	102%	99%	108%	91%	91%	92%	101%
Max	111%	121%	123%	104%	99%	100%	113%
Range	9%	21%	16%	13%	8%	8%	12%

References

1. Herdt, T.H. and Hoff, B. The Use of Blood Analysis to Evaluate Trace Mineral Status in Ruminant Livestock. Vet Clin Food Anim 2011;27:255–283. https://www.sciencedirect.com/science/article/pii/S0749072011000065?via%3Dihub
2. Radke, S.L., et al. Inductively coupled plasma mass spectrometry determination of hepatic copper, manganese, selenium, and zinc concentrations in relation to sample amount and storage duration. J Vet Diagn Invest 2020;32:103.. https://journals.sagepub.com/doi/10.1177/1040638719894988.

SWINE

Porcine sapovirus testing update

Rebecca Egan, Anna Marom, Xi Xue, Davor Ojkic

Animal Health Laboratory, University of Guelph, Guelph, ON

AHL Newsletter 2026;30(3):14.

In the Ontario swine herd, porcine sapovirus (PoSaV)-associated diarrhea is frequently identified in young piglets, and most often with concurrent rotavirus infection. When histopathology is performed, atrophic enteritis typical of a viral cause is identified in many of these cases (**Fig. 1**). In order to better understand the impact of these pathogens, particularly in the face of co-infections, immunohistochemistry for rotavirus and i*n situ* hybridization (ISH) for PoSaV can be used to assess for viral antigen in association with the intestinal lesion, with detection supporting a causal role in lesion development.

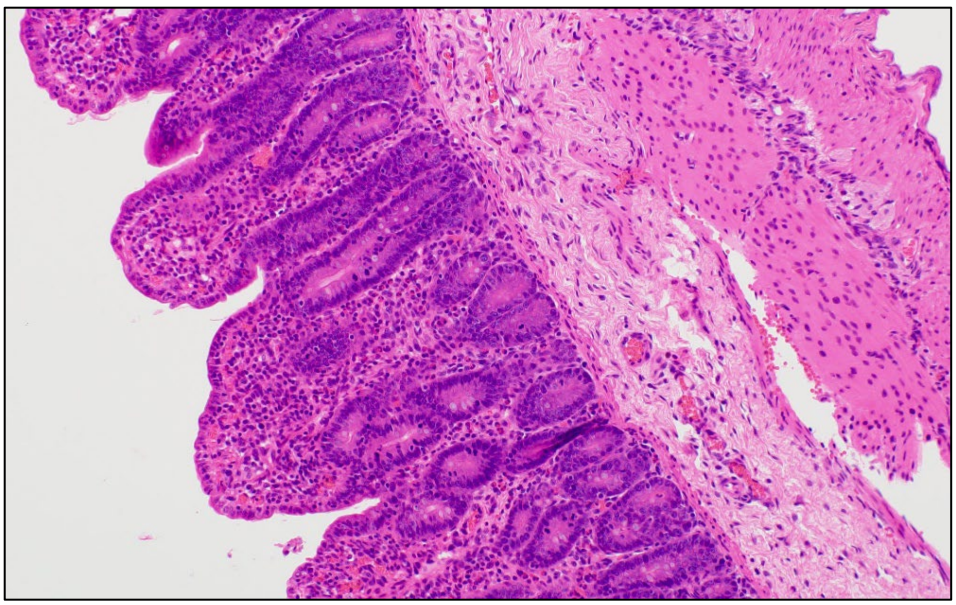


Figure 1. Small intestine from a newly weaned pig presenting with acute watery diarrhea, and atrophic enteritis demonstrated histologically by marked villous atrophy with blunting and fusion. PCR testing of feces was positive for rotavirus A (Ct 11.2), rotavirus B (Ct 27.6), rotavirus C (Ct 28) and porcine sapovirus (Ct 20.4), and negative for porcine coronaviruses. H&E stain.

In-house PCR testing for PoSaV has been available at the AHL since September 2023. Testing results were reviewed for 1,604 diagnostic samples representing 423 distinct cases received between September 6, 2023, and July 20, 2026, and cases with testing for porcine sapovirus and rotaviruses A, B, and C (RVA, RVB, and RVC) were selected. A case was classified as positive if at least one sample from the case was PCR-positive*. Overall, 395 (93.4%) cases were positive for at least one virus and only 28 (6.6%) were negative for all four viruses tested. Of the 233 PoSaV-positive cases, 209 (89.7%) had concurrent detection of at least one rotavirus, whereas only 24 (10.3%) were positive for PoSaV alone

(**Fig. 2**). Among 190 PoSaV-negative cases, the most common infection patterns were RVA only, RVC only, and RVA–RVC co-infection (**Fig. 4**).

Investigation of the role of PoSaV in enteric disease in pigs is ongoing, but current information indicates that PoSaV does contribute to diarrhea, most often in neonatal pigs and occasionally in older nursing or weaning-aged pigs. Currently, the Ontario Animal Health Network has an ongoing project investigating the role of PoSaV in neonatal diarrhea complex, aiming to provide a better understanding of how PoSaV contributes to neonatal diarrhea cases in the Ontario herd. *In situ* hybridization (ISH) is being pursued for all PCR positive cases, which should provide insight regarding involvement of this pathogen in lesion development.

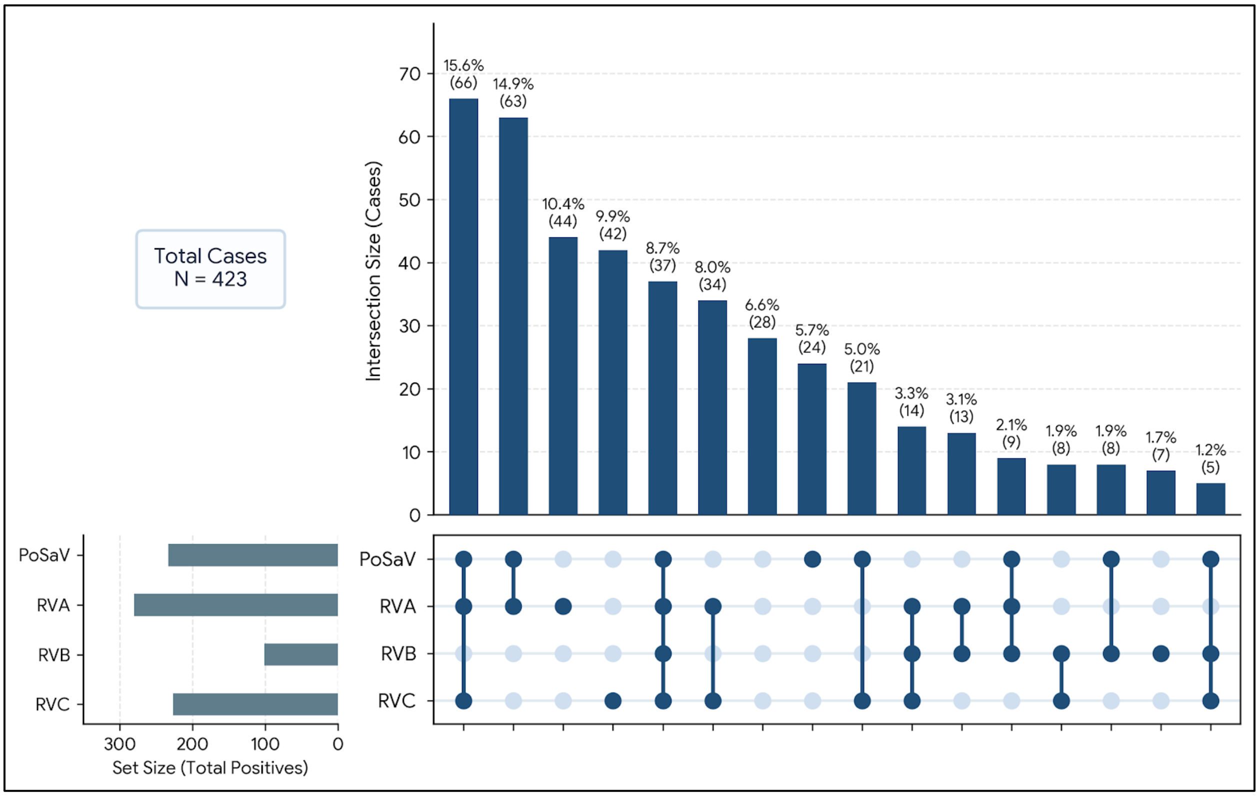


Figure 2. Co-infection patterns of PoSaV and rotaviruses A, B, and C among 423 positive cases tested at AHL since September 2023.

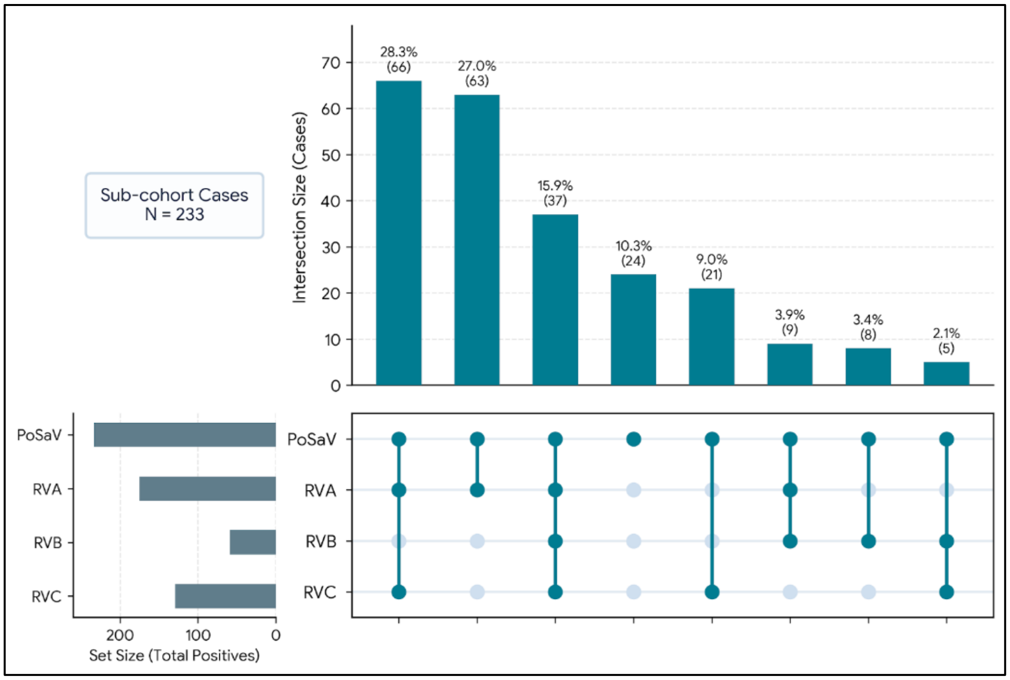


Figure 3. Rotavirus (RVA, RVB, RVC) co-infection profiles within porcine sapovirus (PoSaV)–positive cases (N = 233).

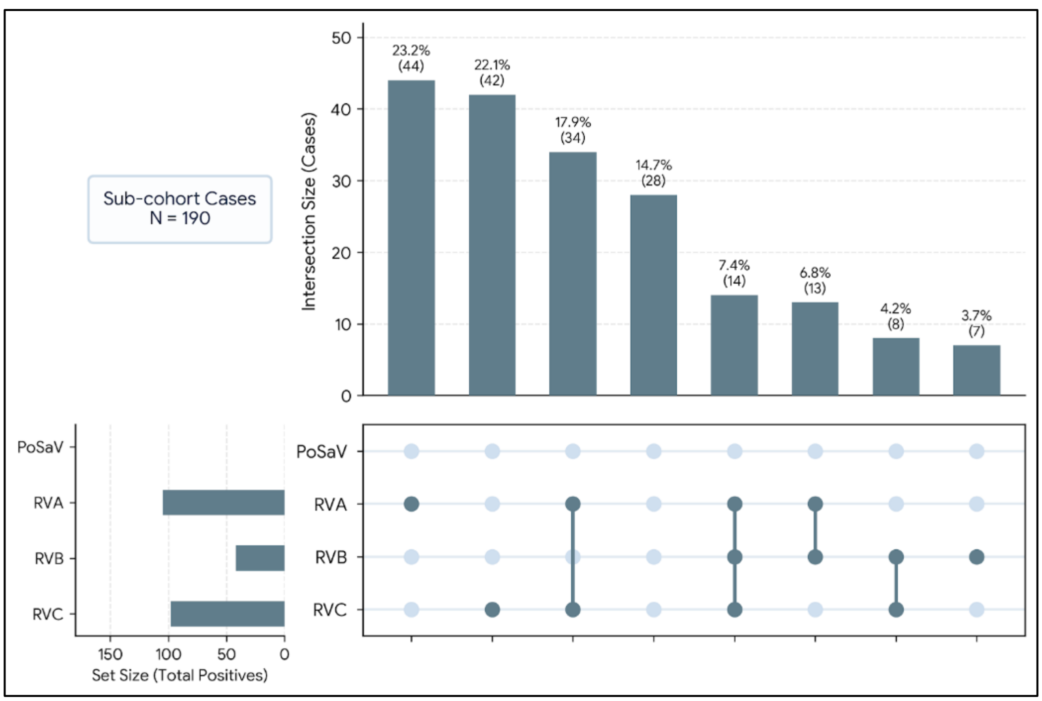


Figure 4. Rotavirus (RVA, RVB, RVC) infection profiles within porcine sapovirus (PoSaV)–negative cases (N = 190).

Sapoviruses are highly diverse viruses, with 21 genogroups currently identified in humans and animals. Eight genogroups have been reported in swine: GIII, GV, GVI, GVII, GVIII, GIX, GX, and GXI. PoSaV genotyping is based on sequence analysis of the major capsid protein gene, VP1. The first PoSaV isolate, the Cowden strain, was identified in 1980 and is now considered the prototype strain of genogroup GIII. This genogroup is the predominant and most widely distributed PoSaV lineage in swine worldwide, and all PoSaV detections in Ontario swine characterized to date have belonged to GIII. However, GIII exhibits substantial intra-genogroup diversity, encompassing multiple genotypes and continually giving rise to new genetic clusters as field strains evolve.

VP1 genotyping is now available at the AHL at a cost of $145 per sample (test code: **psapose).**

References

1. DeLay J, Ojkic D. Porcine sapovirus: An emerging pathogen contributing to swine diarrhea. AHL Newsletter 2023;27(1):15.
2. In: Diseases of Swine, 12th ed. Zimmerman JJ, Karriker LA, Ramirez A, Schwartz KJ, Stevenson GW, Zhang J, eds. Wiley-Black Sons; 2026. p 522-524.
3. Mizuno S, et al. Fecal metatranscriptomics and virus isolation reveal picornavirus diversity and evolution in Japanese wild boars and pigs. Sci Rep. 2026 Apr 9;16(1):20898.

Fowl adenovirus infection and genotyping trends

Davor Ojkić, Jordyn Lopes, Christian Sandrock, Emily Rätsep, Emily Brouwer, Andrew Brooks, Tanya Rossi, Emily Martin

Animal Health Laboratory, University of Guelph, Guelph, ON

AHL Newsletter 2026;30(3):18.

An increase in inclusion body hepatitis (IBH) outbreaks associated with fowl adenovirus (FAdV) infection was reported in Canada between 2004 and 2006. Incidence subsequently declined following the introduction of bivalent autogenous vaccination for broiler breeders. However, since 2015, IBH cases have again increased across Canada.

To characterize the FAdV strains involved, genotyping based on hexon gene sequencing was performed on 1,362 submissions received between 2008 and 2024. Of these, 1,234 originated from nine Canadian provinces and 128 from the United States. Most samples were submitted from Ontario (681), followed by Alberta (243), Nova Scotia (116), British Columbia (77), Quebec (58), Saskatchewan (21), Manitoba (20), Newfoundland (16), and Prince Edward Island (2). The majority of samples (1,285) were associated with clinical IBH, while 77 were submitted for other reasons. Samples from non-IBH submissions lacked histologic lesions or clinical history consistent with IBH, or were derived from non-hepatic tissues (e.g., cloacal swabs, lung, or ventriculus).

Among IBH-associated cases, four FAdV genotypes were identified: FAdV2, FAdV8a, FAdV8b, and FAdV11. From 2008 to 2014, FAdV11 and FAdV8a predominated. Since 2015, however, there has been a clear shift in strain prevalence, with two closely related FAdV8b strains becoming the most frequent IBH-associated genotype and largely replacing FAdV8a and FAdV11 (**Fig. 1**). These two strains are 97.7% identical at the nucleotide level but are clearly distinguishable as separate viral populations. This same trend has been observed in U.S. submissions and aligns with reports from multiple countries worldwide.

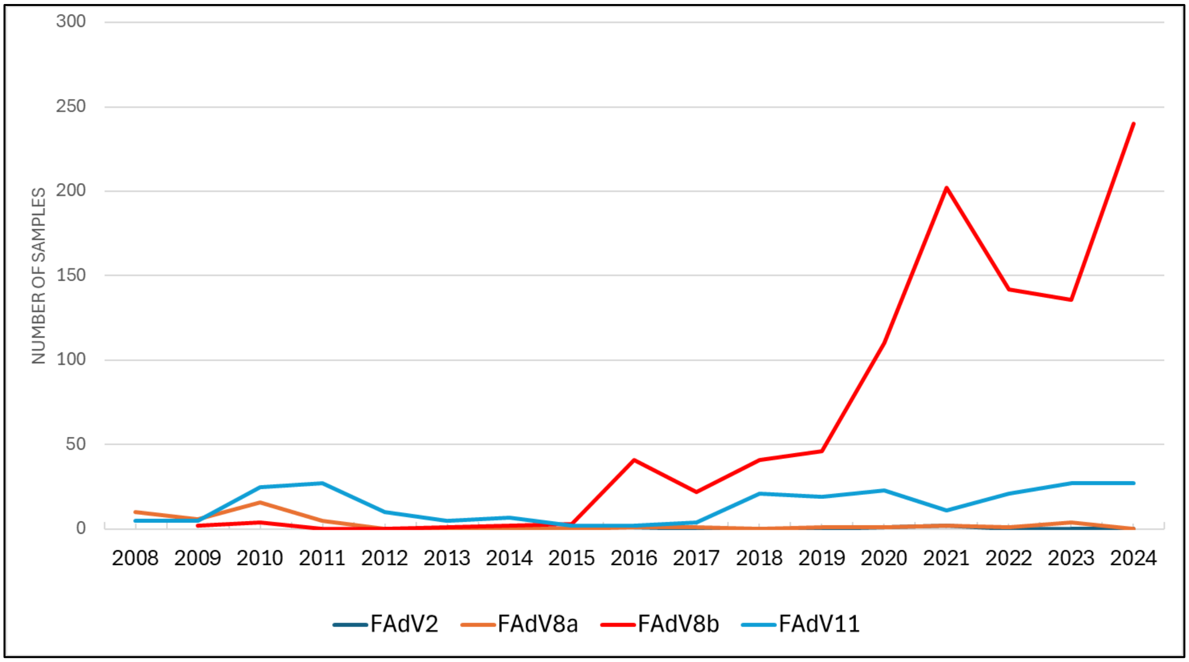


Figure 1. Detection of inclusion body hepatitis-related fowl adenovirus genotypes, 2008–2024

Within the smaller subset of 77 non-IBH submissions, 49 were from commercial flocks and 28 were from non-commercial flocks. A broad diversity of FAdV genotypes was detected in non-IBH submissions, including FAdV1, FAdV2, FAdV3, FAdV4, FAdV6, FAdV7, FAdV8a, FAdV8b, FAdV9, and FAdV11.

FAdV4 infection associated with hepatitis-hydropericardium syndrome (HHS) is widespread throughout Asia, Africa, South America, and Mexico. Although FAdV4 was detected in both commercial and non-commercial flocks in Canada, it was not associated with HHS, suggesting that circulating strains are non-hepatopathogenic and/or may require additional cofactors for disease expression.

Sporadic gizzard erosion outbreaks have been reported in broilers and layers in multiple countries, most frequently associated with FAdV1 and occasionally with FAdV4, FAdV8a, and FAdV8b infection. Of 49 non-IBH samples from commercial flocks, two were clearly associated with gizzard erosions: one with FAdV1 and one with FAdV8a.

References

1. Ojkić D, Lopes J, Sandrock C, Rätsep E, Brouwer E, Brooks A, Rossi T, Martin E. Fowl adenovirus infection and inclusion body hepatitis in Canada: genotyping trends from 2008 to 2024. J Vet Diagn Invest. 2026 Mar;38(2):168-173.

What is your diagnosis?

Rebecca Egan, Marisa Markey

Animal Health Laboratory, University of Guelph, Guelph, ON (Egan), Full Circle Equine Veterinary Services (Markey)

AHL Newsletter 2026;30(3):20.

Skin lesion on the ventral abdomen of a 16-year-old Thoroughbred mare, just cranial to the udder. The lesion has been present as a flat thick scaly region of skin for a couple of years, and more recently developed a nodule at the edge.

Stay tuned for the answer in the December 2026 AHL Newsletter!

Verminous ocular granulomas in a dog, consistent with *Onchocerca* sp.

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An adult mixed-breed, male, neutered dog was presented with increased intraocular pressure (43 mm Hg) in the left eye. At this time, the patient was noted to be *Ehrlichia* spp. positive and was treated with a 30-day course of doxycycline. Two weeks later, an expansile conjunctival growth was observed dorsomedially (**Fig. 1**). A transpalpebral enucleation was performed, and the tissue was submitted for histological examination.

Histologically, the superficial lateral and medial sclera and surrounding periocular fibrous tissue and skeletal muscle are expanded and separated by extensive coalescing aggregates of macrophages, with clustered and scattered neutrophils, lymphocytes, plasma cells, multi-nucleated giant cells, and eosinophils admixed with cellular debris, fibrin, and hemorrhage on a background of plump fibroblasts and variable amounts of mature collagen. Within the inflammation there are numerous cross, longitudinal, and tangential sections of nematodes which range from 200 um – 250 µm in diameter (**Fig. 2**). Many of the parasites are hypereosinophilic (necrotic). The parasites have a ~5-10 µm thick, smooth, eosinophilic cuticle with ring-like circumferential cuticular ridges (annulations) that are apparent in the tangential and longitudinal sections (**Fig. 2B inset**). The organisms have a pseudocoelom and there are remnants of coelomyarian musculature which is segmentally thinned. The intestine is often eccentrically placed and small, and the reproductive organs contain abundant basophilic granular material. Occasionally, aggregates of the basophilic granular material are free within the inflammatory exudate. The conjunctiva is often segmentally attenuated and expanded by edema and large numbers of lymphocytes, plasma cells, and fewer macrophages and neutrophils.

There are accompanying pre-iridal and posterior corneal fibrovascular membranes, retinal detachment and segmental degeneration, and corneal neovascularization. The optic disc and the optic nerve are unremarkable. Neoplasia is not captured in section.

The globe was diagnosed with multifocal to coalescing granulomatous scleritis and periorbital fasciitis, steatitis, and myositis with intralesional degenerate adult filarid nematodes consistent with *Onchocerca* spp.

Causes of ocular helminthic infections in dogs include *Onchocerca lupi*, *Thelazia* spp., *Ancylostoma* caninum, *Dirofilaria immitis*, *Angiostrongylus vasorum*, *Toxocara canis* and *Trichinella spiralis*. The key diagnostic feature that differentiates *Onchocerca* spp. from other filarid nematodes is the presence of evenly spaced ring-like circumferential annular cuticular ridges seen on tangential/longitudinal section but not on cross-section (as are present in this case). Adult female *Onchocerca* spp. are the only nematodes that exhibit this cuticular pattern.

This parasite is not endemic to Canada and is rarely diagnosed locally except in dogs imported from endemic areas including southwestern United States (e.g. Arizona, New Mexico) and Europe. There are reports of development of *Onchocerca* nodules in dogs up to seven years after they were re-homed to a non-endemic region from an endemic one. This patient was adopted by the current owners approximately five years ago, and originated from Texas, USA.

Classic features of glaucoma (e.g. cupping of the optic disk) were not captured in section but are not always present histologically. Glaucoma in this patient is secondary and could be the result of altered flow due to fibrovascular membranes within the anterior chamber, due to compression of the filtration angle by the granulomas, or both.

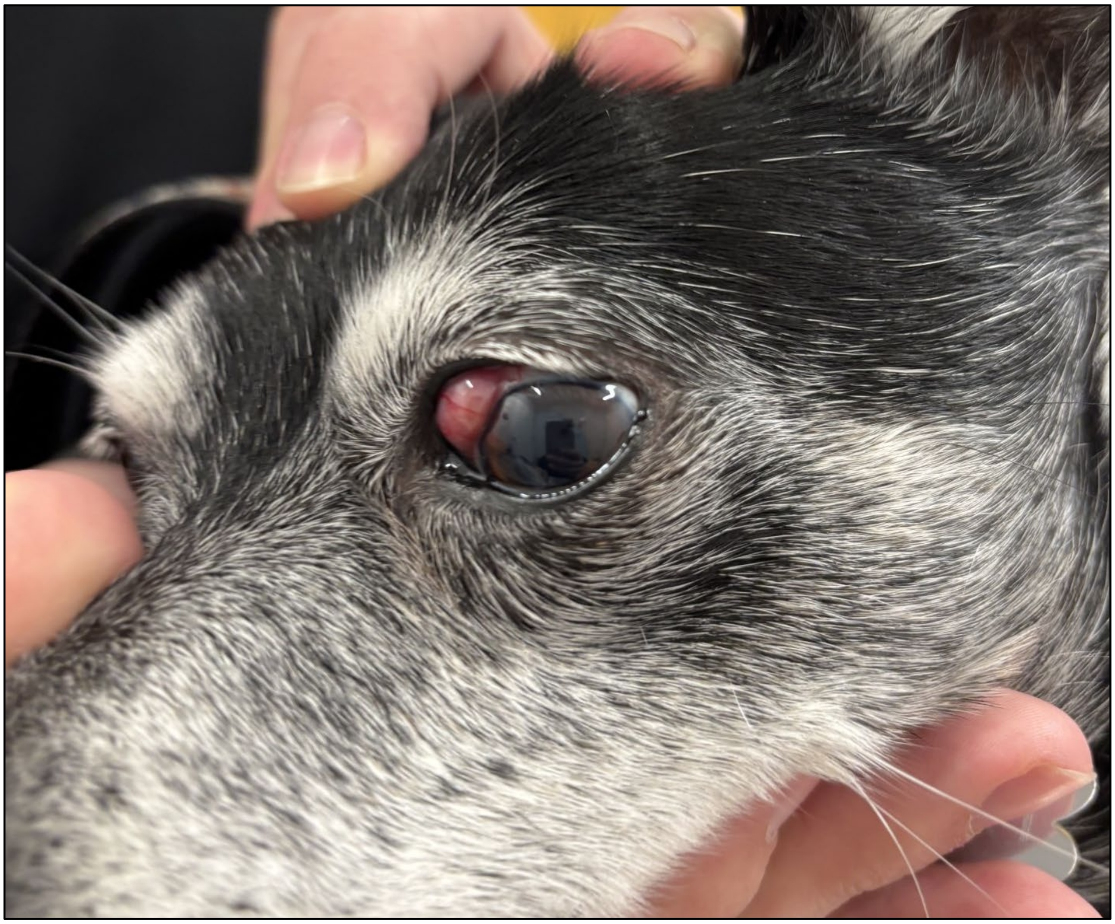

Figure 1. Conjunctiva, left globe. A smooth, pink-red, well-circumscribed, sessile mass arises from the dorsomedial conjunctiva of the left eye.

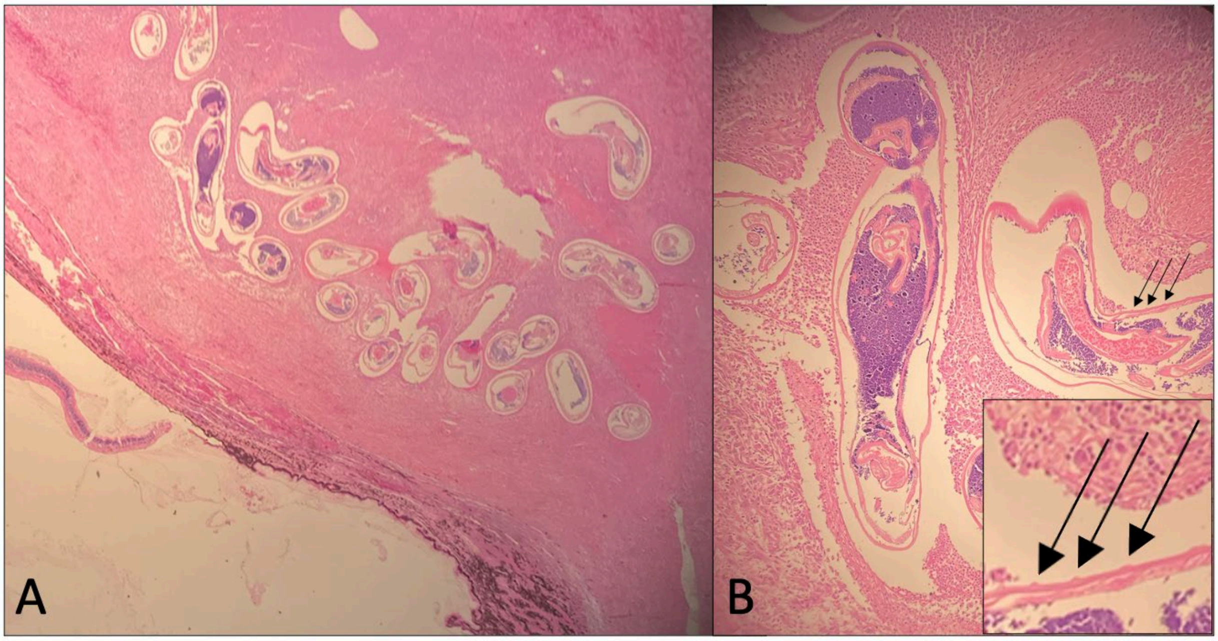

Figure 2. Sclera; H&E stain. **2A**. 4X. Within the scleral inflammation there are numerous cross, longitudinal, and tangential sections of nematodes which range from 200 µm – 250 µm in diameter. Many of the parasites are hypereosinophilic. **2B**. 10X. The parasites have a ~5-10 µm thick, smooth, eosinophilic cuticle with ring-like circumferential cuticular ridges (annulations) that are apparent in the tangential and longitudinal sections (**inset, arrows**). The organisms have a pseudocoelom and there are remnants of coelomyarian musculature which is segmentally thinned. The intestine is often eccentrically placed and small, and the reproductive organs contain abundant basophilic granular material.

References

1. McGarry JW, Carrozza R, Bradley C, Latrofa MS, Makepeace BL Otranto D. Onchocerca lupi in imported dogs in the UK: implications for animal and public health. BMC Vet Res. 2022 Feb 10;18(1):66.
2. Rojas A, Morales-Calvo F, Salant H, Otranto D, Baneth G. Zoonotic Ocular Onchocercosis by *Onchocerca lupi*. Yale J Biol Med. 2021 Jun 30;94(2):331-341.