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THE DAVIS-THOMPSON FOUNDATION NEWSLETTER

August

VOL. 54

Intrauterine infection of a bovine fetus around 60-180 days of gestation with which virus(es) results in malformations in the central nervous system AND arthrogryposis multiplex congenita?

A. Bovine viral diarrhea virus
B. Bluetongue virus
C. Schmallenberg virus
D. All of the above
E. Only C

INSIDE THIS ISSUE

Monthly cover photograph winner: Christoph Schulze

Berlin-Brandenburg State Laboratory, Frankfurt (Oder), Germany

Answer: E

Transverse section of the brain of a stillborn Holstein Friesian calf with hydrocephalus and porencephaly caused by intrauterine Schmallenberg virus infection.

Brain lesions typically consist of hydranencephaly, porencephaly, hydrocephalus and cerebellar hypoplasia, which in case of Schmallenberg, Akabane and Aino viruses infections may be associated with malformations of the axial and appendicular skeleton, e.g. arthrogryposis multiplex congenita.

REFERENCE: Agerholm JS, Hewicker-Trautwein M, Peperkamp K, Windsor PA. Virus-induced congenital malformations in cattle. Acta Vet Scand. 2015 Sep 24;57(1):54. doi: 10.1186/s13028-015-0145-8. PMID: 26399846; PMCID: PMC4581091.

-Dr. Katherine D. Watson - Cover Image Editor
-Dr. M. Donald McGavin - Cover Image Composition Analyst

MESSAGE FROM THE CEO

Dear colleagues

Welcome to the August issue of the Davis-Thompson Foundation newsletter, with the compliments, as usual of our outstanding managing editors, Javier Asin and Jeann Leal.

It is with heavy heart, that we share the news of the passing of Dr Mary Anna Thrall, on July 14. Dr. Thrall was an incredibly accomplished clinical pathologist, who was a prolific and generous contributor to the DTF. During many years she taught clinical pathology for anatomic pathologists for the Foundation in many countries. A full article about her great life is in the following pages.

This issue is, as always, full of information about the training activities of the Foundation all over the world in several languages. See them in the following pages or in our website: https://davisthompsonfoundation.org/

Remember that registration for one of our newest courses, Foundations of Pathology, is open and there are still a few seats available. Consider registering soon because once registration is complete, we will not be able to accept new registrations. And do not forget the 3-day hands-on Racehorse Necropsy Workshop co-sponsored by the Horse Integrity and Safety Authority, a “must” for those doing necropsies of racehorses. For this particular workshop we have also created a waiting list (see registration page), so if you do not manage to secure a seat, we will consider doing a new version later in the year or early in 2025.

One of the many highlights of our July training activities, was the “Just in time mock exams”, an incredibly successful two-day meeting attended by a large number of aspiring veterinary anatomic pathologists. This seminar will be offered annually in the summer.

Looking forward to seeing you in one of our training activities.

Warm regards

Francisco (Paco) Uzal
Chief Executive Officer
Davis-Thompson Foundation

JVDI IN FOCUS

Our August focus is an article appearing in the September issue: **"Retrospective review of the pathology of American pikas"** by Adrienne Barrett, Kali Holder, Susan Knowles, Elise E. B. LaDouceur.

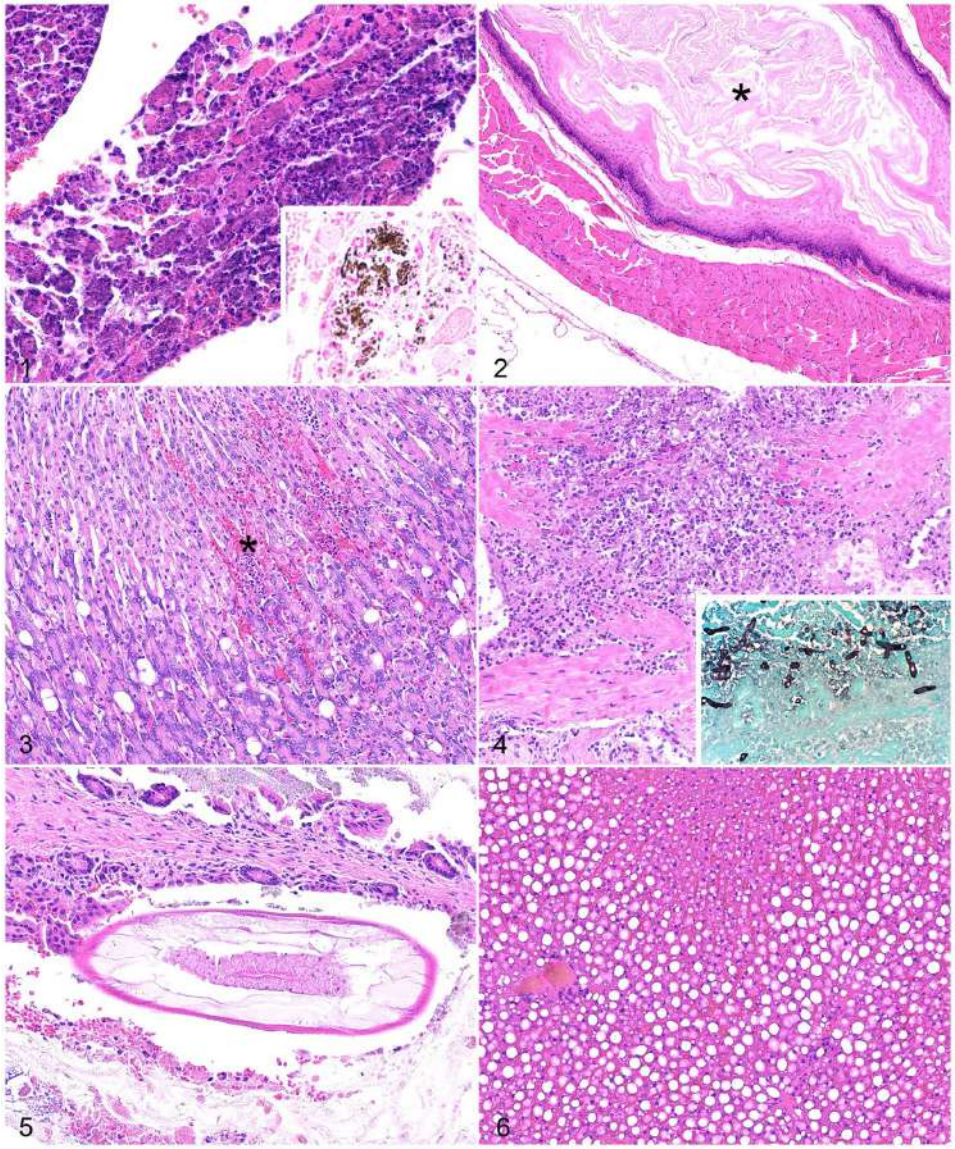
J Vet Diagn Invest 2024;36(5). https://journals.sagepub.com/doi/epdf/10.1177/10406387241256907

American pikas (*Ochotona princeps*) are small lagomorphs that live in mountainous talus areas of western North America. Studies on the histopathology of American pikas are limited. We summarize here the clinical histories, and gross and histologic findings of 12 American pikas, including 9 captive (wild-caught) and 3 wild animals. Death was often attributed to stress (transport, handling, anesthesia) with few-to-no premonitory clinical signs. Infection was the cause of death in 2 cases: 1 had bacterial pyogranulomatous dermatitis, cellulitis, and lymphadenitis with sepsis; the other case had oomycete-induced necrotizing colitis. Incidental parasitic infections included sarcocystosis, nematodosis (oxyurids), and ectoparasitism. Most animals with adequate nutritional status had periportal hepatic lipidosis; this finding was absent in all animals with adipose atrophy, and it is possible that periportal hepatic lipidosis is non-pathologic in American pikas. Three cases had myocardial necrosis that was considered the cause of death; the cause of necrosis was not determined, but it may have been caused by stress or vitamin E–selenium deficiency. Esophageal hyperkeratosis was noted in animals with a history of anorexia and negative energy balance; accumulation of esophageal keratin can result from lack of mucosal abrasion by ingesta. Several histologic findings that are likely normal in American pikas include splenic extramedullary hematopoiesis, thymic tissue in adults, and *Clostridium* sp. in the enteric lumen.

The Journal of Veterinary Diagnostic Investigation is the official journal of the American Association of Veterinary Laboratory Diagnosticians. The mission of the Journal is to educate by informing readers of progress in veterinary laboratory medicine and related fields of endeavor. The key objectives of the JVDI are to promote the science of veterinary laboratory medicine and the betterment of animal and public health. JVDI fully supports diversity, equity, and inclusion in our publishing activities.

Editor-in-chief, Dr. Grant Maxie / https://journals.sagepub.com/home/VDI

JVDI IN FOCUS



Figures 1–6. Histologic lesions in American pikas (*Ochotona princeps*). **Figure 1.** Myocardial necrosis in case 7. Cardiomyocyte sarcoplasm is fragmented and mineralized. H&E. Inset: calcium salt deposits. Von Kossa stain. **Figure 2.** Esophageal hyperkeratosis (asterisk) in case 8. H&E. **Figure 3**. Small clusters of mucosal epithelial cells have lytic necrosis with hemorrhage (asterisk) in the gastric mucosa in case 7. H&E. **Figure 4**. Necrotizing oomycotic colitis in case 6. The architecture is effaced by hemorrhage, inflammation, and necrosis. H&E. Inset: oomycotic hyphae. GMS stain. **Figure 5**. Colonic nematodosis consistent with oxyurid infestation in case 7. Nematodes have large lateral cords, a pseudocoelom, platymyarian musculature with a pronounced cytoplasm, and an enteric tract with uninucleate, columnar-to-cuboidal cells. H&E. **Figure 6**. Periportal and midzonal hepatic lipidosis in case 5. H&E.

DIAGNOSTIC EXERCISE

Case #: 239; **Month:** June; **Year:** 2024

Contributors: Adriana L. Stigger[1], David Driemeier[2], Ana L. Schild[3], Rafael P. Lima[2], Fernanda F. Perosa[2], Irene Guterra[1], Allanis M. Silveira[1]

[1]Laboratory of Veterinary Pathology, Centro Universitário da Região da Campanha (Urcamp), Alegrete, RS, Brazil

[2]Setor de Patologia Veterinária, Faculdade de Medicina Veterinária, Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, RS, Brazil.

[3]Laboratório Regional de Diagnóstico (LRD), Faculdade de Veterinária, Universidade Federal de Pelotas (UFPel).

Corresponding author: davetpath@ufrgs.br

Clinical History: In October (spring), on a farm in southern Brazil (29° 47' 02" S 55° 47' 28" W), 84 10 to 12 months old mixed breed calves out of a herd of 120 presented anorexia, weight loss, cough, respiratory distress, dyspnea, and serous nasal discharge. Some calves had open-mouth breathing, with extended necks and altered stance (with their forelimbs apart, in an "air-hunger" posture). Mortality was reportedly "high", though the exact number of deaths was not mentioned. Two of the dead calves were submitted for necropsy (Figs. 1-4).

Figure 1.

DIAGNOSTIC EXERCISE

Figure 2.

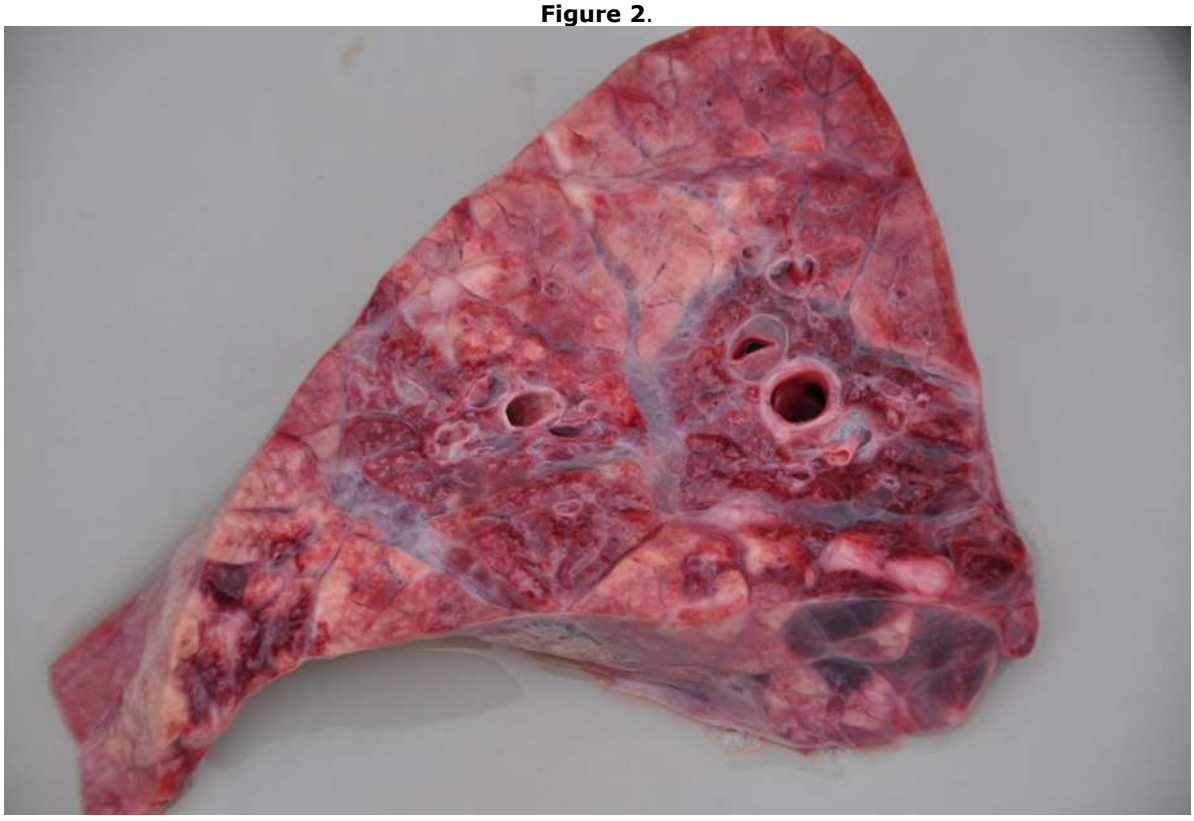


Figure 3

DIAGNOSTIC EXERCISE

Figure 4.

Follow-up questions:

- *Morphologic diagnosis*
- *Etiologic diagnosis*
- *Differential diagnoses*

Click here for answers

The Diagnostic Exercises are an initiative of the Latin Comparative Pathology Group (LCPG), the Latin American subdivis on of The Davis-Thompson Foundation (DTF). These exercises are contributed by members and non-members from any country of residence. Consider submitting an exercise! A final document containing this material with answers and a brie discussion will be posted on the DTF website (https://davisthompsonfoundation.org/diagnostic-exercise/)

Associate Editor for this Diagnostic Exercise: Ingeborg Langohr
Editor-in-chief: Claudio Barros

DE & BJVP ANNOUNCEMENT

The Brazilian Journal of Veterinary Pathology to publish 18 Latin Comparative Pathology Group diagnostic exercises a year

Dear colleagues,

It gives us great pleasure to announce that the Brazilian Journal of Veterinary Pathology has generously decided that from now on, 6 Latin Comparative Pathology Group (LCPG) diagnostic exercises (DE) will be published in every issue of the journal (18 a year). This is double the number of 3 DE per issue that the journal has been publishing for several years. Thank you Br J Vet Path! This decision was mainly based on the large number of excellent diagnostic exercises that the LCPG has been receiving, all of which were published on line in the Davis-Thompson Foundation (DTF) website, but only a few were published in the BJVP.

We hope that this new initiative will encourage more colleagues from all over the world to prepare and submit DEs. Please do not hesitate to contact our Editor in Chief, Dr Claudio Barros (claudiobarros1945@gmail.com) if you have any questions about the DEs.

As a reminder, the DEs are an initiative of the LCPG, the Latin American subdivision of the DTF. These exercises are contributed by members and non-members of the LCPG or DTF, from any country. Cases do not have to be something unusual, and all sub-specialties of pathology are welcome! Previous cases and instructions for preparation and submission of DEs are available online at the Davis Thompson Foundation website and in the member's section of the AAVLD website. Selected cases (now 6 a year!!!) are also published in each number of the Brazilian Journal of Veterinary Pathology; if a case is selected for the latter, the authors will be contacted to request authorization before the DE is transferred to the B J Vet Path.

Looking forward to be inundated with DEs submissions!!!

Warm regards

Claudio Barros, Editor in Chief DEs
Francisco Carvallo, President LCPG
Paco Uzal, President-elect LCPG

SEMINAR REVIEWS

5th Annual Davis-Thompson Foundation Eastern European Veterinary Pathology Meeting, 22 – 24 May 2024

By Tamara Dolenšek, Board Member and European Division Regional Representative for Eastern Europe, Davis-Thompson Foundation

Photo credits: Prof. Simon Priestnall, Assoc. Prof. Ivan – Conrado Šoštarić – Zuckermann and Krunoslav Vinicki

Another successful Davis-Thompson Foundation meeting took place in Eastern Europe, this year showcasing amazing veterinary pathology lectures in the beautiful scenery of Lovran on the Istrian coast of Croatia. The meeting held at Hotel Excelsior overlooking the crystal-clear Adriatic Sea was co-organized by the European Division of the Davis-Thompson Foundation and the veterinary pathologists from the Faculty of Veterinary Medicine, University of Zagreb, Croatia.

Professor Julie Engiles, University of Pennsylvania, USA, caught the participants' attention with amazing gross and histology images of equine pathology. The initial lecture covered equine oral pathology and the rest delved into the more common and uncommon diseases of the gastrointestinal tract, hepatobiliary system, respiratory and cardiovascular system as well as urogenital pathology and neuropathology. The participants were amazed by the number of cases that are seen by their service on a daily basis and the detail of examination of difficult cases, especially the ones with oral pathology and neuropathology. The following day, Professor Engiles tied up her lectures by providing a case-based quiz and animating the participants to form two competing groups. Needless to say, that the participants were instructed well and were able to pass the quiz through a group effort. The meeting's program was continued by Associate Professor Ivan – Conrado Šoštarić – Zuckermann, Head of the Local Organizing Committee from the University of Zagreb, who gave a wonderful lecture on zoo pathology cases he had encountered recently. By using an interactive online quiz app, he was able to truly engage the majority of the participants and receive real-time answers. Since zoo pathology is not a regular for most of the participants, this lecture was a great warm-up ahead of the lectures by Dr Daniela Denk, Sea World Yas Island Abu Dhabi, United Arab Emirates. Dr Denk opened her lectures a bit differently as her first lecture covered the zoo/wildlife pathologist's mindset.

SEMINAR REVIEWS

We probably all agree that zoo and wildlife cases intrigue us, but they equally make us uneasy, concerned and doubtful of our own expertise on the topic. Dr Denk reassured us that we all have the basic knowledge of pattern and disease recognition, providing a solid foundation for the application of this knowledge to unfamiliar species, which should be complemented by species specific research of textbooks, articles, and other available online resources. Her next lecture focused on primate pathology and specifically emphasized the need to consider zoonotic diseases when dealing with such species. After a quick lunch the participants and speakers jumped onto a tour boat that took us from Lovran past the picturesque villages of Ika and Ičići to Opatija. In the late 19th century Opatija became accessible by train which opened the path for the development of tourism and the construction of several villas boasting the typical architecture of the Austro-Hungarian Empire. On the last day of the meeting Dr Denk covered bacterial, parasitic, viral and environmental diseases of zoo animals and wildlife and concluded the day with a quiz. The participants were amazed by the case variety, the level of ingenuity in solving cases and the amazing facilities of Sea World Yas Island Abu Dhabi. The meeting came to an end with a formal dinner which offered the participants and speakers yet another opportunity to exchange ideas and form a vibrant veterinary pathology community. The Local Organizing Committee did an outstanding job with the running of the event as well as providing a pleasant social atmosphere.

After the Davis-Thompson Foundation's Eastern European meetings took place in Belgrade (Serbia), Ljubljana (Slovenia), Ohrid (North Macedonia), Sarajevo (Bosnia and Herzegovina) and Lovran (Croatia), this established group of veterinary pathologists will head towards Romania since the 6th annual meeting will be hosted by the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca in May 2025. Make a mark in your calendar and stay tuned since another fabulous opportunity for continued education awaits in Eastern Europe!

SEMINAR REVIEWS

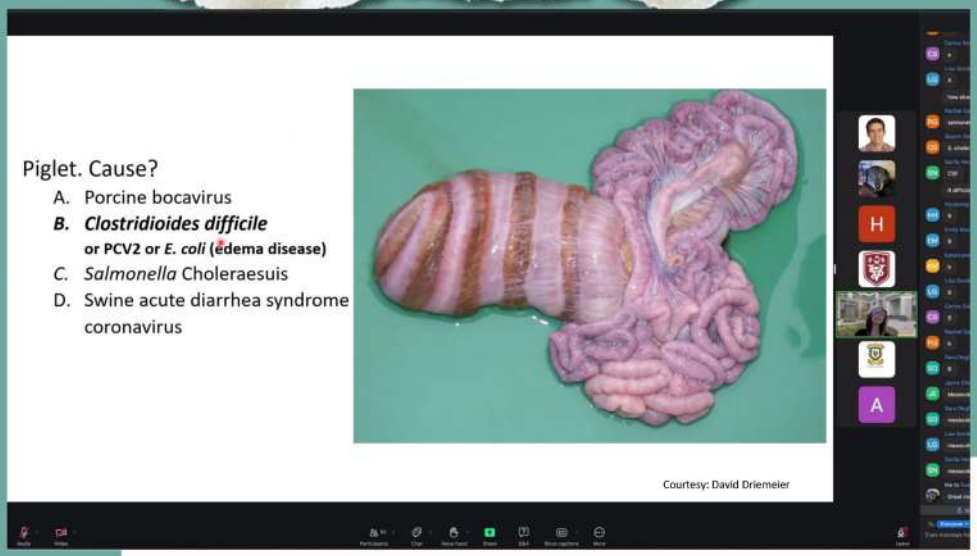
SEMINAR REVIEWS

JUST IN TIME MOCK EXAMS

2024

By Francisco Uzal

SEMINAR REVIEW



On July 15-16, the Foundation provided a new on-line outstanding and very dynamic two-day mock exams dedicated to aspiring veterinary anatomic pathologists. The seminar was presented by a selected group of ACVP/ECVP Board Certified pathologists, which included Kevin Woolard, Paco Uzal, Javier Asin, Eileen Henderson, Denise Imai and Leslie Woods (UCDavis); Ingeborg Langohr (Louisiana State University/Sanofi); Anne Lewis (Oregon National Primate Research Center); and Dalen Agnew (Michigan State University).

More than ninety eager aspiring pathologists from all over the world attended the seminar, which combined interactive presentations and mock exams centered around diverse animal species and diseases. The participants navigated a comprehensive potpourris of important, classic, and peculiar diseases with exam simulations. Based on the resoundingly positive comments received from the attendees, it seems that this Just in time mock exams seminar is here to stay and we hope it will offer annually during the summer from now on.

SEMINAR REVIEWS

European Descriptive Veterinary Pathology Course 2024

by Jey Koehler, Foundation President

The 2024 European Descriptive Veterinary Pathology course was held in Valencia, Spain at CEU Cardenal Herrera University. The dream team of Drs. Linden Craig, Jey Koehler, and Patty Pesavento delivered lectures, quizzes, virtual histo slides, and lots of discussion on their favorite topic: the recognition, interpretation, and description of lesions at every level of magnification. The trip started off fantastically thanks to our wonderful local host, Dr. Joaquín Ortega, who arranged for a behind-the-scenes tour of the Oceanogràfic de València. This gorgeous aquarium is the largest in Europe, and had just received two beluga whales rescued from the besieged city of Kharkiv in Ukraine. Head vet Dr. Jose Luis Crespo gave us an incredible overview of both the work being done in the cutting-edge labs at the aquarium but also conservation work being done in the field in cooperation with local fishermen.

Once the course started, Dr. Ortega, as well as local faculty Dr. Elena Colombino and Dr. Arturo Oliver helped everything to run smoothly and we overcame all minor technical hurdles. On day one, Dr. Craig gave her wonderful methodical overview of interpreting gross lesions and kept participants on their toes with polling questions. She also gave us all some useful photography tips and inspired us to stay organized on the necropsy floor (pro tip: you should have a checklist!). During the break, participants enjoyed a yummy snack of *horchata* (the Spanish one, made from chufa nuts) and long narrow sweet breads called *fartons*. Dr. Pesavento rounded out the day with a little taste of macro-micro correlations. 2x is your friend!! Day two, Dr. Koehler walked through developing your style, and how to approach neoplasms and non-neoplastic lesions, as well as how you might encounter histo images in the setting of an assessment. Day three, Dr. Pesavento gave everyone some anchors in her fantastic EM talk, and gave some foundational knowledge on IHC and ISH, then the afternoon was dedicated to a mock exam with eight challenging digital slides.

SEMINAR REVIEWS

The next morning on day four, we reviewed every histo slide in great detail, with lots of images and discussion, and of course the ever-popular “This Not That” where we reviewed other entities that might be confused with the one in our slide. The afternoon on day four was dedicated to some great image interpretation tests by Drs. Craig and Pesavento. On our final day, we got a little lagniappe EM from Dr. Pesavento, some discussion about writing good multiple-choice questions (and their role in helping you study), and some open-ended Q&A with participants.

Being together in person was great and led to many wonderful spontaneous interactions and connections. Feedback from participants was excellent, and we look forward to going back to Europe in a couple of years! We are so grateful for everything Joaquín and his wife Pati (a fellow faculty member at CEU in radiology) did to make us feel at home.

All course participants & Faculty

SEMINAR REVIEWS

Jey teaching

Group at Aquarium

Patty and participants

Course participants

Agatha & Jey

Course participants

Linden teaching

Horchata and fartons

GROSS SEMINARS ABPV

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TUMOR GRADING IN ANIMALS

Click here to register

SEMINARS SERIES IN SPANISH

Click here to register

EUROPEAN SYMPOSIUM

Click here to register

GHPN INFORMATION SESSIONS

Global Health Pathology Network (GHPN) Information Sessions

GLOBAL HEALTH PATHOLOGY NETWORK

Have you heard of the GHPN?

The GHPN is an organization that operates under the umbrella of the Davis-Thompson Foundation and fosters engagement of veterinary pathologists in Global Health

This year, there will be information sessions about the GHPN at the ECVP/ESVP/ESTP and ACVP/ASVCP meetings

CUTTING EDGE PATHOLOGY

SEAPV

August 31, 2024

11:30 AM- 1:00 PM (CEST)

In person

San Lorenzo de El Escorial, Madrid, Spain

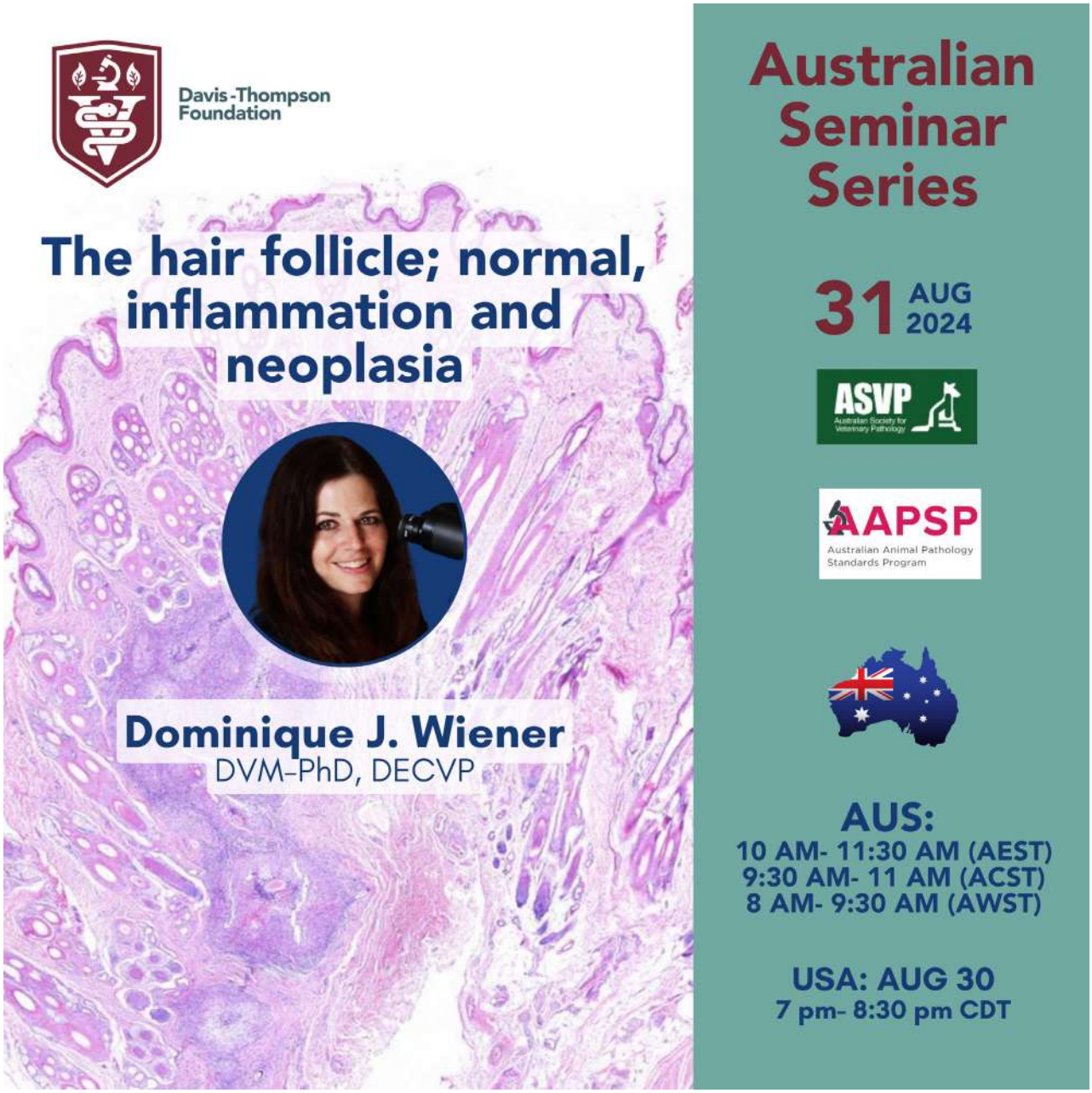
Click **here** for more information

Javier Asin
DVM, PhD, DECVP

More information coming soon

Speaker(s) for ACVP to be announced soon

THE HAIR FOLLICLE



Click here to register

RACEHORSE NECROPSY WORKSHOP

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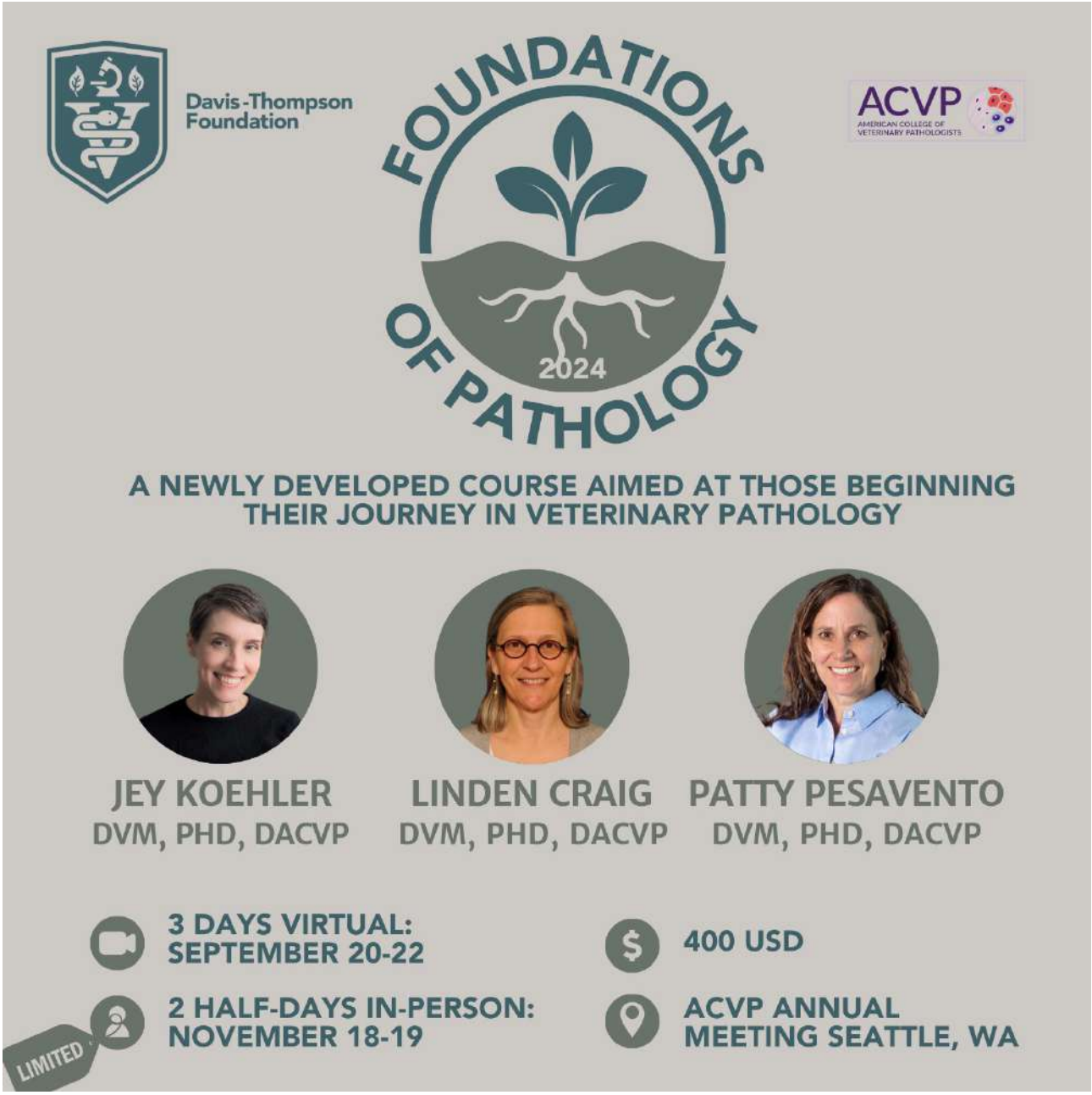
ZOO & WILDLIFE PATHOLOGY

Click here to register

FOUNDATIONS OF PATHOLOGY



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INVERTEBRATE PATHOLOGY SEMINAR

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AAVLDEI WORKSHOP

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AAVLD 2024 PRE-MEETING

Click here to register

ACVP 2024 PRE-MEETING

Click here to register

EUROPOLA

Click here to register

WESTERN ROUND ROBIN CASE

CONTRIBUTING LABORATORY:

California Animal Health and Food Safety Lab - Davis Branch

History: A 12-year-old backyard hen with approximately 5-month history of tumor growth on the left wing. The hen progressively declined clinically and died.

Gross findings: Emaciated chicken with obliteration of the left wing by a large (18 x 10 cm), firm, pale, gritty mass. The mass encompasses the complete humerus, from the scapulohumeral joint to the humeroulnar joint. On sectioning, there are cavitations filled with hemorrhagic and occasionally yellow tinged exudate. The humerus is diffusely fractured into many fragments (pathologic fracture).

Histology: The mass is composed of neoplastic polygonal to short columnar cells forming clusters and glandular structures supported by a large amount of fibrous stroma (desmoplasia). Rare cells have ciliated apical membranes. Mitotic figures are rare. Bone resorption is observed with osteoclastic activity.

Morphologic diagnosis: Humerus, air sac adenocarcinoma

Comments: Air sac adenocarcinomas are rare tumors in avians, and mostly described in large psittacines (1). Nevertheless, there have been reports in a number of psittacine birds including smaller parrots such as the quaker parrot or cockatiels (2,3,4). Based on published reports, the humerus appears to be the most commonly affected tissue. Chickens typically have virus-induced neoplasms; however, they can get spontaneous tumors (5). Air sac carcinoma has not been reported (5) and the present case is the only one we have encountered over the past 15 years, looking at thousands of chickens.

References:

1. Pathology of pet and aviary birds. 2015. RE Schmidt, DR. Reaville, DN Phalen. John Wiley & Sons 2nd Ed.

2. Panayiotis Loukopoulos, Julius Boniface Okuni, Teresa Micco, Jorge P. Garcia, Francisco A. Uzal, Santiago S. Diab. Air sac adenocarcinoma of the sternum in a quaker parrot (Myiopsitta monachus) Journal of Zoo and Wildlife Medicine, 10.1638/2014-0080.1, 45, 4, (961-965), (2014)

WESTERN ROUND ROBIN CASE

3. HR Baron,TSY Foo, DN Phalen. Humeral air sac cystadenocarcinoma in a rainbow lorikeet (Trichoglossus moluccanus). 2020 Australian Veterinary Journal 98:168–171.
4. SJ Tyson, E Biswell. 2022 Humeral air sac neoplasm in a cockatiel (Nymphicus hollandicus). Veterinary Record Case Reports 10:e356.
5. AM Fadly, V Nair. Neoplastic Diseases. 2008. In Diseases of Poultry. 12th Ed. 449-616

Contributor: Dr Aslı Mete DVM, PhD, DACVP

Click here to see this slide in Noah's Slidebox

NOAH'S SLIDEBOX

BSTP CORNER

BRITISH SOCIETY OF TOXICOLOGICAL PATHOLOGY

Notice of Future Meetings

Virtual Continuing Education Symposium 9: Digestive System
20th – 29th February 2024
Tuesday, Wednesday and Thursday
13.00 – 17.00 (GMT+0, London/UCT+0/ET-5)

CES 9 will be held over two weeks - on the afternoons of Tuesday 20th, Wednesday 21st, Thursday 22nd, Tuesday 27th, Wednesday 28th and Thursday 29th February 2024, from 13.00 – 17.00 (GMT+0, London/UCT+0) each day.

REGISTRATION IS NOW OPEN WITH AN EARLY BIRD DEADLINE OF FRIDAY 26th JANUARY 2024

This CES will give you the opportunity to have an overview of the normal anatomy and physiology of the digestive system; repair and regeneration mechanisms; spontaneous lesions of the rodent, rabbit, and non-human primate GI tract; toxicology and carcinogenesis of the exocrine pancreas; health monitoring of laboratory rodent colonies; pathology of infectious GI diseases of rodents, rabbits and non-human primates; anatomy, physiology, histology and pathology of the teeth. Other topics to be covered include spontaneous pathology and infectious disease in the canine and minipig digestive system; rodent models of inflammatory bowel disease; from biomarkers to AI; bioaccumulation of therapeutic drugs.

Reduced fee funding opportunities are also available for trainee/early career pathologists as well as a number of free registration bursary places.

If you would like further information, have any queries, or would like to reserve a place, please contact the Hg3 Conferences Ltd - **events@hg3.co.uk**

This symposium will be organised by Hg3 Conferences Ltd, who have been appointed by the Council of the BSTP to take over the administrative organisation of all BSTP events – events@hg3.co.uk

or visit: **https://www.bstp.org.uk/events/ces-9-digestive-system/**

Virtual Continuing Education Symposium 10: Urinary System
9th – 18th July 2024
Tuesday, Wednesday and Thursday
13.00 – 17.00 (GMT+1, London/UCT+1)

CES 10 will be held over two weeks – on the afternoons of Tuesday 9th, Wednesday 10th, Thursday 11th, Tuesday 16th, Wednesday 17th and Thursday 18th July 2024, from 13.00 – 17.00 (GMT+1, London/UCT+1) each day.

This CES will give you the opportunity to learn about the urinary system. There will also be roundtable/share knowledge discussions and questions.

Updated information about this symposium will be posted on the BSTP website and BSTP group LinkedIn pages as it becomes available.

If you would like further information, have any queries or would like to reserve a place, please contact the Hg3 Conferences Ltd - **events@hg3.co.uk**

This symposium will be organised by HG3 Conferences Ltd, who have been appointed by the Council of the BSTP to take over the administrative organisation of all BSTP events – events@hg3.co.uk

or visit: **https://www.bstp.org.uk/events/ces-10-urinary-system/**

For registration and more information about the events, visit the BSTP website:
https://www.bstp.org.uk/events/bstp-events/

ASVP CORNER

Selected cases from the July 2024 edition of *The Scope*, the newsletter of the Australian Society for Veterinary Pathology.

1. *Spirocerca* infection with neurological and ophthalmic clinical signs

An 11-month-old French bulldog presented to a referral clinic for a history of neurological and ocular signs. MRI found multifocal brain lesions and CSF cytological examination revealed a mixed cell pleocytosis. The patient went on to develop forequarter edema and swelling with an aortic aneurysm later identified on CT. Progressive edema continued in the forequarter, neck and head. Fecal flotation revealed no ova. No evidence of esophageal nodules were identified on post-mortem esophagoscopy.

On histologic examination, throughout what remained of the aorta were numerous spirurid nematodes with a smooth cuticle, coelomyarian-polymyarian muscles, large lateral hypodermal chords, abundant amphophilic to basophilic fluid in the pseudocoelom and an intestine composed of individual cuboidal cells, each with a prominent brush border. Similar nematodes were noted in the esophagus in an area which contained grossly visible regions of hemorrhage (Fig. 1). The brain contained multifocal regions of malacia, hemorrhage and thrombi. The remaining neuropil contained increased glial cells and regions of spongiosis without evidence of neuronal necrosis (Fig. 2). The globe revealed retinal separation and atrophy and mild uveitis.

The features of the nematode in addition to the patient's origin are most consistent with *Spirocerca lupi*. This nematode is often found in subtropical regions and is a common parasite of carnivores. Carnivores are a definitive host, and once ingested and released, the L3 larvae migrates from the gastric lumen into the gastric wall further navigating the complex abdominal and thoracic vasculature to arrive at the caudal esophagus where the L3 matures to the L4 stage and eventual adult form.[2] It is unknown if the patient was receiving anthelminthics prior to presentation.

The aortic and esophageal changes in this patient are considered typical for spirocercosis in dogs.[1,2] The cerebral changes were unusual. A thorough gross examination of the brain revealed no evidence of migration tracks suggestive of aberrant migration, however, provided the mixed pleocytosis in the CSF, aberrant migration cannot be ruled out. Similar findings have been described in feline patients with feline ischemic encephalopathy associated with aberrant migration of *Cuterebra sp.*[3] Other considerations for the multifocal and random areas of cerebral malacia and thrombus formation include microthromboembolic disease associated with the aortic aneurysm and thrombus.

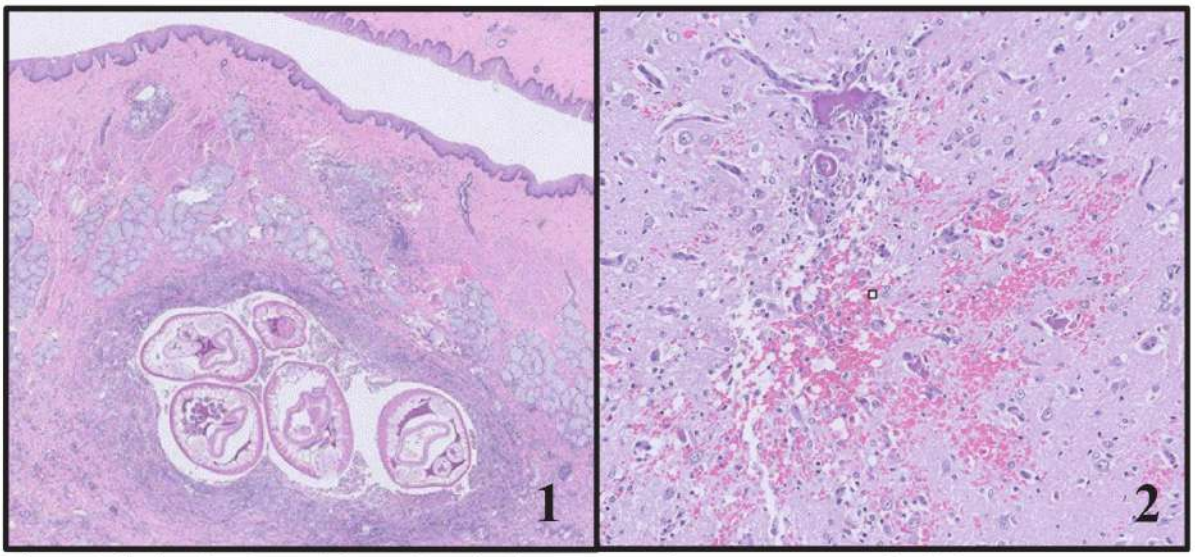

Figure 1: Canine. Esophagus. The esophageal submucosa contains numerous nematodes. HE.
Figure 2: Canine. Cerebrum. The neuropil contains regions of spongiosis, gliosis and malacia. HE.

ASVP CORNER

2. Papillomavirus in New Zealand fur seals

Over the years the Australian Registry of Wildlife Health has observed rare cases where wild seals have been observed with proliferative oral lesions, with histological features suggestive of papillomavirus infection. Direct PCR for papilloma and pox viruses returned negative results. Tissue samples were retained further investigation.

Jane Hall, the Registry's Wildlife Health Project Officer, is also a PhD candidate at Griffith University, exploring the ecology, health and diseases of the New Zealand (aka long-nosed) fur seal (NZFS, *Arctocephalus forsteri*). Jane has collaborated with Jonathon Mifsud, Erin Harvey and Eddie Holmes at the University of Sydney to investigate the virome of these animals.

Metatranscriptomic investigations conducted on tissue samples from 18 stranded NZFS identified a gammaherpes virus in one animal without pathological evidence of viral infection, and a novel papillomavirus, provisionally named *A. forsteri* papillomavirus 1 (AforPV1) in the oral tissue of an animal with multiple proliferative oral lesions. Comparison of a complete 7926 bp genome of AforPV1 illustrated that the virus grouped with taupapillomaviruses identified in other carnivores, clustering closely with *Mustela putorius* Papillomavirus (MpPV1).

The AforPV1 virus was discovered in high abundance in an oral biopsy collected from an emaciated young male NZFS that was found stranded on a beach near Narooma in 2002. The seal was anaemic, dehydrated and had several skin wounds suggestive of attempted shark predation. On closer inspection there were multiple raised, nodular, papillary masses on the roof of the mouth, tongue and an area of pallor and thickening at the base of one canine tooth (Fig. 3).

Histological examination of a formalin fixed biopsy sample identified multiple raised, circumscribed, papillary masses formed by acanthotic folds of epithelium overlying apparently normal lingual lamina propria (Fig. 4). The affected epithelium was basophilic with expansion of the stratum spinosum and stratum corneum. In these areas there were numerous atypical cells, cells with large nuclei and abundant pale to basophilic cytoplasm. Karyorrhexis, atypical cells, koilocytes, intercellular edema, karyomegaly, nuclear hyperchromasia and perinuclear cytoplasmic vacuolation were evident.

The gross and histological lesions, particularly the epidermal proliferation, cellular atypia and presence of koilocytes, were interpreted to support the presence of a papillomavirus.

The animal's injuries prevented release to the wild, and it lived for more than 10 years in a zoological collection. The oral lesions were observed to self-resolve over a period of several months.

Oral papillomas and papillomaviruses had not previously been described in fur seals. Rarely, papillomaviruses, are described in earless seals and sea lions, particularly California sea lions (*Zalophus californianus*) in association with proliferative skin lesions and invasive squamous cell carcinoma. Other

Figure 3. New Zealand fur seal. Oral lesions in an injured New Zealand fur seal undergoing rehabilitation, NSW.
Figure 4. New Zealand fur seal. Papillary oral mass comprising hyperplastic epithelium. HE.

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genera of papilloma viruses have been found in the faeces of healthy Weddell seals (*Leptonychotes weddellii*). An important element of oncogenic potential in papillomaviruses is their capacity to become integrated into the host genome.

3. Suspected retained yolk sac related abortion in a thoroughbred mare

Spontaneous abortion occurred in an eleven-year-old thoroughbred mare and examination of the placenta revealed an unusually large yolk sac remnant. Further findings in this case were consistent with cord occlusion and yolk sac related vascular compromise was the presumed diagnosis.

In all mammals, the yolk sac, derived from the blastocoel, is vital for the exchange of nutrients between the early foetus and for maintenance of a healthy pregnancy.[1,2] In comparison to other species, equine fetuses are heavily reliant on the yolk sac due to delayed maturation of the allantois and, uniquely to horses, this structure can become retained.[3] The normal yolk sac is detectable sonographically from 10 days of gestation and regresses between days 22 and 40 into a vestigial structure inside the umbilical cord.[3,4,6] Retained yolk sacs frequently occur within the infundibulum of the placenta, although location on the allantoic umbilical cord, as in this case, is not unusual.[1] Yolk sac remnants average 5cm diameter and rarely associated with pathology.[6] However, umbilical cord strangulation by a yolk sac pedicle or vascular compression by large remnants are recognised causes of abortion.[3,5,6]

The fetus was normally developed for the estimated gestation time of 185 days and in good body condition. There was moderate fetal autolysis and notable edema of the abdominal wall surrounding the umbilicus. The bladder contained a small amount of urine but was not distended.

The placenta was in excellent condition with minimal autolysis. Focally extensive vascular turgidity and

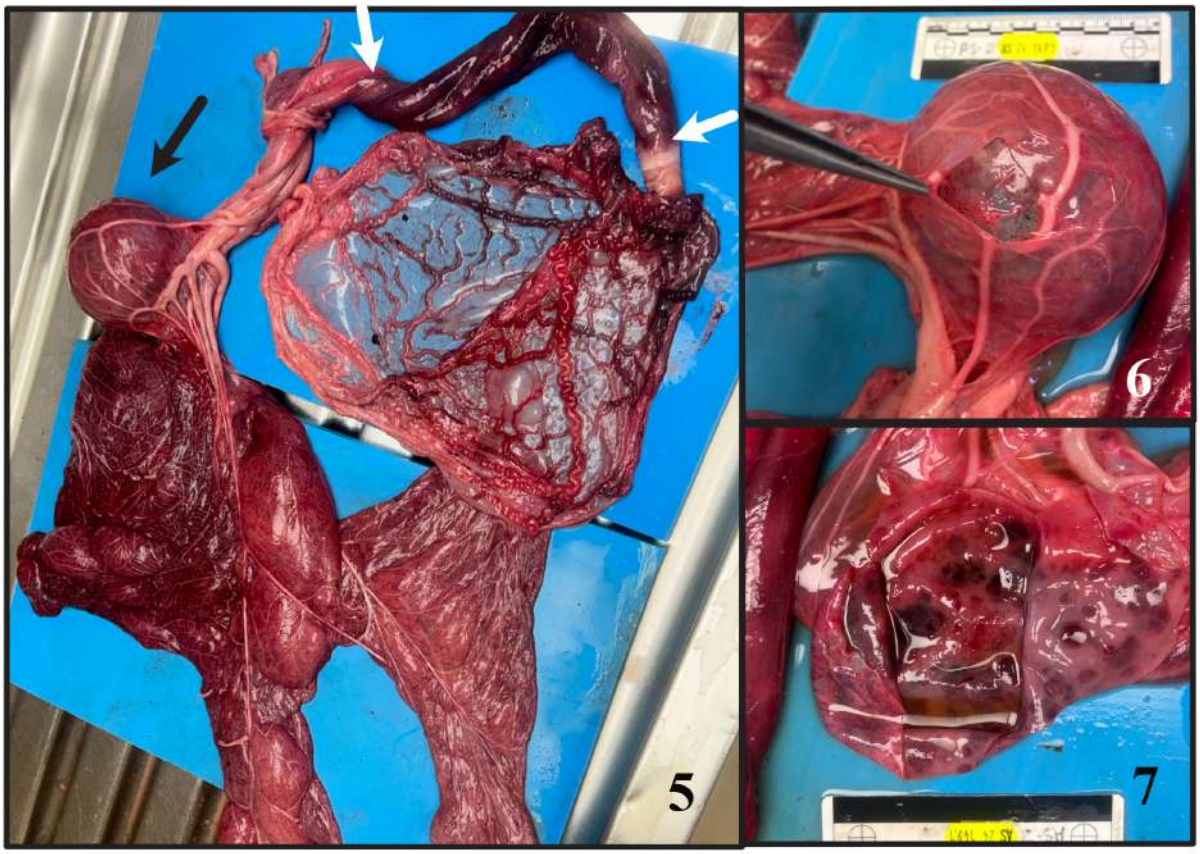

Figure 5. Equine. Placenta. Placenta displayed with large yolk sac remnant (black arrow) and congested umbilical cord segment (white arrows)

Figure 6: Equine. Yolk sac remnant. Intact, cystic yolk sac remnant.

Figure 7: Equine. Yolk sac remnant. Punctured yolk sac remnant with serous fluid content.

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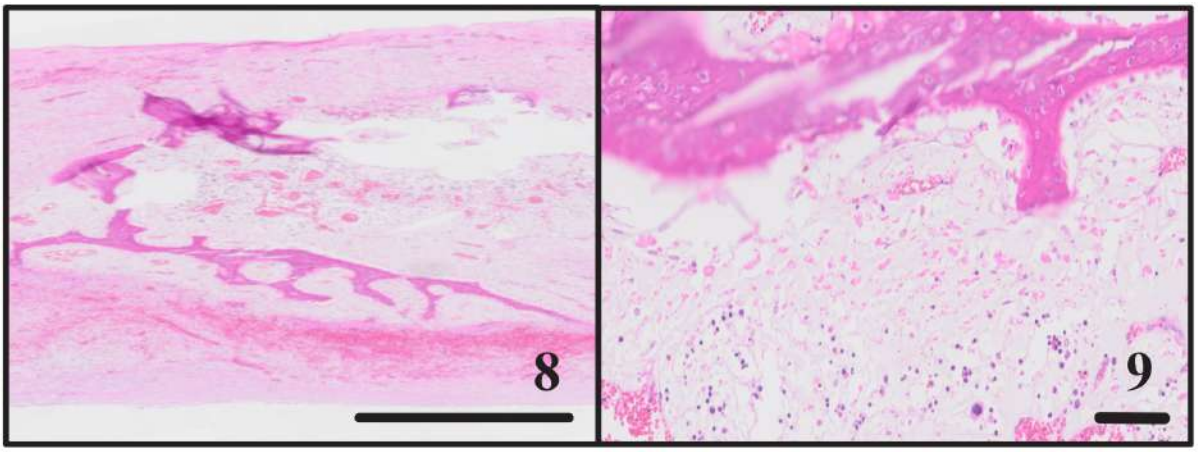

Figure 8: Equine. Yolk sac. Ossified spicules and marrow-like foci within mesenchyme HE. Bar=1mm.
Figure 9: Equine. Yolk sac. Ossification and hematopoiesis in mesenchyme. HE. Bar=100µm.

dark red to black colour change affected approximately 70% of the amnion. The umbilical cord was 77cm long and while not twisted, exhibited marked segmental variation in turgidity and colour. The allantoic umbilical cord was relatively normal from the amniotic portion transitioned into a reddened, mildly turgid area, becoming dark purple and very turgid towards the foetal attachment (Fig. 5). At the base of the allantoic umbilical cord there was a 10cm diameter firm, round, cystic structure. On incision the capsule was gritty and the mass contained serosanguineous fluid (Figs. 5-7).

Histopathologically, placental tissues were well preserved but the tissues from the foal were markedly autolysed, suggestive of umbilical vascular occlusion. No inflammatory changes or infectious agents were detected histologically or microbiologically.

The capsule of the globoid structure displayed ossification, mineralisation and fibroplasia as are commonly reported for yolk sac remnants (Figs. 8, 9).[1] Diffuse vascular congestion and multifocal hemorrhage was also noted. Three sections of the umbilical cord were assessed, with segmental differences in tissue viability and presence of edema and hemorrhage supporting cord occlusion towards the amniotic extremity.

No evidence of an infectious cause of abortion was found, and Agerholm *et al*. found non-infectious causes of abortion to be more common than infectious causes.[11] In this study, cord occlusion was the most frequent final diagnosis, usually associated with torsion, for which cord lengths of 80 to 95cm are a major risk factor. [8,9] However, in this case the cord was of an acceptable length and the 10cm diameter yolk sac was the only anomalous finding.

While definitive statistics on umbilical compromise due to yolk sacs seem elusive, there were multiple findings in this case consistent with cord occlusion, including autolysis of the foal, normal growth of the foal prior to death, liquid intestinal contents, and segmental edema and colour change to the umbilical cord.[9] With these findings, umbilical cord occlusion related to the large yolk sac remnant abortion was considered the likely cause of abortion.

Acknowledgements

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- Vetnostics Laboratories and Dr Guy Wolfendon,
- Australian Registry of Wildlife Health, &
- DPIRD Diagnostic & Laboratory Services

for case contributions 1, 2 and 3 respectively.

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The ASVP thanks the Davis-Thompson Foundation for the opportunity to share casework.

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AAPSP
Australian Animal Pathology Standards Program

Australian Pathology Roadshow 2024

Each year the Davis-Thompson Foundation and the Australian Animal Pathology Standards Program (AAPSP) collaborate to host a Roadshow where a distinguished speaker tours five Australian cities, providing a two-day seminar in each. We have delivered some high quality CPD for subscribers in previous years and this year was no exception.

The 2024 Roadshow, run from 29 May to 14 June, featured Professor David Dorman, Veterinary Toxicologist at North Carolina State University presenting on '*Toxicology: what a pathologist needs to know*'. Professor Dorman's seminar covered pharmacokinetics, sampling for toxicologic testing and common analytic techniques before moving into species based common toxicities. David finished with a walk through emerging and environmental toxins plus a fascinating peek at nasal toxicology, one of his many areas of interest. Stories from several decades of applied and research experience made the seminars feel relevant to a veterinary pathology dominated audience. Another of David and partner Melanie's passions, wildlife photography, provided lighter notes throughout the discussion.

While a little tangential to much of our routine diagnostic work, Professor Dorman was an engaging speaker and encyclopaedic toxicologist. Feedback was extremely positive. Participant comments frequently referenced Professor Dorman's engaging speaking style and vast knowledge across a wide range of species.

Other than the formal program, the Roadshow is a great opportunity for veterinary pathologists in each state to get together, meet face to face and engage in excellent CPD. Planning is underway for the 2025 Roadshow – it will be a high bar for next time.

We would like to acknowledge the Davis Thompson Foundations generous support of the speaker's international travel costs and the AAPSP's support of the domestic Australian travel costs. In particular, thanks to Professor Dorman for a great set of presentations and galloping through 10 days of seminars in 5 locations in two and a half weeks.

Shane Besier
AAPSP Scientific coordinator

Above: Professor David Dorman, veterinary toxicologist, 5th from left, with participants from the Perth AAPSP Roadshow.

Left: a lighter 'off-topic' moment with Professor Dorman and one of many great wildlife photographs.

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IDEXX CASECONNEXX CORNER

Signalment: 8-year-old, male, neutered Goldendoodle dog

Source/ History: Radiographically lytic lesion noted in the left femoral condyle.

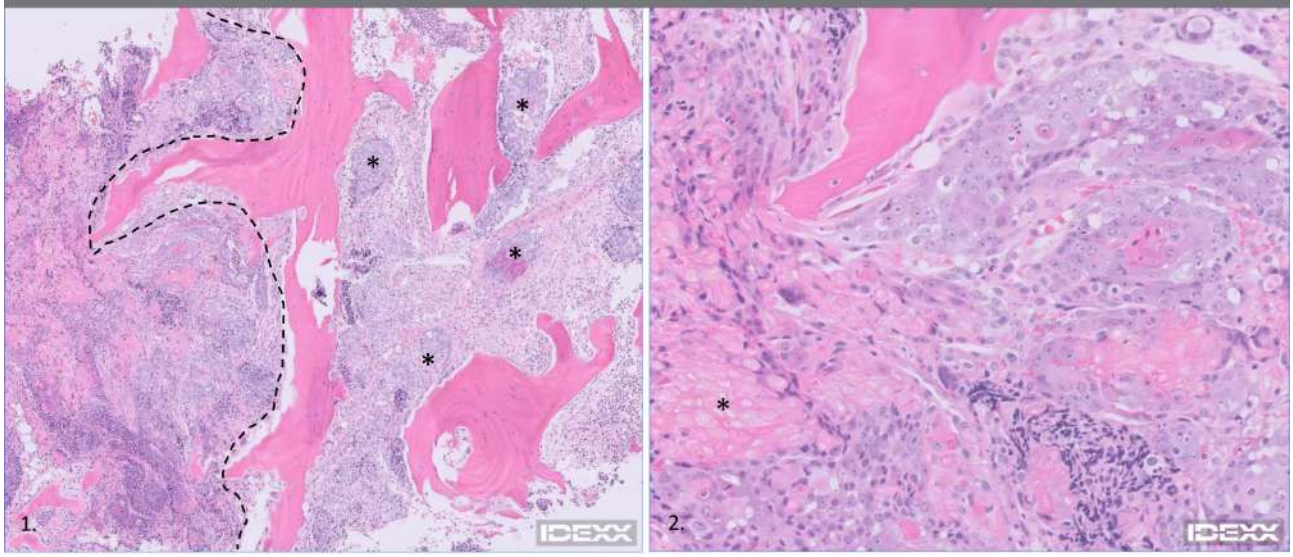

Figure 1. Broad coalescing regions (dashed outline) and multifocal islands (black asterisks) of malignant epithelial neoplastic growth fill intertrabecular spaces of the left femoral condyle. Figure 2. Atypical basaloid to squamoid neoplastic epithelial cells that exhibit frequent evidence of matrical keratinization with accumulation of abundant anuclear ghost cells / matrical keratin (black asterisk). Neoplastic growth directly abuts markedly lytic bony trabeculae with irregularly scalloped margins.

Histopathologic Description:
These core biopsies consist of bony fragments exhibiting evidence of extensive and active lysis due to markedly infiltrative growth throughout the intertrabecular spaces by a malignant epithelial cell population. These epithelial cells form multifocal islands and anastomosing cords and trabeculae. The neoplastic cells are basaloid to squamous in morphology, with distinct cell borders, small to moderate amounts of amphophilic cytoplasm, and a large round to oval nucleus with finely stippled chromatin and 1-2 large, prominent magenta nucleoli. The neoplastic cells are frequently undergoing matrical keratinization with abundant accumulation of brightly eosinophilic, anuclear, ghost/shadow cells. There is up to 2-fold anisocytosis and anisokaryosis amongst the neoplastic cell population, and 3-4 mitotic figures can be counted per 0.237 mm2 field. There are regions of immature reactive woven bone formation, fibrocartilaginous metaplasia, and variably mature fibroplasia associated with this neoplastic growth.

Interpretation:
Metastatic malignant pilomatricoma

Comments:
Histopathology of the bone core biopsies from this lytic left femoral lesion was consistent with bony metastasis of a malignant pilomatricoma (a.k.a matrical carcinoma). Metastasis of malignant epithelial tumors to the skeleton is a comparatively common event in dogs compared to neoplasms of other origin (e.g., sarcomas). The most common tissues of origin for skeletal metastatic carcinoma include the mammary gland, thyroid, prostate, ovary, lung and malignant pilomatricomas of the skin. The most common sites of localization for carcinomatous metastasis include the ribs, vertebrae, and proximal long bones.

Malignant pilomatricoma is considered a rare tumor of dogs which arises from germinative hair bulb epithelium. The trunk, neck and tail are the most common sites of occurrence. These neoplasms are capable of metastasis and, when identified, it can disseminate to a variety of organs, including, but not limited to, bone and central nervous system. It is uncertain whether malignant pilomatricomas arise de novo or represent malignant transformation of pre-existing pilomatricomas.

Case by
Luke Haydock BVSc (Dist.) DVSc DACVP

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2024 DTF-LCPG ACTIVITIES IN LATIN AMERICA

Country	Name of Seminar	Dates	Place/University	Speakers	Organizers
Argentina	XVIII Seminar of the Argentinean Subdivision of the Davis-Thompson Foundation and XII Forum on Teaching Veterinary Pathology.	Aug 22-23	Rosario, Argentina. Facultad de Ciencias Veterinarias, Universidad Nacional de Rosario	Francisco Uzal, Fabio Vanucci, Pablo Piñeyro, Luary Carolina Martínez Chavarría	Leonardo Minatel
	Latin American roadshow: Gastrointestinal pathology	Oct 24-25	Buenos Aires, Argentina. Universidad de Buenos Aires.	Francisco Uzal	Leonardo Minatel
Brazil	2024 Brazilian Symposium of the DTF - Pathology of zoo and wildlife	Sept 20-22	Universidade Federal de Minas Gerais - Belo Horizonte, MG, Brazil	Denise McAloose	Renato de Lima Santos / Ayisa Rodrigues de Oliveira
Chile	Pathology of wildlife	Aug 8-9	Valdivia, Chile. Universidad Austral de Chile	Mauricio Seguel, Enrique Paredes, Mauricio Navarro, Manuel Moroni.	Mauricio Navarro
Colombia	Latin American roadshow: Gastrointestinal pathology	Nov 1-2	Barranquilla, Colombia. Universidad San Martin	Francisco Uzal	Paola Barato
Costa Rica	Workshop in freshwater fish medicine and pathology in Latin America	Mar 22-23	San José, Costa Rica. Escuela de medicina y cirugia veterinaria San Francisco de Asís	Esteban Soto, Paola Barato	Roberto Olivares
Guatemala	Latin American roadshow: Gastrointestinal pathology	Nov 4-5	Ciudad de Guatemala, Guatemala. Universidad de San Carlos.	Francisco Uzal	Déborah Rodriguez
México	IV on-line necropsy course	Apr 8-19	México (On-line)	Elizabeth Rodríguez, María del Carmen Carmona, Alfredo Pérez, Mario Bedolla, Carlos González, Elizabeth Morales, Gerardo Salas, Mireya Juárez, Luis García-Márquez, Diana Galván, Rubén López, Laura Romero, Francisco Carvallo.	Rubén Lopez
	V seminar of the Mexican subdivision of the Davis-Thompson Foundation: Bovine pathology	Oct 17-18	Facultad de Medicina Veterinaria y Zootecnia "Dr Norberto Treviño Zapata", Universidad Autónoma de Tamaulipas	Mario Bedolla, Luis Jorge García, Luis Mario Leyva, Alfonso López, Julio Martínez, Elizabeth Morales, Rafael Ramírez	Ubicelio Martín
	Workshop in freshwater fish medicine and pathology in Latin America	Nov 21-22	Faculta de Medicina Veterinaria y Zootecnia, Universidad Nacional Autónoma de México.	Esteban Soto, Paola Barato	Rubén Lopez
Paraguay	Latin American roadshow: Gastrointestinal pathology	Oct 28-29	Asunción, Paraguay. Universidad Nacional de Asunción.	Francisco Uzal	Leila Maidana, Mirtha Suarez
Uruguay	Latin American roadshow: Gastrointestinal pathology	Oct 21-22	Montevideo, Uruguay. Universidad de la República.	Francisco Uzal	Jose Manuel Verdes
Venezuela	II Seminar of the Venezuelan Subdivision of the Davis-Thompson Foundation	Jul 18-19	Barquisimeto, Venezuela	Francisco Uzal, Joaquín Ortega, Yaritza Salas	Yaritza Salas

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Invitation to submit abstracts to ACVP Annual meeting

Dear LCPG members

Every year at the ACVP Annual Meeting, the Latin Comparative Pathology Group (LCPG; Latin-American Subdivision of the Davis-Thompson Foundation) presents scientific lectures in English. These sessions provide both educational and networking opportunities to pathologists of all backgrounds. The sessions, generally scheduled at lunchtime, consist of two short presentations, each of approximately 10 minutes followed by 5 minutes for questions and answers.

If you are planning to attend the ACVP meeting this year in Seattle WA, the LCPG Education Committee would like to invite you to consider speaking at this session at the meeting. If you are interested, please submit an abstract of your proposed presentation along with your Curriculum Vitae by July 1st 2024 to mmaciasrioseco@ucdavis.edu (include "Call for Abstracts for the 2024 ACVP Meeting" on the email's subject). The abstracts should be submitted in English and be up to 220 words long. Selected speakers will be announced by email by August 5th 2024.

Please be aware that, because the LCPG and the ACVP are non-profit organizations, we will not be able to provide any reimbursement for traveling, accommodation expenses or honorarium to presenters.

Please feel free contact us if you have additional questions.

Thanks,

Chair of the scientific committee and members:

Dr. Melissa Macias-Rioseco
Dr. Ana Alcaraz
Dr. Angela Arenas

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Workshop in Freshwater Fish Medicine and Pathology in Latin America (Costa Rica)

by Dr Roberto Olivares

The "Workshop in Freshwater Fish Medicine and Pathology in Latin America (Costa Rica)" was held at the San Francisco de Asis School of Veterinary Medicine and Surgery in San Jose, Costa Rica, on March 22nd and 23rd, 2024. This workshop was coordinated locally by Drs. Roberto Olivares and Ezekiel Salas, and lectured by Drs. Paola Barato and Esteban Soto. The workshop was kindly sponsored by UC Davis, Corpavet, WAVMA (World Aquaculture Veterinary Medicine Association), and LCPG (Latin Comparative Pathology Group) from the Davis-Thompson Foundation.

During the workshop, lectures were given on topics ranging from fish anatomy and histology to disease diagnosis and water quality. The workshop also included a practical laboratory in which the 40 participants performed various medical procedures, including necropsies and macroscopic and microscopic evaluations of different tissues. Fourteen of the attendees were full scholarship students from the three universities in Costa Rica where veterinary medicine is taught (UTN, UNA, and ESFA). The course was a complete success and not only provided a first-class update on fish medicine and pathology, but also brought together different professionals in this thriving area of veterinary medicine to exchange experiences and generate contacts among them (Fig 1)

Figure 1. A. Participants of the workshop. **B.** Dr. Esteban Soto lecture about water quality. **C.** Dr. Paola Barato lecture about anatomy and histology of teleost. **D.** Practice in necropsy area of dissection of fish.

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2nd Venezuelan Seminar of the Davis-Thompson Foundation and the Latin American Comparative Pathology Group (LCPG)

by Yaritza Salas

The 2nd Venezuelan Seminar of the Davis-Thompson Foundation and the Latin Comparative Pathology Group (LCPG) was successfully held in Lara State, Venezuela, on July 18th and 19th, 2024. The seminar was attended by over 100 participants, including Veterinary Medicine students, University lecturers, diagnosticians and practicing veterinarians. We had the honor of hosting two excellent international speakers, Dr. Francisco Uzal and Dr. Joaquín Ortega, who shared their expertise in Anatomopathological Diagnosis with all of us. On July the 18th a theoretical and practical workshop was held at the El Tunal, a large ranch producing cattle, pigs, chickens and several crops, just outside of Barquisimeto, where a large number of field veterinarians works. Dr. Uzal lectured on gross description and morphologic diagnosis and performed necropsies on a calf, a pig and several chickens.

The following day, at the Mediveb Auditorium in Barquisimeto, Dr. Ortega joined us via Zoom from Valencia, Spain, and gave a great lecture on sampling techniques and tips for achieving an accurate diagnosis. Dr. Uzal captivated us with his exceptional pedagogical skills, sharing his extensive experience on gastrointestinal pathology in canines, ruminants, and equines. Special thanks to the organizing team composed by the faculty members from the Veterinary Sciences Faculty of the Centro Occidental University “Lisandro Alvarado”; Doctors Yaritza Salas, Adelys Márquez from Animal Path, Ysabel Márquez, Nyurkys Matheus, and María Forlano from VetLab, Luis Ruiz from VetPlus Academy; and José Angulo.

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Thanks to the Davis Thompson Foundation and the LCPG for trusting us, as well as to El Tunal and Mediveb for their support. Events like this strengthen Veterinary Medicine professionals, helping them face the daily responsibility of ensuring animal and human health as part of an integrated approach.

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LCPG diagnostic case seminar seview & Abstracts

by Francisco Carvallo

On June 11, 2024, the first LCPG diagnostic webinar took place online. This webinar was organized by the Latin Comparative Pathology Group (LCPG), with the support of the Davis Thompson Foundation. Approximately 100 veterinarians and students, both members and non-members of the LCPG from around the world, attended this series of presentations, where each speaker had 12 minutes to present a diagnostic case. The event was held in both English and Spanish, ensuring that language was not a barrier! In the next pages, the abstracts of the presented cases are included. Congratulations to all the authors! We extend our most sincere gratitude for being active members of the LCPG and for sharing your diagnostic work!

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ANGIOSTRONGYLUS VASORUM INFECTION IN A GREY FOX: CASE REPORT AND BRIEF REVIEW

Degiovanni C, Brizzio R, Martin A.
Patología Animal Córdoba; Universidad Católica de Córdoba, Argentina.

A male, adult, grey fox arrived at Parque de la Biodiversidad, a wildlife rehab center located in Córdoba, Argentina, with severe dehydration and depression. The animal died the day after arrival. Grossly, both lungs were markedly edematous and had an increased consistency. They did not collapse when the thoracic cavity was open. Microscopic examination of the lungs revealed an inflammatory process in blood vessels and pulmonary interstitium with the presence of adult nematodes within the lumen. Arteries were dilated with a moderate number of adult nematodes inside them. These parasites had a 270-350 µm diameter with a thin, eosinophilic cuticle surrounding the coelomyarian musculature, and a pseudocoelom with an intestine lined by tall multinucleated cells. The arteries had a thickened tunica intima and were infiltrated by lymphocytes, eosinophils, plasma cells, and macrophages. There was intimal hyperplasia. The pulmonary interstitium had multiple nodules composed of macrophages and lymphocytes. Inside these nodules and free within the alveolar spaces were moderate to large numbers of nematode larvae measuring 20 x 80 µm and fewer multinuclear and uninuclear eggs. There was mild proliferation of type II pneumocytes, alveolar hemorrhage, hemosiderin-laden macrophages, alveolar emphysema, and arterial thrombosis. Some thrombi were fibrosed and recanalized. A diagnosis of *Angiostrongylus vasorum* infection was made based on microscopic lesions and the morphology of the adult parasites. *Angiostrongylus vasorum* is a nematode with an indirect life cycle, belonging to the superfamily Metastrongyloidea. Definitive hosts include canids from the order Carnivora, with foxes and domestic dogs being the most significant. In these hosts, adult worms parasitize the right heart and pulmonary artery. Intermediate hosts are snails and slugs, while paratenic hosts include chickens and frogs. The definitive host becomes infected by ingesting these intermediate or paratenic hosts containing the infective L3 larvae. Once ingested, L3 larvae reach the intestine, migrate through the mesentery and portal veins to the cava vein, and finally settle in the right heart and pulmonary arteries, where they mature into adults. The adults release eggs into the pulmonary interstitium. The eggs hatch into L1 larvae, which migrate to the bronchioles, are coughed up, swallowed, and passed in the feces. In the environment, L1 larvae are ingested by intermediate hosts, where they develop into L3 larvae, continuing the cycle. Clinical signs range from cardiorespiratory and neurologic symptoms to bleeding tendencies. Due to the limited number of reports on angiostrongylosis in Latin America, little is known about its distribution and prevalence in the region. Small animal and wildlife practitioners should consider this infection in the differential diagnosis of cardiopulmonary disorders in canids.

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ECTOPIC THYROID CARCINOMA AT THE BASE OF THE HEART IN A DOG: CASE REPORT

Brizzio R, Degiovanni C, Martin A
Patología Animal Córdoba; Universidad Católica de Córdoba, Argentina.

An 8-year-old female mixed-breed dog with pericardial effusion was diagnosed with a tumor at the base of the heart. Grossly, the mass was firm, white, and irregular. Microscopic examination revealed an epithelial malignant neoplasia. The mass was poorly demarcated, infiltrative, and multilobulated with cells arranged in solid cellular sheets. The lobules were subdivided by multiple small packets, each surrounded by a scant amount of fine fibrous stroma and capillaries. Sporadic follicular structures with eosinophilic proteinaceous material were observed. Cells were rounded, with a moderate amount of cytoplasm with distinct borders, and centrally located small nuclei with granular chromatin. The mitotic count was 25 in 2.37 mm^2. There were numerous foci of hemorrhages and necrosis. No lymphovascular invasion was observed, but infiltration of the wall of large vessels was noted. Immunohistochemistry was performed to differentiate from other heart base tumors. Staining for vimentin and chromogranin was negative, ruling out a possible neuroendocrine tumor. Neoplastic cells stained positive for thyroglobulin, consistent with a tumor of thyroid origin. A diagnosis of ectopic thyroid carcinoma was made. Ectopic thyroid tissue is relatively common in dogs and may occur anywhere from the larynx to the diaphragm. The aberrant tissue can result from failure to descend from the floor of the pharynx to the normal cervical location or from tissue descending beyond its normal adult location. The thyroid is intimately related to the aortic sac in its development, and this explains the frequent finding of accessory thyroid tissue in mediastinal structures. Tumors arising from ectopic thyroid tissue are considered relatively rare. They are often located in the base of the heart or the cranial mediastinum. Distinguishing these tumors from aortic body tumors, which are more commonly found in this location, is crucial. Diagnosis relies on the presence of follicles in the neoplastic tissue and immunohistochemistry analysis. In cats and horses, thyroid carcinoma is rare, whereas in guinea pigs, up to half of thyroid tumors are carcinomas, although they rarely die from this cause. In this species, there is a case report of ectopic carcinoma.

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QUISTE ODONTOGÉNICO EN UN CERDO KUNEKUNE

Hernando D. Acevedo, Javier Asin, Eileen Henderson, Francisco A. Uzal
California Animal Health and Food Safety Laboratory, San Bernardino, California.

El Kunekune es una raza de cerdo doméstico originaria de Nueva Zelanda. En esta raza existen escasos reportes bibliográficos asociados con anomalías mandibulares, incluyendo quistes odontogénicos. Estos quistes están revestidos por mucosa oral y se dividen en quistes inflamatorios y de desarrollo. Una cerda Kunekune de un año de edad con antecedentes de disnea, disfagia, emaciación y problemas para comer, fue sacrificada y enviada a CAHFS San Bernardino para un examen post mortem. En ambos lados de la cara, aproximadamente 5.0 cm ventral a la base de las orejas, habían áreas inflamadas y úlceras que se conectaban con fístulas que conducían a la cavidad bucal. Las fístulas contenían restos de comida y producían una secreción verdosa. La cavidad bucal reveló múltiples cavidades llenas de alimento mezclado con hemorragia en la unión del cuerpo y las ramas de ambos lados de la mandíbula. Esas cavidades tenían paredes óseas delgadas y estaban cubiertas por una mucosa que era difusamente roja/bronceada, y estaban conectadas con el resto de la mucosa oral que se encontraba fuera de las cavidades. El último molar mandibular de ambos lados estaba desplazado caudalmente e inclinado lateralmente; además estaba separado del resto de los dientes los cuales estaban inclinados medialmente. Microscópicamente, la mucosa de estas cavidades mandibulares tenía un epitelio escamoso estratificado no queratinizado. La submucosa estaba difusamente infiltrada por numerosos linfocitos, macrófagos, células plasmáticas y neutrófilos. Había mucho tejido de granulación. La superficie endóstica de las cavidades óseas tenían bordes festoneados en los que se apoyaban numerosos osteoclastos. Las lesiones fueron consistentes con quistes inflamatorios odontógenicos. Se sugiere que esta condición en esta raza de cerdo, tal como ocurre en el ser humano, está asociada a una influencia genética.

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GRANULOMA FÚNGICO YEYUNAL ASOCIADO A INTUSUSCEPCIÓN EN PERRO DE 1.5 AÑOS

Carlos A. Flores Olivares, Julián E. Reyes Lucero
Facultad de Ciencias Agropecuarias, Universidad del Alba, La Serena, Chile

Los casos de granuloma intestinal por hongos en caninos que causan intususcepción han sido reportados asociados principalmente a agentes como *Cryptococcus* spp. en pacientes jóvenes inmunocomprometidos. El siguiente reporte corresponde a un caso de obstrucción intestinal con intususcepción en un canino Pastor Belga Ilinois, hembra de 1.5 años. El animal presentó obstrucción intestinal debido a masa nodular yeyunal detectada mediante ecografía abdominal. Se realizó evaluación pre-quirúrgica para luego extraer el tejido afectado con el objetivo de identificar el origen de la lesión. Se retiró una masa de 10.0 x 7.0 x 5.0 cm de diámetro, la masa era firme al corte, con superficie irregular de coloración heterogénea con áreas rojizas, grisáceas y blanquecinas. Se obtuvieron múltiples fragmentos los que fueron fijados en solución de formalina bufferada al 10% para posteriormente realizar protocolo de procesamiento histopatológico de rutina además de técnicas histoquímicas de PAS y Tricrómico de Masson. En microscopia, se evidenció lesión multifocal a coalescente la que se distribuye desde la superficie de la mucosa a serosa siendo predominante la inflamación piogranulomatosa con áreas de degeneración y necrosis rodeados por células gigantes multinucleadas de citoplasma amplio con múltiples estructuras redondeadas de 6.0 a 16.0 µm de diámetro con áreas de gemación positivos a técnica de PAS. Estas estructuras, se encuentran en el intersticio además del citoplasma de macrófagos y células gigantes multinucleadas. Las áreas circundantes presentan marcada fibrosis con bandas de tejido conectivo colágeno organizadas en bandas paralelas con un fondo de aspecto edematizado e hiperemia moderada. El paciente fue tratado con terapia antifúngica, sin embargo, el tratamiento fue interrumpido, ocasionado empeoramiento progresivo y perdida de condición corporal. La identificación mediante pruebas moleculares se encuentra en proceso.

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IN MEMORIAN: MARY ANNA THRALL, 1944-2024

Dr. Mary Anna Thrall was a mother, grandmother, great grandmother, professor of clinical pathology, and a force to be reckoned with of Barnesville, Colorado and St Kitts, passed away at 80 years of age of ovarian cancer, on July 14th, 2024.

She was born in Montreal, Canada, on July 4th, 1944, to Mariella Godfrey Hull And John Hull. Mary Anna grew up in Patoka, IN. She knew she wanted to be a veterinarian from six years of age. Mary Anna obtained her undergraduate degree from the University of Evansville, her Doctor of Veterinary Medicine degree from Purdue University, and her Master's Degree from Colorado State University.

Dr. Mary Anna Thrall was a small animal practitioner for four years after receiving her DVM degree. Following her residency in clinical pathology, she was a faculty member in the Department of Pathology at Colorado State University. For 32 years, she helped train over 40 veterinary clinical pathologists at CSU. She joined Ross University School of Veterinary Medicine in 2010 as a full time Professor of Veterinary Clinical Pathology. Dr. Mary Anna Thrall was actively teaching until just weeks ago. Teaching was her passion and she cared more for her students than they will ever know.

Dr. Thrall was involved in continuing education to veterinarians and pathologists and has provided more than 300 scientific presentations and continuing education programs. She is author or co-author of numerous scientific publications, abstracts, proceedings, and book chapters, and is the primary author of a clinical pathology textbook, Veterinary Hematology and Clinical Chemistry. Dr. Thrall was a diplomate and former president of the American College of Veterinary Pathologists in Clinical Pathology and was a recipient of the ASVCP Lifetime Achievement Award in 2008. Mary Anna was also the recipient of the National Pfizer (Zoetis) AAVMC Distinguished Teaching Award, in 2013.

Mary Anna was preceded in death by her mother Mariella Godfrey Hull, her father John Hull, and her half sister Shoan Finch.

IN MEMORIAN: MARY ANNA THRALL, 1944-2024

Dr. Mary Anna Thrall is survived by her half brother John Hull Jr., and her four children. She married her high-school sweetheart, Joe Paul Bammer Sr, and they had Joseph Bammer, her first born son, who is a successful sod farmer from Patoka, IN. Joseph is married to Pam Bammer, and they have three beautiful children: Emily, Katherine, and Grace. Emily has two children, Jack (6) and Finnley (4). Katherine is married to Zac Kempf and they also have two children: Braxton (10) and Fletcher (2 months).

Dr. Mary Anna Thrall later married Dr. Francis Freemyer of Barnesville, CO and had three girls Anna, Sarah, and Clarissa. Anna is an Orthopedic Surgeon in Sterling, CO and is married to Josh Brown. Josh and Anna have three children: Evan (6), Nova (6), and Mari (1.5). Sarah is a devoted science teacher in Fort Collins, CO, and is married to Michael Waido. They also have three children: Lily (10), Iris (7), and Poppy (1.5). And lastly, Clarissa, of whom she was most proud as she is a veterinarian and recently completed a veterinarian radiation oncology residency. Clarissa is engaged to Sam O'Brien and they have one child, Willow Claire (3 weeks). Mary Anna had hoped to attend their wedding in September of this year.

Dr. Donald Thrall, her significant other, was very close to her heart. They were married for four years prior to divorcing in the 70s. They rekindled their love over the past few years, and Don was there for her until the very end.

Mary Anna is also survived by many pets. She had four dogs: Maddie, Puff, Coco, and Bruce. She also had two cats: Belly and Stubs.

Mary Anna's favorite thing to do was garden. She has two beautiful gardens that she spent countless hours perfecting. One is in Barnesville, CO (where she will be laid to rest) and the other is in St Kitts. We encourage you to visit both and pull a weed in her honor.

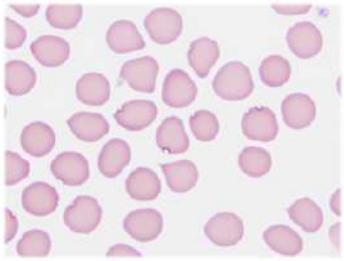
There will be a private burial followed by a celebration of this incredible life on August 3rd at 4pm at her home in Barnesville, CO. She will always be remembered as a wonderful mother and teacher who taught us all to be the best versions of ourselves, to think critically, to have fun, and to not be held back by anything or anyone who gets in the way of our dreams and goals. May she live on in all of us.

MISCELLANEOUS ANNOUNCEMENTS

Have you seen a Pathology Error published in a scientific journal?

Help us determine the extent of the problem

Submit to the ACVP Errors in Publications Web Portal



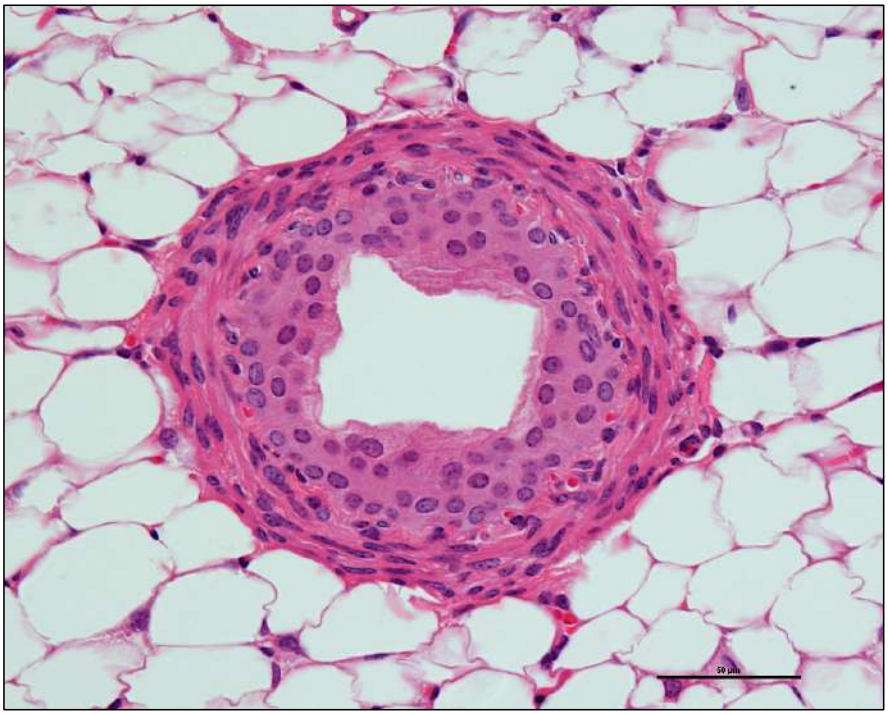


Figure 1. Tissue from a mouse. *The **tunica media** of **medium-sized arteries** is thickened by concentric rings of excessive smooth muscle that is characteristic of **hypertensive arteriosclerosis****

*This is a **hypothetical example** of a pathology error which **misdiagnoses** a normal microanatomic/histologic structure (**mouse ureter**) as a lesion. Errors, omissions, or "false claims" in pathology data such as this are becoming **increasingly common in scientific journals**, especially those that **do not routinely include pathologists** in their peer review process. The ACVP Advocacy and Policy Committee and Board of Directors have therefore developed a **web submission portal** that will allow professionals with advanced pathology training to report concerns on substantiative errors in publications.

We need your help!

When you come across a pathology error published in a scientific journal, please take 5-10 minutes to fill out the anonymous survey on the **ACVP Errors in Publication web submission portal**. The information gathered from submissions to this web portal will be collated and used to compile the data needed to develop and promote publication standards and review procedures to improve the accuracy of published pathology data. Any data obtained will be maintained strictly in **anonymous** form and will greatly benefit the advancement of this initiative.

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MISCELLANEOUS ANNOUNCEMENTS

2024 AAVLD Annual Meeting

October 13th, 2024
2:00 PM-5:00 PM
Gaylord Opryland Resort & Convention Center

PATHOLOGY COMMITTEE SUNDAY SEMINAR: PIG DISEASES SEMINAR

Program:

- 2:00 Welcome – Rachel J. Derscheid and Melissa Macías-Rioseco
- 2:10 Porcine Gastrointestinal Pathology and Laboratory Diagnosis of Disease- Dr. Eric Burrough
- 3:00 Break
- 3:10 Porcine Cardiopulmonary Pathology and Laboratory Diagnosis of Disease-Dr. Rachel J. Derscheid
- 4:00 Break
- 4:10 Diagnostic Approach to Neurological Infectious Diseases and PCV-Associated Diseases- Dr. Pablo Piñeyro

Our Presenters:

DR. ERIC BURROUGH DVM, PHD, DIPLOMATE ACVP
Iowa State University
College of Veterinary Medicine
Veterinary Diagnostic Laboratory

DR. RACHEL J. DERSCHEID, DVM, PHD, DIPLOMATE ACVP
Iowa State University
College of Veterinary Medicine
Veterinary Diagnostic Laboratory

DR. PABLO PIÑEYRO, DVM, MVSC, DVSC, PHD
Iowa State University
College of Veterinary Medicine
Veterinary Diagnostic Laboratory

Additional Questions:

- Melissa Macías-Rioseco: mmaciasrioseco@ucdavis.edu
- Rachel J. Derscheid: rdersch@iastate.edu

REGISTRATION: $75

Click HERE

MISCELLANEOUS ANNOUNCEMENTS

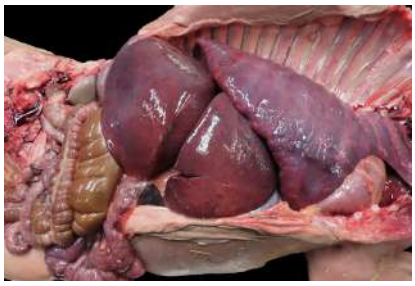
2024 AAVLD Annual Meeting

October 12th, 2024
6:00 PM-8:30 PM

Interpretive Pathology Mock Exam

The AAVLD Pathology Committee is hosting the "interpretative pathology mock exam" (formerly the gross mock exam) aimed at preparing residents for the ACVP Anatomic Pathology Certification Exam (phase 2). Two mock exams will be offered by ACVP board-certified pathologists. While this session is primarily designed for resident training, everyone is welcome.

Registration is required but the session is free to attend. Pizza and soft drinks will be served!



Program:

- 6:00-6:10 pm Welcome and Introduction: Eileen Henderson & Heidi Pecoraro
- 6:10-6:40 pm Mock exam 1: Melissa Macías-Rioseco
- 6:40-7:10 pm Review of mock exam 1: Melissa Macías-Rioseco
- 7:10-7:30 pm Break
- 7:30-8:00 pm Mock exam 2: Melissa Swan
- 8:00-8:30 pm Review of mock exam 2: Melissa Swan

Our Presenters:

Melissa Macías-Rioseco, DVM, MPVM, PhD, DACVP
California Animal Health and Food Safety Laboratory, University of California-Davis

Melissa Swan, DVM, MS, DACVP
University of Kentucky

Gaylord Opryland Resort & Convention Center
REGISTER HERE

Additional Questions:
-Eileen Henderson (eehenderson@ucdavis.edu)
-Heidi Pecoraro (heidi.pecoraro@ndsu.edu)

MISCELLANEOUS ANNOUNCEMENTS

Cutting Edge Pathology Congress

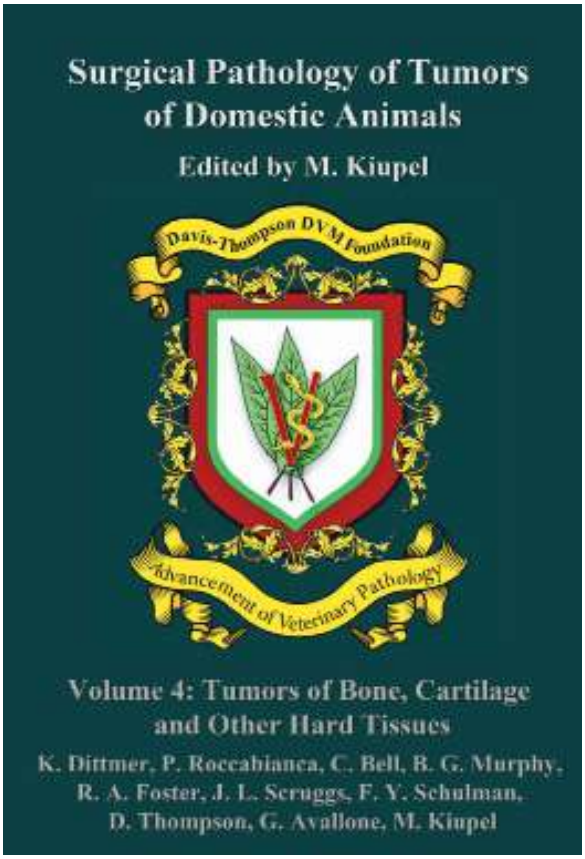
The 5th Cutting Edge Pathology Congress will take place from August 28th to 31st, 2024, in San Lorenzo de El Escorial (Madrid). This congress is very singular as the conference will be a joint venture among the European Society of Veterinary Pathology (ESVP), the European College of Veterinary Pathologists (ECVP), the European Society of Toxicologic Pathology (ESTP) and the Spanish Society of Veterinary Pathology (*Sociedad Española de Anatomía Patológica Veterinaria*, SEAPV).

The congress will host an extensive program of great interest to veterinary pathologists, toxicologic pathologists, residents, postgraduate students and scientists interested in veterinary pathology or toxicopathology.

Visit the congress website for more information or register directly to attend the congress here.

MISCELLANEOUS ANNOUNCEMENTS

MISCELLANEOUS ANNOUNCEMENTS



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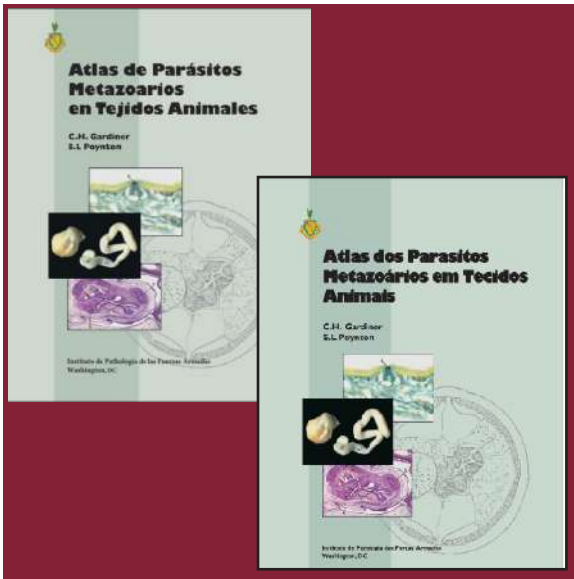
Davis-Thompson Foundation Pathology Externship

Since 1980, the Davis-Thompson Foundation lab sites have hosted more than 125 veterinary students at 8 participating diagnostic laboratories. These students usually have a strong interest in pathology itself or zoo or poultry medicine that require a strong pathology background. The Foundation is always interested in having veterinary students apply for an externship and we would like to add more externship sites that do not usually have veterinary students, to help increase their interest and knowledge of pathology with some off-campus experience. For more information, contact Dr. Jim Britt, **jobritt@sbcglobal.net;** 501-912-1449.



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