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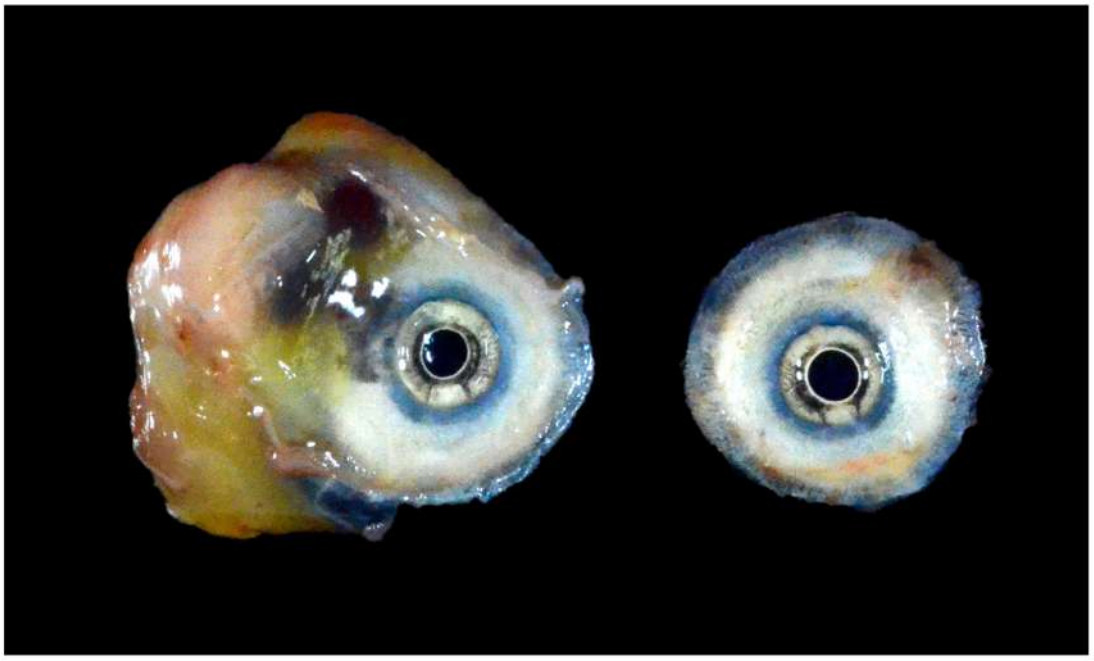
and comparative pathology

THE DAVIS-THOMPSON FOUNDATION NEWSLETTER

August

VOL. 53



Tissue from a bearded dragon

What is the cell of origin for myxosarcomas?

a. Myopericyte
b. Leiomyoblast
c. Fibroblast
d. Chondrocyte

INSIDE THIS ISSUE

Monthly cover photograph winner:

Elliott S. Chiu

University of California-Davis, Davis, CA

Answer: C

Description: An anaplastic sarcoma (suspect poorly differentiated myxosarcoma) from a 5-year-old, intact, female bearded dragon (*Pogona vitticeps*).

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

MESSAGE FROM THE CEO

Dear colleagues

We are proud to present the August issue of the Davis-Thompson Foundation Newsletter, brilliantly prepared by our outstanding managing editors: Javier Asin and Jeann Leal.
Other very successful versions of the Current Laboratory Animal Science Seminar (CLASS) and Pathology of Laboratory Animals (POLA) courses have just finished. With this, we are done for the year with the "4-big-ones": General Pathology, CLIIC, Descriptive Veterinary Pathology and POLA. But the show goes on, and between now and the end of the year, there are myriad training opportunities in person and virtual all over the world, in English, Spanish and Portuguese. Some of these courses and seminars are coming up very soon and have limited seats, so please do not miss the opportunity to register as soon as possible. Look them up in the following pages and/or in our website:

https://davisthompsonfoundation.org/events-calendar/

Also, do not miss "Cytology in the postmortem room," another great article by Dr Roger Kelly as part of his series “Things I didn’t learn in the library.” Thank you, Roger.

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

With my warmest regards

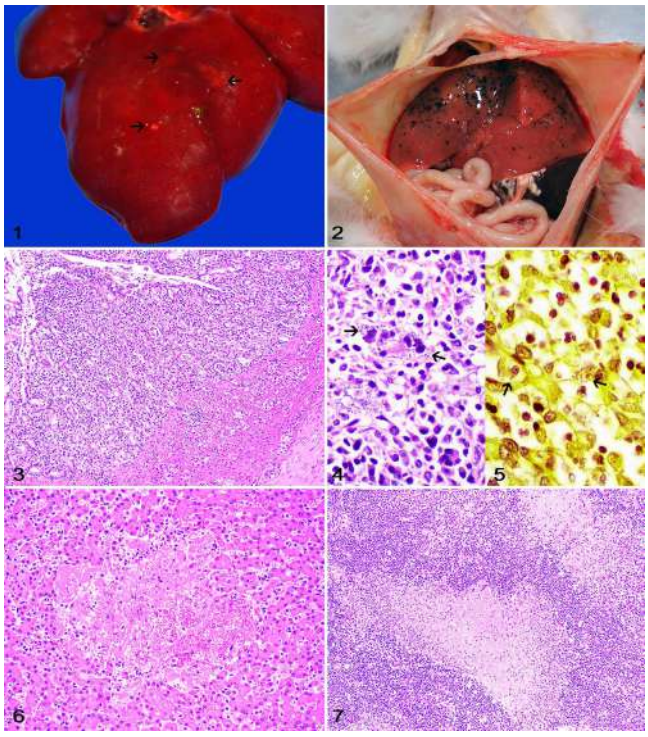
Francisco (Paco) Uzal
Chief Executive Officer
Davis-Thompson Foundation

JVDI IN FOCUS

Our August focus is an article appearing in the upcoming September issue: **"Systemic salmonellosis in 4 cats"** by Jesse Riker, Doris M. Miller, Uriel Blas-Machado, Danielle E. Lieske, Justin M. Stilwell, Kathryn McCullough, Susan Sanchez, Daniel R. Rissi.

J Vet Diagn Invest 2023;35(5). https://journals.sagepub.com/doi/full/10.1177/10406387231181389

Clinical signs in 4 cases of salmonellosis in cats included vomiting, diarrhea (2 cases each), fever, dystocia, icterus, and seizures (1 case each). Three cats died, and one was euthanized. Grossly, all cats were in poor body condition and had yellow-to-dark-red perianal feces (3 cases), oral and ocular pallor (2 cases) or icterus (1 case), fluid or pasty yellow intestinal contents (4 cases), white or dark-red-to-black depressed areas on the hepatic surface (2 cases), yellow abdominal fluid with swollen abdominal lymph nodes (1 case), and fibrin strands on the placental chorionic surface (1 case). Histologically, all cats had necrotizing enterocolitis and random hepatocellular necrosis. Other histologic findings included mesenteric (4 cases) or splenic (2 cases) lymphoid necrosis, and endometrial and chorioallantoic necrosis (1 case). Gram-negative bacilli were observed within neutrophils and macrophages in the intestinal lamina propria (4 cases), liver, spleen, lymph node, endometrium, and placenta (1 case each). Aerobic bacterial culture on frozen samples of small intestine, mesenteric lymph node, lung, and liver yielded *Salmonella enterica* subsp. *enterica*. Serotyping was consistent with *S.* Enteritidis (cases 1, 3) and *S.* Typhimurium (cases 2, 4).



Figures 1–7. Systemic salmonellosis in cats. **Figure 1.** Pale white-to-yellow areas of hepatocellular necrosis (arrows) in case 2. **Figure 2**. Widespread black areas of hepatocellular necrosis and hemorrhage in case 4. **Figure 3**. Colonic mucosal necrosis with scattered inflammatory cells that occasionally extend into the submucosa in case 4. H&E. **Figure 4**. Clusters of intracellular bacilli (arrows) in the colonic mucosa in case 2. H&E. **Figure 5.** Clusters of intracellular gram-negative bacilli (arrows) in the colonic mucosa in case 4. Modified Brown–Hopps Gram stain. **Figure 6.** Well-demarcated area of hepatocellular necrosis replaced with fibrin, hemorrhage, and scattered neutrophils in case 4. H&E. **Figure 7**. Extensive mesenteric lymphoid necrosis admixed with fibrin and scattered neutrophils efface most of the lymph node architecture in case 2. H&E.

EXPERT´S CORNER

CYTOLOGY IN THE POSTMORTEM ROOM

Another in the series: "Things I didn't learn in the library"

By W. Roger Kelly

We've all been there. One or more round, pale nodules protrude from liver, or spleen, or lymph node... or indeed, from any tissue. You pause during the autopsy and consider the options. Something has been focally added to the tissue, so it's unlikely to be a degenerative process. And a developmental disorder seems intuitively unlikely. So that leaves either inflammation, or neoplasia. You slice open one of the nodules. If it consists of a tough capsule surrounding a purulent or caseous centre, you feel fairly confident that it's subacute or chronic inflammation. But what if it's fairly uniformly fleshy across its cut surface, with a few foci of necrosis?

Well, we could just take appropriate samples for histology and microbiology and wait for the results. That's certainly easier than interrupting the dissection to make cytological preparations, but by neglecting to do this, you are missing an educational opportunity of great value to any residents or students you may have in the PM room with you. You may also miss an early diagnosis of an important zoonosis, with health implications for those exposed to the carcass.

My post-graduate pathology training began in Ken Jubb's department in Melbourne. He was quite uninterested in cytology; his attitude seemed to be: "Why look at isolated cells when you're going to be looking at what they're doing in tissue sections?" But later, when I had a couple of graduate students who asked for cytology training, I realised that, as a histopathologist, I had a golden opportunity to learn with them, by preparing cytological preparations from specimens that had been presented for histological diagnosis. We would end up with a histological diagnosis which we could compare with our cytological interpretation, and the cytological learning curve was steep.

I made my first trainee use the May-Grunwald-Giemsa stain, since that was what the standard texts recommended. Later, of course, we found – like everyone else – that Diff-Quik is just as good if used properly. But we also tried making temporary "wet preps": buffered 0.1% toluidine blue (or new methylene blue) dropped onto rapidly air-dried, unfixed smears and cover-slipped wet; the excess stain being blotted from the edge before going straight to the microscope. Even quicker than the Diff-Quik. The great advantage of the wet prep was that you very smartly knew whether or not your sample was adequate; if it wasn't, you could go straight back and resample.

We soon realised that the nuclear detail in the wet preparation was often superior to that in even the best Giemsa-stained smears; it was reminiscent of that seen in Papanicolau preparations. Mast cell granules were even more strongly stained than in the Giemsas, and there were other bonuses, such as the dramatic demonstration of cryptococcal capsules (see fig.).

Of course, the downsides of the wet prep include the fact that, being unfixed, pathogens in the smear might be dangerous to the observer, and it is temporary and is useless after a few hours. And, with time, the buffered stain grows microbes and throws a precipitate. But make it up in a 10ml Luer syringe fitted with a Millipore filter, and you will have freshly-filtered stain whenever you need it.

A serious disincentive for the practice of rapid cytological examination during the autopsy is the need to easily access a decently-maintained microscope, if not in the PM room itself, then in a nearby annexe, entry to which that doesn't necessitate changing. In the best of all worlds, the prosector would whistle up a skilled technical assistant who would run in with 2 clean slides and a hair-drier. The pathologist

EXPERT´S CORNER

would deposit a suitable sample on a slide; the technician would gently push the second slide onto the sample, draw the slides apart, immediately dry the smears with the hair-dryer, make a wet prep with one and put the other into Diff-Quik fixative. The pathologist would then be called to the microscope (disposable plastic bags on the controls, so glove removal not necessary) and become better informed about what disease processes are involved. This would influence decisions about subsequent specimen sampling and laboratory submissions...

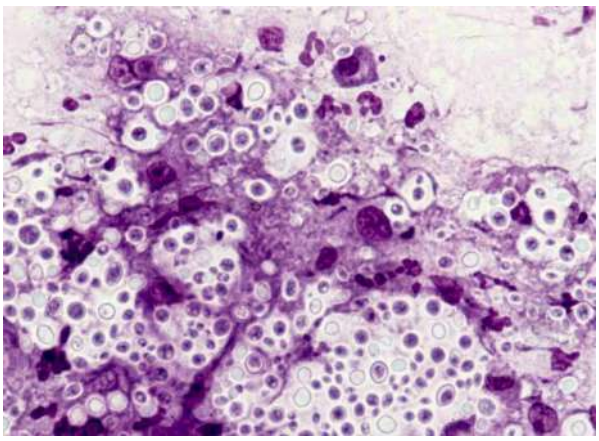
OK, this a bit of a dream. In the real world the technician is probably having morning tea, or it's the weekend and you're working alone. But whenever possible, especially when preparing to open a freshly-killed animal, try to at least set out some clean slides and a hair-dryer as close to the action as you can. Now let's say you are opening a freshly killed cat and find some large sub-lumbar lymph nodes; the other nodes look normal. It might be a case of localised lymphoma, or it might be lymphadenitis. A quick look at a wet prep should enable you to distinguish between inflammatory cells and malignant lymphocytes. If the latter, you probably wouldn't bother about submitting a node to the bacto lab.

It's all a lot easier with biopsies, provided you can train the surgeons. This isn't easy, I know, but you have to get them to call you when they have just cut something out, and before they've put it in formalin. You get the sample while it's still warm and you can slice it open and scrape a blade across the cut surface to give you something to smear. Or you can practice your fine-needle aspiration technique, especially if it's a large sample. I know of clinicians, in clinics remote from pathology labs, who will make smears from fresh biopsies before putting them into fixative and sending them away. These folk have thus trained themselves in cytology, since they can compare their cyto interpretation with subsequent histo reports, just as I did.

The use of the hair-dryer is essential, because speed of drying of smears is critical, whether they are for wet prep or Giemsa/Diff-Quik. The osmotic shrivelling of cells during slow drying is horrible. A drier may not be needed in the desert in high summer, but PM rooms are wet and the air is humid.

The wet prep might not even need staining. A dog with acute renal failure was presented for autopsy in early winter when I was working at Cornell. Grossly, the kidneys were slightly enlarged, pale and wet on section. We all expected this to be a case of oxalate nephrosis, since antifreeze poisoning of dogs is common at that time of year, but when I asked the residents how we could confirm the diagnosis before "show-and-tell" later that afternoon, they were puzzled. So I gently scraped a freshly-cut surface of kidney and put a drop of the juice on a slide, followed by a cover-slip. With no stain, and the iris diaphragm choked right down ("poor man's phase contrast"), the oxalate crystals were spectacular.

Another trick concerning oxalate crystals (or any refractile material) in histo sections is to place your hand close to the light source and block half the light, and the crystals will jump out at you. A lot quicker than setting up phase contrast.



Toluidine blue-stained wet prep of unfixed, air-dried smear of a mucoid intranasal mass in a dog. No need to use India ink to demonstrate these cryptococcal capsules

VOLUNTEER CORNER

Volunteer Corner

Behind-the-Scenes of the educational opportunities and materials the Davis-Thompson Foundation offers is a skilled team of volunteers. These professionals carve personal time for tasks and projects that directly impact the Foundation's mission.

To showcase our volunteers' efforts, we are launching a space on our newsletter and website to bring awareness to their hard work and express our gratitude. Stay tuned and join us in applauding their noble gestures and helping each see the great impact their efforts have made on our pathology community and beyond.

DIAGNOSTIC EXERCISE

Case #: 215; **Month:** June; **Year:** 2023

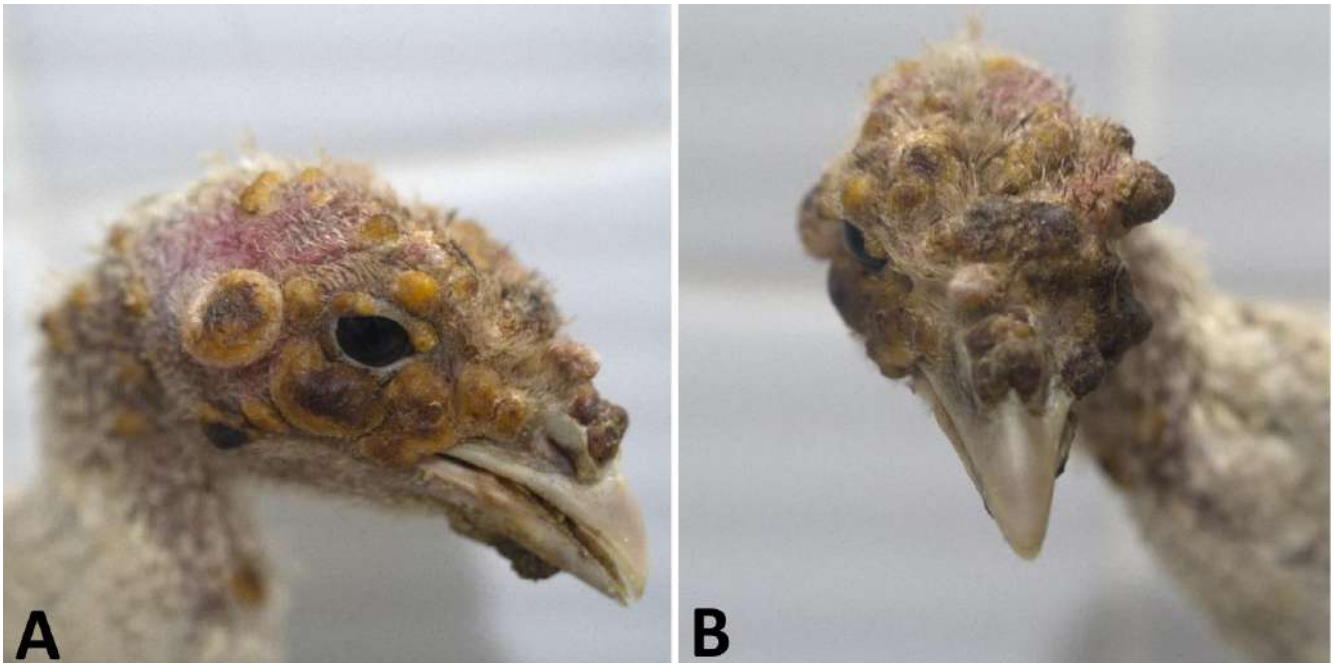
Contributors: Hodias S. de Oliveira Filho[1], DVM, José L. C. Duarte[1], DVM, Gabriel F. Paranhos[1], DVM, Rafael L. de Oliveira[2], DVM, MSc, Jeann L. de Araújo[1], DVM, MSc, PhD.

[1]Laboratory of Veterinary Pathology, Federal University of Paraíba (UFPB), Areia, PB, Brazil. [2]Wild animal clinic sector, Federal University of Paraíba (UFPB), Areia, PB, Brazil. lealjeann@gmail.com

Clinical History: A young male turkey (*Meleagris gallopavo*) was referred to the Veterinary Hospital of the Federal University of Paraíba (UFPB), having multiple skin nodules. The owner reported that twenty-four chickens (twelve adult and twelve young) and nine turkeys (four adult and five young) had similar lesions on the same property. The animals were raised together, and several birds died, mainly turkeys and chicks.

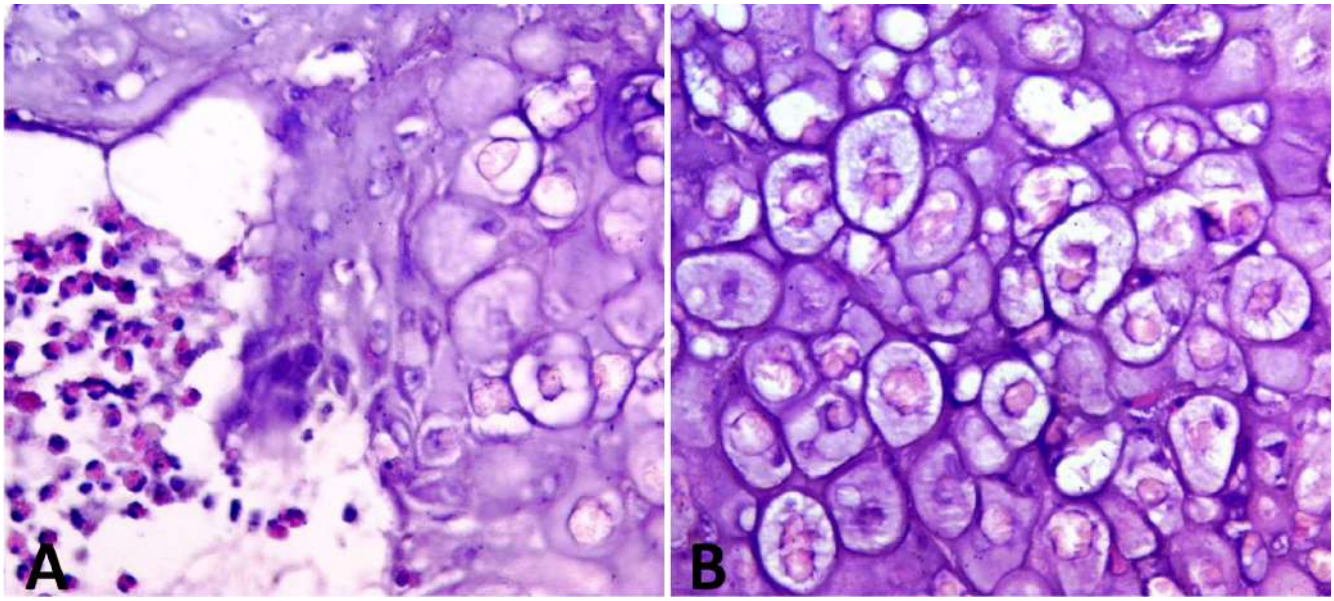
Clinical Findings: The turkey was numb, with multifocal to coalescing firm crusted nodules with a depressed center on the head, neck and limbs, and focally extensive areas of necrosis in the oral cavity. Fragments from the skin lesions were sampled for biopsy.

Gross Images:



DIAGNOSTIC EXERCISE

Microscopic Images:



Follow-up questions:
(1) *Histological description*
(2) *Name of the condition*
(3) *Etiology*
(4) *Forms of clinical presentation*
(5) *Two differential diagnoses*

Click here for answers

Editor-in-chief: Claudio Barros
Associate Editor for this Diagnostic Exercise: Raquel Rech

SEMINAR REVIEWS

VII Brazilian Symposium of The Davis-Thompson Foundation at ENAPAVE 2023 with Dr. Raquel Rech

by Javier Asin

The Symposium took place on July 18 and 19, under the auspices of the 7th Brazilian Congress of Veterinary Pathology "ENAPAVE 2023," held in the beautiful beach city of João Pessoa, Paraíba. The event was efficiently organized by Drs. Ricardo Barbosa de Lucena and Francisco de Assis Leite Souza, along with the commission and volunteers of the Brazilian Association of Veterinary Pathology.

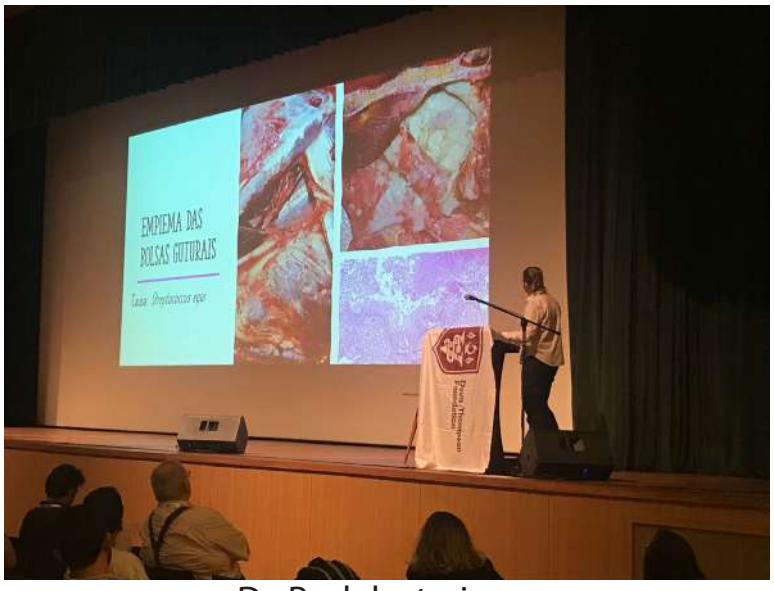
Dr. Raquel Rech (Texas A&M) delivered four, 2-hour lectures to a crowd of over 350 participants. On the first day, she provided a comprehensive overview of diseases affecting horses by organ systems. The second day focused on neuropathology, covering multiple species. Dr. Rech's graphic materials were superb, and her presentations were truly spectacular. She brought a case-based, practical approach to both topics, drawing from her extensive 20+ years of experience at the Universidade Federal de Santa Maria (Brazil), University of Georgia (US), and Texas A&M (US).

Dr. Rech's captivating presentations kept the audience on the edge of their seats, so much so that, at the end of the evening session on the first day, multiple attendees begged for an additional 30 minutes of her brilliant lecture. Throughout her talks, she graciously acknowledged the mentors and colleagues who inspired her during her journey, most notably her "Mestre," Professor Claudio Barros, who was proudly present at the Symposium.

Concluding the Symposium, Dr. Rech left the trainees with inspiring words. As a former Brazilian graduate student, she had attended ENAPAVE in the past, most recently in 2005, and never imagined that one day she would return to lecture as a speaker. Her advice to the trainees present was to keep studying and seeking good and inspiring mentors.

Now, in 2023, Raquel herself has become an inspiration and role model for trainees and early-career colleagues in Brazil, other Latin-American countries, and beyond.

Drs. Leite, Rech, & Barbosa



Dr. Rech lecturing

SEMINAR REVIEWS

Australian Pathology Roadshow with Dr. Keren Dittmer

by Tony Ross

This coast-to-coast pathology roadshow is held every year in Australia. The Davis-Thompson Foundation (DTF) is the major sponsor. DTF worked with the Australian Animal Pathology Standards Program to present 2 days of veterinary pathology based on a theme. This year's theme was bone, presented by Dr Keren Dittmer of Massey University, New Zealand. Professor Dittmer is the co-author of the Bones and Joints chapter in *Jubb, Kennedy & Palmer*, and author of Bone Tumors in *Meuten*.

Just under 100 pathologists attended the 5 workshop venues throughout June: Brisbane, Sydney, Melbourne, Adelaide and Perth.

Dr Dittmer provided a thorough overview of metabolic diseases of bone in all species. She included tips for investigating fracture outbreaks, tumors of bone including radiology, cytology and histology. More tips on investigating teratogenic and genetic skeletal diseases with an introduction to mutation detection.

Feedback was very positive with attendees enjoying Dr Dittmer's knowledge and experience.

Photos of attendees and faculty during the roadshow

SEMINAR REVIEWS

First Israelian Seminar of the DTF with Dr Fabio del Piero

by Fabio del Piero & Zadok Ruben

The First Seminar of the Davis-Thompson Foundation in Israel took place on June 19 - 22 in Bet Dagan, a central location of the Koret Veterinary School Clinic, The Government Veterinary Institute and the internationally known Vulkani Agriculture Research Institute. The organization of the event was initiated by Dr. Asaf Berkowitz and the long process was materialized with the council and encouragement of Dr. Zadok Ruben. The focus was on diseases of ruminants and swine.

Dr Fabio Del Piero, Professor of Pathology in the Department of Pathobiology and LADDL at Louisiana State University, a Davis Thompson Foundation board member since the year 2000, was invited to present several hours on diseases of food production animals. The event was very well received with numerous participants both in person and online. In addition, some colleagues from neighboring countries and territories participated of the meeting. A multilingual audience with some international specialists asked many questions.

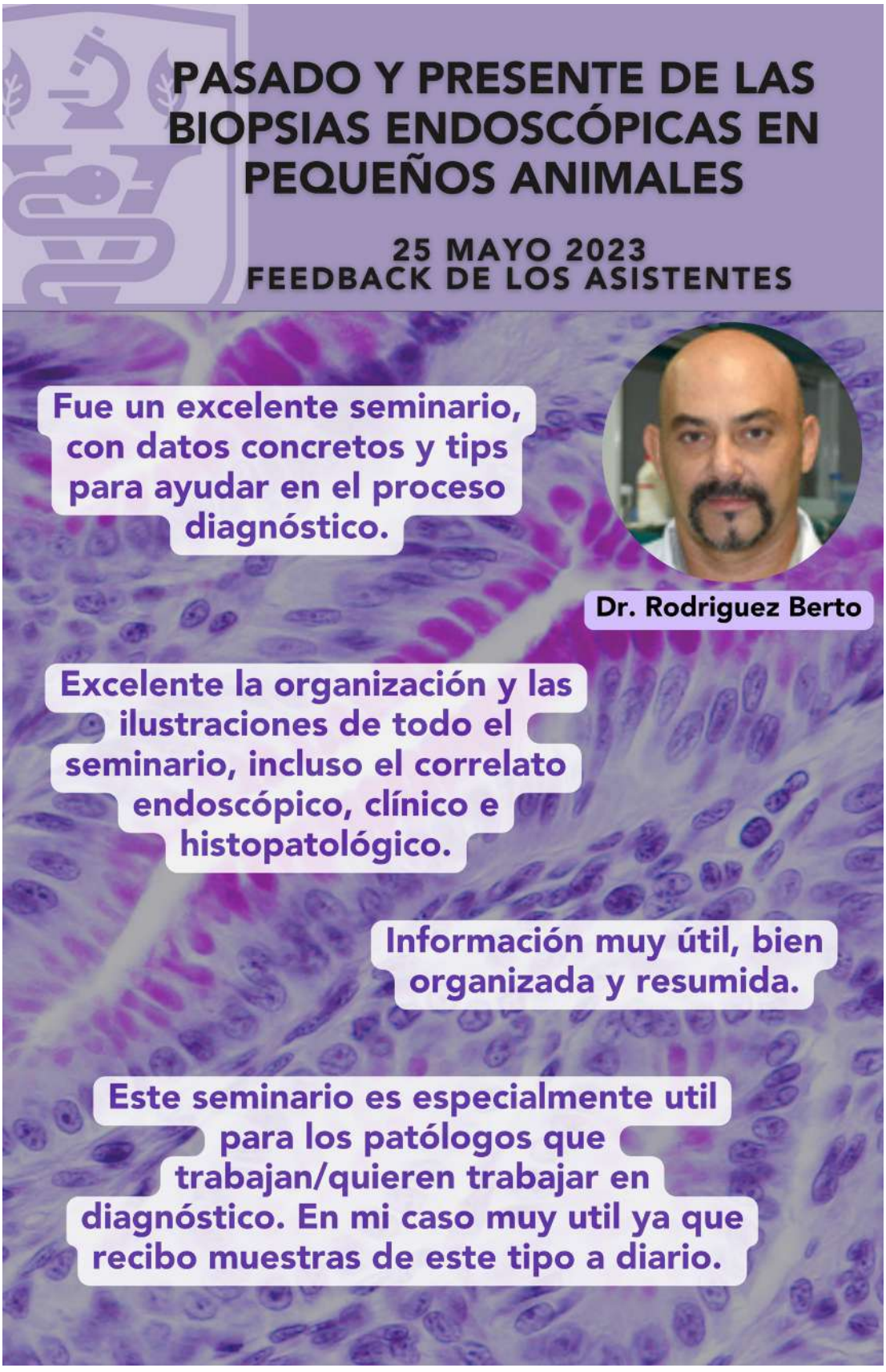
The president of the Israel Medical Veterinary Association, Dr Michael Ettinger, opened the meeting, followed by an introduction given by veteran Dr. Zadok Ruben about the Davis-Thompson Foundation. The very hard work of Dr. Asaf Berkowitz, renown and well stablished ACVP comparative pathologist who always kept in touch with the Foundation, is greatly appreciated. Another very important part of this event was visiting the state-of-the-art Aquatic Center at Kibbutz Dan (in Northern Galilee); Dr. Avi Eldar, founder and international authority on aquatic animal diseases and management, hosted the visit. The setting would be perfect for future events in this wonderful, efficient and welcoming country, close to Europe and Africa.

Dr. Fabio del Piero with a rhino skeleton

Dr. Zadok Ruben presenting an overview of the DTF

SEMINAR REVIEWS

SEMINAR REVIEWS



FREE FRIDAY SEMINAR: KALI HOLDER

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SEMINARIO GUATEMALTECO

Click here for more information

RACEHORSE NECROPSIES

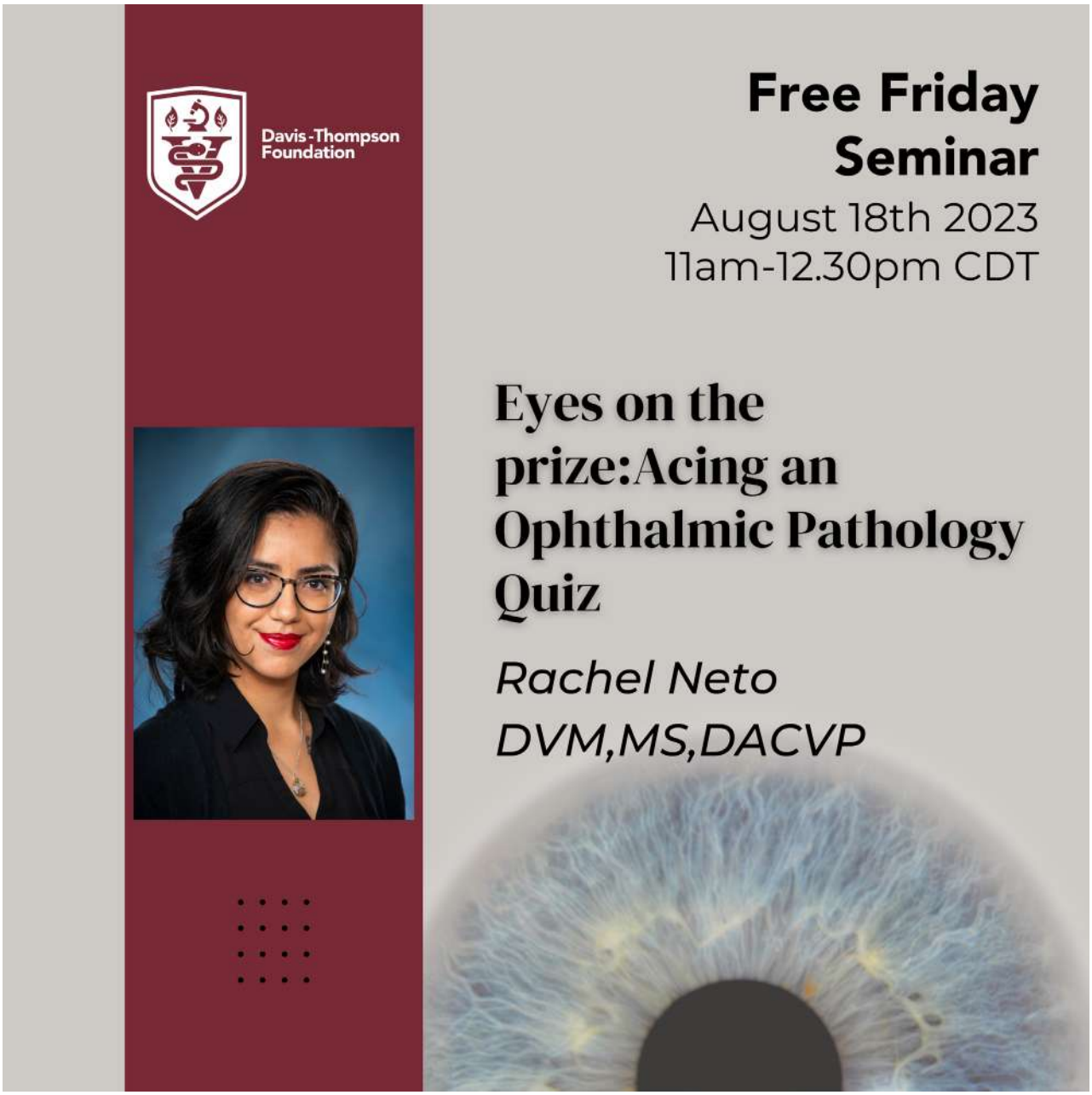
Click here to register

LCPG HISTO ROUNDS

Click here to register

xx

FREE FRIDAY SEMINAR: RACHEL NETO



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CURSO DE NECROPSIA NICARAGUA

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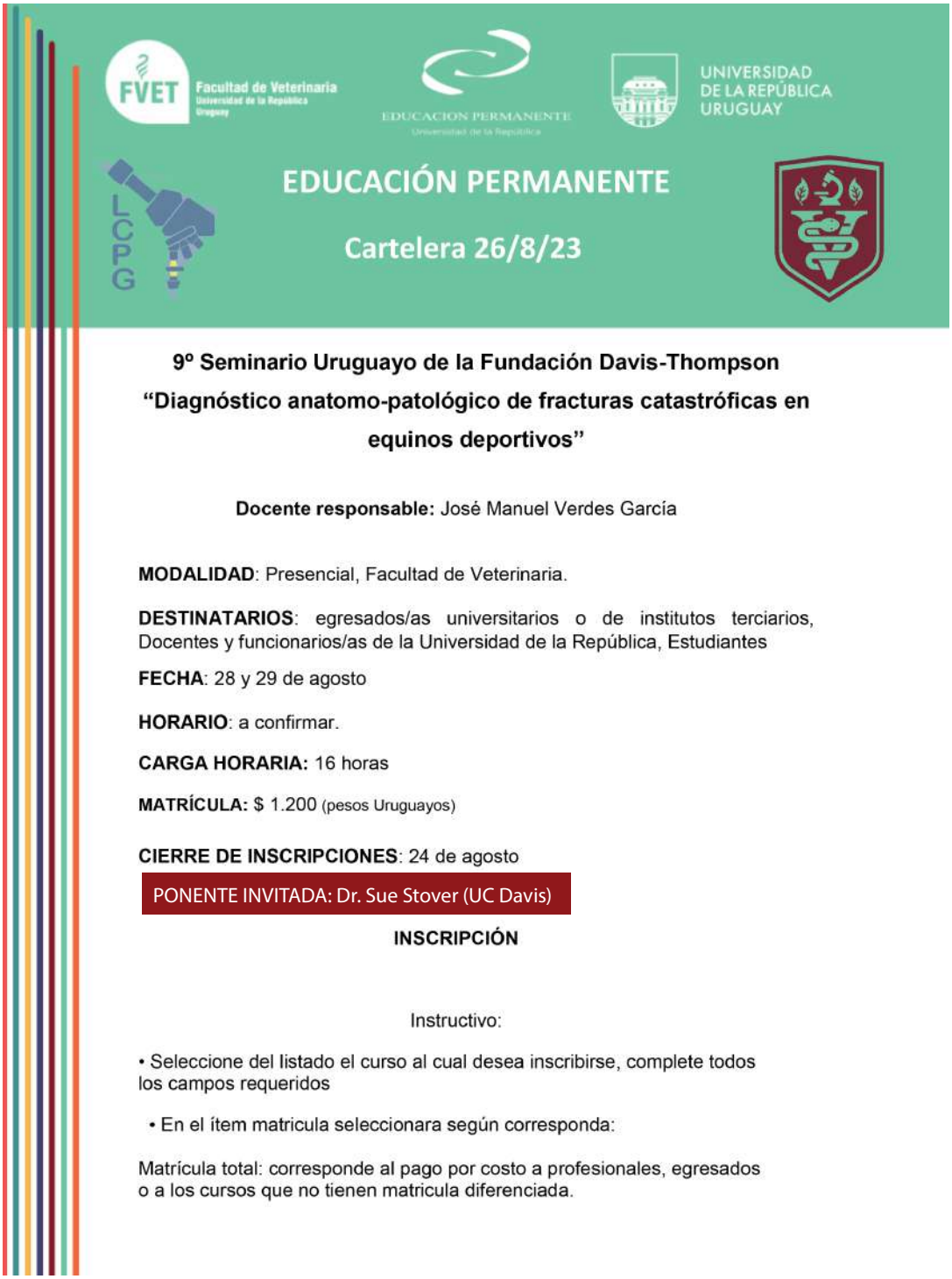
URUGUAYAN MEETING



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LCPG

EDUCACIÓN PERMANENTE

Cartelera 26/8/23

9º Seminario Uruguayo de la Fundación Davis-Thompson

"Diagnóstico anatomo-patológico de fracturas catastróficas en equinos deportivos"

Docente responsable: José Manuel Verdes García

MODALIDAD: Presencial, Facultad de Veterinaria.

DESTINATARIOS: egresados/as universitarios o de institutos terciarios, Docentes y funcionarios/as de la Universidad de la República, Estudiantes

FECHA: 28 y 29 de agosto

HORARIO: a confirmar.

CARGA HORARIA: 16 horas

MATRÍCULA: $ 1.200 (pesos Uruguayos)

CIERRE DE INSCRIPCIONES: 24 de agosto

PONENTE INVITADA: Dr. Sue Stover (UC Davis)

INSCRIPCIÓN

Instructivo:

• Seleccione del listado el curso al cual desea inscribirse, complete todos los campos requeridos

• En el ítem matricula seleccionara según corresponda:

Matrícula total: corresponde al pago por costo a profesionales, egresados o a los cursos que no tienen matricula diferenciada.

Click here to register

EUROPEAN DIVISION: OCULAR PATHOLOGY

Click here to register

ISVD ANNUAL MEETING

International Society of Veterinary Dermatopathology (ISVD)

24th Annual Meeting

Satellite meeting of the ECVP/ESVP/ESVCP/ECVPV congress

Lisbon, Portugal, 30th of August 2023

8.00 – 8.50	**Registration**
8.50 – 9.00	**Welcome** President ISVD Dr. Stefano Borio
9.00 - 9.30	**Mystery slide session part 1** Moderator: Dr. William Craft 1. Dr. David Gardiner, Zoetis Reference Laboratories, Louisville, Kentucky, USA 2. Dr. Barbara McMahill, IDEXX Reference Laboratories, Wyoming, USA
9.30 – 10.30	**Plenary Lecture ISVD part 1** Chairperson: Dr. Stefano Borio, Diseases of the mucocutaneous junction and nasal planum – pathogenic, clinical, and histopathological aspects Dr. Monika Welle, University of Bern, Switzerland
10.30 - 11.00	Break
11.00 – 12.00	**Plenary Lecture ISVD part 2** Chairperson: Dr. Stefano Borio Diseases of the mucocutaneous junction and nasal planum – pathogenic, clinical, and histopathological aspects Dr. Monika Welle, University of Bern, Switzerland
12.00 - 12.30	**ISVD Grant Presentation** Chairperson: Dr. Stefano Borio, University of California, Davis, USA Unravelling the spatial profile of DNA Methylation in canine malignant melanoma Alice Musi, Doctorate Student, Faculty of Veterinary Medicine, University of Teramo, Italy
12.30 - 14.00	Lunch (included)
14.00 - 15.00	**Supportive Lecture ISVD** Chairperson: Dr. Chiara Brachelente Lies of lesions – Mucocutaneous diseases Dr. Karen Trainor, Innovative Vet Path, Kansas City, USA Dr. Dominique Wiener, Texas A&M University, Texas, USA
15.00 - 15.30	**Mystery slide session part 2** Moderator: Dr. William Craft 1. Dr. Karen Trainor, Innovative Vet Path, Kansas City, Kansas, USA 2. Dr. Ana Resendes, Universidade Lusófona, Lisbon, Portugal
15.30 - 16.00	Break
16.00 - 17.00	**Clinicopathological correlations** Moderator: Dr. Monika Welle 1. Dr. Kelly Keating, Animal Dermatology Group, California, USA and Dr. Verena Affolter, University of California, Davis, USA 2. Dr. William Craft, University of Florida, USA and Dr. Stefano Borio, University of California, Davis, USA 3. Dr. Karen Trainor, Innovative Vet Path, Kansas, USA and Dr. Roubina Honarchian, Metropoliten Animal Specialty Hospital, Los Angeles, California, USA
17.00 – 17.15	**Histology quiz** Moderator: Dr. Dominique Wiener
17.15 - 18.15	**ISVD Annual General Meeting (AGM)** - Members only

Click here to register

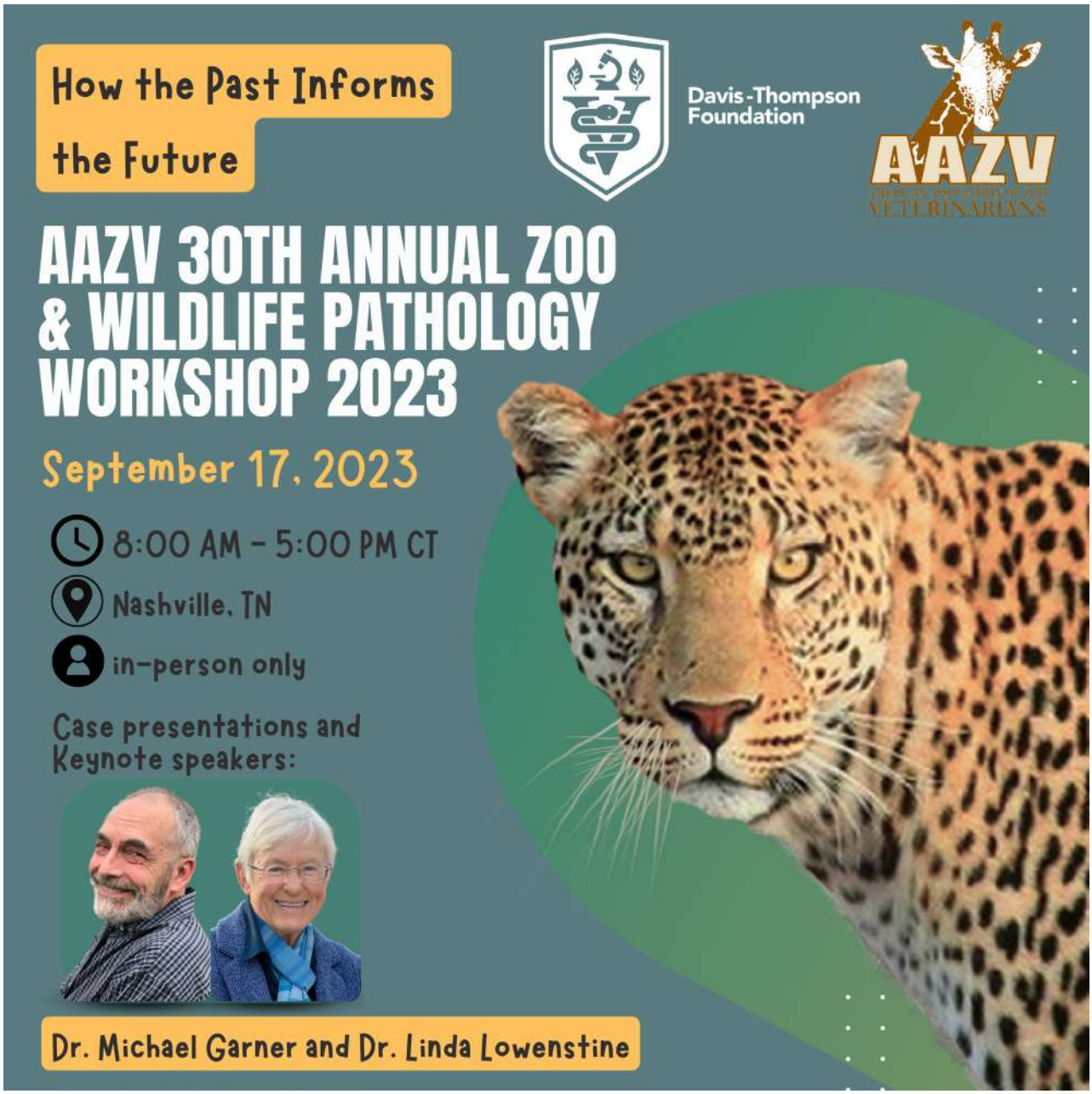
EASTERN EUROPEAN VET PATH MEETING

Click here to register

SEMINAR SERIES IN SPANISH

Registration information coming soon

AAZV WORKSHOP



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SOUTH CENTRAL DIVISION MEETING

Click here to register

MAMMARY TUMORS IN DOGS AND CATS

Registration information coming soon in the website

REUNIÓN ARGENTINA DE PATOLOGÍA VETERINARIA

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REUNIÓN ARGENTINA DE PATOLOGÍA VETERINARIA

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AAVLD PRE-MEETING WORKSHOP

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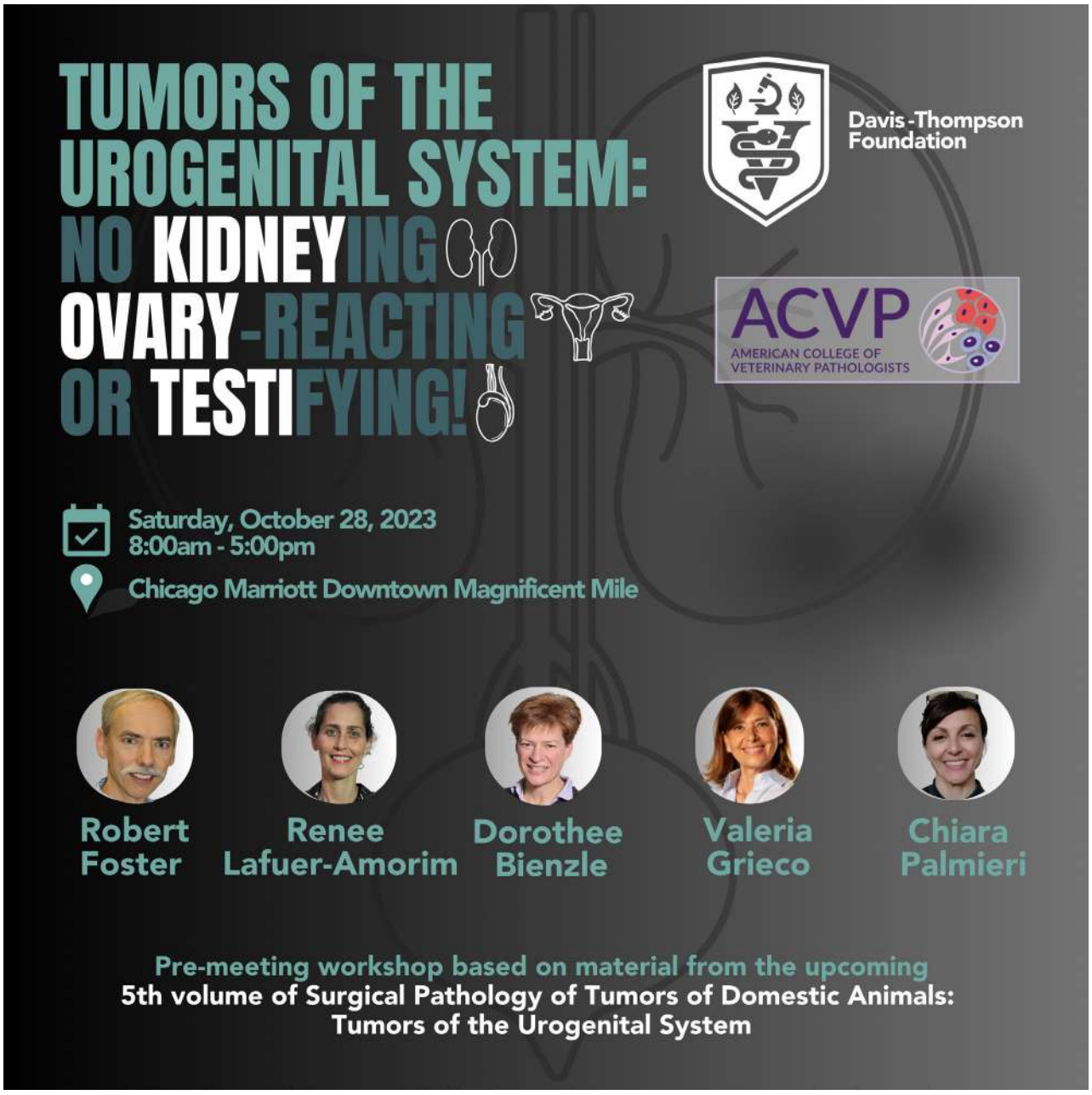
ACVP PRE-MEETING WORKSHOP



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SEMINAR SERIES IN SPANISH

Registration information coming soon

LATIN AMERICAN DESCRIPTIVE COURSE

Click here to register

ASVP CORNER

A selection of cases from the June 2023 edition of *The Scope*, the newsletter of the Australian Society for Veterinary Pathology.

Leptospirosis in a young dog

(From ASAP Lab in Victoria)

In April an 11-month-old, female Hungarian Vizsla presented to a Melbourne vet clinic for lethargy and jaundice. Initial blood results revealed an elevated serum bilirubin. After 24 hours in hospital additional biochemistry results revealed elevated liver enzymes. The dog was euthanised following rapid deterioration. Four days prior to hospitalisation the dog had been in kennels in the Yarra Valley, Victoria.

Samples of kidney and liver were fixed and sent to ASAP laboratory for histopathology. Prior to euthanasia a blood *Leptospira* PCR and leptospirosis microscopic agglutination test (MAT) was performed. DNA for *Leptospira interrogans* DNA was equivocal and titre results were borderline positive (i.e., titre = 50) for serovars Copenhagi, Australis, Kremastos, and Bataviae. These results hinted at an acute phase reaction.

Histopathology showed marked hepatic dissociation in the liver with increased numbers of hepatocytes with mitotic figures (Figure 1), and multifocal lymphoplasmacytic and histiocytic nephritis with acute tubular injury and multiple vascular fibrin thrombi most prominent in the arcuate arteries (Figure 2). The classic histologic changes combined with the blood results confirmed leptospirosis.

Leptospirosis is a zoonotic bacterial disease affecting most mammalian species with a worldwide distribution. The regions of highest seroprevalence include Hawaii, the Pacific Northwest and mid-Atlantic coastal regions

. *Leptospira interrogans* is the the primary cause in dogs and the most pathogenic serovars are usually Canicola and Icterohaemorrhagiae. Rodents are the primary reservoir host with bacterial organisms persisting in the renal tubular epithelial brush border resulting in prolonged shedding of infectious leptospires in their urine. Exposure is often from freshwater sources and outbreaks in dogs have been reported following times of increased rainfall. Infected animals are usually seronegative in the first week with a fourfold increase in MAT titres over 7-14 days supportive of a recent infection.

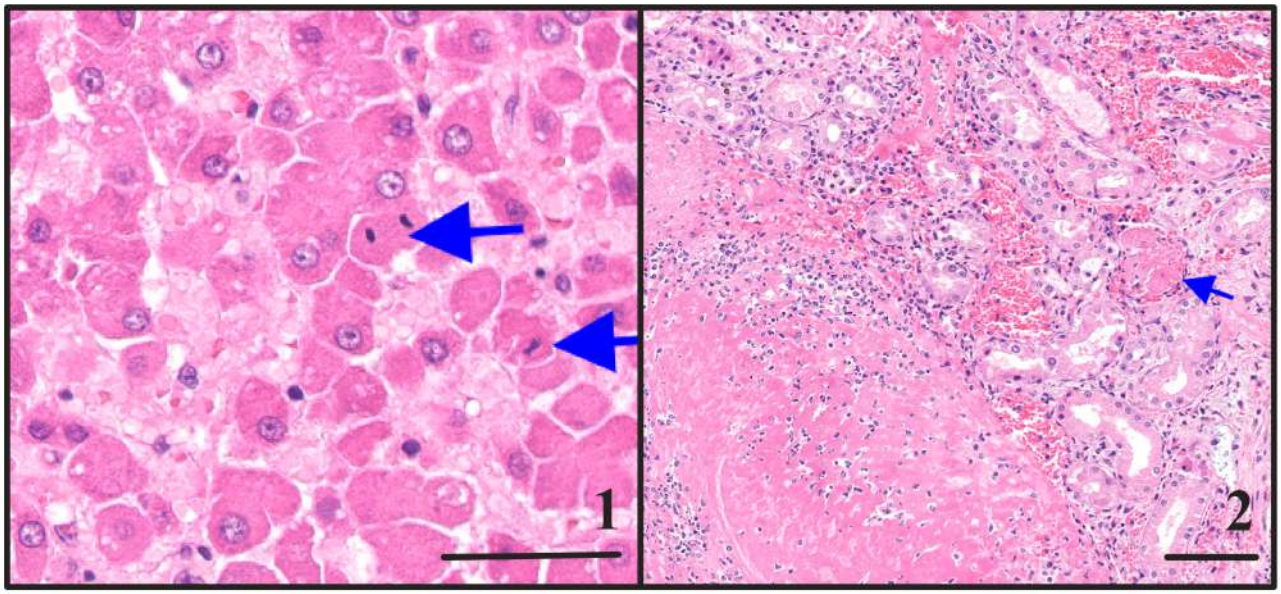

Figure 1: Canine. Liver. Hepatocellular dissociation & prominent mitoses (arrows). HE. Bar 50µm
Figure 2: Canine Kidney. Renal arcuate arterial thrombosis (arrow). HE. Bar 100µm.

ASVP CORNER

Encephalomyocarditis virus in a calf
(From the NSW State lab)

An FMD exclusion recently submitted to the EMAI laboratory was confirmed to be a case of Encephalomyocarditis Virus (EMCV). The 6-week-old calf was from the NSW North Coast and presented with ataxia, difficulty breathing and subsequent mortality.

On post-mortem examination, there were notable pale pink foci of the heart, as well as ascites and pulmonary oedema. Histologically, the heart had mild non-suppurative myocarditis, fibrinous endocarditis and myocardial necrosis (Figure 3). Interestingly, there was also moderate centrilobular hepatic necrosis, possibly due to hypoxic injury secondary to heart failure, however a concurrent toxic insult could not be definitively excluded.

While the case was considered low risk, myocarditis and myocardial necrosis in young animals may be seen with FMD, with exclusion performed in this case by the EMAI Virology lab and the Australian Centre for Disease Preparedness. There is one previously reported case of EMCV in a splenectomised calf in Queensland (Diallo, Carter & Storie 2013). EMCV can infect a wide range of mammals, with outbreaks most seen in pigs and captive wildlife species. Outbreaks are usually associated with severe infestations of mice and less commonly rats.

***Aeromonas veronii* infection in a nonhuman primate.**
(From the Queensland State lab)

A referring veterinarian submitted samples from a diabetic, female elderly nonhuman primate. The Tamarin had presented with melaena and received treatment but slowly

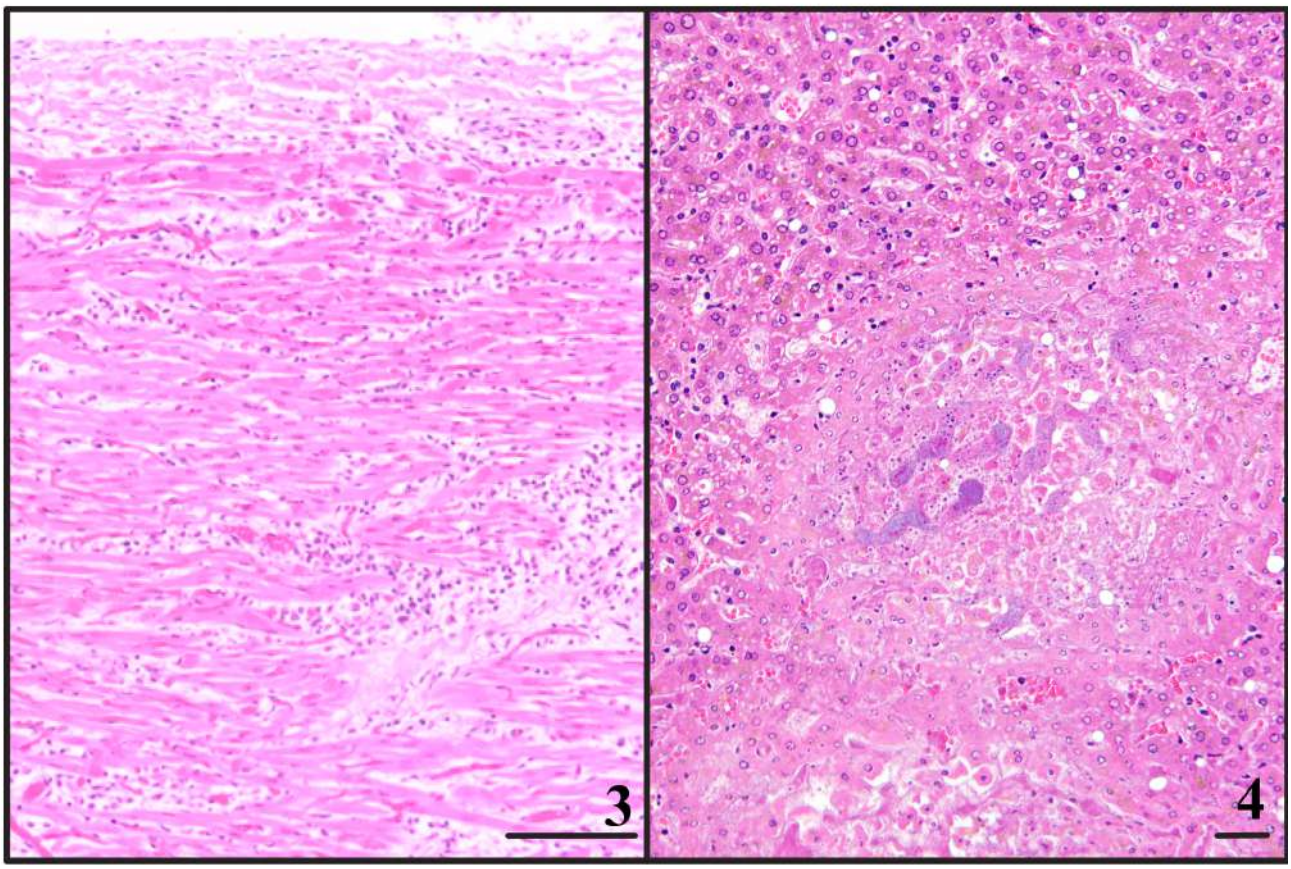

Figure 3: Calf. Heart. Multifocally, the myocardium and endocardium is infiltrated by lymphocytes with fewer macrophages and neutrophils. Some myocardial fibres are hypereosinophilic, individualised and fragmented (necrotic). HE. Bar 100µm.

Figure 4: Tamarin. Liver. Multifocal necrosis and intralesional bacteria. HE. Bar 20µm.

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deteriorated before dying naturally. The other Tamarin in the enclosure was unaffected. At necropsy the referring veterinarian, using appropriate PPE, noted multifocal white-yellow, 2-4mm, round lesions through the liver, as well as nodular kidneys. Other lesions such as ulceration of the gastrointestinal tract, skin or genitals, eyelid oedema or haemorrhage of adrenal gland or lymph nodes.

On histopathological examination of the liver, multifocal, necrotising hepatitis was observed. Myriad small Gram-negative rods were noted within foci of coagulative necrosis, in turn surrounded by neutrophils and macrophages (Figure 4). Often the bacteria were present within cellular "ghosts". The kidney showed an interstitial nephritis with fibrosis, glomerular sclerosis and tubular ectasia, all characteristics of an end-stage kidney. Fresh liver tissue was incubated for bacterial culture and a heavy pure growth of *Aeromonas veronii* was cultured. Reports of *A. veronii* causing disease in nonhuman primates are scant.

Aeromonas sp. are small, ubiquitous Gram-negative bacilli that typically inhabit freshwater environments. Aeromonads are pathogens of aquatic animals, causing diseases of fish, as well as amphibian, reptiles and birds. *Aeromonas* spp have also been implicated in gastroenteritis, wound infections and bacteraemia or septicaemia in mammals including humans. *A. veronii* can cause sepsis and ulcerative syndrome in fresh water fish, and has also been identified in cases of sepsis in humans. Aeromonads have also been identified in the faeces of healthy animals. This was an aged animal with diabetes and chronic renal disease which likely predisposed it to bacterial infection.

Uterine stump pseudomycetoma in a cat
(From Vetpath lab in Western Australia)

An eight-year-old, female neutered, British short hair presented post-ovariohysterectomy. Further clinical history was not submitted.

Histologically, the uterine stump was completed effaced and replaced by pyogranulomatous inflammation containing both intracellular and extracellular fungal organisms. Fungi displayed parallel walls, bulbous dilations, septa and branching.

Panfungal nucleic acid detection was performed on scrolls of formalin fixed paraffin embedded (FFPE) tissues pooled from multiple blocks containing fungal organisms. *Microsporum canis* DNA was detected by PCR and DNA sequencing by the Institute of Clinical Pathology and Medical Research, Westmead Hospital.

Dermatophytic pseudomycetomas in cats are cmmonly caused by *Microsporum canis*. Case reports, limited to a single or few infected cats, highlight an increased incidence or overrepresentation of disease in Persian breeds (Chang *et al.* 2011 and Bond *et al.* 2001). Intra-abdominal infection is rarely reported in comparison to infections arising from the skin. Bianchi *et al.* (2017), have described two cases of intra-abdominal pseudomycetoma in Persian cats. One of these cases presented post-ovariohysterectomy with a large mass at the uterine stump, as in the current case. Infection was suspected to have occurred during laparotomy during an ovariohysterectomy surgical procedure.

The lack of fresh tissue samples may hinder a definitive diagnosis. However, PCR on formalin fixed paraffin embedded tissues may be worthwhile when fungal organisms are numerous. An important consideration to convey to the client include the reduced sensitivity with FFPE tissues (~50-60%) and the possibility of false negative results.

Malignant ovarian teratoma
(From Vetpath lab in Western Australia)

A one-year-old, female entire, golden retriever presented for abdominal swelling and constipation. The patient was otherwise clinically well. Abdominal palpation revealed a large abdominal mass. Exploratory laparotomy suggested the lesion was arising from the left ovary. Multiple, small nodules were also noted throughout the mesenteric adipose and along the serosal surface of the bladder and gastrointestinal tract. The mass and mesenteric lesions were excised and submitted for histopathology.

The gross image shows a large mass in the region of the ovary (Figure 5). Also present are multiple, variably sized nodular lesions

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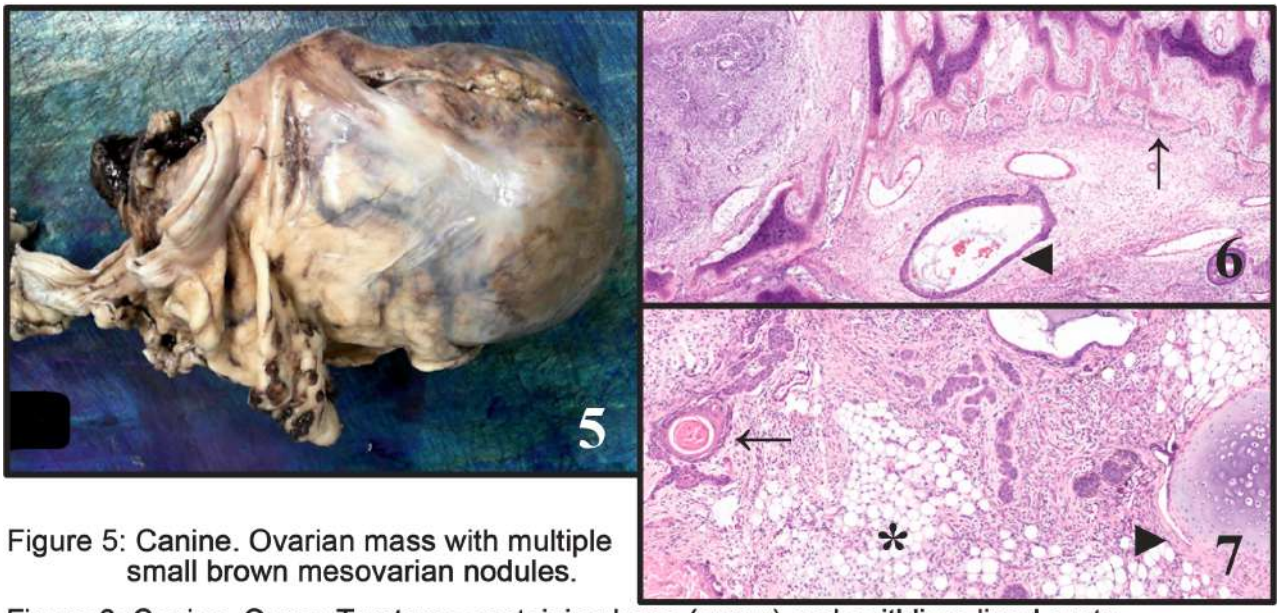

Figure 5: Canine. Ovarian mass with multiple small brown mesovarian nodules.

Figure 6: Canine. Ovary. Teratoma containing bone (arrow) and epithlium-lined cysts (arrowhead). HE.

Figure 7: Canine. Ovary. Teratoma containing keratinising squamous epithelium (arrows), cartilage (arrowhead) and adipose tissue (asterisk). HE.

through the mesenteric adipose tissue adjacent to the mass.

Histologically, the mass is composed of tissue differentiated toward all three primordial germ layers. Figure 6 shows an area of the neoplasm containing bone. Also present are multiple cysts lined by ciliated epithelial cells consistent with respiratory epithelium, and regions of primitive neural tissue. Figure 7 shows an area containing keratinising squamous epithelium with cartilage and adipose tissue. Occasional hair follicles and sebacous glands were also present. The histomorphology is consistent with an ovarian teratoma.

Throughout the adjacent mesentery, the nodules contain a mixed infiltrate consisting of fibroplasia and infiltrates of macrophage and lymphocytes. Admixed throughout are clusters of polygonal cells sometimes arranged into nests.

Immunohistochemistry was performed to further assess the histogenesis of this cell population. Both cell populations are strongly cytokeratin positive and negative for IBA1.

The gross and histological findings in this case are most consistent with a malignant ovarian teratoma with mesenteric metastasis.

These tumours are uncommon in domestic animal species but arise most often in the ovary of dogs. Other reported sites include the kidney, brain and spine in a range of species including horses, rabbits and cats. Young female dogs are most often affected. The majority of these lesions are benign, typically composed of mature well-differentiated tissue. However, any of the tissues that make up a teratoma may be malignant. Some studies report approximately 50% of dogs with histologically malignant teratomas will have metastatic disease at the time of diagnosis. The histological features which separate benign verses malignant teratoma are not well characterised. In addition, these tumours are often so large at the time of evaluation that it's impossible to evaluate the entire neoplasm. All affected patient should be evaluated and monitored for metastatic disease.

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Acknowledgements

ASVP acknowledges the staff of the

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- DPI NSW EMAI
- Queensland Biosecurity Laboratory and
- Vetpath Laboratory

For their case contributions.

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This year's ASVP conference theme is the hepatobilary system. We are delighted to announce the engagement of high calibre international and national speakers that cover the specialities of internal medicine, clinical pathology and anatomical pathology. The program will have a case based collaborative approach with audience participation encouraged, and will appeal to anatomical and clinical pathologists interested in both small and large animal species, as well as internal medicine specialists or residents.

We look forward to welcoming you as a delegate to the Conference.

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DR JONATHAN LIDBURY
Associate Professor, Small Animal Internal Medicine
Gastrointestinal Laboratory
Texas A&M University

DR SEAN MCDONOUGH
Associate Professor, Department of Population Medicine and Diagnostic Sciences
College of Veterinary Medicine
Cornell University

DR NATALIE COURTMAN
Associate Professor, Veterinary Clinical Pathology
Sydney School of Veterinary Science
University of Sydney

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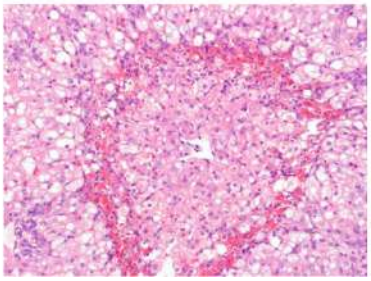

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Taronga's Australian Registry of Wildlife Health, supported by the Cybec Foundation and Davis-Thompson Foundation, is hosting a Wildlife Health and Pathology Short Course, and a One Health Principles in Wildlife Disease Management Symposium.

The course is open to anyone with an interest in wildlife disease, including pathologists, veterinarians, conservation biologists, and veterinary, ecology, and postgraduate students. Practical workshops on necropsy and sampling techniques, and a histopathology master class will be offered.

The 1-day One Health Principles in Wildlife Disease Management Symposium (17th February) will highlight Australian and international perspectives on wildlife health management. Panel discussions will provide an opportunity for engagement and the exchange of ideas and best practice.

Internationally acclaimed wildlife pathologists, epidemiologists and microbiologists will join representatives from across Australia and New Zealand to deliver this fascinating program.

Registrations open July 2023!

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The One Health Principles in Wildlife Disease Management Symposium will highlight Australian and international perspectives on wildlife disease management. Panel discussions will provide an opportunity for engagement and the exchange of ideas and best practice.

In the days preceding this symposia, the Registry will also be hosting an intensive wildlife health and pathology short course composed of a day of hands on workshops and wet-labs, and a 4-day intensive review of the diseases of all vertebrate taxa.

Registrations open July 2023!

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BSTP CORNER

Notice of Future Meetings

38th Annual Scientific Meeting of the BSTP
Preclinical translatability and pathology of cell-based therapies
Date: 15th and 16th November 2023
Location: Verona, Italy

Cell therapy spans multiple therapeutic areas, such as regenerative medicine, immunotherapy, and cancer therapy. The meeting will focus on stem cell- and non–stem cell-based therapies, that are administered topically, as injectables, infusions, bioscaffolds, or scaffold-free systems. At the same time, it will address some of the challenges arising during the preclinical development of cell-based therapies with focus on disease modeling.

As well as giving an overview of this very broad field, the meeting will include real-world case histories, many exemplifying the contribution of pathologists either in demonstrating efficacy or in assessing potential safety issues. In addition, the program includes discussion of risk-benefit analysis approaches, regulatory considerations, and the impact of combinations of cells and devices. A round table discussion of invited experts in the field will take place during the meeting at which specific topics can be examined in more detail.

For up-to-date information, visit - https://www.bstp.org.uk/events/38th-annual-scientific-meeting-of-the-bstp/

Webinars 2023

Working with the STP, the BSTP will organise three webinars which will take place in 2023 - registration to take part in the webinars will be free with the dial in details provided one week before.

The BSTP also work with the ESTP/SFTP/ECVP/ESVP to organise a number of webinars through the year.

Keep checking https://www.bstp.org.uk/events/bstp-webinars/ for more details.

Future BSTP events are due to take place as follows:

15th & 16th November 2023	**38th Annual Scientific Meeting & AGM**
February/March 2024	**CES 9 - Gastrointestinal System**
July 2024	**CES 10 - Urinary System**
November 2024	39th Annual Scientific Meeting & AGM
March 2025	CES 11 - Cardiovascular System
July 2025	CES 12 - Endocrine System
November 2025	40th Annual Scientific Meeting & AGM
March 2026	CES 13 - Lymphoid & Haematopoietic Systems
July 2026	CES 14 - Musculoskeletal System & Skin
November 2026	41st Annual Scientific Meeting & AGM

The order of the CES will depend on the availability of high-quality speakers who are world experts in their particular field to present at the relevant meeting. Details of future meetings are correct at the time this booklet is generated, the BSTP will not be held responsible for any changes to dates, topics and venues of these meetings.

For more information on any events organised by the BSTP, please contact the BSTP Secretariat - bstpsecretariat@gmail.com or check out the website – https://www.bstp.org.uk/bstp-events/

BSTP

For registration and more information about the events, visit the BSTP website:
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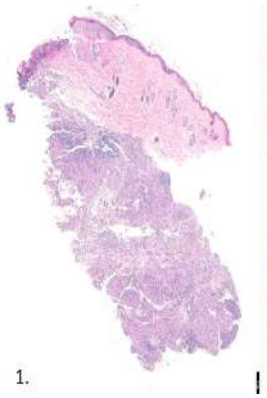
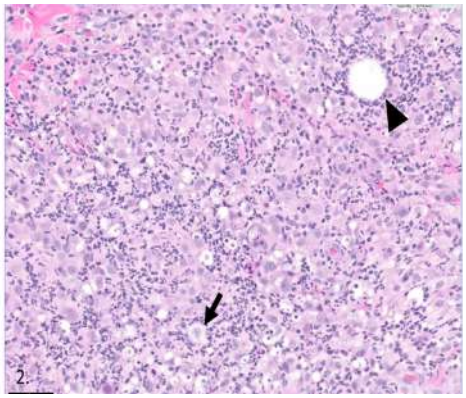
Signalment: 3-year-old, male neutered, Domestic shorthair

Source/ History: Ulcerated wound on the pre-scap area for several months. Ringworm PCR is negative.





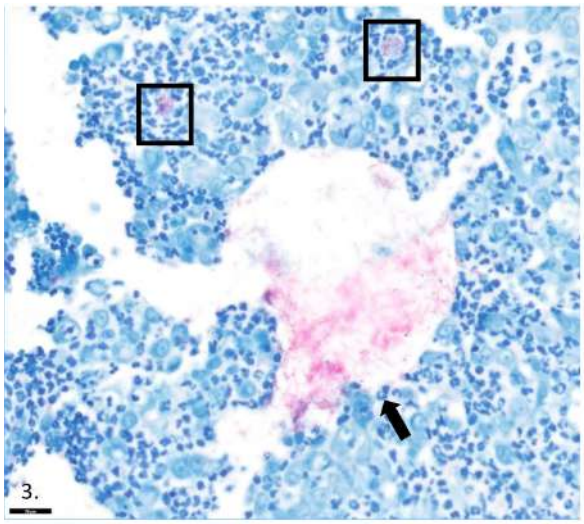
Figures 1. (2X magnification, H&E stain) and 2. (40X magnification, H&E stain) Within the dermis and predominately in the subcutis, is a nodular to locally extensive region of inflammation. The inflammation is composed of predominately neutrophils and histiocytes, with fewer lymphocytes and plasma cells. Within the inflammation, there is minimal scattered granular to slightly linear amphophilic material (arrow), and occasional round clear zones (arrowhead).

Figure 3. (60X magnification, Fites stain) Within the inflammation there are multifocal clusters of tangled linear to filamentous acid-fast structures (arrow). These structures are occasionally within the cytoplasm of histiocytes (boxes).

MICROSCOPIC DESCRIPTION:
Examined is an incisional punch biopsy of haired skin. Predominately in the subcutis, and within the dermis, are nodular to locally extensive infiltrates of mixed inflammatory cells and reactive fibroplasia. The inflammation is composed of predominately histiocytes and neutrophils with fewer plasma cells, lymphocytes and scattered multinucleated giant cells. There is minimal scattered granular to slightly linear amphophilic material in the inflammation, and a few round clear spaces. The epidermis is segmentally, mildly to moderately hyperplastic and ulcerated at the edge of the sample. There are degenerate dermal collagen bundles extending perpendicularly into the serocellular crust overlying the ulcerated region.

Fites stain: Multifocally within the inflammation are mild to moderate numbers of extracellular and intracellular linear to short filamentous acid-fast positive organisms

MICROSCOPIC INTERPRETATION:
Moderate to marked, chronic-active, nodular to locally extensive, pyogranulomatous and lesser lymphoplasmacytic dermatitis and panniculitis with segmental ulceration, superficial dermal degeneration, serocellular crust and intralesional acid-fast bacteria (consistent with *Mycobacterium* spp.)



Comments:
Histologic examination revealed a pyogranulomatous dermatitis and panniculitis with intralesional acid-fast bacilli compatible with Mycobacterium spp. Definitive identification of the organisms was not performed in this case.

Multiple different Mycobacterium species have been isolated in cats and can cause different clinical presentations. In cats, the main clinical syndromes include tuberculosis, atypical or opportunistic mycobacteriosis, and leprosy. Lesions are often cutaneous with multiple nodules/abscesses in the dermis and subcutis that progress to nonhealing ulcers. Systemic dissemination may occur with some *Mycobacterium* spp.

In this case, an opportunistic mycobacterial infection was suspected, though feline leprosy syndrome was not completely ruled out. Opportunistic mycobacterial infections are caused by facultatively pathogenic, rapidly growing mycobacteria. Multiple different atypical mycobacteria have been cultured in cats, though Mycobacterium fortuitum and Mycobacterium chelonae are commonly isolated. The inguinal/groin region and trunk are commonly affected sites; the axillae, head and neck are less commonly affected. Feline leprosy syndrome is caused by various mycobacteria that typically cannot be cultured or are not easily cultured. The head, neck and limbs are common locations of lesions.

References: Skin Diseases of the Dog and Cat, 2nd ed., pp. 276-281;283-287, 2005. Muller & Kirk's Small Animal Dermatology, 7th ed., pp. 207-212, 2013; Gunn-Moore DA. Feline mycobacterial infections. Vet J 2014 Aug; 201(2):230-8; Lloret A, Hartmann K, et al. Mycobacterioses in cats: ABCD guidelines on prevention and management. J Feline Med Surg. 2013 Jul; 15(7): 591-7.

Case by
Joseph Malatos, DVM, DACVP

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LCPG & DTF ACTIVITIES IN LATIN AMERICA

Country	Name of Seminar	Dates	Place/University	Speakers	Organizers
Argentina	XIII RAPAVE/17° Argentinean Seminar of C.L. Davis - S.W. Thompson Foundation.	Oct 4-6	Facultad de Ciencias Agrarias y Veterinarias, Universidad Católica de Salta	Fernando Dutra, David Driemeier, Francisco Uzal	Juan Micheloud
Brazil	Brazilian Symposium of the C.L. Davis - S.W. Thompson Foundation and National Pathology Meeting - ENAPAVE	Jul 17-20	João Pessoa, Paraíba	Raquel Rech	ABPV (Associação Brasileira de Patologia Veterinária)
	Latin American ROADSHOW of the C.L. Davis - S.W. Thompson Foundation (Brazil, Chile, Mexico, Peru)	Oct 23-Nov 3	TBD	Marti Pumarola	Francisco Carvallo, Francisco Uzal
Chile	Latin American ROADSHOW of the C.L. Davis - S.W. Thompson Foundation (Brazil, Chile, Mexico, Peru)	Oct 23-Nov 3	TBD	Marti Pumarola	Francisco Carvallo, Francisco Uzal
	8th Chilean meeting of veterinary histopathology	TBD	TBD	TBD	Carlos Flores
México	Latin American ROADSHOW of the C.L. Davis - S.W. Thompson Foundation (Brazil, Chile, Mexico, Peru)	Oct 23-Nov 3	TBD	Marti Pumarola	Francisco Carvallo, Francisco Uzal
Costa Rica	Descriptive Veterinary Pathology Course (Spanish version)	Dec 15-18	Universidad Veritas, Heredia	Jey Koehler, Ana Alcaraz, Patty Pesavento	Roberto Olivares
Guatemala	Workshop on pathology and mechanisms of diseases / IV Seminar of C.L. Davis - S.W. Thompson Foundation	Aug 7-10	Universidad San Carlos de Guatemala, Guatemala City	Corrie Brown, Javier Asin, Francisco Carvallo	Deborah Rodriguez
Nicaragua	1st Nicaraguan meeting of the C.L. Davis - S.W. Thompson Foundation	Aug 20-21	Laboratorio de Morfología, Universidad de Ciencias Comerciales, Managua	Francisco Carvallo, Guillermo Rimoldi	Jose Lara, Cristina Toledo
Paraguay	4th Paraguayan Meeting of the C.L. Davis - S.W. Thompson Foundation	Sep 27-28	Universidad Nacional de Asunción	Melissa Macias Rioseco	Leila Maidana
Peru	Latin American ROADSHOW of the C.L. Davis - S.W. Thompson Foundation (Brazil, Chile, Mexico, Peru)	Oct 23-Nov 3	TBD	Marti Pumarola	Francisco Carvallo, Francisco Uzal
Uruguay	Necropsy and gross pathology workshop of the C.L. Davis - S.W. Thompson Foundation and 50th Uruguayan Buiatrics Meeting	Jun 10	Estación Experimental Dr. Mario A. Cassinoni, Facultad de Agronomía, Paysandú	Carolina Matto, Franklin Riet Correa, Fernando Dutra, Rodolfo Rivero, Jose Manuel Verdes, Lourdes Adrien, Francisco Uzal	Adrien Lourdes
	9th Uruguayan seminar of the C.L. Davis - S.W. Thompson Foundation	Oct 28-29	Facultad de Veterinaria, Universidad de la República, Montevideo	Susan Stover	José Manuel Verdes
Venezuela	1st Venezuelan Meeting of the C.L. Davis - S.W. Thompson Foundation	Oct 19	Barquisimeto, Venezuela	Francisco Uzal	Yaritza Salas

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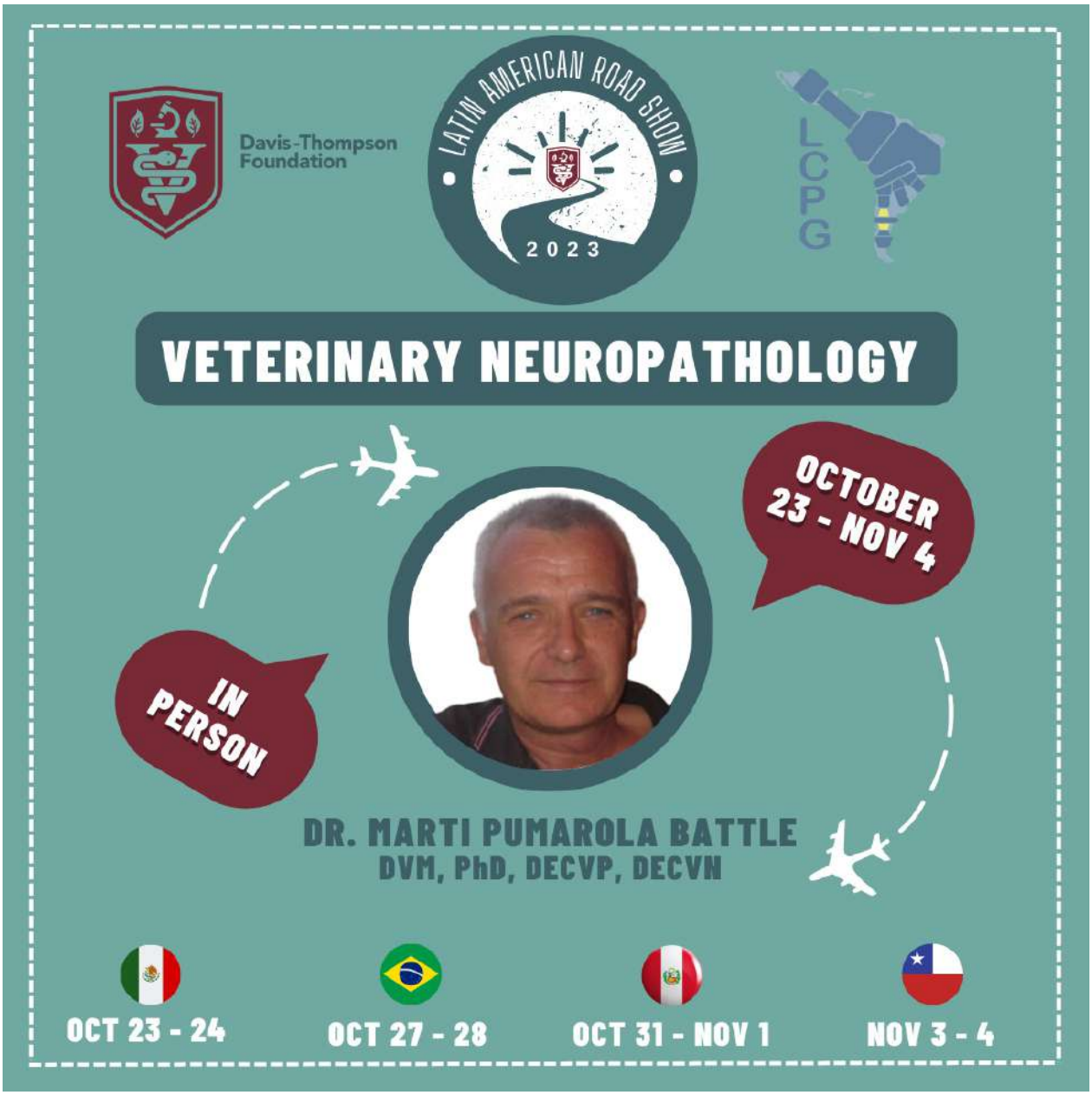

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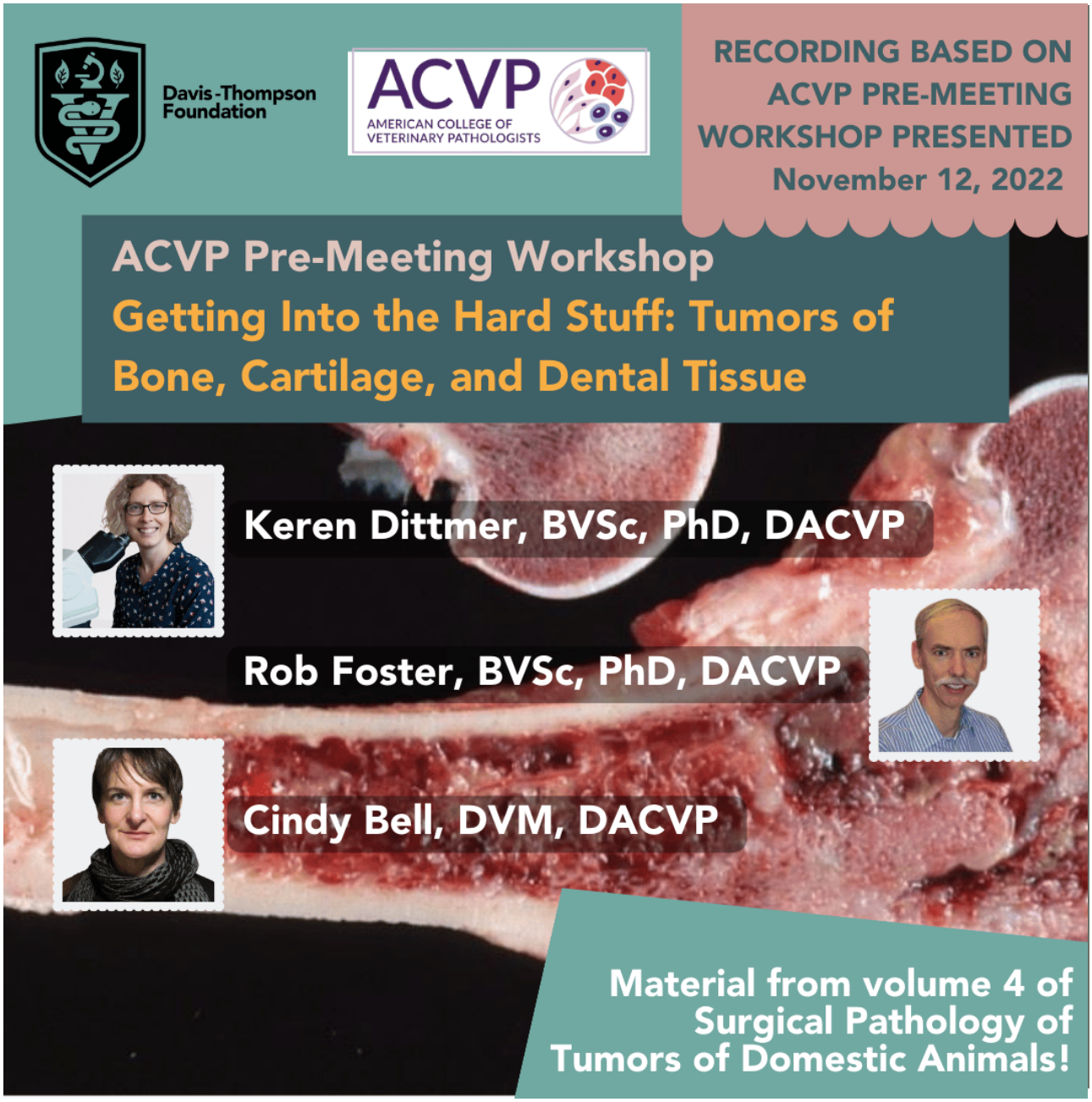

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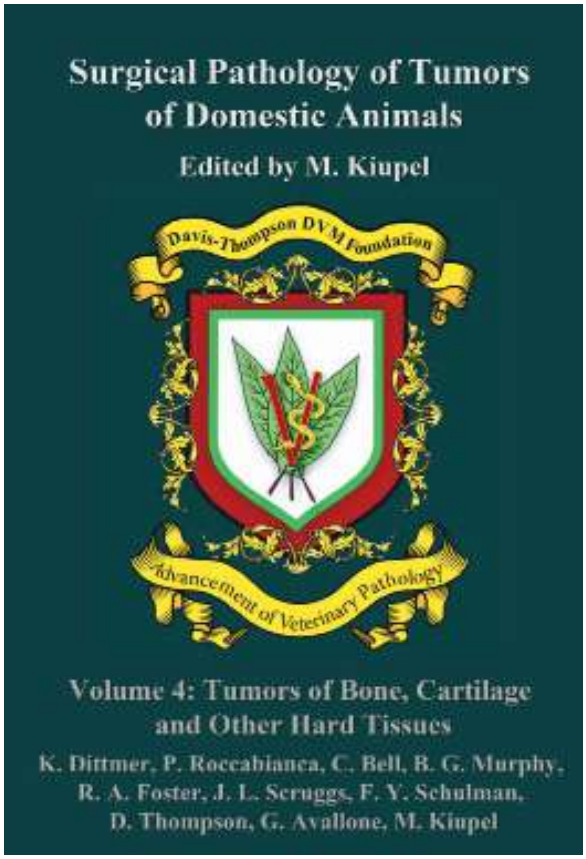

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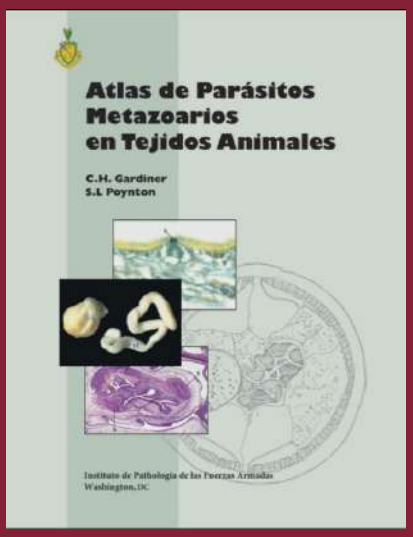
Since 1980, the Davis-Thompson Foundation lab sites have hosted more than 125 veterinary students at 8 participating diagnostic laboratories. These students usually have a strong interest in pathology itself or zoo or poultry medicine that require a strong pathology background. The Foundation is always 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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