

HGVT

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PARAFFINALIA NEWSLETTER

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The HGVT aims to provide a dynamic continuing education program in which all persons with an interest in Histology and Histotechnology are freely invited to participate.

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The members of the Histology Group of Victoria 2025 are:

Name	Institution
Samantha Arandelovic	Mater Hospital Brisbane
Kerrie Scott-Dowell	Dorevitch Pathology/ Leica Biosystems
Mark Bromley	Sullivan Nicolaides Pathology
Kellie Vukovic	Melbourne Pathology
Alistair Townsend	Royal Hobart Hospital
Christine Gorrige	Royal Hobart Hospital
Elizabeth Baranyai	Cabrini Health
Bronwyn Christiansen	Royal Children's Hospital
Snejana Ursache	Alfred Hospital
Gulnur Orman	Box Hill Hospital
Dodie Pouniotis	RMIT University
Fatema Tajbhai	Northern Health
Kerrie Howard	Northern Health/ RMIT University
Maria Boyer	Monash Pathology
Nicola Pinolo	Royal Melbourne Hospital

Contact us at www.hgvt.org.au

Membership enquiries: membership@hgvt.org.au

General enquiries: secretary@hgvt.org.au

Sponsorship/Advertising enquiries: trade@hgvt.org.au

Newsletter enquiries: editor@hgvt.org.au

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President's Address

Behind the Bench with Sam Arandelovic

Dear Members,

As we step into a new year, I want to extend my gratitude to each of you for your continued dedication to histology and our society. 2024 was a year of growth, collaboration, and knowledge-sharing, and I'm excited about what lies ahead.

Our committee has been hard at work planning an exciting year filled with educational opportunities, networking events, and professional development sessions. Upcoming events and meeting recording are posted on our website.

If you are not receiving HGVT emails please subscribe with your personal email address.

Back by popular demand, our Annual Histology Trivia Night will be a fantastic opportunity to test your knowledge, network with peers, and enjoy a fun evening with colleagues. Whether you're a trivia expert or just in it for the social experience, this is an event you won't want to miss! More details to come soon.

We are thrilled to announce a one-day histology conference in Hobart this year! This event will feature expert speakers and discussions on the latest advancements in histology. It's a perfect opportunity to connect with fellow professionals and gain new insights into the field. Stay tuned for registration details and program announcements.

I look forward to another year of learning, collaboration, and growth within our society. Thank you for being part of this vibrant community, and I can't wait to see you all at our upcoming events!



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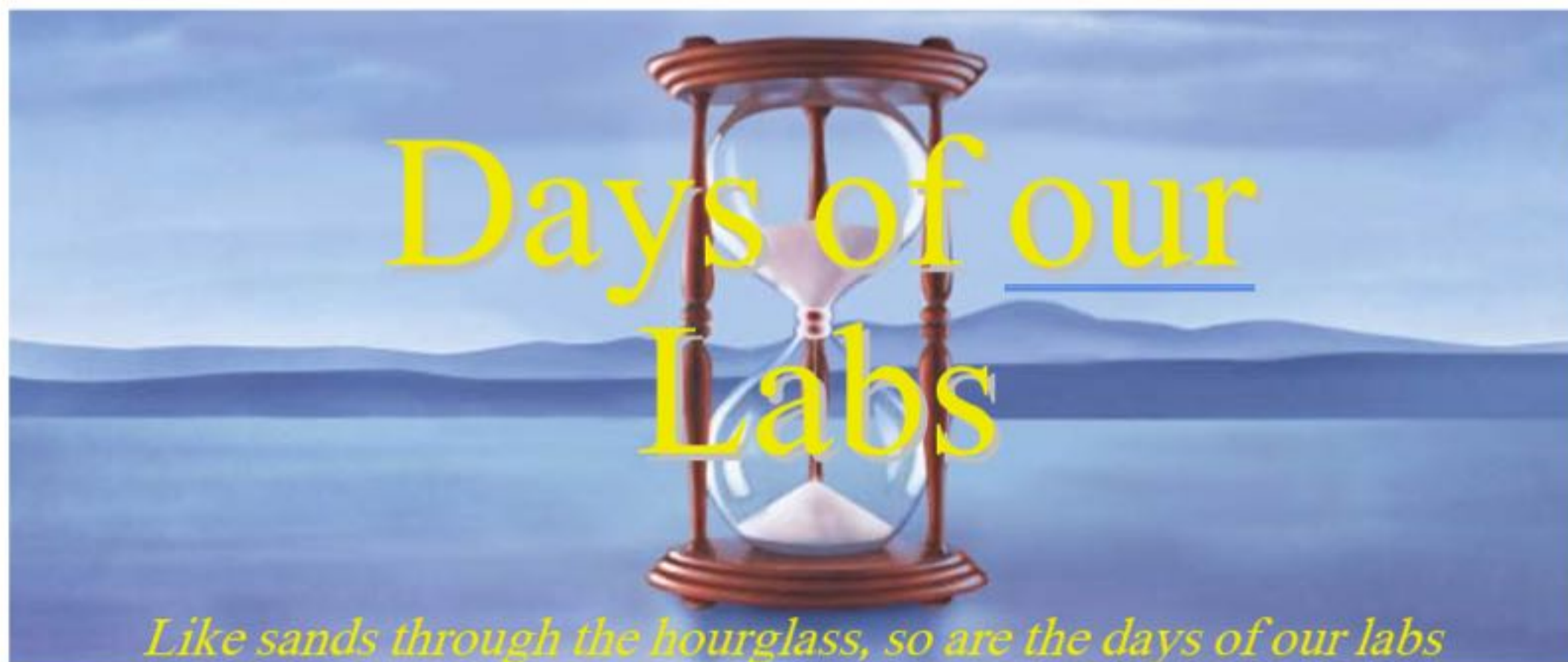


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1 year of Anatomical Pathology at Northern Health on 5th February celebrated with the team, lots of laughs and plenty of cake



Histology News, Births, Marriages, Retirements??? Any news!!!
 We would love to hear from you! Submit a pic and a short description to “Days of our labs” to the HGVT Facebook messenger or email editor@hgvt.org.au

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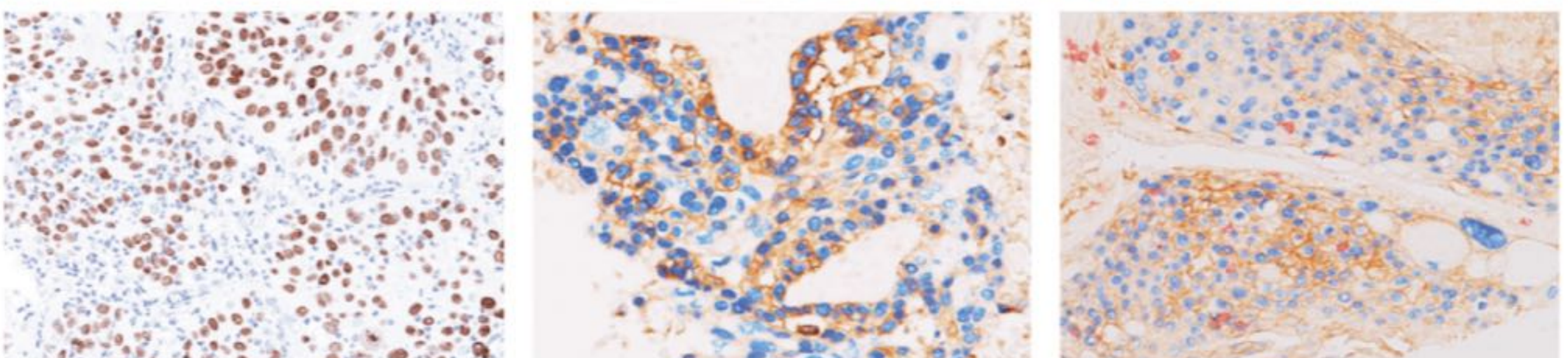
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On February 4th, we celebrated World Cancer

Day, a time to raise awareness of cancer and to encourage its prevention, detection, and treatment, in which we all play an important part.

Recent changes to the National Bowel Cancer Screening Program have seen the age range for free screening tests drop to 45 years of age, capturing a large portion of new diagnoses that may have otherwise been missed. However, Bowel Cancer Australia have noted that while this is a great step forward, more needs to be done to address the high rates of early-onset bowel cancer.

- Bowel cancer is the deadliest cancer for Australians aged 25-44.
- The risk of being diagnosed with bowel cancer before the age of 40 has more than doubled since the year 2000.
- Over the past three decades there has been a 266% increase in bowel cancer incidence rates in adolescents and young adults (15-24 years).
- People born in 1990 onwards have double the risk of colon cancer and quadruple the risk of rectal cancer compared to people born in 1950.



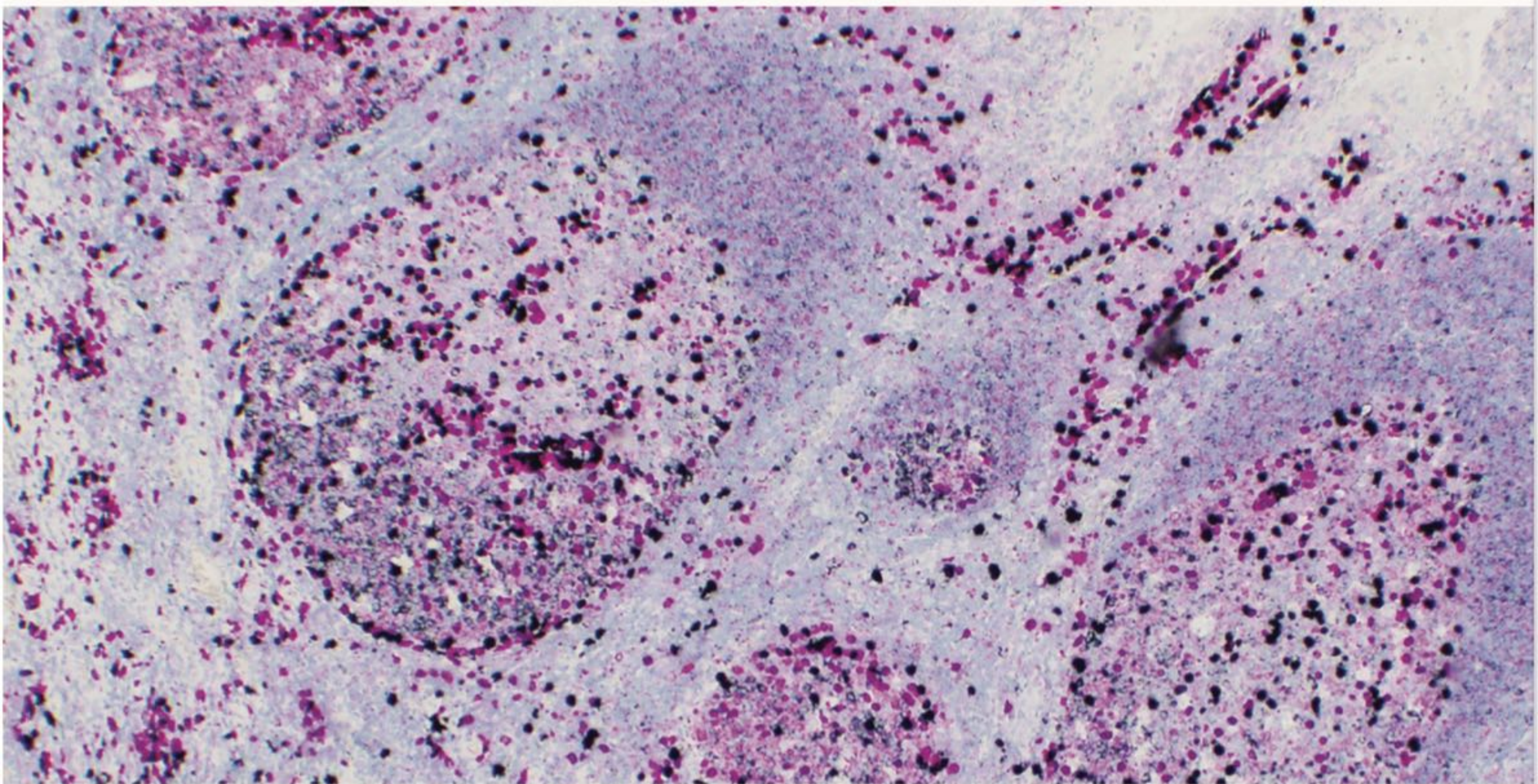


On the 11th of February we celebrated International Day of Women and Girls in Science. The Royal Melbourne Hospital featured many of their female pathology scientists on their social media channels.



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Under the Microscope with Maheeka Samayadasa



What was your first part-time job?

My first part-time job was at Belmont McDonald's, where I worked as a crew member. This was during my first year of University. It was my introduction to the fast-paced world of customer service—and also where I perfected the art of making the perfect Macca's fries!

What is your current job?

I am a Medical Scientist specializing in Histopathology at Cabrini Health.

How long have you been working in your role?

I've been in this role for nearly four years, and every day brings something new to learn.

What skill do you want to learn and why?

I'm really interested in finance, real estate, and entrepreneurship. Understanding how to build financial security and run a business fascinates me—it's like a game where strategy and knowledge determine success.

If money was no object, what would you do all day?

I would travel the world, immersing myself in different cultures, cuisines, and landscapes. Basically, I'd turn my life into a never-ending episode of a travel documentary!

What's an ideal weekend for you?

An ideal weekend for me is a balance of relaxation and productivity. Spending quality time with loved ones, cooking a hearty meal, and making sure the house is tidy for the week ahead. I also love taking care of my plants—giving them a little TLC (and the occasional pep talk to keep them thriving!).

What's on your bucket list this year?

This year, I'm focused on improving my fitness, traveling to a new country, and reading more books. Also, tackling more hiking adventures. A well-rounded mix of mind, body, and adventure!

What music/podcast is on your playlist at the moment?

Hmm... good question! Let's just say my playlist is as unpredictable as Melbourne weather—one moment it's chill acoustic tunes, the next it's an intense psychological thriller podcast.

Where do you most want to travel, but have never been to?

Europe is at the top of my list! The history, the architecture, the food—there's so much to experience. Plus, I wouldn't mind living my best life, sipping coffee in a Parisian café or indulging in fresh pasta in Italy.



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Showing the right path

Scientific Meeting Review

Nerve and Muscle processing

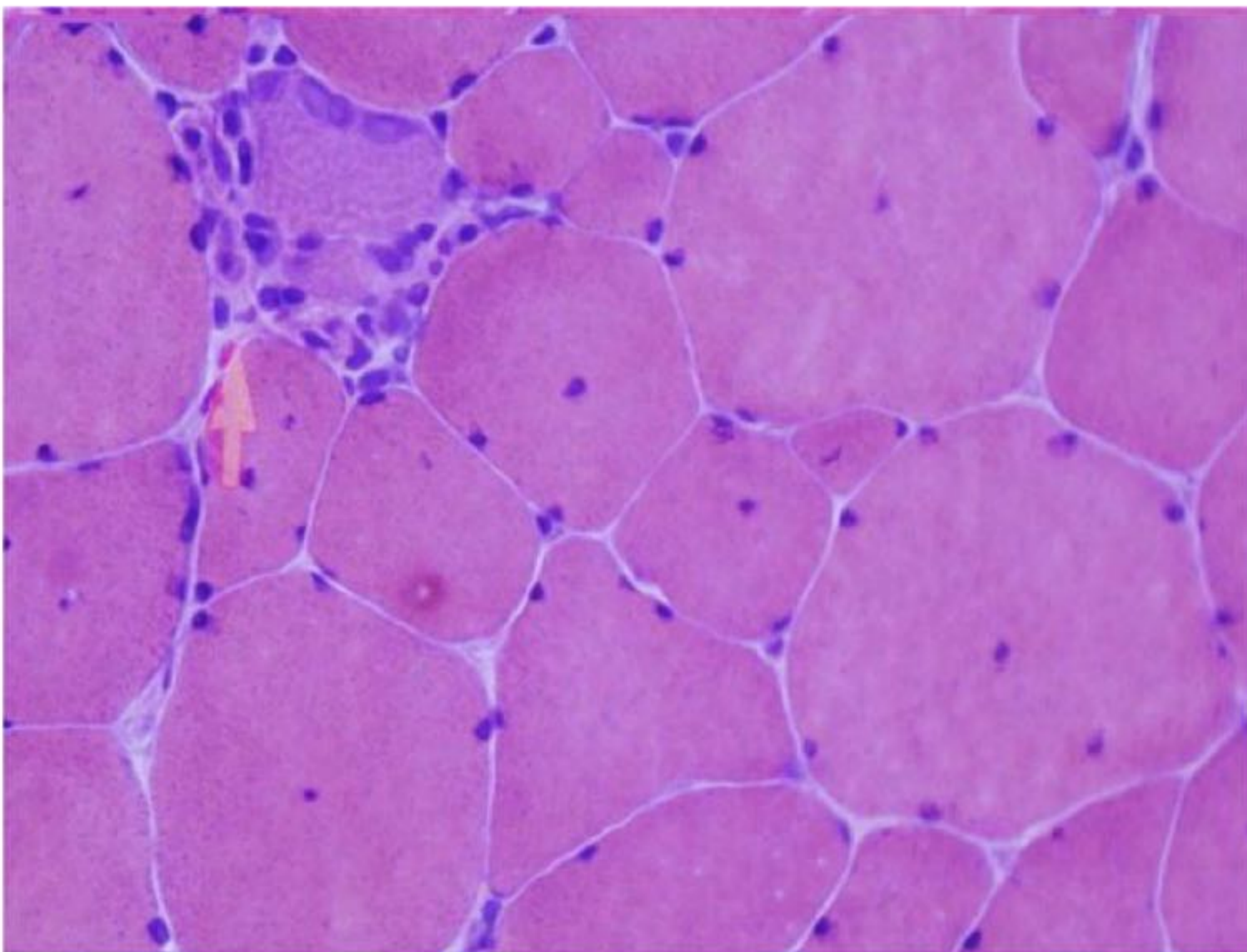
with Paul Kennedy

By Kerrie Scott

Paul Kennedy from the Victorian Neuromuscular Laboratory Service presented on the complexities of muscle and nerve biopsies to the HGVT.

Paul's department handles 500 muscle biopsies/year and 200 nerves/year. Patients mostly present with the same symptom "Muscle Weakness", but there are a myriad of diseases that it could include, some of which are inflammatory diseases, structural protein abnormalities, metabolic disorders, congenital myopathies plus many others.

He was passionate about what we can do to get these special biopsies to the VNLS in the state that they are the most useful to the patient, as many of the artefacts can mimic pathology, so patient diagnosis is on the line.



Degenerating fiber on muscle biopsy stained with H&E

Some of the artefacts and major impacts include:

Diathermy -Can inhibit the ATP staining in the muscles by denaturing the enzymes disrupting the regular checkerboard pattern usually seen

Local anaesthetic – Deep muscle injection changes appearance of the structures to be investigated

Nerve tube – if the nerve is not hooked, weighted and kept upright in its tube, there will be retraction and distortion.

Inappropriate use of dry ice- the muscle is prone to freezing /crystal artefact where the water leaves holes in the fibres and can be mistaken for disease process eg myofibrillar myopathy. (Paul did outline how he can get some recovery if they know the tissue has been handled inappropriately).

Wrong Fixative-If the nerve is initially fixed in NBF followed by the Glutaraldehyde the result is myelin splitting, so they can't tell if the patient has a demyelinating or remyelinating disease or just the wrong fixative & freezing artefact.

Insufficient sample or wrong area sampled

Lack of timely delivery- Muscle needs to get to the lab within 2 hours as if glycogen storage disease is suspected, delays result in the glycogen dissolving into the interstitial tissue and the diagnosis is compromised. Time challengers from Tasmania pose a real danger to the limits

Grossing and embedding with the nerve teasing out being a very time consuming and delicate process

Sectioning- As measurements of fibres and structural integrity are required for some diagnosis, good microtomy is essential as the functional unit, the sarcomere , must be preserved

Muscle Bx – 20mmx10mmx10mm

Frozen component has enzyme studies, maybe IHC, western blot and DNA extraction

The enzyme studies are quite finicky with 3 different pH requirements. The ATPase is also dependent on the substrate and temperature for fibre typing.

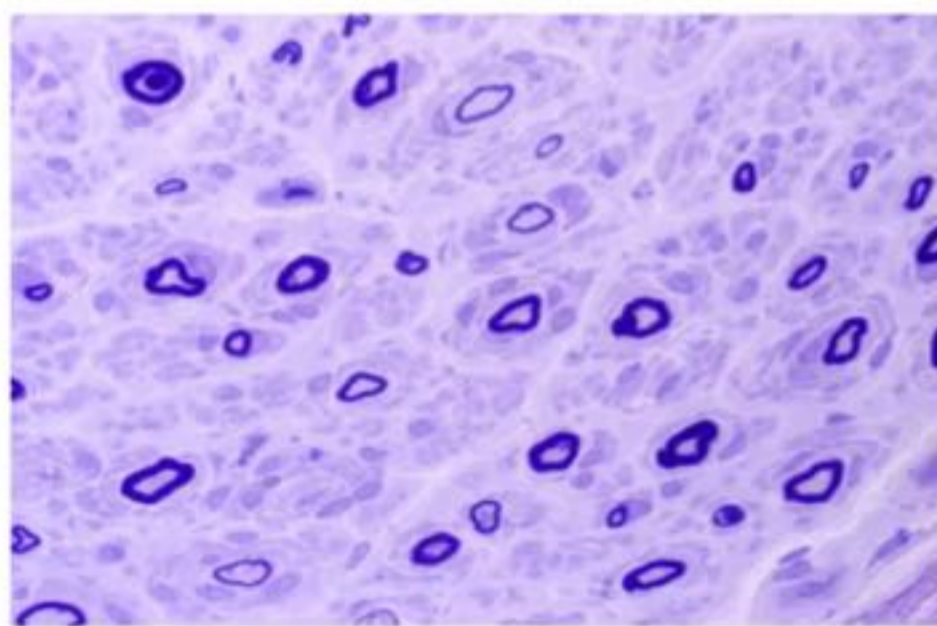
The IHC is used in lots of cases of inflammatory myopathies- antibodies C5B9 complement, spectrin 1, HLA class 2 and CD markers

Western Blotting -protein electrophoresis is looking for the presence or absence of proteins.

The DNA extraction looks at the neuromuscular sequencing /gene analysis

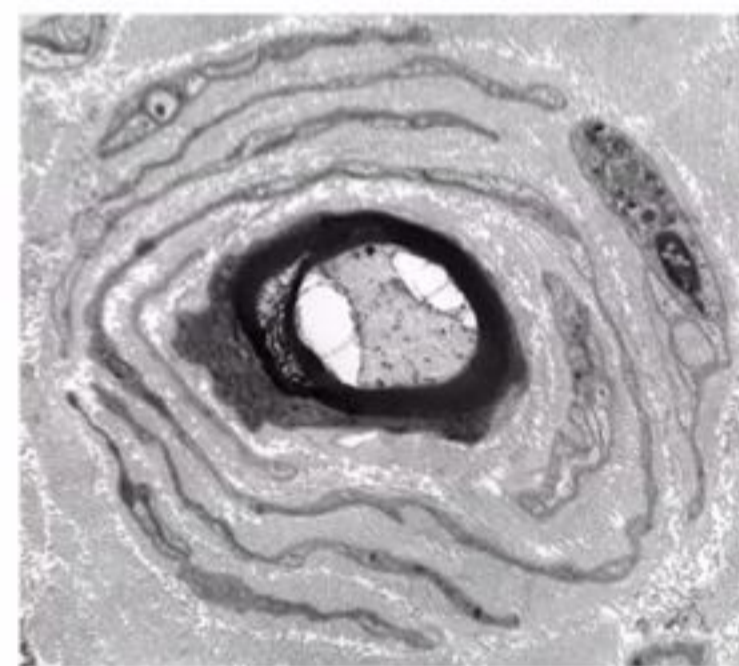
Paraffin component has H&Es Masson Trichrome, PAS+/-Diastase & Congo Red

EM



Onion bulbs in Dejerine-Sottas neuropathy (Charcot Marie Tooth Type III). These are typical of **recurring episodes of demyelination and remyelination**. Onion bulbs are also seen in chronic inflammatory demyelinating polyneuropathy (CIDP) in combination with variable axonal loss.

(From: pathology.mc.duke.edu)



Onion bulb as seen by electron microscopy. The appearance is produced by **concentric layers of Schwann cell membranes** wrapping around a central partially remyelinated axon.

(From: neuropathology_web.org)

Nerve Biopsy-25mm full thickness nerve

Paraffin -H&Es, Masson Trichrome, Congo Red and unstained which show the myelinated fibres as black

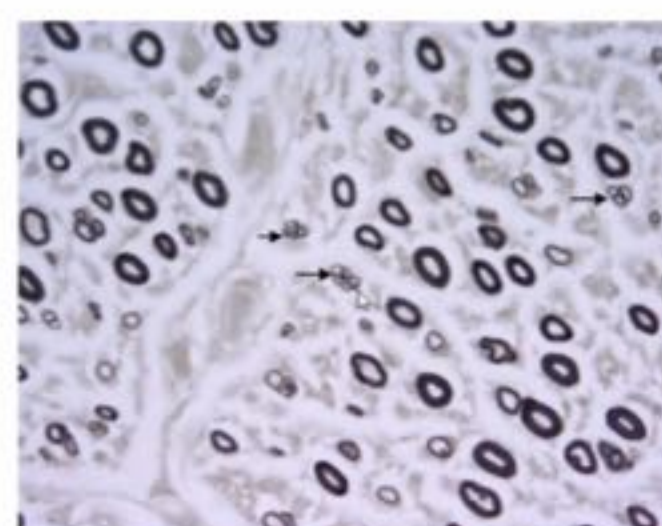
EM- transverse sections are taken and the nerve is teased out to get to the endoneurium, looking at the nodes of Ranvier that can show Axonal degeneration or regeneration.

Health

Axonal neuropathy



Teased nerve fibre preparation showing **myelin ovoids** in axonal degeneration in a patient with **vasculitic neuropathy**



Osmicated section of nerve biopsy. Myelin sheaths appear black. The section shows **decreased density of myelinated nerve fibres** due to fibre loss.

Small **clusters of regenerating fibres** are seen (arrows). A cluster is an aggregate of small fibres within the cytoplasm of one Schwann cell. In normal nerve, there is a 1:1 ratio between a Schwann cell and myelinated axon i.e only a single axon is normally seen in the cytoplasm of a Schwann cell. (2)

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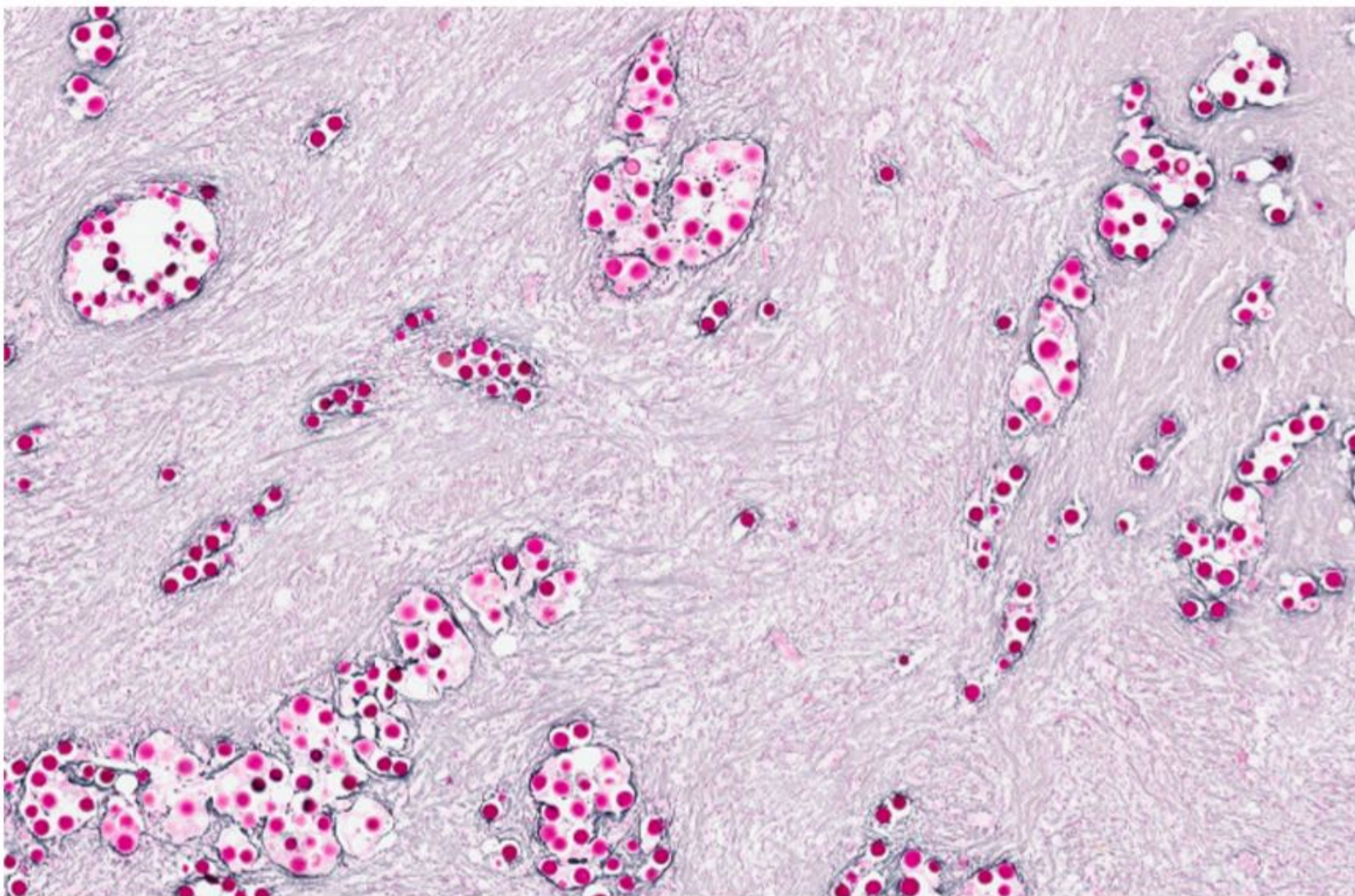
Microspheres? Microspheres!

By Julachai Yonterng

Routine histopathology always has the potential to surprise you in ways that you don't expect, which is why I love the field so much. Recently, I was staring down the microscope as part of quality control for special stains until I noticed a defect that appeared to take up a lot of nuclear fast red as I was patrolling this particular batch of retic stains.

Initially I thought that it was due to poor dewaxing, but the pattern was not consistent to what poor dewaxing looks like as they often have a gradient effect or large blotches of areas where there is staining and others where there is none. Furthermore, the areas of bright red were oddly circular, in a way that was uncanny, not even glomeruli are this circular!

I asked a senior scientist to have a look at the slide with me, and they too had seen nothing like it, but they did point out how they only appeared in the blood vessels and upon closer inspection or perhaps lowering of the magnification of the microscope, this observation was true.

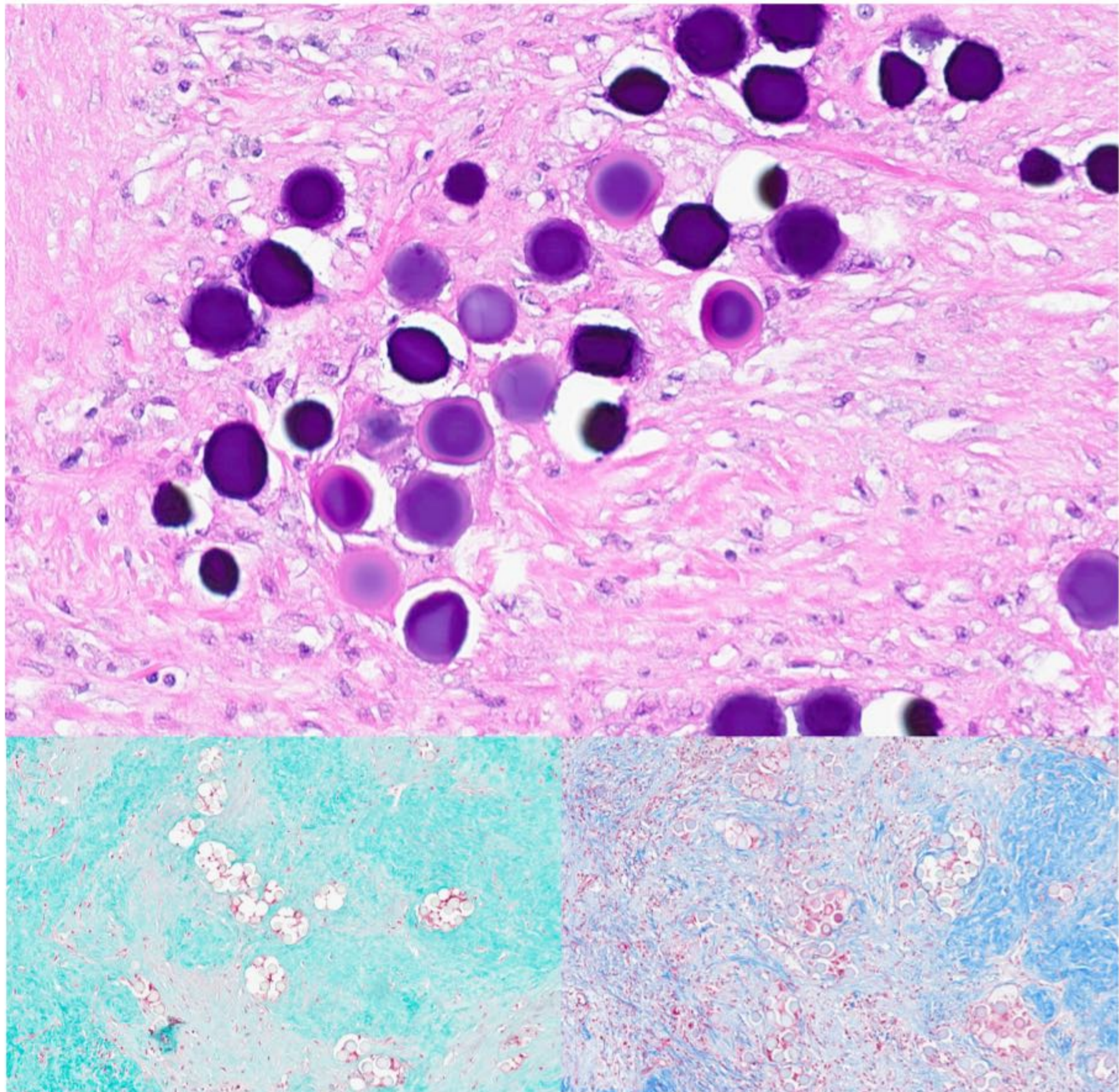


We were looking at a piece of liver with hepatocellular carcinoma and these alien circular objects were seen throughout the blood vessels.

This quickly caught the attention of other scientists, including Kerrie Scott who also showed it to another pathologist who had never come across this either. By this point the running theory was that they could have been parasites or their eggs.

Looking into the request form and patient history, it became apparent that these were circulating in the patient's blood as a part of their treatment. Selective Internal Radiation Therapy (SIRT) is used for the treatment of inoperable liver cancers done to reduce the size of the tumour and commonly used with chemotherapy. Suddenly these bizarre spheres made sense.

After solving the mystery, I took the opportunity to stain more sections to see what stains the microsphere would take up. They did not like Light Green or Aniline Blue, but Haematoxylin worked wonders as expected for the most versatile stain.



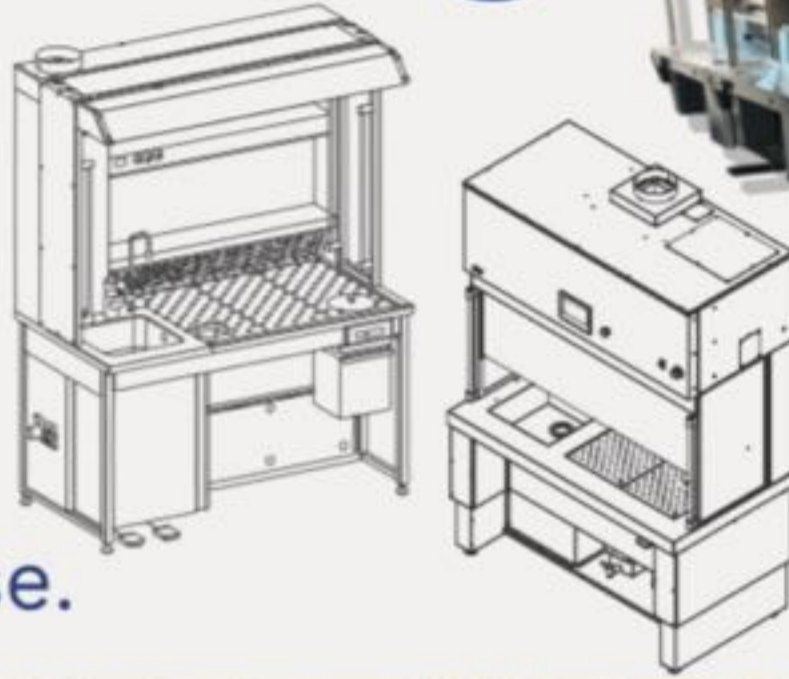


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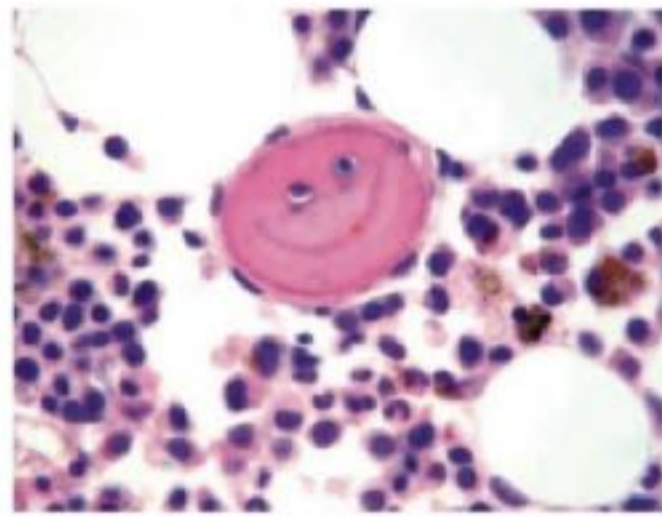
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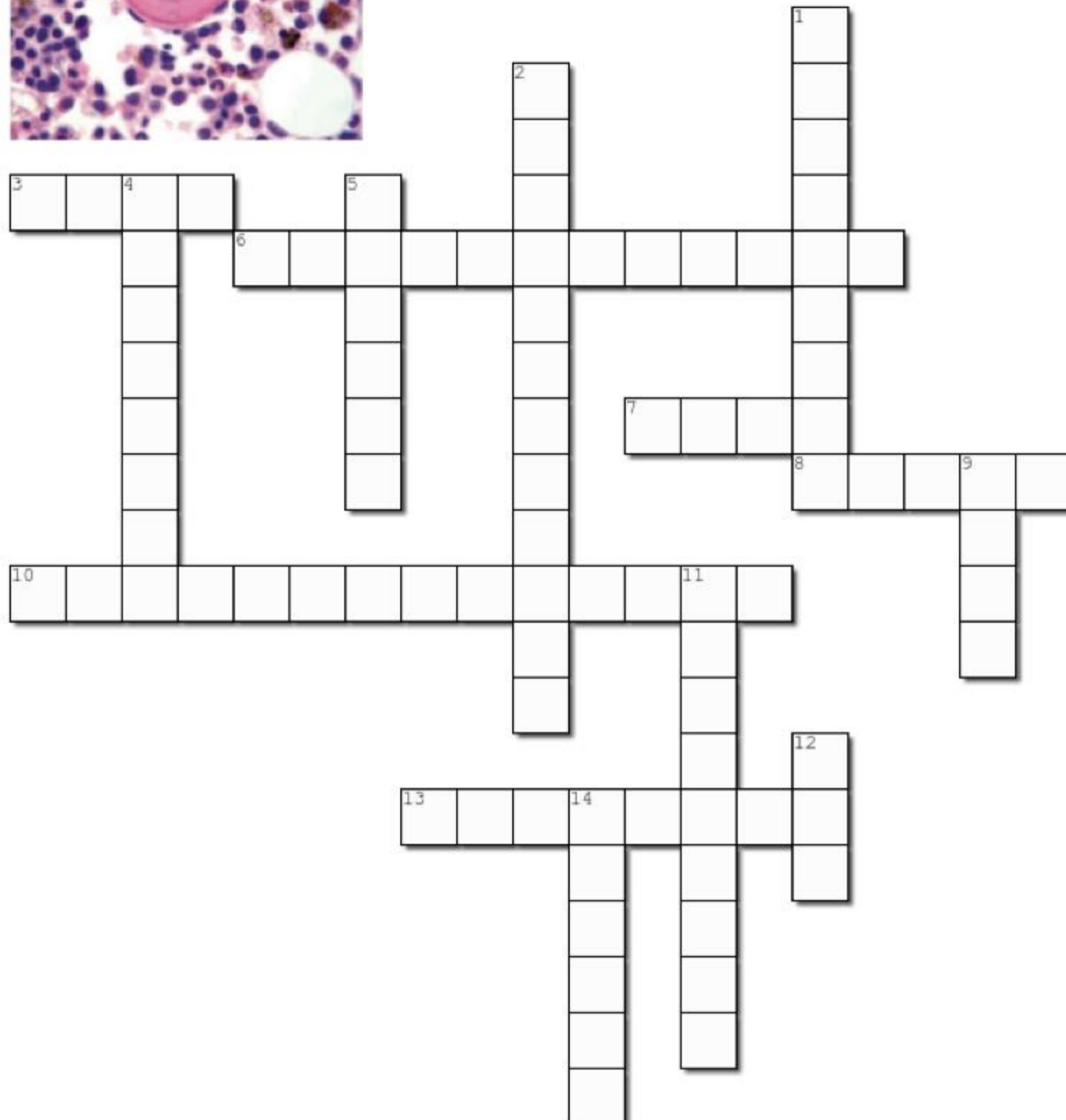


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HGVT Crossword

Practice your histology trivia!



Created using the Crossword Maker on TheTeachersCorner.net

Across

- 3. Eosin stains cellular structures this colour
- 6. A bacterial genus that can be identified using the Warthin-Starry staining method
- 7. What the 'S' stands for in FISH
- 8. The part of the microscope you put your slide on
- 10. A cancer of glandular origins
- 13. Mycosis fungoides is a type of _____

Down

- 1. A structure inside the nucleus, often prominent in cancer cells
- 2. Epithelial cell proteins
- 4. Gram-_____ bacteria stain pink/red with the Gram stain
- 5. Meta-_____: transformation of one kind of tissue into another
- 9. What a scientist wears in the laboratory
- 11. A tissue sectioning tool for creating thin slices
- 12. A common chromogen used in immunohistochemical staining
- 14. Haematoxylin stains cellular structures this colour



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- › Reproducible sample preparation in μ -accuracy
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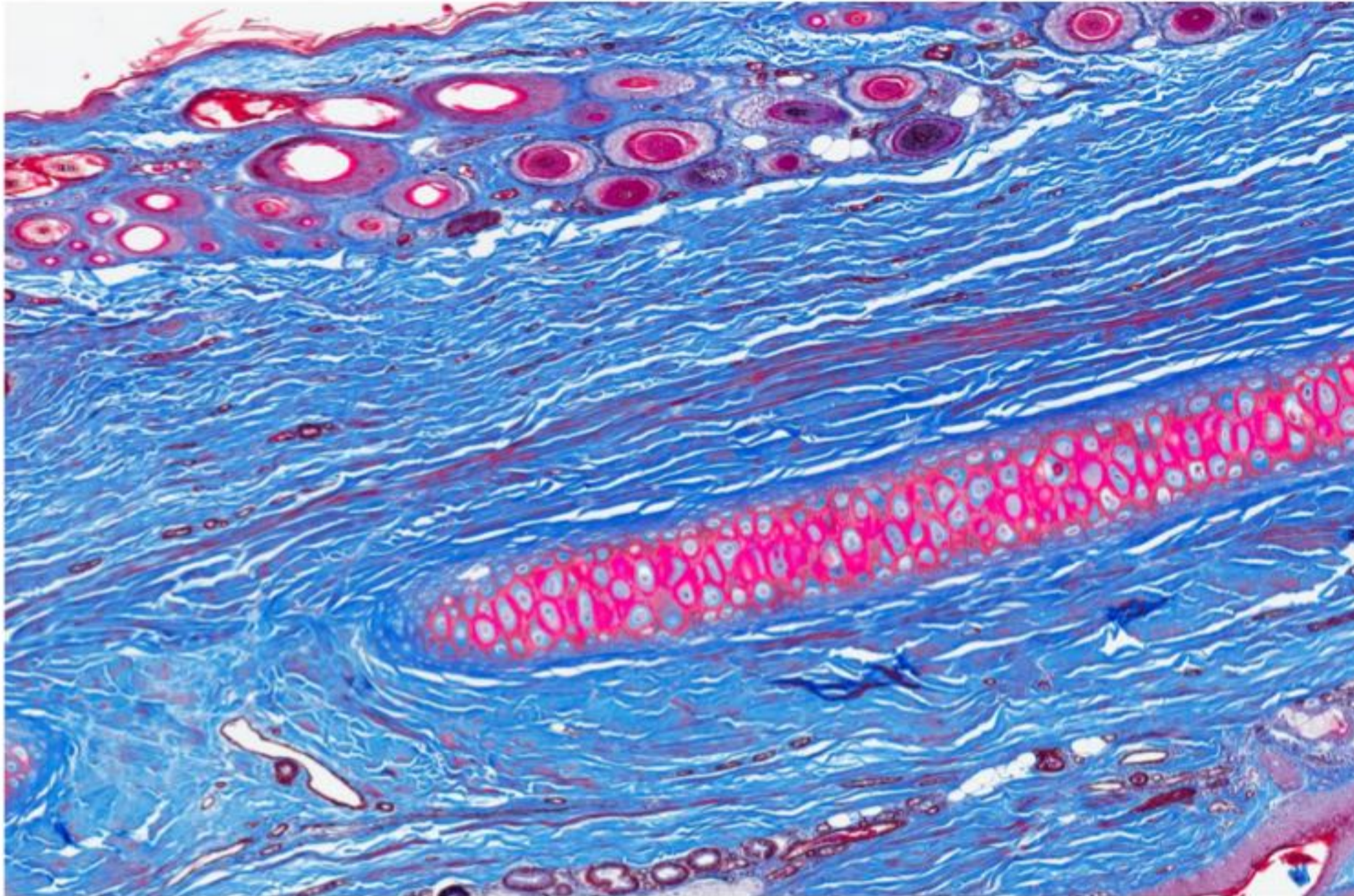


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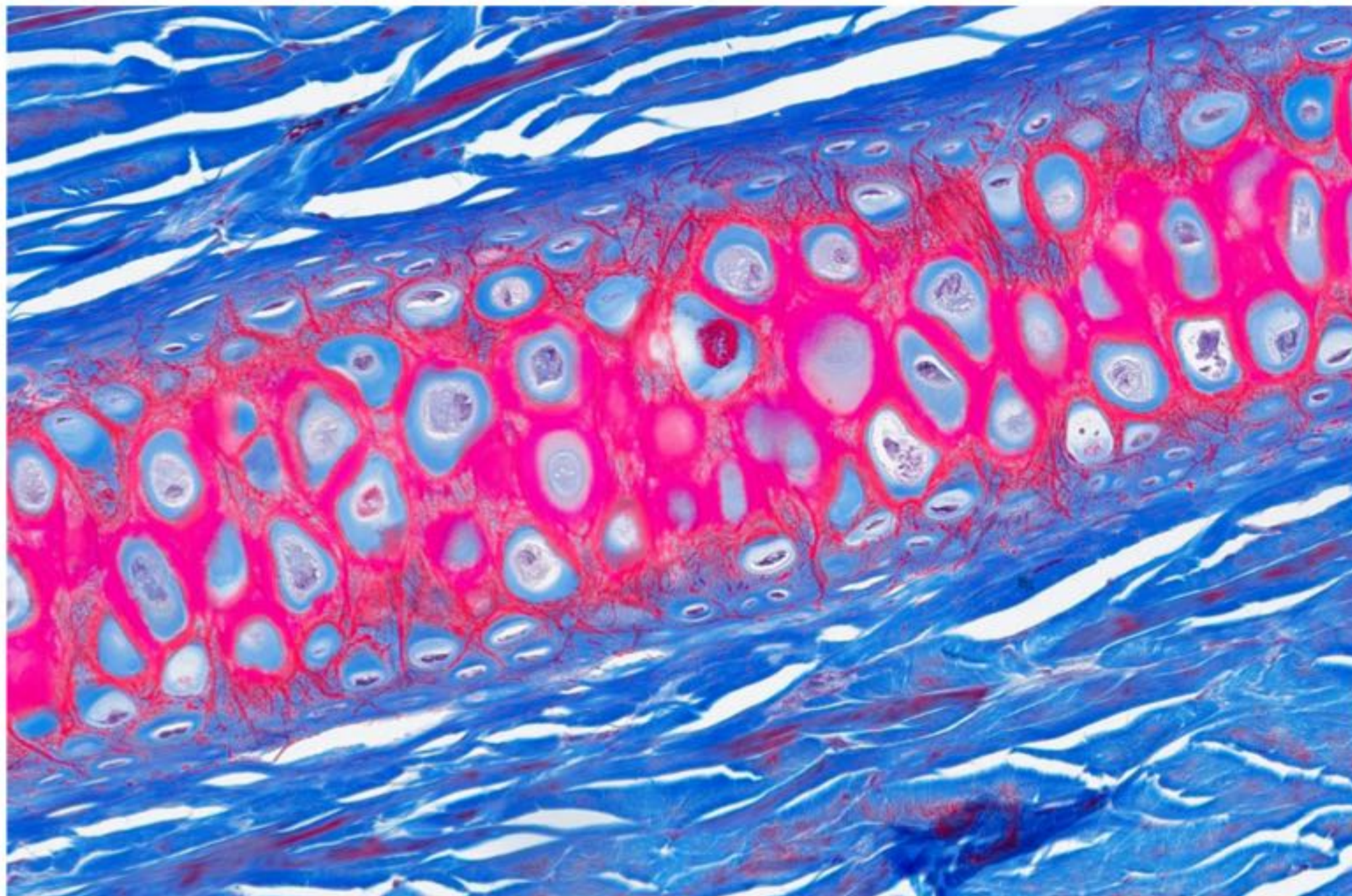


Pretty Images from the lab

Kerrie Scott| Dorevitch Pathology



Dog's Ear with a Masson Trichrome. The skin surface shows compound hair follicles on one side and less hair on the opposite side with central cartilage. Hyaline cartilage showing chondrocytes in lacuna in the matrix. Elastic fibres are prominent.



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Future Events 2025

Scientific Meeting | May 1st

Title: Renal Processing & Reporting; including EM

Presenters: TBA

Scientific Meeting | June 19th

Title: Paediatric Ancillary Testing

Presenters: TBA

TRIVIA NIGHT | End July/Start August

Scientific Meeting | August 21st.

Title: Student Presentations

Presenters: TBA

Tasmania Scientific Meeting and AGM | End October Hobart

Title: TBA

Presenters: TBA