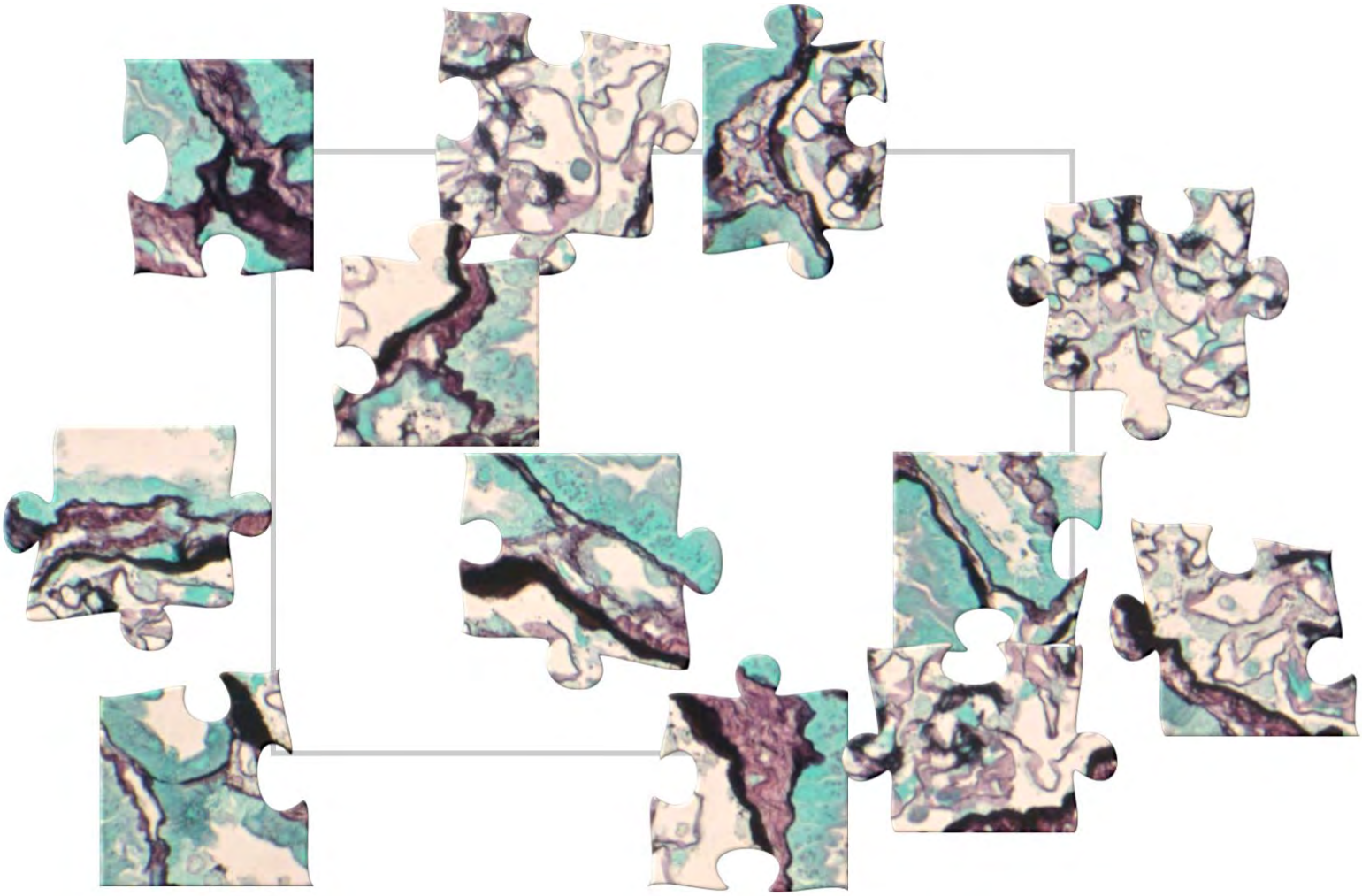
HISTOTECHNOLOGY
SOCIETY OF NSW

HISTOGRAPH



Newsletter No.3 2022

December

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Chairperson's Report

We made it through another year!

2023 here we come.

Recent events

We packed 4 presentations in since out last edition. Thank you to our presenters Joanne To of NSW Health Pathology who presented on 'Molar Pregnancies', Tony Henwood of Children's hospital Westmead who outlined 'IHC Preanalytical Issues', Kylie McDonald of NSW Health Pathology who provided a detailed 'Introduction to IHC' and Dr Melissa Tadros of the University of Newcastle who presented on 'Artificial Intelligence (AI) & Deep Learning in Anatomical Pathology'.

We would also like to thank our presentation sponsors Leica Biosystems, Diagnostic Technologies and Trajan. As always, we are grateful for the ongoing support of our industry partners.

New Treasurer

We held our Annual General Meeting on the 28th of October where we welcomed a new member to our executive team, Nevena Kostovska as Treasurer. The committee thanked and farewelled long serving Treasurer, Fred Reader, who has been a great asset to the committee for many years.

Goals for 2023

- ✓ Continue to increase engagement with members
- ✓ Commence co-ordination of the 2024 National Conference
- ✓ Finish digitally transforming committee administrative operations
- ✓ Review and upgrade our website. Let us know what you would like to see - complete this survey

Event Schedule

2023 is looking like another great year for continuing education and professional development. We have our first webinar kicking off in February with 'The value of cytology in pathological diagnoses + Purpose of the mobile cytology lab – ROSE' presented by Elizabeth Salisbury and Joanne La Malfa from NSW Health pathology. Check out page 17 for the full schedule.

National Surgical Cut-up Competency Standards Update

The national benchmarks for triage and allocation, simple transfers and non-complex surgical cut-up have been approved by the Australian Industry and Skills Committee (AISC) and are sitting with Ministers for final approval. The new nationally recognised training is expected to be available for Registered Training Organisations to start planning for delivery approximately mid December 2022.

If you are an RTO and are interested in delivering these units or the skillset, reach out as we may be able to assist. Please email Chairperson@histonsw.org.au.

It has been a massive year for the team, and we look forward to breaking new ground again in 2023.

On behalf of the Committee, we wish you all a safe and happy Christmas!

Warm regards,

Leah Simmons

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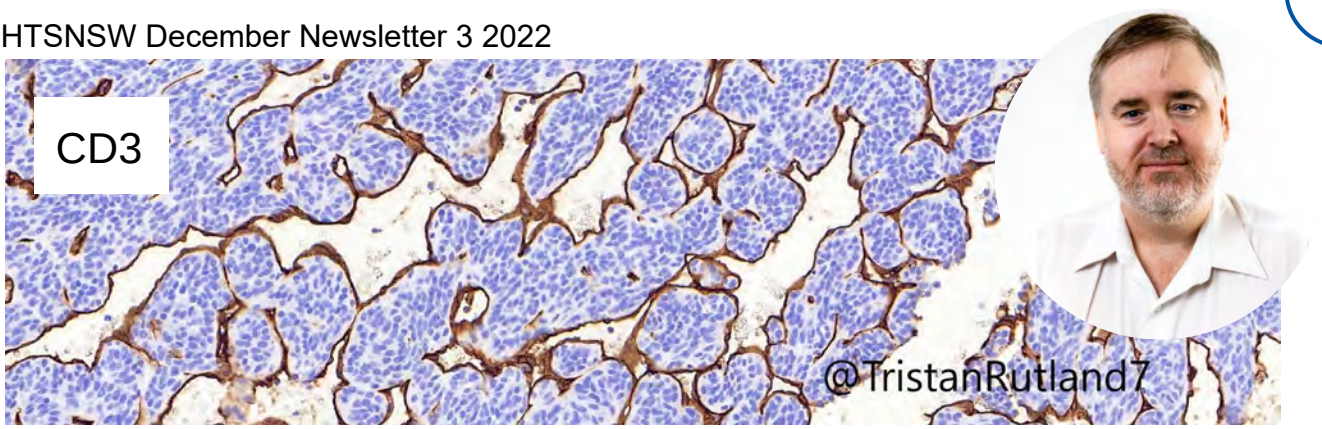


Social Media Spotlight: Tristan Rutland

Author: *Liz Farquhar, NSW Health Pathology* ***Edited:*** *Leah Simmons, NSW Health Pathology*

Social media generally, and in particular platforms like Twitter, have been variously described as a bin fire, a sewer and a place for trolls. So why would anyone choose to use these platforms for education and a force for good?

Who better to ask than Dr Tristan Rutland, NSW Health Pathology anatomical pathologist, and the very recent recipient of a prestigious US award for his selfless dedication to pathology education.

He is also very popular on Twitter. He's no Elon Musk, but Tristan Rutland has over 12,000 followers and his use of the social networking platform to share and discuss images of pathology slides has attracted a devoted worldwide following.

The winner of the 2022 College of American Pathologists Resident Advocate Award and the 2020 Konrad Muller RCPA Outstanding Teaching Award explained how the COVID pandemic fired his interest in what's known as #PathTwitter - an international community of pathologists sharing cases and educating each other on how to avoid diagnostic pitfalls.

"When the pandemic kicked off I ended up teaching our registrars via digital, and that expanded to the point where I was teaching pretty much all the registrars in Australasia in the RCP training program every Saturday for four hours for six months," Dr Rutland explained.

"Then I had a couple of them saying, 'You should get involved in Twitter'.

"Now, social media has always been a bit of a bin fire, or a dumpster fire, for me. It was always just frustrating and people getting angry very quickly, so I just stayed clear of it. But then somebody introduced me to #PathTwitter and it's just completely the opposite of all that.

"Marketing people would say, it's where the people are at - and it turns out Twitter is actually one of the most perfect platforms for pathology.

"You have to be succinct, and you can show images, and that's what people want.

"We're busy people. People can read what I post for two, three minutes, and in a busy world it just seems to work."

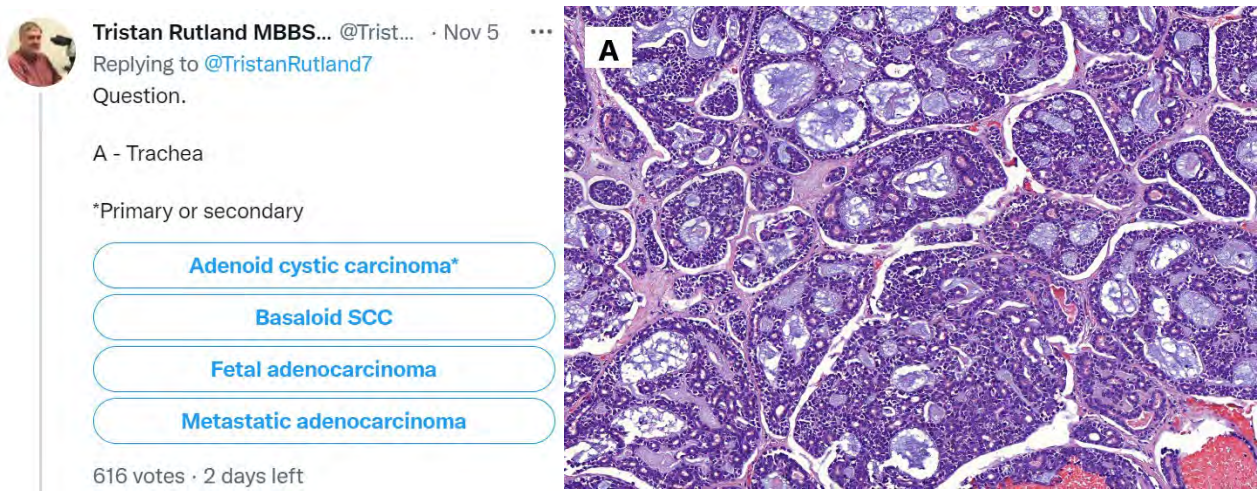
Social Medica Case Study Continued

Dr Rutland has a theory about why the medical community, and pathologists in particular, seem to have avoided the nastiness that has come to be synonymous with social media.

"People who choose to engage on Twitter in this educational capacity tend to be sort of more dynamic, forward-thinking and will probably not want to engage in (nasty behaviour), that's not their forum.

"People tend to be quite professional and very supportive. I also have patients and other professionals following me so I'm always very aware of my behaviour."

Dr Rutland is also very keen to emphasise that the sharing of information is done without any identification of patients.



Answer on page 21

He says he only shares images of cases that are years, if not decades old, to avoid any connection to patients and it's all deidentified.

"The whole idea is not to talk about the patient. It's about discussing the pitfalls and the things that are important for someone to learn and make a diagnosis.

"What do you think this possibly could be? What are the pitfalls and how do you get around it, a bit of a discussion about how you could avoid making this mistake and potentially do a disservice for your patients.

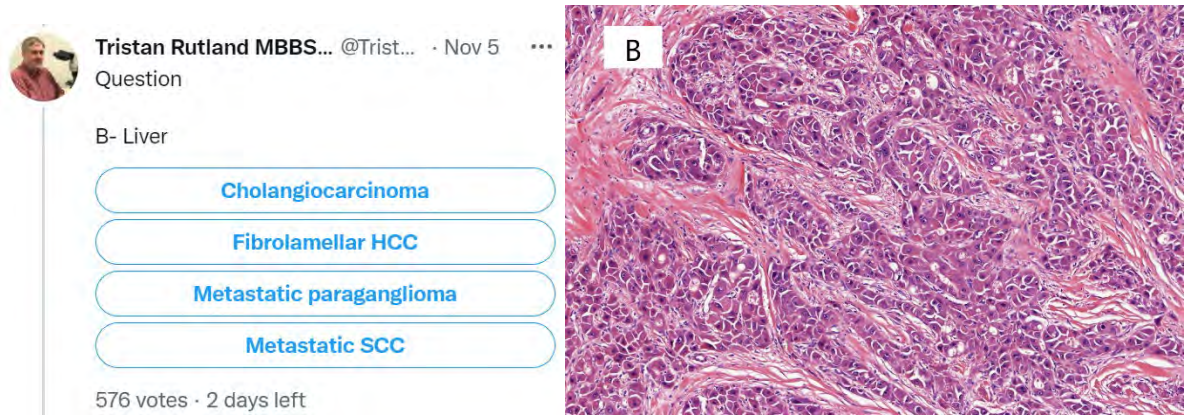
"Particularly with unique cases, then there's a big, big, time lag. If something is super rare, you wouldn't put it up the next day, you'd wait a year."

As much as he enjoys passing on his knowledge, Dr Rutland says he's also learned from other people sharing their cases.

Social Medica Case Study Continued

"I do it because I enjoy teaching and I also get something out of reviewing my older cases, but I have to admit I have been saved and people in our department have been saved by stuff that people have put up on Twitter.

"I've actually been like, 'Yes, I've seen something like this', and it's changed a diagnosis."



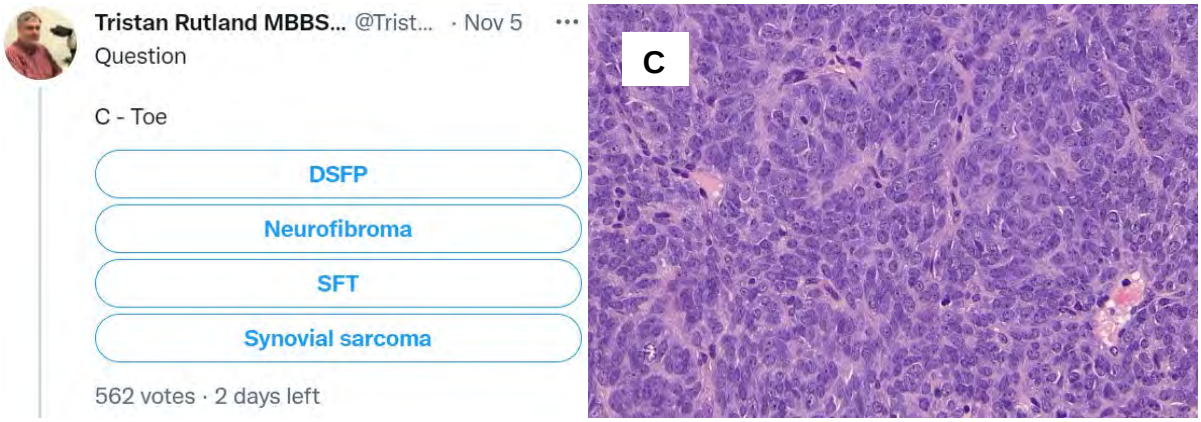
Answer on page 21

More than that, the platform has changed the way he collaborates with colleagues around the world, opening up new opportunities for learning and research.

"Absolutely. I've just got an abstract accepted for USCAP (United States and Canadian Academy of Pathology), which is over in the US next year, and I'm one of about 60 pathologists that have never met in person, haven't had a zoom call – it was all through Twitter," he said.

"There are people putting out calls for papers and collaboration on Twitter, for people to get involved in research articles, to be involved in new projects and new initiatives. It's completely changed the way people collaborate.

"I had no idea this would actually be such a powerful tool."



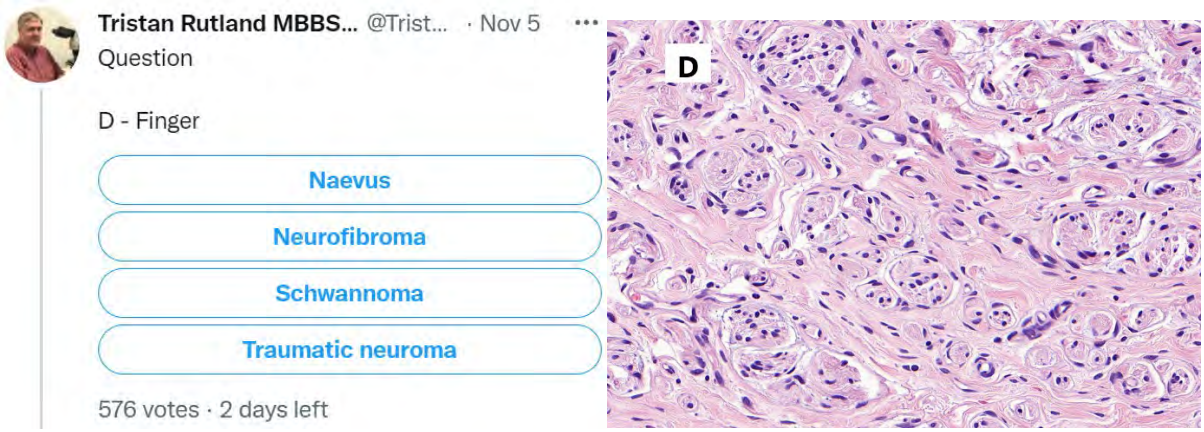
Answer on page 21

He hopes the visibility of the #PathTwitter community will attract more people to pathology, a specialty struggling for numbers worldwide.

Social Medica Case Study Continued

"The irony is we are one of the most active medical communities on social media, yet it's still very difficult to attract people. We have trouble getting people into our training courses and that's a real shame.

"It's figuring out how to translate what we do here into, not necessarily engaging the general public, but increased recognition in the medical world."



Answer on page 21

He acknowledges pathology is not often viewed as a "sexy option" for medical students but insists that reputation is not deserved.

"If I had my time again, I'd do pathology again. It's such a great specialty because it's super interesting. People go, 'You're just looking at little glass slides', but once you know what you're looking at, it's actually really engaging.

"And that's coming from someone who grew up on a farm and loved running around.

"This is really one of the most engaging things I've done in my in my life."

You can follow Tristan Rutland on Twitter - @TristanRutland7

And follow the PathTwitter community by using #PathTwitter

Editor Note: This article was written prior to Elon Musk's purchase of Twitter and at the time #PathTwitter was active.

Social Media Spotlight

If you are interested in following pathology related posts on social media platforms but don't know where to start. The Social Media Spotlight has been designed to help focus your search by providing links to Histotechnology and Histology related social media influencers and posts.

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Advice for Researchers

Andrew Da Silva, Histology Technician, Garvan Institute of Medical Research

Histology. It might seem a puzzle to new research assistants, honours and PHD students.

With many graduates having very little wet lab experience during their university degree, here it looms at last: your supervisor has given you a protocol to follow, but it seems written as an afterthought, without any detail?

"What are the best methods/practices to follow?

If I do something differently, will this impact my downstream results?

How much will it cost? How long will it take?"

I have seen this scenario play out many times during my six years working as a Histology Technician in a Research Institute. It is part of my job to help bridge this gap, and successfully navigate researchers through the histological component of their experiment.

All experiments are different, but some things remain the same: we all need help sometimes. If you find yourself at the door of your own histological gauntlet, here is some advice:

Get to know your Histology Facility and Technicians

If you have a dedicated facility at your disposal, then you are already at an advantage. Make an appointment with the Histology Lab manager or Histology Technician. You might find they can point you in the right direction, or have the answers you were looking for. They might even be able to decipher that protocol you are now certain is written in alien language.

Make it personal; share your story. When we can connect a person to an experiment it creates a special link: "Oh these are Susan's samples - I remember she mentioned she was trying a new technique for cell suspension…" As a tech., I am already making mental notes for feedback I wasn't even asked to provide. I become invested in the project because the researcher made a point of personally briefing me on the experiment. I am only human.

There are many potential benefits of consulting with the histology facility, even from the stage of experiment design - particularly if you already know there is a significant component of histology to your work. These benefits range from:

- cost saving measures to your budget
- advice on specimen collection/tissue cut up
- choice of stains
- imaging results and quality control
- antibody selection and immunohistochemistry
- advice on DNA/RNA extraction
- molecular profiling, bio banking, etc.

Advice for researchers continued

A histology technician can help you consider all the options available to you. More importantly, they might make you aware that some of them are not options at all, but necessary for your experiment to be a success.

There have been instances when researchers have adjusted their histological approach during the consultation period. They might become aware a certain technique or technology currently at their disposal will deliver them comparable, efficient, and reproducible results. Other times, we have helped researchers see certain avenues are cost prohibitive, and prove too time consuming during analysis.

Not all experiments have budgets to cover the newest technology, and there is certainly something to be said for the hands-on approach, and the experience gained from doing the work yourself. However, what might seem an easier, cheaper option today can sometimes have expensive consequences, and go against future reproducibility of your experiment.

This is research after all, and your new ideas and suggestions to improve existing methods are always encouraged, but if you are considering breaking some rules, make sure you know why.

In my experience, you need to know the rules before you decide to break them. Do some homework. There is a reason histology has been around for as long as it has, and why properly processed formalin fixed paraffin embedded (FFPE) blocks are such a valuable resource with a long shelf life. There might be some unintended consequences to your unorthodox methods, consider the entirety of your experiment before you start moving away from established protocols.

If you don't have a facility on site to help you with your work, ask around: "Where is everyone sending their samples?" Your colleagues, and supervisors can help you find a suitable one. It is comforting to know you are not the first or last researcher to come up against this challenge.

Building a fruitful relationship with a lab can have lasting and positive impact on your research.

Nothing is as infectious as a researcher whose passion for the project is evident from the first encounter. You have much more to gain by sharing that enthusiasm and knowledge with others, and you might find the collaborative process rewarding. Technology is moving very quickly, and by working together we can help each other adapt to tackle the challenges that lie ahead.

Nothing is more gratifying than being part of someone's success, and seeing them grow as scientists.

See you in the lab.

Andrew.

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TO HISTOTECHS

HISTOTECHNOLOGY PROFESSIONALS DAY
Friday 10th March 2023

This **Histotechnology Professionals Day**, we are asking everyone to **put a hat on so we can take our hats off** to recognise the valuable and important work of Histology Professionals all around the world.

Dust off your craziest, funniest hat and celebrate the day with your lab or organisation.

Don't forget to **share pictures of your celebrations** to our social media pages and for publication in the Histograph:

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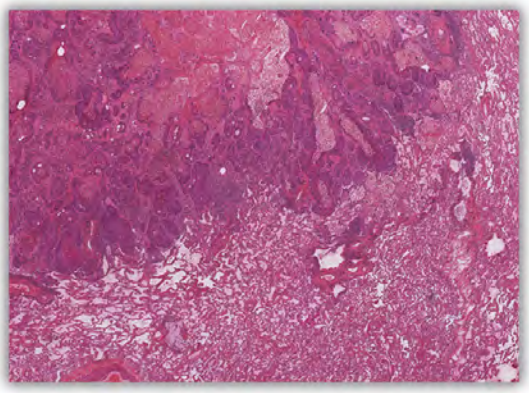
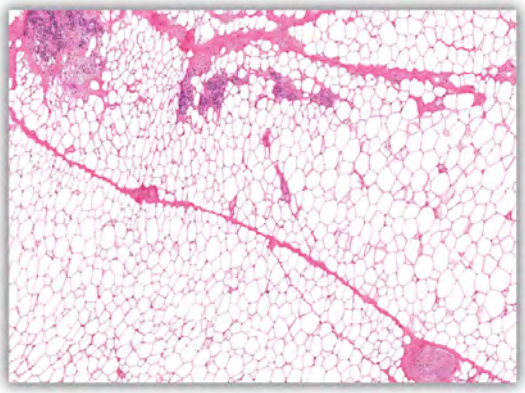
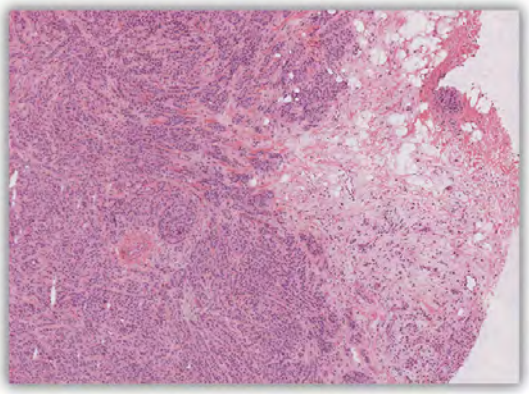


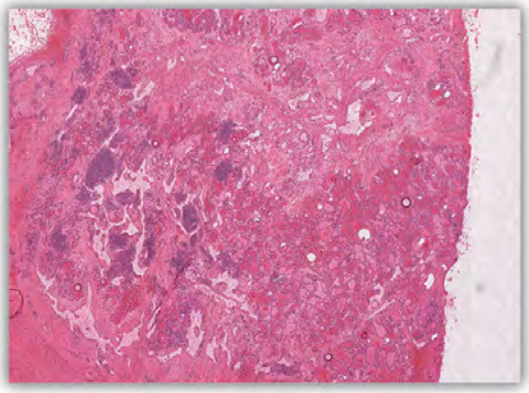
Lung Cancer 40x



Breast 40x



Breast Cancer 40x



Thyroid 20x

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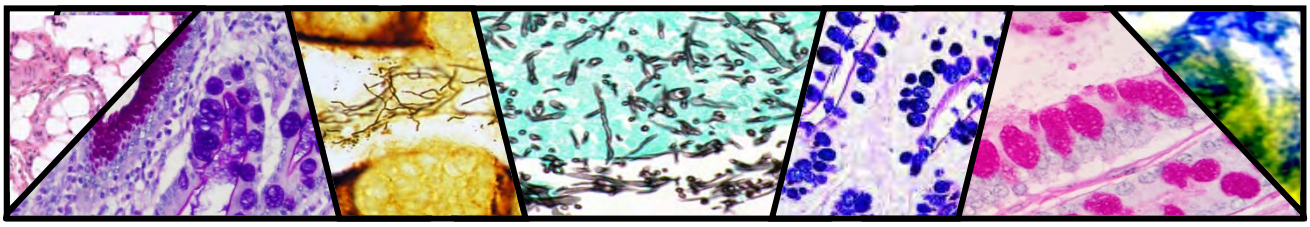

The Histochemical Chronicles

Author: Mike Rentsch

Laboratory Assistant to Medical Laboratory Scientist; On the bench 1969 to June 2019.

Origins of the Histochemical Chronicles

The best methods of improving our techniques and knowledge, comes from learning from our mistakes and trying to explain aberrant results.

In 1979 I was asked by my Lab Manager, Mr. Anthony Charnley, to set up a section for Anatomical Pathology. This was out of the blue and although I was a qualified Haematology Technologist, I was the only staff member with some Histo training (albeit only 4 months as a trainee).

When he did so he gave me an Indexed Laboratory Notebook (Nalgene from Selby Anax). He advised me to write down all my protocols from scratch, record all my mistakes, aberrant results, steps taken for correction including analyses and conclusions. His intension was to review my notebook on a regular basis. This he did for approx. one year, thereafter leaving me to my own devices. In essence, scientific emphasis was introduced into my toolbox instead of treating Histology as an art-form (which everyone previously told me it was – except for my Lab Manager, for whom I am forever indebted).

I have maintained these Laboratory Notebooks continuously from 1979 to 2019 inclusive, and have had occasion to revisit them many times, both to remember how a problem was solved, or even a positive conclusion with methodology changes being made many years past the original event (e.g. Giemsa, had multiple entries over a twenty year or so period).

In solving many of my problems, I relied heavily on my colleagues in the Histology Discussion Groups (all States), former Tutors/Lecturers; their personal communications being recorded. The willingness of these persons, even from commercially competitive labs, has always been unstinting.

I encourage every Lab Manager/Section Head to give a similar notebook to every Junior/trainee.

The Histochemical Chronicles are a sample of these experiences captured in my personal notebooks over many years.

Histochemical Chronicles: The Notebook 1

21st January 1980: Aqueous Eosin Failure

Issue:

Initially, I used commercially prepared stain for H&E's being Gurr Harris Haematoxylin and 1% eosin. While these worked fairly well, the Haematoxylin did suffer from a short shelf life and occasionally suffered from over-oxidation and precipitation. We decided to change over to making our own H&E stains, and selected Lillie Mayer for the Haematoxylin [i] and straight 1% Eosin Aqueous as described in Carleton's Histological Technique, with thymol as a preservative and Gurr Eosin dye.

Even with a 5-minute staining time, I found that virtually no dye uptake occurred with the home-made Eosin, even though the Gurr pre-prepared material worked fine at the same time. I tried to contact the technician at Box Hill Pathology and was put through to the Director of Pathology. [ii] who suggested that I determine the pH of my water supply as it might be alkaline and that if so, would not be colour fast hence being washed out/decolourised by the water rinse. The Director also advised me that I could overcome this, by ensuring the Eosin solution have a pH of 5.3-5.4. and to control the differentiation by adjusting the water rinse.

Our water supply was tested (in Biochemistry as Histo did not need a pH Meter), and the water was found to be alkaline (7.8).

I prepared a 1% Eosin solution in a Walpole's 0.2M Acetic Acid/Sodium Acetate Buffer @ 5.4 (Ex appx. Carleton's Histological Technique). The results were avid, with a 2 min water rinse required to produce differentiation: RBC's/eosinophils avid intense red, muscle pink, collagen pale pink. The original water rinse for the Gurr Solution was 30 secs. It was also found that the solution was not prone to exhaustion or pH drift due to water rinse carryover, and a significant increase in the number of slides was achieved.

Method: (remember this is 1980)

0.2M Acetic Acid

Ingredient	Specification	Amount	Unit
Acetic Acid	Glacial/Analar BDH	12	mL
Distilled Water	>4Mohm	988	mL

0.2M Sodium Acetate

Ingredient	Specification	Amount	Unit
Sodium Acetate	Anhydrous/Univar Ajax	16.4	g
Distilled Water	>4Mohm	1000	mL

1% Eosin Buffered pH 5.4 500mL

Ingredient	Specification	Amount	Unit
Acetic Acid	0.2M	44	mL
Sodium Acetate	0.2M	206	mL
Distilled Water	>4Mohm	250	MΩ
Eosin Dye	Gurr Certistain	5	g

The Notebook continued

1. Prepare 0.2M Acetic Acid solution by pipetting 2x6mL of Acetic Acid into a 1 Litre volumetric flask using gold line volumetric pipettes. Add distilled water by running initially down inside neck of flask and making up to 1 Litre meniscus. Mix thoroughly by inversion. Label flask with prep date, preparator Initials, and give an expiry of 1 year.
2. Prepare 0.2M Sodium Acetate solution by weighing Sodium Acetate in glass weighing boat on beam balance, allowing ±0.02g on reflector Vernier. Transfer dry Acetate to flask by rinsing weighing contents into neck of volumetric flask. Make up to 1 Litre with distilled water to meniscus line. Mix thoroughly by inversion. Label flask with prep date, preparator Initials, and give an expiry of 1 year.
3. Prepare buffer, by measuring 44mL of 0.2M Acetic Acid in a 50mL measuring cylinder and decanting into a 500mL Erlenmeyer flask; measure 206mL of 0.2M Sodium Acetate in 250mL measuring cylinder and decant into 500mL Erlenmeyer flask.
4. Weigh Eosin into a glass weighing boat, allowing ±0.02g on reflector Vernier. Transfer Eosin dye to Erlenmeyer Flask, rinsing dry contents into flask with distilled water. Make up to final volume of 500mL mark. Add magnetic flea to flask, place on mixer, adjust speed to maintain a vortex without aeration. (Don't let the vortex bottom out!). Allow to mix for 30mins. Filter through no 1 Whatman's paper. Transfer dye solution to a 500mL amber glass bottle (from pharmacy dept). Add a crystal of thymol to solution. Label with name, prep date and preparator Initials and expiry date (give 1 year). Store in dark in cupboard.

Notes:

1. Biochemist not happy with me weighing dye on their balance and refused permission to use pH meter on my finished Eosin Solution. (Old style Radiometer with calomel electrode and changeable membrane).
2. In these modern times, such specifications as listed above are insufficient, and would later give me an aberration with Schiff reagent that went unexplained for some two years.

June 1980

Decided to make up a 5% Working solution as new Pathologist wanted more intense colouration. It was found that by increasing the ingredients x5 produced a solution that required >24hrs filtration through No 1 Whatman's even if pre-filtered through Whatman's no 4, with a fair amount of precipitate (insoluble dye) retained. Concentration of dye reduced to 4.6% and found that filtration was achieved in 20mins with minimal precipitate.

Conclusion: (remember this is 1980)

- Existing commercial solutions, while have Batch Numbers, invariably had no preparation or expiry dates; so the age is unknown, and assuredly suffered from poor transit conditions across the equator (E.g. Shipping containers frequently get well above 50^{o}C).
- I need my own pH Meter (get a modern one with a sealed electrode).
- I need my own electronic balance at least to 0.01 (4 decimal place beam balance in glass cabinet too awkward).
- Buffered Stain solutions are not prone to pH changes with minor dilution effects.

- Solubility of Eosin is likely pH dependent, i.e., Solubility of Eosin @pH 5.4 is very close to 4.6%w/v.
- Water supply properties will vary from site to site, possibly even seasonally.
- Alkaline water may be used to decolourise Eosin. (Maybe explains why grandma added lemon juice to stop reds loosing colour in laundry detergent. If ever you have had pink Bonds singlet, you know what I mean!).
- Tailor methodologies to match local requirements.
- Read widely, use journals and newsletters.
- Participate in discussion groups – don't just observe.
- If you need advice, don't be embarrassed and don't hesitate to ask someone.

From the personal journal of Author

Mike Rentsch, Stain Tech

Edited by Leah Simmons, NSW Health Pathology & Bill Sinai, HTSNSW Life Member

Footnotes:

Other workers would also report Issues with Eosin Staining and pH dependence [iii] using final pH's of varying from 5.4 down to 4.98 with variation between some brands. [iv]

[i] Senior Technician, Brighton Pathology (BPMS). Personal Communication

[ii] Director Pathology Box Hill Hospital. Personal Communication

[iii] W.D.Turner. "Eosin Staining and pH Dependence" Histologic. 10th Anniversary Ed. 10/1980.

[iv] B.Moore. "Solution to Eosin Staining Problems" Histologic. 4.Oct. 1982.

Histologic is a free Newsletter (I had no other access to relevant Journals at this time), and can today be accessed via the Sakura Website (Formerly Tissue-Tek) and includes all archived editions.

Upcoming Events

Sat 18th Feb Webinar - The value of cytology in pathological diagnoses + Purpose of the mobile cytology lab - ROSE

Thu 23rd Mar Webinar - Surgical cut up, Benign gynaecology specimens

Sat 29th Apr Webinar - Hirschsprung Disease

Sat 24th Jun Webinar - RCPAQAP

Sat 29th July Face to Face Event - Christmas in July - venue and topic TBC

Sat 26th Aug Webinar - Forensics

Thus 24th Oct Annual General Meeting + Webinar - topic TBC

Sat 25th Nov Webinar – topic TBC

*Dates, type of event, and topics subject to change

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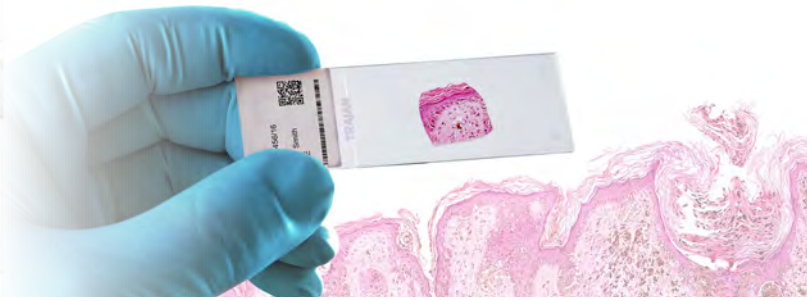
Q: Do you have trouble finding specialised stain kits for your workflow solution?



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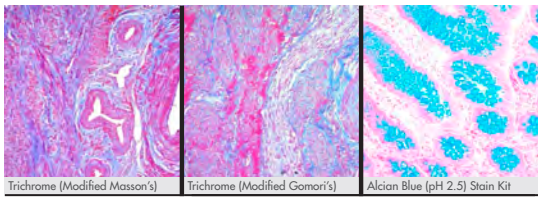

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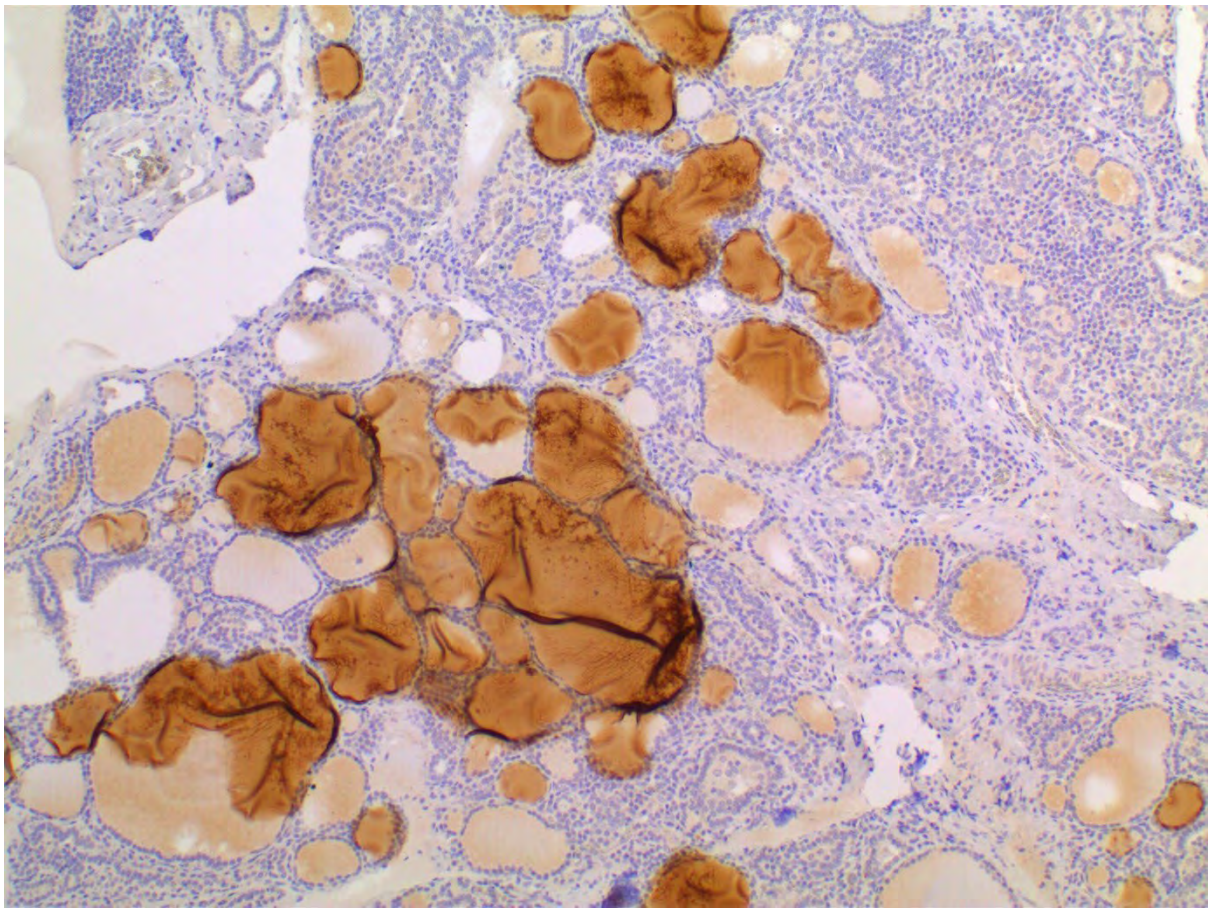
Test and Teach

Thyroid colloid and Immunohistochemistry

Tony Henwood,

Histopathology, the Children's Hospital at Westmead



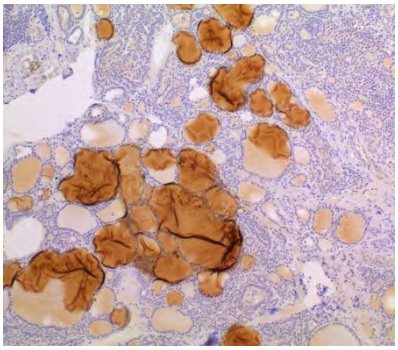
Question 1: What is this tissue?

Question 2: Immunohistochemistry for TdT – What appears positive?

Question 3: Is this staining Specific?

Answers on next page

Thyroid colloid and Immunohistochemistry continued



Question 1: What is this tissue? Thyroid

Question 2: Immunohistochemistry for TdT What appears positive? The colloid within the follicles is positive

Question 3: Is this staining Specific? No. This is an example of immunohistochemical reagent trapping in tissue that has partially lifted during staining.

Discussion

Reagent trapping by tissue sections during immunohistochemical staining is an analytical complication that results in non-specific positive staining. Similar to other reports (De Matos et al 2005, Bullock et al 2012), we have noticed brown staining of thyroid colloid whilst immunostaining for Terminal Deoxynucleotidyl Transferase (TdT). Since there is no evidence to support the presence of TdT in colloid, it was suggested that this phenomenon was caused by the trapping of the reagents beneath the colloid during immunostaining.

Bussolati & Leonardo (2008) and Miller (2019) suggest that areas of trapped reagent can be produced by irregular folds in the histological sections or by small fragments detached from the slide as a consequence of antigen retrieval. They state that this artefact is usually found when the tissue is poorly fixed or remarkably sclerotic. In addition, cracks and spaces in tissue sections can show non-specific entrapment of reagents; in such spaces, one can recognise a focal pattern of chromogen precipitation.

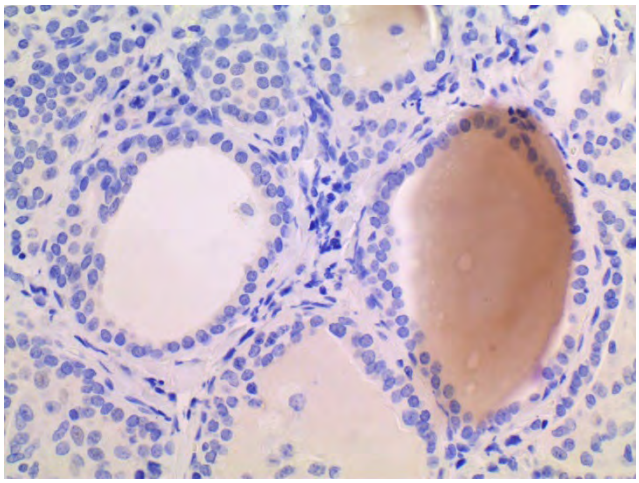


Figure 2 also shows reagent trapping by colloid. In this instance, the localisation antibody has been replaced with buffer wash (negative control).

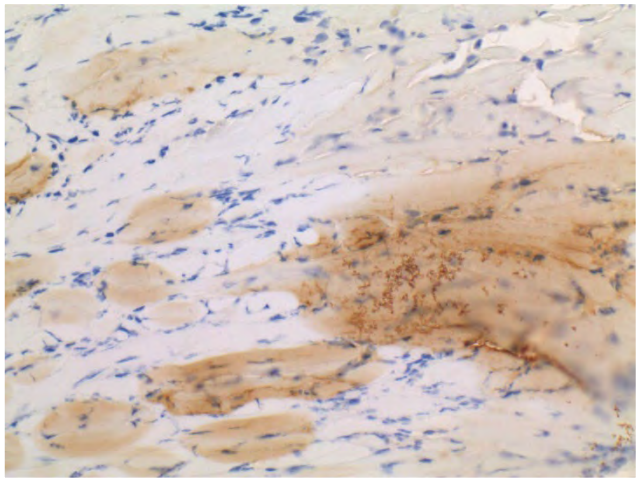


Figure 3 shows antibody trapped under fibrous tissue that has partially lifted. The precipitate appears more granular and lifting is revealed by the out-of-focus nature of the affected area.

Usually, aberrant immunostaining of colloid is ignored by pathologists though Fischer and Asa (2008) in their study on HBME-1 in thyroid neoplasms noted that this could cause a problem in interpretation.

Thyroid colloid and Immunohistochemistry continued

Thyroid colloid and Immunohistochemistry continued De Matos et al (2005) considered staining of the follicular colloid in the absence of staining of the follicular epithelium and/or cytoplasm to be non-specific and negative.

Gambella et al (2017) investigated section detachment in immunohistochemistry and discovered that section thickness, slide ageing, slide brand, "human" influence, and size and fixation of samples influenced section detachment.

Strategies to reduce this non-specific staining include using appropriate immunohistochemical sticky slides (e.g. APTES or Superfrost-plus) and allowing the sections to dry overnight at room temperature prior to heating, though even following this, reagent trapping may still occur so it is important to recognise this artefact.

References

Bullock, M., O'Neill, C., Chou, A., Clarkson, A., Dodds, T., Toon, C., ... & Gill, A. J. (2012). Utilization of a MAB for BRAFV600E detection in papillary thyroid carcinoma. Endocrine-related cancer, 19(6), 779-784.

Bussolati, G., & Leonardo, E. (2008). Technical pitfalls potentially affecting diagnoses in immunohistochemistry. Journal of clinical pathology, 61(11), 1184-1192.

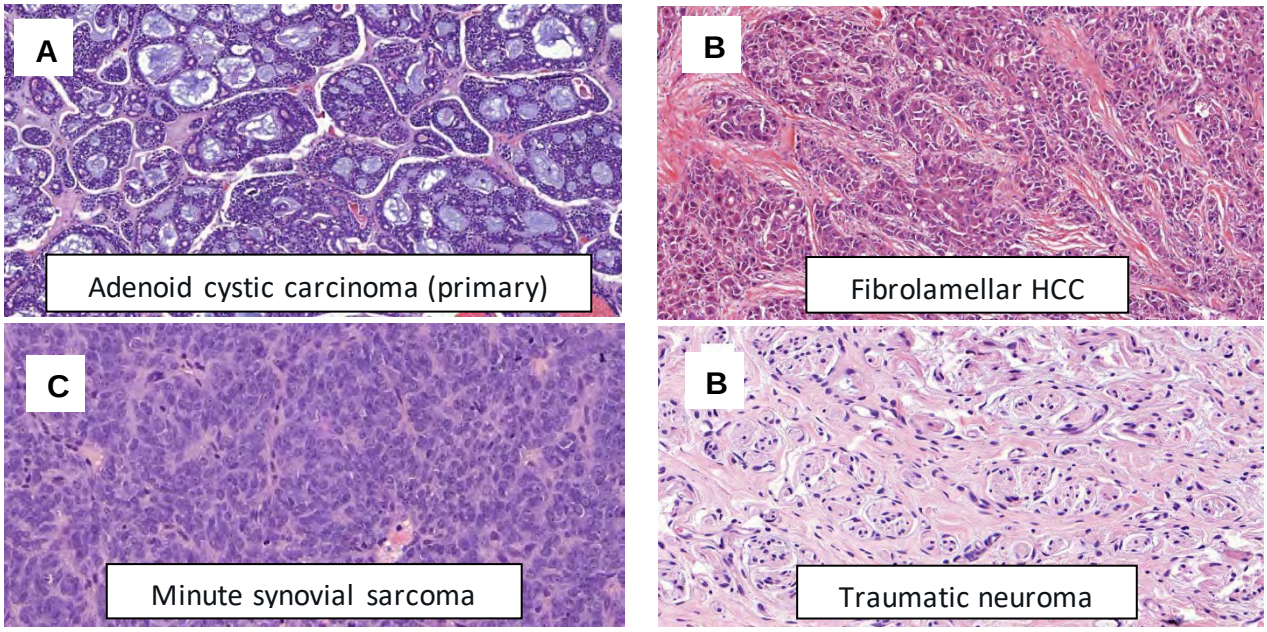
De Matos, P. S., Ferreira, A. P., de Oliveira Facuri, F., Assumpcao, L. V. M., Metze, K., & Ward, L. S. (2005). Usefulness of HBME-1, cytokeratin 19 and galectin-3 immunostaining in the diagnosis of thyroid malignancy. Histopathology, 47(4), 391-401.

Fischer, S., & Asa, S. L. (2008). Application of immunohistochemistry to thyroid neoplasms. Archives of pathology & laboratory medicine, 132(3), 359-372.

Gambella, A., Porro, L., Pigozzi, S., Fiocca, R., Grillo, F., & Mastracci, L. (2017). Section detachment in immunohistochemistry: causes, troubleshooting, and problem-solving. Histochemistry and cell biology, 148(1), 95-101.

Miller, R. T. (2019, September). Avoiding pitfalls in diagnostic immunohistochemistry–important technical aspects that every pathologist should know. In Seminars in Diagnostic Pathology (Vol. 36, No. 5, pp. 312-335). WB Saunders.

Social Media Case Study: Answers



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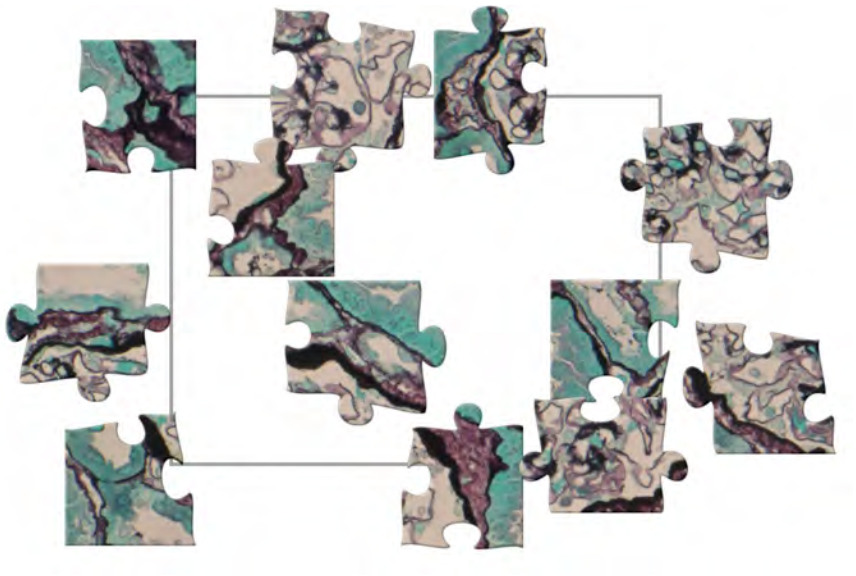
Puzzle: Piece it together

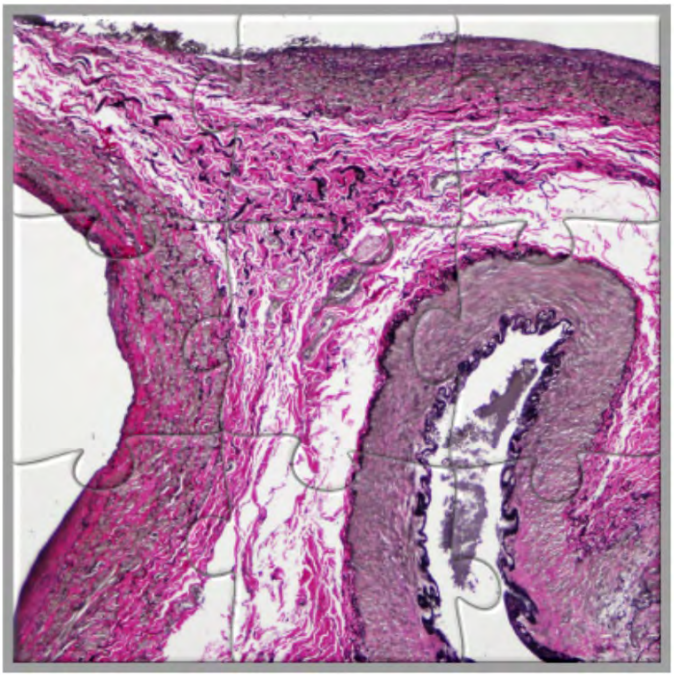


Click the puzzle or link to attempt the digital puzzle.

How many pieces need to be in place before you can identify the stain, tissue and structure?

Answers in next edition.

Answers from previous edition:



Stain: Verhoff's Van Geison

Tissue: Vein and Artery side by side

Did not attempt the puzzle – here is the link again

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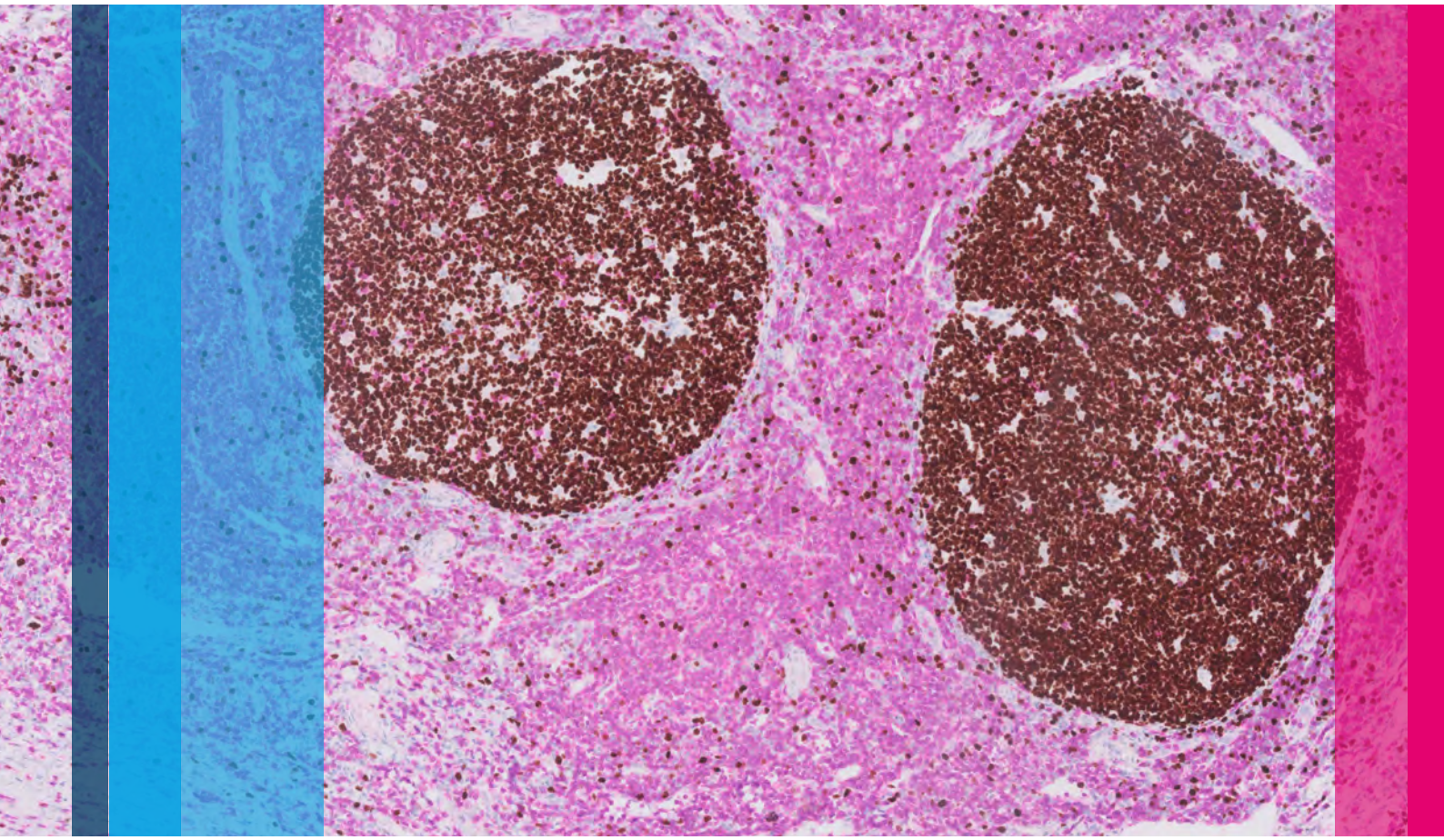

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Image Caption: Tonsil, sequential staining of Ki-67 (DAB, nuclei) in germinal centers and, CD3 (HRP Magenta, cytoplasm and membranes of T cells) in the mantle zone.

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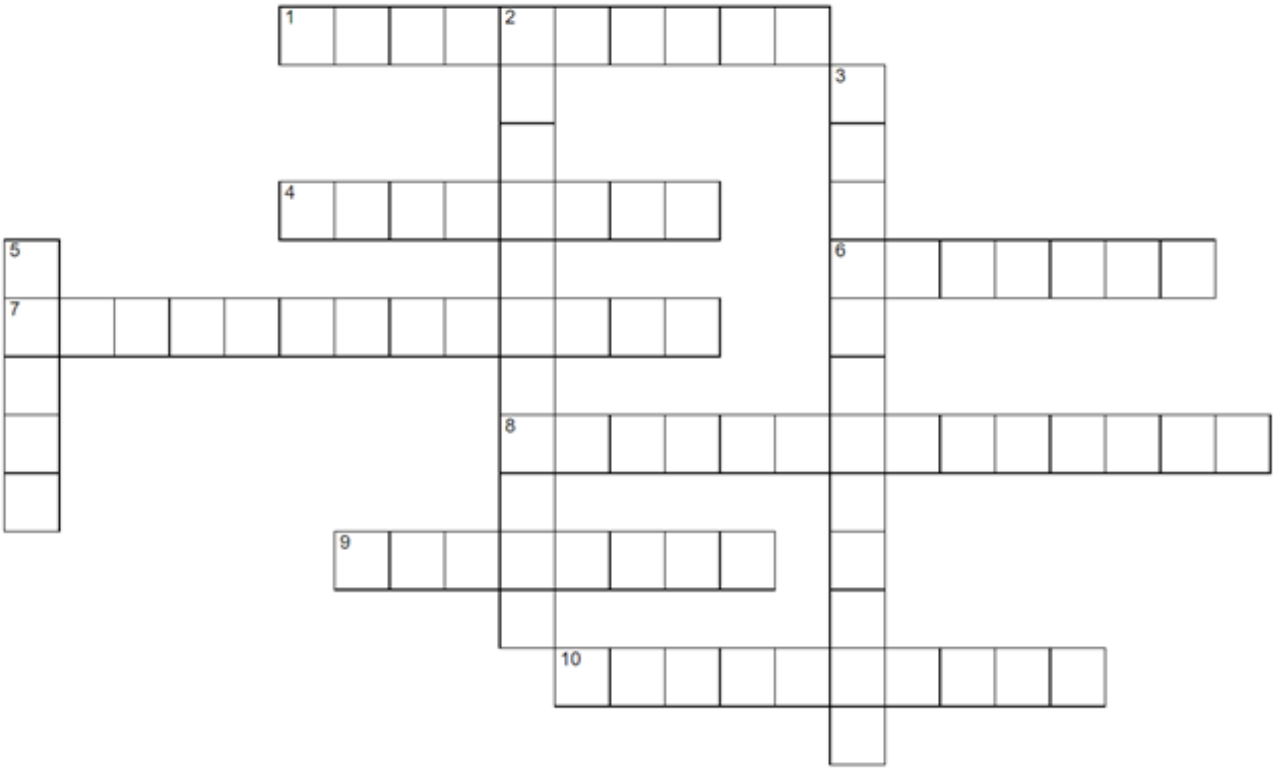
Crossword: Know your techniques



Across:

1. The active part of a stain

4. A calcium stain with a Dutch name

6. Chemical component used to link unlike materials for staining

7. Schiff reagent is called _____ when colourless

8. Hyaluronidase removes _____ _____ from tissues

9. Schiff reagent changes colour when the _____ group is oxidised

10. An anionic tissue component is _____ charged

Down:

2. The structure in a dye which allows it to be coloured

3. Most common IHC counter stain

5. Reducing substances show a _____ colour when a silver technique is used

Answers on page 23

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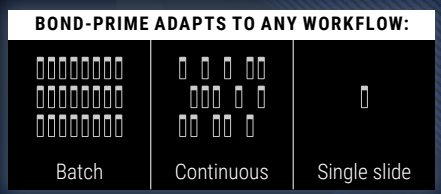

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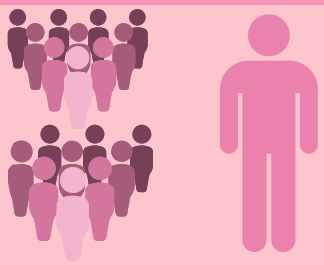
Colorectal Cancer

What is Colorectal Cancer?

Colorectal Cancer informally known as Bowel Cancer is the 3rd most common cancer in Australia. Colorectal Cancer develops from precursor abnormalities within colon tissue called 'polyps'.



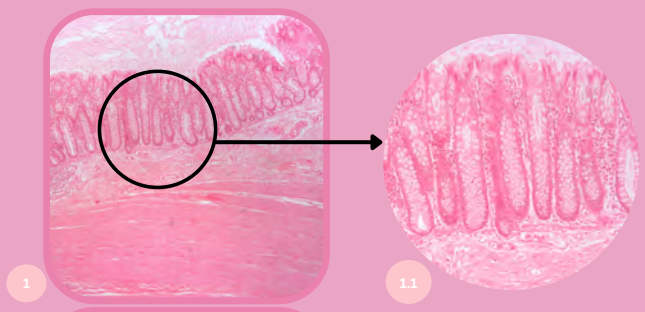
It is estimated that Australians have a **1 in 19** chance of being **diagnosed** with colorectal cancer by the **age of 85.**

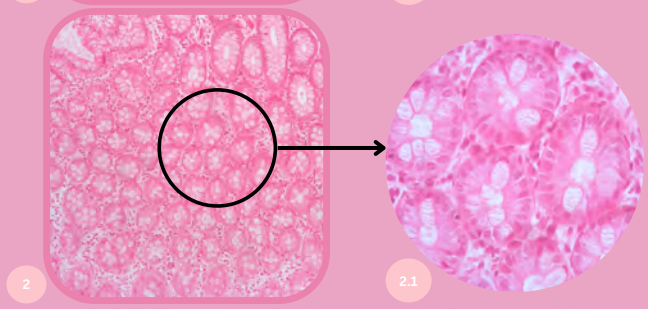
Signs and Symptoms

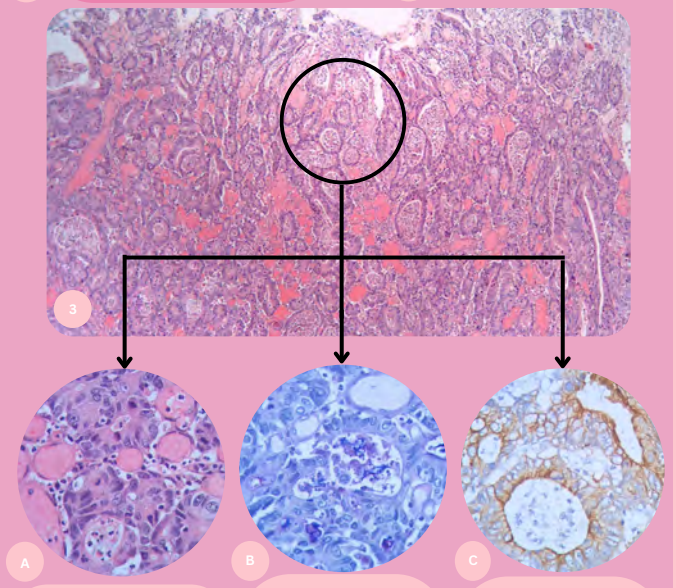
- Blood and mucus in stool
- Abdominal discomfort or pain
- Bloating
- Pain in rectum
- Weight loss
- Change in bowel habit
  - Diarrhoea
  - Constipation
- Unexplained fatigue
- Blood in urine
- Frequent Urination

Diagnosis

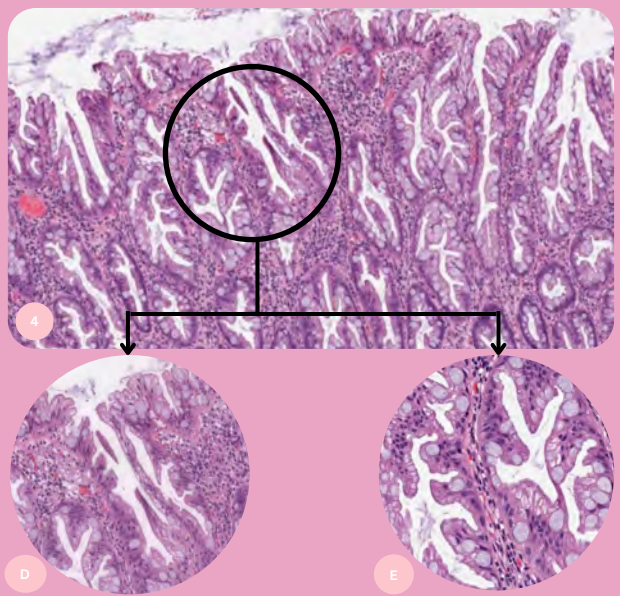
- **Blood Tests:** low red blood cell count associated with bowel cancer
- **Immunochemical Faecal Occult Blood Test (iFOBT):** sample stool at home and sent to be examined under microscope for traces of blood that can be a sign of polyps.
- **Colonoscopy:** A camera is inserted through a tube via the anus to visualise any abnormal tissue which can be removed by endoscope for further examination.







H&E at 10x | AB/PAS at 10x | CAM 5.2 IHC at 10x



Normal Colon

Primary role is to absorb water and nutrients from digested food. Distinctive structure allowing for increased surface area and secretion of mucus to aid absorption and digestion.

1 = H&E at 4x magnification, distinct layers of colon

1.1 = H&E at 10x magnification, clear goblet cells and view of crypt structure.

2 = H&E at 10x magnification, abundance of crypts viewed in transverse cut.

2.1 = H&E at 40x magnification, clear goblet cells and surveillance immune cells monitoring the environment.

Colorectal Adenocarcinoma

Accounts for around 80-90% of all colorectal cancer diagnoses. Dysplastic colon glandular epithelium.

3: H&E at 4x magnification, loss of linear crypt structure, overall hyperplasia of epithelial cells lining crypts.

A: Dysplasia of colon crypts, evident necrosis.

B: Alcian Blue staining acidic mucins in goblet secreting cells and gastrointestinal mucosa. Periodic Acid Schiff staining of neutral mucins, given the restructuring of the crypts mucus is building up. Necrosis is also occurring.

C: CAM 5.2 stains for CK7 and CK8 which is utilised to identify secretory epithelial or glandular cancers. The brown pigment highlighting the presence of the proliferation associated protein in the epithelium.

Sessile vs. Tubular Polyps

Tubular polyps grow off a crypt into the lumen of the colon. Whereas, sessile polyps grow into the colon tissue, away from the lumen making them harder to diagnose and thus more susceptible to metastasis.

Serrated Sessile Polyp

Polyps that make crypts appear with serrated anatomy. Account for between 15-30% of colorectal cancer cases.

4: H&E at 4x magnification, serrated appearance of mucosa.

D: H&E at 10x magnification, inflammatory infiltrates and immature cells (neoplasia) surrounding abnormal crypt anatomy.

E: H&E at 40x magnification, flower-like arrangement that is not well organised and constituent cells, more mucus secreting cells.

Treatments for Colorectal Cancer

- **Surgery:** Main form of treatment is a colectomy.
- **Radiation Therapy:** Used prior to surgery for advanced rectal cancer that hasn't metastasized to reduce size and number of cancerous cells.
- **Chemotherapy (Adjuvant Therapy):** Used commonly post surgery to reduce risk of cancer relapse.
- **Palliative Care:** For purpose of improving quality of life by alleviating symptoms.

HUBS3414 - Infographic
Student ID: C3376456
Name: Rebecca Walker

References

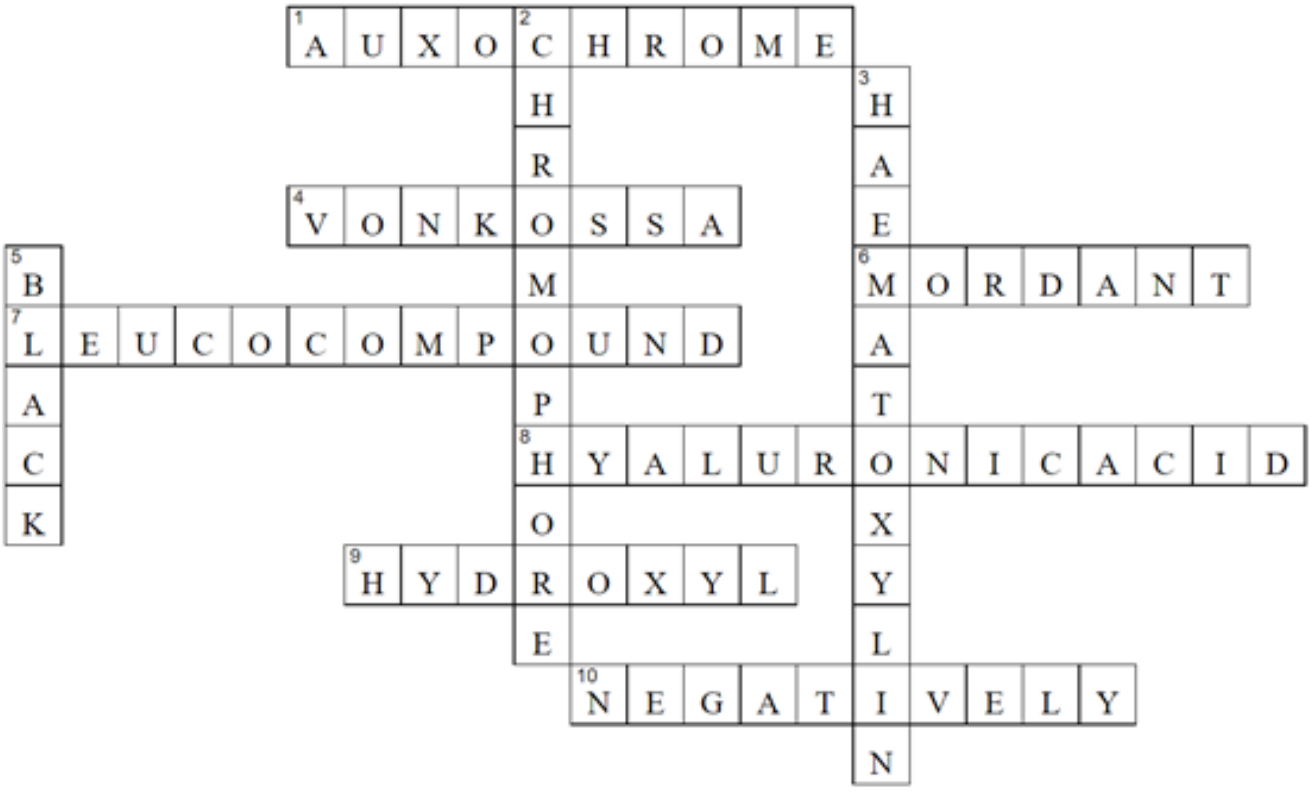
Serrated Sessile Polyp Microscope Link (Figures 4, D & E):

1. Colon Traditional Serrated Adenoma. Lmpimg.med.utoronto.ca. (2015). Retrieved 16 September 2022, from https://lmpimg.med.utoronto.ca/LMP10203.htmutm_campaign=Full&utm_medium=referral&utm_source=dlml.

Colorectal Cancer Information and Statistics:

1. Bowel Cancer. Cancer Council. (2022). Retrieved 19 September 2022, from https://www.cancer.org.au/cancer-information/types-of-cancer/bowel-cancer.
2. He, S., Peng, J., Li, L., Xu, Y., Wu, X., & Yu, J. et al. (2019). High expression of cytokeratin CAM5.2 in esophageal squamous cell carcinoma is associated with poor prognosis. Medicine, 98(37), e17104. Retrieved 20 September 2022, https://doi.org/10.1097/md.0000000000017104
3. Bowel Cancer (Colorectal Cancer) in Australia Statistics. Australian Government - Cancer Australia. (2022). Retrieved 20 September 2022, from https://www.canceraustralia.gov.au/cancer-types/bowel-cancer/statistics.
4. NCI Dictionary of Cancer Terms. National Cancer Institute. (2022). Retrieved 22 September 2022, from https://www.cancer.gov/publications/dictionaries/cancer-terms/def/adenocarcinoma.
5. Obuch, J., Pigott, C., & Ahnen, D. (2015). Sessile Serrated Polyps: Detection, Eradication, and Prevention of the Evil Twin. Current Treatment Options In Gastroenterology, 13(1), 156-170. Retrieved 22 September 2022, https://doi.org/10.1007/s11938-015-0046-y

Crossword Answer Key



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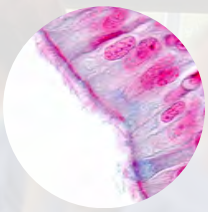

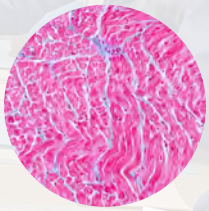

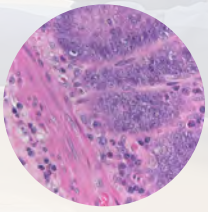

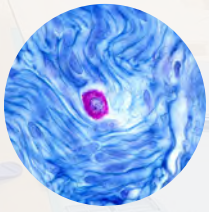

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Adrian Ureta	
Alfred White	

Sub-committee Member

Momoko Sakaki	Social Media Coordinator

Committee Meetings

Most meetings are scheduled for the first Monday of each month starting at 6 pm with some exceptions. These dates may change from time to time.

If you wish to contact the committee, make suggestions, or ask questions please feel free to contact the society's secretary secretary@histonsw.org.au

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Thanks for reading! :-)