Histotechnology Group of Queensland

Bridging Histology Laboratories Since 1982

TISSUE PAPER

President's Report

Welcome to the second edition of the Tissue Paper for 2019. Our first scientific meeting of the year gave the opportunity for members to visit SNP's Central Lab at Bowen Hills. Emma Hughes (SNP) & Selena Chu (QUT student) we're kind enough to donate their time to speak to our HGQ members. Thanks to SNP & Roche for supporting this event. The National Histology Conference headed to Adelaide. This biennial event was well attended & supported with close to 300 industry & trade delegates present. The variety of presentations were relevant and well received. I congratulate the HGSA committee for the fantastic job with the conference. Also at this event, the respective state histology groups came together to officially form a national body, the Histology Group of Australia. The intentions of this group is to combine the resources, skills and knowledge from each of the state groups and to represent and support the interests of people in the field of histology at a national level. As with other state representatives present, I was honoured and fortunate to be involved in the inception of this significant group. Stay tuned for further developments & announcements. The upcoming events for this year is the Trivia Night on Fri 28th June at the QA Hotel & the Special Stains & IHC Workshop on Sat 27th July at QUT Gardens Point. Check out the website and social media for more details. We hope that the recent and upcoming events have and will provide many opportunities for continuing education and networking for our members. To keep up to date with the HGQ, take advantage of free membership at www.hgq.org.au. Until the next edition, take care, stay safe and enjoy!! Happy reading ;)

Jerres Alcober

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We are always looking for contributions of scientific articles and news, or if you have improvements and techniques that make a difference in your lab! Submissions can be sent to newsletter@hgq.org.au in digital format

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Histotechnology Group of Queensland

Format and layout of Tissue Paper by Greg Bowlay

REVIEW

9TH NATIONAL HISTOLOGY CONFERENCE 2019

ADELAIDE • SOUTH AUSTRALIA
24-26 MAY 2019

The 9th National Histology Conference was held at the Adelaide Convention Centre on 24-26th May 2019. The event proved to be a huge success with just under 300 registered delegates plus numerous trade exhibitors.

FRIDAY

The conference began for many on the Friday with four pre-conference workshops to choose from. One of the morning options involved a complex cut-up workshop that was a close up inspection and hands on grossing tutorial of a complex kidney specimen. The second option was a troubleshooting workshop aimed to reduce errors in an anatomical pathology laboratory. The afternoon workshops included a repeat of the morning errors in the lab talk as well as a hands on comparative tutorial of IHC staining methods vs old school special stains to show Syphilis.

Although I didn't actually attend the Gin Cruise that was offered as a social event in the afternoon I only heard positive feedback from all those who attended. Others spent the afternoon wandering through the shops of Rundle Street Mall trying to find the famous Haigh's chocolate shop.

The welcome function was held on Friday night and gave delegates an opportunity to meet with the Trade reps as well as their interstate colleagues. The food and drink was flowing which created a great atmosphere to open up the conference.

SATURDAY

Saturday morning began with an official opening from the Governor of South Australia. The actual hall where the majority of the conference was held at the convention centre, was decorated perfectly in purple with small touches throughout. There were balloons, tables up front and lecture style seating at the back. The SA Committee were a stand out in their purple t shirts and matched the purple theme throughout the whole weekend.

One of the key note speakers at the conference was Dr Arie Perry who is a Professor at the University of California where he serves as the Director of the Neuropathology Division and the Neuropathology Fellowship program. Dr Perry's talk on the practical utilisation of WHO2016 and cIMPACT-NOW in brain tumour diagnosis discussed the recent advances that have resulted in major diagnostic shifts. The new approach focuses on the integrated diagnosis which incorporates classic histopathology with specific molecular signatures. The presentation was very informative and concluded in a way I have never seen before– a 6 minute brain tumour parody to Bohemian Rhapsody where he got up with a microphone and showed off his excellent singing skills. I would highly recommend looking him up on YouTube https://www.youtube.com/watch?v=FfP4HTuu6Vs

The mid-morning session included an update from the RCPAQAP which discussed the changes that have gone on within the program including the new myQAP portal, new scanning hardware and imaging software. Changes to programs such as Electron Microscopy and Her2 Brish were also looked at.

Next was a presentation on Molar pregnancy which is an abnormal pregnancy that carries an increased risk of gestational trophoblastic disease. Correct diagnosis of complete mole is required so that the complete evacuation of the uterus and any further treatment can be undertaken. Given that genetic testing is an important part of the diagnosis of molar pregnancy, we learnt that fresh tissue should be kept in case genetic testing is required.

Dr Rajiv Patel began the third session with an introduction to the grossing of skin specimens. Dr Patel is a Professor of Pathology and Dermatology at the University Of Michigan School Of Medicine and completed some of his studies at Flinders University in Adelaide. His presentation discussed the need for proper grossing techniques of skin specimens which are essential in our workplaces. Errors in this area are serious and sometimes difficult to rectify. A number of different skin specimens were discussed from punch biopsies to complex skin specimens.

Michael Bushe-Jones from Path West in WA presented an interesting find in their lab, where a CMV control was accidently used to stain a TTF-1 slide. It was discovered that this tumour marker seemed to stain the CMV infected cells on the aberrant control. To determine if this was a legitimate phenomenon, a number of known CMV positive cases were stained with the TTF-1 antibody. Close analysis showed

that TTF-1 not only reliably stained CMV infected cells but it also seemed to stain some infected cells which had not been picked up by the CMV antibody.

The last presentation of the day was an in-depth discussion of the diagnosis, collection and prognosis of renal biopsies. The kidney biopsy is considered the most valuable tool in providing nephrologists with information regarding the pathological causes of intrinsic renal disease. This session outlined the

indications, complications and procedural aspects of a kidney biopsy.

A special presentation was made to honour two invaluable histology figures who have contributed so much to our profession over the years. Laurie and Sue Reilly from Townsville were presented with a trophy as a thanks for all they have done in the Histology world.

The Conference Gala Dinner sponsored by Agilent was themed "Through the Looking Glass" and was attended by 194 delegates. The night was absolutely amazing with an Alice in Wonderland inspired room and a great band that kept people up dancing all night. The highlight of the evening was definitely a fireworks display over the river at the beginning of the evening which was an unexpected surprise for all.

SUNDAY

At 9am on Sunday morning many bleary eyed delegates turned up for the first presentation of the day by Ian Olver who is a medical oncologist, bioethicist and researcher. The presentation titled "The

Evolution and Revolution in Cancer treatment" discussed the shift in cancer treatment towards more targeted therapies rather than using cytotoxic drugs. We learnt that genomic analysis will become more important than histological subtype in selecting treatments and may be achieved by liquid biopsies.

The RCPA QAP then discussed the approach for the assessment of Her2BRISH gastric technical and diagnostic proficiency. The presentation provided an overview of the Her2BRISH Gastric program, discussed the assessment program and highlighted results from previous surveys.

The second session of the day consisted of three different presentations. Bronwyn Christiansen from the Royal Children's Hospital looked at the combination of C4d and C5b-9 staining in the diagnosis of Gestational Alloimmune Liver Disease. The project demonstrated that a combination of the two markers can be used to improve the sensitivity and specificity of a diagnosis of GALD. Jean Mitchell from the NHS followed with a presentation on the History of Haematoxylin. She explored the pathologists and scientists that lend their names to different types of haematoxylin and the techniques they incorporated into our all-important diagnostic nuclear stain. Finally, Jacqui Simmonds from Lismore showed us a case study on a patient that presented with possible DCIS in her breast after calcifications were found. The biopsy interestingly revealed calcified Schistosoma japonicum eggs which is a parasite that is usually passed through the body.

The final presentations of the conference included the use of archived FFPE tissues for research purposes by Dr Lauren Thurgood. We learnt that the process of FFPE induces numerous chemical changes and degradation to DNA, RNA and protein that can hamper its usefulness for research purposes. Clare Loudon from The Children's Medical Research Institution concluded the conference with a presentation on the cryosectioning of cancer tissues for proteomic analysis.

The Histology Group of South Australia's Committee needs to be congratulated for putting on an excellent event. We also need to thank the many Trade representatives who spent the whole weekend showing us the latest technologies and gadgets they have ready for us to try. Without the support of the Trade, events like this would not be possible. The Conference concluded with the announcement of the 10th National Histology Conference that will be held in Sydney on the 4-6th June 2021.

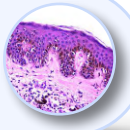
Kellie Vukovic

Histotechnology Group of Queensland

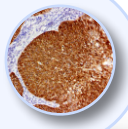
QUT

2019 Special Stains & IHC Workshop

Theme: Skin

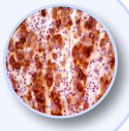


Saturday 27 July 12-8:30pm



Visit www.hgq.org.au for more information!

QUT Gardens Point, 2 George Street, Brisbane QLD

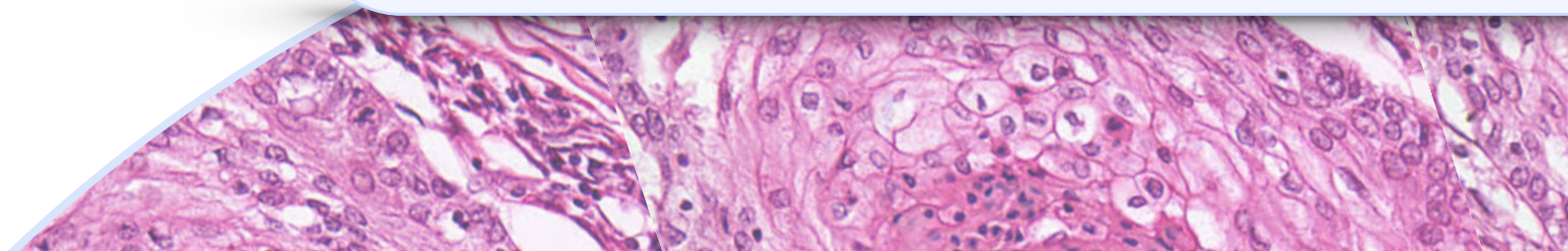


***$75 registration includes workshop, welcome drink & canapés**

Registration opens Monday 3 June - Closes Friday 12 July 2019

******Limited spots available - book early to avoid disappointment******

Join us after the workshop for drinks & canapés at Plough Inn, Southbank starting 5:30pm



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Down The Ureter: Conference Workshop

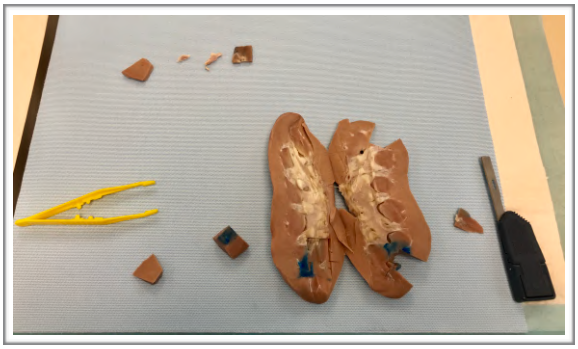
The Complex Cut-up workshop presented by Dr Adam Swalling who is an Anatomical Pathologist from ClinPath in Adelaide was held at Adelaide University and proved to be a popular topic with almost 40 people attending. The three hour workshop discussed the approach to take for the macroscopic assessment and dissection of a kidney including a hands on grossing tutorial.

The presentation began with a detailed explanation of the common types of renal parenchymal tumours as well as the AJCC staging manual based on tumour, lymph nodes and metastasis. The staging of these tumours is very dependent on the size of the tumour so the importance of correct and accurate measurements at the cut up bench was discussed. Tumours in the renal pelvis and ureter were also covered with this staging manual.

The actual dissection of a kidney was discussed in great detail with step by step instructions of what we should be including in our macroscopic descriptions. It is important to weigh the specimen, measure the entire specimen in 3 dimensions, measure the kidney by itself, identify the ureter, renal vein and renal artery, measure the ureter and adrenal gland if present, identify Gerota's facia, mention any other relevant aspects and take a photo of the specimen for the pathologist to see.

The macroscopic appearance of certain tumours was looked at with some renal tumours in particular having a very characteristic look. Renal Clear Cell, for example is usually golden yellow to red with firm to spongy rounded nodules and pushing borders. Knowing the type of renal tumour in a specimen can assist the dissectionist in the correct sampling of the tumour and what aspects need to be included in our blocking details.

After the theory component was completed we went on to watch Dr Swalling dissect a kidney that had been donated for teaching purposes. This was extremely valuable to watch as the theory was put into practise. It enabled us to have a visual picture of the sections that are required to adequately sample a tumour kidney and expand on the information we had just been taught.



We were then given the opportunity to dissect and block a pig kidney per person which had been sourced from abattoirs and butchers. This hands on approach was an extremely useful way to cement everything we had just learnt about the kidney. This was overall a very information and interesting wet workshop to attend.

Kellie Vukovic

Agilent
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HGQ Appreciation Award

Sue and Laurie Reilly

At the recent National Histology conference in Adelaide, I was able to present the HGQ Appreciation Award to Sue Reilly & Laurie Reilly. Unfortunately Sue was unable to attend but Laurie accepted Sue's on her behalf and his own award.

On behalf of the HGQ committee and its members, I would like to congratulate Laurie and Sue on their valuable contribution to Histology locally in Queensland and nationally & wish them well in their retirement. You will both be missed.

I would like to thank Karen Reeks (Vet Histology Scientist - James Cook University - Townsville) & Patrick Martin (Lab Manager - Envoi Pathology - Brisbane) for the information & their help on stage and the Histology Group of South Australia for the opportunity to present the award at NHC 2019.

Below is some information (as mentioned) that I was able to present that was put together by Karen & Patrick:

Laurie and Sue Reilly both retired since the end of last year from JCU in Townsville. Laurie completed under 44 years and Sue completed over 20 years of teaching Histology to James Cook University Med Lab Science students. All who have graduated to date. Laurie and Sue's past students have always described the infectious hands on approach to their teaching of Histology and inspired many students to continue on to a career in Histology.

Prior to JCU, both Laurie and Sue worked at Monash with Sue taking Laurie's position when he went travelling in the Kimberley's. On Laurie's return, he presented Sue with an actual heart for Valentine's day!

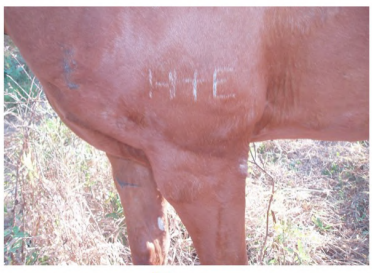
Appreciation Award

"Tools of the Trade"

Sue was a trained cytology screener when cytology was in it's infancy as a diagnostic test. Laurie has travelled to Indonesia to help set up histology labs and also attended an NSH conference in America and helped to run workshops at American conferences.

To say that Histology has had an impact on their lives would be an understatement. Laurie and Sue own a property appropriately named "Logwood" after the Haematoxylin tree. There is a grove of the very trees lining the driveway and you will notice a very peculiar letter box (Spencer Microtome).

Their horse been branded with the characters "H+E".

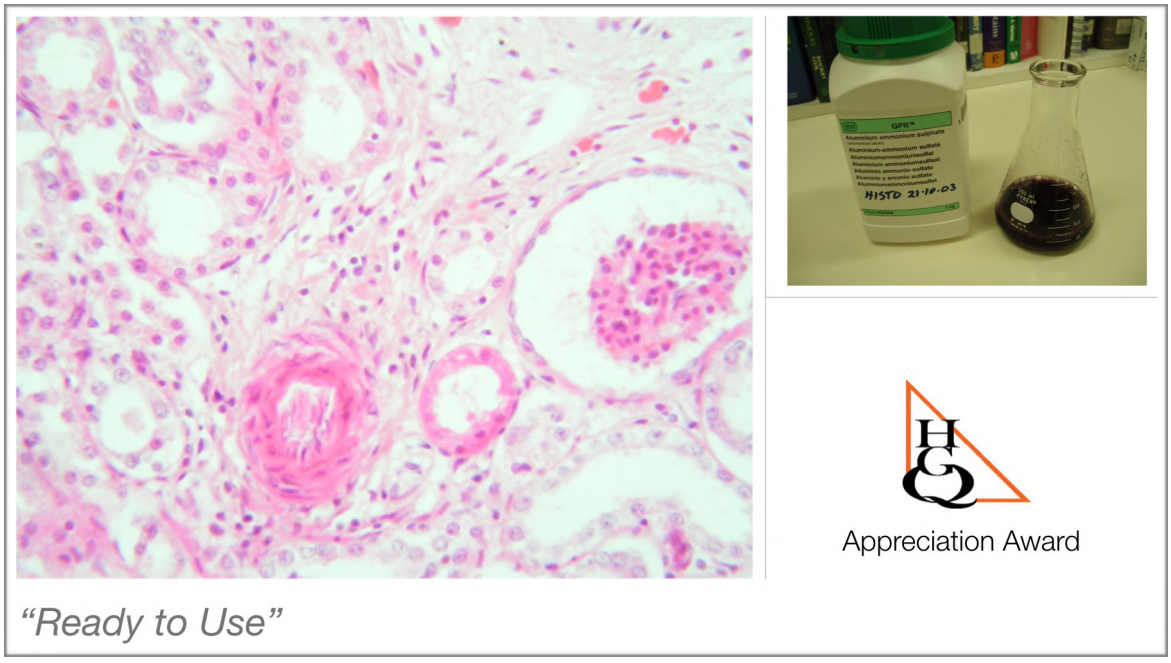


"Home Sweet Home"

At the 3rd National Histology Conference in 2006 at Gold Coast, Laurie helped out by creating beautiful Haematoxylin wood plaques which were presented to each of the speakers as gifts.

"Start from Scratch"

Laurie has presented talks at the National Histology Conference in particular on his home brew haematoxylin where he prepared his own stain from the very trees he has grown.



"Ready to Use"

Appreciation Award

Between Laurie and Sue, they have contributed to hundreds if not thousands of research papers, both directly & indirectly and have received special mentions in many more papers & textbooks.

"NHC - Back in the Day"

The following special story was posted on Facebook:

"Just a couple of weeks ago during the flooding up here Laurie was travelling home from holidaying down south and got stuck at Home Hill due to water over the road. Some people were paying upwards of $200-300 to have their car taken across the water on the back of Semi's – one couple couldn't fit their motorbike trailer on so Laurie, being Laurie offered to look after it and tow it back to Townsville once the road was open (he waited 3 days to come home). Meanwhile, Sue was stuck at home – isolated but ok – they lost some fencing – which Laurie tells me he has already repaired." This post received 40 comments and over 130 likes.

In their retirement, Laurie enjoys playing the banjo and regularly performs with a band around Townsville. Sue has decided to learn the flute.

Of all the people who know Laurie and Sue, everyone will attest that they are two of the most generous & helpful people and not to mention, extraordinary teachers.

Jerres Alcober

Histotechnology Group of Queensland

TRIVIA NIGHT 2019

Date: Friday 28th June

Time: 6.30pm-10.30pm

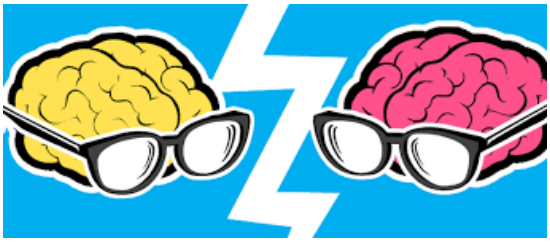
Location: The QA Hotel
64 James Street
New Farm QLD 4005

Price: $30 per person
(Tables of 10)

Including: sit down dinner (alternate drop), one house beer/wine/soft drink, Trade sponsored prizes and rounds with a professional host

Additional drinks at bar prices.

Payment due by Friday 7st June. Please be quick as tables are limited and sold on a first in best dressed basis!



Limited street parking is available close to the venue

Histological Salad

Lt Cdr Angus K Haig (retired)

Looking back, I started my histology career on the deck of the HMS Devonshire when I was a lad of twelve. She was a fine ship, even by today's standards and her decks were open to the public for the first time in history. I stared wide eyed at anti-aircraft batteries, ladders claiming to be stairs and the nine behemoths–ten inch (255mm) cannons in three turrets. These cannons were her pride and joy.

In the barrel of each, was a half-lemon, cut surface down.

Rather than ask the obvious question of why each barrel had half a lemon in it, my naïve query to the deck officer was what happened to the final half of the lemon? There were, after all, nine barrels. Five lemons equal ten half-lemons.

The remaining half-lemon was used in the officer's mess to dress the salads, I was told. To a twelve year old boy, this appeared to be a sound explanation to the wrong question but it somehow cemented the idea that I would join Her Majesty's navy and enjoy half a lemon on my salad at elevenses and brunch.

Ten years later, I had graduated as a scientist and was working histology for the Royal Navy. Seniors taught me that (secretly) no-one reads the macros but all claim they do. Never be dependent on any equipment you do not own. Official records such as temperature logs are "write-only data" so it is right and sane to feel resentment at the time wasted. A wax ribbon can be guided into position by wiping your finger across your forehead and dipping into the water to break surface tension. I was even lucky enough to spend five months aboard my beloved Devonshire eating salads dressed with the last half-lemon before being transferred to a histology post aboard the Sutherland.

I enjoyed Sutherland and I learned much from my mentor Lieutenant Commander Halliwell. I also learned that I did not enjoy salads, with or without half a lemon but I persevered because childhood dreams linger. Halliwell thought I was mad.

"Life is not a dress rehearsal," he would say, "There is no value in eating something you don't enjoy."

"I eat well because this is the only life I have."

Halliwell usually had no response to this other than to twirl his forceps around his fingers. Ostensibly, this was to change grip quickly but we both knew he did it to show off. It was, undoubtedly, faster by a matter of seconds for a dissectionist to switch between over handed and underhanded holds using the twirl/spin method but the primary purpose was to look good.

Two hundred patients/roughly three hundred specimens a night, means that saving one second on a grip change results in five minutes out of an entire shift. Along with other techniques, this can accumulate to an hour or two every shift, all for the price of ten minutes learning a perfect spin.

It was Halliwell who prompted the obvious question which had somehow eluded me for the past decade.

"But…why did they put half a lemon in the barrels?"

I'm not sure how, but in ten years, I had never asked. Halliwell quickly put to rest any hope of a simple answer. "They can't put an obstruction in the barrels without permission of an FCO [Fire Control Officer] and no FCO would tell you why without a legal reason." Worse still, he continued, the reasons would be technical and not a matter of tradition. Somehow, the half-lemons aided gunnery.

This put a new spin on my histology career. Having just joined the Royal Navy, I now wanted to learn why. Which made things awkward as advancement required I be good at my job but being good at my job would ensure I would be trapped as a histology officer and may never become an Fire Control Officer and thus, would never learn why Devonshire had half-lemons in her barrels.

I needed help with a capital N and luckily, I was friends of a friend of the Admiral so I used Nepotism to gain my gunnery badge. My friend was the epitome of a mad scientist and was more interested in learning than promotion, science or even diagnosis. He once built a hovercraft powered by liquid nitrogen and broke three ribs in the carpark testing it. According to the MPs, he crashed at twenty-two miles per hour then fell into a box of shoes. For this and other misadventures, I shan't refer to him by name as it may affect his parole in 2024.

I will mention that it was his idea to have me subjected to Sutherland's artillery to impress the admiral as a segue into a gunnery career. Nine barrels x ten inches x ten rounds a minute of cannonade can be described as a living Hell but only briefly and after that, it is just Hell. Little survives and even the training smoke rounds are potentially fatal. I was one of few volunteers to huddle in a bunker as our own ship blasted us with training rounds and the effect was both exhilarating and career-advancing. I was accepted into gunnery school by year's end.

I've yet to find a navy which tolerates free time. After mastering the daily lessons of "gun laying" I started to read Karl Marx's Das Kapital at night. Word of my ritual quickly reached the admiralty. Having aced my daily exams, there was little they could do to stop me but luckily, by pure happenstance (so I was repeatedly assured), the base laboratory needed my original skills as a dissectionist so the Navy found a way to stop me from learning about bombs in the day and revolution by night without having to officially explain why the juxtaposition unnerved them.

Dissection is a fun affair at high speeds. They claim the contrary but pathology laboratories everywhere want fast results and little else. Laboratories can make any claim they like but they are slaves to evidence. I have seen far too many managers berated for overtime and too few berated for errors. Any laboratory which tells its staff to take the time to get it right is lying and uses this as an excuse to force people to work faster while putting blame for the resulting mistakes back onto the scientists who are too busy to get it right every single time. It is unfair but some people have found ways save time in the strangest ways.

The secret is confidence: If you cannot win inside your head, you cannot win outside of it. This is a shorter way of saying that in order to succeed, you need to believe in yourself in all things. Without certainty in your abilities, you will always be doubting yourself and therefore you are not using your full concentration for the task at hand. Once you stop thinking it can't be done, you start thinking about how to get it done simply because the absence of doubt frees the brain's processing power.

I used mine for organ dissection and projectile parabolas. The end result was promotion to Lieutenant and an artilleryman's licence allowing me to be the Fire Control Officer as soon as a vessel had a free opening. I was another step closer to solving the mystery of the half-lemons in the nine barrels of the HMS Devonshire.

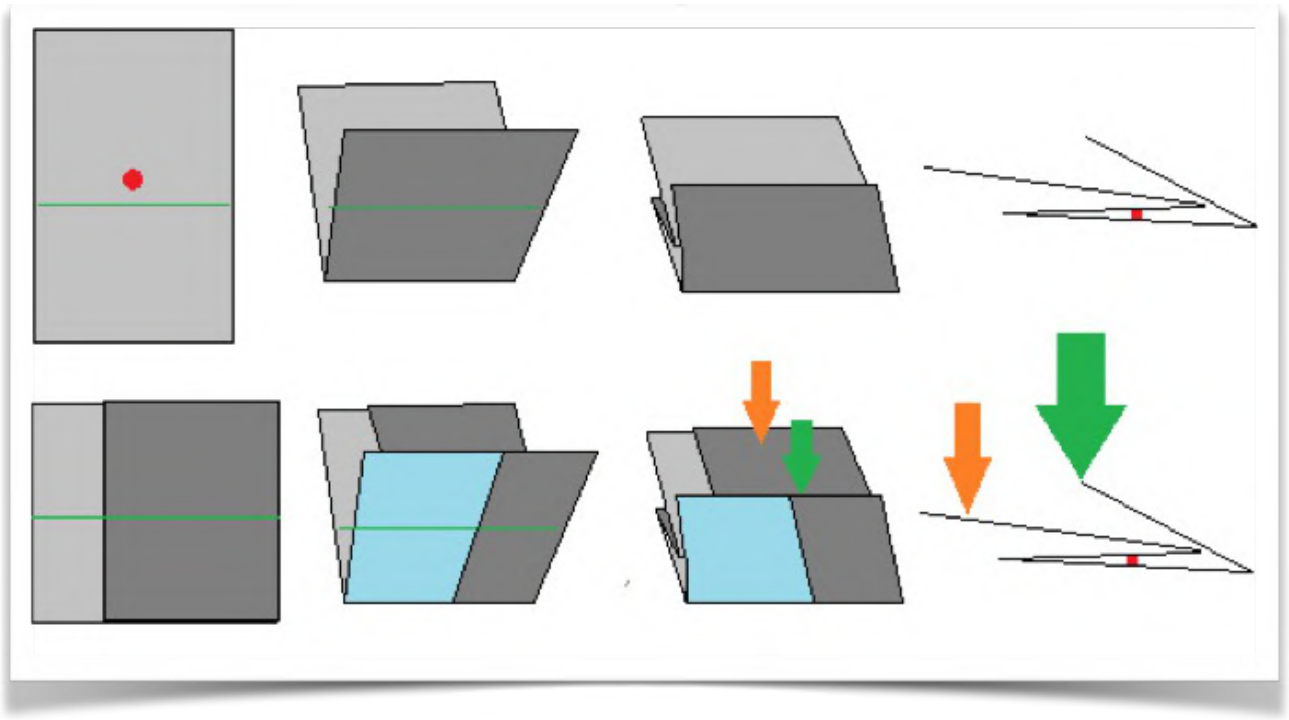
This enigma began to drive me in histology. The more I looked into it, the murkier it got. When I was stationed in Bombay, I met an ex-Devonshire officer who refused to explain the half-lemons. He did confirm that it was not a tradition but part of the cannons' design. A simple way to correct a minor flaw which would otherwise require a retrofitting a new gearing system to the turrets' rotational motors. This was all he could tell me as it was a MI5 secret "National Inflection; Level 4a" (pronounced, "four alpha"). 4a is a relatively low level of secrecy but requires a minimum rank of Lieutenant Commander.

This created an odd boost to my career aspirations as not only did I need to be the Fire Control Officer but I needed 4a clearance. The only way to do that was to science as hard as I could and hope I got noticed.

To do that, I had to learn the perfect wrapping technique. Mostly because half the military is run by idiots who are impressed by such minutia and my then CO was no exception. Wrapping = Promotion.

Histology is a process of manufacturing microscope slides. There is a chain of events much like that of a mass production factory. There are acts which do nothing to help me go faster but will help others go faster. I could also go faster by using methods which slow down the next step (such as being messy or slapdash) but there is no overall gain. I am simply stealing time from the next person in the sequence. So, I can go faster and/or I can help others go faster but I cannot delay others.

Wrapping is simple enough and there is a simple way to wrap small specimens which makes life much easier on the embedder at no cost to the dissectionist.



Row One: From right to left, the specimen is placed at about the two-third point of the wrapping paper. The paper is then folded (green line) at about the one third point.

In the second diagram, the paper is folded again on the other side of the specimen. The third diagram shows the result. The fourth diagram is a side view, showing the location of the specimen relative to the folding.

Row Two: The next step is to rotate the paper 90º to the left and the same two folds are repeated again, this time at right angles to the original folding.

The final diagrams show how to place the forceps to quickly unwrap the specimen. One pair of forceps (orange) simply presses down against extreme end of the flap of paper. The second pair (green) grasps the top flap.

Separating the forceps opens the paper. The paper is rotated. The action is repeated. The wrapping can be undone in three quick actions which take, literally, less than one second.

This wrapping takes no extra time for the dissectionist but saves considerable time and effort for the embedder. I learnt this from an Irish/Japanese chap who took his heritage so seriously he decorated his wedding with one thousand origami potatoes. He worked for WellVision Pathology in Victland when he invented the wrapping method in an inspired burst of cellulose.

In my experience, the only ones who don't see the advantages to this wrapping are the dinosaurs who refuse to learn any new way of doing things. Alas, such dinosaurs are found everywhere, not just histology and they deal with change by howling at oncoming meteorites.

I refused to be a dinosaur so I learned better ways to wrap, thus earning me a promotion to Lieutenant Commander and paving the way for my 4a clearance. I earned that under the advice of Commodore Carmody who taught me all manner of things regarding security clearances.

He was also the one who taught me dual wielding. Carmody used neither scalpel nor forceps; eschewing them in favour of two feather blades. There was nothing he could do with a scalpel that he could not do with a feather blade including removing tiny sutures from the most delicate fragments of tissue. He gave up the scalpel years ago. Two different blades was a distraction he said.

There was also nothing he could do with forceps that he could not do with two feather blades so about a year after I had met him, he put down his forceps forever and simply used two feather blades, one in each hand.

There were three reasons for this. 1) Dual Wielding looks and sounds cool. Enhancing reputation is never a bad thing so long as the reputation is earned. 2) It was good for "brain plasticity." Carmody liked to vary his habits and learn ambidexterity in the belief that it would ward off dementia. 3) It kept his dissection bench free of clutter. He felt minimalism was the key to speed and efficiency; preferring to use more skills and fewer tools to get a job done.

I think his favourite moments in life were not the births of his four children but those times when both blades needed to be changed at once so he would perform a one-handed blade change with each hand in stereo. It was a choreographed stunt of efficient show-boating worthy of narcissistic circus pony high on cocaine.

Despite his manifest lunacy, Carmody's advice was sound. I gained my desired 4a clearance by year's end. There was but one thing left to do and that was to transfer back to Devonshire and be the Fire Control Officer.

I had finally ticked all the boxes and was inducted into the secret of the half-lemons on my second day aboard Devonshire. Captain Mitternich made a request for my time in a manner so courteous I

knew it was an irrefutable order. I tried to follow him to his stateroom in a servile and dignified manner befitting a new officer to a distinguished vessel and I succeeded (for the most part) in looking that way on the outside.

On the inside, I was agog. Years of learning histology had paid off at last. I had my rank, my security clearance, my qualifications and I was on the Devonshire. The same ship where I had started when I was twelve years old staring down her barrels at the cut lemons inside. Years of eating salad with lemon dressing and hating it every lunch.

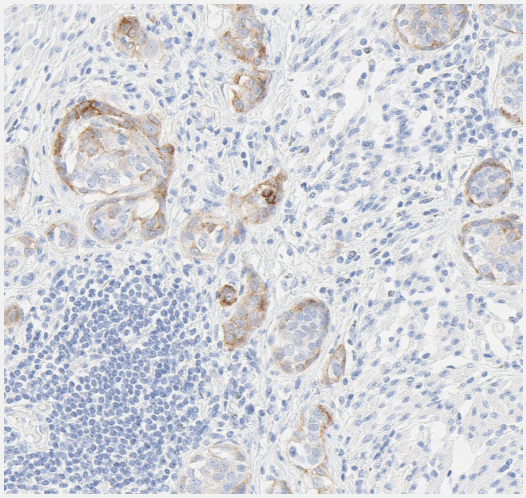
Mitternich pulled out two binders of technical plans, printed in an age when blueprints were truly blue. He opened them at the critical pages and explained why the HMS Devonshire put half a lemon in each barrel of her main guns.

However, I cannot tell you the reason as none of you are Fire Control Officers with a rank of Lieutenant Commander serving with a 4a clearance aboard the HMS Devonshire in the Royal Navy.

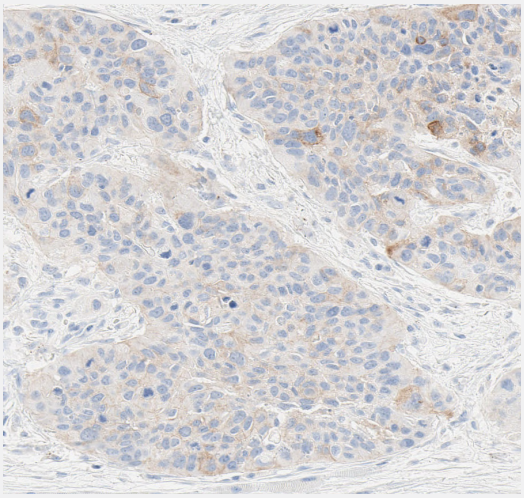
VENTANA pan-TRK (EPR17341) Assay

Your assay choice matters

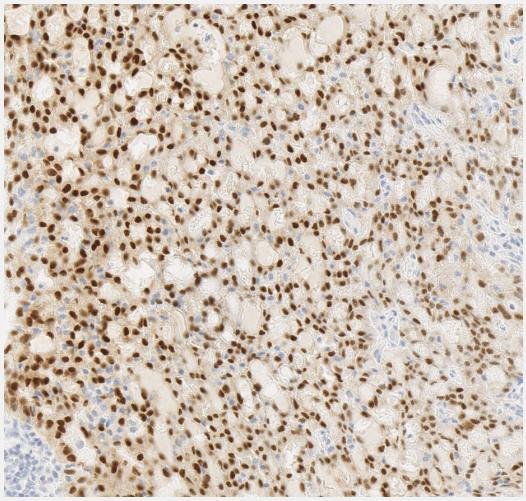
VENTANA pan-TRK (EPR17341) Assay is intended for the immunohistochemical detection of the C-terminal region of the tropomyosin receptor kinase (TRK) proteins A, B and C, which is known to be conserved across wild-type and chimeric fusion proteins, in formalin-fixed, paraffin-embedded (FFPE) neoplastic tissues stained with BenchMark IHC/ISH instruments. This product should be interpreted by a qualified pathologist in conjunction with histological examination, relevant clinical information and proper controls. This antibody is intended for in vitro diagnostic (IVD) use.



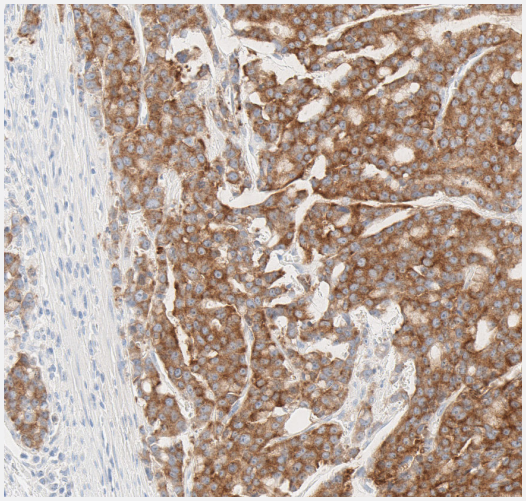
Protein expression in head and neck squamous cell carcinoma with wild-type TRK (20x)



Protein expression in salivary tumour with wild-type TRK (20x)



Protein expression in mammary analogue secretory carcinoma with TRK fusion (20x)*



Protein expression in colorectal carcinoma with TRK fusion (20x)*

Ordering information

08494665001, VENTANA pan-TRK (EPR17341) Assay, 50 test dispenser

Mohs: A Technician's Perspective

Mohs micrographic surgery is considered the most effective technique for treating many basal cell carcinomas (BCCs) and squamous cell carcinomas (SCCs), the two most common types of skin cancer. The procedure is done in stages, including lab work, while the patient waits. This allows the removal of all cancerous cells for the highest cure rate while sparing healthy tissue and leaving the smallest possible scar.

Mohs began as a technique called chemosurgery, developed by Frederic E. Mohs, MD, in the late 1930s, but was not widely known. In the mid-1960s, Perry Robins, MD, became the first dermatologist to study the technique with Dr. Mohs, and he helped advance the procedure into what is now called Mohs micrographic surgery.

Mohs surgery is performed by doctors who are specially trained to fulfil three roles:

1. Surgeon who removes the cancerous tissue
2. Pathologist who analyses the lab specimens
3. Surgeon who closes or reconstructs the wound

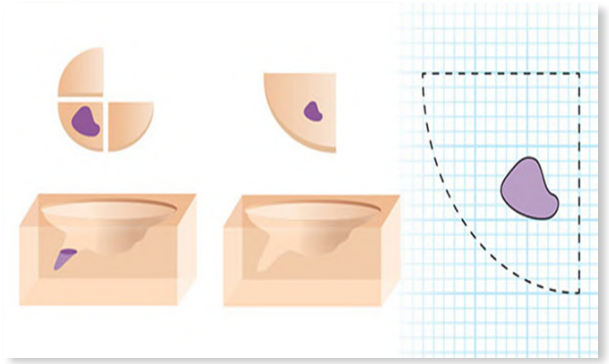
The specimen come into the Mohs room placed onto a piece of card. The Surgeon takes a biopsy from the lesion then divides the specimen into pieces the usual being 4 or 6 pieces. Each piece is given a number from 1 to 7, for example and a diagram is drawn. The inside margins of each piece are inked two separate colours - this allows the surgeon to identify which side any tumour present in the slides is located.

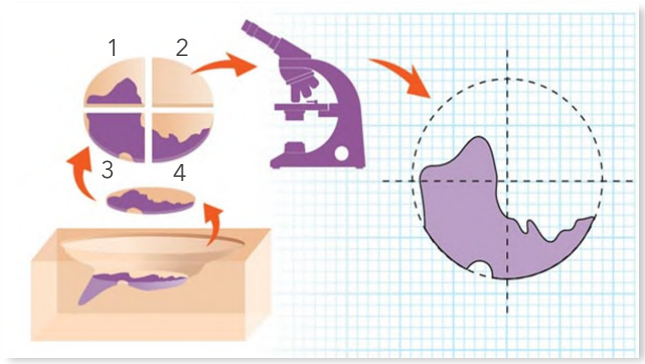
The surgeon may also need to slice the top of the tissue shallowly to "relax" the specimen to ensure that the tissue lies flat on the paper and thus able to be laid flat at embedding. Two common methods exist for embedding/mounting the skin onto the chuck for cryosectioning, these methods are the Mould and the Slide method. The important thing for both methods is to ensure the tissue and the skin is embedded flat. We want to ensure that we are able to produce a full face section as shallowly into the specimen as possible.

The mould method closely resembles the normal embedding method instead we use OCT in the mould instead of Wax. The specimen is picked up off the paper with forceps and placed straight down into the bottom of the meld. The specimen is then covered in OCT and the chuck is placed upside down on top of the mould. Once the OCT has set the chuck can be easily removed from the mould.

Both methods are effective and have their benefits. The mould method is best used with liquid nitrogen and or a very cold cryostat. The Slide method is preferred when doing Mohs without liquid nitrogen and or when the cryostat runs slightly warmer. The aim of microtomy is to cut into the block in fixed increments until a full face section is on the slide. The aim is to only have one slide per chuck.

The surgeon will want to know the distance between each section on the slide, so if they see cancer in on section and not in the next they know roughly the margin clearance. The technician should take the first reasonable section on the slide. Then pare in the fixed amount then take the next level and so on until a full face is achieved. If the technician has taken due attention at the embedding stage and ensured the tissue is blocked flat then 3- 5 sections per slide should be sufficient - the slide will be labelled with the patient name and the chuck number.





The slides are fixed in Diff Quik Fixative then a Haematoxylin and Eosin stain is performed. Depending on the Mohs location this may be automated on a linear stainer or hand stained. A glass coverslip is then applied using Ultramount. Using a microscope, the surgeon examines all the edges and deep margin of the tissue on the slides. The physician then knows whether another layer of tissue needs to be removed.

The surgeon can estimate the amount of tissue that needs to be removed by looking at the slide margins and the absence/presence of tumour in the different sections on the slide. The surgeon then marks the location of any cancer on his diagram like shown below. If any cancer is present at the deep margin or the epidermis margin a second stage is performed.

Back in the operating room, the surgeon injects more anaesthesia if needed and removes another layer of skin or deep margin/subcutaneous tissue, precisely where the cancer cells remain, based on the map, then the Technician's work begins again. This entire process is repeated as many times as needed until there are no more cancer cells.

Common issues are as follows:

1. Epidermis not embedded flat - more time taken at embedding should be the first remedial action taken. Angling the chuck and/or the production of a second slide would be the second choice.
2. Chuck under/over frozen - under-frozen chuck can be resolved by the use of freeze spray and over-frozen can be helped by application of warmth to the chuck usually by holding your thumb over the tissue for a few seconds.
3. Cartilage is very firm and is often very hard to press flat. The best way to deal with this is to make sure the bottom of the mould/slide is cold and press down with damper to stop the cartilage from rising up. Orientating the chuck in the cryostat to ensure the cartilage is facing away from the blade for easier cutting is also helpful.
4. OCT/tissue splitting can be mitigated to a large extent by dab off any excess ink from the specimens and warming the join slightly by holding your thumb there for a few seconds.

Emma Hughes

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What's new with the HGQ?

Upcoming Events

June 2019

- **Social Event - Trivia Night**
  - Venue - QA Hotel
  - FRI 28 JUN

July 2019

- **Workshop - Special Stains & IHC**
  - Venue - QUT Gardens Point
  - SAT 27 JUL

August 2019

- **Newsletter - Tissue Paper**

- **Scientific Meeting - Joint AIMS/HGQ**
  - Venue - The Pineapple Hotel
  - THU 22 AUG

October 2019

- **Scientific Meeting & AGM**
  - Venue - TBA
  - THU 24 OCT

November 2019

- **Newsletter - Tissue Paper**

March 2020

- **Newsletter - Tissue Paper**

- **Scientific Meeting**
  - Venue - TBC
  - THU 12 MAR

May 2020

- **Newsletter - Tissue Paper**