

TISSUE PAPER



Histotechnology Group of
Queensland

“Bridging histology laboratories since 1982”



FROM THE PRESIDENT - ANTHONY VAN ZWIETEN

“The HGQ has been nominated as the host for the 6th National Histotechnology Conference in 2015”

Welcome to the 2nd Tissue Paper edition for 2013. We hosted a scientific meeting recently at the PAH laboratory which was well attended by staff from Brisbane and Gold Coast laboratories. Thanks to Jason Tu and Tony Reilly for their interesting presentations on Moh's surgery and *Mycobacterium marinum*.

The HGQ is organising a social event for early November to comprise of a winery/ brewery bus tour of Tamborine Mountain similar to that of 2011. Keep an eye out for further information by email and be quick to RSVP your place on the bus for a great day out of the histology lab.

The next scientific meeting will be held in conjunction with the AGM and is scheduled for early December. The meeting details will be provided by email from Jerres Alcober as usual and hope to see a good turn out then.

The HGQ has been nominated as the host for the 6th National Histotechnology

Conference in 2015 due to WA being unable to guarantee an organised meeting by then. The first decision when organising a conference is the venue. The committee has nominated Brisbane as the venue for the June long weekend. This decision was made after receiving feedback from our Victorian and NSW colleagues, and also to make it an affordable and convenient option for all HGQ members.

This also puts us in a position to potentially host the meeting at the Brisbane Convention and Exhibition Centre in parallel to the South Pacific International Academy of Pathology (IAP) meeting. Stay tuned for more news relating to this

Thanks as always to Emma Hughes and Jerres for putting this edition together.

Happy reading. Anthony



This edition includes:

A few words from our president, secretary and editor

NHC 2013 conference summary

Feature article from OSSAA

IHC & Special Stains Articles

Latest Histology quiz

Newsletter Designed by Jerres Alcober

EDITOR'S NOTE



Welcome to the second issue of the Tissue Paper Magazine of 2013.

In this issue you will find part 1 of a fascinating look at the work of the OVERSEAS SPECIALIST SURGICAL ASSOCIATION OF AUSTRALIA and their General Surgical Visit to Halilulik, West Timor, in Nusa Tenggara Timur from February 25th to March 7th, 2013. This fascinating article is presented on behalf of Dr Brian Miller – General Surgeon – Brisbane, Qld.

There is also a lovely article written by the wonderfully funny André Heiser who has written a personal account of his time at the National Histology Conference in Melbourne.

There is the second in our series about IHC all about the Prostate Gland. Finally there is a quick quiz for all you brainiacs out there. All the answers will be printed in the next issue as well as a new quiz for you.

Regards

Emma Hughes.

Secretarial Report: Jerres Alcober

Hello to all our readers. The last few months have been busy for all in the world of histology across the "Sunshine State". As 2014 approaches, the HGQ have a few events planned for all current, previous & future members.

Thank you to Pathology Qld's Princess Alexandra Hospital for hosting the recent scientific meeting on site. It was another fantastic turn out. I thought the "noodles in a box" were a great catering option. Jason Tu & Tony Reilly's contribution to this event is greatly appreciated. We now look forward to the AGM/scientific meeting, which will be hosted by QML in early December.

If your lab would like to get involved in providing an educational experience to the Histology community, please contact us, as we like to have you on board QUT have joined in and will be hosting a scientific meeting sometime in 2014.

Back in April this year, I was able to attend the National Histology

Conference (NHC) hosted by the HGV in Melbourne. Jason Tu and I were fortunate to attend a meeting with committee members from Histology groups across the country. This meeting concluded with confirmation that in 2015, the HGQ will host the next NHC. The HGQ are very excited to accept the "torch" and look forward to bringing the event to Qld.

The committee have recently proposed that the NHC will be held in Brisbane on 5-7 June 2015 in conjunction with the South Pacific IAP conference. This will present a unique educational and networking opportunity for prospective diagnostic and technical delegates. To keep updated, please get on to www.hgq.org.au.

Just a reminder that membership with the HGQ has numerous benefits & covers the calendar year (1st January – 31st December). Joining is easy as getting online and best of all it's "Free".

Hope to see you at the upcoming social event and AGM/scientific meeting.

Enjoy!!



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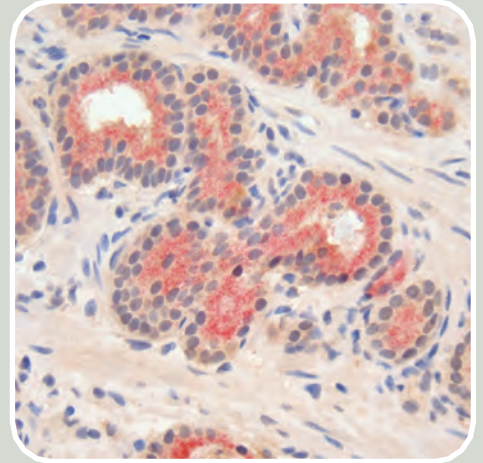
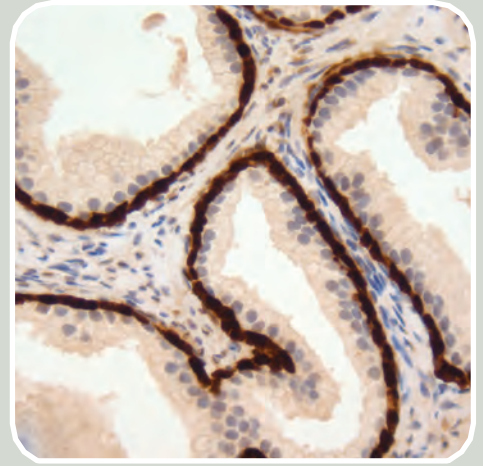
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THE PROSTATE AND IMMUNOHISTOCHEMISTRY STAINING - EMMA HUGHES



“Immunohistochemistry can play an important role in diagnostic surgical pathology of the prostate”

The prostate (from Greek προστάτης – prostates, literally "one who stands before", "protector", "guardian") is a compound tubuloalveolar exocrine gland of the male reproductive system.

The function of the prostate is to secrete a slightly alkaline fluid, milky or white in appearance, that usually constitutes 50–75% of the volume of the semen along with spermatozoa and seminal vesicle fluid.

The prostate also contains some smooth muscles that help expel semen during ejaculation. A healthy human prostate is classically said to be slightly larger than a walnut. The mean weight of the "normal" prostate in adult males is about 11 grams, usually ranging between 7 and 16 grams. It surrounds the urethra just below the urinary bladder.

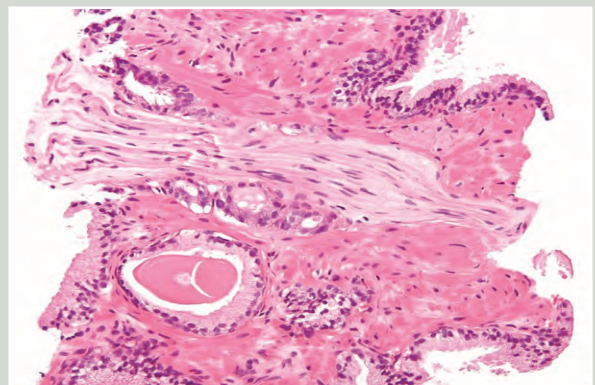
The secretory epithelium is mainly pseudostratified, comprising tall columnar cells and basal cells which are supported by a fibroelastic stroma containing randomly orientated smooth muscle bundles. The epithelium is highly variable and areas of low cuboidal or squamous epithelium are also present, with transitional epithelium in the distal regions of the longer ducts. Within the prostate, the urethra coming from the bladder is called the prostatic urethra and merges with the two ejaculatory ducts.

The prostate can be divided in two ways: by zone, or by lobe. It does not have a capsule, rather an integral fibromuscular band

surrounds it. It is sheathed in the muscles of the pelvic floor, which contract during the ejaculatory process.

PSA is produced in the epithelial cells of the prostate for the ejaculate, where it liquefies semen in the seminal coagulum and allows sperm to swim freely. It is also believed to be instrumental in dissolving cervical mucus, allowing the entry of sperm into the uterus. PSA is present in small quantities in the serum of men with healthy prostates, but is often elevated in the presence of prostate cancer or other prostate disorders.

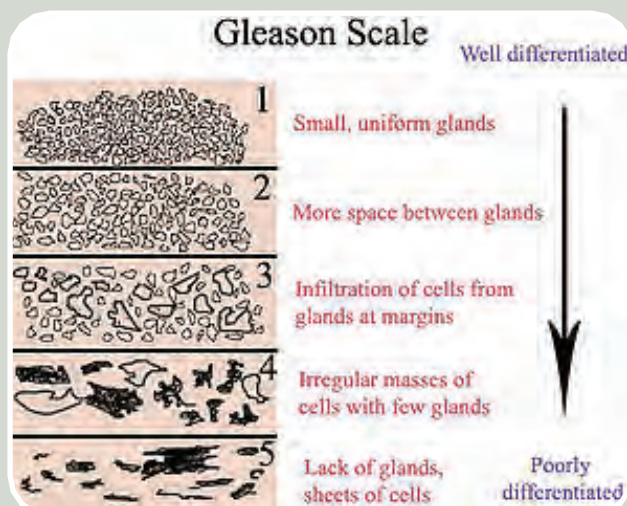
Prostate cancer is the most common extra-cutaneous malignancy and the second leading cause of cancer-related deaths in men in the United States.



Prostate Cancer (conventional adenocarcinoma) with perineural invasion

When prostate cancer is suspected a urologist or radiologist will remove a cylindrical sample (biopsy) of prostate tissue through the rectum, using hollow needles, and prepare microscope slides. After a prostate is removed in surgery, a pathologist will slice the prostate for a final examination. The pathologist assigns a grade to the most common tumor pattern, and a second grade to the next most common tumor pattern. First called the primary grade, represents the majority of tumor (has to be greater than 50% of the total pattern seen). Second - a secondary grade - relates to the minority of the tumor (has to be less than 50%, but at least 5%, of the pattern of the total cancer observed).

The two grades are added together to get a Gleason Score. For example, if the most common tumor pattern was grade 3, and the next most common tumor pattern was grade 4, the Gleason Score would be $3+4 = 7$. The Gleason Grade or Gleason Pattern ranges from 1 to 5, with 5 having the worst prognosis. The Gleason Score ranges from 2 to 10, with 10 having the worst prognosis. For Gleason Score 7, a Gleason $4+3$ is a more aggressive cancer than a Gleason $3+4$. Also, there is not really any difference between the aggressiveness of a Gleason Score 9 or 10 tumor.



Increasingly, pathologists provide details of the "tertiary" component. This is where there is a small component of a third (generally more aggressive) pattern. So there could be a Gleason $3+4$ with a tertiary component of pattern 5 - this would be considered to be more aggressive than a prostate cancer that was Gleason $3+4$ with no tertiary pattern 5. Although it is debatable as to what the full extent the tertiary component has on the aggressiveness of a cancer. Prostate cancer of Gleason pattern 1 and 2 are almost never seen. Gleason pattern 3 is by far the most common.

Immunohistochemistry (IHC) can play an important role in diagnostic surgical pathology of the prostate

Prostate specific antigen (PSA) and prostate specific acid phosphatase (PSAP) are both quite sensitive and fairly specific markers of PC (there are a few non-prostatic tumors that can express one or both), and are both very helpful in establishing or confirming the diagnosis of PC when the differential diagnosis includes other tumors that can involve the prostate such as urinary bladder urothelial carcinoma. 34 β E12, p63, thrombomodulin, and uroplakin III are additional urothelial associated markers useful in this differential

diagnosis. CDX2 and villin are useful markers to diagnostically separate colonic adenocarcinoma from PC. PSA and PSAP immunohistochemical stains are valuable in confirming metastatic carcinoma as being of prostatic origin and should always be utilized in the diagnostic evaluation of metastatic adenocarcinoma of unknown primary origin in males. Almost all prostatic cancers of low and intermediate grade are negative for p63, while normal or hyperplastic prostatic glands show strong and diffuse p63 expression.

Basal cell markers, such as the 34 β E12 antibody and antibodies directed against cytokeratin 5 and 6 or p63, are very useful for demonstration of basal cells as their presence argues against a diagnosis of invasive prostatic carcinoma (PC). However, several benign mimickers of PC, including atrophy, atypical adenomatous hyperplasia (AAH), nephrogenic adenoma, and mesonephric hyperplasia, can stain negatively with these markers, and thus, a negative basal cell marker immunostain alone does not exclude a diagnosis of benignancy

PSA remains present in prostate cells after they become malignant. Prostate cancer cells generally have variable or weak staining for PSA, due to the disruption of their normal functioning. Thus, individual prostate cancer cells produce less PSA than healthy cells; the raised serum levels in prostate cancer patients is due to the greatly increased number of such cells, not their individual activity. However, in most cases of prostate cancer, the cells remain positive for the antigen, which can therefore be used to identify metastasis. Since some high-grade prostate cancers may be entirely negative for PSA, however, histological analysis to identify such cases usually uses PSA in combination with other antibodies, such as PSAP and CD57. Tissue samples can be stained for the presence of PSA in order to determine the origin of malignant cells that have metastasized.

PSA is readily demonstrated in adenocarcinomas of the prostate in about 99% of the cases. There is a correlation between malignancy grade and intensity of staining, high grade carcinomas displaying weaker expression. About 1% of poorly differentiated carcinomas have been negative for PSA.

Different types of prostatic carcinoma, including ductal adenocarcinoma, mucinous, signet ring and small cell carcinoma, have been described to express PSA, whereas rare carcinoma with squamous differentiation as well as adenoid cystic carcinoma have been negative for PSA. Prostatic adenocarcinomas metastatic to lymph nodes or bones are, equally to primary carcinoma, identifiable by staining for PSA. PSA has been found in rare urethral papillomas and in some extraprostatic neoplasms, such as female and male breast carcinoma, as well as salivary and sweat gland tumours.

Due to the high specificity of PSA for prostatic glandular epithelium, it is very useful in identifying prostatic carcinoma in the prostate and in the adjacent organs often affected by epithelial malignancies, i.e. rectum and urinary bladder.



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MELBOURNE HISTOLOGY CONFERENCE 2013

André Heiser: Freelance Journalist

Thursday Night—Arrival in Melbourne

There ought to be cheering when 78 tonnes of metal goes air-borne but the ubiquity of science in everyday matters has blinded us to its wonders. Even a jaded journalist like me has to be amazed when he travels to the National Histology Conference 2013 in Melbourne at roughly two hundred and twenty metres every second.

Once in Melbourne, I walked to Crown Plaza whereupon I discovered that Crowne Plaza was not hosting the Histology Conference but it did have a plumber's convention in the pipeline, a librarian party booked and a union rally in the works. An algebra conference recently took the spot of the brewery federation (it substituted XXXX) but there was definitely no histology conference. Against all common sense and reason, Crown Casino and Crowne Plaza are not related but are quite close to each other and suffer what we, as histologists, call cross-contamination.

Friday—Conference Registration and the Pre-Conference Workshops

I arrived for registration quite early (even among nerds, I was first to arrive) and had fun snapping photos of the delegates as they trickled in then writing down their names in hopes of matching the names with the photos later. Many days afterwards I discovered that either I had forgotten to write someone's name or one of the delegates is named Yarra River.

Dr Guy Orchard and Mohammed Shams spoke of MOHS technique in great detail so that, despite its "Advanced" description, everyone who attended was able to understand it and took something useful from the lecture. They covered the methods, indications, history and benefits of Frederic Mohs' micrographic surgery and the only thing they didn't explain was why Frederic MOHS' surname is capitalised in some texts.

Dr Orchard also saved the day for the next workshop given by Jason Kelly, Alex Laslowski, Mark Bromley and Rita Au. The speakers covered immunohistochemistry of several antibodies used in the diagnosis and characterisation of prostate cancers, lymphomas, melanomas and breast cancers. While most of us are in diagnostic laboratories where such things are more the realm of the pathologists than the scientists, it is both useful

and fascinating to know why these techniques are used.

Australian Biostain has a new product named Rentsch haematoxylin (after its inventor) which looks promising and delivers a crisp nuclear stain. I was also assured that Aus Biostains would give free samples of anything needed for research. The exact meaning of "research" was not given so I chose to believe that it includes nitric acid, toluene and nitroamines. It's not as if I need my eyebrows and I am pretty sure I can spare a few fingers.

Olympus had a stand dedicated to microscopes (they're worth looking into). ThermoFisher Scientific even demonstrated an adjustable height cryostat which rose and fell with a satisfying hydraulic whir. This is not only good ergonomics but would be a great way to reach the top of an inconvenient storage shelf.

The remaining two workshops covered tissue identification and advances in cancer diagnoses for prostates, lungs, colons and breasts. Both were given by Dr Thomas Haas who didn't mind me filming him so long as he got 10% of the film profits. I bargained him down to 7.2% do long as he and his partner were played by Robert Redford and Sigourney Weaver.

Friday ended for most at this point but some of us went out for drinks which may explain my extreme photophobia on Saturday morning.

Saturday—The Conference Begins

Hungover but dedicated, I stumbled to the conference centre and wincing under the harsh fluorescent lighting every time I took my sunglasses off to talk to people.

With that, I took my seat in the darkest corner of the room while the poor boy readjusted the lighting for the first speaker, Adrian Warmington of the Histology Group of Victoria, who welcomed us and held a moment of silence for the Anzac Day weekend.

In the Anzac spirit, the first speaker of the main conference was Air Commodore Rowan Story. Before he even ascended the podium, I could tell he was a man with much to his name. In fact, he had so much to his name that he quickly got tired of hearing his own accolades and began a slow climb to the microphone



"Even a jaded journalist like me has to be amazed...."

before the praises were halfway done. Success has not diminished his modesty and rather than speak of his own work, he opted for a general history of medical care in the Australian Defence Force and how it had advanced over the years to protect not only serving members of the ADF but also people in areas literally on the other side of the world.

The next speaker was Keith Byron who spoke about molecular techniques. There is divided opinion their role and if it can ever replace histology. Keith pointed out some of the limitations and more interestingly, some of the advances they had made. I know the basics of the PCR but I was unprepared for the progress which had been made in molecular methods. Modern science is totally wondercoolsome (yes, I know that's not a word but it should be). I won't go into the details of real-time PCR, DNA quantification and the likes because I would not know where to stop raving about the ingenuity behind these ideas. Molecular techniques are certainly powerful and may indeed replace at least part of histology.

Histology is hardly gone however and remains the definitive way to diagnose a number of things such as prostate cancer—representing a third of all new malignancies in Australian males and the second biggest cause of cancer deaths in Australia according to the next speaker: Tony Van Galen.

Tony spoke about the details of prostate biopsies but sadly didn't offer any hope that the dreaded twelve prostate cores with their associated mass of unstained slides will ever go away. In fact, he alluded to the standard use of even more biopsies in the future - a future which hopefully uses molecular techniques to handle prostatic cancers.

But we ought not complain: Anne Prins, an expert in unusual specimens, described some

of the more exotic things she has handled. Normally, an unusual specimen in histology is something especially disgusting or cool (in histology, these terms are typically synonymous) which interrupts workflow when all departments are invited to watch the dissection in hopes of making someone vomit. Anne speech took "unusual" to new levels by performing histology on all types of random items such as parchment. The HGV was wise in arranging lunch after her talk rather than after anything obscenely biological.

Natalie Kvalheim spoke of using ISH on a disease called Abalone Viral Ganglioneuritis which is causing economic problems for abalone farmers and harvesters not just in Victoria but also Tasmania and New South Wales where it could establish itself. The ISH methods she described were created solely for this problem and are part of the work to solve the issue.

It was nice to have a non-human disease to counterbalance the next talk by Soeun Mom: Testicular Biopsies. This made roughly half the audience cringe internally but will be an important issue as the demand grows. Luckily, it is still a niche area and Monash Medical Centre has only one pathologist examining them (if he is fired, would he be given the sac?) but demand is expected to increase as few men want to leave the question of fertility dangling.

Nina Fotinatos spoke about career paths after a science degree. It was an excellent presentation explaining what the different degrees were, how to apply and what to expect in terms of workload, time and government support.

With that, we all went our separate ways until the dinner. In a bold move, HGV chose to have the whole conference handed professionally by InFront Events. I asked about their history and discovered that InFront organised over one thousand people from fourteen different countries for the Ceduna total eclipse parties in 2002. Quite a feat for an event which lasted only thirty-two seconds. Presumably this would have been handled by their rural division: OutBack Events. I am sure that InFront have other achievements but none of them work as a pun.

As mentioned, Dako was the major sponsor of the conference so it got to pick the theme of the evening: A Splash of Red (which sounds ominous but is still better than Microtomy Incident!). Keeping with the theme

was the band Red Sector (who wore black). They seemed to genuinely enjoy music and their jobs. Those with courage danced the night away and I did my utmost to get others to participate because the Nutbush is not a dance which tolerates loners. Dako's red theme was a good omen. A red theme in a red-lit restaurant with Red Sector playing music to people wearing red means this article will be read.

I drank moderately at dinner and was quite annoyed when I woke on Sunday feeling like I had swallowed a radioactive hamster. It was most unfair after a night of restraint.

Sunday—The Final Day

In deference to the drinking, the final day started a little later than usual and with a noticeably reduced attendance. It is theoretically possible that delegates weren't interested in

Naomi

"The practical skills and time-pressures of histology create a kind of Top Gun mentality...."

McCallum's neuropathology case studies using electron microscopy but highly unlikely. Occam's Razor supplied the obvious answer and this was confirmed as people trickled in late over the next half hour as Naomi spoke of her work and the uses it has to confirm diagnoses which histology cannot provide. Naomi reminded us that histology is not the be all and end all and used case-studies to prove it.

The practical skills and time-pressures of histology create a kind of Top Gun mentality in some scientists which is why it is good to see Naomi cut them down to size by talking of a department whose analytical capabilities can never be matched by light microscopy.

Heather Renko-Montes and Dr Thomas Haas then spoke of sentinel lymph nodes. Like the other speakers, they discussed focused on the overall reasons for doing what we do as well the technical details and how it fits into patient care.

Next was Suzanna Svobodova who explained the reasons and methods of molecular testing for EGFR, KRAS and BRAF. Classifying/characterising mutations in these genes allows better choice of treatment options according to which cellular pathways are affected and therefore which pathways/

mechanisms can be targeted by treatments such as BRAF V600E-specific inhibitors, anti-EGFR antibodies and tyrosinase inhibitors.

Going back to classic histology, David Gan spoke of immunohistochemistry and the best ways to get a good IHC slide. The importance of basic understanding of histology is just as great as understanding the overall context in terms of patient care and the role of other departments so it was good to have a refresher course in the most powerful technique in histology.

While not as sexy as electron microscopy, real-time PCR or InFront Events staff, the following topic is indisputably essential to us: NATA. Andrew Griffin gave a quick overview of the ISO 15189 standard for medical laboratories and the changes it has undergone since the last time.

Oddly enough, the most interesting talk (for me) had little to do with histology—Leishmaniasis in kangaroos. At this point, it is all a bit of a mystery and I think the questions raised by Sarah Morabito's talk are the best part. Despite all the advances we have made in science, there are still unanswered questions and new mysteries in the world. Discovering leishmania parasites in kangaroos opens up many areas for research and it will be fascinating to watch how it all unfolds.

The funniest speech was saved for the end. Greg Jenkins spoke of the innumerable disasters which befell a friend of a friend of his during many years of histology including the final battle involving a clumsy pathologist, a slippery bowel and an insinkerator waste disposal unit which had been accidentally left running during the dissection: "Specimen did not survive processing."

Other funny disasters were shared by all at the end when some spoke of incidents from their own laboratories. After a weekend of intense education, it was nice to relax and enjoy ourselves, not for the passion of learning but simply because working in the laboratory can be fun in itself.

Next year, it all starts again in South Australia for the Histology Group of South Australia's conference. This is to be held at Mount Gambier, close to a number of wineries and the Victorian border. This will be convenient for those who wish to get drunk at the dinner, embarrass themselves then escape the South Australian police by jumping the border.

I will supply more details as I get them.



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OVERSEAS SPECIALIST SURGICAL ASSOCIATION OF AUSTRALIA

PART ONE

General Surgical Visit to Halilulik, West Timor, in Nusa Tenggara Timur

Date of Visit: February 25th to March 7th, 2013

Team Members: Dr Brian Miller – General Surgeon – Brisbane, Qld
 Dr Andy Beinssen – Anaesthetist – Adelaide, SA
 Sr Cath Coombe – Theatre Nurse and Coordinator – Adelaide, SA
 Dr Fifi Djatmiko – Team Interpreter and Coordinator – Brisbane, Qld
 Dr Joyce – Accompanying Clinician – Atambua, NTT, Indonesia



Members of the OSSAA general surgical team, Dr Brian Miller, Sr Cath Coombe, Dr Fifi Djatmiko and Dr Andy Beinssen, at Kupang Airport on the way to Halilulik.



Bintang with her 6 pups, during the OSSAA visit to Halilulik in July 2011



V-Scan handheld rechargeable U/S device



Sister Angela with Dr Andy and Dr Brian, in the OT foyer at Halilulik Hospital.



Powpow, one of Bintang's favourite pups, sitting with Dr Brian, Dr Intan and Dr Ilona. Powpow has remained at the convent looked after by the Sisters and Dr Intan, and he is now 18 months old.

Introduction

The purpose of this visit was to provide general surgical services and clinical teaching to the patients and to the staff respectively of Halilulik Hospital in Halilulik, West Timor, NTT. The last general surgical OSSAA Team to visit Halilulik Hospital had been that of Dr Bob Sillar from Newcastle in August, 2012. The senior clinical nurse at Halilulik Hospital, Sister Angela, was instrumental in promoting the surgical visits which are scheduled for the year 2013 through collaboration with the Ministry of Health in Jakarta and the OSSAA organization in Adelaide. She also enlisted the help of Dr Joyce from Atambua to screen admissions for surgical conditions and minor operations during our visit, and this again was cleared through the Ministry of Health in Jakarta. Our team assembled in Denpasar from various parts of Australia and proceeded to Halilulik where we worked for the duration of the visit before returning home.

We were met by Sisters of the same Order at Kupang Airport on the way to Halilulik and they welcomed us there before we proceeded on. Dr Suroso from Atambua Hospital, a qualified surgeon, was responsible for the continuing care of our post-operative patients following the team's return to Australia. Our interpreter, Dr Djatmiko is an Indonesian doctor trained through the Australian system currently engaged as an advanced trainee in paediatrics at the Mater Hospital in Brisbane. She has been on several previous visits with this team.

Denpasar

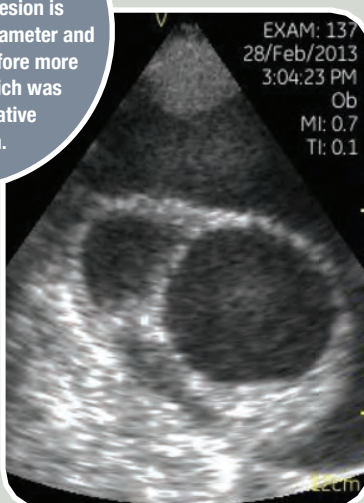
In order to avail the team of more secure flights and space aboard the planes, the internal bookings were made in Australia by Harvey World Travel. The road transport arrangements were made by Sister Angela in Halilulik. Virgin Airlines on the flight to and from Denpasar was helpful in waiving excess baggage fees, as was Garuda Airlines on the way back from Kupang.

We arrived in Denpasar on the afternoon of February 25th and spent that night at the Vira Bali Hotel which is conveniently close to

the airport. The following morning the team set off for Kupang on Garuda Airlines where we were met by the sisters from the same order as the Halilulik Hospital, and a large commercial transit vehicle as arranged by Sister Angela.

We drove directly from Kupang to Halilulik stopping for dinner in Kefamenanu, which took about 6 hours.

V-Scan U/S of patient with midline pelvic mass inseparable from uterus clinically. Lesion is approximately 9cm diameter and cystic on U/S; therefore more likely ovarian, which was useful preoperative information.



Our arrival in Halilulik was at about 8.00 pm that night. There was quite a bit of wet weather en route, but the drive was largely uneventful.

Halilulik

The weather in Halilulik was generally quite rainy in the afternoon and at night, and the team was accommodated across the road from the hospital in the doctor's quarters next to the convent. Conditions there were very



satisfactory with tidy rooms, comfortable beds, three outside bathrooms featuring western-style toilets in two, and mandi's with piping hot water brought in in buckets by the staff each morning for showering. There was room-sharing by Cath and Fifi, as well as by the junior doctors who were moved out of their

rooms to accommodate our team. This perhaps would have been an issue had the OSSAA team been larger, or the junior doctors more numerous, perhaps requiring the use of suitable bedrooms elsewhere in the convent which we heard are available.

We all took doxycycline as usual, but the mosquitoes were not too troublesome this time.

The hospital was in a notably clean and orderly condition. There had been some reorganization of the wards and outpatient areas in the hospital since our visit last year with a larger space for outpatients and minor ops up the back where there were wards before. The rooms in the theatre suite were in the same arrangement as we had seen before, and there was plenty of space to see outpatient consultations between cases in the foyer. There was a large whiteboard in the same area for recording our operative bookings.

All meals were served in the theatre complex. The catering was outstanding throughout, with provision of a varied menu for the various medical staff in theatre and plenty of cold tinned drinks.

The nursing station in the hospital is centralized, and at first sight seems rather distant from some of the patients but the compactness of the hospital made for relatively quick access to all areas. In addition,

major post-operative cases such as thyroidectomy and laparotomy patients were looked after in the ward that is closest to the nursing station. Hand-washing and alcohol rubs for sterilizing hands after patient contact were in universal use. After a small

reminder to Sister Angela the observation charts were reinstalled at each bed promptly and were used effectively. One patient who had a bowel resection in particular required careful fluid balance, and

Sister Angela was instrumental in making sure that this was done accurately

Laparotomy and removal of loculated 9cm diameter left ovarian cystic structure, which was densely adherent to appendix (seen here) and also to uterine adnexae. Submitted for histology in Australia.

Pre-op assessment

Brian carried out his consultations in groups of 3 or 4 between the operative cases. This ensured a good through-put of patients requiring surgery. The long queue of outpatients meant that there was never any lack of cases for the lists each day, indeed, rather the reverse in that there were patients priority wait-listed towards the end of the visit who could not be accommodated.

A list of the names of these priority patients assessed by Brian as being ready for surgery has been passed on to Dr Bob Sillar so that perhaps they can be offered surgery during Bob's August 2013 visit to Halilulik.

Basic investigations such as haematology, and various biochemical tests (including now thyroid function tests) were obtained where indicated, but there was still no radiology facility at all at the hospital.

A small ultrasound unit was again available in theatre, and in addition Brian had brought with him a hand-held re-chargeable V-Scan U/S unit lent to him by the Emergency Department doctors at PAH in Brisbane, which was very helpful in the assessment particularly of some patients with abdominal masses. We were able to email the V-Scan U/S images obtained in Halilulik back to one of the radiologists (Dr Mark Benson) at PAH in Brisbane for quick reporting.

Halilulik Hospital

Halilulik Hospital is the major hospital for the district. It is also the only hospital in this area with an operating facility. There is no qualified surgeon in Kefa Hospital, and apart from Dr Suroso, the general surgeon at Atambua Hospital (who does not have an anaesthetist, but does do spinals himself) there are no surgical facilities in the area at all. At Halilulik Hospital there are approximately 60 beds, and 5 wards including a private general ward and an obstetric ward. Most wards are open-plan although there are some individual

rooms. The wards are clean but are not screened beyond having individual mosquito nets.

Hand washing was by alcohol solution carried by the staff on ward rounds. Sister Angela monitored all activities and provided help for patients who were having trouble with distant referrals. She came on all of our ward rounds twice a day, with her staff. Suggestions and orders were quickly acted upon. The families were bringing in food and doing some basic nursing procedures as well. IVs were

running to time, dressings were changed by the nurses as ordered, and the drains (especially those in the post-op struma patients) were removed by Brian.



AC Automatic Voltage Regulator for the diathermy, essential in theatre.

Radiology

As mentioned above there was no X-ray available except by referring patients to the Army Hospital near Atambua about 30 minutes away by car where they had to pay a fee. This was obviously only an option for patients willing and able to afford this. Before she left last year, Sister Helma had previously done the costing for a basic X-ray unit to be installed on a vacant piece of land next to the theatre, but this has not yet happened. Some ultrasound examinations were being performed in Halilulik particularly by one of the junior doctors, Dr Intan. The nearest CT scanner was in Surabaya on Java. There is no CT scanner available in West Timor. CT scanning was, therefore, not a reasonable prospect for most patients because of the cost of the travel to Surabaya as well as the study itself.

Pathology

The Pathology Unit was quite basic. Since our last visit the hospital is now capable of doing thyroid function tests which was very useful given the number of goitre patients in the area. Blood donations were being cross-matched in Atambua and were available for transfusions if and when required from compatible family members. However we had one instance during the visit where there was an issue with the storage of blood, and at least three units of blood had to be discarded because the blood had not been stored at the correct temperature. A few haematology and biochemistry tests were available, notably FBC, a few liver function tests and urea/creatinine. Electrolytes were not available.

About 12 histological specimens were collected as indicated from our operative specimens into small formalin jars brought by Brian from Princess Alexandra Hospital in Brisbane, and these were returned to Brisbane for processing at the end of the visit. Some reports will have a bearing on patient

management, and the results will be sent to Sister Angela and Dr Intan for acting upon as necessary. In addition a copy will be made available for Dr Bob Sillar who is the next general



surgeon to visit Halilulik in July/August, 2013. Dr Geoff Strutton and Dr Guy Lampe, histopathologists at the Princess Alexandra Hospital in Brisbane will be responsible for reporting the histology. To be noted is that this is a pro bono service provided by Queensland Health.

Pharmacy

There was a reasonable quantity and variety of common medications in the pharmacy. First generation and third generation cephalosporins were readily available as well as oral metronidazole. Standard post-operative pain management included local anaesthetic blocks followed by paracetamol and tramadol. A variety of synthetic surgical sutures and other

disposables was in stock, although we had brought a good supply of our own. To be noted is that Johnson and Johnson (Queensland) are no longer able to supply suture materials directly to members of the team, so that these were obtained from existing hospital stock. The sutures that we brought included some less popular generics that had been removed from PAH stocks such as Polysorb.

Medical Staff

Drs Intan, Rudy, Ilona and Chandra – hospital doctors on site.

Drs Juanna, Donni, Vester, Dewi and several others totaling 15 – visiting doctors from Jakarta and Surabaya working in local clinics and outlying hospitals. Dr Joyce – hospital doctor, with private practice in Atambua who screened outpatients for us and did minor operations under LA.

Dr Filo – hospital doctor, Atambua.

Nursing Staff

Sister Angela – head Sister at Halilulik Hospital.

Nurse Richard – anaesthetic nurse, working with Dr Andy. Sister Mea and Nurse Addiss – theatre scrub nurses.

Operating Theatre

This is a fairly new freestanding building with a big foyer, a very elegant lounge for interviewing visitors, a consultation area with curtained space for patient examination used extensively by Brian and Fifi with the other junior doctors, segregated male and female changing areas, the tearoom, western-style toilets in the change rooms and two theatres with an adjoining recovery area which was extensively used by Dr Andy Beinssen. The useful thing about the recovery area was that it could be viewed as required by Andy from within the theatre through the glass doors of the theatre itself.

The major cases were done by Brian and Andy in the smaller of the two theatres with air conditioning and the larger anaesthetic machine for Andy. Concurrently minor cases were done in the Outpatient and screening area under local anaesthetic by Dr Joyce from Atambua and the junior doctors. The larger of the two theatres in the theatre suite was not

used on this visit, but the potential for using it is there because the air conditioner is now working and there is an anesthetic machine available for it which has been used in the past by Dr Andy and is working well. Suction and the small Erbe diathermy functioned well this visit with the important addition of the red voltage regulator. Brian had brought his Welch Allyn headlight which was used extensively for all major cases. This together with the theatre light was quite adequate, and as it turned out there were very few power outages of any significance during this visit. The theatre table worked well for patients requiring special positioning for thyroidectomy, although we did find that it was not possible to get a head-down position for pelvic operations.



Thyrotoxic patient seen in consultation on this visit, and managed medically.

There was a reasonable stock of instruments brought up over several visits to Halilulik by Cath and Brian, enough to make up several packs. Suture availability was not an issue, as mentioned above.

Each working day commenced with a comprehensive morning ward round at 7.30 am together with Sister Angela. We were generally able to commence operating at about 9.15 am after breakfast. Most days concluded around 6.00 pm, although there were a couple of evenings where in order to complete the booked cases we went through to about 8.00 pm. There was one emergency case, a laparotomy and small bowel resection, but it turned out that this fell on a Sunday morning and therefore did not impact on the length of the day. The theatre staff was very accepting of these hours, and Sister Angela organized

members of her staff to stay right through to the end of the day while keeping a very close eye on all proceedings herself, although she did not scrub.

Staffing

The regular OT scrub nurses were Nurse Addis and Sr Mea. They received considerable tuition from Sr Cath, and were both improving dramatically by the end of the visit. Sr Mea already had quite a bit of experience from previous visits.

There was no anaesthetic technician as such but Andy spent considerable time tutoring Nurse Ricardo in intubation and spinal techniques. Notably there is still no ventilator machine on the anaesthetic machine. I will leave Andy to comment on this further in his report. The staff all appeared enthusiastic, eager to learn, and ready to adopt good nursing protocols introduced by Cath. There was ongoing education and procedural instruction provided by all members of our team to doctors assisting on the cases, as well as to anaesthetic staff and nurses.

We had approximately 15 younger doctors in the hospital for this visit, and we got to know 8 of them well. The 8 doctors, 4 of whom actually worked at the hospital, deployed themselves appropriately and scrubbed in on all the operative cases as assistants.

Consultations

As many outpatients as possible were seen between the operative cases by Brian and Fifi, with on-the-spot anaesthetic consultations provided by Andy as and when required. This all took place in the large well-lit room near the front door of the theatre suite, with a large whiteboard well-placed to write up the bookings. Towards the end of the visit the number of patients presenting for consultation dwindled when the lists were clearly full, although we were still prepared to book them onto a waiting list for subsequent Australian teams or suggest referral to other hospitals as necessary.

The case mix

The outstanding clinical features of this visit were again the large number of goitres as well as other head and neck lesions, ovarian



19 year old girl, who underwent left above-knee amputation in July 2011, for osteosarcoma, done by Dr Brian, assisted by Dr Filo.

cysts, burn-scar contracture and numerous symptomatic hernias including a profuse small bowel fistula from a strangulated Richter-type femoral hernia.

We now have 121 patients in the NTT Lipiodol goitre study, thanks to repeated donations of radiological Lipiodol from PAH Brisbane. In addition to these 121 patients there are quite a few that have also received Lipiodol from Dr Bob Sillar on his visits. The patients have been derived from Kefamenanu, Larantuka, Soe and Halilulik. The follow-up of our earlier patients for a simple neck circumference measurement after two years to ascertain whether the Lipiodol has caused any shrinkage of the goitres so treated has been difficult. However to be noted is that this treatment has now entered mainstream literature in the Oxford Handbook of Tropical Medicine, 3rd edition. From the literature a 60% response rate can be expected provided the goitre has not gone on to extensive cystic degeneration.

It is still unclear whether the high incidence of multinodular goitre in NTT is due to lack of iodine in the soil, eating of poorly

cooked cassava, a familial tendency, or a combination of these factors.

For other clinicians who decide to use Lipiodol as a nonsurgical management for multinodular goitre, I would emphasize that it is important to prescribe a concurrent course of ferrous sulphate, and also a dose of albendazole, to ensure maximum availability, absorption and utilization of the iodine over a 1 to 2 year time

frame. The Lipiodol is given as a single oral dose of 1.5ml using a glass syringe with a steel needle to squirt the oily fluid to the back of the mouth. The treatment is contraindicated if the patient has any clinical signs of hyperthyroidism as this may be exacerbated (Jod Basedow effect) by the iodine. The availability of TFTs at the hospital now renders exclusion of patients who may be thyrotoxic a great deal easier.

Intestinal work remained uncommon, although the emergency case that was done on the Sunday during this visit was in fact a small bowel resection and anastomosis for a strangulating and perforated Richter's hernia.

Several post-operative patients from previous visits were reviewed, including:-

1). A female infant with an imperforate anus who had required a colostomy in 2011. Unfortunately it has not been possible for this little girl to reach a paediatric surgeon yet for her definitive pull-through procedure, although an extensive attempt was made by Sister Angela and the OSSAA team in August 2011 for her to see a New Zealand paediatric surgeon in Dili. Arrangements for this, however, fell through at the last moment due to the patient's mother being unwilling to travel. Accordingly other arrangements have been made by Sister Angela for her to go to

Surabaya instead.

2). One of Dr Bob Sillar's patients, who had been referred by him to Australia for a resection of an ameloblastoma with free fibular



Early post-op, July 2011

graft to the mandible, was also

reviewed and she is doing exceptionally well. I hear that Dr Bob Sillar is making arrangements for her to pursue a career in nursing. 3). Also, the 19 year-old female patient who had an above-knee amputation for histologically proven osteosarcoma in 2011 was reviewed during this visit, and she is pleasingly still free from clinical signs of metastatic disease. She is now well mobilized with her prosthetic leg which was paid for by our team.....

PART TWO - Next Issue



Brian with the patient, now clinically well at 18 months post-op, in February 2013. Walking well with her new left above-knee prosthesis.



Up walking on day 4. The OSSAA team left a donation of Aus \$140 in 2011, to be used for a prosthesis later.

December

AGM/3RD SCIENTIFIC MEETING 2013



To spend some
quality time with the
"Gan Man"

RSVP at www.hgq.org.au
or admin@hgq.org.au

WHEN:

Friday 6th
December 2013

TIME:

6:00pm sharp

HOST:

QML - Histology

**2013 MEMBER
BENEFITS:**

Main Meal &
Beverages
complimentary

ITINERARY:

- AGM
- 3rd Scientific Meeting
- Dinner

RSVP:

Friday 29th
November 2013

"LET'S GET QUIZ-ICAL, QUIZ-ICAL"

SPECIAL STAINS QUIZ - 20 MCQ - PART ONE

- EMMA HUGHES

1. DOPA-oxidase:

- ☐ What is Wilson's disease?
- ☐ How is silica visualized?
- ☐ What is the most specific method of melanin staining?
- ☐ Where is melanin found?

2. Demonstrates phosphates and carbonates, but these are usually present along with calcium. Most useful when large amounts are present, as in bone:

- ☐ When is a VonKossa stain used?
- ☐ What does a high LAP score indicate?
- ☐ What are the types of melanin stains?
- ☐ What method is used to stain iron tissues?

3. Outlining tissue structures--basement membranes, capsules, blood vessels, etc.:

- ☐ What is a PAS stain useful for?
- ☐ What characterized tattoo pigment?
- ☐ What are Lipochrome (lipofuscin) pigments?
- ☐ What is a LAP stain used for?

4. Most commonly in heart, liver, CNS, and adrenal cortex (zona reticularis):

- ☐ How does carbon appear and how is it imaged?
- ☐ Where are lipochrome/lipofuscin pigments commonly found?
- ☐ What is a special property of giemsa stains?
- ☐ What is used to stain asbestos?

5. Fungi and for Pneumocystis carinii (jirovecii) - organisms are outlined by the brown to black stain:

- ☐ What is a Gomori methenamine silver (GMS) stain used for?
- ☐ When is Alizarin red S used?
- ☐ How is Perl's iron stain produced?
- ☐ How does Schmorl's method work?

6.

i) Neutral - found in glands of the GI tract and in prostate. They stain with PAS

ii) Acid (simple, or non-sulfated) - Are the typical mucins of epithelial cells containing sialic acid. They stain with PAS, Alcian blue at pH 2.5, colloidal iron, and metachromatic dyes. They resist hyaluronidase digestion.

iii) Acid (simple, mesenchymal) - These contain hyaluronic acid and are found in tissue stroma. Stain with Alcian blue at pH 2.5, colloidal iron, and metachromatic dyes. They digest with hyaluronic acid. Found in sarcomas.

iv) Acid (complex, or sulfated, epithelial) - These are found in adenocarcinomas. PAS is usually positive. Alcian blue positive at pH 1, colloidal iron, mucicarmine, and metachromatic stains are positive. They resist digestion with hyaluronidase.

v) Acid (complex, connective tissue) - Found in tissue stroma, cartilage, and bone and include substances such as chondroitin sulfate or keratan sulfate. Stain selectively with Alcian blue at pH 0.5.

- ☐ What demonstrates donovan bodies and leishmania?
- ☐ When is Alizarin red S used?
- ☐ What are the types of Mucin stains?
- ☐ What stains fungi and Pneumocystis carinii (jirovecii)?

7. Found in the skin, eye, and substantia nigra. It may also be found in melanomas:

- ☐ Where is melanin found?
- ☐ Where is hemosiderin found?
- ☐ What methods are used for calcium staining?
- ☐ What are the types of Mucin stains?

8. Uses the reducing properties of melanin to stain granules blue-green:

- ☐ What is used to stain bacteria?
- ☐ What does a low LAP score indicate?
- ☐ How does Schmorl's method work?
- ☐ What does pseudomelanin stain with?



"I wanna get quiz-ical"

9. Birefringent on polarization. Using a red plate, the crystals show negative birefringence (yellow color) when the crystal's long axis is aligned in the direction of the slow wave. At 90 degrees to this, the crystals will be blue:

- ☐ How does DOPA-oxidase work?
- ☐ What are traditional classification of the staining patterns of biogenic amines?
- ☐ What is a special property of urates?
- ☐ What is an AFB (acid fast bacilli) stain used to?

10. GMS, PAS:

- ☐ What is a special property of urates?
- ☐ What is used to stain bacteria?
- ☐ What stains can have a high background?
- ☐ What stains ID inflammatory cells in peripheral blood and tissue?

11. Help diagnose a rare leukemia known as hairy cell leukemia:

- ☐ What types of stains for chromaffin include?
- ☐ What methods are used for calcium staining?
- ☐ What is the use of a TRAP stain?
- ☐ Why are fresh smears or cryostat sections of tissue necessary in fat stains?

"LET'S GET QUIZ-ICAL, QUIZ-ICAL"

SPECIAL STAINS QUIZ - 20 MCQ - PART TWO

- EMMA HUGHES

12. *Rubeanic acid and rhodanine stains are utilized to detect the cytoplasmic accumulation of copper in the liver:*

- ☐ What is a special property of giemsa stains?
- ☐ How are minerals visualized?
- ☐ What stains are used for copper?
- ☐ What is the most specific method of melanin staining?

13. *Fontana-Masson; Schmorl's method; DOPA-oxidase; Formaldehyde-induced fluorescence:*

- ☐ What types of stains for chromaffin include?
- ☐ What stains ID inflammatory cells in peripheral blood and tissue?
- ☐ What stains can have a high background?
- ☐ What are the types of melanin stains?

14. *Requires frozen sections for best results, but paraffin sections of well-fixed tissues may be used. The stain works because the DOPA substrate is acted upon by DOPA-oxidase in the melanin-producing cells to produce a brownish black deposit:*

- ☐ What is used to stain bacteria?
- ☐ How is Perl's iron stain produced?
- ☐ How is fat stained?
- ☐ How does DOPA-oxidase work?

15.

i) *Chromaffin - have cytoplasmic granules that appear brown when fixed with a dichromate solution - medulla or extraadrenal paraganglion tissues (pheochromocytomas)*

ii) *Argentaffin - reduce a silver solution to metallic silver after formalin fixation - carcinoid tumors of the gut*

iii) *Argyrophil (pre-reduction step necessary)*

- ☐ What is used to stain gram(-) bacteria?
- ☐ What is the Fontana-Masson?
- ☐ What are traditional classification of the staining patterns of biogenic amines?
- ☐ What are examples of exogenous pigments and minerals?

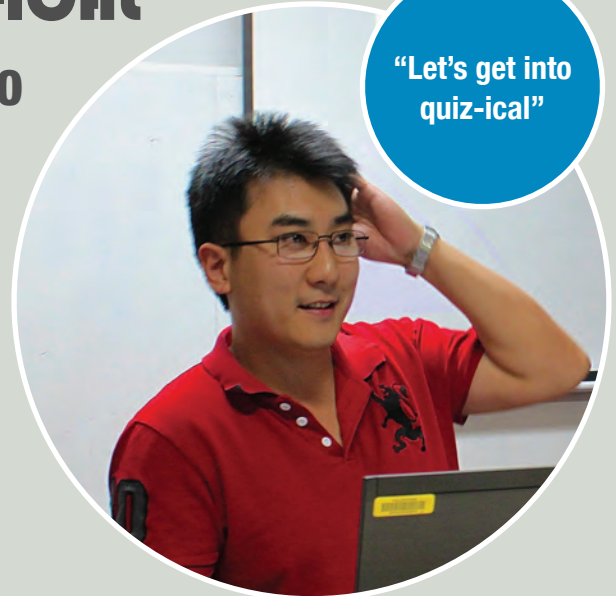
16. *To ID Spirochetes - but they are difficult to ID:*

- ☐ How is Perl's iron stain produced?
- ☐ What is a Warthin-Starry stain used for?
- ☐ What characterizes asbestos in tissue?
- ☐ What characterized tattoo pigment?

17. *Carbon, asbestos, silica, street drugs, tattoo pigments:*

- ☐ What are the types of melanin stains?
- ☐ What is a PAS stain useful for?
- ☐ What are examples of exogenous pigments and minerals?
- ☐ What characterized tattoo pigment?

18. *Glycogen, mucin, mucoprotein, glycoprotein, as well as fungi:*



"Let's get into quiz-ical"

- ☐ What demonstrates donovan bodies and leishmania?
- ☐ What are the methods of AFB stains?
- ☐ What stains are used for copper?
- ☐ What does a PAS stain visualize?

19. *In general, minerals are best demonstrated by microincineration techniques or by scanning electron microscopy with energy dispersive analysis (SEM-EDA):*

- ☐ What is a special property of urates?
- ☐ What is used to stain bacteria?
- ☐ How are minerals visualized?
- ☐ What does pseudomelanin stain with?

20. *It is inert and can't be stained. It's demonstrated by white birefringence on polarization:*

- ☐ What stain fungi?
- ☐ What is used to stain bacteria?
- ☐ How is silica visualized?
- ☐ What is an AFB (acid fast bacilli) stain used to?

Upcoming Events

- Social Event
- AGM/Scientific Meeting
- Tissue Paper
- www.hggq.org.au - more info & updates

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TISSUE PAPER

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