Histograph

www.histonsw.org.au

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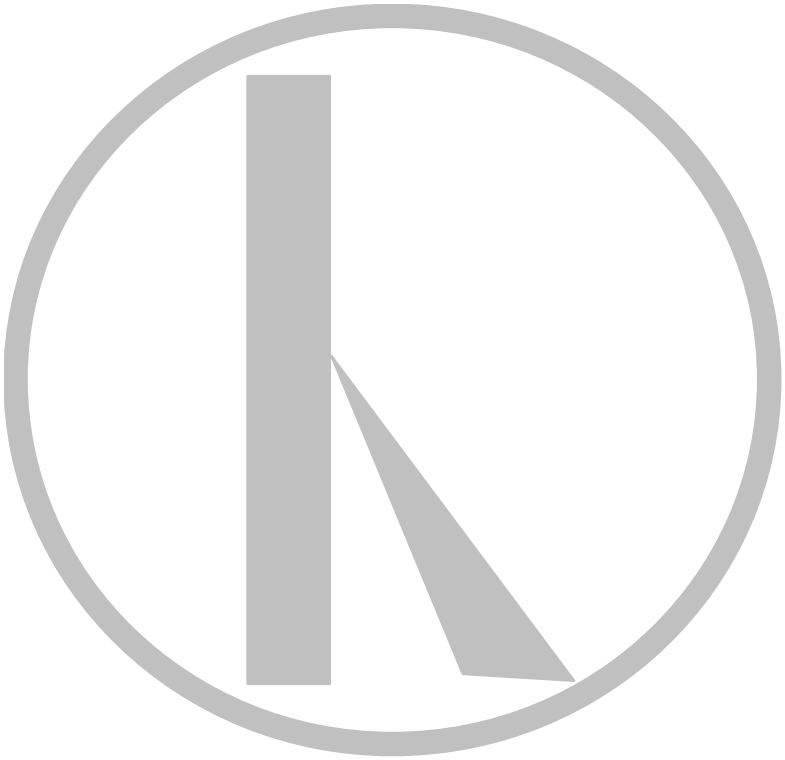
August 2018



Newsletter of the Histotechnology Society of NSW

Contents

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Editorial

The "**Histotechnology Society of NSW State Conference 2018**" in Rooty Hill RSL is coming up soon for histotechnologist to attend. It's very educational, entertaining and great for networking. The aim of the conference is to provide a vibrant ongoing education program in which anyone with an interest in Histotechnology can participate. Please check the website https://histonsw.org.au/ for updates.

We have two very remarkable workshops on Cryotomy and Interpreting & Troubleshooting Special Stains. Some very attention-grabbing and informative talks will be presented by very knowledgeable speakers.

The cryotomy workshop is a wet workshop designed to teach and train technicians performing cryotomy in either research or diagnostic laboratories. It is a hands on workshop where you will be working with animal tissue learning to freeze, cut, stain, and store the slides. The main objective is to give attendees hints, trouble shooting skills and practical cryosectioning experience with interesting variations for mounting frozen sections on a glass slide ready for light microscopy. Delegates will get to practice on some unique, specialised freezing devices. Be prepared for a energetic and informative workshop and the opportunity to share your favourite cryotomy techniques.

While immunohistochemistry have replaced many histochemical stains, histochemical stains still continue to play a vital role in diagnosing diseases. Even though there are kits available to perform many of these stains, mistakes still occur in the performance of these stains. This workshop will concentrate on commonly used histochemical stains including their mechanisms, uses, controls, and troubleshooting. The Special Stain workshop will focus on common used special stains in the clinical histology lab. There will be a discussion on the stains. The talk will also elaborate on the uses in every aspect of anatomical pathology from histopathology to cytopathology and even in forensic medicine.

This issue contains some very interesting current literatures abstracts regarding special stains and frozen sections. Tony Henwood has given a brief overview about denatured alcohol. Do you know what denatured alcohol is and I'm sure most of the Histology laboratories are using it. The one factor we need to keep in mind is the type of denaturant. The type of denaturant could interfere with staining or even the machinery (i.e. processors, stainers, etc.). So read the labels before using your mystery solvents.

Be sure to check your answers from the last issue of the crossword puzzle and test your knowledge.

Anyone interested in publishing any articles in the histograph please do not hesitate to email me.

Linda Prasad,
Editor
linda.prasad@health.nsw.gov.au

Chairman's Report

On the evening of the 29th of May, TAFE NSW held their annual Excellence Awards at Sydney TAFE. Leah Simmons from TAFE NSW and a committee member and me attended. Our committee has been a strong supporter of NSW TAFE for many years and hold workshops in their laboratories. There was another reason to attend this award presentation, a student [Adrian Ureta] Leah had been involved in teaching Histology had been nominated for an award. Adrian was awarded "Student of the Year" in the category of "Innovative Manufacturing, Robotics and Science". A very broad topic and very competitive, the first time a Histology student has won one of these awards. Congratulations Adrian, a truly great effort.

At a function following the award ceremony, Leah and I met with Jon Black, Managing Director of TAFE NSW and were able to discuss our involvement with TAFE. Jon was aware of some of the things we are doing and supportive of us working together in the future. TAFE is an important part of teaching Histology in NSW. We were also able to briefly meet with Megan Aitken, General Manager of TAFE Digital which is a rapidly developing component of the TAFE teaching system. Lots of positive developments and a great opportunity to strengthen our working relationship with NSW TAFE.

Our first conference in September is the AIMS/AACB conference to be held at the Darling Harbour Convention Centre on the 2nd to the 5th of September. We have organised a Histology component of [Cancer Day, Tuesday the 4th] which will be worth attending if you can. Presentations by Dr Fiona Maclean DHM and Associate Professor Kevin Spring as well as a workshop by DHM registrars on "Weird and wonderful" cases.

This Conference will be quickly followed by IMC19 which is the International Conference on Microscopy to also be held at Darling Harbour from the 9th to the 14th of September. The Conference includes two Nobel Prize winners and a large section on Life Sciences which also covers Clinical aspects as well as digital imaging which is a rapidly growing area. This only the second time this Conference has been held in Australia and involves many key scientists from around the world. There is also a large trade display and a number of workshops. For more information, go to "imc19.com".

Following on from IMC19 we have our Histology State Conference at Rooty Hill RSL, 5th to the 7th of October. There has already been a lot of interest with all exhibition stands being taken, a lot of interest by the Companies. The two workshops on the Friday already have a number of registrations. Interpreting & Troubleshooting Special Stains and Cryotomy/Frozen Sections [A morning and separate afternoon workshop is planned for the Cryotomy/Frozen Section workshop]. Three operational Cryostats are planned to be operating so you will need to book early as numbers will be limited. So we suggest you register early for these workshops. With the Conference being held in Sydney it will enable more local attendees, we already have group registrations of 5 or more from local Histology Laboratories. We encourage not only your attendance, your colleagues as well. The program has been finalised. More detailed information can be found on our website www.histonsw.org.au. A broad range of Conference topics have been planned so there will be something for everybody. We look forward to seeing you and your colleagues at our Conference.

Our Annual General Meeting is being held at North Ryde RSL on Friday the 31st of August. We have an interesting speaker, Bill Henderson a 1956 Olympian. It will be an interesting presentation. We look forward to having as many people attend as possible. There is some minor adjustments to the constitution proposed which will need to be voted on.

We continue to work with our interstate colleagues on the next National Conference to be held in Adelaide next year. We are also discussing other topics that require National input. These phone linkups are becoming important as we investigate a National body.

Cheers,
Trevor Hinwood.
Chairperson, Histotechnology Society of NSW.

HISTOTECHNOLOGY
SOCIETY OF NSW

Incorporated under the Associations Incorporation Act 2009
ABN: 63 128 868 343
www.histonsw.org.au

P.O. Box 871
Seven Hills NSW 1730

CONTRIBUTE TO HISTOGRAPH

The Histotechnology Society of NSW is preparing for next Histograph newsletter. The committee invites all members to submit any interesting Histology related articles for publication in Histograph.

Preferable Criteria:

1. **Good referencing (Google Scholar is good)**
2. **Reviews on Histotechnology is quite acceptable**
3. **Word document is preferred**
4. **Name, institution and email address of author is required**

Send your articles to Editor: tony.henwood@health.nsw.gov.au

If you have any suggestions for inclusions in to Histograph, we would love to hear from you.

Histograph Advertising Charges

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A4 B&W PAGE - Printed In The Journal	1 A4 page $150.00
A4 COLOUR - Printed In The Journal	1 A4 page $350.00

HISTOTECHNOLOGY
SOCIETY OF NSW

CONFERENCE REGISTRATION

Early Bird Two Day Conference Registration (closes on 31st August 2018)
(Includes Welcome Ceremony on Friday and Conference Dinner on Saturday)

Members: $300.00
Non-members: $350.00

Student members: $100.00
Non-member students: $150.00

Late Registration *(closes on 21st September 2018)*

Members: $350.00
Non-members: $400.00

Student members: $150.00
Non-member students: $200.00

WORKSHOP REGISTRATION

Friday Workshop Registration *(closes on 31st August 2018). Limited spaces*

Interpreting & Troubleshooting Special Stains (Full day workshop 9:30am -4.00pm)

Members: $90.00
Non-members:$105.00

Student members: $90.00
Non-member students: $105.00

Cryotomy & Frozen Sections (Half-a-day workshop)

Two sessions: 9:00am -12.00pm 2:00pm-5:00pm

Members: $60.00
Non-members:$75.00

Student members: $60.00
Non-member students: $75.00

SOCIAL PROGRAM

Welcome Ceremony & Trade Expo Opening:

Friday 5th October 6pm - 7pm in Trade Expo/ Boomerang room

Pre-Dinner Drinks & Networking:

Saturday 6th October Waratah room, Rooty Hill RSL Club 6:30pm – 7:00pm

Conference Dinner:

Saturday 6th October Waratah room, Rooty Hill RSL Club 7pm – 11pm
Additional Tickets for dinner: $100.00

- For more details and registration: https://histonsw.org.au/
- The event address is https://histonsw.org.au/event/2018-conference

ACCOMMODATION

Novotel Sydney Rooty Hill (within the RSL precinct)

**You will need to make your own accommodation arrangements*

Bookings can only be made direct via
Tel +61 02 9832 3888 or
Email: reservations@novotelrootyhill.com.au and quote "Histotechnology Conference" when making the booking.
Kindly refer to below link for more information about the accommodation at Novotel Sydney Rooty Hill www.novotelrootyhill.com.au

CONTACTS

Conference Information:

Bharathi Cheerala
Email: Bharathi.Cheerala@sonichealthcare.com.au

Kathy Wells
Email: KWells-Reed@dhm.com.au

Trade Exhibition:

Mark Mullin
Email: mark.mullin@leicabiosystems.com

NOTE:

Please note that Histotechnology Society members must be logged in to the website to access member priced registrations. If you are unsure of your login details, please contact

KWells-Reed@dhm.com.au

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Conference Program

Time	Title	Presenter/s
Friday 5th October 2018		
8:30- 8:45	**Registration Open - Cryotomy Workshop**	
9:15- 9:30	**Registration Open - Special Stains Workshop**	
9:00- 12:00	Cryotomy	Tony Henwood & Linda Prasad, The Children's hospital, Westmead
9:45- 10:30	Interpreting & Troubleshooting Special Stains	Dr Esther Myint, Douglass Hanly Moir Pathology
10:30-11:00	Break	
11:00-13:00	Interpreting & Troubleshooting Special Stains	Bharathi Cheerala & Kathy Wells- Reed, Douglass Hanly Moir Pathology
13:00- 14:00	Lunch	
14:00-17:00	Cryotomy	Tony Henwood & Linda, The Children's Hospital, Westmead
14:00- 16:00	Interpreting & Troubleshooting Special Stains	Grant Taggart & Dr Esther Myint, Douglass Hanly Moir Pathology
16:00-16:30	Break	
18:00-19:00	Welcoming & Trade Expo Opening	
Saturday 6th October 2018		
8:15-8:45	**Conference Registration Open**	
8:45-8:55	Conference Opening by Trevor Hinwood	
8:55	Session Chair	Tony Henwood
9:00-9:50	Muscle Biopsy Preparation & Introduction to Interpretation	Dr Janice Brewer, Pathologist, Royal North Shore Hospital, St Leonards
9:50-10:05	Trade Update	Roche
10:05-10:25	Morning Tea	
10:25	Session Chair	Grant Taggart
10:30-11:30	Prostate Disease How can one little gland cause all that trouble?- Panel Presentation	Dr Fiona Maclean (pathologist, DHM), Dr Carole Harris (oncologist) & Dr Dominic Lee (surgeon), St George Hospital
11:30 – 12:15	Practical Tips on Eye Pathology	Dr Geoff Hall, Pathologist & Dr Alex Allende, Pathologist, Douglass Hanly Moir Pathology
12:15 – 13:00	Mass Cytometry- New way of IHC	Diane Reader, Scientist, Royal North Shore Hospital, St Leonards
13:00- 14:00	Networking Lunch	
14:00	Session Chair	Dianne Reader
14:00-14:45	Regulatory Affairs & The Regulation of In-house IVDs	Andrew Ellis, Senior Regulatory Affairs Specialist, Leica Biosystems
14:45-15:30	The Future of Surgical Cut up for Scientists	Grant Taggart, Senior Clinical Scientist, Douglass Hanly Moir Pathology
15:30-15:45	Afternoon Tea	

Conference Program

15:45- 16:35	Surgical Cut Up by Scientists – Round Table Discussion	Grant Taggart, Richard Farquharson, Dr Fiona Maclean, RCPAQAP
16:35-16:45	Trade Update	Trajan
18:30-19:00	Pre-Dinner Drinks & Networking	
19:00-23:00	Conference Dinner	
Sunday 7th October 2018		
9:30	Session Chair	Bill Sinai
9:30- 10:00	Review of RCPA Quality Assurance Special Stain Results	Neeta Lal, Scientist, RCPAQAP
10:00-10:40	Slow Mohs Surgery	Walter Rhonda, Scientist, Douglass Hanly Moir Pathology
10:40- 11:00	Morning Tea	
11:00	Session Chair	Leah Simmons
11:05-11:45	Preparing an IHC stain-from Simple to Complex	Enisa Hasic, Scientist, Prince of Wales
11:45 -12:15	Histology Quiz	Bill Sinai & Grant Taggart
12:15 -13:00	All Creatures Great & Small; Understanding Comparative Pathology	Dr Melinda Gabor, Director Science & Research Policy, Department of Primary Industries
13:00-13:15	Poster prizes session by Kathy wells	
13:15-13:30	Conference Closing by Bharathi Cheerala	
13:30-14:30	Networking Lunch	

Abstracts for the Conference Presentations and workshops

Muscle biopsy preparation and Introduction to Interpretation

Dr Janice Brewer
Histopathologist, Royal North Shore Hospital

Abstract:
Despite the expansion of ancillary testing to more clearly define the nature of musculoskeletal disorders, for many conditions open muscle biopsy and light microscopy (with or without electron microscopy) still underpin clinical diagnosis. Many of the stains used rely on enzymatic reactions, so appropriate harvesting and laboratory handling of fresh tissue are essential. In this presentation, the most commonly employed histochemical and enzymatic stains will be outlined and illustrated and some newer investigative techniques will be mentioned. A few case examples will be shown to demonstrate how a diagnosis can be reached using a combination of clinical history, physical examination and muscle biopsy findings.

Bio:
Dr Brewer is a senior staff specialist histopathologist/neuropathologist with 30 years' experience, who works with Pathology North, based at Royal North Shore Hospital, St Leonards, NSW. She has interests in surgical neuropathology, musculoskeletal pathology and placental pathology. She developed an interest in muscle biopsy interpretation while a registrar at Royal North Shore Hospital, training under the mentorship of her former colleague and neuropathologist, Dr Judith Fryer. Pathology North provides a muscle biopsy service for the Northern Sydney and Central Coast regions as well as accepting samples from other remote areas of New South Wales.

Prostate Disease – How Can One Little Gland Cause All That Trouble?

*Dr Fiona Maclean, **Deputy Director** – Histopathology, Douglass Hanly Moir Pathology*
Dr Carole Harris, Medical Oncologist, St George Hospital
Dr Dominic Lee, Urologist, St George Hospital

Abstract:
A panel of three expert medical specialists with a special interest in prostate disease – Dr Dominic Lee (Urologist), Dr Carole Harris (Oncologist) and Dr Fiona Maclean (Anatomical Pathologist) will discuss investigation and management of prostate disease, with a special focus on the key importance of laboratory findings. Although this is a serious topic for histotechnologists, the general community, and possibly individual members of the audience, and will be discussed thoughtfully, there will be some history, humour and hijinks included. This promises to be a fun but enlightening session in which histopathology will come to life in the context of patient scenarios and frank discussions amongst the panel.

Dr Fiona Maclean

Deputy Director – Histopathology, Douglass Hanly Moir Pathology

Dr Fiona Maclean graduated from the University of Sydney with first class honours. She worked as a resident medical officer at the Concord Repatriation General Hospital, where she was awarded Intern of the Year in 1999. Dr Maclean is Deputy Director of Histopathology at Douglass Hanly Moir Pathology. She is passionate about teaching pathology and enjoys presenting lectures to people from all walks of life. Dr Maclean is a Senior Lecturer in Pathology at the School of Medicine, University of Notre Dame, and Lecturer in Pathology at Macquarie University. She is co-author of two chapters in the current edition of Sternberg's Diagnostic Surgical Pathology, one of the premier textbooks of pathology. Dr Maclean is currently the Secretary of the Australasian Division of the International Academy of Pathology.
Special interests: Anatomical pathology, cytopathology, focusing on urological pathology, bone and soft tissue pathology Also, just completed the "Joint" chapter for the 5th edition of Histology for pathologists (Mills) which is due to be published later this year.

Dr Carole Harris

Medical Oncologist, St George Hospital

Dr Carole Harris is a Medical Oncologist with a special interest in treating breast cancer and genitourinary malignancies (kidney, prostate, bladder and testicular cancer). She graduated from Medicine at the University of Sydney Medicine with honours in 2002 and was awarded a fellowship in Medical Oncology with the Royal Australian College of Physicians in 2009. She went on to complete a Masters of Medicine (Research) in pharmacoepidemiology at the University of New South Wales in 2014.

Dr Harris is a staff specialist at St George and Sutherland Hospitals and a VMO at St George Private Hospital. As well as her clinical interests, she is heavily involved in education as a clinical lecturer at UNSW, where she teaches undergraduate medical students and runs the oncology teaching program at St George and Sutherland Clinical School.
Her research interests are based around the use and effectiveness of targeted cancer therapies both in clinical trials and in the post market setting. She is an investigator on a number of clinical trials and an examiner with the Royal Australian College of Physicians.
She is a member of a number of professional societies including the Medical Oncology Group of Australia, Clinical Oncology Society of Australia, American Society of Clinical Oncologists, Australian and New Zealand Breast Cancer Trial Group, Australian and New Zealand Urological and Prostate Cancer Trials Group.

Dr Dominic Lee

Urologist, St George Hospital

Dr Dominic Lee is a highly experienced Australian-trained Urologist who has trained at some of the World's leading urological institutions. He is one of only a few surgeons in Australia who is trained in both minimally invasive and robotic cancer surgery, as well as reconstructive female urological surgery. Dr Lee also provides cosmetic men's surgery.

Dr Dominic Lee has a significant record in academic medicine and research, with multiple publications in the field of urology and surgery. This allows him to stay on top of the latest advances in urological sciences, novel surgical techniques and emerging treatment options.

Areas of Expertise:

Complex robotic & laparoscopic cancer surgery (prostate, kidney, bladder)
Kidney stone removal
Female reconstructive surgery (pelvic floor, urinary tract, vaginal prolapse)
Transvaginal mesh removal surgery
Penile curvature corrective surgery
Testicular prosthesis surgery
Sexual dysfunction (erectile dysfunction, premature ejaculation, painful sex)
Incontinence & voiding dysfunction
Circumcision (12+ years old only)
Vasectomy surgery
Neurourology

Practical Tips on Eye Pathology

Dr Geoffrey Hall & Dr Alexandra Allende
Histopathologists, Douglass Hanly Moir Pathology

Abstract:

Eye specimens can be intimidating to the uninitiated scientist in the laboratory as the specimens submitted often seem to be either tiny, wrinkled, un-oriented wisps of tissue, have complex orientations such as wedge resections or show impossibly complex anatomy such as eye globes in enucleations. Many types of specimen are infrequently encountered and there may be a lack of experience or confidence in dealing with the tissue. This uneasiness is further compounded by unfamiliar and bewildering terminology in clinical ophthalmology and ocular pathology.

We will cover the cut up approach to corneal specimens, conjunctival specimens, eyelid specimens including canthus and caruncle, and globe specimens. By the end of the lecture you should feel more comfortable in approaching cut up of eye specimens and have a better understanding of the reasons why different approaches are necessary.

Bios:

Dr Geoffrey Hall

Histopathologists, Douglass Hanly Moir Pathology

Dr Geoffrey Hall graduated from the University of Auckland Medical School, New Zealand, in 1992 and completed his internship and resident years at Royal Prince Alfred Hospital, Sydney. He has had extensive clinical medical experience, with interests in surgery, medical information technologies and ophthalmology. Dr Hall has completed his ophthalmology RANZCO Part I exam and a Master of Public Health degree from the University of New South Wales. His anatomical pathology training was based mainly at Westmead Public Hospital, with rotations to Nepean Public Hospital, Douglass Hanly Moir Laboratory and North Shore Public Hospital. During his training, Dr Hall has been involved in a number of research projects, several of which have resulted in publications in peer-reviewed journal articles. A number of these projects have been collaborations with clinicians. He has particular interest in gastrointestinal tract, ocular and neuropathology. Dr Hall also enjoys lecturing students, as well as demonstrating anatomical pathology techniques, and hopes to continue his teaching role in the future.

Dr Alexandra Allende

Histopathologists, Douglass Hanly Moir Pathology

Dr Alex Allende is a medical graduate of the University of Sydney. Following extensive experience in clinical medicine for several years, with particular interests in ophthalmology and research, she undertook a Doctorate of Philosophy in the discipline of ophthalmology at the University of Sydney, with the support of an NHMRC scholarship. The thesis, incorporating histological and molecular studies into the mechanisms of vascular development in the choroid and retina, inspired her to train in anatomical pathology, which was undertaken primarily at Westmead Hospital, with additional rotations to Nepean Hospital and Douglass Hanly Moir Pathology. Following completion of training, which included teaching, journal publications and conference presentations, she joined the histopathology department at Douglass Hanly Moir Pathology. Her knowledge has been developed further by taking part in an observer ship in Wills Eye Institute, Philadelphia, by being involved in research in ocular and gastrointestinal pathology and by being actively involved in teaching pathology and ophthalmology registrars, as well as medical students, with appointments at Notre Dame University and Macquarie University.

Mass Cytometry – New Way With Immunohistochemistry

Dianne Reader, Royal North Shore Hospital

Abstract:

In 1942 antibodies were first introduced to label tissues sections to visualize pneumococcal antigens. The existing immunohistochemical methods use antibodies that are tagged with fluorophores or enzyme reporters which are visualised as coloured labels of antibody binding. As a mainstay of clinical diagnostics, this technique is primarily used to assess the spatial distribution of one, two and rarely more antigens of cells or their products in tissue sections. From here immunohistochemistry has become a tool that visualizes protein or receptors in majority of solid tissue malignancies.

Multiplex immunohistochemistry is not routinely done on formalin fixed tissue in the clinical laboratory setting, this method being a research tool. With the use of metal tagged antibodies and multiplex ion beam imaging, the technique has been applied to formalin fixed human breast tumour tissue and labelled with ten different antibodies simultaneously. This is done on one single, breast tumour tissue section on a slide.

Every time the laboratory is asked to cut sections for immunohistochemistry, it is at a deeper level in the tissue block from which the original haematoxylin and eosin stained section that was given to the pathologist. So, if the tumour is very limited in size and shape, then it is possible that the tumour may no longer be present in these deeper level sections and the immunohistochemical testing is a waste of time and resources.

The use of the multiplex ion beam imaging immunohistochemical method would eliminate this concern and the result for the patient would have a faster and better outcome. However, convincing pathologists to examine an e-photo and readout other than a microscope slide may be one obstacle too high for them to jump over. But this method should not be only left to the research field but would be for the patients' and clinicians' benefit.

Bio:

Dianne Reader has worked in anatomical pathology for 39 years working in the public, tertiary, private, and research sectors of the industry. She has managed a laboratory and is currently the laboratory safety officer. She has increased her skills, kept up-to-date and contributes to the training of other scientists by being a long-time member and is the executive of the NSW Histotechnology Society and past member and on the executive of the NSW branch of the Australian and New Zealand Forensic Science Society.

She gives back to our discipline by teaching both Histology and Anatomical Pathology now for 28 years at the University of Technology Sydney, where she has contributed to the training and passing on of her knowledge, skills as well as her experience to up-and-coming scientists at both the undergraduate and postgraduate levels.

Her main work and research interests are in the histotechnological and histopathological diagnosis of muscle, nerve and brain pathologies.
She is a wife and mother to 3 adult children, a menagerie of animals: 3 cats, 3 dogs, a guinea pig, 3 axolotls, 2 snakes, 2 lizards, and tens of fish! She enjoys cooking and baking when she has time to relax as well as travel, dance and theatre.

Regulatory Affairs and the Regulation of In-House IVDs

Andrew Ellis, Leica Biosystems

Abstract:

The increase in the regulation of IVD products reflects a higher level of confidence being demanded by the public. The move by the TGA to regulate the In-house IVDs comes after reports of in-house IVD test failures. The move in Australia to regulate the supply of in-house IVD follows those in other countries such as the US FDA, Canada and the EU/UK.
The approach adopted by most regulatory authorities includes:

- **A risk-based approach;**
- **Independent review prior to supply/use of high risk tests;**
- **A focus on analytical and clinical validity as the basis for test approval;**
- **Postmarket surveillance and adverse event reporting;**
- **Laboratory quality system;**
- **Public availability of test performance information.**

These requirements for in-house IVD producers are similar to commercial IVD manufacturers.
This presentation provides a summary of the risk based classification system and a comparison, by test classification, of the requirements and cost associated with both in-house and commercial IVDs

Bio:
Andrew Ellis is a Senior Regulatory Affairs Specialist. He has a Bachelor degree in Mechanical Engineering (Melbourne University) and a Masters in Biomedical Engineering (NSW University).

He has worked in the IVD and Medical Device field for 30 years:

Therapeutic Good Administration	1986-1988
Telectronics Pty Ltd	1990-1995
MediReg Pty Ltd	1995-1998
CSL Ltd	1998-2001
Norwood Abey Pty Ltd	2001-2002
Leica Biosystems	2002-2018

His current responsibilities at Leica Biosystems include working with regulatory authorities in multiple countries globally to register IVD products.

The Future of Surgical Cutup Scientist

Grant Taggart, senior Scientist, Douglass Hanly Moir Pathology

Abstract:

In his talk, Grant will take us through the evolution of scientists performing cut up. From the early days assisting pathologists, to the present growth in ‘surgical scientists’, Grant will outline a possible future where scientists dominate the surgical cut up. There have been lots of changes over many years but the last five have been the most significant. Necessity has championed the use of scientists in the surgical cut-up at DHM and many other labs and has also outlined the challenges in achieving the level of competency required to perform this role. Will surgical cut-up become the new domain of scientists and, if so, how will we provide them with the skill-set needed without placing the entire burden of training on the laboratory? This question will form part of the discussion that follows round table next

Bio:
Grant Taggart served as Department Manager and currently is the Senior Clinical Scientist in Anatomical Pathology Department at Douglass Hanly Moir Pathology. He has been working in pathology for over 50 years. Grant has been doing surgical cut up for a long time.

Round Table Discussion - Surgical Cutup by Scientists

Will surgical cut-up become the new domain of scientists and, if so, how will we provide them with the skill-set needed without placing the entire burden of training on the laboratory?

The US has had Pathologists Assistants' doing all of the surgical cut-up since the 1970's. Are we on the verge of finally following suit here in Australia? If so, how do we provide the training and support for this burgeoning career? If not, what's holding us back?

Key Participants:

Dr Fiona Maclean
Dr Esther Myint
Grant Taggart
Richard Farquharson
RCPAQAP

Review of RCPA Quality Assurance Special Stain Results

Neeta Nandani Lal
Scientist, Royal College of Pathologists of Australasia Quality Assurance Program (RCPAQAP) Anatomical Pathology, St Leonards, Sydney, Australia

Abstract:
Special stains are performed routinely in the majority of Anatomical Pathology laboratories from centuries ago to assist pathologists with diagnosis. The RCPAQAP Anatomical Pathology provides a comprehensive technical proficiency module which includes a range of special staining exercises.

Each year participants are provided with a different special staining exercise. Stained slides are submitted by participants which are then assessed by a Technical advisory committee. This presentation will provide an overview on special stain selection, the assessment process and highlight results from previous special stain surveys.

Bio:
Neeta is a Scientist in Anatomical Pathology at the RCPAQAP. She holds a Bachelor of Science Degree, specializing in Anatomical Pathology. She joined the RCPAQAP in September 2014. She co-ordinates the assessments and reports for the Technical and Neuropathology Technical Survey Modules. Prior to her role at RCPAQAP, her career includes appointments at University of Sydney and Concord Repatriation Hospital.

MOHS Surgery

Walter Rhonda, Douglass Hanly Moir Pathology

Abstract:
MOHs micrographic surgery is considered the most effective surgical technique for treating basal cell carcinomas (BCCs) and squamous cell carcinomas (SCCs), two of the most common skin cancers diagnosed. The procedure is done in stages to ensure maximum normal tissue preservation whilst removing and clearing all margins of the lesion. This presentation will explore how and why MOHs Surgery is carried out and explain the role of a MOHs scientist in the procedure.

Bio:
Walter is currently a Histology/MOHs Scientist at Douglass Hanly Moir Pathology in Macquarie Park NSW. He began his career with the company 5 years ago since graduating from Macquarie University with a Bachelor of Science – Major in Human Biology. He is responsible for attending all offsite frozen sections accompanying a pathologist and is the MOHs Scientist for Dr Yiasemides at Southern Dermatology which currently runs on a fortnightly basis. He has also done MOHs at the Skin and Cancer Foundation both at Darlinghurst and Westmead and also for Dr Kearney at Bondi Junction.

Preparing an IHC Stain – From Simple to Complex

Enisa Hasic, Hospital Scientist, Prince of Wales Hospital

Abstract:

Diagnosing diseases such as cancer today involves more than just the routine morphological assessment of tissues. Immunohistochemistry (IHC), utilising antigen-antibody reactions to detect and analyse the presence and distribution of specific antigens, gives additional, more detailed analyses. A simple process when first utilised in the 1940s, a series of advancements through the next decades saw IHC included in 'routine' diagnosis. Now, with the development of automation, IHC is a powerful investigative tool. In this presentation, I will discuss how we prepare single stains and sequential stains, and how, drawing inspiration from the technical advances, we implemented the use of a new procedure combining IHC with histology that allows for more exact evaluation.

Bio:

Enisa Hasic graduated from New South Wales University with a Bachelor of Science (Microbiology), however, her working life has focused on immunology, both research and clinical. Her first job was as Hospital Scientist at the Kanematsu Research Institute, Sydney Hospital, and a 16-month stint in melanoma research with Dr Peter Hersey, Clinical Immunologist. Her next employment was as Hospital Scientist in charge of the Immunohistochemistry laboratory at the Department of Eye Pathology, Sydney Eye Hospital, a role she relished for 15 years under the expertise of Dr Marijan Filipic, Director of Eye Pathology. When the department amalgamated with the Department of Anatomical Pathology at Prince of Wales Hospital, Enisa transferred to the new site. Today, she is Hospital Scientist in charge of the Immunohistochemistry laboratory there, performing tests for clinical and research applications. Enisa is also Honorary Research Associate at the Save Sight Institute, where her long association with ophthalmic pathology and expertise in immunohistochemistry make her a valuable member of the Ophthalmic Pathology Research Group.

Histology Quiz

Grant Taggart & Bill Sinai

All Creatures Great and Small, Understanding Comparative Pathology

Dr Melinda Gabor BSC (Vet), BVSc, PhD, Diplomate ACVP
Director Science & Research Policy, Department of Primary Industries

Abstract:

Veterinary pathology is a challenging and rich discipline requiring training and expertise in the diseases of a broad array of animal species on land, in water and in the skies. Understanding the general mechanisms that govern disease pathogenesis and creates pathological change combined with a strong knowledge of normal histology is the essential tool that forms the foundation for a comparative pathology mind-set. Such a mind-set enables the ability to recognise similarities and differences in cellular structure, organisation and function across the animal kingdom to support an understanding of pathogenesis and disease diagnosis. It requires a flexible approach with skills in pattern recognition and processing of visual information.

This presentation will describe the training and skills required to embark on a career as a Veterinary Pathologist, in particular developing the comparative pathology mind-set. It will then describe in detail an experimental study in an invertebrate specie (the garden snail) to illustrate the application of comparative pathology mind-set and how this can be used to develop an understanding of disease pathogenesis.

Bio:

Dr Melinda Gabor was the Principal Veterinary Pathologist and Director Laboratory Services at the Elizabeth Macarthur Agricultural Institute and most recently the Director Science & Research Policy in the Chief Scientist Branch, NSW Department of Primary Industries. She is a diplomate of the American College of Veterinary Pathologists, a member of the Australian and New Zealand College of Veterinary Scientists (Pathology) and has significant experience and diagnostic capabilities as a specialist veterinary pathologist with a wide understanding of the technical dimensions of livestock, companion and aquatic animal health.

She has been involved in the diagnosis and management of a number of exotic and emerging disease events in birds, oysters, fish and terrestrial animals in Australia. She has a strong focus on building partnerships nationally and internationally with scientists, diagnostic institutes, universities, industry and government stakeholders to support collaboration and a joint approach to disease diagnosis. During her time leading NSW DPI Laboratory Services she established an internal, integrated digital histopathology service with links externally to interstate and reference laboratory pathology teams.

She has a strong commitment to pathology training through an established and accredited residency program and maintains strong collaborative ties with the University of Sydney as an Adjunct Associate Professor, Faculty of Veterinary Science and with Taronga Park Zoo through collaborative projects and student placements. She is the current President of the Australian Society for Veterinary Pathologists and has been commissioned to provide pathology descriptions for the National Registry of Domestic Animal Pathology through Animal Health Australia.

Cryotomy Workshop

Tony Henwood & Linda Prasad - Children's Hospital, Westmead

Abstract:

This workshop will cover the below aspects.

- Using Cryotomes
- Freezing samples
- Staining with Toluidine Blue & other rapid H&E like stains.
- Look at examples of renal & skin Frozen Sections stained with Toluidine Blue & H&E
- (Incomplete & complete skin surface, gloms)
- Look at examples of Tol Blue & H&E of Rectal biopsies for Hirschsprung's disease.
- Pseudo-phase microscopy.

Tony Henwood

Tony Henwood has over 30 years' experience in histopathology. He has been Laboratory Manager and Principal Scientist at the Westmead Children's Hospital in Sydney as well as the Repatriation General Hospital in Adelaide. Tony is an Adjunct Fellow of the School of Medicine at the University of Western Sydney. He has over 50 publications in local and international journals as well as being referenced in several textbooks including Conn's Biological Stains, Bancroft & Stevens "Theory and Practice of Histological techniques" and Kiernan's "Histological and Histochemical Methods: Theory and Practice" .

For the last fifteen years he has been the editor of Histograph, the journal of the Histotechnology Group of NSW. Tony is currently the editor of Cytoletter, the journal of the Australian Society of Cytology. In 2010, Tony was awarded an inaugural Fellow of the Faculty of Science of the Royal College of Pathologists of Australia.

In 2017, Tony was awarded the Outstanding Teaching Award by the Royal Australian College of Pathologists.

Tony's scientific interests include Histochemistry, immunohistochemistry, molecular histotechnology and paediatric cytology. He is committed to the continuing development of quality scientific histopathology.

Linda Prasad

Linda Prasad has been working in the histopathology industry for 17 years. She is currently the Senior Scientist and 2IC in the Histopathology Department at the Children's Hospital at Westmead with previous experience at Histopath and Symbion. Linda has a Bachelor of Biological Science and completed a Masters in Medical Pathology in 2009.

Linda is passionate about histopathology and encourages others to participate in industry related activities and continuing education. She is an active member of the Histotechnology Society of NSW, serving as both Assistant Editor and now Editor of the Histograph. She also has conducted many workshops for the Histotechnology Society of NSW including Frozen Section and Immunofluorescence, H&E, and Double-Labelling Immunohistochemistry.

Linda's interests include muscle histochemistry, teaching and cryotomy.

Interpreting & Troubleshooting Special Stains Workshop

Dr Esther Myint, Grant Taggart, Katherine Wells – Reed & Bharathi Cheerala
Douglass Hanly Moir Pathology, Sonic Healthcare

Abstract:

This workshop will cover the detective work of special stains. It will be focused on the critical diagnostics and clinical applications, of common special stains, even to get to the basis of diseases. Special stains are of paramount importance in the diagnosis of congenital, neoplastic, inflammatory diseases and infectious diseases. Special stains are used to detect the presence of certain hereditary or congenital substances in cells. It plays a huge role to diagnose certain tumours, differentiating between benign and malignant tumours, between stromal tumours and smooth muscle tumours, adenocarcinomas and squamous carcinomas. Without special stains, infectious organisms cannot be confirmed. The talk will also elaborate on the uses in every aspect of anatomical pathology from histopathology to cytopathology and even in forensic medicine.This workshop will also focus on what makes a good stain, what can go wrong and why and how to resolve it.

Dr Esther Myint

Dr Esther Myint graduated from Institute of Medicine (I), RGN, Burma in 1979 and she received her qualifications in general pathology in 1985 from the same institute. She won a scholarship from the WHO for MSc in Immunology from the University of Birmingham, UK in 1992. Dr Myint was retrained in anatomical pathology in John Hunter Hospital in Newcastle and the Royal Prince Alfred Hospital in Sydney and received her FRCPA Fellowship in 2011. She further received her Dip ICDP-UEMS from Germany, a diploma in dermatopathology in 2016. Dr Myint has much undergraduate and postgraduate teaching experience and is currently an Adjunct Lecturer at The University of Western Sydney and The University of Notre Dame. Dr Myint is a member of the overseas trained specialist assessment committee of the The Royal College of Pathology, Australasia and commits herself to the education programmes of pathology by the RCPA. She is currently associate examiner for the Anatomical Pathology division of the RCPA. Her special interests are in lymphomas, skins, brain, gastroenterology, cytopathology and genitourinary pathology. She joined Douglass Hanly Moir Pathology in May 2014.

Grant Taggart

Grant Taggart served as Department Manager and currently is the Senior Clinical Scientist in Anatomical Pathology Department at Douglass Hanly Moir Pathology. He has been working in pathology for over 50 years. Grant has been doing surgical cut up for a long time.

Katherine Wells –Reed

Katherine born 8th October 1980. Katherine has been working in the Pathology/Histopathology industry since 1999 for Douglass Hanly Moir Pathology. She joined the organisation as a SRA work experience student during her time studying at the University of Western Sydney, Hawkesbury Campus and remained an employee since then during that time. Katherine has progressed her way through different areas of the Histology department and acquired the technical knowledge for microtomy, embedding, special stains and immunohistochemistry as well as general knowledge for Gross Cut-Up. She has held titles as Evening Supervisor, Histology Trainer and now has moved into a more senior role of Quality Coordinator for Anatomical Pathology and provides support services to all peripheral and regional Histology labs under the Sonic Company. Katherine is also still a current part of the Executive Committee for the Histotechnology Society of NSW since 2011.

Bharathi Cheerala

Bharathi's background spans the fields of Immunohistochemistry and anatomical pathology at Douglass Hanly Moir Pathology. Bharathi served as in charge- Immunohistochemistry where she was involved in a various research projects, presenting and participating educational sessions, training programs, workshops and conferences. In addition she was involved in overseeing quality, special stains, trouble shooting and problem solving. She is currently working in Project Management area in Sonic Healthcare. Bharathi is currently the secretary of the Histotechnology Society of NSW.

What is Denatured Alcohol and what are the implications for Histopathology?

Tony Henwood, Histopathology, the Children's Hospital at Westmead, NSW, Australia

Most of the ethanols used in Histopathology are Denatured Alcohols. Denatured alcohol, also called methylated spirit (methylated spirits in Australia and New Zealand) or denatured rectified spirit, is ethanol that has additives to make it poisonous, bad tasting, foul smelling or nauseating, to discourage recreational consumption. In some cases it is also dyed. Pyridine, methanol, or both can be added to make denatured alcohol poisonous, and denatonium can be added to make it bitter (1).

There is a dark side to Denatured Alcohol. In the 1920's, during the American Prohibition era, frustrated that people continued to consume so much alcohol even after it was banned, federal officials had decided to try a different kind of enforcement. They ordered the poisoning of industrial alcohols manufactured in the United States, products regularly stolen by bootleggers and resold as drinkable spirits. The practice was called "denaturing". The idea was to scare people into giving up illicit drinking. Instead, by the time Prohibition ended in 1933, the federal poisoning program, by some estimates, had killed at least 10,000 people (2). "They put all kinds of poisonous stuff into the alcohol. There was benzene, there was mercury, there was this list of formulas that's heart-stopping horrible. But in particular they put more wood alcohol, or methanol, because their own tests showed bootleggers couldn't get it out — it's too closely bonded to the drinking alcohol" (2).

Ethanol is the commonly used dehydrant in histology. However, because it is drinkable, pure ethanol is taxed and regulated in many countries. Ethanol is also available with chemicals added to make it undrinkable. These government approved denatured formulations are less regulated and require minimal documentation to purchase. "Reagent Alcohol," comprised of approximately 90% ethanol, 5% methanol and 5% isopropanol, is one example of a denatured ethanol. Only this blend can be labelled as "Reagent Alcohol." Alcohols labelled as "denatured ethanol" use other chemical denaturants (e.g., gasoline, ammonia, pine tar) that can possibly cause excess drying of tissue samples; they should only be used after validation (3).

So what are the "Denaturants" added to the ethanols that we are likely to use in Histopathology. Looking at those MSDS available on-line can give us some indications.

- Methyl isobutyl ketone - The typical toxicity effects of Methyl isobutyl ketone in humans exposed at 50 to 100 ppm are mucous membrane irritation and weak effects on the central nervous system (CNS) such as headache.
- Denatonium Benzoate - Denatonium benzoate gets its name from "denatured alcohol", and that is where it is often used. It is the bitterest tasting substance known.
- Heptane – It has been reported that exposure to 1000 ppm of heptane for 6 minutes caused slight dizziness in humans; exposures to higher levels caused vertigo, incoordination, and inappropriate behaviour (4).
- Ethyl acetate – has a sweet smell and it is used to impart flavour to any fruit flavoured candy, baked food, gum etc. It is highly flammable, as well as toxic when ingestion or inhaled, and this chemical can be seriously damaging to internal organs in the case of repeated or prolonged exposure.
- Methanol
- Iso-propanol - acts as central nervous system (CNS) depressants, and around 15 g of isopropyl alcohol can have a toxic effect on a 70-kg human if left untreated. Poisoning can occur from ingestion, inhalation, or skin absorption.

So, we have another issue we need to be aware of in Histotechnology: The appropriate use of "Denatured Alcohol". It might be prudent to consider possible difficulties that the use of this reagent might cause to our stains and processes.

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On behalf of the Membership Committee of Histotechnology Society of NSW, I thank you for your continuing support and participation and look forward to seeing you soon.

Regards,

Bharathi Cheerala
Secretary
Histotechnology Society of NSW

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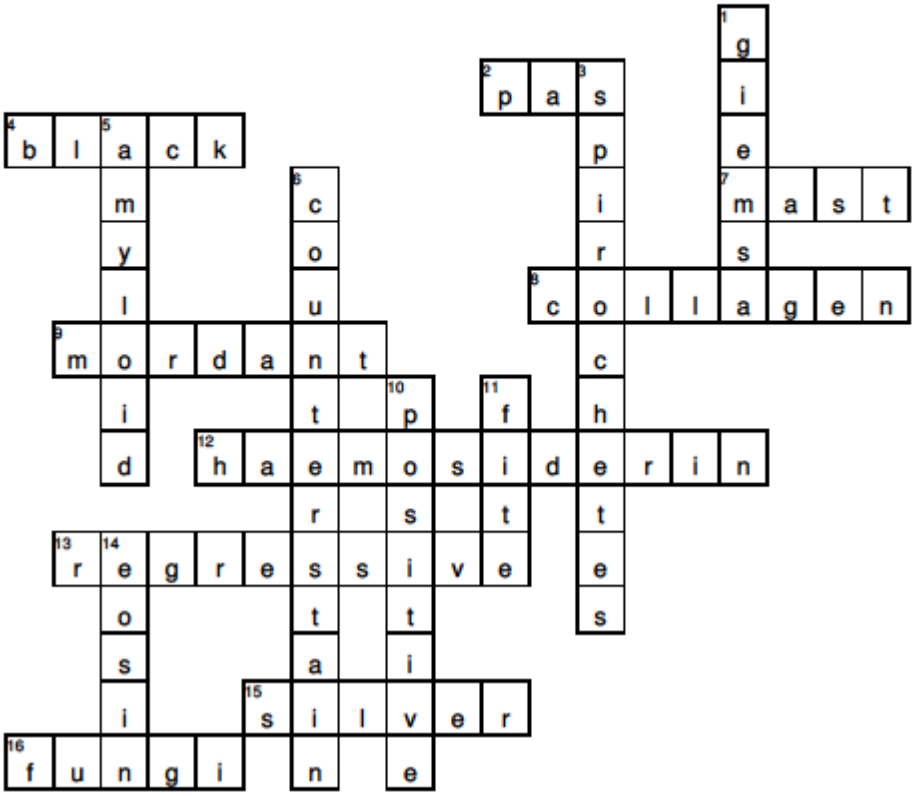
Crossword – Answers from last issue

Special Stains Crossword



Across

2. Standard stain used for the demonstration of carbohydrates in tissue sections (Abbreviation).

4. Verhoeff's Elastic stain stains elastic fibres _____.

7. Toludine Blue stains _____ cells purple

8. Masson's Trichrome stain is used to differentiate muscle fibres and _____.

9. Anchoring substance required to pretreat tissues before specific stains.

12. _____ deposits stain Blue in Perl's reaction.

13. Staining technique where tissue is first over stained and then differentiated.

15. Argyrophil and Argentaffin are both examples of _____ stains.

16. The Grocott's Methanamine Silver stain stains _____ black.

Down

1. Commonly performed on gastric biopsies, this stain highlights any Helicobacter Pylori present in the tissue.

3. What type of organism is stained by the Warthin-Starry stain.

5. Highman's Congo Red stain is used to stain ____ red.

6. A Second stain of a contrasting colour to differentiate between tissue types

10. Crystal violet stains gram_____ bacteria violet blue in gram stains.

11. The modification to the Ziel Neelson stain that allows for detection of leprae bacilli is the Wade _____ stain.

14. Common counterstain used with haemotoxylin.

Abstracts from the Literature

Helicobacter pylori stains and association between H. pylori and inflammation in gastric specimens

Aaron Vancil ORCID Icon, Jessica Hillyard ORCID Icon & Sheila Criswell ORCID Icon
Journal of Histotechnology – Volume 41, 2018 - Issue 1

Abstract
Gastric cancer has been strongly associated with presence of the bacterium Helicobacter pylori. To improve techniques in identifying H. pylori so that gastric cancer may be predicted early, this project was formulated to determine whether one particular stain is more effective in displaying H. pylori microscopically. In addition, this study attempted to determine whether the degree of inflammatory elements present in tissue could be used to predict the likelihood of H. pylori presence. Protocols for the staining techniques, Steiner and alcian yellow/toluidine blue (AY/TB), were employed on specimens to semi-quantitate H. pylori presence. Serial sections from the same specimens were stained with hematoxylin and eosin to determine the amount of inflammation. Spearman rho correlation was used to evaluate the association between amount of H. pylori and inflammation in each case. It was determined that AY/TB was more easily performed, more effective in demonstrating H. pylori, and more cost effective than the Steiner stain. Additionally, it was determined that a moderate positive association was indicated between high levels of inflammation and marked presence of H. pylori.

A combination Prussian blue – hematoxylin and eosin staining technique for identification of iron and other histological features

Katelyn Rowatt, Rachel E. Burns, Salvatore Frasca Jr. & Denise M. Long
Journal of Histotechnology – Volume 41, 2018 - Issue 1

Abstract

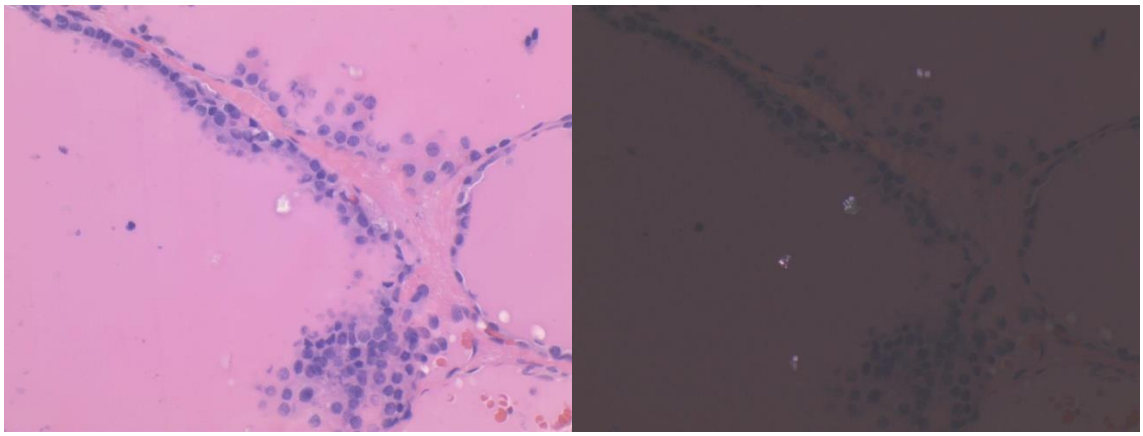
The Prussian blue reaction (PB) detects ferric iron in histological sections but the nuclear fast red (NFR) counterstain does not selectively stain the surrounding tissue and cellular features very well. The PB/NFR stain has the advantage of detecting iron located in tissue sections, but a significant disadvantage of having poorly differentiated tissue components, as compared to a routine hematoxylin and eosin (H&E). We developed a combination of Gomori's Prussian blue/H&E staining method (PB/H&E), and modified the technique for best performance and clarity, then assessed the ability of this new combination stain to differentiate histological features of the tissue and identify iron. Serial sections from seven formalin fixed paraffin-embedded liver samples previously diagnosed with the presence of ferric iron were subjected to our routine H&E, routine PB/NFR and three trials of the new Prussian blue/H&E combination (PB/H&E). The technique that best differentiated the histological components of tissues containing iron was further tested on liver sections from a variety of species to verify consistency i.e. equivalence in staining intensity, concentration,

(Continued p 32)

Test and Teach (from last issue)

Tony Henwood, Principal Scientist, Histopathology, the Children's Hospital at Westmead

What is this tissue? Thyroid
What are these crystals? Calcium Oxalate
How would you demonstrate them? Birefringence, Yasue's silver nitrate-rubeanic acid method



The appearance of calcium oxalate in thyroid is an enigma of medicine. Excess oxalate is toxic and apart from the thyroid can be found in the kidney and in association with aspergillus infection. The mystery lies in why would the thyroid produce and store calcium oxalate.

CaOx was first described in the human thyroid gland by Krausc in 1868. Although quite common, its presence is generally ignored since it is believed to have no significance. The overall prevalence of crystals given in different series ranges from 41 to 95%. Where studied, prevalence and quantity have been found to increase with age (1). Shimizu et al (3) have studied birefringent crystals in 60 cases of thyroid FNA. They found that the total incidence of birefringent crystals was 45% (benign lesions 68% vs. malignant tumours 21%). Benign diseases showed more multifocal than focal distribution of birefringent crystals, unlike malignant tumours. Most cases with birefringent crystals revealed background location of the crystals, especially within thyroid colloid (3). In general, crystals lay well within colloid, unrelated to the epithelium, without any sign of inflammatory reaction (4).

CaOx crystals appear pale or colourless and are difficult to identify under conventional light microscopy. However, they are strongly birefringent and are easily detected under polarized light microscopy (1,2). Calcium oxalate is soluble in such acids as hydrochloric acid, sulphuric acid, nitric acid, and periodic acid; however, it does not dissolve in acetic acid, sodium hydrochloride, lithium carbonate, ether, alcohol, or xylene (6). CaOx, compared to calcium phosphate and carbonate, is difficult to demonstrate histochemically in tissues due to its chemical stability. Among the calcium salts only calcium oxalate is stained black with the silver nitrate-rubeanic acid method after eliminating

calcium phosphate and carbonate with 5 % acetic acid. (6). CaOx will stain with Von Kossa, but not with Alizarin red (pH 4.1–4.3). Most calcium salts and salts containing other divalent metal cations, such as zinc, will stain with Alizarin red, and therefore, the combination of Von Kossa and Alizarin red stains is somewhat specific for calcium oxalate and is helpful for distinguishing calcium oxalate from other calcium salts (7).

The cause of excess CaOx is variable.

Oxalic acid is an example of a toxic substance that is consumed with no ill effects in small amounts in the daily food, yet when ingested in large amounts in pure form causes serious illness or death (5). Examples of oxalosis were recorded during the Second World War in England as a result of eating rhubarb leaves. Similarly, many grasses, such as sorrel, eaten by domestic grazing animals contain high levels of oxalate, leading to similar illness (5).

Oxalosis can be caused by the accidental or suicidal ingestion of ethylene glycol and diethylene glycol (antifreeze) (5).

Primary hyperoxaluria is a general term for at least two rare genetic disorders of glyoxylate metabolism characterised by recurrent calcium oxalate nephrolithiasis, chronic renal failure, and usually death in uraemia at an early age. In 12% of cases symptoms occur before the age of 1 year, in 65% before the age of 5 years. About 80% die by the age of 20 (5)

Excluding oxalate excess related to genetic disorders and exposure to toxins, calcium oxalate in human tissues seems to occur in three general situations: (a) in presumptively sterile acellular material of different kinds, as in the thyroid colloid, in the lens of the eye, and the matrix of mixed salivary tumours, (b) in small ducts, as in the breast and kidneys, and (c) in chronic inflammatory lesions such as sarcoidosis (1).

While it is thought that the deposition of these crystals may be related to a decrease in the thyroid follicular functional state, the significance of the crystals in the thyroid gland still remains unclear (2).

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brightness between sections of the same sample and quality i.e. coloration, vividness, recognizable differentiation of tissue components, improved staining.

Comparison of special stains for keratin with routine hematoxylin and eosin stain

Rao RS1, Patil S2, Majumdar B3, Oswal RG4.
J Int Oral Health. 2015 Mar; 7(3): 1–5

Abstract

Background:

Keratins are the most abundant proteins and are characteristic findings in many epithelial pathologies, making it a diagnostically important marker, both histopathologically and immunohistochemically. Since, immunohistochemistry is an expensive diagnostic tool, special stains to detect the degree of keratinization could serve as a faster and economic option. The aim of the present study was to compare the efficacy of special stains for keratin with standard hematoxylin and eosin stain (H and E). Objectives include: (i) To subject the diagnosed cases of keratin disorders to the selected special stains: Ayoub-shklar method, Dane-Herman method, Alcian blue -periodic acid Schiff 's (PAS), rapid papanicolaou (PAP) and Gram's stain. (ii) To compare the staining specificity and staining intensity of special stains with respect to routine hematoxylin and eosin (H and E) stain. (iii) To compare the efficacy of special stains to routine H and E stain in identification of the type of keratin present in the selected cases.

Materials And Methods:

A total of 80 cases of known pathology for keratin were retrieved from the department archive, which included 10 each of normal gingiva, hyperkeratosis, squamous papilloma, verrucous hyperplasia, verrucous carcinoma, well-differentiated squamous cell carcinoma, orthokeratinized odontogenic cyst and keratocystic odontogenic tumors. Six sections of 4 µ each from the paraffin blocks were made, stained with H and E and the special stains and these were evaluated by 2 pathologists based on the modified scoring criteria from Rahma Al-Maaini and Philip Bryant 2008.

Results:

The results were tabulated using Chi square and kappa statistics. The statistical values for identification of the type of keratinization was insignificant showing that ortho and parakeratinized epithelia could be correctly identified by both H and E as well as all the special stains. Furthermore, all the special stains showed a positive result and statistical significance ($P < 0.001$) with respect to the staining of keratin.

Conclusion:

To conclude, though the special stains distinctly stained the keratin with a higher intensity, H and E proves to be overall better stain with respect to specificity.

Frozen section diagnosis for non-melanoma skin cancers: correlation with permanent section diagnosis.

Onajin O1, Wetter DA1, Roenigk RK1, Gibson LE1,2, Weaver AL3, Comfere NI1,2.
J Cutan Pathol. 2015 Jul;42(7):459-64.

Abstract

Frozen section pathology is routinely used for margin assessment of non-melanoma skin cancer (NMSC). Frozen section can also be used for the primary diagnosis of several skin lesions. Limited data exist on the accuracy of frozen section in the diagnosis of NMSC. We performed a retrospective chart review of 300 cases in which frozen section diagnoses were compared with permanent section diagnoses of NMSC. Frozen section and permanent section pathology were concordant 83.3% of the time, with the highest concordance rates noted for basal cell carcinoma (145/153, 95%). Our results show a high level of concordance between frozen section and corresponding permanent section pathology diagnosis for NMSC. The rapidity of frozen section tissue processing and pathology reporting makes this technique useful in dermatologic practice for immediate diagnosis and management of NMSC. Further studies should explore strategies to decrease or eliminate discrepancies between frozen and permanent section diagnosis.

Frozen section: guiding the hands of surgeons?

McIntosh ER, Harada S, Drwiega J, Brandwein-Gensler MS, Gordetsky J.
Ann Diagn Pathol. 2015 Oct;19(5):326-9

Abstract

Frozen section (FS) analysis is a powerful tool that can provide a rapid diagnosis, directing operative management. However, FSs can also be misused. We consider an FS to be "inappropriate" when it does not influence operative management or immediate patient care. Not only can inappropriate FSs compromise diagnostic material, they can impact turnaround time of other FSs. We evaluated the utilization of FSs at our institution and assessed influence on intraoperative management. Frozen sections performed at the University of Alabama at Birmingham Hospital in 2013 were stratified by surgical subspecialty. Operative, clinical, and pathology notes were reviewed to determine the rationale for sending each FS and to determine impact on intraoperative management. Cases lacking operative notes were excluded. A total of 4104 FSs were performed in 1896 cases. Surgical subspecialties included cardiothoracic, otolaryngology, breast, surgical oncology, gynecology, gastrointestinal, hepatobiliary, urology, transplant, and orthopedics. 42.5% of FSs evaluated margin status, 34.8% confirmed or excluded malignancy, 9.5% were for tumor classification, 6.7% assessed adequacy for diagnosis, 1.9% were to confirm or exclude infection, 2.8% were for transplant, and 1.8% were for lymphoma workup. Twelve percent (491/4104) of FSs did not influence operative management. This was most common among cardiothoracic surgeries (34%). No inappropriate FSs were sent for any transplant surgeries. Otolaryngology used the most FSs and had less than 1% that were inappropriate. Most FSs influence operative management. The rationale for sending an FS and its influence on operative management was subspecialty dependent. Interdepartmental discussions of FS utilization might be helpful in the elimination of unnecessary FSs.

Histological Stains: A Literature Review and Case Study

Alturkistani HA1, Tashkandi FM, Mohammedsaleh ZM.
Glob J Health Sci. 2015 Jun 25;8(3):72-9.

Abstract

The history of histology indicates that there have been significant changes in the techniques used for histological staining through chemical, molecular biology assays and immunological techniques, collectively referred to as histochemistry. Early histologists used the readily available chemicals to prepare tissues for microscopic studies; these laboratory chemicals were potassium dichromate, alcohol and the mercuric chloride to harden cellular tissues. Staining techniques used were carmine, silver nitrate, Giemsa, Trichrome Stains, Gram Stain and Hematoxylin among others. The purpose of this research was to assess past and current literature reviews, as well as case studies, with the aim of informing ways in which histological stains have been improved in the modern age. Results from the literature review has indicated that there has been an improvement in histopathology and histotechnology in stains used. There has been a rising need for efficient, accurate and less complex staining procedures. Many stain procedures are still in use today, and many others have been replaced with new immunostaining, molecular, non-culture and other advanced staining techniques. Some staining methods have been abandoned because the chemicals required have been medically proven to be toxic. The case studies indicated that in modern histology a combination of different stain techniques are used to enhance the effectiveness of the staining process. Currently, improved histological stains, have been modified and combined with other stains to improve their effectiveness.

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