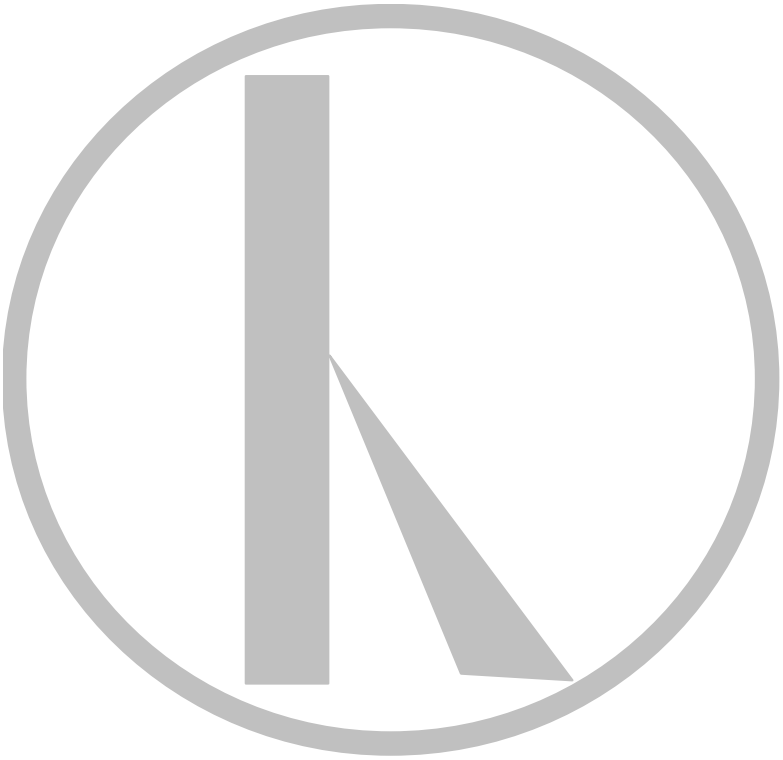
Histograph

ISSUE 3
August 2004



NEWSLETTER OF THE HISTOTECHNOLOGY GROUP of NSW

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Editorial

It is with great regret that I inform you of the passing of two caring, much respected professionals.

Dr Carina Clarke died a few weeks ago, a victim of cancer. Carina was a lecturer at UTS in Human Biology. Many of us remember with fondness her bubbling personality, her enthusiasm to impart knowledge and her urging us to think.

Back in the late 70s, as an undergraduate in Biomedical Science at the NSWIT as it was known, I recall a very interesting field trip to Myall Lakes. Well, I remember the hangover anyway. Carina was one of those that made the excursion memorable with her wit and kindness.

Alan Smith was the Principle Scientist and Laboratory Manager in Histopathology at Concord Hospital for many years. Alan was also one of our first Scientific Advisors and served on our committee from its inception in the early 1980's for several years.

Alan was also one of my first bosses and for seven years, prior to my appointment to South Australia, had a great deal of influence in my development as a scientist. I was also privileged to have Alan as a co-author on one of our papers:

> *Henwood, A.F., Smith, A.J., (1984) "A Stain to differentiate O-Acetylsialomucin from other Epithelial Mucins". Tissue Talk 6(1):3-4.*

I as well as many other scientists and technicians who had the privilege of working under Alan's tutelage will always remember the caring nature of his management style, his willingness to embrace new ideas and his unselfish willingness to share his experience and knowledge.

We will miss both Carina and Alan, and in their memory we would like to dedicate this issue to them.

Tony Henwood
Editor
Histograph

anthonyh@chw.edu.au

Differentiation of the H&E

Michael Rentsch [histomail@vic.australis.com.au]
(Special thanks to BS; JB; RH; SK; LR; LB)

Definition

"Differentiation: To constitute or make a difference between a process of growth or development that can be identified through visualisation"

The above definition covers both the role of the Pathologist and the Stain technologist. In terms of morphology, the differentiation may vary from Very Poor through to Well Differentiated and is directly related to the role of the Stain Technologist, whose task is that the degree of differentiation is maximised fully with the material available to facilitate a diagnosis.

The process of visualisation is at the very core of Histology/Histopathology, in which the microscopic study of normal and disease processes are compared and the difference/s allow a diagnosis to be made.

We "Visualise" or observe differences through four main pathways ie:

1. Movement. Rarely used in the Anatomical Pathology sense, but is used in other fields eg. "Wet Preps" or In vitro studies.
2. Pattern. The arrangement of a structure/s is different to that of the surroundings or material of origin. Sometimes the arrangement is specific eg. palisading, streptococci etc.
3. Contrast. In the extreme is "Sky-lined" against a background. But includes degrees of shading down to a point where a difference is no longer discernable.
4. Colour. Use is made of the affinity of structure/s for certain colours, Classically Blue for Nuclei and Red for other elements.

Of these 3 &4 are the most important to the Stain Technologist while 2,3 &4 are critical to requirements of the Pathologist.

For the Stain Technologist, it is all about "Controlled & Reproducible Staining".

This controlled & reproducible H&E we all seek, is generally approached in one of two general protocols i.e. Progressive or Regressive and in many instances both may be applied in the one method eg. Regressive Nuclear stain with a progressive Cytoplasmic application. Having said this, both methods/applications are in fact differential if correctly applied.

Confused?

Progressive methods rely on single solutions to produce a carefully balanced colour/contrast (Items 3 & 4) and are usually specific to a structure (Item 2).
Regressive methods rely on intense staining of many structures and controlled removal of the stain until the desired colour/contrast balance is achieved.

The very same factors/agents/properties that control Progressive methods also control Regressive, and to understand these properly we must consider how our stains are formulated.

The first to be considered is the Nuclear Stain - Haematoxylin.

Continued page 9

HGV
Histology Group of Victoria Inc.

The committee of the Histology Group of Victoria has commenced working already on the program and format.

Dates: Friday 21 st - Sunday 23rd October, 2005

Venue: Carlton Crest Hotel
65 Queens Road
Melbourne
(4.5 km SE of the GPO, overlooking Albert Park Lake)

A range of accommodation is available at the Carlton Crest, at both 3 ½and 4 ½star rating. Room rates are as follows:

Standard Rooms	$134.00	Superior Rooms	$203.00
Congress Suites	$149.00	Carlton Club	$233.00

Car parking is available beneath the hotel.

The city centre, Spencer Street transport terminus and Airport bus terminals are a short tram ride away, as are Southbank and St Kilda
Alternative accommodation is also available nearby.

Confirmed topics and/or speakers in the plenary sessions

- **Mr Neil Hand** — **Queen's Medical Centre Nottingham UK**
- **Dr Cesar Wong** — **Chinese University of Hong Kong**
- **Lung morphometry** — **Women's and Childrens Hospital, Adelaide**
- **Non-clinical applications of histology** — **Anatomy Department University of Melboume**
- **"Virgin Speakers"**

HGV website: http://home.vicnet.net.au/`hgvinc/
Contact the HGV: hgv@netspace.net.au

Calling all Histologists!

The HGV is in the process of organising the program for the 2nd National Histology Meeting. We are calling for submissions from all interested parties, from all states and territories in this wide, brown land. The topics we have thought of so far are:

- A day in the life of a regional Histology lab
- Histology of Hirschprung's disease histochemistry
- Immunohistochemistry Case studies
- Overview of further experience
  Education available to Histologists
- "Virgin" speakers – (the first time is always special…)
- Liver special stain panel
- Histology of Food
- Sentinel node protocols
- Specimen collection Enzyme
- "Silver" theme Case studies
- New use for old Ab's
- C4d renal rejection marker
- Rabbit monoclonals

- Forensic
- Special Stains
- Mortuary practices
- Museum techniques
- Veterinary histology
- Marine histology

The list is by no means exclusive, but is more a list of topics that we would like to include in the program so if there is anything you would like to present in a National forum, now is the time to collect your ideas, get them down in a Powerpoint presentation (or other format by arrangement) and impart your knowledge and experience to an eager audience.

Poster presenters will not be required to deliver an oral presentation, but will be expected to attend at their poster display at a specified time each day.

Yours sincerely

HGV Organising committee.

PROGRAM DETAILS

Workshops Friday :2-1-t October 2005 0900 -1200

1300-1600

Workshop1 **Basic Immunohistochemistry Techniques**
Presented by: *Dr Cesar Wong* Associate Professor,
Chinese University of Hong Kong

Workshop 2 **Solvent Recycling**
Presented by: *Mr Andrew Kennedy* Senior Science Officer
Mr Frank Quaranta Senior Technical Officer
Anatomical Pathology,
Concord Repatriation Hospital

(Workshops 1 and 2 will run concurrently)

Workshop 3 **Histology Mythology: Fact or Fiction?**
Presented by: *Mr Neil Hand* Chief Biomedical Scientist
Histopathology Department
Queen's Medical Centre
Nottingham UK

Cocktail Party Opening of Trade Display 1800 - 1930

Plenary Session Saturday 22nd October 0900 -1030
Morning tea
1100 -1230
Lunch
1330 - 1500
Afternoon tea
1530 - 1700

Conference Dinner Saturday 22nd October 1900 - Late,

THE POINT Albert Park Lake

Plenary Sessions Sunday 23rd 0930-1030
Morning tea
11-00 - 1-230
Lunch

Histology Group of Victoria Inc.

1330 -1500
Close

REGISTRATION DETAILS

Full registration (includes opening cocktail party, morning and afternoon teas and lunches) **$225.00**

1 Day **registration** (includes morning and afternoon tea and lunch) **$150.00**

Workshops (includes morning or afternoon tea) **$75.00**

Student registration (per day, includes morning and afternoon tea and lunch) **$50.00**
(Application for student registration must be accompanied by evidence of full-time enrolment in a recognized course)

Cocktail Party (extra tickets) **$45.00**

Conference Dinner **$85.00**

Late Registration Penalty (after August 19, 2005) **$75.00**

Differentiation of H&E cont'd from page 4

Understanding the Haematoxylin Solution

It has long been assumed that the Alum Haematoxylins act solely as true Mordant dyes or Chelate Complexes. In fact the complexes formed are both anionic and cationic and probably with more than one type of each in the mixture. The Haematoxylin is oxidised from the inactive form to Haematein, which over time is further oxidised to Oxyhaematein, which is inactive in nuclear staining.

Nuclear staining falls into two main categories:

1. Basic Dyes (cationic) requiring the presence of Nucleic Acids (RNA & DNA). The reaction is considered fairly specific.

2. A Di- or Tri-valent metal ion/mordant dye used either in sequence or combination.

The ability of chelated complexes to bind to tissue groups not necessarily acid in nature is of extreme importance esp. in those instances where nucleic acids have been partially lost or damaged due to fixation or decalcification (eg. Bouin's or prolonged Carnoy's). In such instances the alum haematoxylins are still capable of demonstrating nuclei.

R.D.Lillie (1) states that as the concentration of the metal salt increases and dye content decreases (in alum Haemataoxylins), electrophoresis shows that the Cationic complex also increases in concentration and that the precision of nuclear staining also increases. It should also be noted that in Lillie's study that pH would also have decreased.

It would appear that the Alum Haematoxylins, in addition to acting as mordant/metal complexes, also act as basic dyes with ligand formation. Ammonium Alum has certainly been used with Nuclear Red to demonstrate sulphated mucosubstances (2). This use of Alum to bind a cationic dye may explain to some extent the staining of cartilage, mucins, elastin and glycogen by Non- acidified Alum Haematoxylins.

Perhaps the most overlooked influencing factor on nuclear staining esp. with the use of Alum Haematoxylins is the pH of the solution. Some 19th Century workers knew that the addition of a weak acid (esp. Acetic) could be used to restrict basic dye and complex staining to nuclei; certainly Giemsa 1904 used weak acetic acid to differentiate slides that were too blue. The further the pH is from the isoelectric point

H&E Differentiation cont'd from page 12

of a substance, the more reactive it is likely to be. But - the real "Twist" is the stereoscopic changes that also occur in the substrate target (the tissue on the slide) with "Exposure" or "Blocking" of potential sites for attachment. What we can expect from this is that for any given pH, a certain staining pattern can be expected.

The following table is taken from J.A. Kiernan (3) and while it is intended for Cationic dyes (especially Thiazins) it provides us with an insight of how influential pH is.

pH	Elements demonstrated
1.0	Only sulphated carbohydrate components are stained.
2.5-3.0	As above but also Nucleic acids (RNA & DNA)
4.0-5.0	All the above and also carboxyl groups of carbohydrates and more acid proteins.
>5.0	All the above with increasing staining of basic proteins as pH increases.

References

1. "Histopathologic Technic and Practical Histochemistry" 4th Ed. McGraw Hill. p126.

2. "Observations on a highly specific method for the histochemical detection of sulphated mucopolysaccharides, and its possible mechanisms." Quarterly Journal of Microscopical Science 103:457-475.

3. "Histological and Histochemical Methods. Theory and Practice." 2nd Ed. Permagon Press. p91.

Abstracts from the literature

Lipid fixation for fat staining in paraffin sections applied to lesions of atherosclerosis

Richard E. Tracy and Parvene Walia

Virchows Archiv (2004) 445 (1): 22 – 26

A new method to fix lipids for staining in paraffin sections was applied here to early lesions of atherosclerosis to test comparability with similar results using frozen-section fat stains. Small blocks of formalin-fixed human coronary artery were exposed to an emulsion of acid and lecithin in 70% ethylene glycol at 56°C for 3 days. The unsaturated fatty acids partitioned into the tissue for later fixation by chromic acid and could then be processed through paraffin-section for fat staining. Blocks of tissue from the same specimens were also processed for standard frozen-section fat staining. The types of early atherosclerotic lesions described by the American Heart Association Lesions Committee—types I, II, III, and IV—were demonstrated equally well using the two methods. Additional newly described patterns of lipid deposits were also revealed by both methods. The paraffin method showed no indication of omitting or adding anything compared with frozen sections. The surprising finding of unexpected patterns of lipid distribution in human coronary artery suggests that the method may prove to be useful. Those novel patterns were first observed with the more flexible paraffin method and later confirmed by the more tedious and demanding frozen-section method.

Embedding Media for Cryomicrotomy: An Applicative Reappraisal

Cristina Cocco, Ginetta Vitalia Melis, Gian-Luca Ferri.

Applied Immunohistochemistry & Molecular Morphology 2003; 11(3):274-280

We reassess here the formulation of cryoembedding media in connection with recent developments in commercial cryomicrotomes. Water-based solutions of polyvinyl alcohols were our starting media, and each of 2 different polymers (56-98, MW ~195000; and 6-98, MW ~47000) showed a critical concentration for optimum sectioning. At higher or lower polymer concentrations, wrinkles and folds became apparent in tissue areas of sections, or in the sectioned embedding medium areas between tissues, respectively. Addition of polyethylene glycol (MW 380-420) further facilitated and improved sectioning, resulting in frozen tissue blocks that cut well in the 2 to 100 µm range and further, using disposable blades throughout. Applying a wide temperature differential between tissue specimen (-11°C to -13°C) and cutting knife (-33°C to -35°C), serial adjacent sections were reproducibly obtained at a 2-µm setting, singly or in short ribbons. Embedding media of low and high viscosity were obtained; depending on the polyvinyl alcohol polymer used, and could be applied sequentially for tissue infiltration followed by embedding with precise sample orientation. When required, media were made semisolid by addition of carboxymethylcellulose.

Further Characterization of Storage-Related Alterations in Immunoreactivity of Archival Tissue Sections and its Implications for Collaborative Multicenter Immunohistochemical Studies

E. Oluwabunmi Olapade-Olaopa, J. Olufemi Ogunbiyi, E. Hugh MacKay, Charles A. Muronda, Temitope O. Alonge, Alex P. Danso, David K. Moscatello, Davinder P.S. Sandhu, Olayiwola B. Shittu, Timothy R. Terry, Albert J. Wong, Fouad K. Habib.

Applied Immunohistochemistry & Molecular Morphology 2001; 9:261-266

Storage of unstained paraffin slides may lead to the deterioration of specimens and failure to detect cellular proteins immunohistochemically. Although the implication of age-induced alterations on multicenter immunohistochemical studies would be considerable, they have not been investigated previously. The current study was undertaken to examine the effect of this factor further and to explore new ways of overcoming the resultant shortcomings. The authors now report on the immunodetection of a host of antigens in similarly preserved unstained serial paraffin slides obtained from three centres using a panel of eight antibodies. Staining of recently prepared sections from the authors' centres resulted in similar strong patterns in seven of eight antibodies, with one antibody demonstrating variable immunoreactivity. However, storage of unstained paraffin sections at room temperature resulted in a variable but progressive decrease in expression of several tissue antigens. Although the loss in antigenicity was proportional to the length of storage, the effect was reversible if super antibody concentrations were used. The authors conclude that recently prepared paraffin sections from centres with similar fixation protocols have similar immunoreactivity and are suitable for use in comparative multicenter studies. However, in view of the delays that may attend tissue transportation during these projects, the authors suggest that test systems should be checked for age-induced antigen degradation by incubating sections with higher antibody concentrations.

Microwave cell death: Enzyme histochemical evaluation for metastatic carcinoma of the liver

Takashi Ozaki, Katsuyoshi Tabuse, Takeshi Tsuji, Yasushi Nakamura, Kennichi Kakudo, Ichiro Mori.

Pathology International 53(12): 837 - 845

We have reported that microwave cell death is a unique cell death preserving not only cell and nuclear shapes but also immunohistochemical antigenicity. However, their enzyme activity was lost, which indicated cell dysfunction and death. This peculiar observation implies that the microwave effect is likely an ‘in situ’ tissue fixation and that this type of cell death is morphologically different from cell death, by either oncosis or apoptosis, as previously known. To confirm whether this peculiar cell death was observed also in human tissue samples, we examined clinical samples from patients with metastatic liver cancer, which were treated with microwave irradiation. They were examined immunohistochemically for human Ki-67 antigen and proliferating cell nuclear antigen and enzyme histochemically for alkaline phosphatase, and the same morphological changes that were observed in microwave-treated rat liver were found. In conclusion, we believe that routine hematoxylin-eosin stain alone is not a suitable method to evaluate microwave treatment for cancer because microwave coagulation therapy-treated cells preserved their nuclei and cellular architectures, even after 3 months. For microwave-treated tumours, enzyme histochemistry is helpful to determine its effectiveness.

Prevalence and Incidence of Cytoplasmic Yellow Bodies in Thyroid Neoplasms

Harold J. Rothenberg, John R. Goellner, and J. Aidan Carney.

Archives of Pathology and Laboratory Medicine: 127(6): 715–717.

Context: Cytoplasmic yellow bodies are a common and frequent histologic finding in hyalinizing trabecular adenoma of the thyroid gland, a morphologically distinctive neoplasm, and are visible in fine-needle aspiration biopsy of the tumour.
Objective: To determine the prevalence and frequency of cytoplasmic yellow bodies in common thyroid tumours.
Design: Microscopic slides of random cases of papillary carcinoma (61 cases), follicular adenoma (27 cases), and Hürthle cell adenoma (12 cases) were searched for cytoplasmic yellow bodies.
Setting and Patients: Slides were from patients who had undergone surgery at Mayo Clinic, Rochester, Minn, and were obtained from the Mayo Clinic Tissue Registry.
Main Outcome Measure: Presence or absence of cytoplasmic yellow bodies.
Results: Cytoplasmic yellow bodies were found in papillary carcinoma (62%), follicular carcinoma (22%), and Hürthle cell adenoma (83%) but were very infrequent numerically in each tumour type.

Conclusions: Cytoplasmic yellow bodies may be present in papillary carcinoma and in follicular and Hürthle cell adenomas, but because they are uncommon in these tumours, they are unlikely to be found in fine-needle aspiration biopsy smears. Therefore, cytoplasmic yellow bodies are a useful cytomorphologic indicator of hyalinizing trabecular adenoma of the thyroid gland.

Towards reasonable workload in diagnosis of sentinel lymph nodes: comparison of two frozen section methods

Krogerus L A, Leidenius M H K, Toivonen T S & von Smitten K J A

Histopathology 44: 29–34, 2004.

Aims: To compare two methods of histological assessment with intraoperative diagnosis of sentinel node metastases in breast cancer.
Methods and results: A total of 204 consecutive breast cancer cases with lymphatic mapping, sentinel node biopsy and intraoperative diagnosis were included. The sentinel nodes in the first 102 cases (method A) were bisected and serially sectioned. In the other 102 cases (method B) the nodes were sliced thinly with a razor blade. All 1–1.5 mm thick slices were mounted on pre-chilled mounting medium on frozen section buttons. Cytological imprints were also made of the attached tissue slices. Postoperative diagnosis of sentinel lymph node metastases was taken as gold standard. Sentinel node metastases were found in 28 (27%) cases in group A and in 42 (40%) cases in group B ($P = 0.05$). The median size of the sentinel node metastases was 4.3 mm in group A and 3.3 mm in group B ($P < 0.05$).
Conclusion: Method B finds more and smaller metastases and takes less time and effort in the laboratory. When using method A, many small metastases are not detected at all.

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In Order to Improve Myself!

An interesting continuing education site, though I was concerned when I received this email:

-----Original Message-----
From: support@LabVisionCorp.com [mailto:support@LabVisionCorp.com]
Sent: Wednesday, 24 September 2003 11:51
To: anthonyh@chw.edu.au
Subject: LabVision.com Tutorial - Test Passed

****
LabVision.com Tutorial Program

This is a confirmation that you have passed Test 1 of our Bio-Terrorism Tutorial Program. Please keep a record of this email for future correspondence. Upon completion of all four tests, you will be issued a certificate of completion from LabVision for this course.

If you have any questions or comments regarding your test, please feel free to contact our customer support representatives at 800.828.1628 or email us at LabVision@LabVision.com.

With Kind Regards,
The LabVision Team
****

Some Helpful Hints from John Sullivan

I have known John Sullivan ever since I started in Histopathology (back when The Histotechnology Group of NSW first started). He recently sent me an email that I must share with you:

Removing Stubborn Stains

This is a photographic tray cleaner, but will clean all glassware that has silver deposit.

Solution A

Water	1000ml
Potassium Permanganate	2.0 grams
Sulphuric Acid (conc.)	4.0ml

Solution B

Water	1000ml
Sodium Bisulphite	30.0 grams
Sodium Sulphite (desiccated)	30.0 grams

To remove stains due to silver, silver sulphide, and many dyes, pour a small quantity of solution A into the vessel and allow to remain for a few minutes; swirling to wet the entire surface. Rinse well in water. Replace with a similar volume of solution B. Agitate so as to clear the brown stain completely, was thoroughly.

Silver Stain Remover (for removal of stains from clothing)

Water	750ml
Thiourea	75.0 grams
Citric Acid	75.0 grams
Water to make	1000ml

Thoroughly wet the stain with this solution and wait for the stain to disappear. Old stains may require more than one application and a longer time (several minutes) to disappear. The garment should be thoroughly washed after the stains have been removed.

NOTE always test on a hidden part of the garment first. Always wear gloves when using and preparing this solution. Thiourea is difficult to remove from skin.

Silver fish

Over the years many people have told me that silver fish is eating their stored blocks.
A simple solution:

> In the back of the each block storage drawer, place a few crystals of Magnesium Sulphate (Epsom Salts). It is also a good idea to place it in the back of bookshelves and the bottom of filing cabinets.

Cockroach baits should also be used in or around the block storage area, but must be changed on a regular basis. This program applies just as much to new building as old. Laboratories moving to new buildings take a lot of beasts with them in the move.

Regards
John Sullivan
Wise Investment, Support & Education Pty Ltd
PO Box 585 NEWCASTLE NSW 2300
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United Biosciences is pleased to introduce the CDI range of tissue marking dyes.

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UB-CDI-03	Green marking dye, 237 ml bottle.	each	$120.00
UB-CDI-04	Red marking dye, 237 ml bottle.	each	$120.00
UB-CDI-05	Yellow marking dye, 237 ml bottle.	each	$120.00
UB-CDI-06	Orange marking dye, 237 ml bottle.	each	$120.00
UB-CDI-07	6- pack of 4ml squeeze tube marking dye set, 1 of each colour	each	$32.50
UB-CDI-08	18- pack of 4ml squeeze tube marking dye set, 3 of each colour	each	$97.50

For further information contact:

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Safety

Formaldehyde is carcinogenic: IARC

http://www.cch.com.au/default.asp

IARC Friday, 25 June 2004

Formaldehyde has been classified as carcinogenic to humans by the International Agency for Research on Cancer (IARC).

New information from studies of people exposed to formaldehyde collected by the IARC has led it to revise its classification of the chemical from "probably carcinogenic to humans" (a Group 2A substance) to "carcinogenic to humans" (a Group 1 substance), according to a press release by the IARC on 15 June 2004.

The IARC states that there is now "*sufficient evidence*" that formaldehyde causes nasopharyngeal cancer in humans, as well as "*limited evidence*" for cancer of the nasal cavity and paranasal sinuses. However, while there was strong evidence for leukaemia, epidemiologists were unable to identify the mechanism for its induction.

Director of IARC, Dr Peter Boyle, said in the media release, "By signalling the degree of evidence for leukaemia and cancer of the nasal cavity and paranasal sinuses, the working group identified areas where further clarification through research is needed".

Formaldehyde is widely used to produce resins, which are used as adhesives and binders for wood products, pulp, paper, glasswool and rockwool. It is also used to produce plastics and coatings, manufacture chemicals, and as a disinfectant or preservative. In Australia, the exposure limit for formaldehyde is 1 part per million (ppm) (1.2 mg/m3) measured as an eight-hour time-weighted average; and the short-term exposure limit is listed as 2 ppm (2.5 mg/m3) (see the National Occupational Health and Safety Commission's National Exposure Standards Database (1)). The exposure standard for formaldehyde is currently under review for its irritant effects.

For more information on managing hazardous substances in your workplace, subscribe to CCH's Hazard Alert: Managing Workplace Hazardous Substances (2).

1. http://www.nohsc.gov.au/OHSInformation/Databases/ExposureStandards/expsearch.asp
2. http://www.cch.com.au/default.asp

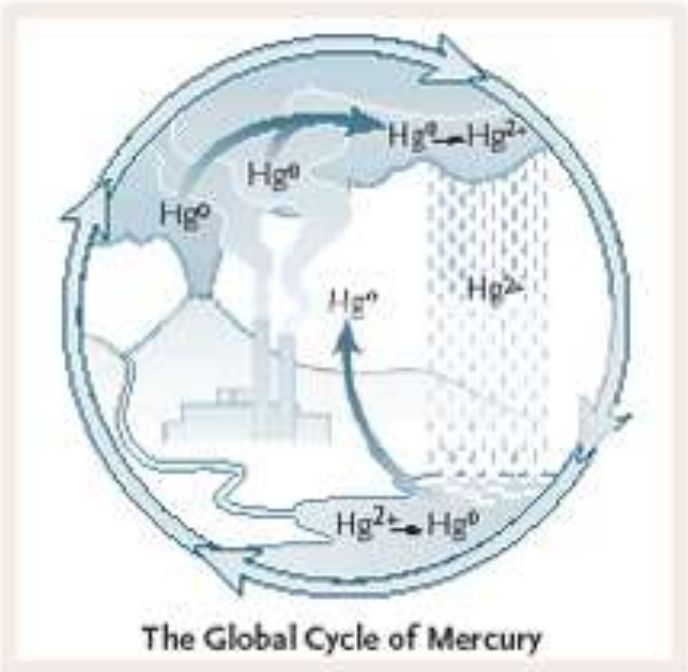
The Toxicology of Mercury

Mercury poisoning still occurs as a result of accidental and occupational exposure. For the general population, however, the main concern is the possible adverse effect of exposure to mercury through fish consumption and the receipt of dental amalgams and thimerosal, a preservative used in vaccines. This review summarizes both the facts and the controversies surrounding exposure to methyl mercury, mercury vapour, and the ethyl mercury in thimerosal.

Mercury has been used commercially and medically for centuries. In the past it was a common constituent of many medications. It is still used in hospitals in thermometers and blood-pressure cuffs and commercially in batteries, switches, and fluorescent light bulbs. Large quantities of metallic mercury are employed as electrodes in the electrolytic production of chlorine and sodium hydroxide from saline. These uses still give rise to accidental and occupational exposures.

Today, however, exposure of the general population comes from three major sources: fish consumption, dental amalgams, and vaccines.

Clarkson T.W., (2003) "Current Concepts: The Toxicology of Mercury -- Current Exposures and Clinical Manifestations" NEJM October 30, 349(18):1731-1737.



The Global Cycle of Mercury

Provisional Program

Histotechnology Group of Queensland Incorporated Conference 2004

Saturday 16th and Sunday 17th October 2004
Hyatt Regency Coolum, Coolum Beach, Qld.

Saturday 16th October

- 9:00 – 9:30am **Registration**
- 9:30 – 11:00am **Session One**

  International guest speaker/s – Surgical cut-up (United Kingdom & United States)
- 11:00 – 11:30am **Morning Tea**
- 11:30am – 1:00pm **Session Two**

  International guest speaker/s – Immunohistochemistry (United States)
- 1:00 – 2:00pm **Lunch**
- 2:00pm – 3:30pm **Session Three**

  Coroner's Act 2003/Body Tracking in the morgue

  Neuropathology

  DPI topics
- 3:30pm **Afternoon tea and close of sessions**

Sunday 17th October

- 8:15 – 10:00am **Session One**

  Breast – Clinical and Diagnostic Pathology views
- 10:00 – 10:30am **Morning Tea**
- 10:30am – 1:00pm **Session Two**

  Breast/fatty tissue – Technical views

  EM
- 1:00pm **Close of conference**

The Histotechnology Group of Queensland will be holding its Annual General Meeting at some stage during the course of the conference. The specific time will be announced immediately prior to the commencement of the AGM. Guess the day and time of the AGM on your registration form and win a prize.

REGISTRATION FORM

Histotechnology Group of Queensland Incorporated
Conference 2004

Saturday 16th and Sunday 17th October 2004
Hyatt Regency Coolum, Coolum Beach, Qld.

Name: .....

Address: .....

.....

.....

..... Post code: .....

Contact phone number: ( ).....

Fax: ( ) .....

E-mail: .....

.....

Name(s) of accompanying person(s):

.....

.....

.....

Guess the **day and time** of the Annual General Meeting and win a prize!

My guess is: Day _____

Time _____

Return your completed registration form together with cheque or money order (made payable to *"**Histotechnology Group of Queensland Incorporated"***) for full payment by:

13th August 2004

To:
The Secretary
Histotechnology Group of Queensland, Inc
Anatomical Pathology Department
QHPS Toowoomba
Locked Bag No 5
Toowoomba QLD 4350

NOTE: A late fee of $75 applies to registrations received after this date. Cancellations after 30th August 2004 will not be refunded.

REGISTRATION OPTIONS

Please tick the relevant boxes

☐ Full registration Saturday and Sunday

(Includes registration for both days, accommodation Saturday night and all meals, including pre-dinner drinks and Conference Dinner Saturday night)

☐ Twin room per person ☐ $300 **Member** ☐ $350 **Non-member**

I would like to share a room with:

_____

☐ Single room ☐ $415 **Member** ☐ $465 **Non-member**

☐ Day registration (Accommodation not included, Conference dinner extra)

(Includes morning tea, lunch and afternoon tea on Saturday, and morning tea on Sunday)

☐ Saturday ☐ $110 **Member** ☐ $140 **Non-member**

☐ Sunday ☐ $90 **Member** ☐ $120 **Non-member**

☐ Conference Dinner ticket $95

(Conference dinner includes a selection of wines, beers and soft drinks)

☐ Friday night accommodation

(Includes breakfast Saturday morning)

☐ Twin room per person (per night) ☐ $110 **Member** ☐ $160 **Non-member**

☐ Single room (per night) ☐ $210 **Member** ☐ $260 **Non-member**

☐ Accompanying person(s)

(Includes accommodation and breakfast only)

☐ Friday ☐ $100

☐ Saturday ☐ $100

☐ Accompanying person to attend Conference dinner Saturday night.

(Non-delegate accompanying delegate to Conference dinner Saturday night)

☐ Extra Conference Dinner ticket $95

(Conference dinner includes a selection of wines, beers and soft drinks)

Name on ticket _____

Total payable $_____

- **Make cheques payable to: *Histotechnology Group of Queensland Incorporated***
- **Delegates should be aware that there are a limited number of single rooms available, which will be allocated on a first come first serve basis. This goes for ALL accommodation options and rooms cannot be guaranteed after 30th August, 2004.**
- **The Hyatt Coolum charges guests for valet parking (approximately $20); however delegates will be able to park in the visitor car park for free.**

SPECIAL REQUIREMENTS (eg special food or accommodation requirements)

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.....

.....

[1506] Rapid Intraoperative Immunohistochemical Evaluation of Sentinel Lymph Nodes for Metastatic Breast Carcinoma

El Johnston, RA Beach, SM Waldrop, D Lawson, C Cohen. Emory University School of Medicine, Atlanta, GA.

Background: Sentinel lymph node (SLN) biopsy has become an integral part of the surgical management of patients with breast cancer. Rapid immunohistochemistry (RIHC) is a technique that has the potential to increase detection of metastatic carcinoma at the time of frozen section consultation. Previous limitations of immunohistochemistry for intraoperative SLN evaluation include low sensitivity and increased time to diagnosis. We assessed the accuracy and turnaround time of a newly developed RIHC method for pancytokeratin (RIHC-CK) using antibodies conjugated with horseradish peroxidase (HRP) polymer. Results were compared with previous touch preparations (TP), frozen sections (FS), hematoxylin and eosin (PermH&E), and AE1/3 immunostained permanent sections (PermCK).

Design: 66 sentinel lymph nodes from 32 patients with breast carcinoma were examined for metastasis using the Zymed® Sentinel Lymph Node Rapid IHC Kit (Zymed, South San Francisco, CA). At the time of intraoperative consultation, 6-µm frozen sections of the sentinel lymph nodes were placed on plus slides and fixed in cold acetone for 20 seconds. The slides were incubated with Zymed® anti-pan-cytokeratin/HRP conjugate for 3 minutes at 37°C. The slides were rinsed, incubated with diaminobenzidine (DAB) substrate, rinsed, and stained with hematoxylin. Slides were ready for evaluation within 8 minutes and were interpreted as positive or negative for metastatic carcinoma. Results were compared with previous intraoperative TP, FS (H&E), PermH&E, and PermCK.

Results: 14 lymph nodes (19%) in 13 patients tested positive for metastatic carcinoma in PermH&E, used as the gold standard. RIHC-CK had the highest sensitivity (92%) of the intraoperative tests, compared with TP (64%) and FS (80%). RIHC-CK showed 94% accuracy as compared to 96% (FS), and 93% (TP). There were three putative false positives present in RIHC-CK that were not seen in TP, FS, PermH&E, or PermCK. These were believed to be true positives that tested negative in the other methods due to tissue sampling. The RIHC technique took 8 minutes and was easy to perform and interpret because of minimal background stain.

Conclusions: Zymed® rapid immunohistochemistry is a sensitive method for detection of breast cancer metastases in SLN. The speed, accuracy, and ease of interpretation of the test allow for recognition of micrometastases (< 2 mm) that might otherwise be undetectable by current methods of intraoperative evaluation. The prognostic significance and effect on surgical management of micrometastases in SLN has yet to be determined.

For more information on Zymed's Sentinel Lymph Node Kit (Cat # 28-8700), please contact;

BIO Scientific pty. ltd. ABN 11 001 405 947

FREECALL: 1 800 251 437, (0 800 444 157 NZ only)
Phone: +61 2 9521 2177(Sydney Metro), Fax: +61 2 9542 3100
E-mail: info@biosci.com.au
Web Site: www.biosci.com.au

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United Biosciences is pleased to introduce the SS-200 range of slide storage systems. These Australian made cabinets offer many advantages over conventional products and are specifically designed for applications requiring high storage capacity on a small footprint in research, haematology, histology and microbiology laboratories.

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- The cabinets are made of heavy gauge steel with smooth running, removable drawers.
- The cabinets are presented in chip & scratch resistant computer tan colour baked enamel finish.
- Each 6 drawer unit holds a total capacity of 5,000 slides, each individual drawer has 2 rows of standard slides.
- The system allows for a stack of up to fifteen 6-drawer units high excluding the base unit.
- Each drawer is supplied with histology cassette block insert trays to double drawer holding block capacity.

Code	Description	Unit Size	Unit Price
SS-200	6 drawer slide storage cabinet. Each drawer holds 2 rows of slides with a total capacity per 6 drawer cabinet of 5,000 slides. Dimensions - 6 drawer unit: 400mm wide x 127mm H x 476mm D	each	$245.00
SB-200	Slide storage base for SS-200, 6 drawer slide storage unit.	each	$95.00

For further information contact:

United Biosciences Pty. Ltd.

P.O Box 1516, Carindale, Qld. 4152

Tel: (07) 3219 2964 Fax: (07) 3219 2974- orders.

Email: sales@unitedbiosciences.com.au

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Spill Response Cabinets.

United Biosciences distributes a range of Spill Response Cabinets and kits. These cabinets have the following product specifications;

- **Wall mountable, white powder coated cabinets, portable, with carry handles.**
- **Three sizes to select from: a mini bench-top kit, with 2 handlers, a small cabinet with 4 chemical handlers or the larger cabinet with up to 8 chemical handlers .**
- **All are supplied with accessory packs. A full face mask with cartridges and up to to 6 chemical handlers can fit into one of the larger spill response cabinets.**
- **You can select from the following chemical handler shaker bottle range: acid, base, chlorine, solvent, aldehydes (Polyform F), & a general spills absorber**
- **The accessory pack & handler shaker bottles can be purchased separately.**

Don't wait for that spill to occur, plan ahead, order now. These kits are affordable.

UB1014.	**U-Bio Small Spill Response Cabinet (4 handlers)**	**$350.00.**
UB1015-6.	**U-Bio Large Spill Response Cabinet (6 handlers)**	**$420.00.**
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Para- Kleaner is not-toxic to the environment and odourless. Do not spray mist into the air
Flash point of 145 degrees F. No hazardous irritating vapours.
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U-Bio Para-Kleaner, 1 litre pump pack. Cat. no. UB1011. $30.00

U-Bio Para Kleaner, 1 litre refill pack. Cat. no. UB1011-R $25.00

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HISTOTECHNOLOGY GROUP of NSW

ABN: 63 128 868 343
nswhistogroup@bigpond.com

2004 - 2005

I wish to become a member of the Histotechnology Group of N.S.W. and enclose

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- ☐ $38.50 for annual subscription of $35.00 and $3.50 GST.
- ☐ $16.50 for student subscription of $15.00 and $1.50 GST
  (Full-time or working toward first qualification)
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