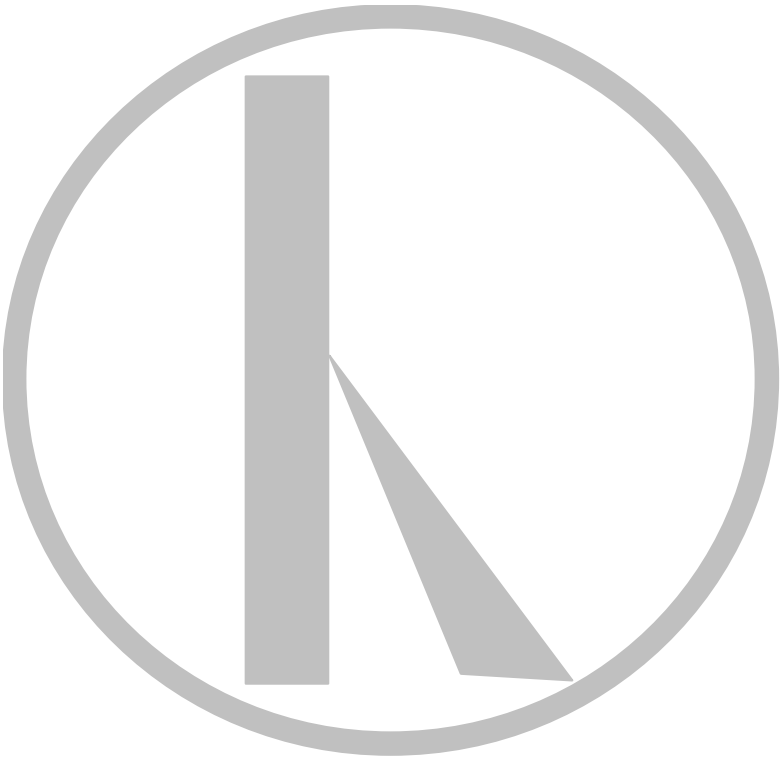
# Histograph

ISSUE 3
October 2006



**Newsletter of the Histotechnology Group of NSW**

# Contents



# Editorial

Well, our National Meeting has been and gone and we now have a new committee. Bill Sinai has stepped aside as Chairman (in fact he threatened to embed anyone who tried to stop him). After too many years to mention, Bill has guided our group to being one of the most prosperous and proactive professional societies I have been associated with. All is not lost though, Bill has promised to be available to offer advice and guidance. His knowledge and expertise will definitely be appreciated.

This has left some mighty big shoes to fill and Trevor Hinwood has agreed to give it a go. A very brave thing to do but he should be ably supported by his committee. Already there are some very interesting events in the pipeline (see a working list later in the journal).

We hope you are all well and please send in any items for publication in Histograph. We need them.

Tony Henwood
Editor
Histopathology Department
The Children's Hospital at Westmead
Locked Bag 4001,
Westmead, NSW, 2145.
Email: anthonyh@chw.edu.au

# Chairman's Report

Welcome to the October "Histograph".

At our Annual General Meeting in July, Bill Sinai stood down as chairperson of our committee. Bill held this position for many years and has put a tremendous amount of work into our NSW group, helping to make it the successful group it is today. Last year Bill was presented with Life Membership in recognition of his contribution. He has decided to continue his support for the group as a committee member.

We welcome the new committee members and the new ideas they will bring. It is important we have some new blood in the committee. This will ensure a good mix of ideas and the stability/progress of the NSW Group in the future. Congratulations to the previous committee members who were re-elected.

The next NSW Conference has now been booked. It will be held in Canberra on the 21st, 22nd and 23rd of September, 2007 at Rydges Capital Hill. We have a keen group of Canberra members organising the program. We will keep you advised of developments.

At the Queensland National Conference, it was confirmed that the NSW Group will hold the next National Conference early 2009. Many topical meeting nights are currently being organised. Our recent "cut up" evening meeting created a lot of interest and much discussion. A Christmas function/trivia night has been arranged for the evening of Friday the 24th of November at North Ryde RSL Club. Note this in your diary, make up a table and have a fun night. Flyer to be sent shortly.

Our "Histograph" is receiving strong support from our suppliers. Please support the companies that are supporting us. Our editor, Tony Henwood is seeking articles and information to print in the "Histograph". It is important Tony receives support so he can continue to provide ideas and information to our members.

Trevor Hinwood, Chairperson, Histology Group of NSW.

# Committee Members

| | | | |
|---|---|---|---|
| Chairman | Trevor Hinwood | trevor.hinwood@hdscientific.com.au | Product Manager, H D Scientific |
| Secretary | Kathy Drummond | kdrummond@dhm.com.au | Histology Lab supervisor, DHM |
| Assistant Secretary | Dianne Reader | dreader@nsccahs.health.nsw.gov.au | Senior TO Anatomical Pathology RNSH |
| Treasurer | Andrew Kennedy | flickmaster181@yahoo.com..au | Transport Senior Co ordinator, APEC 2007 |
| Editor | Tony Henwood | anthonyh@chw.edu.au | Histology Lab Dept Head, CHW |
| Trade Representative | David Jones | | Carl Zeiss Australasia |
| Committee | Amber Johns | a.johns@garvan.org.au | Research Scientist- Cancer Program, Garvin Institute of Medical Research |
| | Bill Sinai | Bills@icpmr.wsahs.nsw.gov.au | Anatomical Pathology Lab Manager, ICPMR |
| | Grant Taggart | gtaggart@dhm.com.au | Histology Lab Manager, DHM |
| | Jeff Leaming | murmandamus@iinet.net.au | TO, Anatomical Pathology, RPAH; [Web Master] |
| | John Kazzi | jkazzi@nsccahs.health.nsw.gov.au | STO ,Histology Lab, Gosford Hospital |
| | Julie Bilkey | juliebilkey@bigpond.com | TO, Histology Lab, Davies, Campbell and de Lambert |
| | Lin Parkes | eyepoint2@bigpond.com | Eyepoint Instruments |
| | Margaret James | megajam@optusnet.com.au | TO, Dutta Path |
| | Dr Tamara Sztynda | tamara.sztynda@uts.edu.au | Lecturer, UTS, Dept of Medical and Molecular Biosciences |
| | Liam O'Donnell | Liam@sydneyskinpathology.com.au | TO, Sydney Skin Pathology |

# The Wonders of Glass

*Editor's note: This is a transcript of the talk given by Trevor Hinwood at our Mudgee meeting and he has kindly put pen to paper.*

Glass is a uniform amorphous solid material, usually produced when the viscous molten material cools to below its glass transition temperature, forming a regular crystal lattice.

Consider a molecular liquid which is slowly cooling down. At a certain temperature, the glass transition temperature, the average kinetic energy of molecules no longer exceeds the binding energy between neighbouring molecules and growth of organized solid crystal begins. Formation of an ordered system takes a certain amount of time since the molecules must move from their current location to energetically preferred points at crystal nodes. As temperature falls, molecular motion slows further down and, if the cooling rate is fast enough, molecules never reach their destination — the substance enters into dynamic arrest and a disordered, glassy solid (or supercooled liquid) forms (1).

In its pure form glass is a transparent, strong, hard-wearing, essentially inert, and biologically inactive material that can be formed with very smooth and impervious surfaces. Glass is, however, brittle and will break into sharp shards. These properties can be modified or changed with the addition of other compounds or heat treatment (1).

Common glass contains about 70-72% of silicon dioxide ($SiO_2$). The major raw material is sand (or "quartz sand") that contains almost 100% of crystalline silica in the form of quartz. Even though it is an almost pure quartz, still it may contain a little (<1%) of iron oxides and this impurity can over time colour the glass (1).

**Historical**

In the late 1700's, glass was first used for microscopical preparations instead of mica. Chevalier in 1862 used a glass cover slip for highest magnifications.

Canada Balsam was first used as a microscope slide mountant in 1848. This improved the quality of the image being viewed as this enabled the light to travel through mediums of similar refractive index.

**Examples of Early Prepared Slides**

Examination of early collections of prepared slides (1880-1930) from C. Fenner and R. Oldfield and their fathers, who were both doctors, show excellent specimen preservation and illustrate the lasting qualities of glass.

Figure 1: Note the slide winning a medal in Paris, 1867.

Figure 2: slides dating around 1880. Note the detail in preparing the slide; each slide was treated as a work of art to be displayed at meetings, functions and dinners.

Figure 3: Honey Bee Ovary Slide 1880. Note how well the tissue has remained preserved and the intensity of the stain.

Figure 4: Sea ooze, Slide contains sample taken from the Adriatic Sea, 1877. "Photographed in Differential Interference Contrast. "

There are many examples of prepared slides dating back

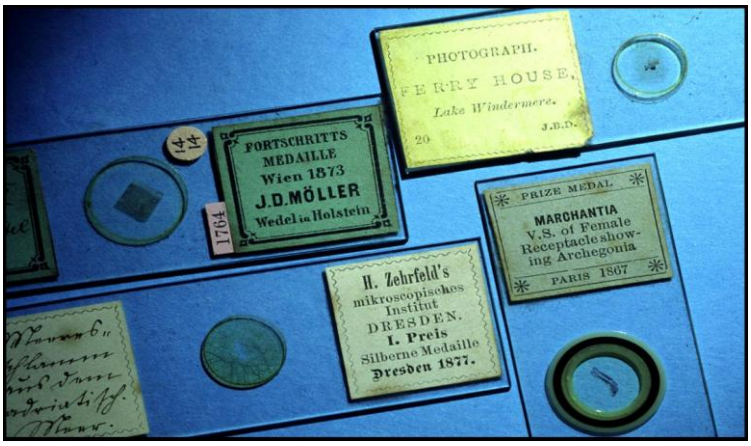



Figure 1

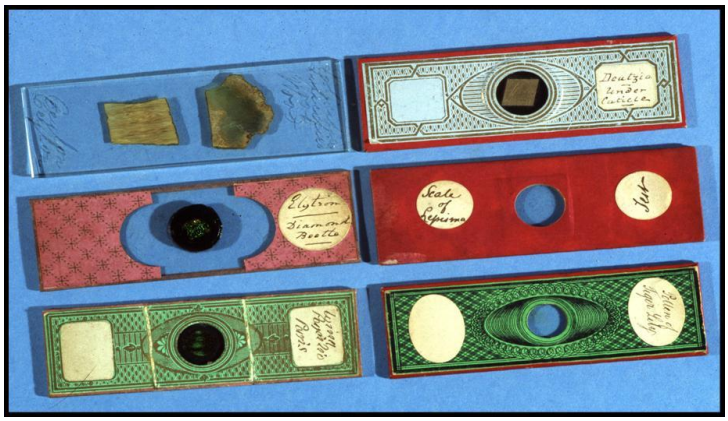


Figure 2

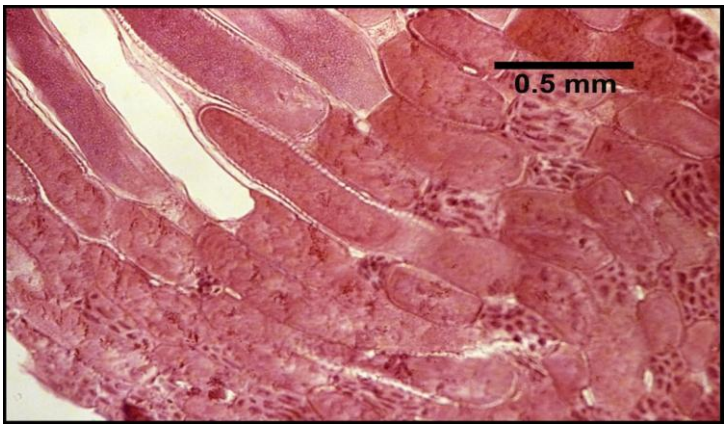



Figure 3

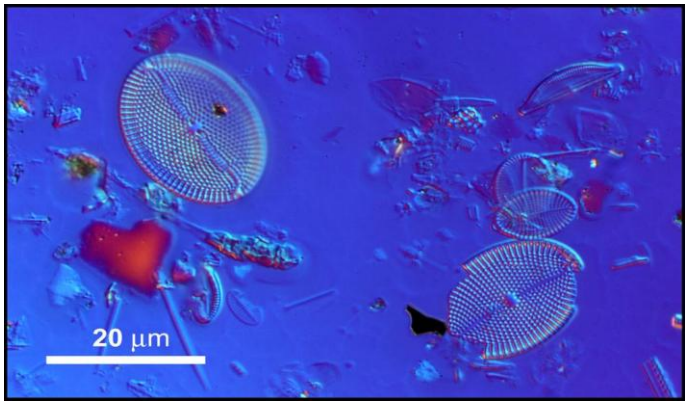


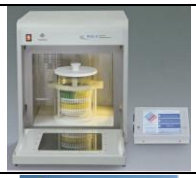
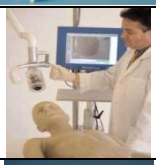

Figure 4

HDS
HD Scientific Supplies Pty Ltd

MILESTONE MEDICAL

# Introducing European quality and innovation backed by Australian Sales & Service Specialists.

HD Scientific Supplies Pty Ltd is proud to announce the acquisition of the sole distributorship of Milestone S.r.l.'s extensive array of environmentally and laboratory friendly equipment. Some of the products include:-

| | |
|---|---|
|  | Welcome to **PATHOS**, the revolutionary automated microwave high throughput batch historprocessor. The PATHOS is the result of Milestone's 10 years of experience in applying microwaves to histoprocessing and the hundreds of semi-automatic RHS microwave histoprocessors installed worldwide. The PATHOS provides the ideal combination of processing performance, reagents efficiency, and environmental sensitivity, without sacrificing the morphology and quality histopathologists expect from their tissue specimens. |
|  | **Rapid Microwave Histoprocessors**:- For Specimens Up To 5 Mm Thickness. The system is designed for laboratories that require a high throughput processor for same day routine histoprocessing for a wide variety of tissues without compromising tissue block thickness. (up to 5 mm). |
|  | **MacroPath**:- An innovative, highly visual productivity and quality tool for the grossing room. MacroPATH is a user-oriented capture/storage system of digital macro images to support macroscopic descriptions and to dramatically reduce specimen turn-around time at the grossing station. |
|  | **MacroVIEW** :- Is designed specifically to fulfill the requirements for the capture and storage of digital images of whole bodies, body parts and larger organ systems examined at autopsy and forensic pathology, particularly for applications in crime scene investigation and disaster victim identification. |
|  | **CutMATE**:- A range of forceps to assist the pathologists, pathologists assistants, Registrars and Researchers in taking the guess works out of getting the right size thickness block |
|  | **FineFIX**:- Is a formalin –free, water-based concentrate. When diluted with ethanol, its patented formulation of low toxicity additives overcomes the drawback commonly associated with the use of pure ethanol or ethanol based fixatives. |

**Our trained sales and service staff will gladly assist with any further enquiries you may have regarding this exciting new range.**

**Tele: 02 9609 1755 Tele: 03 9364 9569 Tele: 07 3711 9262**

over 100 years. By using glass slides and cover glasses and an appropriate mounting medium, tissue has been able to be preserved for investigation over long periods of time. This shows the remarkable properties and qualities of glass.

**The Properties of Microscopic Slides**

Glass slides are manufactured from a semi-solid soda lime material containing a wide range of chemicals.

Modern microscope slides are graded according to the following nomenclature.

| | |
|---|---|
| Half White | Has a greenish/ blue colouration and is the most economical type of glass used. It has the shortest shelf life. |
| Three Quarter White | A clear glass with no colouration. Also called extra white glass. A higher quality glass |
| Full White | Pure optical borosilicate glass. The same quality as cover slips. The highest quality of glass slide and the most expensive |

**Types of Edges on Microscope Slides**

Microscope slides have different types of edges:

- Plain edge (cut finish).
- Ground edge, 90 degrees.
- Ground edge, 45 degrees.
- Bevelled edge.
- Clipped corners (standard on 45 degree and bevelled edged slides, often available for 90° on request). Used in Haematology as a blood spreading slide.

**Storage and Use of Microscope Slides**

It is recommended to use gloves when handling slides and cover slips.

Store microscope slides in a dry, clean environment avoiding large variations in temperature and humidity.

Moisture can cause microscope slides and cover slips to stick together. This results in problems with automated equipment. This can be rectified by placing them in a warm oven or desiccator to remove the moisture.

Due to their chemical properties, slides have a shelf life. Generally 12 months from date of manufacturing when used in Histology, Cytology and Haematology. Environmental conditions can affect this time frame.

To ensure the best storage life, companies may use foil-lined, vacuum packaging to protect the glass from moisture and keeps the slides from oxidizing (eg Menzel®).

**Types of Microscope Slides**

Modern day slides may have a special colour coating on the end of the slide. This enables the slide to be easily identified, labelled or scribed with a slide writer. Colours include white, blue, pink, yellow, green, orange and purple.

Adhesive slides are becoming quite popular. They provide superior cell and tissue adhesion and save money and laboratory time by eliminating the need for expensive adhesives and time consuming coating methods.

Polysine-coated slides have a permanent adhesive on the slide surface which is suitable for fresh frozen sections, Formalin and Alcohol fixed paraffin embedded tissue sections and Cytology preparations. After picking-up the section, dry the slides completely at room temperature by vertically

draining them before heating them in a drying oven.

SuperFrost Plus® slides have a permanent positive charge placed on the slide. This electrostatically attracts fresh frozen tissue sections and Cytology preparations, binding them to the glass. A bridge is formed by developing covalent bonds between formalin fixed sections and the glass. This eliminates background staining. Dry the slides completely at room temperature.

Menzel have developed SuperFrost Ultra Plus®. A special manufacturing process ensures the coating of slide surface is flat. This ensues reagents cannot penetrate under the section during heating/pressure cooking. There is no background staining.

**Diagnostic Microscope Slides**

These are a slides coated with Epoxy or PTFE. They are available with a number of wells with a range of diameters. These coatings withstand test procedures. They are also available with a colour coating on the writing area. Adhesive coatings are also possible

**Microarray (latest in cover-slip and slide development)**

Special cover-slips are now available specifically designed for DNA MicroArray. They are manufactured from 1mm thick stiff glass specifically drawn for flatness and superior surface quality.

They have a printed raised edge for easy injection and are a solution to uniform hybridization.

MicroArray slides are also available in the following chemistries; Aminopropysilane, Poly-L-Lysine, Epoxy Silane and Aldehyde Silane.

These microscope slides are also available in an ultra clean form, with gold surfaces, enhanced surfaces, metallised surfaces and custom chemistries.

**Microscope Cover Slips (Cover Glasses)**

Features of a modern cover slip:

- They are made from clear white optical glass.
- Have uniform thickness.
- They are very low in iron content.
- Have optimum resistance to chemical attack.
- The Refractive index is nd 1.5255.
- They are available in a wide range of standard sizes and thicknesses.
- Come conveniently packed for manual and automatic cover slipping.
- Special sizes can be made to order.

**Conclusion**

The humble microscope slide and cover slip are not just a piece of glass. They are scientific tools that have evolved with scientific advances and will continue to do so.

Glass has withstood the test of time. Other materials have tried to emulate and replace it and have not succeeded. It is a unique material.

A thought, where would diagnostic pathology be if we did not have glass slides and cover slips?

This article is based on a presentation given by Trevor Hinwood (HD Scientific Supplies Pty Ltd) at the NSW Histotechnology Group Conference, Mudgee, 2006.

**References:**

http://en.wikipedia.org/wiki/Glass, downloaded 12/10/06.

**Acknowedgements**

Gerhard Menzel Glassworks GMBH Co Ltd, Braunschweig, Germany.
HD Scientific Supplies Pty Ltd, Sydney, Australia.
Ron Oldfield, Sydney, Australia.

# Sonic Hedgehog - I thought it was a computer game!

The **Hedgehog** gene family was originally identified by a genetic screen in the fruit fly *Drosophila melanogaster*. Since 1990, a number of different hedgehog genes have been reported in vertebrates, all of which are evolutionarily conserved (i.e. the sequence of each gene has remained constant throughout evolution) (1). There are at least five homologous members of the hedgehog gene family: **Sonic hedgehog, Indian hedgehog, Desert hedgehog, Tiggy-winkle and Echidna hedgehog** (3)

The hedgehog signalling pathway has been shown to play a crucial role in embryogenesis (1). During development, graded concentration profiles of signalling molecules provide information across a field of cells. The concentration of the molecule informs the cells where they are and what they should do; such molecules are known as morphogens (5). Hedgehog signalling drives cell proliferation, promotes cell survival, and directs cell differentiation during embryonic development. The array of skeletal elements that compose the hands and feet, and the ordered arrangement of these bones to form the pattern of fingers and toes are dependent on Sonic Hedgehog (5). In the male reproductive tract, Sonic Hedgehog signalling is necessary for the formation of the external genitalia and for the development of the prostate (4). **Sonic Hedgehog** operates as a 'positional signal'. Dysregulation of the pathway during development has been associated with significant human birth defects, including holoprosencephaly, basal cell nevus syndrome, and polydactyly (2).

Hedgehog signalling occurs at epithelial-mesenchymal boundaries during development and at epithelial-stromal boundaries in postnatal life in some tissues whose functions are essential for reproduction, including the gonads, uterus, and hormonally responsive accessory sex glands such as the mammary gland and prostate. Dysregulation of the pathway during postnatal life has been associated with human cancers, including basal cell carcinoma, medulloblastoma, and sarcomas, supporting its critical role in the regulation of cell proliferation (2).

How the protein encoded by the Hedgehog gene behaves in a cell is even weirder. The Hedgehog precursor protein undergoes autocatalytic cleavage, which yields an amino terminal peptide that interacts with a 12-span transmembrane receptor protein encoding a single gene called **Patched**. The interaction between the **Hedgehog** and **Patched** proteins relieves Patched-mediated inhibition of the activity of a G protein-coupled seven-span transmembrane protein called **Smoothened** (2). **Patched** inhibits signal transduction through **Smoothened**. In this situation, the transcription factor **Cubitus Interruptus**, which mediates **Hedgehog** signalling, is sequestered in the cytoplasm, bound to microtubules in a protein complex that includes the kinesin-related protein Costal-2, the putative serine-threonine kinase **Fused**, and a third protein called **Suppressor of Fused** (2).

Who thought of these names?

Mutation in the Sonic Hedgehog gene has been associated with a dominant form of malformation known as holoprosencephaly, a defect characterized by facial and forebrain anomalies. One in 16 000 newborns is affected by HPE, which leads to incomplete development and separation of structures in the central nervous system. Alobar holoprosencephaly is considered to be the most severe form and is usually incompatible with postnatal life as it leads to complete failure of the forebrain to separate into left and right hemispheres (1).

So after all this, how did the name come about? The name Sonic Hedgehog originated with a mutant fruit fly embryo that had spiny cuticle all over its body.

Researchers found three different versions of the "hedgehog" gene but only two kinds of real hedgehogs, so they named the third gene after the cartoon character.

## References


1. Arsic et al (2002) J. Paediatr. Child Health 38, 117–121.
2. Walterhouse et al (2003) Biology of Reproduction 69, 8–14.
3. Iwamoto et al (1999) Crit Rev Oral Biol Med 10(4) 477-480.
4. Sanchez et al (2005) Cancer Res 65(8): 2990-2.
5. Hill et al (2003) J. Anat. 202:13–20


## Christmas Party – Early Notice

A date for your diary:

| | |
|---|---|
| When: | Friday 24th Nov. at 7.30pm. |
| Where: | The Grand Pittwater Function Centre, North Ryde RSL Community Club, Magdala Rd (cnr Pittwater Rd) North Ryde. |
| Cost: | $35.00 per head |
| Theme: | Trivia-type night |
| R S V P: | By the 17th of November, 2006. |
| Contact: | For table reservations, Liam O' Donnell, Ph 02 9417 1940, email, Liam@ sydneyskinpathology.com.au |

## Formalin in Beer

Recently Histonet carried a thread on the use of formaldehyde in various commercial products which certainly caught my attention:

From Austria:
*Today a lab assistant asked me, what would happen to her skin, if formalin was splashed on her arm.*
*I said, the formalin would harden the skin, but only on the surface. She should wash the arm with plenty of water, and there should be no adverse reaction. It would not be dangerous for her health. Do you agree with me? Is there a cancer-risk after short contact with formalin?*

From Charles Embrey Jr:
*You are 100% correct. I have even reached into a tub of formalin with a bare hand to pull out something but washed with soap and water minutes after. I have not personally heard of formalin causing an increased risk of skin cancer however I am sure that there is a study somewhere that has probably associated some risk with L---O---N---G term exposure. Your lab assistant should be perfectly safe. Just don't drink it and keep it out of the eyes.*

From Bryan Llewellyn:
*Most of us old-timers have stuck our fingers in formalin or spilled it on ourselves on many occasions. I have never heard of anyone developing a tumour from it, though. It certainly doesn't appear to be common if it does happen.*

*In Canada some years ago we had a government program assisting people to inject urea-formaldehyde resin into the walls of houses as a retrofit insulation system. A few years later it was decided the formalin fumes given off were carcinogenic, so we had another program to remove it. That's about the only link to tumours I have heard of.*

*One of the pathologists I used to work with many years ago was fond of quoting a paper he had once read which compared nasopharyngeal tumour rates among various groups. Pathologists had a lower rate than other people. He always put that down to the formalin fumes they breathed in all the time.*

*The real identified problem with formalin and skin contact is dermatitis. It isn't universal, but some people do get it with repeated contact, and once you develop the sensitivity to it, it doesn't go away. So wear gloves.*

From Stephen Eyres:
*The key here is the amount of exposure over time. How many labs have a regular monitoring program which assesses formalin concentration whilst staff are working, grossing, tissue processor reagent changes, with or in an area where formalin vapours can build up, such as tissue store? Our lab has been monitored periodically over the years and the levels have always been below the limit. In such a situation, the carcinogenic aspect is not seen as a problem.*

From Ford Royer:
*I am reminded of a story that my son told me from his college days. He majored in Chemistry and went on to get a M.S. in Chemical engineering.*

*On the first day of his second year Organic*

*Chemistry Laboratory the T.A. was giving the class the basic ground rules and safety procedures for their laboratory sessions. The one thing that stuck in his mind is when the T.A. explained what they would be dealing with on this level.*

*"Up until now, in your Freshman labs, and any labs that you may have had prior in High school, the chemicals that you have handled could hurt you. The chemicals that you will be dealing with throughout the course of this lab can KILL you."*

*He never forgot that, as did all of his class mates, for the rest of the semester and thankfully so. They are all still with us today.*

From Jackie M O'Connor:
*Formaldehyde was a common ingredient of shampoos, and I remember reading the ingredients (with horror) on a bottle of Mr. Bubble bubble-bath for kids (like 25 years ago).*

*If you remember "Good Morning Vietnam" –they mentioned using formaldehyde to produce a better head on a glass of beer from the tap.*

*I once worked with a pathologist who was allergic to formaldehyde. When he did the gross, we had to rinse all the specimens in water before he could examine them - yeah, that was fun.*

And finally from Sharon Osborn:
*Yes, in the past, formaldehyde has been added to the beer to ship to the military and may still be done. It is used as a preservative. Thus, the term "rot gut" for when the guys got sick with upset stomachs, numb tongues, and headaches, etc.; it is not all from the alcohol! (This from someone who served and drank!).*

*And, I remember the first time my Dad walked into the histology lab I was working in back in the late 1960's, early 1970's. The pathologist was grossing with an open container of formalin and tissue on the board. Of course, back then, no gloves; the hands went into the formalin to pick out the tissue, etc. The first comment from my Dad was "that's 'maldehyde you are using!" I had to ask him several times before understanding he was talking about formaldehyde. He kept saying he smelled it in the packin' plant. He was familiar with it in the butchering plants/packing plants for cattle, hogs, etc.*

*We had a farm and he would take some animals for slaughter for his custom delivery of beef or hogs to customers. He said they sprayed it in the cooling out rooms to keep the meat from spoiling. So, even your food often has it as a preservative on it.*

*Then, have you ever walked into a fabric store and your eyes start burning, watering, etc. and nose also? It is the strong odour of formaldehyde in the fabrics. It is used in the fabrics our clothing is made of; in the carpet in our homes; in the glues used for the carpets and the furniture; in the chipped wood products that have laminates over them, etc. Then, with our homes tightly sealed when all doors and windows are shut, these gases have no way to escape and we breathe more of it than otherwise.*

*These are current ways I know formaldehyde is being used plus the shampoos already mention. Look at your labels, some hand lotions contain it also!*

# Abstracts from the Literature

## *Loss of S100 antigenicity in metastatic melanoma*

Dara L. Aisner, Ajay Maker, Steven A. Rosenberg and David M. Berman

Human Pathology Volume 36, Issue 9, September 2005, Pages 1016-1019.

Melanoma is a highly malignant disease that may initially present as a poorly differentiated metastatic tumour. Therefore, the S100 immunostain, immunoreactive in 96% to 99% of melanoma, is used to evaluate poorly differentiated malignant tumours. To develop criteria for correctly diagnosing S100-negative melanomas, we studied the immunohistochemical profile of 1553 patients enrolled in ongoing National Cancer Institute clinical trials for melanoma. Seventeen patients (1%) had metastatic melanoma specimens that were negative for S100. Of the 17 S100-negative lesions, 10 (59%) were immunoreactive for both GP100 and MART-1. Of the 17 S100-negative cases, 13 had a documented primary melanoma. Twenty-four percent of the S100-negative cases had an ocular primary, whereas only 6% of all melanomas had an ocular origin. In 11 of the 17 cases with previous surgical specimens, a prior documented S100-immunoreactive specimen was identified in 9 cases (82%). The time interval for loss of S100 immunoreactivity ranged from 3 weeks to 3 years (average, 13.5 months). There was no association between S100-negative status and histological appearance or site of metastasis. We conclude that all S100-negative melanomas could be correctly identified by negative workup for carcinoma, lymphoma, and sarcoma plus (1) GP100/MART-1 immunoreactivity and/or (2) prior documentation of melanoma.

## *Thiol-reactive compounds prevent non-specific antibody binding in immunohistochemistry*

Arlin B Rogers, Kathleen S Cormier and James G Fox

Laboratory Investigation (2006) 86:526-533.

Non-specific antibody binding is the primary source of confounding background in immunohistochemistry (IHC). Based on observed patterns of background staining, and the known spontaneous reduction of immunoglobulin disulfide bonds in vivo and in vitro, we tested the hypothesis

that non-specific antibody binding in IHC is mediated by sulfhydryl interactions.

Co-incubation of primary antibodies with reduced glutathione (GSH), L-cysteine, iodoacetic acid, Ellman's reagent and other thiophilic reagents in pH 8 tris-EDTA (TE) buffer inhibited background staining. In contrast, oxidized glutathione (GSSG) exerted no effect.

When empirically optimized, co-incubation of GSH with primary antibodies significantly improved IHC signal:noise ratio. Tissue pre-incubation with mercaptans, soft and borderline metals, and other sulfhydryl-reactive reagents also inhibited background staining but at the expense of target sensitivity. ELISA results confirmed direct binding between murine serum antibodies and GSH in a non-antigen-dependent manner.

In summary, thiol-reactive compounds prevent non-specific antibody binding in IHC. We propose a mechanism whereby non-specific background resulting from formation of disulfide bridges and other sulfhydryl bonds between primary antibodies and tissue side groups is interrupted by prior exposure to thiol-reactive reagents such as GSH. These findings provide a molecular basis to improve the specificity of IHC and other immunoassays, and hold implications for antibody-based clinical diagnostics and therapeutics.

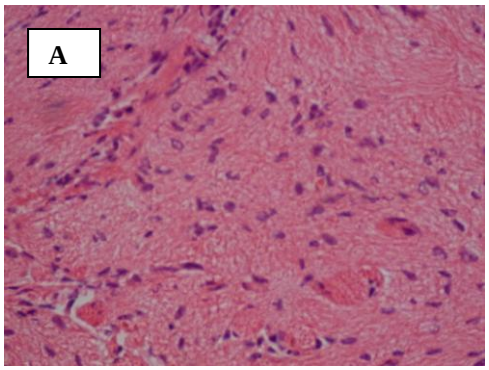
## *Vulvar siliconoma migrating from injected silicone breast augmentation*

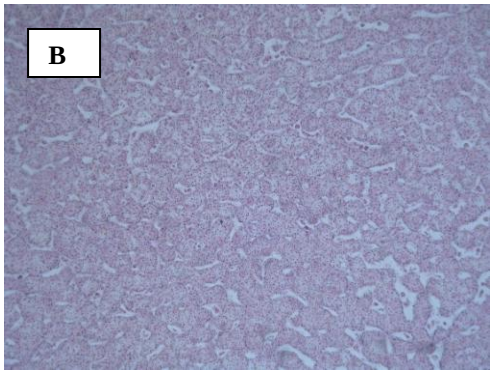
Jeng CJ, Ko ML, Wang TH, et al

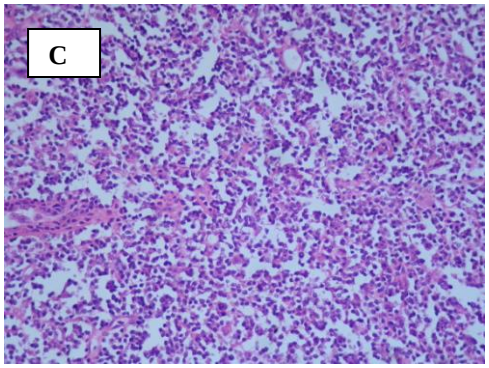
BJOG (2005) 112(12):1659-60.

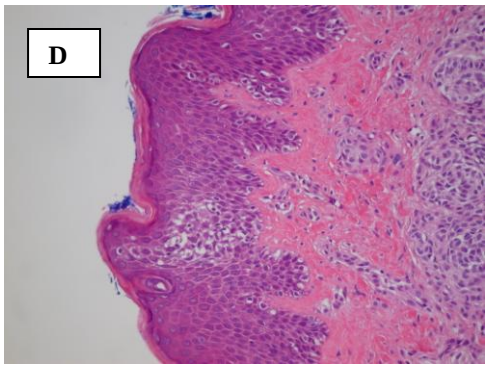
The authors report a case of vulvar siliconoma caused by migration of injectable liquid silicone used for breast augmentation in a 39-year-old woman. The patient presented with a 1-month history of vulvar mass, which was firm, indurated, and ill defined at the right labium majus. Differential diagnoses included lipoma and fibroma. The mass was excised, and the wound healed without complications. The resected specimen was soft and yellow to gray in color. The mass measured 7.4 × 2.5 × 1.3 cm. Microscopic examination revealed siliconoma with various-size vacuoles, foreign-body giant-cell reaction, and foamy histiocyte infiltration. The patient reported that she received liquid silicone injections for breast augmentation from a nonmedical practitioner 2 months before presentation. It was not reported whether the silicone was medical grade. After several days, the patient noticed a change in the shape of the right breast, along with diminished volume, and a small mass in the right abdominal wall. The patient received additional silicone injections in the right breast. 1 month later, the patient discovered a vulvar mass; the abdominal wall mass gradually disappeared. The authors state that to their knowledge, this is the first report of injectable silicone migrating from the breast to the vulva. The authors

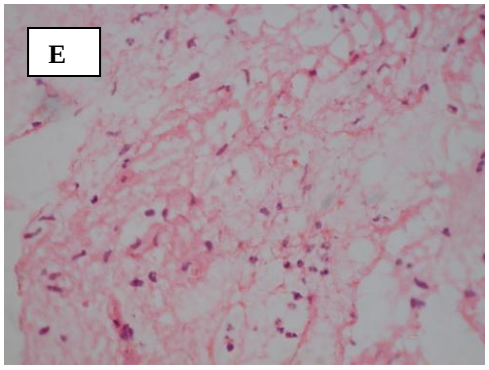
# Match the Good & the Bad

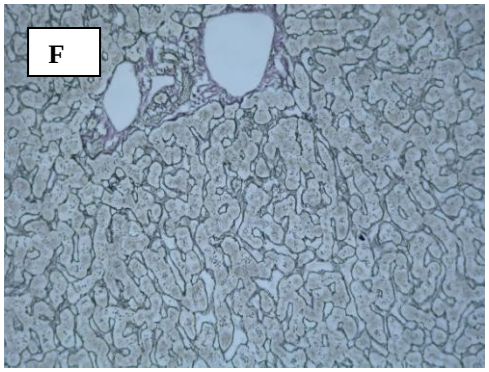


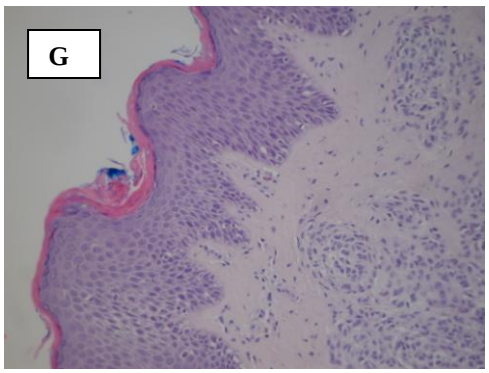



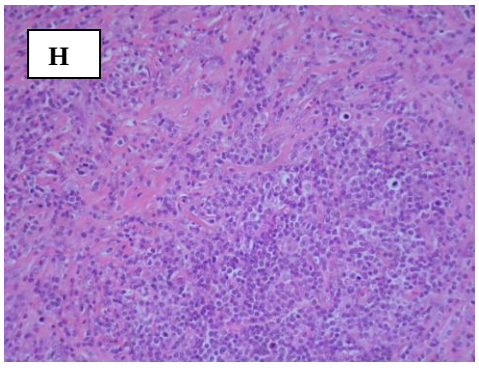




Answers on Page 17

grale scientific

Unit 18/107-113
Heatherdale Road
PO Box 5063
Ringwood VIC 3134

# NEW PRODUCT LAUNCH

# HISTOLOGY MICROTOME ALIGNMENT TOOL

| | | |
|---|---|---|
| For Leica and Reichert Jung microtomes | Cat # MAL-100 | $600.00 |
| For Microm microtomes | Cat # MAM-200 | $680.00 |
| For Microtec microtomes | Cat # MATEC-300 | $600.00 |

1) When every section counts, such as from blocks for research projects, small tissue samples from needle biopsies or positive controls, and they have to be recut on a different Microtome, the alignment can be difficult and time-consuming.

2) When your laboratory pre-trims all of the blocks on one or two microtomes for distribution to numerous ‘cutters’ then this Alignment Tool enables all microtomes to be similarly aligned.

## SAVES VALUABLE TIME WHICH EQUATES TO MONEY

*******Now Available*******

**Mercurochrome Block Orientation Marker 50ml Bottle**

**Cat. No: MERC-50 - $33.00 + GST**

conclude that clinicians and pathologists should be aware of the potential for liquid silicone migration and should consider siliconoma as a differential diagnosis in patients exhibiting granulomatous reactions who have received liquid silicone injections.

### *Alternative cellular energy pigments mistaken for parasitic skin infestations*

W. John Martin

Experimental and Molecular Pathology Volume 78, Issue 3, June 2005, Pages 212-214

Dermatologists and psychiatrists occasionally encounter patients who believe they are infested with skin parasites. They may report seeing threads, fibres and more solid appearing particles attached to their skin and hair, or appearing on clean bed sheets after sleeping. Some of the particles move spontaneously suggesting a life form. Similar structures develop in long-term cultures of stealth-adapted viruses. They are termed alternative cellular energy pigments (ACE pigments) since they appear to provide a non-mitochondria source of cellular energy that can assist in cellular repair from the virus cytopathic effect (CPE). Particles obtained from the skin of stealth virus culture-positive patients can also display auto-fluorescence and electrostatic properties. Some of the particles are magnetic and can generate gas in an aqueous solution. They also lead to the production of lipid-like crystals similar to those produced in long-term cultures of stealth-adapted viruses. It is proposed that skin-derived particles that form in some of the patients assumed to be experiencing a delusional parasitosis are, in reality, a reflection of the body's production of ACE pigments.

## The Good and the Bad – Answers

Picture B: a poor Reticulin stain with too much ammonia in the silver solution – Picture F a lot better.

Picture C: Poorly fixed lymph node (note shrinkage) compare to Picture H.

Picture E: Frozen section of brain tissue transported in saline – note extensive ice crystal artefact, compare with Picture A – frozen section of brain (same case) received dry.

Picture G: Skin H&E with neutral eosin solution, compare with Picture D after acetic acid added to the eosin.

# New Zealand Histology Special Interest Group Meeting

## November 3rd and 4th 2006

The main event will be held on Saturday November 4th with a couple of workshops being put on by some sponsors on Friday November 3rd.

Friday will also have a friendly sponsored Golf Tournament in the afternoon after the workshops which is open to players of all skills – even if you've just hit a few balls around the minigolf and would like to whack a ball about, sign up now as places are limited. All equipment will be supplied.

The meeting on Saturday holds a varied programme and includes speakers from within both the technical and medical professions. In the evening we have the conference dinner followed by entertainment in the form of Karaoke followed by music from LabPlus' one and only band "No Strings Attached".

Venue : Wairakei Resort Hotel
State Highway 1
Wairakei
Taupo

Bookings can be made online at http://www.wairakeiresort.co.nz/
or by contacting the Hotel on 0800 737 678 or +64 7 374 8021
Fax: +64 7 374 8485
Email: stay@wairakei.co.nz

Meeting 4th November
NZIMLS Members: $160
Non-NZIMLS $200
These prices include the cost of the conference dinner, lunches, morning and afternoon tea

Workshop 3rd November $50

Following is a programme for the event but the final schedule may change a little on the day.

**Program**

| Friday 3/11/2006 | Activity |
|---|---|
| 0800 – 10.30 | Workshop 1 Vision- Bio New developments |
| 10.30 – 11.00 | **Morning tea +Registrations** |
| 11.00 -1.30 | Workshop 2 Ventana – New developments |
| 1.30 – 2.00 | **Lunch** |
| 2.00 – 4.00 | Golf Challenges |

| **Saturday 04/11/2006** | **Speaker** | **Presentation** |
|---|---|---|
| 08.30 – 09.00 | **Coffee and Registration** | |
| 9.00am | Cheryl Goodyear | Cultural Aspects of Histology |
| 9.30am | David Gan (AUS) | Special Stains |
| 10.00 – 10.20 | **Morning Tea +Late Registration** | |
| 10.20 – 11.20 | Dr Simon Stables | CSI |
| 11.20 – 11.50 | Dr Chris Van Vliet | Pathology from a Registrars Perspective. |
| 11.50 – 12.15 | Isobel Early | Nutritional Values |
| 12.15- 12.35 | Leanne Giles(RCPA) | Quality Assurance. |
| 12.35 – 1.30 | **Lunch** | |
| 1.30 – 1.55 | Colin Woods | Histo/Cyto Correlations |
| 1.55– 2.20 | Tracy Gunn | Elastic Tissue Staining |
| 2.20 – 245 | Sharita Meharry | Bone Tumours |
| 2.45– 3.10 | Davis Gan (Australia) | Special Stains |
| 3.10 - 340 | Judy Brincat (Australia) | Histology Special Interest Activities in Australia. |
| 3.4 0 – 4.10 | **Afternoon tea and Posters.** | |
| 4.10 – 4.30 | Michelle McAnulty-Smith | Histology Education |
| 4.30 – 5.00 | Jillian Broadbent | CPD Points. |
| 5.00- 5.15 | Closing of Seminar. Presentation of prizes | |
| 6.00 – 7.00 | **Complementary Refreshments** | |
| 7.00 – Late | **Conference Dinner** | |

# Histotechnology Group of NSW Membership Application

**2006 - 2007**

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

PLEASE TICK

- ☐ $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)
- ☐ $82.50 for company subscription of $75.00 and $7.50 GST
  (2 representatives, one of whom must be a NSW representative)
- ☐ RENEWALS ☐ ANY CHANGES TO PREVIOUS DETAILS.

PLEASE PRINT ALL INFORMATION.

SURNAME_____ GIVEN NAME_____

TITLE: MR, MRS, MS, DR, MISS. (Circle one)

OCCUPATION_____POSITION_____

INSTITUTION_____DEPARTMENT_____

ADDRESS for CORRESPONDENCE:

STREET/P.O.BOX._____

CITY,TOWN,SUBURB,_____POSTCODE._____

IS THIS ADDRESS HOME OR BUSINESS ? (Circle One).

PHONE No. WORK_____ EXT_____ HOME_____

**E-MAIL ADDRESS**: _____

**2ND COMPANY CONTACT**

SURNAME_____ GIVEN NAME_____

TITLE: MR, MRS, MS, DR, MISS. (Circle one)

POSITION_____ INSTITUTION_____

ADDRESS STREET/P.O.BOX._____

CITY,TOWN,SUBURB,_____POSTCODE._____

PHONE No. WORK_____ HOME_____

E-MAIL ADDRESS: _____

**SIGNATURE**_____**DATE**_____

RETURN TO:

SECRETARY
HISTOTECHNOLOGY GROUP of N.S.W.
P.O. BOX 496
GUILDFORD NSW 2161

Office use only