Histology Group of Victoria Inc.
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PARAFFINALIA

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Contents:

Editor: Elizabeth Baranyai

"The HGV aims to provide a dynamic continuing education program in Which all persons with an interest in Histology and Histotechnology Are freely invited to participate."

Committee Page:

The members of the Histology Group of Victoria 2008-2009 are:

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Please feel free to contact any of the committee members listed above with any comments or suggestions. Contributions are always welcome.

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The Histology Group of Victoria Inc.
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Australia

Please send articles on floppy disc (preferably Microsoft Word format) for inclusion in the next edition. All articles submitted for publication will then become the sole property of the Histology Group of Victoria.

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FROM THE CHAIR:

Presidents Report 2008/2009 Financial Year

The 2008/2009 financial year was again very successful for the HGV. We held 5 scientific meetings and one cut-up workshop. The meetings have again been well attended. Many HGV members travelled west to the 4th National Histology meeting in Adelaide in May and were very impressed with the excellent conference. The next National Conference is planned for NSW in 2011. The trivia night way back in July 2008 saw the event back into central Melbourne suburbs and thanks primarily to the work of Maria Chavez was once again an enormous success.

The scientific meetings, seminars, conferences, newsletters, social events and web site that the HGV committee organise does not happen without some considerable effort from the committee. I would like to thanks the members of the committee for their work over the 12 months in maintaining the provision of excellent ongoing education with a professional facade. There has been a significant changing of the guard of recent times. We lost Simon Davies after 3 years of service overseas to third world Africa. Also after 3 years on the committee and many more years unofficially before that designing and maintaining the HGV website and all the IT that goes with that, a big thankyou to Sean Phefley. And most significantly after 10 years service, most of which as Treasurer, and lately as trade representative and newsletter editor, Neil O'Callaghan. But the positions that Neil held alone somewhat trivialise the impact and contribution that Neil has made to the HGV committee. He has been a driving force in advancing the professional image of the HGV and ensuring a variety of relevant educational content.

Losses of this nature from the committee are significant, and we face huge challenges picking up the excellent work that these individuals leave behind. If you value the Histology group of Victoria as an entity that provides your professional education and feel you may be able to assist in ensuring that it continues into the future, be it in some small way, a position on the committee may beckon.

Adrian Warmington

Article Review:

Histology, imaging and new diagnostic work-flows in pathology
J Gilbertson, Y Yagi – Diagnostic Pathology 3, 2008, S14.

Fully automated, high speed, high-resolution whole slide imaging (WSI) devices were first introduced in 1999 and since then have become gradually more reliable, fast and capable. Although these devices and the use of them is still far from perfect, they have evolved to a point where a laboratory can consider placing them in a pre-diagnostic role in their clinical histological environment. Investigators have demonstrated that in some instances, pathologists examining images rapidly captured by these imaging systems can make diagnoses that are just as correct and as comprehensive as those made directly from the glass slide. Whole slide imaging is not yet as good as that of which is seen through the microscope – the diagnostic capability is a poor substitute in terms of image quality, however further improvement is expected in the future.

At present the majority of WSI work is only seen post-diagnostically, occurring only after the pathologist has used the glass slide to make the diagnosis. In most institutions, slides are made in the histology lab, are sent to the pathologist for diagnosis and are then sent to a slide filing room for management and storage after each case has been signed out; this is usually where the WSI systems have been placed, in the slide room.

A pilot study was being run at the time this paper was written at the Massachusetts General Hospital in which a high end WSI device was placed in their main clinical histology lab (after the cover slipper and before slides reached the pathologist) to examine the requirement of both the machine and the laboratory. Based on this pilot study several postulations were made.

A number of stresses are put on the histology lab when a WSI robot is placed at the end of the slide creation process; it must be reliable and must keep up with the throughput of the lab. It is proposed that laboratories would need to move from manual, large batch processes to increasingly automated, continuous flow processes such as sending out slides in “mini-batches”. For the WSI system to work the machines need to be reliable and fast. For this to happen, the machines must be presented with high quality tissue slides as the quality of the image is based on the quality of the slide. Parameters such as the placement of the tissue on the slide, the flatness and the thinness of the section, the staining, and the quality of the cover slipping as well as label placement will all affect the image quality, capture speed and the reliability of the imager.

The paper stipulates that a WSI system will only be successful and a useful tool in histopathology if it is used to overall enhance the pathologic examination of tissue. Histology parameters such as fixation, cutting and staining, along with various imaging parameters will become increasingly examined over time as more and more imaging devices are placed in the histology environment. This will ultimately allow for not only the capturing of better pictures, but for the enhancement of detail and structure in histology in the somewhat near future.

Michelle Zammit

The Alfred Hospital

Under the Microscope

Reported by Maria Chavez

Selwyn Stevens
Scientist in Charge
St John of God, Geelong.

1. What was your first job?

Emptying dustbins in South Yorkshire as a 17 year old. Anyone who recalls the movie "Brassed Off" will remember the town as Grimley. It was actually Grimethorpe, home of the world famous brass band. I have the dubious achievement of having emptied every dustbin in Grimethorpe.

2. What attracted you to Histology?

See above! In reality, in 1967, I was looking for a job in a brewery laboratory, as you do, and had an interview at Charrington's Brewery in Whitechapel. Out of curiosity, went to an interview across the road at the London Hospital in the Dept of Morbid Anatomy. They offered me a job, brewery didn't.

3. What is the worst decision you have ever made?

See above! After that, turning down a job offer in Palo Alto in the early seventies. Could have left my art in San Francisco.

4. What is the best decision you have ever made?

Migrating to South Australia in 1977. Took a while to get to Victoria, but.

5. Who would you most like to have dinner with and why?

My old school house captain, Geoffrey Boycott. He used to field me at longstop and I would like to make him pay!

6. What music do you enjoy listening to?

Classical, World Music. Once saw Nusrat Fateh Ali Khan at a WOMAD in Adelaide at 2.00am sitting cross-legged in a haze of marijuana smoke (me, not Nusrat).

7. What is your favourite stain?

The buffered performic-acid-alcian-blue-periodic-acid-schiff method for the differentiation of basophils in the human and rat pituitary, developed by a mentor of mine, Ken Swettenham at the Bernhard Baron Institute of Pathology, the London Hospital. Coupled with orange G to stain acidophils, it is very pretty (and probably now redundant, thanks to brown stains).

8. What is your favourite food/Restaurant?

Italian. Fettucine marinara. Still looking for one as good as a memorable meal in Amalfi in 1986. Must get to Lygon Street!

9. What are you reading at the moment?

Dan Brown, The Lost Symbol. Few pages every night guaranteed to induce sleep.

10. What is the best conference you have ever attended?

Coonawarra, 2007. Met up with my old mate John Doré. We worked together in London.

11. Are there any current projects you are working on at the moment?

Getting to know Victorian wines!

Meeting Report:

Plecomacrolide toxins and endocrine pancreas remodeling

Presented by – Dr. Mark A. Myers: Biomedical Science, School of Science and Engineering, University of Ballarat

The fascinating aspect of pancreas remodeling induced by exposure to plecomacrolide toxins, which was found to accelerate type 1 diabetes in a mouse model, was enthusiastically presented by Dr. Mark A. Myers who outlined the work of two of his PhD students, Kalindi Hettiarachchi and Swee Chin Ling, from Monash University. Dr. Myers has developed a longstanding interest in the diagnosis, causes and treatment of diabetes. His work has explored the use of serum autoantibodies to pancreatic islet cell components and predictive markers for type 1 diabetes, the role of environmental toxins in causing diabetes, and the role of novel pancreatic peptides with insulin sensitizing activity.

Dr. Myers began with an overview of type 1 diabetes. Type 1 diabetes is an autoimmune destruction of the pancreatic islet beta cells, the cells that produce insulin. This destruction results in insulin deficiency which in turn requires life-long insulin replacement therapy for affected individuals. The causes of this disease are complex; it is triggered by a combination of genetic and environmental influences. Environmental causes include toxins, viruses and other factors such as early weaning and early exposure to cow's milk. The influence of toxins in type 1 diabetes is the basis of this presentation.

Bafilomycin is one of the diabetogenic toxins that was explored in this study. This toxin is produced by *Streptomyces* which is found in root vegetables, and has been seen to have an affect on disrupting islet cell turnover. Type 1 diabetes in an autoimmune disease which means that the body recognizes the antigens on the islet beta cells as being foreign and hence begins to destroy them. The way these toxins contribute to this process is that they can cause a disruption of the normal cellular processes. They cause the release of autoantigens, such as proinsulin, which is one of the major autoantigens in type 1 diabetes. This leakage of proinsulin leads to its uptake by dendritic cells that take the antigens back to the draining lymph node. In the draining lymph node, autoreactive T cells react to the autoantigens and escape, migrating back to the islet beta cell and start destroying it through CD8 cytotoxic T cells and cytokine mediated damage. This in turn accelerates the whole process of pancreas remodeling, resulting in a self-destructive cycle of autoimmune damage, beta cell death, and the release more autoantigens. This process can go on for 10 years, eventually resulting in insulin deficiency and hence type 1 diabetes.

Toxins can be highly specific and potent inhibitors of an enzyme called vaculor type ATPase (v-ATPase). This enzyme is responsible for acidifying intracellular compartments. A toxin acts like a spanner in the cogs of the v-ATPase, prohibiting it to pump protons into secretory granules and other intracellular organelles which require an acidic pH for their constituent enzymes to work. Beta cells make insulin from its precursor proinsulin. Proinsulin is converted to insulin via a couple on enzymes called Prohormone Convertases (PC) which require an acidic pH for optimal processing. Such toxins like bafilomycin can interfere with the production of insulin by inhibiting these enzymes. This is the basis of this Monash study and why Dr. Myers and his team started injecting mice with bafilomycin at very low doses to see what would happen to the pancreas of these mice.

A quantitative change was noted in the morphology of the islets in the pancreas after they were injected with bafilomycin, and another toxin called concanamycin. It was found that instead of these toxins killing islet beta cells directly, they seemed to cause a proliferation of the pancreatic islets; this was an unexpected finding. Bafilomycin hence was seen to increase insulin signaling in islet beta cells, acting like a growth factor, and hence, remodeling of the pancreas was considered to be another way of activating an autoimmune response.

In rats, mice and also humans, 10-14 days after birth there is a large increase in the apoptosis of islet beta cells, a plateauing in beta cell mass as the animal grows, and then by 3 weeks of age, a tissue remodeling process in which the apoptotic beta cells are replaced by adult islet beta cells, priming an autoimmune response. Young mice were exposed to bafilomycin to see whether the pancreas developed, and whether the process of tissue remodeling occurred. Small amounts of bafilomycin were placed in the drinking water of the parent mice until the baby mice were weaned, exposing the offspring mice to the toxin *in utero* and via their mother's milk. The pancreases of the offspring were then looked at in four age groups: 10, 14, 21 and 28 days. The pancreases were sectioned and stained with a stain called TUNEL which stains fragmented DNA, an indicator of apoptosis. This showed that there normal peak of apoptosis between 10 and 14 days of age was absent. Exposure to bafilomycin *in vivo* was hence seen to affect growth factor and insulin signaling in pancreatic islets, disrupting the normal turnover of these cells in the neonatal period.

If the remodeling of the pancreas is actually important in the development of type 1 diabetes then interfering with it should have some effect. A research mouse model called a non-obese diabetic (NOD) mouse is seen to spontaneously develop insulin-deficient diabetes due to an autoimmune destruction of its islet beta cells. The NOD mouse is considered the best model available to humans when studying type 1 diabetes. In this study, parent NOD mice were again exposed to bafilomycin in their drinking water. What was found was that exposure of pregnant NOD mice to bafilomycin accelerated diabetes onset in the mice offspring by increasing beta-cell susceptibility to cytokine-induced cell death, with an increased expression of a pro-apoptotic protein called BOK. BOK has never been implicated in the death of beta cells before, so this might be an interesting mediator in beta cell death in type 1 diabetes, and needs to be explored further.

The NOD mouse acquires a number of other autoimmune diseases such as sialadenitis in which the salivary glands show a lymphocytic infiltrate similar to that of the pancreas. Dr. Myers and his team scored this in the salivary glands of the mice in this study and there was no difference in the sialadenitis between the control and bafilomycin treated mice, suggesting that the accelerated pancreas remodeling wasn't an affect of the immune system, but instead a direct affect of the bafilomycin on the beta islet cells themselves.

There is a way in which such toxins like bafilomycin can enter the human body, however no association to type 1 diabetes has been made as of yet. *Streptomyces* can infect vegetables and cause a disease in potatoes called common scab disease. It was found that *Streptomyces* in potatoes do in fact produce bafilomycin, but only a very small amount. There is a possibility however, which is currently being explored, in that factory processing of potatoes might actually concentrate some of these toxins. Statistics have shown an increase in both type 1 diabetes and factory processing of potatoes since the 1950s – any correlation? Well a correlative study showed a positive correlation between potato consumption and type 1 diabetes in certain countries; Finland, Sweden and Canada being the main outliers. All these countries are at very high altitudes, and it is know that vitamin D deficiency has been associated with type 1 diabetes, so all this suggests is that very minimal exposure to sun contributes to an increased susceptibility to the disease.

Dr. Myers concluded that bafilomycin disrupts survival signaling in islet beta cells and accelerates diabetes onset in NOD mice. There is the potential for human exposure to these toxins through infected root vegetables, however risk assessments must be explored to determine the types of toxins and their quantities in processed products.

Take home message - it's still okay to eat potatoes, just remember to keep those Vitamin D levels up!

Reported by Michelle Zammit

Alfred Hospital

HGV One Day Seminar Provisional Program March 19th-20th 2010

Workshops Friday 19th March 2pm.

Speaker	Title
Julian Richardson	Basic presentation photography for medical scientists
Geoff Rolls	Tissue processing

One Day Seminar Saturday 20th March 9 am-5pm

Speaker	Title
Beth Wilson (Breakfast session)	Health Services Commissioner
Ms. Jean Mitchell	Muscle biopsy
Mr. Paul Crammer	Electron Microscopy
Mrs. Natalie Kavelheim	Veterinary histology
Dr.Chris Briggs	Forensic bushfire talk
Mr. Alex Laslowski	Sources of contamination
Ms.Kerry Scott Dowell	Difficult specimens
Prof. Anne Kelso	The influenza A(H1N1) 2009 pandemic in Australia
Dr. Jacqueline Boyd	Infectious disease
Kate Lawlor/Ellen Tsui	Research presentation
Ms. Jean Mitchell	Nerve Biopsy/Pathology

Beth Wilson--Breakfast Session Speaker

P R O F I L E

On 1 May 1997 Beth Wilson became Victoria's Health Services Commissioner. She is a lawyer by training and has worked mainly in administrative law. Beth has had a long-standing interest in medico/legal and ethical issues.

The Health Services Commissioner receives and resolves complaints about health service providers with a view to improving the quality of health services for everybody.

Prior to becoming Health Services Commissioner, Beth was the President of the Mental Health Review Board, a Senior Legal Member of the Social Security Appeals Board and WorkCare Appeals Board and a past President of the Victorian Branch of ANZAPPL (Australian and New Zealand Association of Psychiatry, Psychology and Law). In 2007 Beth was appointed a member of the Disability Services Board.

In October 2002, Beth was awarded Monash University's Distinguished Alumni Award for her outstanding professional achievements and inspirational leadership. In April 2003, Beth was awarded the Centenary Medal for her services to health, and in May 2004 Beth was awarded an Honorary Doctorate from RMIT for her contributions to health education. In 2008 Beth was inducted onto the Victorian Honour Roll of Women for services to women's health in Victoria.

Beth regularly conducts seminars, lectures and classes for consumers, carers, health service providers and others. Beth advocates for work-life balance and the importance of humour, story telling and music in providing inspiration and education and in health promotion.

Jean Mitchell—Keynote Speaker

Biography

Jean Mitchell resides in the state of Wisconsin, located in the Midwestern United States. She has been active in the field of histotechnology on state, regional, national and international levels for 30+ years, with numerous histotechnology presentations and publications to her name. Currently manager of the Neuromuscular Laboratory, University of Wisconsin Hospital and Clinics, Madison, Wisconsin, she is responsible for all aspects of muscle, nerve and punch skin biopsy specimens for the institution as well as outside clients within the state and regional Midwestern area. In her spare time she enjoys sporting events, traveling, spending time with her dogs and relaxing with a good book and a good wine.

Abstracts

If You Have the Muscle; I Have the Nerve: Part 1 - Muscle Biopsy Basics
Preparation of muscle biopsy tissue for clinical diagnosis presents a unique challenge to the histologist. A brief overview of anatomy and physiology of the normal human skeletal muscular system will be presented along with a review of abnormal clinical findings and symptoms that warrant a patient to undergo a muscle biopsy procedure. Transporting, handling and the special procedures that muscle biopsies require for optimal results will be discussed. The panel of non-enzyme and enzyme stains routinely employed for muscle biopsies with pathologic changes demonstrated by each stain and their relevance to disease states will be mentioned along with troubleshooting suggestions to ensure optimal staining results. The significance of immunohistochemical procedures and the use of electron microscopy to enhance/confirm muscle disease diagnosis will be presented.

If You Have the Muscle; I Have the Nerve: Part 2 - Nerve Biopsy Basics and Case Histories
There are many facets to artifact free preparation of nerve biopsy tissue for clinical diagnosis that can present challenges to the histologist. A brief overview of anatomy and physiology of the normal human nervous system will be presented along with a review of abnormal clinical findings and symptoms that warrant a patient to undergo a nerve biopsy. Nerve electron microscopy and the unique method of single nerve fiber teasing will be discussed along with the relevance of these techniques in the diagnosis of nerve abnormalities. Case histories will be used to show the importance and impact nerve and muscle biopsies have in patient care.

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MELBOURNE MARCH19-20TH 2010

HISTOLOGY GROUP OF VICTORIA, ONE DAY SEMINAR

Histology Group of Victoria Inc.
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HGV ONE-DAY SEMINAR 2010

MARCH 19-20TH

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FINAL REGISTRATIONS: **CLOSE: 05 MARCH 2010**

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NOTE: *A LAPTOP WITH PHOTOSHOP VERSION 2 OR BETTER WILL BE REQUIRED TO PARTICIPATE IN THE "BASIC PRESENTATION PHOTOGRAPHY FOR THE MEDICAL SCIENTIST" WORKSHOP.

REGISTRATION

		TICK	COST
1.	SEMINAR REGISTRATION (STUDENT DISCOUNT ** AVAILABLE SEE BELOW)		$70.00
2.	BREAKFAST SESSION (PLACES ARE LIMITED, SO GET IN EARLY)		$10.00
3.	WORKSHOP REGISTRATION #1 (BASIC PRESENTATION PHOTOGRAPHY FOR THE MEDICAL SCIENTIST)*		$30.00
4.	WORKSHOP REGISTRATION #2 (TISSUE PROCESSING)		$30.00

SOCIAL

5.	WORKSHOP DINNER		$40.00
6.	WORKSHOP DINNER PARTNER		$40.00
7.	SEMINAR DINNER (INCLUDES DRINKS)		$57.00
8.	SEMINAR DINNER PARTNER (INCLUDE DRINKS)		$57.00

PACKAGES

9.	FULL WORKSHOP/SEMINAR #1 (BASIC PRESENTATION PHOTOGRAPHY FOR THE MEDICAL SCIENTIST)*		$207.00
10.	FULL WORKSHOP/SEMINAR #2 (TISSUE PROCESSING)		$207.00
11.	FULL SEMINAR REGISTRATION		$137.00
12.	FULL WORKSHOP REGISTRATION		$80.00

SEMINAR HAPPY HOUR		FREE
LATE FEE (AFTER 05 FEBRUARY 2010)		$25.00
STUDENT DISCOUNT (FOR ITEM 1 ONLY)**		-$35.00

Total $_____

PLEASE NOTE ANY DIETARY REQUIREMENTS FOR EITHER DINNER:_____

_____

_____

_____

_____

See earlier pages for information on the Keynote and Breakfast session speakers.

NOTE: THERE WILL BE NO REGISTRATIONS ON THE DAY

Histology Group of Victoria Inc.

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PACKAGE INFORMATION:

Full Workshop/Seminar Registration #1

Includes registration to workshop #1 (Basic Presentation Photography for the Medical Scientist), workshop dinner, registration to seminar, including breakfast session, lunch, access to trade, happy hour and seminar dinner.

Full Workshop/Seminar Registration #2

Includes registration to workshop #2 (Tissue Processing), workshop dinner, registration to seminar, including breakfast session, lunch, access to trade, happy hour and seminar dinner.

Full Workshop Registration

Includes registration to workshop #1 (Basic Presentation Photography for the Medical Scientist) or workshop #2 (Tissue Processing) and workshop dinner.

Full Seminar Registration

Includes registration to seminar, which includes breakfast session, lunch, access to trade, happy hour and seminar dinner.

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INFORMATION:

LOCATION
Both the Workshops and the Seminar will be held at St. Vincent's Public Hospital, 41 Victoria Parade, Fitzroy, Victoria 3065.

PARKING
Parking is available in a multi-level car park behind the private hospital in Fitzroy Street. Cost is $10 per day on weekends. Other limited street parking is available.

WORKSHOPS
Both Workshops will be run concurrently on Friday from 2pm-5pm. A light afternoon tea will be available. They will be held at St. Vincent's Public Hospital, 41 Victoria Parade, Fitzroy, Victoria 3065. Exact location and name of room to be advised closer to the date.

BREAKFAST SESSION
The breakfast session will be held in one of the rooms at St. Vincent's Public Hospital, 41 Victoria Parade, Fitzroy, Victoria 3065. Exact location and name of room to be advised closer to the date. Places are limited so get in early.

WORKSHOP DINNER
The dinner will be at The Pumphouse Hotel, 128 Nicholson St, Fitzroy, a short walk from the Workshop venue. Dinner will commence at 7:00pm. Seminar delegates not attending the workshops but who will be in Melbourne on the Friday evening are welcome to register for the dinner.

SEMINAR
The seminar will start at 9:00am and conclude at 5:00pm. Morning tea, lunch and afternoon tea is provided. There will be a happy hour at the conclusion, which is free. Please indicate on the registration form if you are attending.

SEMINAR DINNER
The dinner will be at the Kri Kri Greek Restaurant located at 39-41 Little Bourke Street, Melbourne, a short walk from the Seminar venue. It will include a 3 course set menu meal and drinks. Dinner will commence at 7:30pm and conclude at 12:00 midnight

TRAVEL
Melbourne is approximately 25km from Tullamarine airport. To access Melbourne Airport via the Tullamarine Freeway, you may be required to obtain a CityLink pass. Passengers can also choose to travel toll-free to Melbourne Airport via the Western Ring Road.

SkyBus offers an express bus service from the airport to the city centre. This service operates 24/7, including all public holidays. Buses run from every 10 minutes throughout the day. $16 Adult - one way - Return $26

Taxis are available from the ground floor level of Melbourne Airport, outside Terminal 2 (T2 - International) and both domestic terminals (Terminal 1 - T1 and Terminal 3 - T3). Expect a taxi fare of around A$80 to A$85 for a return trip between the CBD and Melbourne Airport.

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Upon receiving an invoice, payment will be accepted by

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North Ringwood 3134

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Branch: St Vincent's Hospital Victoria
BSB No: 063449
Account No: 10065881
Include delegate name and invoice number

Cancellations up to and including February 26th will be completely refunded.

Cancellations after February 26th and before March 5th will receive 50% refund.

Cancellations after March 5th will forfeit payment.

ACCOMMODATION SUGGESTIONS:

Metropole Hotel Apartments
44 Brunswick St
Fitzroy
03 9411 8100
Fax: 03 9411 8200
Freecall 1800 061 441
reservations@metropole.org
www.metropole.org

Hotel Windsor Melbourne,
111 Spring St.
Melbourne
Phone: 9633-6000
Link: www.wotif.com/hotel/View?hotel=W965&page=1&viewType-all

City Limits Hotel Apartment, 20 Little Bourke St.
Melbourne
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Link- www.wotif.com/hotel/View?hotel=W3315&page=1&viewType-all