THE HONG KONG COLLEGE OF PATHOLOGISTS
香港病理學專科學院

NEWSLETTER OF THE HONG KONG COLLEGE OF PATHOLOGISTS

PATHOLOGUE

The Hong Kong College of Pathologists, Incorporated in Hong Kong with Limited Liability

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INDEX

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FROM THE CHIEF EDITOR

We hope you have enjoyed reading the last issue of Pathologue, our College Newsletter.

It has been 15 years since the establishment of our College. In the Message from the President, Dr. K.C. Lee discusses the growth of our College, and the potential to liaise and collaborate with pathology societies nationally and internationally through the Ministry of Health (MOH), the International Liaison of College Presidents (ILCP), and the World Association of Societies of Pathology and Laboratory Medicine (WASPaLM).

The College AGM will take place on 25 November, 2006, and the Second Trainee Presentation Session will start at 2:45 p.m. We are honoured to have Prof. H.K. Ng as our speaker for the T.B. Teoh Foundation Lecture this year, and the title of his talk is: The 2007 WHO Classification of CNS Tumours - Some Preliminary Views.

After soliciting input from a number of fellows of different subspecialties, Dr. K.T. Loo from our Editorial Board has written the featured article for this issue - 'Image Digitalisation in Pathology – The Quiet Revolution'. Image digitalisation has revolutionized the practice of Pathology, especially in Anatomical Pathology. We take this opportunity to critically examine the potential and limit of this technology. We thank all fellows who have contributed to this article. Feedback, comments and sharing of experience, particularly from the private sector, are most welcome.

In the Topical Update provided by the Education Committee, Dr. C.W. Lam and Dr. C. Mak reported the local experience in Diagnosing Wilson disease in the post-genomic era. This is one example where molecular biology is playing an important role in the practice of Pathology.

Starting from this issue, we have created a section Out of the White Coat. This section aims to provide a forum for informal communication amongst fellows. Updated news from old and respected friends of College Fellows are also featured. If you have any news or photos that you want to share, please send the material to us.

See you all at the AGM (25 Nov, 2006)!

Dr. Alexander C.L. Chan,
Chief Editor

MESSAGE FROM THE PRESIDENT

How time flies. It has been 15 years since our Inaugural Annual General Meeting in October 1991, when the College began with a great vision and just 23 subscribers. Now the College has matured into a full-fledged professional institution with over 200 Fellows - we have come a long way to become the peak body of the profession with established credentials in training and examinations and in setting standards. All this could not be possible without the firm foundation laid down by our founders in the early days, and the hard work and dedication of many bright and enthusiastic members throughout these years.

While many of the operational aspects of the College have now become quite established, there are still challenges we have to face, and opportunities to seize. The world is changing fast – the profession is empowered with new ideas and technologies, but we are also confronted with increasing expectations and requirements. The rapid economic development of the Mainland, and along with it the demand for better quality medical care and specialist service, for example, could affect us in a big way in the future, so that groundwork has to be laid down today. We should take hold of the opportunity to liaise with pathologists in the Mainland for academic and educational collaborations, and, through the Ministry of Health (MOH), share our experience and hopefully participate in the process of establishing the specialist training and registration system in the Mainland. At the same time, however, we also need to take into consideration the possible effects on our own practice, and to safeguard the best interests of our members. Likewise, while the College strives to foster further development of sub-disciplines of the profession, we should share a larger vision so that our spirit of unity would not be jeopardized as a result, for failing to balance the interests of sub-disciplines with that of the whole profession could result in our compartmentalization, which in turn sets limits to the growth of sub-disciplines. It is therefore important to realize that the interdisciplinary nature of our profession is in the core of our identity as specialists regardless of our individual sub-disciplines, and preserving this character of our specialty is key to our success in the past and the future.

The world is getting smaller with improved communications and transportation technologies, and some seemingly local concerns often actually exist across countries. This “global village” reality has left a deep impression on me when I listened to the current issues that are affecting our overseas counterparts at the International Liaison of College Presidents (ILCP) on 13-14 October 2006 in Washington DC, USA, as to varying extents we are all facing similar challenges. No doubt one could learn a lot from the experience of others on how similar issues have been tackled, and the collective wisdom could often lead to better solutions.

Along the same line, the College has now joined the World Association of Societies of Pathology and Laboratory Medicine (WASPaLM) as one of its constituent societies. WASPaLM was founded in the 1940s and is an organization of pathology societies with 35 societies as members, with goals to promote education, research, and international quality standards. The main activities of WASPaLM include sponsoring the organization of a World Congress every two years, as well as focusing on providing education programmes for countries in the developing world. Through WASPaLM, the College will have a link to the ISO working groups, and hence could access and perhaps contribute to the development of international standards. Together with the ILCP, and through the MOH, we will have a better network of communication to liaise and collaborate with pathology societies nationally and internationally on matters of common concern.

Thanks to the hard work of many Fellows,

this year we have completed another large-scale laboratory inspection exercise for training. The exercise, which is criteria-based with inspection guidelines to align assessments for uniformity, is required to be conducted at least once every five years to ensure the training units are up to the high standards set by the College. With much consolidation of pathology services going on both in the Hospital Authority and the Department of Health, the exercise has become more complex than before, and hence has demanded greater attention and efforts from our inspectors. This, together with conducting examinations, organizing quality assurance programmes and many other College activities, has put an enormous pressure and workload on our colleagues. I could not imagine all these could have been done without dedicated and fully supportive members and an effective secretariat. I wish to record my thanks to everybody for your immense contributions. Without doubt your continuous support will be essential in furthering the development of the College, in the next 15 years and beyond.

Dr. K.C. Lee,
the President

PROGRAMME OF ANNUAL GENERAL MEETING 2006

Date:
25 November, 2006 (Saturday)

Venue:
Pao Yue Kong Auditorium, the HKAM Jockey Club Building,
99 Wong Chuk Hang Road, Aberdeen, HK.

Programme:

2:45 – 4:30 p.m.	2nd Trainee Presentation Session
5:00 – 6:00 p.m.	15th T.B. Teoh Foundation Lecture: **Title: The 2007 WHO Classification of CNS Tumours – Some Preliminary Views.** **Speaker: Prof. NG Ho Keung**
6:00 – 6.45 p.m.	AGM
6:45 – 7:15 p.m.	Reception
7:15 – 7:45 p.m.	Admission of New Fellows and Members
7:45 – 8:00 p.m.	Photograph of the Council and Guests
8:00 – 10:00 p.m.	Chinese Banquet Dinner

FEATURED ARTICLE - Image Digitalisation in Pathology – The Quiet Revolution

Computers represent images by pixels (short for "picture elements"). As computer technology advances at a breathtaking pace, the speed of encoding images in pixels (digitalising) and processing these elements phenomenally increases, while high-performance computers become increasingly affordable. Acquisition, editing, storage and transmission of images are simpler and quicker than never before. We, as Pathologists, deal with images of various forms in our daily work. It is high time we derive benefit from such welcomed progress. In the following paragraphs, Fellows of different disciplines highlight the ways in which image digitalisation is applied in their respective fields. It would, however, be unwise or even dangerous to ignore the potential problems hasty application may cause. So we start by listing the problems, and, as we proceed, then point out how these may be solved.

To the contributors of this article, Dr Eric Chan, Dr K F Chan, Dr King Chung Lee, Dr Tony Mak, Dr C K Ng, Dr T L Que, Dr Jason So and Dr Sidney Tam (names arranged according to alphabetic order), the author records his grateful acknowledgements.

Potential Problems

- Hardware cost (cameras, microscopic mounts, storage media, slide imaging system)
- Software compatibility
- Technique in acquiring images
- Data loss
- General computer literary in data storage, retrieval and display
- Quality of electronic images compared to microscopic images
- Loss of experience in real slide examination
- Loss of face-to-face communication between doctors or between doctors and technical staff

Applications: Pathology in General

Test reports and procedure manuals

- Photos can be incorporated into textual reports and procedure manuals

Teaching

- For example, in Anatomical Pathology: the use of digital slides cuts the cost of microscope procurement and maintenance and reduces the labour of filing glass slides
- Photos can easily be incorporated into presentations and manuscripts
- Digital slides are simultaneously available to a large number of students
- Damage or loss of material from rare cases is prevented
- Studies have shown very favourable reception by students and teachers of the change to digital images from glass slides; one study also found that the use of digital images improved the examination performance of students

Scanning request forms

- Digital images of the request forms and worksheets save greatly on storage space
- These images permit electronic indexing which facilitates retrieval

Virtual microscopy

- An entire microscopic slide can be rendered into an image file in a matter of minutes using high-speed automated scanners, which can then be read with software enabling navigation as well as switching of magnification
- Images may be read in workstations near or remote from the server computer
- Simultaneous viewing of sections stained with different stains is possible, e.g. H&E and immunohistochemistry

Quality assurance (QA)

- Digital images may be incorporated into quality control / QA records
- Digital slides are readily distributed to an unlimited number of QA programme participants
- Identical sample is guaranteed for all participants
- Running QA schemes in this way reduces the cost and labour of cutting sections and preparing slides, packing, posting
- Loss or damage of samples during transport is also prevented

Telepathology

- Digitalisation allows examination of specimens submitted to remote locations or institutes with insufficient workload to support a Pathologist
- Digital transmission of images speeds up and permits interactive discussion in external, including overseas, consultation

Storage of Digital Images

Pixel size of the image

- This depends on the purpose
- The requirement in descending order of magnitude is: print-out > on screen display > PowerPoint® projection

- Roughly, an 8R print requires a 4-Megapixel image and a PowerPoint® projection only needs a 1-Megapixel image
- One can always store images above this size if storage space is not a problem and one plans to crop images

File size

- File size is affected by the format of the image file
- The commonly used formats include the uncompressed TIFF and the compressed JPEG formats
- Although compression causes loss of information, the loss is not human-discernible for a 4-Megapixel image, which has a file size of 12 Megabyte if uncompressed, being compressed to a 1-Megabyte file using the JPEG format

Storage media

- Hard disk is still the best storage media
- One can also write the image files to various removable media, e.g. writable DVD of various formats etc.
- However, all removable media are not fool-proof and will be corrupted, and they are not convenient

Backup issues

- Backup of image is a must irrespective of the storage media used
- The best method is to combine a real-time backup using the RAID technology with a scheduled backup to a physically separate storage medium in the same or, better still, a different computer. The real-time backup safeguards against hardware problems related to the storage media; the scheduled backup safeguards against software and human error, including virus attack
- The frequency of the scheduled backup should be set to the maximum tolerable duration of data loss

Security of image file

- There is currently no good method
- A standard procedure in creating a single master copy of the file is needed
- One should always refer to this master copy for originality
- The master copy should be made read-only for all except one or two dedicated persons responsible for transferring the image from the capturing device
- Additional information on this issue is provided in the following section.

Maintaining Digital Image Integrity

Digital imaging provides technology for the detection of manipulation

Since courts may make decisions based on images presented as evidence, the integrity of a digital image is of paramount importance. Digital imaging does not create the possibility of image manipulation; it merely simplifies the process. Silver-based images too can be, and have been, manipulated. Digital imaging, in addition, provides technology for the detection of manipulation. Metadata is stored with a digital photograph. If the photograph is altered, the associated metadata will reveal the alteration by having a break or inconsistency. The tools to analyse a digital image enable the viewer to look at very fine edge detail and find resolution mismatches, difference in noise signatures, and other clues.

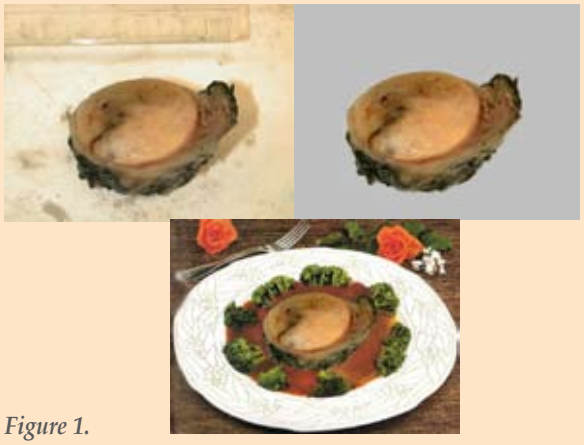

Figure 1.
Digital images can easily be modified. The above series, in which a schwannoma specimen is transformed into a sumptuous look-alike, illustrates how genuineness may be impaired in the attempt to enhance visual appeal.

Best practice for digital imaging should maintain an archive image, restrict access to the archive image, require others to work only on copies of the archive image, and provide an audit trail of any adjustments made to the image.

A raw file is difficult to alter without leaving traces detectable by experts

The archive image is the primary or original image stored on media suitable for long-term storage. The primary image is defined as the first instance in which an image is recorded onto any media. It is of the same format as that originally captured. A primary image in a raw format may contain a hidden sidecar file, which must be kept when the raw file is moved. A raw file is read-only and difficult to be altered without leaving traces detectable by experts. This is a benefit for archival purposes, but in order to view such a file on a computer monitor, it needs to be irreversibly transformed. The resulting processing information can no longer become part of the original archive file.

An audit trail will show how each adjustment affected the image

An image may have gone through a number of adjustments after it was captured. The adjustment facilitates demonstration of the object of interest. A method of tracking changes to create an audit trail will show if valid procedures were used and how each procedure affected the image.

Any enhancement technique must be reproducible

When a technology is challenged in court, a Kelly-Frye hearing or a Daubert hearing may be called to determine if the technology is valid. Any enhancement technique must be reproducible. Notes about the process and the person who carried out this process should be maintained. The technique must be performed on the same image or an exact copy of the image. For example, images in raw format must be opened using the same settings. Thus, sidecar files must be carefully retained with the raw files.

Camera and software companies, for example, Kodak, Olympus and Canon, have introduced products to provide archive images, audit trails, and image authentication systems. Watermarks have also been used to authenticate digital images; they enable software to detect changes in the image.

A Note on Image Indexing

We should have consensus in the types and format of information to be stored

Since Anatomical Pathologists deal with tons of images, it is wise to develop a systematic way to index our photographs which allows future retrieval. Many photo-album softwares tackle the task by adding information in the metadata of the image (EXIF in jpeg, ID tag in mp3 file). However the amount of information that can be added is limited, and there are some standards to follow. In order to facilitate future image sharing and system scalability, we should have consensus in the types and format of information to be stored. Using image metadata for image indexing is relatively simple (e.g. Picasa in PC and iPhoto in Mac); it will enable us to access all the important information while browsing through thousands of images afterwards.

Forensic Pathology

Currently, in the Forensic Pathology Service, all photos intended to be presented as evidence in the trials are taken by the police photographers. As the photos are taken, processed and kept by the police, we as the Forensic Pathologists do not need to prove the genuineness and bother about the admissibility of the photos taken.

As to the doctors working in other specialities, they should be aware that there is a possibility that the digital images they take during daily practice may be seized and presented in court as evidence. Therefore, they should regard the photos as part of the medical records. Those issues stated in the previous section on "Maintaining Digital Image Integrity" may serve as working guidelines.

Anatomical Pathology

Gross specimens

- High-quality digital photos of gross specimens are produced by digital cameras which are of modest cost and simpler to use than film cameras
- Zoom function reduces the need to frequently re-position camera
- Image-editing software rectifies problems with illumination
- Annotations may be inserted into photos

- Specimens can also be scanned using a flatbed scanner, producing images of quality comparable to digital cameras for specimens of ordinary thickness, with the advantage of direct image output to disk

Figure 2.
Gross photograph of cerebral arterio-venous malformation taken with flatbed scanner.

Microscopic slides

Digital photomicrographs can be adjusted for colour by means of touch-up function before saving

Non-permanent slides

For example, images of immunofluorescence and labile stains like crystal violet, toluidine blue, enzyme histochemistry can be retained

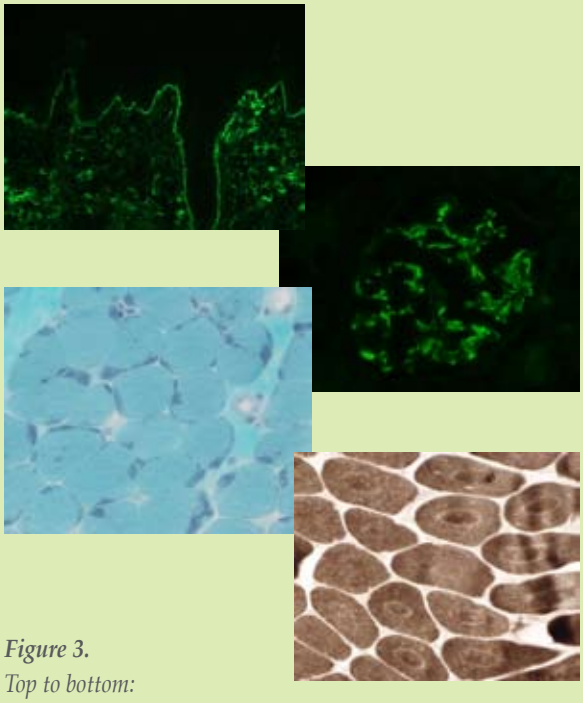

Figure 3.
Top to bottom:
Immunofluorescence for C3 in skin biopsy of bullous pemphigoid.
Immunofluorescence for IgA in renal biopsy of IgA nephropathy.
Gomori trichrome stain of muscle biopsy of nemaline myopathy.
ATPase stain of muscle biopsy of central core disease.

Electron microscopy (EM)

- Digital photos can replace black-and-white prints, saving on the cost of chemicals and photographic paper
- Digital photography connected to the EM machine has revolutionised the learning process in electron microscopy. This is because of real-time feedback to the user on the subcellular structures being blown up, instead of a few days' time lapse as in the good old days

Haematology and Blood Bank

- Storage of selected blood smears and marrow slides in electronic format using special microscope system:
  - ~ save physical space
  - ~ prevent deterioration of slide quality over time
  - ~ easy retrieval of specific features by electronic coordinates

- Document test results when physical archive is not possible or optimal, e.g.:
  - ~ flow cytometric phenotyping data (reanalysis of raw data not possible with printed scatterplots)
  - ~ tube test results such as Ham test
  - ~ haemoglobin H granules detected by supravital staining (staining fades over time)
  - ~ electrophoretic strips such as haemoglobin and PCR product electrophoresis

- Document tube and microtube (gel) results of serological investigation

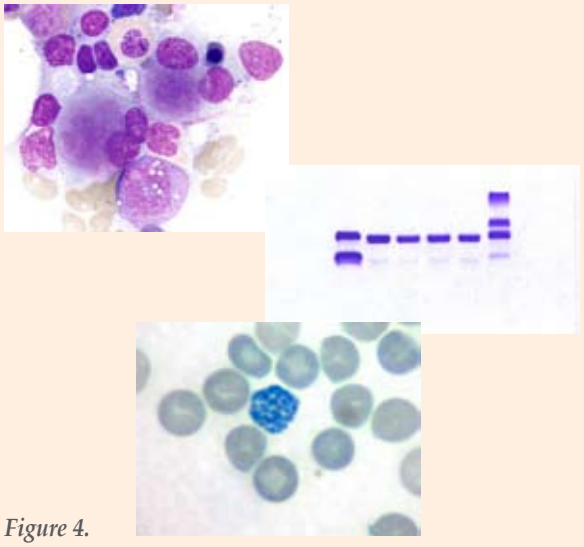

Figure 4.
Top to bottom:
Drug-induced dysmegakaryopoiesis.
Citrate acid electrophoresis for haemoglobin separation.
HbH granules in alpha thalassaemia trait.

Microbiology

Although the use of image capture in Clinical Microbiology may not be as frequent as in other areas of Pathology such as Anatomical Pathology, there are still interesting practical examples of applications both locally and overseas. To give just a few examples.

Use of Telemedicine in support of night shift technical staff

Not every hospital can afford to have night-shift staff from the Microbiology Laboratory. One solution is to train the Medical Technologists (MT) on duty in the Emergency Laboratory to perform a simple Gram stain examination; if they see anything suspicious the image will be e-mailed to an on-call Microbiology MT who will examine the image and advise on the finding. This will save the trouble of the Microbiology MT having to come back every time in the middle of the night.

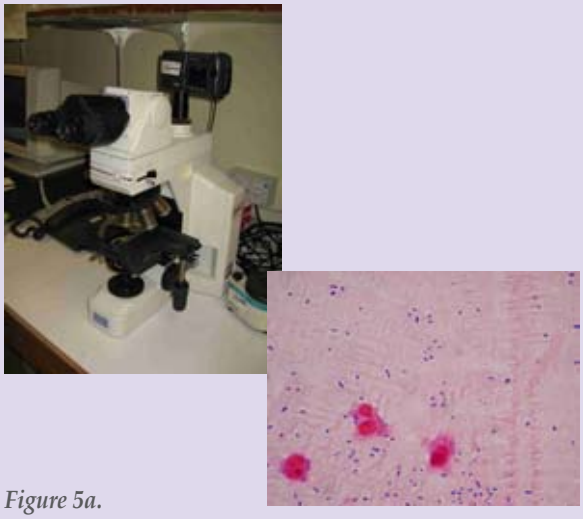

Figure 5a.
Left: Microscopy setup of Emergency Laboratory .
Right: Direct Gram stain of Streptococcus suis in CSF.

Increased depth of focus of gross specimens

Have you ever been frustrated by the shallow depth of focus when one is taking macroscopic photos of gross specimens? The Natural History Museum in London has overcome this problem by digital technology. They have attached a digital camera to a dissecting microscope and focused on individual focusing planes of a gross specimen and the areas of images that are in focus are stitched together using a computer software.

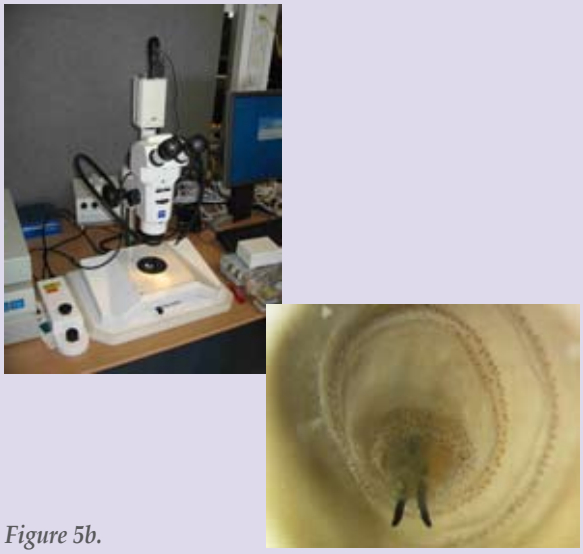

Figure 5b.
Left: Photographic equipment of Natural History Museum.
Right: Montage showing anterior mouthpart of maggot Chrysomya bezziana.

Automated antimicrobial agent sensitivity testing

The third area in Microbiology where digital photography has been applied is the disc-diffusion method of sensitivity testing. One will remember how one needs to measure the disc diffusion zone size using a ruler and then refer to figures in a table to get the S (Sensitive), I (Intermediate) and R (Resistant) results. There are a few commercial systems in the market that can make use of digital imaging to capture the zone diameter and also come up with an interpretation of results.

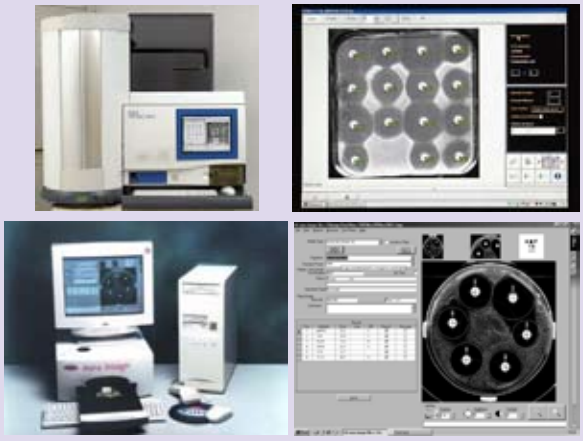

Figure 5c.
Examples of systems determining antibiotic sensitivity using disc-diffusion method:
top: Sirscan 2000 automatic: system (left), analysis screen (right),
bottom: Oxoid Aura Image: system (left), analysis screen (right).

Chemical Pathology

Image digitalisation has very little role in the reporting of Chemical Pathology results, since in this discipline reports are primarily not morphology-based, unlike some other disciplines such as Anatomical Pathology, Forensic Pathology and, to a lesser extent, Haematology. Nevertheless, for interpretative reports where textual description is deemed inadequate in conveying the more subtle findings of clinical significance, incorporating an image in the Chemical Pathology report may be of help. However, up to the present, such a scenario has not occurred in actual practice.

Immunology

Digital images of positive immunofixation are stored. These can be recalled for review when follow up tests of the same patients are performed.

Barriers to Digitalisation and Telepathology

Many Pathologists still experience misgivings about making diagnoses employing telepathology with a fully automated microscope. These are mostly based on preconceptions arising from unfamiliarity with digital technology and resistance to change. Education and clear guidelines should go a long way in reversing this bias. The skeptics should find reassurance in studies on telepathology which have shown a diagnostic accuracy that is the same as conventional glass slide light microscopy. The issue of medico-legal concern would be addressed in due course, and there is hope that it can be resolved. Whether image digitalisation should be applied full-scale in those discipline of Pathology utilising morphology-based reporting is still a matter of debate. The potential loss of experience in real slide examination and face-to-face communication between doctors or between doctors and technical staff is a price not everyone is willing to pay.

ANNOUNCEMENT – CME/CPD PROGRAMME FOR OVERSEAS FELLOWS

The Hong Kong Academy of Medicine (the Academy) has endorsed a new policy for Overseas Fellows of all Colleges on CME/CPD programme. Colleges can decide to accept an annual summary CME/CPD report, on a point-to-point basis, of an overseas College submitted by an Overseas Fellow, provided that Colleges are satisfied that the CME/CPD programme of this overseas College is comparable to theirs.

In accordance with this policy, the Hong Kong College of Pathologists (the College) has endorsed that, starting with the 2006 cycle-year, Overseas Fellows can submit annual summary CME/CPD reports issued by the following overseas Colleges/ Authorities as an alternative way to claim CME/CPD points, on a category-matched point-to-point basis, when submitting CME/CPD Annual Return to the College:-

1. The American Board of Pathology
2. The Royal College of Pathologists (UK)
3. The Royal College of Pathologists of Australasia
4. The Royal College of Physicians and Surgeons of Canada
5. Singapore Medical Council

When submitting annual summary CME/CPD report issued by the listed overseas Colleges/ Authorities, Overseas Fellows have to break down the CME/CPD points gained from overseas Colleges or Authorities into categories (e.g. Self Study, Passive Participation, Active Participation, Quality Assurance Activities etc.) according to the CME/CPD scheme of the College and complete the summary sheet of the College CME/CPD Annual Return Form. The minimum CME/CPD requirement of the College (90 points for each 3-year cycle) and the maximum CME/ CPD points set for each category of the current CME/ CPD scheme will still apply to Overseas Fellows. The time schedule and deadline for submission of CME/ CPD Annual Return from Overseas Fellows to the College will remain unchanged.

Education Committee
The Hong Kong College of Pathologists

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THE HONG KONG COLLEGE OF PATHOLOGISTS:

TOPICAL UPDATE

SCIENTIA ILLUMINAT MEDICINAM
香港病理學專科學院

Volume 1, Issue 3 NOV 2006

(This article is reproduced from the publication of the Education Committee, Topical Update, Volume 1, Issue 3.)

Editorial Note from the Education Committee:

Wilson disease (WD) is a classic inherited metabolic disease of copper metabolism. It is well known for its characteristic Kayser-Fleischer ring, very low serum caeruloplasmin level and the diverse spectrum of clinical presentations. However, the pathogenesis of WD remained a mystery until the discovery of the responsible gene ATP7B in 1993. In the current issue of Topical Update, Lam and Mak gave a concise overview of the function of ATP7B protein, the clinical application of ATP7B genetic testing and the common ATP7B mutations among local population.

Any feedback and suggestions could be directed to Dr Liz YP Yuen (email: yuenyp@ha.org.hk) of the Education Committee, the Hong Kong College of Pathologists. Opinions expressed are those of the authors or named individual, and are not necessarily those of the Hong Kong College of Pathologists.

Diagnosing Wilson Disease in the Post-genomic Era

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Wilson disease (WD) (MIM # 277900) is an autosomal recessive disorder of copper transport. Clinical manifestations of WD vary widely. The age of onset ranges from three to more than 50 years of age. The initial onset of symptoms can be hepatic, neurological, psychiatric or as an acute haemolytic crisis. The prevalence of WD has been estimated to be approximately 1 in 30,000 in the Caucasian population. Although the prevalence of WD in the Hong Kong Chinese has not been investigated, based on our local experiences, WD is common and is the most common inherited liver disease in Hong Kong. In addition, investigators in Japan have suggested that the prevalence of WD in Asians might be higher than that reported in the U.S. and Europe.

In 1993, the gene responsible for WD was identified, and the gene product was predicted to be

a copper binding P-type adenosine triphosphatase. The *ATP7B* gene, which consists of 21 exons, spans a genomic region of about 80 kb and encodes a protein of 1465 amino acids. *ATP7B* is expressed primarily in the liver and kidney. The protein plays a dual function in the hepatocytes. One role is biosynthetic, delivering copper to apocaeruloplasmin within the Golgi network. The other role of ATP7B is to transport excess copper out of the cell and into the bile canaliculus for subsequent excretion from the body with bile. *ATP7B* is localized in the trans-Golgi network of hepatocytes under low copper conditions, redistributes to cytoplasmic vesicles when cells are exposed to elevated copper levels, and then recycles back to the trans-Golgi network when copper is removed. Therefore, an *ATP7B* mutant will result in a reduction in the rate of incorporation of copper into apocaeruloplasmin or a reduction in biliary excretion of copper, or both. For example, a WD mutant protein, R778L, has recently been shown to be extensively mislocalized, presumably to the endoplasmic reticulum. Defective biliary excretion leads to accumulation of copper in the liver with progressive liver damage and subsequent copper overflow to the brain, causing loss of coordination and involuntary moments. Deposition in the cornea produces Kayser-Fleischer rings, and accumulation in the other sites causes renal tubular damage, cardiomyopathy, hypoparathyroidism osteoporosis, and arthropathy, etc.

Direct mutation detection of the gene responsible for Wilson disease (*ATP7B* gene) is important in the diagnosis of affected presymptomatic family members.

The prognosis for WD patients is excellent with early treatment with D-penicillamine, trientine, or zinc salts. Early detection, monitoring, and treatment of presymptomatic patients are critical to prevent irreversible damages to the liver and brain damage. Biochemical parameters (e.g. low level of serum caeruloplasmin concentration and elevated 24-hour urine copper level) and clinical signs and symptoms (e.g. Kayser-Fleischer rings) are not specific enough for effective diagnosis of all affected individuals. In addition, the clinical and laboratory parameters are not sufficient to exclude the diagnosis of WD in patients with liver disease of unknown origin. Direct detection of the *ATP7B* mutations causing WD will eliminate these problems. Direct mutation detection is particularly important and useful in the diagnosis of presymptomatic family members because it is very difficult to distinguish presymptomatic patients from heterozygotes based on biochemical parameters.

The most frequent *ATP7B* mutation in Caucasian patients is H1069Q, which is found in 28%-38% of all alleles. The next most frequent mutation is G1267K, which is found in 10%. These two mutations have so far not been detected in Asian WD patients. This finding reveals that the mutation spectrum of the *ATP7B* gene shows a population-dependent distribution. We were the first group to study the *ATP7B* gene in Hong Kong Chinese. Sixty-four WD patients from 54 unrelated Chinese families were recruited. Ten of the 64 patients were presymptomatic family members. The median age at presentation was 18 years old (range 4 – 50). We identified 38 different mutations in the 54 probands (Figure 1). Interestingly, 14 mutations are novel. Over 50% of the mutations are located in

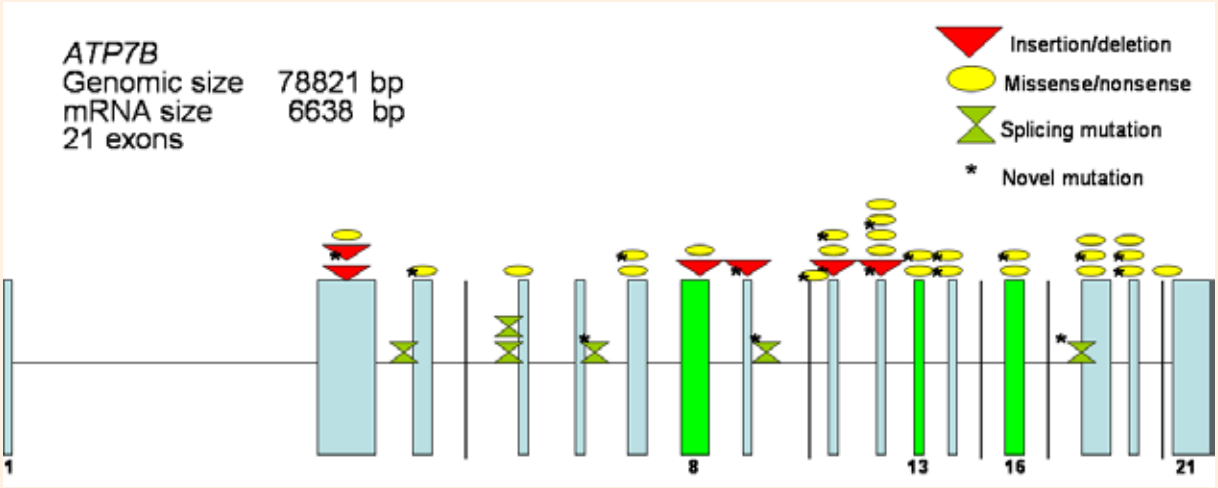


Figure 1. *Distribution of the 38 mutations in the ATP7B gene.*

3 of 21 exons of the ATP7B gene – exons 8, 13, and 16. The mutations, R778L, P992L, and I1148T are the three most common mutations detected in this study. These 3 mutations probably represent the most prevalent *ATP7B* mutations in Hong Kong Chinese WD patients (Figure 2).

In Hong Kong Chinese, over 50% of the mutations are located in exons 8, 13 and 16 of the *ATP7B* gene.

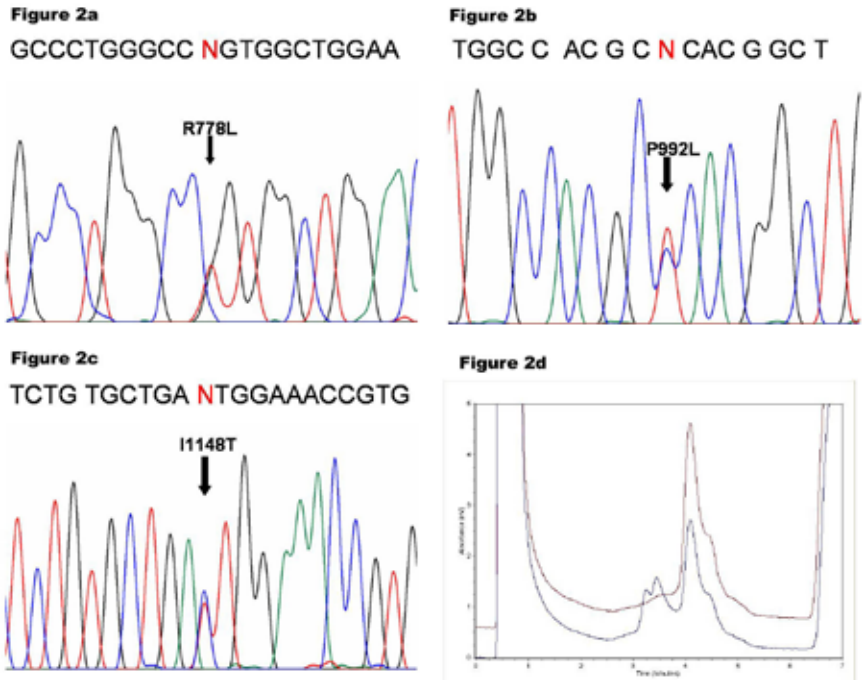
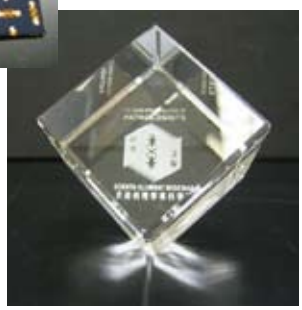


Figure 2. *Common ATP7B mutations. (a) R778L (b) P992L and (c) I1148T (arrows). (d) Denaturing high performance chromatogram of exon 13 (y axis represents absorbance (mV), and x axis represents time (minutes)): upper: wild type DNA; lower: P992L heterozygous.*

COLLEGE SOUVENIRS

The long-awaited new College ties have finally arrived! We have also prepared some College scarves (53 cm x 53 cm) specially for our lady fellows. Both items are made of 100% silk. For those who prefer memorabilia on your table-top, an elegant crystal cube (5 x 5 x 5 cm) with engraved College logo is also available. All these College souvenirs will be on sale at very reasonable price at the AGM (tie: $120; scarf: $110; crystal cube: $100). After the AGM, purchase can be made at the College Chamber (please contact the College Secretary or Dr. A.C.L. Chan for details).

The new College tie in navy blue colour (HK$120) and the College scarf in bright light blue colour (HK$110).



The College crystal cube with engraved College logo (HK$100).

THE COUNCIL OF THE HONG KONG COLLEGE OF PATHOLOGISTS (2005-2006)

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Address:
College Chamber, Rm. 606, 6/F, HKAM Jockey Club Building,
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Council 2005-2006: *Front row from left: Dr. Jason So, Dr. Michael Suen (Registrar), Dr. H.K. Mong (Vice-President), Dr. K.C. Lee (President), Dr. W.F. Ng (Vice-President), Dr. W.M. Poon, Prof. Irene Ng; back row from left: Dr. Raymond Lai, Dr. S.L. Loke, Dr. W.K. Luk, Dr. Bobby Shum, Dr. Michael Chan, Prof. K.F. To, Dr. A.C.L. Chan.*

College examinations were held for all six disciplines this year. We would like to take this opportunity to congratulate the following successful candidates:

Dr. Cheng Hok Fai *(Membership assessment in Anatomical Pathology)*
Dr. Yiu Kwan Ho *(Membership assessment in Anatomical Pathology)*
Dr. Chan Bik Wan *(Fellowship assessment in Anatomical Pathology)*
Dr. Chan Ngot Htain Alice *(Fellowship assessment in Anatomical Pathology)*
Dr. Chau Kwok Fung Tony *(Fellowship assessment in Anatomical Pathology)*
Dr. Fan Yuen Shan Patricia *(Fellowship assessment in Anatomical Pathology)*
Dr. Kan Chi Hang *(Fellowship assessment in Anatomical Pathology)*
Dr. Lau Pak Lun *(Fellowship assessment in Anatomical Pathology)*
Dr. Leung Ka Lun Charlotte *(Fellowship assessment in Anatomical Pathology)*

Dr. Chan On Kei, Angel *(Fellowship assessment in Chemical Pathology)*
Dr. Tai Hok Leung, Morris *(Fellowship assessment in Chemical Pathology)*

Dr. Chuang Wai Man, Vivien *(Fellowship assessment in Clinical Microbiology and Infection)*
Dr. Lam Tin Keung, Edman *(Fellowship assessment in Clinical Microbiology and Infection)*
Dr. Lau Kar Pui Susanna *(Fellowship assessment in Clinical Microbiology and Infection)*

Dr. Chiao Wing Fu *(Membership assessment in Forensic Pathology)*

Dr. Wong Wai Shan *(Fellowship assessment in Haematology)*

Dr. Kwok Siu Yin, Janette *(Fellowship assessment in Immunology)*

(Dr. Alice Chan, Dr. Morris Tai, Dr. Vivien Chuang, Dr. Susanna Lau, Dr. Janette Kwok and Dr. Wong Wai Shan are eligible for Fellowship Admission in the coming AGM.)

For those Fellows or trainees who are curious in knowing how our examiners look like, here are photos of some of them.

Examiners for Haematology: *Front row from left: Dr. K.F. Wong (Chief Examiner), Dr. Charles Singer (External Examiner), Mrs. Lorna Singer; back row from left: Dr. Raymond Chu, Prof. Margaret Ng, Prof. Y.L. Kwong, Dr. Clarence Lam, Dr. Edmond Ma*

Examiners for Chemical Pathology: *From left: Dr. Tony Mak (Chief Examiner), Dr. Anthony Shek, Prof. R. Swaminathan (External Examiner), Dr. Sidney Tam, Prof. C.W. Lam, Dr. Albert Chan.*

OUT OF THE WHITE COAT

This section aims to provide a forum for informal communication amongst fellows. Updated news from old and respected friends of College Fellows are also featured. If you have any news or photos that you want to share, please send the material to us.

HOMECOMING OF AN OLD FRIEND

Dr. K.F. So is no stranger to many senior fellows in Hong Kong. He is an experienced and respectable teacher and mentor to many currently practicing anatomical pathologists. His contribution to the diagnostic service at the Department of Pathology of Queen Mary Hospital was instrumental in the 70s' to 90's. After his retirement, Dr. So has been living with his family in Brisbane, Australia. Recently, on their journey to his hometown in the Mainland, Dr. So and his wife paid a visit back to the Department of Pathology of Queen Mary Hospital to meet some old friends. He was very much impressed by the changes in the Department, particularly in teaching and research. He has been enjoying good health and has become very knowledgeable in gardening and plants.

Dr. K.F. So (third from the right) visiting his friends at Queen Mary Hospital. (Left to right: Dr. U.S. Khoo, Prof. L.C. Chan, Mrs. So, Dr. K.F. So, Dr. K.W. Chan, Prof. Irene Ng).

MEETING ANNOUNCEMENT

- **15th ANNUAL GENERAL MEETING OF THE HONG KONG COLLEGE OF PATHOLOGISTS AND 15th T.B. TEOH FOUNDATION LECTURE: The 2007 WHO Classification of CNS Tumours – some preliminary views (Prof. H.K. Ng); HKAM Jockey Club Building; 25 Nov, 2006.**

- **15th ANNUAL SCIENTIFIC MEETING OF THE HKIAP: invited speakers include Dr. P. Chandrasoma, Dr. John Chan and Dr. Ivy Luk. Postgraduate Education Centre, Prince of Wales Hospital; 2-3 Dec, 2006. http://www.hkiap.org**

- **SEMINAR AND 7th ANNUAL GENERAL MEETING OF THE HONG KONG SOCIETY OF CYTOLOGY: Recent developments in gynaecologic cytology (Dr. R. Nayar); Kai Cheong Tong, G/F, School of Public Health, Prince of Wales Hospital; 9 Dec, 2006. http://www.cytology.org.hk**

- **CROUCHER ADVANCED STUDY INSTITUTE (ASI) 2007 MEETING: "Molecular Genetics and Cell Signaling in Cancer and Cancer Metastasis". Invited speakers include Dr. S. Courtneidge, Dr. S. Lowe, Dr. R. Moon, Dr. C.J. Sherr, and Dr. F. Slack. Organized by Department of Pathology, Li Ka Shing Faculty of Medicine, the University of Hong Kong (Meeting Director: Prof. I. Ng). Cheung Kung Hai Conference Centre, 21 Sassoon Road, Pokfulam, Hong Kong; 29 Jan - 2 Feb, 2007.**
  For enquiries: Ms Cherry Lee, Department of Pathology, The University of Hong Kong (E-mail: cherrylee@pathology.hku.hk Tel: (852) 2855 4875; Fax: (852) 2872 5197; website: http://www.hku.hk/patho/)

- **THE WORLD CONGRESS OF PATHOLOGY: Meeting the Challenges of Globalisation and Miniaturisation. Sunway Pyramid, Convention Centre, Petaling Jaya, Malaysia; 20-24 Aug, 2007. http://www.waspalm2007.org**

Come and support our trainees at the 2nd Trainee Presentation Session!

Pao Yue Kong Auditorium, the HKAM Jockey Club Building, Aberdeen

2:45 – 4:30 p.m., 25 Nov, 2006 (Sat)