

ACEM

focus

➤ NATIONAL EM STRATEGY ..	1
➤ SEMT MEETING	2
➤ RMS	2
➤ AFC	2
➤ NEWCASTLE ACEM	3
➤ DIGITAL IMAGING	3
➤ NOS	4
➤ WEB NEWS	4
➤ EQA	5
➤ AUSTRALIAN EQA	5
➤ RECENT PUBLICATIONS	6

National EM Strategy

"What is needed is a national strategy for Electron Microscopy"

That's the main conclusion drawn from recent discussions that ACEM have had with the Workplace Review Team, the Department of Health and the Royal College of Pathologists.

ACEM Chairman, Dr Tim Ryder, has represented electron microscopists at meetings determining future requirements for healthcare scientists. In the case of the scientists working in EM (both Biomedical and Clinical), predicting future requirements has proved impossible without a clear understanding of how the service will be configured in the future. Existing services have largely come about by accident and not the result of co-ordinated planning.

It was agreed that ACEM, as the only professional body representing the interests of clinical electron microscopists, needs to develop a national strategy for EM that would form the basis of future manpower planning and training.

Before a plan can be developed, however, it is essential to know what the situation is at present. ACEM made a start last year by gathering information on the clinical scientists working in EM. This year it is planned to extend the information gathering exercise to cover the bulk of the EM workforce, i.e. the biomedical scientists and MTO's. To this end the ACEM Webmaster has been developing an online questionnaire that should be ready for data gathering in the near future. This will avoid the need to send out individual questionnaires to members and make collating data very much easier. Members are urged to participate in the data gathering

exercise as the success of any future strategy will depend on sound information underpinning realistic recommendations.

The plan being developed by the ACEM Committee is to:

- 1) Undertake a comprehensive review of healthcare scientists working in EM. From the preceding comments it can be seen that a start has already been made on this but there's still a lot to be done.
- 2) Establish a database of the existing clinical EM facilities throughout the country. This would include information on their location, types of specimen handled, workload etc.
- 3) Establish a project team comprising the major stakeholders (i.e. clinical scientists, biomedical scientists and pathologists with an interest in EM). The remit of the project team would be to attempt to predict future national requirements for electron microscopy and make recommendations as to how the existing facilities might be configured to provide the necessary service.

The resulting strategy would form the basis of future representations to the Workforce Review Team and Training agencies and be used to encourage a planned development of the service, something that has never happened in the past. If EM is to have a future in healthcare science we need to act now!

Tim Ryder December 2005 .

REMEMBER
ACEM AT
PATH SOC
2006



ACEM Members at the Newcastle Meeting July 2005, see inside for details of the meeting.



Pathological Society Annual
Meeting & Centenary Meeting
2006

July 4th - July 7th 2006

Manchester University

ACEM Companion Meeting

Thurs 6th July

Society of Electron Microscope Technology Meeting

The Society of Electron Microscope Technology SEMT held a two day meeting at the Open University, Milton Keynes on 27th and 28th April 2005 to celebrate 35 years as a society.

This was a well-attended meeting with a significant trade presence. To those of us involved in diagnostic EM where we struggle for funds against the ever-increasing momentum of molecular technology, this meeting was a revelation. There are many significant developments in EM technology going on out there and the results of this were presented during several talks at this meeting.

There were three talks with a virological theme, one by Dr Paul Monaghan (Institute of Animal Health, Pirbright) on "Immunolabelling in the study of viral replication", a second by Patrick Costigan (National Virus Reference Laboratory, University College Dublin) on "EM in diagnostic virology" and an entertaining presentation by Barry Dowsett (Centre for Emergency Preparedness and Response, Porton Down) on "Searching for weapons of mass destruction – micro and macro scale, Porton to Baghdad". Other presentations covered such diverse topics as catching space dust (Anton Kearsley,

Natural History Museum, London), the accumulation of metals in animals (Dr John Morgan, Cardiff University), immunogold/silver staining in both pre-embedding and post embedding applications (Peter van de Plas, Aurion, Wageningen, The Netherlands), specimen coating for high resolution SEM (Dr Iolo ap Gwynn, University of Wales, Aberystwyth), morphological analysis of the secretory pathway by electron tomography (Dr Koert Burger, Institute of Biomembranes, Utrecht, The Netherlands), serotonin receptors in the hippocampus: from depression to Alzheimer's (Dr Jose Julio Rodriguez Arellano, Biological Sciences, Open University) and use of confocal and SEM to study protein dynamics in inner ear hair cells (Dr Agnieszka Rzedzinska, Sanger Institute, Cambridge).

By contrast, Dr Peter Evennett (Formerly of the Biology Dept., Leeds University) gave a fascinating talk on the

early pioneers of electron microscopy in Leeds just after the Second World War. In 1946, the sum of £5500 was paid for a Philips EM100 microscope and Irene Manton discovered the 9+2 structure of cilia.

The SEMT is complementary to ACEM and can be joined (free of charge!) by contacting David McCarthy at the University of London School of Pharmacy; email: David.mccarthy@ulsop.ac.uk

Alan Curry and Hazel Appleton



“ Don't miss Path Soc
2006 at Manchester
University ”

Royal Microscopical Society

ACEM has recently secured an affiliation with the RMS and can now enjoy a line of communication with them. The privileges of an affiliated group include:

- Publicity for meetings and reports of meetings in the 'user group section' of the Proceedings of the RMS
- Advice and assistance in obtaining guest speakers
- Eligibility to apply for financial assistance towards cost of invited speakers at their annual meeting
- Permission to use 'Affiliated to the RMS' in literature advertising their activities
- Receiving a copy of each issue of the Proceedings of the RMS
- Receiving assistance with additional publicity

RMS news and meetings, relevant to electron microscopists, will be posted on the ACEM website and included in Newsletters

The RMS is holding an 'International Conference and Exhibition' at ExCel, London on the 27th to 29th June 2006. Events include lectures, workshops and exhibitions. For more information visit www.microscience2006.org.uk

Please note that ACEM would welcome reviews of this meeting and/or any other pertinent meetings which can be put onto their website. Please contact either:

Elizabeth.Curtis@uhb.nhs.uk or Pat.Tarpey@cmmc.nhs.uk

Agenda for change

This controversial subject in its inception promised to bring healthcare workers equity and fair remuneration and address recruitment and retention issues. Is this being achieved? As Trusts around the country move forward with the process, the debate begins and many ACEM members will, I am sure, have strong opinions on the subject. The ACEM website forum is currently running with the A4C debate and some members are sharing the outcome of their assimilations. I believe it will be useful for all EM workers to know which bands are being 'bestowed' upon BMS and Clinical Scientists in electron microscopy. I am sure we are agreed that our duties include technically demanding work, a high level of responsibility and expert knowledge. I hope that the banding outcomes eventually will reflect this and any salary discrepancies between us are resolved. Please join the ACEM forum discussions and let us know your feeling on this 'prickly' subject.

Pat Tarpey



ACEM FOCUS

Report of ACEM 2005 - Newcastle Meeting

The Association of Clinical Electron Microscopists (ACEM) holds an annual one-day satellite meeting with The Pathological Society of Great Britain and Ireland. The venue for this meeting moves around the British Isles, the Republic of Ireland and also the Netherlands. The last meeting was held at Newcastle University. There were six guest speakers Dr B Eyden, Christie Hospital, Manchester 'Unusual tumors needing electron microscopy for precise characterisation and diagnosis'. Ms T Dopping-Hepenstal, St John's at St Thomas' Hospital, London 'From the basement up - Ultrastructural clues in hereditary skin disorders epidermolysis bullosa and ichthyosis'. Dr J Schroeder, University Hospital Regensburg, Germany

'Ultrastructural telepathology - Possibilities and limitations'. Dr R Fleck, National Institute of Biological Standards and Control, London 'EM and biological medicines (production and safety of viral vaccines), and Dr R Bonshek, Manchester Royal Infirmary 'Electron Microscopy in ophthalmic pathology'. The meeting was well attended (see photograph on front page).

Ideas for speakers at future meetings should be relayed to any of the ACEM Committee.

Those interested in joining ACEM should visit our website: www.acem.org.uk



“ Don't miss Path Soc ”
2006 at Manchester
University

ACEM 2006 Meeting Programme

ACEM 2006 Programme so far includes 'Use of EM in bone disease-diagnosis and therapy' Dr John Cassella, Staffordshire University. 'Ultrastructure of erythroblasts in health and disease' Professor Sunitha Wickramasinghe, St

Mary's Hospital London. 'Human DNA and RNA Viruses: Life cycle, negative stained and thin section' Mr Bart Wagner, Northern General Hospital, Sheffield. Mr Barry Dowsett, Porton Down, Salisbury. Mr Bill

Cooley, Veterinary Laboratories Agency, Addlestone.
Thanks to Bart Wagner for organising the programme of speakers.

Handwritten signature

Digital Imaging & Photographic Matters

Ilford is back from receivership, Kodak has pulled the plug on black and white printing paper and Agfa have now gone into receivership! Many of us still use Kodak EM film and hopefully this will be available for many years to come. However, we are now entering 'the digital imaging era' and those that have not started thinking about changing to this new imaging technology, should start to do so in the very near future (write a business case)! In established EM units, two separate avenues have to be taken to embrace digital imaging totally. An add-on EM digital camera for ongoing diagnostic work and a film negative scanner for all those stored negatives and photographs we all have in our labs should we need to access them again retrospectively.

Digital cameras can be bought and fitted to most electron microscopes, but they are expensive – the cheapest being about £25,000 to £30,000. Several manufacturers produce add-on cameras, some are better than others and some are easier to use than others. These add-on cameras have numerous advantages over conventional silver-based

photographic methods, namely no more printing (you may even be able to use a printing darkroom for another purpose!), no more expensive film or printing paper has to be purchased, reduced exposure to toxic photographic chemicals, images can be available more quickly and images can be stored on the computer to aid training/teaching. However there is a disadvantage in that images must be backed-up on disc or on an imaging server maintained by the IT Dept. If not already included in the digital camera package, software is available allowing the addition of scale bars, structure labelling, measurement and addition of demographic and laboratory data. Having recently purchased a system for one of our microscopes at MRI, the impact of digital imaging is dramatic and immediate!

The other route to digital imaging is to stick with conventional EM film and produce images from 'scanned-in' negatives. Some scanners are significantly better than others, but one that has received very favourable reviews in the photographic press is the Epson Perfection 4990 Photo. This scanner can be utilised to scan either micrographs or negatives. Medium format negative scanning quality (as produced by EMs) is

particularly impressive, but it is less impressive when used with 35mm negatives. (According to press reports)

To make maximum savings, images (either direct from a digital camera or from a scanned negative) must be viewed on a computer monitor screen and not printed individually. From our experiences here, monitor screen quality or computer graphics card specification can make a significant difference to the quality of the image produced.

Finally, we all have to adhere to Caldicott rules – emailing images can be problematic unless a secure emailing system is in place. Here in Manchester, we deliver digital images to customers/users on CD or memory sticks with appropriate identification of all image files.

Alan Curry



ACEM FOCUS

National Occupational Standards

In the last ACEM Newsletter I wrote that National Occupational Standards in Electron Microscopy were being developed. These National Occupational Standards for EM are now "signed off" by the Department of Health NOS group and the full version is on the ACEM website. The standards divide procedures done by electron microscopists into a) the tasks that the worker must be able to do and b) the knowledge required to competently carry out these tasks.

There are 8 specific EM standards:-

- o NOS EM 1 Processing specimens for TEM
- o NOS EM 2 Preparing sections for TEM
- o NOS EM 3 Preparing virological samples for TEM
- o NOS EM 4 Preparing specimens for SEM
- o NOS EM 5 Examining specimens by TEM
- o NOS EM 6 Examining specimens by SEM
- o NOS EM 7 Photographis techniques
- o NOS EM 8 Digital Imaging techniques

In addition to discipline specific standards there are 10 generic standards covering

- o NOS A Equipment
- o NOS B Developing protocols, procedures and methods
- o NOS C Handling of specimens, pre and post analysis
- o NOS D Interpret results and provide clinical advice
- o NOS E Health and Safety
- o NOS F Management
- o NOS G Training and professional development
- o NOS H Research and Development
- o NOS I Patient care
- o NOS J Provide advice on patient services

Competencies in NOS standards will be confirmed by assessment based training plus accompanying evidence.

The EM NOS working group have begun the linking of specific and generic NOS's to this pathway. An overview of these initial links plus the training modules for NOS competencies in EM will be presented at the EM EQA Feedback meeting in London in January.

Pat Tarpey

ACEM Website News

Since its launch in 2000, the ACEM website has attracted steadily more visitors, both members and non-members. Currently the site receives between 3-4000 individual visitors per month. The vast majority of these visits are to the public part of the site. Sadly, the members' area is still underused. However, as ACEM develops its role as a professional body, representing electron microscopists in the UK, the website will become an increasingly important route for communicating with and between its members. To give one example, recently the News Forum has been used to exchange information on outcomes of the Agenda for Change pay banding. Electron microscopists need not work in isolation - there are potentially nearly 50 ACEM members, including a number of colleagues from overseas, with access to the Forums who could exchange views and experiences.

Some of the features in the members' area:

- Details of past ACEM meetings including abstracts from many of the presentations;
- Details of future meetings; these are posted as they become available;
- List of all current members together with their area of speciality. Includes email addresses;
- News page; please contact the webmaster if you have any items of news to post;
- Mini symposium on the use of EM in diagnostic pathology;
- The final version of the National Occupational Standards;
- The Forums; discuss items of interest with fellow members;
- Useful links; if you have any suggestions for further links please email webmaster@acem.org.uk;
- Update your contact information from the 'My details' page;

Secure Online Payments for ACEM membership fees

Costs for establishing this service, and the bank charges for the first year of operation, were kindly met by JEOL UK Ltd, but the committee has taken the decision to maintain the facility. Using this service benefits both members and ACEM. Users will receive automated reminders and a simple method of paying fees, and it is particularly convenient for new members and those overseas. ACEM benefits from automation and the minimising of administration time. There are currently 48 paid-up members, slightly less than half of whom pay online. If you wish to change your payment method to online, please contact webmaster@acem.org.uk. If you have a standing order- remember to cancel it!

Nomination for committee members

The re-election of ACEM committee members is due to take place at the 2006 AGM in Manchester. If you would like to nominate someone for one of the posts, a form is available to download from the members' area of the website.

Booklist

ACEM is compiling a booklist to be posted on the members' area. If you have any suggestions to add to the list please contact secretary@acem.org.uk

Updating the website

The website is now more than 4 years old and requires some modernisation, of both content and the behind-the-scenes software. This has led to some glitches developing, which will be fixed by the site update.



ACEM FOCUS

Liz Curtis

Technical UK EM EQA

The pilot run of the EQA is underway and anonymised results will be published on the members' area; individual results should also be available to members from their individual logon page. This has been organised by Peter Wells-Jordan, Tracey deHaro and Vicki Martin in Leicester in addition to Bart Wagner.

EM technical EQA Feed-back Meeting

Friday the 27th of January 2006.

The meeting will be held in the
Histopathology Museum, 4th Floor, Laboratory Block,
Charing Cross Hospital.
London

1.00 – 1.30pm Lunch

1.30 – 4.00pm Feed-back meeting plus refreshment break

Meeting sponsored by Leica – represented by Gareth Jackson

Directions to the hospital can be found at <http://www.hhnt.nhs.uk/maps/map.htm>
Full instructions to participants when they register – by e-mail to bart.wagner@sth.nhs.uk.

No registration fee, but please register for catering purposes - we don't want to either run out of food or throw it away.

Australian EQA Scheme-being pioneered in Manchester

DIAGNOSTIC TEM – NEW INTERNATIONAL QUALITY ASSURANCE AND PROFICIENCY TESTING PROGRAM

Transmission electron microscopy (TEM) plays an essential role in diagnostic protocols in anatomical pathology. However, despite its importance, there are no internationally accepted external quality and proficiency testing systems for TEM. This deficit is now being addressed. The Royal College of Pathologists of Australasia (RCPA) Quality Assurance Programs Pty Limited recently established a pilot TEM quality assurance program in collaboration with John Stirling, the Principal Scientist in the Diagnostic TEM Laboratory at Flinders Medical Centre in Adelaide, South Australia.

The RCPA Quality Assurance Programs Pty Limited is a NATA-accredited (to ILAC G13) facility that provides a wide range of external proficiency testing schemes with both quality assessment and educational aspects; the TEM pilot module is the latest addition to their Anatomical Pathology program. Initially, registrants in the pilot scheme will submit electron micrographs from selected diagnostic cases. The micrographs will be examined in respect to: (1) technical and scientific proficiency (quality of processing and preparation) and; (2) tissue interpretation and diagnostic accuracy (the quality and suitability of the micrographs – 'fitness for purpose'). It is expected that the module will develop to include practical and educational elements. Interest in the module is high and laboratories in the UK (Manchester is to participate in the pilot scheme), Australia, New Zealand, South Africa and Hong Kong have already joined the pilot scheme.

For details of the program contact:

Leanne Giles, Technical Manager
RCPA QAP Anatomical Pathology
Unit 3, 15-21 Huntingdale Road
Burwood, Victoria 3125. AUSTRALIA
Email: apqap@rcpaqap.com.au



ACEM FOCUS

Recent Publications List

1 Eyden B

Electron microscopy in pathology

Chapter 5 in: The Science of Laboratory Diagnosis, 2nd edition, eds, D Burnett & J Crocker, John Wiley & Sons, pp 43-60, 2005

2 Eyden B

The myofibroblast: a study of normal, reactive and neoplastic tissues, with an emphasis on ultrastructure. Part 1 – normal and reactive cells.

Journal of Submicroscopic Cytology and Pathology 37, 109-204, 2005

3 Eyden B, Moss J, Shore I, Banerjee SS

Metastatic malignant small-cell melanoma: a case requiring immunoelectronmicroscopy for the demonstration of lattice-deficient melanosomes

Ultrastructural Pathology 29, 71-78, 2005

4 Eyden B, Shore I, Moss J, Yamazaki K, Ru Y, Shanks JH, Banerjee SS

Foci of amorphous/granulofilamentous matrix in the extracellular domain of tumours. 2. Immunohistochemical and immunogold characterization of a fibronectin-rich component

Journal of Submicroscopic Cytology and Pathology 37, 1-11, 2005

5 Eyden B, Pandit D, Banerjee SS

Malignant melanoma with neuroendocrine differentiation: clinical, histological, immunohistochemical and ultrastructural features of three cases

Histopathology 47, 402-409, 2005

6 Menasce LP and Eyden B

Nasopharyngeal carcinoma mimicking large-cell anaplastic lymphoma

Histopathology 46, 342-344, 2005

7 Al-Daraji WI, Salman WD, Nakhuda Y, Zaman F, Eyden B

Primary smooth muscle tumor of the pleura: a clinicopathological case report with ultrastructural observations and a review of the literature.

Ultrastructural Pathology 29, 389-398, 2005

8 Hegyi L, Peston D, Theodorou M, Moss J, Olver J, Roncaroli F

Primary glial tumor of the retina with features of myxopapillary ependymoma

American Journal of Surgical Pathology 29, 1404-1409, 2005

9 Appleton H

Electron microscopy in virology

The Science of Laboratory Diagnosis, 2nd edition, eds, D Burnett & J Crocker, John Wiley & Sons, pp 181-189, 2005

10 Bailey MS, Boos CJ, Vautier G, Green AD, Appleton H, Gallimore CI, Gray JJ, Beeching NJ

Gastroenteritis outbreak in British troops, Iraq

Emerging Infectious Diseases 11, 1625-1628, 2005

11 Rauz S, Tuft S, Dart JKG, Bonshek R, Luthert P, Curry A

Ultrastructural examination of two cases of stromal microsporidial keratitis

Journal of Medical Microbiology 53, 775-781, 2004

12 Curry A

Emerging human protozoan infections in the temperate European climate

Journal of Submicroscopic Cytology and Pathology 36, 105-119, 2004

13 Curry A, Beeching NJ, Gilbert JD, Scott G, Rowland PL, Currie BJ

Trachipleistophora hominis infection in the myocardium and skeletal muscle of a patient with AIDS

Journal of Infection 51, e139-e144, 2005

14 Curry A

Microsporidiosis; Chapter 25

In Topley & Wilson's Microbiology and Microbial Infections 10th Edition; Parasitology volume; Eds Cox FEG, Wakelin D,

Gillespie SH, Despommier DD

Hodder Arnold, 2005

RECENT PUBLICATIONS BY ACEM MEMBERS – Please send details for inclusion in future editions of the NEWSLETTER to alan.curry@cmmc.nhs.uk

Articles from ACEM members are welcomed - email to alan.curry@cmmc.nhs.uk who will assess suitability.

All the best for 2006 - from the ACEM Committee.

3 Thoughts for the New Year

- go digital
- use the ACEM website more
- think about speakers for the 2007 ACEM Path Soc Meeting



ACEM FOCUS