Welcome from the ECR 2008 Congress President

By Prof. Maximilian F. Reiser

Welcome to ECR 2008! This conference promises to be a tremendous success, thanks to the tried and tested methods that have been used by our excellent ESR office to build previous congresses, the enormous effort by each and every member of the Programme Planning Committee, and the outstanding leadership provided by Professor Max Reiser. Some people may not realise that it takes two years to prepare an ECR. All aspects of the congress receive close individual attention and nothing is left to chance. The programme is the result of carefully coordinated efforts, directly or indirectly involving almost every academic radiological organisation in Europe. The attention to detail and the commitment to high standards are very impressive indeed. This year, there was a 20% increase in the submission of scientific papers to the Congress. Of course, this means that the quality is higher than ever.

For the first time, the ECR will hold a joint session with another medical discipline – that of general practitioners, an indication of our commitment to a multidisciplinary approach to radiology which is essential to the future success of our specialty. Also, there will be substantial pieces of radiological equipment exhibited at the congress, recognition of the growing importance of the ECR.

As always, the congress provides an opportunity to recognise the contributions of eminent colleagues. This year, the ESR will honour the ESR Gold Medal awarded to Prof. Nicholas Goertzeopoulos. Eminent radiologists from these countries will present highlights and particularly interesting aspects of radiology from their countries. Abstract submission skyrocketed, with an acceptance rate of 33%. The new ‘Face-off’ session will allow you to experience live the efficiency of workstations from different manufacturers, e.g. in the detection of colon polyps or in the interpretation of examinations of coronary arteries. Health systems worldwide are confronted with difficult challenges. Radiology has to be aware of its responsibilities in a socio-economic and political context, not least in view of the political unification of Europe, which has more and more influence on the daily work of doctors. By creating ESR as a common house of radiology in Europe, we have now established an organisation that can effectively represent and coordinate our interests and demands.

Radiology has to adapt to the demographic changes in our society. In the special focus sessions on ‘Geriatric Trauma’, we will seek solutions for suitable radiological care for old and very old people. The situation of female professionals in radiology is another topic which deserves our attention. What has to be done so our female colleagues can combine family and work in a better way, and their talents, experience and skills do not get lost? Flexible working hours and a new understanding of female roles by their male colleagues could play an important part in this necessary change. This topic will be discussed in a Professional Challenges Session moderated by the ESR Congress President Prof. Helen Carrey.

I would like to express my sincere thanks to everybody who has invested time, effort and commitment in the preparations for ECR 2008 – the Programme Planning Committee, the Subspeciality Societies and the many researchers who have actively contributed to the scientific and educational programme. I am especially grateful to the wonderful team at the ESR Office for their exceptional cooperation.

By Andy Adam

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The arguments in favour of full field digital mammography (FFDM) are compelling. Image quality is high, mammograms can be read and manipulated on high-resolution monitors, and computer-aided software tools can be employed. Images are transferred electronically, and data are archived for rapid retrieval.

Some studies have also shown that FFDM can detect more cancers than conventional mammography in certain groups of women.

Dr. Nick Perry, radiologist and director of breast screening at St. Bartholomew’s Hospital, London, is a self-confessed convert to FFDM. Perry began using digital mammography for screening work in 2000. He now has access to nine different FFDM units at public and private breast screening centres across London.

His message to anyone contemplating the switch to FFDM is simple: plan ahead. Moving from analogue to digital can involve a sizeable capital investment. It therefore makes sense to ensure that the practicalities of running a digital breast screening service have been thought through.

High-contrast digital mammography images can be used for screening purposes, regardless of breast density. A: Extremely dense breast tissue (> 75% fibroglandular). B: Moderately dense breast tissue (25% to 50% fibroglandular). C: Low density breast tissue (< 25% fibroglandular). (Provided by N. Perry)

Prof. Hilde Bosmans recommends regular QA check-ups for digital mammography systems.
ET 2008 | ECIO 2008
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- Hands-on Workshops
- Technical and Clinical Focus Sessions
- Learning Centres
- Industry Symposia

A witness to changing times, Prof. Albert L. Baert has had a considerable influence on the development of radiology as the backbone of healthcare in the second half of the 20th century and the start of the 21st.

Born in 1931 in Aalst, Belgium, Baert chose to embark on a career in radiology in 1956 because of its key role in the diagnosis and therapeutic decision making process, as well as the intellectual challenge of solving clinical problems. At that time, he could not have foreseen the revolution in mental imaging which was to take place during the coming decades, sparked by the emergence of ultrasound, computed tomography and MRI. “I was very much with my choice,” he recollects gratefully.

Baert, appointed chairman of the department of radiology of the University Hospitals of Leuven in 1971, was intimately involved in the clinical introduction and application of these new diagnostic tools, which he used to their full potential, particularly in abdominal sectional imaging. Under his aegis, the Leuven department of radiology soon developed into one of the largest in Europe, and acquired fame for its clinical research.

A Professor Emeritus with special assignment, Albert Baert has had a rich and flourishing academic career. He started teaching in 1962 and obtained full professorship in 1971 from Leuven University. In 1986 he was appointed member of the Board of Directors of the University Hospitals of Leuven, before becoming their deputy medical director in 1994. Furthermore, he served as chairman of the Belgian Government Committee for Radiological Board Certification from 1980 to 1997.

Early on, he took an interest in angiography and wrote a dissertation on the subject of angiography in renal tumours, for which he received a PhD degree in 1968. His further interests in lymphography and, later, body CT were reflected in 580 authored or co-authored scientific papers, numerous book chapters and 5 books. His book on contrast enhancement body CT, first published in 1981, rapidly became a standard for this revolutionary imaging method. He has also lectured frequently on these topics in both Europe and the United States.

Baert’s contribution to the scientific advance of radiology has been outstanding. But his biography would not be complete without mentioning his accomplishments in the development of organised radiology in Europe. Together with prominent radiologists conducted by Prof. Josef Lioser, he orchestrated the exponential growth in the number of members of the European Congress of Radiology. While most observers would now agree that an annual Congress was a must, the necessity for European radiologists to discuss their problems, lay out future strategies and strengthen friendly bonds, Baert and his collaborators had to face harsh criticism for their plans. “At the beginning, our efforts were met with considerable scepticism and even resistance from different sides, notably when we proposed to move the European Congress from a quadrennial to a biennial and soon to an annual meeting,” he remembers.

ECR, which has since become the second largest radiological meeting in the world, is, for him “a brilliant example of what Europeans can achieve when they unite their forces for a common goal.”

He was duly rewarded for his commitment to European radiology by being appointed ECR President twice, in 1993 and 1995, and by receiving the ECR Gold Medal in 1999. He also greatly contributed to the establishment of the European Society of Radiology, ESR, and presided over the former European Association of Radiology (EAR) from 1995 until 1997.

“I am delighted to note that in a relatively short time period European radiology had become almost non-existent 20 years ago, has developed into a sophisticated, forward-looking society based on individual membership,” he says. “In my opinion, it will be of vital importance for the future success of ESR and the more than 50,000 European radiologists are further developed. We must keep each individual member well informed on ESR decisions and strategies, to stimulate their personal engagement in the activities of the new society,” he advises.

After a long and successful career, Baert retired in 1997. But he remained extremely active, notably by continuing as the editor-in-chief of European Radiology until December 2007, a position he held for 13 years. Under his leadership, European Radiology has become the second highest ranked true general radiological journal. Also, the number of incoming manuscripts is now about five times higher. The number of pages published increased from 600 to 3,000 pages annually, and the journal became monthly instead of bimonthly. Its impact factor took off, from 0.438, when it was first attributed in 1996, to 2.554 for the year 2006.

“My period as editor-in-chief represents for me mainly two things: hard but fascinating work in a new field which I gradually explored and discovered, but also immense personal satisfaction and reward,” comments Baert.

He is confident that his respected successor, Prof. Adrian K. Dixon, will be able to “explore new avenues and develop new editorial policies” that are needed for the expansion of the journal. “My only advice to my successor would be to conduct editorial affairs in his ‘own way’ and to speak with a stronger voice and according to his personal insights and views,” he says.

He also wants to pay tribute to “the highly expert peer reviewers from Europe and overseas” but also to the authors who submitted their manuscripts, “these talented, ambitious and mostly junior radiologists.”

To the latter, he advises “to keep a very open eye and mind for new and promising techniques in imaging methods and their clinical practice.”

Subspecialisation, but also experimental laboratory research in radiological imaging sciences and studying the scientific literature are equally essential, he states.

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Prof. Albert L. Baert, from Leuven, Belgium, will receive a Lifetime Achievement Award from the European Society of Radiology today at ECR.

By Mélisande Rouger

HIGHLIGHTS

Having witnessed tremendous changes and scepticism in his own time, Baert is optimistic about the future of radiology. “There is actually undoubtedly a widespread concern among radiologists that more and more areas of our discipline may be taken over by other clinical disciplines,” he considers. “Yet if we look carefully at the past and the present, there may be less reason for these concerns or for this down-and-gloom. We should not forget that since the birth of our discipline more than 100 years ago, the same concerns were voiced over and over again during the following decades. Nevertheless, during that period, radiology became more and more advanced and the clinical role of the radiologist became more and more important.”

By belonging to the ESR you are part of a very large and diverse community that helps to harness the potential of the most vibrant and exciting specialty in medicine.

I hope that you will have a fulfilling and enjoyable few days in Vienna!

Prof. Albert L. Baert

ECR TODAY FRIDAY, MARCH 7, 2008

FRIDAY, MARCH 7
17:45
Room A
Presentation of ESR Lifetime Achievement Award to
Albert L. Baert, Leuven, BE

continued from page 1

Prof. Nicholas Court Siriann, Prof. Albert Baert, Dr. Lubert Kempe, Dr. Fred Kelder and Dr. Gill Jost. I shall not describe their achievements here, as I could not do justice to them in the space available, but I invite all the readers of this column to attend the ceremonies that will celebrate their tremendous work.

ECR 2008 represents a milestone in the history of European radiology. This is the happy end of a long road, aiming to bring the major organisations representing our specialty in Europe into a ‘single house’. The last two years have been a transition period between the previous system, in which the ECR and the EAR were independent organisations, and the current situation, in which the ESR speaks for all European radiologists. The pace of growth of the ESR during the last year has been nothing less than phenomenal. Our society now has almost 30,000 members and it is truly a global force in our specialty. However, it is important to point out that we do not seek agreement for its own sake. Having a large number of members enables us to speak with a stronger voice and to be more effective. An excellent example of this strength is the efficiency of the ESR in tackling the various issues that have threatened to do so much damage, especially in paediatrics and interventional radiology. Although this matter is by no means over, and although more work will be necessary, the authority of the ESR, partly based on size, enabled us to speak loudly and clearly on this important issue. There will be many occasions in the future when we will need to do the same in relation to other matters and I am delighted that we are in a position to do so. However, it is necessary to further the interests of radiology and to continue to serve our patients.

The ESR is, of course, a European organisation, and this will not change. Our common goal must remain on educational, scientific and professional issues affecting European radiologists. However, the ESR is also a multinational society that has the potential to become truly global. Already, ten non-European organisations have joined the ESR as institutional members, and several thousand non-European radiologists belong to the society. I am confident that very soon it will become the only truly global organisation in radiology, coordinating activity in this field around the world. There are great benefits in doing so, as many of the challenges facing us are similar in all continents. Teleradiology and easier movement of doctors across national boundaries raise educational and regulatory issues that are best addressed in a coordinated fashion across the world. Therefore, the ESR has decided to pursue a policy of inclusion, welcoming colleagues from around the globe and enabling them to contribute to its activities.

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**European radiology leader receives ESR Gold Medal**

Prof. Nicholas Gourtsoyiannis, Iraklion/GR, will be awarded the Gold Medal of the European Society of Radiology today at ECR.

By Mélisande Rouger

Prof. Nicholas Gourtsoyiannis was born in Amphissa, Greece, in 1943. He obtained his medical degree from Thessaloniki University in 1967 and his PhD from Athens University in 1977. After a three-year internship in Internal Medicine at the Red Cross Hospital of Athens, he completed a three-year residency in radiology at Evangelismos Hospital in Athens and did a 2-year fellowship at the Radiology Information Department of Munich University, a position he held from 1975 until 1981.

He was elected associate professor of radiology of the University of Crete in 1986, and since 1990 he has been professor and chairman of the department of radiology. He has served as the first medical director at the University Hospital of Crete (1997–1999) and spent two terms as dean of the Faculty of Medicine of the University of Crete (1999–2001 and 2001–2003).

Gourtsoyiannis is the founding father of the Hellenic College of Academic Radiology. He has served as its president from 1997 until 2001 and he is its honorary president. He is also a founding member of the European Society of Gastrointestinal and Abdominal Radiology (ESGAR). He was President of two of the annual ESGAR meetings (1996, 1998), President of the Society (1997–2000), and President of the joint European (ESGAR) and American (SGR) abdominal congress in 2006.

His greatest interest has been in the radiology of diseases of the small intestine, and he is currently contributing to the evaluation of small bowel imaging with MR. His work in Radiological-Pathological Correlation spurred him to establish ECR’s Categorical Course and Syllabus in this discipline, introducing Radiological-Pathological Correlation at ECR. An active researcher, he has published more than 250 scientific articles in international peer-reviewed journals and he has written or co-written 28 book chapters.

He has served on the Editorial Board of numerous journals, including Abdominal Imaging, Investigative Radiology, Acta Radiologica and Magnetic Resonance in Medical Science. He has also been the editor of Hellenic Radiology. He is currently section editor of European Radiology and a reviewer for several national and international scientific journals on medical imaging and gastrointestinal diseases. Last but not least, he is also the editor or co-editor of 3 books, Imaging of Small Bowel Tumors (Elsevier, 1997), Small Bowel Imaging (Springer-Verlag, 2003) and Radiological-Pathological Correlations (Springer-Verlag, 2005).

Nicholas Gourtsoyiannis has been visiting professor at 23 universities and he has delivered more than 250 invited lectures worldwide. In recognition of his international achievements and the excellence of his work, he has been awarded honorary membership by the following societies:

- the Radiological Society of North America, the British Institute of Radiology, the French Society of Radiology, the Radiological Society of Switzerland, the Austrian Society of Radiology, the Italian Society of Medical Radiology, the Royal Belgian Radiological Society, the Australian Society of Radiology, the Argentinean Society of Radiology, the Bulgarian Association of Radiology, the Association of Bosnia and Herzegovina Radiologists, the Turkish Radiological Society, the Hungarian Society of Radiology, the Nordic Radiological Society, the Swedish Society of Radiology and the Polish Society of Medical Radiology.

He has also received honorary fellowships from the Royal College of Radiologists (UK) and the Royal College of Surgeons (Ireland), and he is a member of the Russian academy of medical sciences. He is the recipient of the 2000 Gold Medal of ESGAR, the 2001 Olson Medal from Sweden, the 2003 Schima Medal from Switzerland, the first Gold Medal of the Hellenic Society of Radiology in 2004 and the Boris Rajewsky Medal of the EAR in 2007.

Gourtsoyiannis has played a pivotal role in the creation of ESR. He was ECR President in 2003 and chairman of the ECR executive committee in 2004. From 1999 to 2003 he was chairman of the subspecialties committee of the EAR and from 2004 to 2007 President of the European Association of Radiology (EAR). He introduced the Electronic Presentation Online System (EPOS) and he masterminded the creation of the European Society of Radiology (ESR). Nicholas Gourtsoyiannis was the first President of the European Society of Radiology (Dec 2006 to March 2007). He is now the Scientific/Educational Director of the European School of Radiology and currently serves as Secretary General of the International Society of Radiology.

**Neurosciences researcher presents Inaugural Lecture**

Prof. Ernst Pöppel, Munich/DE, will present the Inaugural Lecture ‘Images in the brain – pictures in the eyes’ today at ECR.

By Mélisande Rouger

Prof. Ernst Pöppel was born in 1940 in Schwesin, Germany. He studied psychology and biology in Germany and Austria, and obtained a PhD degree in psychology from Innsbruck University in 1968. He then went to the United States, where he successively worked as a research associate at the department of psychology and brain science and as a staff scientist for a neuroscience research programme at the prestigious Massachusetts Institute of Technology (MIT). Back in Europe, he completed two Habilitationen (postdoctoral lecture qualifications), one in sensory physiology at the medical faculty of Munich University, the other in psychology at the science faculty in Innsbruck. In parallel, he worked as a fellow and research associate for several Max-Planck-Institutes.

In 1976 he became professor (ordinaris) in medical psychology at the Munich University, a position he has held since. From 1968, he has been teaching in medical psychology, neuropsychology, psychophysics, sensory physiology and special areas of philosophy at the faculty of medicine of Jena and Munich, as well as the faculty of natural sciences of Innsbruck.

Prof. Dr. Pöppel has been the head of the Institute of Medical Psychology since 1977, and of the Human Science Centre since 1997, both at Munich University.

Between 1992 and 1997, Prof. Pöpel was on the board of directors of the Forschungszentrum Jülich (‘Research Centre Jülich’) (medicine, biotechnology, and environmental research), where he founded a brain imaging centre.

His main fields of research are neuropsychology of perception of the visual modality, restitution of functions after brain injuries, and neuropsychological rehabilitation, as well as temporal perception in neural systems and behaviour. His involvement in research has gained him many distinctions, including membership of the European Academy of Sciences and Art, the J.E. Purkinje Medal of the Czech Medical Society and the Award of the Association of German Medical Journalists.

He has also been offered membership by well established societies such as the International Brain Research Organisation (IBRRO), the European Brain and Behaviour Society (EBSB), the European Neurosciences Association (ENA) and the Society for Neuroscience.

He has published some 350 scientific articles, on visual perception, temporal control, and on general neuroscientific problems, and more than 20 books, some for the general public. He has delivered approximately 1,000 lectures worldwide. He has oversen some 30 co-workers’ Habilitationen and about 250 students’ MDs and PhDs.
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To learn more visit www.gehealthcare.com/re-imagine
MR vendors take centre stage in ECR’s Technical Exhibition

By John Bonner

A keen sense of anticipation is building up among ECR 2008 delegates, as the deadline approaches for this afternoon’s grand opening of the Technical Exhibition. To mark the occasion, ECR Today is reviewing some of the new developments in MRI, while tomorrow’s industry feature will focus on CT. Sunday’s article on the Technical Exhibition will look at PACS, and ultrasound will be covered in Monday/Tuesday’s issue.

GE Healthcare’s latest high-definition MR system, Signa HDxt, is available in both 1.5T and 3T field strengths. It has been developed with two applications, which the company hopes will significantly expand this technology’s clinical value. The first, Cube, is designed to replace standard 2D data acquisition in multiple planes.

“Our intention is to produce an architecture that will democratise the technology,” said Stefano Vagliani, general manager of GE’s European MR business. “We believe Cube will change the way that radiologists use MRI. Instead of acquiring slices, as with conventional MR, it acquires a volume in a given direction. The new software will treat and reformat the data in any given plane without losing its sub-millimetre level spatial resolution. Basically, it is like the volume acquisition achievable with CT, but we can combine the spatial resolution of CT with the contrast resolution of MRI.”

High-resolution reformatting can be done at the operating console in the axial, sagittal, coronal, and oblique planes, using fast and easy-to-use reformatting tools that take less than a minute to run, GE claims.

Vagliani maintains that these two new applications will produce synergistic benefits for the workload of a radiology department. He thinks that together Cube and Ideal can increase the diagnostic power of users by 20 to 30 percent.

Esaote is a leading company in the field of dedicated extremity MRI, and is displaying the latest refinements within the department. Notably, this involves the latest refinements to its SmartExam technology, a tool allowing an entire MR examination to be driven by a single mouse click, so increasing efficiency and reproducibility. Introduced originally as a brain imaging tool, the software has been adapted for knee, spine, and shoulder applications, enabling automated planning, scanning, and processing.

SmartExam automates the entire acquisition protocol. In this way, examinations are performed in precisely the same way that they would be if a technologist was carrying out every step. Regardless of patient position or age, or the pathology or technologist, clinicians can produce the same image quality for all clinical applications, according to Siemens.

Meanwhile, Philips Healthcare is concentrating on operator-friendly systems to simplify workflow within the department. Notably, this involves the latest refinements to its SmartExam technology, a tool allowing an entire MR examination to be driven by a single mouse click, so increasing efficiency and reproducibility. Introduced originally as a brain imaging tool, the software has been adapted for knee, spine, and shoulder applications, enabling automated planning, scanning, and processing.

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The unit’s high-performance electronics can reduce energy consumption by up to 50 percent, the vendor claims. The magnet also has zero helium boil-off, so there is no need to regularly replace the cooling components, and the system is ready for operation. Yet with its 30 mT/m gradients, the Essenza still offers excellent image quality for all clinical applications, according to Siemens.

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Finally, ECR attendees should head to the Hitachi booth for details about Oasis, the new open MRI system with a superconducting 1.2T vertical field magnet.
Advanced pathological techniques challenge notions about breast cancer

By Emily Hayes

The true nature of breast cancer will be demonstrated based on cutting-edge pathological techniques during the opening session of a categorical course this afternoon. Rare and potentially revolutionary, the new methods look set to challenge radiologists’ understanding of breast cancer and could alter their approaches to imaging interpretation in the future.

Out of thousands of pathology departments in the world, only a handful use large format pathology in the breast. With large format pathology, bigger and continuous pieces of tissue are examined on super-sized microscope slides with sophisticated 3D histology techniques.

Whether conventional or advanced histology techniques are used, there is growing awareness of the importance of cooperation between radiologists and pathologists in breast cancer management. These doctors must work closely together to match up pathology results with 2D and 3D imaging studies, make an assessment about the extent of disease, and provide accurate information for their colleagues in surgery.

One of the course presenters, Dr. Tibor Tot, is a pioneer in large format pathology, having almost 20 years’ experience in the field. He recently published results from 500 consecutive breast carcinoma cases, reporting that only 34% of cases were unifocal, 36% were multifocal, and the others were diffuse or mixed (Cancer 2007;110:2531-40). In contrast, conventional 2D pathology techniques have indicated that the majority of breast cancer cases are unifocal.

"You see a microscopic tumour and you believe there is only one focus, that the breast carcinoma is only a lump -- and that is wrong," said Tot, head of pathology and clinical cytol- ogy at the Central Hospital in Falun, Sweden.

Information about disease extent has obvious importance for planning surgery. A lump may be excised in a hampeticopy, but breast-conserv- ing surgery may not be appropriate for multifocal disease, given the frequency of post-treatment relapses.

Instead mastectomy may be a better option. Tot said that in his region, mastectomy is more common in other settings because advanced pathology is routinely used and indicates more extensive disease. The large pathology format findings match well to 3D imaging studies like MRI, which also helps to show the true extent of disease, he added.

Researchers at Bally’s University of Bologna, where large format histology has been used in the breast for about seven years, recently reported that more than 50% of in situ and invasive lobular disease in 45 mastec- tomy cases was multifocal (Human Pathol 2007;38[12]:1736-43).

"Their results, similar to ours, show that multifocality and extensive lesions are very common in breast cancer. If an invasive tumour is multifocal, it has double the potential to give lymph node metastases," Tot said.

The Italian researchers also noted that well-differentiated ductal carci- noma in situ grade 1 is often multifocal, while poorly differentiated DCIS grade 3 is more commonly unifocal. Tot speculates that breast disease often involves development of multiple foci in one sick lobe and that partial mastectomy to remove the sick lobe may be a viable option in these cases (Int J Surg Pathol 2007;15[4]:369-72). According to this theory, it may be possible to prevent development of cancer in the future by removing a sick lobe before cancer develops.

During the same session, Dr. Daniel Favery will explain the microanat- omy of the breast, including the signifi cance of the terminal ductal lob- ular unit (TDLU) for breast imaging analysis, based on his experience with large format pathology and conventional pathology techniques.

Favery, co-medical director at the CMP Pathology Laboratory in Brus- sels, will also review the four main types of calcifications:

- calcium phosphate sediment
- calcium oxalate crystals.

Some types of calcifications are strictly related to benign lesions, such as calcium oxalate, whereas others are often associated with borderline lesions or carcinoma in situ, he noted.

In his talk, Favery plans to stress the importance of communication between the radiologist and pathologist in both conventional and sophisticated pathology envi- ronments.

"Aspects of the lesion that the radiologist sees on a mammogram, sonography or MRI should be com- pared routinely in daily practice with pathology findings. Radio- logists can learn a lot more from comparing notes with pathologists than they can in a 30-minute course," Favery said.

For example, after calculations are detected on mammography, a vacuum-assisted core needle biopsy is often performed. The patholo- gist should have an x-ray of the core for comparative purposes, and must identify the number and distribution of calcifications and estimate lesion size. The radiologist and pathologist should then meet and discuss the results. Thanks to advances in communication tech- nology, comparisons can easily be made across distances if the phy- sicians are practicing at different facilities, he explained.

In some cases, the pathologist may find something in a specimen that is unexpected or inconsistent with the lesion type and may request additional views on mammography or a different imaging study, such as MRI. The radiomorphological compar- isons help determine the true size of the lesion and to tailor the surgical treatment according to the patient’s needs.

Categorical Course: Breast: From Basics to Advanced Imaging

Friday, March 7, 16:30–17:30, Room E1
ECR 2008. From breast to imaging: radiology-pathology correlations
Moderator: D. El Mouyri, Paris/FR
Saturday, March 8, 08:30–10:00, Room E1
CC 518 Breast lesions at mammography: How to characterize?
Moderators: A. Fauster, Muen/AT
Sunday, March 9, 16:00–17:30, Room R2
CC 1218 Characterization of breast lesions by US and MRI
Moderators: E. Almeida, Stockholm/SF
Monday, March 10, 08:15–10:30, Room R2
CC 5135 International protocols
Moderators: D. Pary, Vienna/AT
Monday, March 10, 16:00–17:00, Room R2
CC 1618 Advanced imaging: Full-field digital mammography (FFDM)/MRI
Moderator: Iv. Karasevnenj, Niigyama/YL
Tuesday, March 11, 08:30–10:00, Room R2
CC 1719 Advanced imaging
Moderator: L.S. Fournier, Paris/FR

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This correlation between radiology and histology is proving vital for accurate assessment and appropriate management of breast cancer. In this case, vacuum-assisted needle core biopsy was performed following detection of micrometastases in the axilla of the case demon- strated the presence of calcifications. A sample of the area on 3D histology showed an enlarged terminal ductal lobar unit still attached to a collecting duct (H&E). A high magnifica- tion view of 2D standard histological section allowed the diagnosis of ductal carcinoma in situ (grade II according to Van Nuys classification). (Provided by D. Favery)
Learn the basic rules of head and neck imaging and it becomes manageable

By Karen Sandrick

Many general radiologists are cautious about using imaging examinations of the head and neck because of the complexity of the anatomy, the wide range of pathology, the rarity of presentation of many diseases, and the difficulty of eliciting imaging signs. Yet general radiologists can practice in head and neck radiology by following some fairly simple rules.

“This is not an area to be afraid of, as radiologists usually think. It is complex, and you do need to know a lot about disease in this area, but if you grasp some basic rules, you will get a lot of interpretative benefit out of your cases,” said Dr. Stephen J. Golding, consultant radiologist at John Radcliffe Hospital, University of Oxford, Headington, UK.

Neuroradiology poses other challenges. Radiologists may be familiar with the classic appearance of signs such as tram tracks, light bulbs, hot nodules, bags of black worms, popcorn balls, violet helmets or moose heads, and Mickey Mice. However, many of these signs were described in the days of conventional radiography and early cross-sectional imaging, and their appearance and specificity may be diminished or totally lost when using today’s volumetric forms of imaging, according to Prof. Isabella M. Björkman-Burtscher from the Centre for Medical Imaging and Physiology, Lund University, Sweden.

This afternoon Golding and Björkman-Burtscher will guide radiologists through the head and neck as well as neuroradiology in the form of an interactive quiz session in the European School of Radiology (ESR) Foundation Course, “Signs in neuroradiology and in head and neck imaging.”

In a series of cases, Björkman-Burtscher will present neuroradiology signs that are pertinent, relatively common, and easy to identify. She will also show how modern cross-sectional imaging may affect the classic definition of these signs.

Golding will describe a simple approach to imaging of the head and neck based on anatomical compartments, clinical examination findings, and therapeutic options.

As in other parts of the body, the first kind of differential diagnosis in the head and neck revolves around the tissue of origin of a lesion. However, determining where a lesion arises is not straightforward when imaging the face because of the complex anatomy.

“It is usually fairly obvious in imaging a part of the body, such as a limb, whether you are dealing with disease arising from bone or muscle or fat and skin. In the face, that’s rather more difficult, because by the time the disease gets established in an area with structures that are so small and close together, a lot of structures will be involved. So we lose our careful sign for assessing disease,” he said.

Imaging characteristics also can be fairly variable in the face, and some of the general rules of imaging break down. For example, when dealing with tumours in the rest of the body, it is well accepted that benign lesions mould and remodel adja- cent bone while malignant tumours invade bony areas.

“In the face, those rules don’t apply in the same way. Because the bones are so small, it’s possible for a malignant tumour to mould the facial bones, and there is a range of benign lesions that can be quite aggressive and erode bone,” Golding said.

The principal guide to diagnosing diseases in the head and face is the compartment within which a lesion occurs. He explains that the face may be divided into clear-cut compartments by tissue boundaries. These planes are within the tissue that limit the spread of disease.

“If we know a disease is in a particular compartment, we know what the possibilities are for the compartment, and we can look at imaging characteristics of the lesion to get an idea of what we’re dealing with,” he said.

Both macroscopic and microscopic views of lesions are often essential because many of the general guidelines about the characteristics of lesions, particularly round the edges of the normal category, overlap more in the face than they do elsewhere in the body.

“We tend to think of pathology as the gold standard of diagnosing disease from the biopsy. It’s striking when you work in head and neck disease, how often the pathologist will come back to the radiologist and say: ‘I need an idea of how this looks.’ The rules of diagnosing disease aren’t quite as cast in iron as they are elsewhere,” Golding said.

Surgents frequently look to radiologists for more precise anatomical roadmaps when operating in the head and neck than in other parts of the body because of the need to preserve facial appearance as well as other functions, such as speech.

Radiologists benefit by understanding the ways in which disease involvement affects the surgeon’s approach to surgical excision and reconstruction.

For example, a superficial tumour on the floor of the mouth under the tongue can be removed easily by a surgeon. A tumour that infiltrates the base of the tongue or that penetrates the muscle floor and the chin will require not only surgical excision but also replacement of the floor of the mouth. A tumour that invades the mandible will demand extensive surgical reconstruction to replace the resected bone.

“The information the radiologist provides will be guiding the surgeons as to what sort of procedure they need to be planning. Because of the complex anatomy in the face, that is a rather more specific, detailed and demanding job,” Golding said.

In September 2007, the 30th ESR/ EFR Tutorial for radiologists from Azerbaijan, Kazakhstan, Russia, Turkmenistan and Uzbekistan took place in Graz, Austria. It was also the celebration of a jubilee – 15 years of Graz Tutorials, an initiative of the European Society of Radiology, formerly the European Association of Radiology.

The history

After the collapse of the Soviet Union, many different medical, political and industrial organisations had built up educational programmes or training courses from the former Eastern Bloc. Most of the radiologists knew a lot about anatomy, physiology, pathoanatomy and pathophysiology, but had not had the chance to be involved in a modern kind of health service and to use innovative radiological technologies. Prof. Albert L. Baert realised the need to integrate young radiologists from the “new” countries into the European Association of Radiology, and established the tutorials, which provide an opportunity to experience medical practice in a large, urban university hospital. Partners from the industry (Agfa and Siemens) were found and, since the first tutorial, organised in 1993 in Graz, the University Clinic of Radiology of the Medical University of Graz has hosted tutorials twice a year, under the supervision of Prof. Rainer Riemmüller.

The aim

At the outset, the tutorials aim at providing young colleagues with good theoretical and practical experience to enable them to help improve the medical service in their home countries. Furthermore, the tutorials help them to become familiar with modern standards in the field of scientific radiology and explain the medical-ethical considerations of a democratic society as well as communicating the ideas of ESR.

The successful programme

The tutorials last 14 days each and comprise lectures and hands-on workshops in different areas of radiological diagnosis. With the help of lecturers from the participants’ home countries, talks are adapted according to the needs of radiology, medicine, and science, as well as the types of healthcare systems and medical educational systems. The workshops include training in the fields of CT, MRT, mammography, interventional radiology, ultrasound etc. and the participants learn about the medical workflow and successful teamwork between technicians and medical doctors.

Since its establishment, more than 450 radiologists in training have attended these tutorials.

Nowadays, many of the participants hold leading positions at radiological institutes or medical organisations in their home countries, but are also involved in international organisations.

With the year 2008, the tutorials have been integrated into the activities of ESR.

Prof. Rainer Riemmüller and Prof. Nicholas Gourtsoyiannis, ESR Scientific/Educational Director, are convinced that this partnership will contribute enormously to increasing the scientific profile of European radiologists.

For further information please visit www.myESR.org/esor

High-field MRT is playing an increasing role in neuroradiology. In 3T MRT, routine protocol for temporal lobe epilepsy evaluation shows good balance between speed and image quality. The six high-quality images were acquired in just over 15 minutes.

Upper left: Inversion recovery T2-weighted turbo spin-echo MRT; 30 x 2 mm slices acquired in 3 min, 56 sec. Upper right: Axial fluid-attenuated inversion recovery (FLAIR) T2-weighted turbo spin-echo MRT; 30 x 2 mm slices acquired in 3 min, 40 sec. Bottom right (left to right): Coronal FLAIR (2 min, 24 sec); axial T2-weighted turbo spin-echo MRT (1 min, 38 sec); axial T1-weighted MDEFT (2 min, 38 sec). (Provided by Diagnostic Zentrum Urania, Vienna)
Many healthcare providers around the world face a dilemma: they need to be innovative to provide high-quality care and at the same time need to reduce the costs of care. But is it really a contradiction? Not at all. In fact one effort can be directly connected to the other – by increasing the efficiency of workflows.

How increased efficiency leads to high productivity, as well as to excellent quality, can be demonstrated by looking at the high-tech industry – e.g. the medical engineering industry. Strong process orientation is a common and important factor in the reaching and maintaining excellence and best-in-class quality. This is reflected by measuring criteria, incentive structures, and productivity programmes. Also by the motivation of the people involved.

Yet, at the same time competitive advantage requires innovations that exactly match the market’s needs. Such innovations in products and solutions are the key to success. Innovation management has therefore developed as a discipline and core competence.

These management experiences and insights of driving innovation and at the same time cost-efficiency can and often need to be transferred to different markets and businesses.

Applying manufacturing models to the radiology subsystem of the inpatient hospitalisation process

By Martin Bledsoe, Baltimore/US

In almost all US hospitals, inpatient radiology exams are not scheduled. Instead, they are performed when equipment and patients are simultaneously and serendipitously available. While this flexibility may optimise patient flow for radiology under current conditions, it introduces variability and inefficiency into broader hospital operations, which may cost through length of stay. In an environment with fixed reimbursement per admission, a decrease in length of stay even a few hours over an entire hospitalisation can create tens of millions of dollars of revenue opportunity if the newly created capacity can be utilised.

This presentation shows how the Johns Hopkins University School of Medicine in Baltimore, MD, has reengineered its department of radiology to provide the most efficient throughput and highest quality in the nation. The Johns Hopkins Department of Radiology, the first one to develop PACS, has designed a work flow that maximises throughput and quality. By eliminating bottlenecks, the department has become the most efficient in the country.

Many radiology departments were forced to reengineer their operations after the collapse of the US market for MR imaging in the early 2000s. The Hopkins Department of Radiology was one of the few to maintain their market share and even increase. They did this by reengineering their work flow so that they could process 4000 exams per month. The Hopkins Department of Radiology has always been at the forefront of innovation and has developed several unique work flows that have set new standards for the industry.

Using a single HIS and PACS platform for patient medical data sharing between different healthcare providers

By Dr. Peeter Ross, East-Tallinn/EE

This presentation gives an overview of patient medical data sharing and distribution between hospital, general practitioner (GP) and patient using recent developments of Hospital Information System (HIS) and Picture Archiving and Communication System (PACS).

Effective use of digital medical data requires workflow re-engineering and use of modern data transfer technology. The radiology department at the East Tallinn Central Hospital (ETCH) has completely re-engineered its radiology workflow management during the last four years using the latest HIS and PACS technology. The hospital started using PACS with limited diagnostic load during reporting. By the end of 2007 the hospital was ‘claimless’, with an annual volume of 170,000 radiology exams. The case mix includes all imaging modalities, and radiologists are also providing reporting services for external facilities.

Our web-based PACS with streaming technology allows archiving all kinds of images, including non-DICOM and non-radiology images. The PACS is integrated into the web-based HIS so the radiologist or referring physician can open images using the HIS and simultaneously view other patient data. The same possibility is available to GPs outside ETCH. This kind of holistic patient approach achieved by HIS/PACS integration minimises the risk of having an inadequate patient history or referral letters before imaging or during reporting.

By successful digital image sharing with other healthcare providers, ETCH has opened the whole electronic patient record for authorised GPs and even more – patients can access their medical data in HIS. The security of patients’ sensitive data is guaranteed by using a personal ID-card.

Classic hospital or department workflow is linear, which means that to maximise throughput, hospitals must deploy new systems for patient tracking, universal scheduling, and real-time systems performance monitoring. These systems have been widely deployed in other industries for the most part specific applications for healthcare have not been developed.

One key principle of the theory of constraints is that maximising the throughput of a microsystem often slows throughput of the macrosystem. In the context of inpatient hospitalisation, radiology can be regarded as a microsystem and hospitalisation itself is the macrosystem. Because throughput has always been important in radiology due to large capital investment in equipment, it is a logical place for early proof of concept work in designing the new healthcare applications. However, as a next step in developing and testing these new applications, it will be necessary to perform simultaneous pilot work across all hospital microsystems, including other diagnostic areas, treatment areas, and inpatient nursing care, in order to capture throughput efficiencies at the macrosystem level.

Only then can hospital management create the revenue opportunity provided by a length of stay shortened by a few hours.

Martin Bledsoe has been the Chief Administrator for the Russell H. Morgan Department of Radiology and Radiological Science at Johns Hopkins Medicine since 2000 and will speak at the Management Session of the symposium.

Following a degree in Nursing, he practiced for 11 years before going back to graduate school to obtain his Masters of Science in Public Health at the University of North Carolina. He then joined the administrative leadership of Johns Hopkins Medicine. In his current leadership position he manages an organisation of approximately 1,500 employees. In addition, he has been actively involved in the leadership and programme development for the Johns Hopkins Medicine.

He has also actively consulted and published in the field of imaging business operations.
How to afford and keep pace with top-notch technology without going broke

By Eric-Jan Rutten, Eindhoven/NL

New government policies, privatisation and evolving financial regulations across Europe have increasingly forced hospitals to think and work like a business without being a business in the conventional sense. This shift in focus has also had an effect on technology suppliers - they need to change the way they do business in order to attract and retain customers.

Philips Healthcare recognised this trend early, expanding its professional solutions with financing, project and managed service solutions. In an interview with Melle Lerner from European Hospital (ML), Eric-Jan Rutten, General Manager of Professional Healthcare Solutions for Philips Healthcare (EJR), explained the strategies and solutions the company offers to hospitals that do not want to abandon top-notch technologies.

ML: Cost containment is becoming the crucial challenge for hospitals across Europe. How does Philips, as a supplier of high-tech but costly solutions, deal with this problem?

EJR: One of our main tasks is to provide support, advice and consultancy to our customers. When we looked at the challenges hospitals are faced with today, we realised that there was an opportunity to support them by taking more operational responsibility and sharing some of their business risks. As a result, we’ve taken a long-term commitment, taking a broader approach when looking at each customer’s needs. We don’t just ask ‘which bit of technology would you like to buy?’ - we look at the underlying challenges, such as ‘how can we optimise the total cost of ownership and workflow for this disease?’ and ‘which partnership models can help us to meet this need?’ We’re trying to understand the business issues of our customers by listening to them to find out what they really need. And what they need isn’t just money, it’s flexibility, too.

One example is our ‘Pay per Use’ model, in which we offer to share the risk associated with patient examination or patient volume with our customers. In this case Philips offers a new financing approach, for example for a CT device, built on success-oriented financing. In practice this means that if the radiologist examines fewer patients than planned, they have to pay less. If they perform very well and examine more patients than planned then we share in those productivity gains, too.

This kind of model of course means that we as a provider are even more motivated to support the radiologist and to help make sure their new solution is a success. As a result, we offer business development support, looking at issues such as how they attract patients, or providing a local market overview to work out which types of CT are best in the area already, in order to define how the radiologist can gain a unique position in the market.

Pay per Use models are currently popular in Germany, whereas in the UK our customers ask for financing in the conventional sense. Our solutions vary depending on the scope of the partnership - sometimes capital investment work is required, such as a completely new hospital wing or radiology room, and sometimes other operational aspects are involved that the hospital likes to outsource. Of course we do not perform all these tasks ourselves - we work with the appropriate partners. We work together in a consortium where Philips Healthcare takes care of the technology elements because that’s our core business, while our partners contribute other skills. In some cases, we handle everything from air conditioning to medical instruments and lighting systems. The number of disciplines is very large. In the UK our partners enter into contracts for ten, fifteen or twenty-five years whereas in Italy they are looking for short-term agreements for six or seven years.

One of the ‘hot topics’ for healthcare organisations is becoming a real nightmare, as the volume of information explodes, technology change rate increases, and the different stakeholders of patient care become more demanding. Many questions immediately arise: Should I keep information in-house? How can I give ubiquitous access, but in a controlled manner? How can I make sure legal requirements are fulfilled? What will be the costs in the long run? Managed services can provide part of the answer.

The presentation will explain new architectures, often grid-based, and delivery models for archiving and sharing patient data. It will clarify the impact of the model on IT, finance and the physician in detail. It will provide practical examples from Europe and the US, highlighting the lessons learned. It will finally identify how the model can be seamlessly integrated into global eHealth strategies.

EJR: Buying a device such as a CT is an investment for many years, but technologies are changing rapidly. What kind of solution can you offer your customers to protect their investments and ensure they receive state-of-the-art technology?

EJR: We can offer either a Technology Leap Lease or Managed Service solution. As well as providing financing, we can also include a commitment to keep the technology up-to-date over a fixed period of time. Thus, when a customer signs a so-called Technology Leap Lease for 6 years we can include fixed upgrades or options for replacements for pre-defined budgets. On a larger scale we can also provide a managed service for longer terms when we provide multiple systems, and as technology progresses we will upgrade and replace it within the agreed budget. In this way we ensure that the customer is always working with state-of-the-art technology over a defined period of time for a pre-agreed budget. In such partnerships we typically also agree on the performance levels of the system, such as uptime and response times.

In addition to these financing and service approaches it is important for us to provide our customers with a ‘full scope of solution’ tools. That’s why we’ve established Philips’ turn-key solutions. We act as a main contractor and integrator for all technologies when a hospital is planning a new wing or modernisation of an existing facility. As an integrator we plan and evaluate the purchase of all medical devices, from beds to lamps. Philips will take care of the programme management, specification, procurement, project management, installation, testing, and point-of-care management – all for a fixed price.

Responding to these new demands requires flexibility. Approaches as well as technologies and performances change over time, therefore, we also have to design our contracts with the utmost flexibility and on a good working relation, for the benefit of both our customers and our partners. Long-term partnerships need to be predictable for customers from a performance and financial point of view. This is what Philips provides: flexible, predictable, customised and reliable solutions.


M. Nectoux joined StorageTek – now SUN – Solution Business Group (SBB) in 1999 as Telecom and e-commerce Program Manager. In this position, he particularly developed managed services and started working on European eHealth initiatives. In 2003, he joined Kodak Health Imaging to take responsibility for Europe, Middle East and Africa business for Kodak Healthcare IT Information Management solutions. In 2007, he joined Carestream Health and its eHealth Managed Service Business Unit where he is now in charge of eHealth Managed Service Business for Europe, the Middle East and Africa.
PACS provides platform for new ways of working

By Paula Gould

The switch from hard copy workflow to digital imaging is gathering pace throughout Europe. For departments that have made the switch, the gains can be significant. Installing a PACS is just the first step, though. It is how the technology is then used that really matters.

Speakers at this morning’s refresher course will tackle this topic head on. Their brief is to answer the question: ‘What can PACS do today?’ Used correctly, PACS can streamline daily workflow, add value to reporting services, and act as a useful resource for education and training. Delegates attending the session will learn how to realise this potential.

Many radiology departments that have purchased a PACS have added speech-recognition packages. This software should be fully chased a PACS have added speech-recognition tools that are expected to make it possible to train more radiologists without increasing the number of trainers. PACS was consequently a screen and shared with the group.

Dr. Christoph Trumm will explain how to make effective use of speech recognition software.

"The major advantage is that you can make the report available to your clinical partners almost instantly, which in practice means within two hours," he said.

But whilst online speech recognition is relatively easy to implement in private practices and outpatient clinics, it is not always appropriate in teaching hospitals. The offline mode allows scope for discussion between resident radiologists and senior radiologists before the report is finalised and approved, Trumm said.

Radiologists at the LMU’s Großhadern campus use the online mode to report all out-of-hours cases. Their assessment can then be available in the HIS within minutes. During routine working hours, more complicated cases, such as those from MRI and CT, are dictated and transcribed separately.

"For our setting, it makes sense to use both modes," he explained.

Putting in PACS can also open up new ways of teaching and learning. Many sophisticated packages now make it possible to build complex radiology archives directly on the back of PACS databases. Very simple archives can also be put together from a standard PACS. Both approaches can be used to enrich educational programmes, or to facilitate case conferences with clinical colleagues.

"PACS is undeniably the best investment we have had in our department for training. The space, the machine, the access to the archive … The opportunities it gives to trainees are just unparalleled," said Dr. Andoni Toms, radiologist at the Norfolk and Norwich University Hospital (NNUH), Norwich, UK.

The NNUH is one of three sites in the UK that have had a dedicated radiology training academy. The academies are equipped with a range of tools that are expected to make it possible to train more radiologists without increasing the number of trainers. PACS was consequently an integral part of the set-up from the outset.

In this morning’s session, Toms will outline the existing range of options for PACS-based radiology education. He plans to offer tips on how to archive cases and store data, and to discuss the pros and cons of purchasing proprietary software as opposed to using a homegrown solution.

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PACS is an integral part of radiology residents’ training at the Norfolk and Norwich University Hospital. (Provided by A. Toms)

One of the more sophisticated PACS-based training tools allows residents to perform virtual anatomical dissections and cross-reference the results with cross-sectional images. (Provided by A. Toms)

His presentation will also cover some of the more sophisticated training tools that are being used at Norwich. This includes a programme that allows residents to perform a virtual anatomical dissection, and then correlate the findings with MRI or CT images from PACS. The results can be projected onto a screen and shared with the group.
Radiologists stake their claim to cardiac endovascular intervention

By Frances Rylands-Monk

Before the development of newer techniques, most patients with arterial obstructive disease were treated with open surgery, not endovascular intervention, regardless of the type and size of the lesion. Now smaller lesions can be treated by minimally invasive techniques.

"All endovascular intervention should be in the hands of the specialists, as it is they who have developed the techniques. It is good that surgeons are learning and participating, but endovascular intervention should be controlled and driven by radiologists," Wagner noted.

Patients who have undergone balloon dilatation are being treated with stents.

"While stent implantation has a 10-year track record for the iliac arteries, this technique in the femoral region dates back only five years due to the fact that Nitinol self-expanding stents are a relatively new development. They are better than the last generation of non-Nitinol stents, which did not offer such good long-term results for femoral arteries," he said.

Another new development is the cutting balloon technique. As the balloon dilates, small plates on its surface cut into the atheroma to create controlled dissections, which rupture the atherosclerotic material and push it outside or into the vessel wall. This displacement is not as long-term as the stent technique due to the stent's capacity to keep the lumen open after material displacement. This method has been in clinical use for up to three years, but it is still rarely undertaken, and trials comparing cutting balloon and stent implantation are ongoing.

Restenosis can occur due to intimal hyperplasia of vessel walls during the trauma of balloon dilatation, but another relatively new technique, cryoplasty (or cryo-balloon angioplasty), can reduce the risk of restenosis.

"The stent is a safe tool for opening arteries, but the trauma of balloon dilatation, cryoplasty or cutting balloon angioplasty, can perforate the artery. Moreover, balloons in cryoplasty are inflated with nitrogen, causing the temperature on the balloon's surface to drop to -10° C, inducing apoptosis of vascular cells due to the cooling of the vascular wall. The two-year-old technique, which again is still relatively rare in clinical settings, achieves better long-term results regarding restenosis, compared to non-cryoplasty dilatation, he said.

Contraindications in the femoral region should also be reviewed and comprise large lesions above 15 cm.

"Technically, balloon dilatation or stenting might work, but long-term results are not good enough to compete with surgical bypass procedures," Wagner said.

"Oft en, education and training determines which doctor performs the technique. I would like to see more non super specialised radiologists performing the latest technological developments in revascularisation procedures, such as stent insertion in the femoral-popliteal segment," said Prof. Hans-Joachim Wagner, interventional radiologist and chair of the radiology department at Friedrichshain Hospital in Berlin. He advocates that a radiologist should always be present and responsible for a procedure.

For renal stenting, balloon expandable stents are used almost exclusively. Precise positioning is easier with self-expanding stents, and the strength of the balloon expandable stent is also greater.

In recent years, the profile of instruments for stent delivery has decreased in size, he explained. Interventional techniques now widely use 0.018 inch guideline-compatible systems, compared with the 0.035 guideline-compatible systems used previously, translating into a smaller incision and entry point in the groin artery and ultimately a less invasive procedure for the patient. Importantly, during insertion the crossing profile is smaller, reducing the risk of embolisation.

As for the future of renal stenting, drug-eluting stents used in the coronary arteries will be investigated for use in renal arteries, but their significance for renal artery stenting remains uncertain, as does the use of a protection device, Peregrin said.

"For stents in the carotid arteries we use a protecting umbrella between the stent and brain arteries in case of cholesterol embolisation. For renal procedures there is no dedicated routine tool, such tools are not suitably designed for renal stenting, and their use is still under investigation," he concluded.
New magnetic resonance techniques provide up-to-date solutions for problems in diagnostic and interventional radiology

By Dr. Fritz Schick, Tübingen/DE
ESMRMB Secretary

During the past two decades, rapid developments in MRI have paved the way for much appreciated, high-quality examinations of all body parts, with high spatial resolution and excellent tissue contrast in a shorter and shorter examination time. This steady process is still ongoing in many fields of MR, with the continued development of applications for studies in animal models for preclinical research, and for patient examinations in the hospitals.

Many experts and sessions at this year’s ECR are dealing with the so-called ‘molecular imaging techniques’ of hybrid systems such as PET-CT or MR-PET, providing new insights into metabolism and immune reactions, which are especially useful in oncology. Extremely interesting challenges must be faced in getting such hybrid systems to work, but we should not forget about the considerable effort and success in the development of pure MR technology.

Currently, there is wide clinical access to whole-body MR units operating at 3 Tesla. Optimal use of the higher signal intensity obtained by those clinical ‘high-field systems’ can only be achieved after further intense development of RF technology. In addition to parallel signal recording using multi-array RF coils with an increasing number of coil elements, multi-array transmit coils (so-called transmit SENSE systems) are being introduced to match the challenges of B1-inhomogeneity inside the body trunk and SAR restrictions. Sensitivity-related imaging (such as IMRI of brain function and imaging of iron load of organs) and spectroscopic examinations (e.g. in the brain and in the prostate) gain more than proportionally with increasing magnetic field strengths. It can be anticipated that a new generation of high-field systems operating at 7 Tesla (which are now in the experimental stage) will provide even more capabilities in such applications. Recent results from 7T units show very impressive high-resolution imaging of the brain with several cortical layers. Phase imaging demonstrates local microscopic susceptibility effects and offers a new contrast parameter, which so far is only poorly understood.

Functional magnetic resonance imaging of the brain (fMRI) started as a non-invasive research tool for neuroscience, but is now increasingly being used to assess localisation of important brain functions (like motor, sensory, language and visual function) prior to surgery in larger hospitals. Safety of brain operations has been shown to be clearly improved by this procedure, which has not yet become standard diagnostic routine in all hospitals.

Diffusion-weighted imaging was primarily used for early visualisation of stroke. Meanwhile, the development of diffusion tensor sequences and suitable post-processing tools provide elegant fiber tracking in the brain and characterisation of normal and diseased white matter. Further steps have been made towards clinically useful application of diffusion tensor techniques in the spinal cord. It was also demonstrated that modified sequence types provide diffusion characterisation of other anisotropic tissues such as muscle or kidney. Even whole-body screening for tumour metastasis was demonstrated to be successful using diffusion-sensitive approaches. However, it should be mentioned that the latter seems not to be applicable for all types of tumours.

In clinical routine, perfusion imaging is still dominated by methods based on contrast media effects: T1 and T2* shortening by compounds containing Gadolinium leads to high sensitivity to capillary blood flow and to its temporal dynamic. Last year, a rare but severe disease was reported, which might occur in patients with impaired renal function after administration of MR contrast media (Nephrogenic Systemic Fibrosis, NSF, or Nephrogenic Fibrosing Dermopathy, NSF), or Arterial spin labelling (ASL) techniques might close the gap in those patients by providing semi-quantitative assessment of capillary blood flow to clinically important organs, such as brain or kidney, without the need for contrast media administration.

New sequence types with ultra short echo times (< 0.1 ms, UTE sequences) open the door for MR imaging of tissue types such as bone and tendon. The potential for assessment of degenerative diseases, or for prediction of mechanical strength, has to be evaluated in the near future.

The whole body capabilities of modern MR units cannot only be used for standard T1- and T2 weighted imaging. Besides diffusion sensitive techniques, other contrast modalities such as T2* mapping or magnetisation transfer mapping are also applicable. For example, whole body T2* maps were shown to provide insight into the distribution of normal and overload iron stores in the body.

Interventional procedures steered by MRI benefit from fast parallel imaging capabilities on up-to-date open scanners as well as from the development of MR-compatible instruments. Integrated software tools might even provide online temperature monitoring of surrounding tissue during minimally invasive thermal ablation of tumours or protruded intervertebral discs, and therefore reduce the risk of undesired tissue damage. Further developments will provide even better integration of all components in routine workflow and make interventional MR procedures faster and safer, for the benefit of our patients.

MRI technology is still growing on many frontiers and we cannot really see the horizon. It is still a challenge to keep in touch with the tremendous potential that MRI offers, now and for the future.
ECR Today: The number of female radiology students has considerably increased over the past few years, reaching 60-70% of the current student population in Austria for instance (source: Austrian Radiol. Society, ORG). However, the proportion of female members of the ORG is not even 50% of the male membership (203 women to 572 men in 2006).

Do you know what the situation is like in Poland?

Prof. M. Szczerbo-Trojanowska: To some extent, the situation in Poland is similar to Austria. About 60% of radiologists in training are women, and the proportion of active radiologists is female. But in some specialties, like interventional radiology (IR), there is a clear domination by men. I would say 90% of radiologists working in IR are men. On the other hand, in breast and cardiology, the proportion of women is 70-80%.

In Poland, I can guarantee that there are no more than 10 women working in IR, and I am the only one running an IR department. These figures are nothing surprising. IR is a perfect example of this; things went a lot faster for him.

ECRT: Have you ever been confronted with that situation? Likewise, have you ever experienced sexism at work?

MST: I don’t think so, at least not in Poland. I personally have never experienced sexism at work. But it is true that I was also there at a good time: IR was just emerging as a sub-specialty; and I was there at the very beginning and was given a chance by my predecessor.

More generally, I have never seen or heard of any differences of treatment between a man and a woman when both were competing for the same position. That’s also what the large number of Polish women working in radiology tends to prove.

On the other hand, Poland is a very traditional country. Verbally, many often say that both men and women are given the same chances. But in practice, men are not so present at home, and not ready to share duties and to compromise.

ECRT: For numerous working women, balancing private and professional lives is a major issue, especially when children are involved. A pragmatic solution seems to be more flexibility in working hours. Do you think Poland, and more generally Europe, offers women the flexibility they need to efficiently manage work and home?

MST: Polish legislation is not very advanced in terms of flexibility. And unfortunately, it is not ready to change! You must understand that Poland was, for a very long time, a country dominated by other countries. These questions are only now emerging in society. The current legislation is 6 months of maternity leave for both mothers and fathers, but that’s it.

These obligatory shifts in medical positions create a lot of frustration among young mothers. It can really be tough sometimes.

This debate has just started, so maybe new legislation promoting flexibility will be drafted in the next three to five years. I really hope that there will be more flexibility.

ECRT: As far as you know, is there a leading country in this matter?

MST: Yes. In Sweden for instance, you can choose to work half-time; legislation is very flexible, and it is very good when you have children. Generally, Scandinavian countries have excellent possibilities and promote flexibility; they provide excellent conditions for working mums.

ECRT: How aware are your male peers of the double challenge that female radiologists face when they are mothers?

MST: The great majority of Polish men will say that they are indeed aware of this. But then, they will also say that it is natural that women should take care of children more than men. Men are unwilling and unlikely to change. It is not so very Polish. It is stronger in Poland, because the country is so traditional.

ECRT: Do you know male radiologists who slow down their career so as to spend more time with their family?

MST: No, I don’t know any. Things are changing, but not that far. For instance, I don’t see any examples of duty sharing around me.

ECRT: How well do you balance your life between work and home?

MST: I had my two children while I did my specialisation. I was very lucky because my husband and I managed to create a very loving family where everyone shares duties. Also, my mother wasn’t working when I started my career, and she was of great help. Coincidentally, our family house is very close to the hospital, which made things even easier.

ECRT: Do you have any role models in the profession? Do you think it is important for women to have female role models?

MST: I don’t have any role models in the profession, although I know that successful models may play a very important role. Whether female or male, these models can stimulate and be important in promoting a professional career. The only role model I may have is my father, who was a surgeon. I was very fond of him.

ECRT: Did you have any female professors at the university?

MST: When I studied, the majority of my teachers were men. Nowadays, at my university, many professors in both basic science and clinical medicine are women. In nursing and dentistry, most of them are women.

ECRT: Do you think women have a different approach to radiology, particularly involving treatments specific to female patients, such as uterine fibroid embolisation?

MST: No. In my department, men and women produce publications in equal numbers, whatever the topic. But I have noticed a difference in behaviour. I think there is more competition between men. I think a woman manager treats her assistants like children, at least I do. I am very proud when they achieve something. The difference in age may also play a role in this feeling.

But some male managers would not tolerate that someone in their team is getting better than them. This is what I have seen and I never saw this in any of the women with responsibilities I know.

ECRT: Why are more and more women only now choosing to study radiology? What was the proportion of female students of medicine when you attended university?

MST: The increased number of women in radiology results from the improved safety of diagnostic modalities using radiations. Before, women were more worried about the effect of radiation on a potential pregnancy – especially at the beginning, when the pregnancy is not yet known.

In IR, this is where you are the most exposed to radiation because you stand near the patient and the X-ray tubes. But in DI, professionals are less and less exposed, so women now choose to work in this field more than before.

Their larger representation is also a consequence of the fact that more women are now studying medicine. When Poland used to be a socialist country, quotas were ensured to a 50/50 representation of men and women at medical school were implemented. Three years ago, the Parliament changed the legal situation, and women are now more numerous than men because they are better at succeeding in entrance examinations. 75% of students currently admitted to medical school are women.

ECRT: Are there any official or unofficial networks of female radiologists/physicians in Europe? If not, do you think such an organisation would be necessary or useful?

MST: No, I don’t think it would really help. But there should be a group promoting flexibility in radiology. I guess it is up to women in parliamentary positions to do something about it. They are the ones who can change the rules.
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EIBIR – The European Institute for Biomedical Imaging Research

First success stories of EIBIR networking activities attributed to experience

After almost two years since the foundation of the European Institute for Biomedical Imaging Research (EIBIR), I am pleased to provide you with a review of its structures and activities, as well as an outlook on envisaged projects under our initiative.

The mission of EIBIR is to create a network of European biomedical imaging institutes, co-ordinate the development of biomedical imaging technologies within Europe and support the dissemination of knowledge with the ultimate goal of improving diagnosis, treatment and prevention of disease.

We are particularly delighted with the success of EIBIR coordinated grant proposals submitted to the EU Research Framework Programmes FP6 and FP7.

History
The idea of creating a body that would improve research activities in Europe emerged within the European Association of Radiology (EAR) in the early years of the millennium. Based on the recommendations of EAR, an Ad Hoc Committee was created with the mission to establish an environment and infrastructure that would allow the strengthening of biomedical imaging research in Europe. The specific aims included building an imaging research network throughout Europe, encouraging excellence in basic and clinical imaging research, and creating opportunities for research education.

EIBIR was officially established as a non-profit, limited liability company in January 2006. The establishment of EIBIR was supported by an FP6 grant under the Life Sciences, Genomics and Biotechnology for Health Programme FP6 and FP7.

Projects
EIBIR’s first project, European Institute for Biomedical Imaging Research (EIBIR), submitted within the 6th EU Framework Programme ‘Life, sciences, genomics and biotechnology for health’, has already achieved its first notable milestone: the network produced the EIBIR Research Policy Paper, detailing all activities that will be undertaken to promote the cooperation between its organisations, such as involvement in the definition of a European Research Plan including large infrastructures for biomedical imaging research, co-ordination of multi-centre trials and organisation of conferences and training courses, and definition, organisation and management of joint initiatives. This will be presented in more detail by Prof. Jürgen Hennig, EIBIR Scientific Director, in the 3rd issue of ECR Today.

Another 4-year project submitted to the 7th European Framework Programme ‘HEALTH-2007-1.2.4’ ‘In vivo image-guidance for cell therapy’ will begin in early 2008. ENCITE – European Network for Cell Imaging and Tracking Expertise. The project consists of 21 project partners with leading expertise in the field of cell imaging, with EIBIR as the coordinating partner.

In order to address the needs of the call and to address a significantly wide variety of cell therapies, horizontal (generic) and vertical (specific) subprojects within the ENCITE platform comprise the following objectives:

• New imaging methods to improve the spatio-temporal tracking of labelled cells
• Dual and multimodality imaging procedures to cross-validate each individual approach
• New contrast agents and procedures that will improve the sensitivity and specificity of cellular labelling
• Combining of molecular biology for the generation of molecular and cellular imaging reporters with multimodal imaging techniques

In all these projects EIBIR acts either as coordinator or in charge of project management and dissemination.

There will be an EIBIR lounge at ECR, where further information will be available. All ECR delegates and interested institutions are invited to visit the EIBIR lounge and receive information on EIBIR activities and how to join the network. EIBIR needs the support of the radiological community. Research and innovation will help to secure the future of our profession. Therefore, your personal contribution will be crucial for achieving this goal. We would welcome your donation to the EIBIR/ESR Research Fund. Thank you.

There is an alternative in DICOM viewing and post processing.

Discover OsiriX at ECR 2008
Saturday, March 8th at 16:30, Meeting Room Level U2/K11
Free event, Registration required.
www.osiriX-viewer.com
www.apple.com/de/business/osiriX/

By Prof. Gabriel P. Krestin, ESR Research Committee Chairman

Additional European organisations committed to the support of biomedical imaging research in Europe have officially joined EIBIR as co-shareholders: European Society for Magnetic Resonance in Medicine and Biology (ESMRMB), European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry (COCIR) and the European Association of Nuclear Medicine. Further potential shareholders have been approached with regard to becoming involved in EIBIR.

There is also an Industry Panel, which has allowed EIBIR to set up the office structure, website and strategy, in order to realise important networking activities. These supporting companies are: Bayer HealthCare/Bayer Schering Pharma, Bracco, GE Healthcare, Philips Healthcare and Siemens.

EIBIR has grown into a strong network, with 200 current member institutions throughout Europe and support the dissemination of knowledge with the ultimate goal of improving diagnosis, treatment and prevention of disease.

We are particularly delighted with the success of EIBIR coordinated grant proposals submitted to the EU Research Framework Programmes FP6 and FP7.

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Today’s focus of the Swedish Society of Radiology

By Dr. Karine Åhlström Riklund, Umeå/SE, President of SFMR

The Swedish Society of Medical Radiology, SFMR, is a specialist section of the Swedish Society of Medicine, as well as of the Swedish Medical Association. SFMR helps to promote the development of radiology in Sweden by arranging meetings, with scientific lectures, discussions and presentations of scientific results in all medical spheres using radiology. SFMR is active in educational matters in basic as well as specialist training. The society fur- thermore works to improve radiology in diagnosis and treatment in all medical fields. As a national society, SFMR serves as an organ for collaboration in scientific and educational matters. Finally, as a trade union, SFMR takes care of the occupational and economic interests of its members.

The most important activity for SFMR is the annual congress, Röntgenveckan, which is held each autumn. SFMR, with all its subspecialty societies, is the main organiser, together with the Swedish Society of Radiology. The national societies for radiation physics, oral diagnostic radiology, and medical secretaries are also invited to participate. Approximately 1500 delegates visit the congress and the technical exhibition. All professional categories working in radiology meet and listen to symposia, lectures, and information from both scientific and trade experts during this week. The next Röntgenveckan will be held in Uppsala, August 25–29, 2008 and you are all welcome to visit.

During the last two years, specialist educational matters have been addressed. The government decided on a new specialist structure, which was implemented in the middle of 2006. The specialties are now arranged with so-called base and branch specialties. Focus is set on the quality of specialist education, and specialist competence is achieved after five years of training with tutorials. To achieve a branch specialty you must also achieve the base specialty to which your planned branch is attached. The former specialties, medical radiology, paediatric radiology, nuclear medicine and clinical physiology, have merged together to form a base specialty containing both structural and functional imaging as well as interventional radiology. This means that the curriculum for clinical radiology is not entirely suitable for specialist education in Sweden. The curriculum for all specialties will be approved as a part of the constitution of the Swedish National Board of Health and Welfare in the second quarter of this year. A group consisting of members from the national societies for medical radiology and the branch specialties is working together to form the new specialty. It has not always been easy, but has been very instructive, and several new questions will be put on the agenda. The main difference is that the specialists-to-be will have more knowledge of physiology, biology and functional imaging than their predecessors. This will make them better suited to advanced imaging with CT, MR and ultrasound and will also prepare them for the rapidly increasing hybrid imaging. We have also identified an even more pronounced need for specialisation in organ-oriented fields. It will not be possible to cover all modalities, all organ systems or all ages with a deeper knowledge and therefore concentration in one or two fields is needed. The organisation of departments is occasionally raised for discussion. In order to use equipment in an efficient way, they should be put together, but on the other hand, the new possibility of rounds, and today several departments have settled multidisciplinary rounds over a long distance. This is a great way to take care of patients and to increase knowledge.

To sum up, education and science in collaboration are needed to develop radiology for the future.
European School of Radiology enhances radiological education around the world

ESOR is proud to have established ESOR, the European School of Radiology. This is an integrated and multi-dynamic programme that aspires to extend teaching resources throughout Europe and worldwide, assists in harmonising radiological education in Europe and enhance the scientific profile of radiology. Among its many endeavours, ESOR includes foundation and advanced GALEN courses, the AIMS Programme, the School of MRI, and the Visiting Scholarship and Fellowship Programmes. We invite you to take a look at this wide range of activities, which may well help young radiologists to achieve the knowledge and skills to fulfill tomorrow’s requirements.

Since the establishment of the GALEN Foundation Courses in November 2006, the courses on Abdominal/Genito-Urinary Radiology, Chest/Cardiovascular Radiology, Neuro/Musculoskeletal Radiology and Onco-logic Imaging, held in 2007, were received with great enthusiasm. In cooperation with GE Healthcare Medical Diagnostics South Central Europe, more than 300 young radiologists participated in last year’s programme, which is aimed at residents in years 1 to 3. The 2008 programme offers five courses, with Paediatric Radiology as a new topic. But that’s not all, ESOR extends its programme to GALEN Advanced Courses on Cross-Sectional Imaging, aimed at residents in their 4th or 5th year of training and board-certified radiologists. Topics include Abdominal, Cardiac, Musculoskeletal and Women’s Cross-Sectional Imaging. The courses, focused on recent advances in radiological imaging, are structured in lecture series and interactive workshops, assigned to internationally renowned European faculties. While the foundation courses are primarily assigned to the geographical area of South Central Europe, the advanced courses are directed all of Europe and are kindly supported by GE Healthcare.

GALEN FOUNDATION COURSES

Abdominal/Genito-Urinary Radiology May 16–18, Alexandroupolis/GR

Neuro/Musculoskeletal Radiology June 27–29, Lublin/PL

Paediatric Radiology September 5–7, Prague/CZ

Oncologic Imaging October 17–19, Bucharest/RO

Chest/Cardiovascular Radiology October 31 – November 2, Budapest/HU

GALEN ADVANCED COURSES

Cardiac Cross-Sectional Imaging June 20–21, Rome/IT

Women’s Cross-Sectional Imaging July 4–5, Berlin/DE

Abdominal Cross-Sectional Imaging October 10–11, Stockholm/SE

Musculoskeletal Cross-Sectional Imaging November 7–8, Amsterdam/NL

Building partnerships with other societies or subspecialty societies in the broader domain of imaging is a key feature of the ESOR philosophy. A fruitful cooperation has been built with ESMRM – the European Society for Magnetic Resonance in Medicine and Biology – and its School of MRI which complements and highlights its advanced course series. It is envisaged that the integration of this programme into the activities of ESOR will contribute enormously to increasing the educational opportunities for European radiologists. For the year 2008, 12 advanced courses on MRI have been scheduled as follows:

- Applied MR Techniques, Basic Course May 22–24, Basle/CH
- Advanced Neuro Imaging: Diffusion, Perfusion, Spectroscopy May 29–31, Bern/CH
- Advanced MR Imaging of the Musculoskeletal System July 3–5, Moscow/RU
- Advanced Breast & Pelvis MR Imaging September 4–6, Brussels/BE
- Clinical OHRI - theory and practice September 11–13, Heidelberg/DE
- Advanced MR Imaging of the Abdomen September 18–20, Verona/IT
- Advanced Cardiac MR Imaging September 25–27, Rome/IT
- Advanced MR Imaging of the Musculoskeletal System September 25–27, Vienna/AT
- Applied MR Techniques, Advanced Course October 16–18, Leuven/BE
- Advanced Head & Neck MR Imaging October 16–18, Prague/CZ
- Advanced MR Imaging in Paediatric Radiology November 6–8, Brussels/BE

For further details on the courses and registration please visit the School of MRI website www.school-of-mri.org or www.esmrmb.org.

ESOR has already set up educational projects outside of Europe. The AIMS Programme, which stands for Advanced Imaging Multimodality Seminars, is the extension of ESOR Educational projects to China. It was established to continue strengthening the ties between the Chinese Society of Radiology and the European Society of Radiology immediately after the ECR meets China session, which was held on the occasion of ECR 2007. It is organised in close cooperation with CSR and with the great support of Bracco. The programme comprises six courses each year, delivered in six different Chinese cities, with topics and speakers carefully selected by both CSR and ESOR/ESOR. Over 700 Chinese radiologists attended the seminars in only one year. Following this enormous success, the course series will be continued in 2008 as follows:

- Spring Seminars on Chest and Musculoskeletal Radiology April 10 in Beijing, April 12 in Changsha, April 14 in Dalian
- Summer Seminars on Abdominal and Urogenital Radiology July 20 in Shanghai, July 22 in Hangzhou, July 24 in Chengdu

Complementing the visiting schools programme, ESOR has developed scholarship and fellowship programmes. The Visiting Scholarships, aimed at residents in years 3 to 5, offer structured and comprehensive modular training on a chosen topic and/or focused reviews on advanced techniques and imaging protocols of specified modalities. Scholars are given the opportunity to follow and participate in the core knowledge training programme of reference centres, through tutorials and lectures followed by hands-on training of routine clinical cases and/or modality techniques and protocols, led by an assigned tutor. 12 scholars have already been selected by ESOR for their invaluable efforts and for their enthusiastic cooperation with us in the second half of the year. Each scholar receives an ESR grant to cover travel, accommodation and subsistence costs. The training itself is offered for free by the participating reference training centre.

The first Fellowship Programme on cardiac imaging was established in 2007 in cooperation with ESCR, the European Society of Cardiac Radiology. It is aimed at residents in their 4th or 5th year of training and board-certified radiologists. The primary goal of this programme is to provide exposure to established practices and recent achievements in cardiac imaging. Six European radiologists have already benefited from such a fellowship and were provided with intense modular training in cardiac imaging. Ten cardiac imaging fellowship programmes will be offered in 2008, supported by a joint ESR/ESCR grant. Selected fellows will again have the opportunity to enter a 2-month, intense training programme.

In addition to all of the above-mentioned activities, ESOR’s educational projects include the well-known Gnan tutorials, held twice a year in cooperation with the University Clinic of Radiology of the Medical University of Graz and a virtual school.

This is Education in Partnership and we would like to take this opportunity to thank all our partners from both sides: the scientific world of radiology and industry, supporting education in radiology. We are grateful to a number of colleagues, acting as local organisers for the visiting schools, as well as all the renowned lecturers and teachers of the courses for their invaluable efforts and for making ESOR such a unique opportunity for the exchange and dissemination of scientific knowledge. ESOR is looking forward to furthering this fruitful cooperation with you in the years to come!

Visit the ESOR lounge in the entrance hall of the Austria Center and pick up brochures to learn more about the past and future activities of ESOR.

Information about all activities and course programmes is also available at www.myESR.org/esor

We would like to thank Agfa, Bracco, GE Healthcare, and Siemens for their commitment and continuing support.
The ESGAR CT Colonography Working Group at IMAGINE 2008: What’s new?

By the ESGAR CTC Working Group

The ESGAR (European Society of Abdominal and Gastrointestinal Radiology) CT Colonography Working Group aims to promote continuing medical education and research and development for practitioners using CTC.

The Working Group was precipitated by the ESGAR CTC workshops, an educational initiative that started in Amsterdam in 2003. ESGAR now organises two workshops per year to attendants interested in this emerging imaging technology. At IMAGINE they are showing a 2D-3D and web-based database of CTC cases illustrating all of these developments are used as the basis for training during the workshops.

In addition to educational initiatives, the Working Group initiates and participates in peer-reviewed journals, including European Radiology. A particular research focus at the moment is advanced image processing of CTC data. In particular, computer-assisted-detection (CAD) is attracting considerable attention, especially since systems are now commercially available. CAD research is focused in several different areas. For example, the clinical utility of this new tool for helping inexperienced readers, and its utility in different clinical settings (e.g. screening), is currently being investigated. The precise fashion by which radiologists integrate CAD into their daily workflow is also being investigated. The application of CAD also has to deal with the clinical introduction of novel and ever-more-sophisticated fecal/fluid tagging regimens. A great deal of effort is made by the Working Group in this area of research, especially in the development and clinical validation of electronic cleansing tools (Fig. 1). At IMAGINE, multiple CAD cases illustrating all of these developments are presented by experts in CTC and are available to be reviewed on dedicated workstations (Fig. 2 and 3).

Dr. Emanuele Neri (Pisa/IT), coordinator of the exhibit, says “the ESGAR Working Group in the IMAGINE exhibition provides a pan-European update on the latest advances in CT colonography, especially in the fields of image processing and clinical validation. ECR attendees interested in this emerging imaging tool should certainly visit our booth”.

www.esgar.org

References
By Wieslaw L. Nowinski,
Biomedical Imaging Lab, Agency
for Science Technology and Research (A*STAR), Singapore

Background
At ECR 2007 we proposed a concept: ECR – Efficient Cerebral Routines, addressing the efforts from bench to bedside in neuroradiology in a publicly funded research lab (ECR Today, March 10, 2007). At IMG:инф this year we are presenting a family of our stroke CAD computer exhibits illustrating this concept.

Stroke is the second highest cause of death in the world and a major cause of permanent disability. It has a huge effect on public health and generates high costs for primary treatment, rehabilitation, and chronic care. Despite a critical need, there is no computer-aided diagnosis/detection/decision (CAD) system for stroke, though there are a number of CADs in other fields including mammography, colonoscopy, chest, and brain cancer.

Our Biomedical Imaging Lab, SRBC/ASTAR, Singapore, focuses on research, design, development, and deployment of a suite of CAD systems for ischaemic and haemorrhagic strokes. Processing and analysis of stroke images is enhanced by employing the Cerefy atlases of anatomy, blood supply territories (BSTs), and cerebral vasculature. Three systems demonstrated at IMAGINE are:

1. CAD for acute ischaemic stroke supporting thrombolysis
2. CAD for haemorrhagic stroke supporting thrombolytic evacuation of haematoma
3. Stroke CAD in the emergency room (ER)

Our patent-pending stroke CAD systems, presented earlier as scientific computer exhibits at the ISNRA 2005, 2006 and 2007 meetings, received awards each year.

We believe that our stroke CAD systems potentially facilitate and speed up image analysis, increase confidence of interpreters, and support decision making. They are potentially useful in diagnosis and research, particularly for clinical trials. To quantify these benefits, we collaborate with clinical sites and industry. The CAD for acute ischaemic stroke has been trial licensed to several hospitals in North America, Europe, Asia, and Australia as well as to diagnostic imaging companies including Philips Healthcare and Siemens Medical Solutions (in process). The CAD for haemorrhagic stroke is the only to be approved in a clinical trial, phase III. Here, we report our present development and future directions.

CAD for acute ischaemic stroke
The CAD for acute ischaemic stroke supports thrombolysis. It rapidly checks three thrombolysis conditions on multiple studies including diffusion and perfusion. Our approach shifts the current paradigm from a 2D visual inspection of individual scans and maps to an atlas-assisted quantification and simultaneous visualisation of multiple 2D and 3D images. This CAD supports the following workflow: open case, usually with multiple studies; view individual studies to exclude haemorrhage and/or identify any previous infarcts; process diffusion to segment and quantify the infarct; process perfusion to segment and quantify the penumbra; process MRA or CTA to identify or exclude vessel occlusion; quantify the diffusion-perfusion mismatch; perform atlas-assisted analysis, including calculation of the infarct-MCA ratio; and generate report.

The CAD for haemorrhagic stroke is segmented by a combined automatic-interactive approach, and the diffusion-perfusion mismatch is quantified. The atlases of anatomy and BSTs are mapped rapidly on the images and provide not only interactive labelling but also quantify the infarct and penumbra. The CAD automatically analyses the entire regions occupied by the infarct and penumbra and calculates: names of all anatomical structures and blood supply territories within the infarct and penumbra, volume of occupancy for each structure and territory, and percentage of occupancy for each structure and territory. In addition, the system calculates the infarct-MCA and penumbra-MCA territory ratios.

CAD for haemorrhagic stroke
The CAD for haemorrhagic stroke supports processing of intravenous (IVH) and intracranial (ICH) haemorrhages in CT scans. The clot is automatically segmented, edited if needed, and its volume measured. It can be displayed and manipulated in 3D. The CAD for IVH supports evacuation of haematoma by thrombolytic treatment. The procedure requires a catheter to be inserted into the venous system, t-PA administered through it, and a time series of CT scans acquired to monitor the outcome of clot lysis. The CAD monitors progression and quantifies blood clot removal. Each scan is automatically processed and a curve with clot volume progression generated.

In collaboration with John Hopk Hospital, this CAD is planned to be applied in a multi-centre clinical trial, Phase III, to process 5,000 scans.

Stroke CAD in the ER
The stroke CAD in the ER supports rapid and automatic decision making and localisation analysis. It also handles a situation when a single unenhanced CT scan is acquired in the ER and is likely to be read by a non-stroke clinician (ER physician, non-neuroradiologist, or resident). It analyses the statistical differences between the left and right hemispheres in multiple regions of interest (ROIs) delineated automatically by multiple atlases. This CAD is also able to process CTA and CTP scans, if available.

Automatic stroke detection is performed in the following steps: rapid atlas-to-CT scan mapping, including calculation of the mid-sagittal plane, statistically-based calculation of the anterior and posterior commissures, brain shape approximation, image-based calculation of cortical landmarks, and atlas-to-scan warping; statistical analysis including segmentation and elimination of the ventricular system, generation of atlas-defined ROIs, and calculation of statistical properties in the ROIs by applying 5 statistical tests; and producing report with the outcome (i.e., infarct, haemorrhage, infarct with haemorrhage, not detected) and location details (CT slices, anatomical structures, BSTs). In addition, if available, interactive processing of CTA and CTP scans is performed as follows: 1) for CTA: cross-correlated template, volume rendering, ROI-based symmetry analysis, and 2) for CTP: infarct and penumbra segmentation, quantification, and 3D display, ROI-based symmetry analysis, thresholding with histogramming.

Future directions
Future work advances in three directions: 1) continuous enhancement and extension of the CADs along with the Cerefy brain atlas, 2) validation of the CADs, and 3) new developments. The enhancement of the CADs proceeds in terms of algorithms and functionality. The algorithms are improved to increase their accuracy and robustness while keeping them fast. The Cerefy brain multiple brain atlases with statistical analysis, 2) development of a population-based stroke atlas for diagnosis and prognostic, and 3) integration of all atlases with clinical and laboratory investigations (including biochemical data), resulting in a more powerful stroke CAD system. The last two projects will exploit a cohort of 1,200 stroke patients with one year follow-up, and the data are already being acquired by several hospitals in Singapore, Poland (funded by a joint Singapore-Poland grant).

Pioneering this work in stroke CAD has been an exciting endeavour from a research standpoint, but we realise that this is a long-term, multi-disciplinary effort, requiring close cooperation with clinicians, particularly neuroradiologists, neurologists and neurosurgeons, as well as involving industry. We remain open for collaboration with any new sites worldwide.
News from the Royal College of Radiologists

By Dr. Giles Maskell, Truro/UK, and Dr. Michael Williams, Cambridge/UK

The Royal College of Radiologists (RCR) has approximately 7,200 members and fellows worldwide representing the disciplines of clinical oncology and clinical radiology. The role of the College is to advance the science and practice of radiology and oncology, further public education and promote study and research through setting professional standards of practice.

The College is responsible for setting the curriculum for its two specialties to ensure that high educational standards are met in the interests of safe and responsible practice, assessment of schemes for training in the specialties of clinical radiology and clinical oncology and defining and monitoring programmes of education and training for clinical radiologists and clinical oncologists at all stages of their careers.

Postgraduate medical education in the UK is undergoing major upheaval at present. The failed introduction in 2007 of a system called Modernising Medical Careers designed to streamline specialist training at the expense of flexibility has led to much greater public interest in medical education. The government’s response was to set up an enquiry under Sir John Tooke which reported in January 2008. The College submitted evidence to his enquiry relating to training in its two specialties and has issued a broadly favourable response to his findings and recommendations. At the time of writing, it is not known whether his recommendations for the future of specialist training, which have largely been welcomed by the medical profession, will be accepted by the government.

The Tooke report lays down a number of challenges to the medical profession which the Royal Colleges will be taking up. One of these is to contribute to a wider public debate on the nature of the position occupied by doctors in healthcare. Professor Tooke suggests that in an era in which healthcare is increasingly delivered by teams rather than individuals, the public, and perhaps the profession, have lost sight of what it is that only a doctor can contribute. Much of the work of the College is devolved to its two faculties – clinical radiology and clinical oncology – and many of the issues facing the College are clearly faculty-specific.

Two major areas of work on the oncology side concern investment in radiotherapy and radiotherapy safety. Several recent reports have shown that there has been substantial underinvestment in radiotherapy services in the UK.

The ESTRO-QUARTS report in 2005 showed that the UK had only 50% of the equipment recommended by the National Patient Safety Agency (NPSA). A report has been drafted which identifies the prerequisites for a safe radiotherapy service in terms of staffing, equipment and organisation.

Patient safety is also high on the agenda of the Clinical Radiology Faculty. A specific issue relates to the provision of emergency radiology cover. As diagnostic radiology becomes ever more central to the care of patients with acute medical and surgical conditions, and as interventional radiology replaces emergency surgery for indications such as the arrest of major haemorrhage, the College is looking to support radiology departments in finding solutions to the growing problem of emergency cover. Now that PACS has been implemented throughout the UK National Health Service, the possibility of image transfer offers the potential for new solutions and these are being explored in collaboration with the Department of Health.
Respect the autonomy of the patient

By Mélisande Rouger

“General medicine is the most challenging discipline and the core of every cost-effective healthcare system for the population in a given country, to be effective as a GP requires the combination of knowledge and science with the art of implementing it in daily practice,” says Prof. Manfred Maier, a GP delegate in the ECR pioneer series ‘ESR meets GPs.’

Prof. Maier has been Chairman of both the General Practice Department and the Centre for Public Health at the Medical University of Vienna since 2004. Tomorrow, at ECR 2008, he will present the lecture ‘Patients with peripheral arterial obstructive disease (PAOD) in primary care’ from a general practitioner’s perspective. His presentation will stress the importance of the GP’s role in the diagnosis and treatment of this disease, which affects 4.5 to 7% of the western population aged 55–74.

“For their long-term care, the full spectrum of a GP’s competencies is required,” says Maier. Skills range from recognition of early symptoms to counselling for changes in lifestyle, as well as identification of acute, potentially dangerous conditions and selection of appropriate additional investigations. Informing people about non-invasive and invasive forms of treatment, planning and provision of long-term care and follow-up management, selection of appropriate rehabilitative measures, and motivation of the patient to comply with recommendations are also crucial.

“It is important to respect the autonomy of the patient and his/her priorities,” insists Maier. During follow-up and rehabilitation, the compliance of the patient and his/her functioning in daily life have to be addressed. Furthermore, medical practice in a city or in a rural area presents both the managing physician and the patient with different challenges to be considered. “Relevant co-morbidities also have to be taken into account before non-invasive therapeutic options or invasive procedures are discussed with the patient,” points out Maier, who is notably doing research on the registration of morbidity in Austria.

Finally, cost efficiency considerations are decisive in the GP’s handling of patients. “GPs have to consider and actually balance benefits and risks for patients with economics in their daily work,” he explains. He hopes that his lecture will enable participants to appreciate the competencies required from the primary care physician in caring for PAOD patients, recognise the special relationship between the patient and the GP, and realise that the latter has to balance medical needs and their cost efficiency in his/her decision making.

GP referrals to radiology are crucial in artery-related diseases, but they are also vital in neurological diseases or functional disorders, says Maier. Thus cooperation between specialists is central to their diagnosis and treatment. “Logically, ESR meets GPs is a welcome initiative, as it addresses the fundamental requirements of cooperation in healthcare and of mutual understanding, respect and appreciation among health professionals,” he states.

Collaboration is best achieved by forming group practices or adequate health centres, he says. “Besides radiologists, it would be helpful to closely cooperate with orthopaedic surgeons, gynaecologists and internists in cardiology at the primary care level,” he adds.

Prof. Maier is a member of several teaching and research organisations of the European Society for General Practice/Family Medicine (WONCA Europe), such as the EGPRN and EURACT. Notably, he was chairman of the scientific committee of the European conference WONCA 2000 in Vienna, after which he created a working group on ethical issues together with Dr. Lotte Newman (UK).

He joined the Medical faculty in Vienna in 1979 and spent a postdoctoral fellowship at Harvard Medical School in Boston. Throughout his career, he has developed a network of more than 80 GP practices, which participate in teaching and research in the field of general medicine, and has put special emphasis on staff development.

ECR TODAY 2008 Daily news from Europe’s leading imaging congress FRIDAY, MARCH 7, 2008

ESR meets General Practitioners Part 1

Under the aegis of its current president, Maxmillian F. Reiser, ECR welcomes for the first time a partner discipline, in a move to strengthen dialogue and collaboration between specialties. Tomorrow, the popular ‘ESR meets...’ programme, which traditionally invites 3 countries to present their latest scientific achievements, will make room for general practice during lectures focusing on heart-related diseases.

To help you get to know your counterparts in general practice, ECR Today has met four general practitioners (GPs), three of whom will take part in this session. To open this series is Prof. Manfred Maier from Vienna, Austria.

ESR meets General Practitioners Saturday, March 8, 16:00–17:30, Room C

Panel discussion

Prof. Manfred Maier from Vienna/AT.
Adapt, be willing to change and stay ahead of the technical curve, advises radiology informatics pioneer

RSNA Immediate Past President Prof. R. Gilbert Jost will be awarded Honorary Membership of the European Society of Radiology today at ECR.

By Mélièsande Rouger

"Early on in medical school, I became interested in computers and concluded that they would have an important role to play in the future of radiology. I think I was right," says Prof. R. Gilbert Jost, looking back on his career. A leader in computer applications in radiology and informatics, Gilbert Jost started his residency in 1972, "the year that computed tomography was introduced," after studying at Harvard and Yale Universities. In 1975, he was appointed Chief Resident of the Department of Radiology (MIR), Washington University School of Medicine in St. Louis, Missouri, where he would spend his entire career. He is currently the Elizabeth Mallinckrodt Professor of Radiology, chair of the department of radiology at Washington University, director of MIR, and radiologist-in-chief at Barnes-Jewish Hospital, one of the US's elite medical centres.

His career progressed hand in hand with the development of radiology information systems, particularly the conversion of radiological images into digital form. Jost has influenced some of the specialty's most important information technology projects, including the adoption of the Digital Imaging and Communications in Medicine (DICOM) standard. He was also instrumental in launching the movement to establish standardised computer-integrated medical information systems, which is known as Integrating the Healthcare Enterprise (IHE). He has been an Affiliate Professor of Computer Science at Washington University since 1985.

"To those concerned about technology gaining too much ground in radiology to the detriment of human expertise, he answers: "Certainly, computer-aided diagnosis will improve to the point where computers are better at doing certain things than human beings, and there is no question that the widespread distribution of medical images raises concerns that image interpretation could become a commodity. The challenge for radiologists is to adapt, to be willing to change, and to stay ahead of the technological curve."

Jost, former chair of the Radiology of North America (RSNA) Radiology Informatics Committee (formerly the Electronic Communications Committee), is confident in radiologists' capacity to deal with this new reality. "Radiologists have tended to be more technologically savvy than their colleagues in other specialties. We need to maintain that edge and take advantage of the opportunities that are made available to us by technological changes instead of being marginalised by those developments."

In the future, radiologists will have to combine patient information from various sources, be it genetic, cellular or from an electronic medical record, which should allow for a personalised approach to medical diagnosis and treatment, he forecasts. To meet future requirements, today's radiologists need to educate a new breed of imaging scientists who are not only familiar with the biological sciences, but are also knowledgeable about engineering and the physical sciences such as chemistry, physics and mathematics. "It is an exciting time, but it is a time of rapid change, and we cannot afford to be complacent and simply seek to maintain the status quo," he urges. "In the future, imaging will play an even more important role in medical diagnosis and in scientific discovery than it has in the past. But if radiology is to play a leading role in the future of medical imaging, we need to be willing to broaden our curriculum and rethink the way we train the radiologists of the future," he concludes.

Learning radiology is a lifelong proposition

Prof. Frederick S. Keller from Portland, OR/US, will receive Honorary Membership of the European Society of Radiology today at ECR.

By Mélièsande Rouger

Prof. Frederick S. Keller, Direc
tor of the Dotter Interventional Institute of the Oregon Health and Science University (OHSU) since 1993, could well not have become the illustrious radiologist and professor he is today. After obtaining a medical degree from the University of Pennsylvania Medical School in Philadelphia in 1968, he started to work as an emergency department physician. But as he interacted with colleagues of multiple specialties, his attention was drawn more and more by radiology. "It seemed to me that radiologists were more content with their career choice than physicians of other specialties," he remembers. He completed his residency at the University of Oregon Medical School in Portland in 1977, in parallel to being a chief resident and a Fellow of the American Cancer Society (1976–1977).

Even once he had stuck to radiology, he never stopped reinventing himself. He started to work as a diagnostic radiologist but eventually chose interventional radiology. "Because of the dynamic and pioneering faculty such as Josef Rösch and Charles Dotter who were at my institution at that time," he explains. In 1994, he received a Certificate of Added Qualification in Vascular and Interventional Radiology, which was recertified in 2003.

Throughout his career, Keller has been active both the clinical and academic aspects of interventional radiology at OHSU. He is the Cook Professor of Interventional Therapy. He is medical director of the department of interventional radiology, professor of surgery and chair of the department of diagnostic radiology at OHSU.

A priority in his professional life has been to train work colleagues in his field. He has thus been responsible for training 50 fellows in intervention
tional radiology and for introduc
ing interventional radiology to over 150 diagnostic radiology resi
dents. Keller's academic contribu
tions have been duly recognised by his students: residents of both the radiology and internal medicine departments named him outstanding teacher and best radiology dis
cussant.

Born in 1942, he is confident that the young radiologists will success
tively refine their elders. "They are extremely bright, well educated and have a great future in our specialty," he says. If quality applies to the new generation, so does quantity. In the United States, diagnostic radiology is a very popular specialty and any-
where from 7–10% of graduating medical students choose to train in radiology, according to Keller. In his institution alone, there are approximately 100 applicants for each single residency position.

His message to the new generation is to remember that their ultimate responsibility is to do what is best for the patient and to work hard and remember that learning in radiology is a lifelong proposition."

Further evidence of his commit
tment to sharing his knowledge is that Keller has delivered or partici
pated in more than 1,000 lectures, panels and exhibits all over the world. What struck him throughout these experiences were, differences in training syllabus aside, different attitudes at work. "In Europe and Asia, there is a more formal atmosph
e between residents and fel-
lows, and the attending faculty. In the United States the relationship is more casual," he notes. Clinically though, he thinks that very good medicine is practised on all of these continents.

In recognition of his achievements in research and training, Keller has received significant distinctions over the years, notably Honorary Profes
sorship at the Third Beijing Univer
sity School of Medicine, the title of Professor Titular of the University of Buenos Aires Faculty of Medicine and Honorary Membership of the Japanese Society of Radiology. He was also awarded the gold medal of the Society of Interventional Radiology in 2005, fellowship of the Cardiovascular and Interventional Radiology Society of Europe and honorary fellowship of the British Society of Interventional Radiology. Last but definitely not least, an endowed chair, the Frederick S. Kel
ler Chair of Interventional Radiology, was established in his honour at the Oregon Health and Science University in 2005.

Opening Ceremony
Friday, March 7, 12:15
Room A
Presentation of ESR Honorary Membership to R. Gilbert Jost, St. Louis, MO/US
Presentation of ESR Honorary Membership to Frederick S. Keller, Portland, OR/US
Presentation of ESR Honorary Membership to Libeth M. Kenny, Brisbane, QLD/AU
By Mélisande Rouger

A radiation oncologist, Dr. Liz Kenny has been committed to fighting cancer and placing diagnostic imaging back at the centre of health-care throughout her career. Born in Glasgow, Scotland, in 1957, she emigrated to Brisbane, Australia, at the age of 12. After nine years spent in private practice, she decided to return to the Royal Brisbane and Women’s Hospital, where she undertook her residency and specialty training. First a senior staff specialist in radiation oncology, she became Director of Cancer Services for the Central Area Health Service (then in Queensland) and as such, has been jointly responsible for developing a state-wide implementation plan for cancer services, and has also established the fellowship programme in radiation oncology in Queensland.

"Caring for people with cancer, often at their time of greatest need, is both humbling and a great privilege," she says of their work. "This outweighs all the difficulties: the long days, the days away from home. And it's rewarding to see the benefit of your work. It inspires me on a daily basis and greatly influences my approach to life. To be able to combine direct patient care with the extraordinary technology that we now have available in radiation treatment keeps me constantly engaged and enthused."

A strong advocate for multidisciplinary care, in 2002 Kenny was elected President of the Clinical Oncological Society of Australia, an umbrella organisation with over 20 specialist and tumour-specific groups involved in clinical cancer care. She thus contributed to the development of the national service improvement framework for cancer. She was also Chairman of the National Assessment of Clinical Cancer Research Grants Applications from 2001–2004 and currently serves on a number of committees for Cancer Australia.

"Radiation oncology is a highly interdependent specialty and my professional life is greatly enhanced by the close working relationships that are developed with my colleagues, who are also deeply committed to providing high level multidisciplinary care," she says of her specialty. From 2005 to 2007, she was President of the Royal Australian and New Zealand College of Radiologists (RANZCR), with whom she has been involved ever since attaining fellowship. She became Dean of the Faculty of Radiation Oncology, serving two terms from 1998 to 2002. During that time, she instigated and chaired the development of the National Strategic Plan for Radiation Oncology in Australia. In addition, she chairs the development of the Quality Program in Radiation Treatment Service Delivery.

As President of the RANZCR, Kenny has been committed to rehumanising the role of radiologists as central in patient care and management. "In Australia, all referral for Diagnostic Imaging (DI) procedures is at arm’s length, with radiologists having minimal input into the requesting of appropriate imaging," she explains. As a consequence, there is a steadily increasing use of DI, some of which may not be clinically useful against a background of a relatively static workforce, notes Kenny. "The demand on radiologists’ time pushes them further and further away from clinical interaction, all of which is highly undesirable," she explains ruefully.

Unlike Europe, Australia does not have any specific directive for the referral for DI, and radiology clinicians entirely control it. The RANZCR is aiming to change this situation by placing radiologists at the centre of the entire referral process, in order to maximise radiologists’ expertise and help create imaging relevant to patient care. "Radiology needs to be part of a clinical service and radiologists must be central to the provision of clinical care. Without this close and constant interaction, radiologists will distance themselves further from other clinicians and run the risk of becoming increasingly irrelevant to mainstream clinical practice,” she warns.

Under Kenny’s leadership, the RANZCR has developed a tool, the Quality Use of Diagnostic Imaging (QUDI) programme, which consists of conducting projects that are pertinent to improving the use of DI across the entire provision of service. Funded by the Australian Government, these projects are developed within four broad areas across the spectrum of DI service, including quality referrals, issues of importance to consumers, quality DI services and economic sustainability. "These projects are invaluable in providing an evidence base to influence our policy decisions, both within the RANZCR and in negotiation with the Government, and are of direct relevance to the practice of DI,” she says Kenny.

Overseas, she has given numerous lectures and served on the International Relations Committee of the European Society of Radiology and the International Advisory Board of the Radiological Society of North America. She has also been invited to become a member of the QUESTRO project for ESTRO - the European Society for Therapeutic Radiation Oncology. She has been a guest visitor to ASTRO (Ameri- can Society of Therapeutic Radi- ation Oncology) and a member of the International Affairs Committee of the American Society of Clinical Oncology.

Her wide experience abroad has made her aware of crucial differences between Western and Australian radiology, allowing her to get a better view of how to improve the situation in her country. "University and academic life seems to be more accepted and better resourced in Europe and the US than within Australia and New Zea- land. Our universities are relatively poorly funded and there is minimal emphasis on academic radiology and radiation oncology," she says. This is reflected by both the relative lack of committed teaching of radiology and radiation oncology in many medical schools, she observes.

"Our main emphasis in both public and private sector radiology has been on the provision of service rather than incorporating teaching and research as ordinary parts of radiology practice," she explains.

Reinstating academic practice and developing a systematic teaching and research infrastructure in radiology are thus priorities for the RANZCR and its active president.

News from the Spanish Society of Radiology

By Salvador Pedraza, Publishing Director of SERAM, and José María García Santos, Editor-in-Chief of Radiología

During the last year, Radiología, as the official journal of the Spanish Society of Radiology (SERAM), has implemented substantial changes both in its operation and structure. The main challenge has been the improvement of the editorial work. After a year, peer review in Radiología has changed its table of contents. A variety of features, including editorials, opinion and special articles, have been added, to the other traditional articles in the journal, like original research papers, updates in radiology and case reports. Moreover, during 2008, we will continue putting forward new initiatives and try to increase the usefulness and appeal of the journal for our readers. The first of these actions, which begins with the third issue of 2008, is the offering of continuing medical education (CME) credits for readers. These credits will be awarded after the correct completion of an ad-hoc test based on our ‘update in radiology’ articles. During 2008 we also expect to develop the system for awarding our reviewers with CME credits for reviewing. If we succeed, we will begin to award them in 2009.

An important aim of SERAM is to promote active collaboration between the journal and other international journals. In this sense, Radiología has recently signed an agreement with AJR. This excellent news will bring an important improvement in quality to both of these publications, with an increase in the experience of the editorial board members. Another strategic purpose is to promote and disseminate Radiología among the Beros-
Current radiological issues in Croatia

By Dr. Ratimira Klaric-Custovic,
President of the Croatian Society of Radiology,
and Dr. Boris Brkljačić,
Vice President of the Croatian Society of Radiology

The Croatian Society of Radiology (CSR) is the only national professional society of Croatian radiologists, and is one of the most active professional societies within the Croatian Medical Association. CSR has 380 members, including residents, and is responsible for all aspects of professional issues faced by radiologists in Croatia.

Over the last few years, the quantity and quality of radiological equipment in Croatia has increased considerably, with new equipment installed in hospitals and other medical institutions in all Croatian regions. In 2007, new 1.5T MRI units were installed in seven large university hospitals, and one 3T MRI scanner was installed at the Medical Faculty of the University of Zagreb. The private-public partnership initiative was legalised, and the first PET/CT system was installed in November 2007. The recent ESR survey has demonstrated that, regarding the number of CT and MRI units per number of inhabitants, as well as the number of radiologists per number of inhabitants, Croatia has better indicators than most other transitional countries, and even compared to some established EU countries.

Nevertheless, Croatian radiology faces numerous challenges, like elsewhere in Europe. The Croatian Society of Radiology has initiated the reform of the residency curriculum, and the prolongation of residency from the current four years to the five-year system, fully in accordance with the UEMS guidelines. Our programme was evaluated as the best among all specialties by the Ministry of Health, but the introduction of the new system was postponed until all specialties harmonise their programmes with the UEMS criteria. We expect that the new system will finally be introduced by mid-2008.

Currently we have only three official subspecialties: interventional radiology, neuro-radiology and ultrasound. CSR has been trying for several years to introduce other subspecialties (musculoskeletal, thoracic, abdominal, urogenital, breast, cardiac), but the new system has been postponed by authorities until the other specialties introduce reformed subspecialties as well.

Training radiologists in new imaging modalities is problematic because we lack teachers, and especially those with experience. This is a particularly prominent problem in cardiac imaging, where radiological training is insufficient and where currently no structured programme exists for subspecialty training. We face the same problem with training for PET/CT applications. In cooperation with Croatian Medical Faculties, and particularly with the Medical Faculty of the University of Zagreb, CSR introduced structured, compulsory, professional education for residents, who get 400 hours of structured education in all fields of radiology, and have to pass oral examinations in several areas to become eligible to sit for the board exam. The board exam is still practical and oral, held by the commission of three examiners, but CSR is also working hard to introduce the written exam. CSR strongly supports the educational activities of ESR.

Two young residents underwent ESR training in cardiac imaging and breast imaging in 2007, and many residents attended Galen courses. One Galen course was notably held in Dubrovnik in October 2007.

CSR was very active in introducing the national breast cancer mammographic screening programme that commenced in October 2006 and has already seen promising results.

Turf battles also create major problems. Cardiologists and vascular surgeons increasingly want to participate in and take over endovascular procedures, like EVAR, peripheral arterial interventions, etc. The section of Interventional Radiology is fighting these tendencies vigorously, but the position of radiology is quite weak, since we are a smaller society than cardiology and do not have beds for patients. Turf battles will present major challenges to radiology in general, and the situation in Croatia is more or less similar to those in other countries. PET/CT is currently performed by both radiologists and nuclear medicine specialists, but we presume that turf battles with nuclear medicine will not be the major issue, unlike with cardiologists and vascular surgeons.

Another important emerging problem is that some insurance companies have formed their own imaging centres, with very good equipment, and even plan to create small private hospitals. They attract radiologists and even plan to create small private hospitals. They attract radiologists and surgeons increasingly want to participate in and take over endovascular procedures, like EVAR, peripheral arterial interventions, etc. The section of Interventional Radiology is fighting these tendencies vigorously, but the position of radiology is quite weak, since we are a smaller society than cardiology and do not have beds for patients. Turf battles will present major challenges to radiology in general, and the situation in Croatia is more or less similar to those in other countries. PET/CT is currently performed by both radiologists and nuclear medicine specialists, but we presume that turf battles with nuclear medicine will not be the major issue, unlike with cardiologists and vascular surgeons.

Another area of concern is the tendency of some radiographers to introduce some aspects of UK practice to our system, which traditionally function differently. CSR does not see any need for radiographers to perform any imaging on their own, including ultrasound.

CSR strongly encourages its members to be active in research. The Ministry of Science currently supports three projects on US, CT and MRI in vascular diseases and abdominal diseases, run by Prof. Masioti, Prof. Miletić and Prof. Brkljačić from Zagreb and Rijeka.
Interventional options increase for treating liver tumours

By Karen Sandrick

Interventional radiology techniques are redefining the treatment of liver cancer. Radiofrequency ablation is now considered to be the standard care for patients with early-stage disease when liver transplantation or surgical resection is contraindicated. RF ablation is often the treatment of choice, therefore, for patients who have a single hepatic tumour of 5 cm or less or up to three tumours of 3 cm or less. The procedure also is being performed for patients with limited hepatic metastatic disease who cannot undergo surgery.

New interventional strategies, such as radioembolisation and combination RF ablation and intra-arterial chemoembolisation, are expanding the criteria for choosing patients for interventional procedures even further. This afternoon’s state-of-the-art symposium, “The radiologist as the therapist in liver tumours,” will cover the spectrum of interventional techniques for the clinical management of patients with liver cancer, according to symposium chair Prof. Riccardo Lencioni, University of Pisa, Italy.

“The symposium will provide the attendees with detailed information on the techniques and combinations that are possible for adopting treatment protocols to the features of the disease and the patient. The lectures will discuss how to perform the techniques, but the stronger clinical aim is to provide recommendations and suggestions for the clinical management of patients with any of the interventional options,” he said.

Combination therapy with RF ablation, plus intra-arterial administration of microspheres that have been uploaded with doxorubicin, is enabling interventional radiologists to treat patients who have tumours as large as 7 cm or malignancies that are difficult to approach with RF ablation alone.

“RF ablation is more difficult if tumours are located close to the gallbladder or the bile ducts or in a superficial location adjacent to other organs, such as the colon and the GI tract. In these instances, sometimes it is not possible to use RF ablation in a safe way. But with a combined treatment protocol, one can rely on the synergy between RF ablation and intra-arterial chemoembolisation to increase the effect without increasing the risks,” said Lencioni.

By using RF ablation and intra-arterial chemoembolisation, interventional treatment not only subjects tumour cells to damagingly high internal temperatures, it also makes the cells more vulnerable to the action of chemotherapeutic agents.

“If we expose tumour cells that have been damaged by high but not lethal temperatures with RF ablation to the action of a drug like doxorubicin administered intra-arterially so we can obtain a very high concentration of the drug in the peripheral part of the tumour, the cells will be unable to tolerate the additional cytotoxic effect and they will die,” he stated.

The first pilot study of combination therapy was completed in patients who had residual viable tumours after RF ablation. After administering microspheres uploaded with doxorubicin, there was a complete response rate of 60% in tumours as large as 7 cm. This rate was high considering the size of the tumours and the failure of the conventional RF ablation approach, Lencioni said.

Radioembolisation is emerging as an alternative to chemoembolisation or bland embolisation in the treatment of patients with primary or metastatic hepatocellular carcinoma, said Prof. Jose-Ignacio Bilbao of the Clinica Universitarie de Navarra, Pamplona, Spain.

It has long been known that radiotherapy can eradicate hepatic neo-

prof. riccardo lencioni from pisa/it.
Cultural rendezvous

A centre devoted to the life and works of Wolfgang Amadeus Mozart

By Julia Patuzzi

Wolfgang Amadeus Mozart, one of the world’s great musical geniuses, lived in Mozarthaus Vienna from 1784 to 1787 in grand style, with four large rooms, two small ones and a kitchen. His life and works are presented here on four exhibition levels. In addition to Mozart’s apartment, which has been adapted by Wien Museum, visitors can find out about the times in which Mozart lived and his most important works. The exhibition focuses on his years in Vienna, which marked a high point in his creativity:

The tour of Mozarthaus Vienna starts on the 3rd floor and ends in the historical apartment on the former bel étage 1st floor. The exhibition focuses on the more than ten years that Mozart spent in Vienna until his death, a time in which he composed a large number of works that have established his unique place in the history of music. The underlying motifs behind the documentation is reflected in the famous quotation by Mozart in a letter to his father Leopold: “... I assure you that this is last great work, the Requiem. The Magic Flute area is dominated by a multimedia installation, which is intended to demonstrate that Mozart does not belong to a single country or city but to the whole world. Armed with this knowledge, the visitor can now enter Mozart’s apartment. It was the largest and most expensive apartment that he ever lived in. He spent two and a half years there from 1784 to 1787 and his output during this time was enormous. None of the original furniture belonging to Mozart at this time has survived. Visitors are therefore invited to give free rein to their imagination. How did Mozart live and work in these rooms? What went on in the apartment? It was a very loud and lively place. There were house concerts and billiard evenings, crying babies and barking dogs. The aim of the new presentation is to invite visitors to seek evidence for themselves rather than to create an apartment full of replicas.

Apart from the exhibition area, there is also a café on the ground floor, a museum shop and an event area in the basement.

Salzburger Nockerln
Soufflé Salzburg style

Ingredients

For 2-3 servings
6 egg whites
4 egg yolks
2 ¾ oz. granulated sugar
pinch of vanilla sugar
1 tablespoon rum
pinch of salt
2 oz. flour
1 oz. butter for brushing the soufflé dish
½ fluid. oz. liquid cream
icing sugar

Brush a heatproof soufflé dish (usually oval-shaped) with the butter, pour in cream, heat on the stove until the dish is really hot. Preheat the oven to 190°.
Beat the egg whites with salt and sugar until stiff. Fold in the egg yolks, vanilla sugar and rum quickly, but carefully, sprinkle the wheat flour on the egg mixture and stir together with a whisk in brisk moves until the mixture is creamy and fluffy.

Heat the cream and the butter in a casserole dish, brush with the flour, beat the soufflé mixture on the stove until the eggs are cooked. Pour the mixture into the soufflé dish, add the butter and let the mixture surprise your guests!

As is well-known, the great musical genius Mozart was born in Salzburg, where this original and traditional sweet gem comes from. Legend has it that it was one of his own favourite desserts!
PlACES TO SEE

Send your ears on a voyage of discovery:

Haus der Musik – The Sound Museum

By Vera Schmidt

Haus der Musik (the house of music), is an interactive museum in the former Palais of Archduke Karl, located in Vienna’s first district between St. Stephen’s Cathedral and the Vienna State Opera. It was awarded the Austrian Museum Prize for its innovative design. The house was the residence of Otto Nikul (1820-1890), who composed the opera ‘The Merry Wives of Windsor’ and founded the Vienna Philharmonic orchestra. This is what inspired the Vienna Philharmonic to present original documents from their history on its first floor, the only historically preserved rooms in the house.

The museum was opened in June 2000 without any public funding, but it is strongly supported by celeb- rities of today’s music world. After it opened its doors to the public, Maes- ton Zubin Mehta assumed Haus der Musik’s honorary chairmanship, as he also recognised the importance of bridging the gap between Vienna’s rich musical heritage and its bright musical future.

The museum is host to a range of interactive installations, which playfully communicate openness to new things, understanding and enthusiasm for approaching music. All of its 3,000 m² are dedicated to a wide array of approaches to music, and most of all, to the experience of music; Haus der Musik links trad- ition and innovation. It is an inter- active sound museum which pro- vides a new approach to music on a playful as well as scientific level.

Various interactive elements and installations invite visitors to unfold their own creativity. Music becomes audible and visible in real as well as virtual sound spaces: education and entertainment lead through the whole museum as guiding themes and formal principles. Children can ‘meet’ Wolfgang Amadeus Mozart and ‘compose’ their own CD, but there is also entertainment for those who are still children at heart. Have you always wanted to find out why Karajan’s hair always looked so messed up after a concert? Than just fire away! Haus der Musik even gives you the opportunity to conduct the Vienna Philharmonic.

There is currently a special exhi- bition ‘Vienna Musiziert – pictures of a symphony’ in the foyer of the museum. The multimedia artist Johannes Deutsch mixes computer-controlled sounds and music from Mahler’s 2nd symphony, thus com- bining classics and modernity.

The exhibitions are self-explanatory in German and English, but guided tours in various other languages can be booked in advance. Free audio guides are also available in German, English, French, Japanese, Italian and Spanish.

Haus der Musik is an ideal museum for busy ECR delegates, as it is open from 10am until 10pm every day. If you would like to spend a special evening indulging in delicious cuisine while also experiencing Viennese culture, we recommend ‘Dinner and Sound – A meal for all senses’ at ECR prices, includ- ing museum admission, guidebook and 3-course dinner from Mon- day to Saturday. After your visit to the Haus der Musik, the restaurant Canton awaits you on the top floor – with an incomparable view across the rooftops of Vienna and of St. Stephen’s Cathedral. You will be treated to an exquisite meal, consist- ing of a ‘trio de tapas’ starter – the speciality of the Mediterranean res- taurant – as well as a main course of fish or meat and a delicious desert.

Music is the world’s oldest lan- guage, so come and experience it firsthand!

Haus der Musik
Sellersstrasse 30
1010 Vienna
Phone: +43 1 516 48 1010 Vienna
Fax: +43 1 516 48 1010 Vienna
Website: www.hdm.at

LITERARY ENCOUNTERS

Discover Vienna as a true home of music

By Nils Jensen, Vienna written, Buchautor

In Vienna there is a saying which can hardly be translated: ‘the sky in Vienna is full of violins’. Which means no more or less than ‘here, music in all its forms has found its true home’. Not for nothing is the lively city on the Danube consid- ered the musical capital of Europe, and one of the most important musical locations in the world. Just think about the New Year’s Con- cert, broadcast around the world, watched by millions of people, annually conducted by a master of the baton, and performed by one of the most eminent orchestras in the world, the Vienna Philharmonic.

But Vienna has two more interna- tionally acclaimed orchestras, the Vienna Symphonic Orchestra and the Radio Symphony Orchestra Vienna, and a most influential jazz orchestra. It was founded in Vienna - by a Swiss of course! - and has been touring the world for more than thirty years, the Vienna Art Orchestra.

At every turn you encounter music in this city. Many great composers and interpreters of their music have operated here and animated the musical world with new sounds and arrangements. Starting with masters of Baroque at the imperial court of Schönbrunn, to the classics such as Joseph Haydn, Wolfgang Amadeus Mozart, Ludwig van Beethoven and Franz Schubert, to the avant-garde of twelve-tone music in the 20th cen- tury; Schönberg, Berg, Webern. Gustav Mahler was director of the State Opera Vienna, being an unsettled gadabout (and always in financial distress) had to move umpteen times because he was not able to pay his rent, Beethoven was Mozart’s pupil for a short while before he succeeded as a composer (and darling of the Viennese high nobility) until, due to his heavy hearing ailment, he became a lone- some eccentric. Another musi- cal immigrant was the Hamburg- born Johannes Brahms, famous most of all for his songs and piano pieces. Like Mozart and Beethoven he also died here in Vienna.

With all these sublime names, one must not forget the elegant, light- hearted entertainment music, with the name of the Strauss dynasty at the forefront. They may certainly call themselves the fathers of the ‘three-four time’, which can nowa- days be heard at the near and far ends of this planet under the name of ‘Viennese Waltz’.

Not only the Strauss’s melodies, including the Blue Danube Waltz, invoked the light muse. Another typical musical genre originated in this town, the operetta. It could be called an easy and casual form of the opera, with playful stories and com- positions at the highest level.

As mentioned above, at every turn you meet places with (musical) history, Mozart’s last apartment, Beethoven’s domicile in Heiligen- stadt, the statues of Brahms and many of his colleagues. And all those venues where you can lis- ten to this marvellous melodies today, above all the Vienna State Opera, the glamorous hall of the Musikverein, the Konzerthaus, the Volksoper, the Theater an der Wien. Beethoven’s music proves to be a most interesting read about the main themes of humanity, about ‘Eros’ and ‘Thanatos’, love and death. Eighteen expressive stories lead us from Vienna music to word music in this town. Sweet and strong, dark and tough, mysterious and bright.

Translation by Julia Pataczi
Meet the Editor-in-Chief of European Radiology

By Stefanie Muzik

Prof. Adrian K. Dixon is, besides being a well-known and established radiologist at Cambridge/UK, since 2008, the new Editor-in-Chief of ESR’s official journal European Radiology. We took the chance to talk to him about his work and his route into radiology, and tried to get an impression of how his career can be an example for young radiologists throughout the world.

ECR Today: Does science run in your family?

Prof. Adrian K. Dixon: My grandfather was a botanist, my father a pathologist. However I did not anticipate going into medicine and had to do a crash course in biology at a late stage of schooling. I then went to the University of Cambridge where I read Natural Sciences and subsequently pursued clinical medicine at the oldest hospital in the UK [St Bartholomew’s Hospital, founded in 1123].

ECR Today: Why did you choose to become a radiologist?

AD: My deafness was obviously one factor. As I had a 50/50 chance of becoming profoundly deaf, radiology was clearly a sensible choice. As I had a 50/50 chance of becoming profoundly deaf, radiology was clearly a sensible choice. Even then, mistakes will still be made and there is always someone better than you in everything – do not be shy about asking for help or learning from your mistakes. Only by practising, practising, and more discussion between patients and radiologists.

ECR Today: When you look back on your career, being successful hasn’t come easy, has it? What would you advise young doctors or radiologists to never forget on their way up?

AD: There is almost any information you require available now. This makes the patient’s knowledge a real factor. As I had a 50/50 chance of becoming profoundly deaf, radiology was clearly a sensible choice. Mind you, I might have become a pathologist. However I did not anticipate going into medicine and had to do a crash course in biology at a late stage of schooling. I then went to the University of Cambridge where I read Natural Sciences and subsequently pursued clinical medicine at the oldest hospital in the UK [St Bartholomew’s Hospital, founded in 1123].

More discussion between patients and radiologists. Indeed, those currently assessing future developments within radiology are keen to see this aspect of radiological practice increase.

ECR Today: The combination of such advanced imaging techniques with image fusion but more specifically the integration of such image fusion but more specifically the integration of advanced techniques is the first mainstream example of artificial intelligence.

AD: Practise, practise, and more discussion between patients and radiologists. Indeed, those currently assessing future developments within radiology are keen to see this aspect of radiological practice increase.

ECR Today: When you look back on your career, being successful hasn’t come easy, has it? What would you advise young doctors or radiologists to never forget on their way up?

AD: Practise, practise, and more discussion between patients and radiologists. Indeed, those currently assessing future developments within radiology are keen to see this aspect of radiological practice increase.

ECR Today: Being at the 20th ECR in its history – what do you remember from your first ECR?

AD: I was extremely nervous about giving a presentation, even though it was to a relatively small scientific group. I much remember the kindliness of the senior European radiologist who, as Chairman, could see a relatively young presenter on edge.

More senior people have a duty to help all future members of our profession.

ECR Today: Why do you attend congresses? Do you think they are important? Nowadays you could get almost any information you require from the Internet.

AD: The opportunity to meet colleagues, see equipment, discuss science, hear about new developments, listen to the gurus and have fun in Vienna – who could ask for anything more! I would not have the time to do this on the Internet in my home town – other duties would get in the way.

ECR Today: Thank you very much for this interesting interview!

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ECR Today: Thank you very much for this interesting interview!

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