Welcome to the 28th European Congress of Radiology

I am very proud and greatly honoured to welcome you to the European Congress of Radiology (ECR) 2016. During the last 20 years I have seen the congress evolve and grow, and every year I love being at this wonderful event.

The first impression when arriving in the entrance hall is always fabulous and the feeling of being welcome is always strong for me, and I hope all of you will feel the same. To meet you all in the entrance hall, in lecture rooms, and in the technical exhibition, strengthens my confidence of the importance of keeping face-to-face meetings. The number of friends and colleagues attending the ECR has increased year by year and we ended up with more than 25,000 participants, onsite and online, during last year’s ECR. Even if we have upped the ante on hybrid imaging, the number of friends and colleagues attending the ECR 2016 will remain, which means you will find sessions with the right level of complexity wherever you are in your professional development. To guide you, the sessions are marked with the knowledge level they are intended for. Also this year, candidates will once again be sitting examinations for the European Diploma in Radiology (EDiR) during the congress. Interest in the EDiR has been increasing every year and I am pleased to say this particular examination was fully booked a long time in advance.

This year’s poster shows you a combination of the phenomena we have up north, close to the Arctic Circle; the northern lights and the midnight sun, but something is wrong. They do not show up simultaneously, not even at Kebnekaise, which is the mountain on the poster. So the poster is a hybrid of both summer and winter, and hybrid is a theme that is repeated throughout ECR 2016. These phenomena are merged with small objects symbolizing people, or molecules, or whatever you would like them to be, and if you look at the movies you can see them all moving, in some way connected to each other. The ECR 2016 theme ‘radiology without borders’ is more relevant than ever for most of us and I hope we still can meet at ECR 2016 without borders even if the situation in Europe has changed dramatically during recent months. The ECR is one of the greatest radiological events in the world, with participants from more than 120 countries, which means you will meet friends and colleagues from almost every part of the world.

ECR 2016 will keep up the good reputation of a programme woven from high quality teaching and scientific sessions, as well as posters. A new feature this year is the Voice of EPOS, which consists of poster sessions with short oral presentations in the EPOS® area. Interest in this new idea has been great, leading to an all-time high in EPOS abstract submissions, with 2,989 abstracts submitted. The Voice of EPOS sessions will be held not only in organ-based topic groups, but also in several different languages, adding a useful new dimension to the congress.

Prof. Katrine Riklund is a radiologist who is also licensed in nuclear medicine at Umeå University Hospital, Sweden. She is deputy head of the department of radiation sciences and director of the medical school at Umeå University.

Continued on page 3
EUROPEAN SOCIETY OF RADIOLOGY

PROUDLY PRESENTS

JUAN DIEGO FLÓREZ

AN EXCLUSIVE PERFORMANCE AT THE

ECR 2016 OPENING CEREMONY

WEDNESDAY, MARCH 2
17:45-19:00, ROOM A
ECR 2016: a reflection of a year’s progress

It gives me great pleasure to welcome you to the European Congress of Radiology (ECR) 2016. As president of the European Society of Radiology (ESR), it is very satisfying to see the culmination of all the hard work and dedication that has gone into preparing this event, which is always the biggest highlight of the society’s year.

The ECR is so much more than a scientific meeting; beyond the regular programme that forms its basis, there are an ever-increasing number of special sessions and side events that tie in with the ESR’s ongoing activities. More and more, the ECR is becoming not only a marker of the current state of our discipline, via its scientific content, but also a reflection of the ESR’s progress, as so many of the achievements from throughout the prior twelve months are represented here in one way or another. Naturally, this congress is not just where we, as individuals, come to discover the latest in our field; it is also where we, as a society, celebrate and look back on the steps we have taken over the last year.

Some of our proudest recent moments have come in the field of research. In particular, the European Imaging Biomarker Initiative (EIBAL), which was launched under the aegis of the ESR-EORTC and QIBA™, has been held and this year it will serve as a platform for the introduction of a new examination process with the aim of making sure the exam remains as accurate a test of cognitive ability as possible. The result of this is that a new examination ‘skills examination’ will be tested at ECR 2016, developed from what was used to be known as the oral part of the exam. I would like to wish everyone taking the exam, which will include the ESR’s 1000th candidate, the very best of luck!

The ESR is of course not the only strand of the ESR’s educational activities with a presence at the congress. The European School of Radiology (ESOR) will hold a session as usual, and the European Diploma Examination (EDEX) will also be well represented at the congress. The campaign is continually growing in scope and this year that is clearly reflected in the ECR programme, with not only the four dedicated ESR imaging sessions, but six other sessions and workshops centred on various subjects. One of those topics is clinical decision support (CDS), a major issue on the ECR’s agenda over the last year, during which we have launched a CDS platform (the ESR KidGaid, as well as our own basic patient safety standards and the ESR Clinical Audit Tool. Such services deliver both the basics and the essence of the radiological profession to our audience.

Another aspect of this commitment is the ESR Support Initiative, which was launched in March 2015 to provide support to radiologists in their professional and personal development. The programme is now well underway, and we are delighted that we have been able to quickly establish a network of radiographers and radiological technicians visiting the congress have been consistently high over recent years, thanks largely to the close involvement of the European Federation of Radiographer Societies. I am positive that this year’s programme will match the previous standard and we can expect a broad radiological family joining us in Vienna.

I hope all of you enjoy the congress, meet friends, make new contacts in your network, and take the opportunity to enjoy the social events of the congress and also of Vienna.
In recognition of his pioneering work in radiology and commitment to the advancement of medical imaging, Professor Ronald L. Arenson from San Francisco, United States, will receive Honorary Membership of the European Society of Radiology at ECR 2016.

Ronald L. Arenson is the Alexander R. Mann Professor and chair of the department of radiology and biomedical imaging at the University of California, San Francisco, where he has worked since 1975. He is the immediate past president of the Radiological Society of North America (RSNA).

Prof. Arenson received his medical degree in 1973 from New York Medical College in New York and completed his diagnostic radiology residency at Massachusetts General Hospital in Boston.

“My father was a radiologist and I often went to work with him on weekends. I was very comfortable with radiology, but I believe I kept an open mind in medical school. Although several specialties entered me during school, I ended up with radiology mainly because I found it intellectually challenging and it closely matched my interests in technology and information systems,” he recalled.

He began his academic career in 1979 at the University of Pennsylvania, where he successively became associate chairman of clinical services in radiology, director of administrative services, and interim vice provost for information systems and computing for the campus.

His research interest is informatization in radiology. He has also patented new techniques in interventional radiology. One of his achievements was the development of a catheter that can be steered in a magnetic field, enabling interventionalists to reach further into smaller blood vessels. In 2001, he and fellow researchers filed a patent on the invention, which was selected for presentation at a national fair on technology.

Although he now dedicates most of his time to being an administrator and mentor, he is still involved in the development of novel information system applications. “I am looking at the future of radiology and healthcare,” he said.

His main activities are hospital management, diagnostic imaging consultation and guidance for graduate and PhD students. He has mentored more than 100 graduate students and PhD doctors.

Prof. Arenson has authored or co-authored more than 200 peer-reviewed scientific articles, four book chapters, three books and numerous exhibits, abstracts and editorials.

He has also served on the editorial boards of several journals, including Radiology and Journal of the American College of Radiology.

He has served on several committees of numerous medical societies and organizations, such as the American Society of Radiology and Information Sciences (ASAR), the Association of University Radiologists (AUR), the Academy of Radiology Research (ARR) and the American College of Radiology (ACR). He was also a founding member of the Radiology Information System Consortium, now the Society for Imaging Informatics in Medicine (SIIM).

Prof. Arenson holds fellowships in the ACR, ACMI and SIIM, and is past-president of the AUR and the Society of Chairmen of Academic Radiology Departments (SCARD). In addition he has served on the United States’ National Advisory Council of the National Institute of Biomedical Imaging and Bioengineering of the National Institutes of Health, and the NIH Council of Councils.

Prof. Arenson has received numerous honours throughout his long career, including the Alumni Medal of Honor from New York Medical College in 2003 and a gold medal from AUR in 2003.

In recognition of his contributions to the advancement of abdominal imaging and his efforts in strengthening ties between Asian and European radiologists, Professor Qiyong Guo from Shenyang, China, will be awarded Honorary Membership of the European Society of Radiology at ECR 2016.

Qiyong Guo is a professor of radiology and chairman of the radiology department at Shengjing Hospital, China Medical University (CMU). He is also president of Shengjing Hospital, vice president of CMU, and dean of the radiology faculty.

Prof. Guo graduated from CMU in 1983 and started working as a radiologist in Shengjing Hospital. He finished his medical studies in Japan, at Nara Medical University, where he specialized in abdominal imaging and interventional radiology and majored in liver research between 1988 and 1993. In 1993 he returned to Shengjing Hospital, where he took on his current positions.

His research interests relate to abdominal imaging, especially of the liver and biliary tract. He is also an interventional radiologist, with particular interests in non-vascular interventional radiology and tumour diagnosis and treatment, and has published more than 550 papers.

His main activities are hospital management, diagnostic imaging consultation and guidance for graduate and PhD students. He has mentored more than 100 graduate students and PhD doctors.

Prof. Guo is chief editor of the China Clinical Medical Imaging Journal and Contemporary Hospital Management. He is also in charge of more than ten projects at all levels of academic research, including national natural science funds. He is chief editor of three specialized textbooks including Interventional Radiology and chief editor of several specialized monographs such as Practical Radiology.

He is president of the Chinese Association of Radiologists and chairman of medical imaging for the China Hospitals Association. He is also an executive member of the Asian Ovarian Society of Radiology (AOSR), and a former president of the Chinese Society of Radiology and the Asian Society of Abdominal Radiology (ASAR).

Prof. Guo has been attending the ECR for more than 20 years and cherishes the experience. “I am very impressed by the number of female radiologists attending the congress, which seems to be far greater than male radiologists. I think radiology will be a female world in the future. Another remarkable highlight of the ECR is that the Yanonymous pork steak is delicious,” he said.

In recognition of his work, he has been awarded numerous distinctions throughout his career, including honorary membership of the Russian Society of Radiology in 2009, the Japan Society of Radiology in 2011 and the German Society of Radiology in 2013. Last but not least, he received the Gold Medal of ASAR in 2015.

“I feel very grateful for this honour and want to thank the ESR. There is still plenty of space for promoting and improving the academic exchange between the ECR and CSR. I will strengthen and promote communication and cooperation on the level of radiologist training and common research areas between European and Chinese radiologists.”
Hassen A. Gharbi is a professor of radiology and medical biophysics from Tunis, Tunisia. He was head of the department of radiology at Tunis Children’s Hospital and head of the medical biophysics department at Tunis Medical School. He is the immediate past president of the World Federation for Ultrasound in Medicine and Biology (WFUMB) and the African Society of Radiology (AISR).

Gharbi worked as an assistant professor at the biophysics department of Paris Medical School between 1956 and 1970, before being appointed vice-dean of Tunis Medical School in 1971. In 1978 he created the first paediatric radiology department in North Africa at Tunis Children’s Hospital, which he later headed.

“In 1970 we had an important children’s hospital in Tunis, without any radiologists, but with a great team of paediatricians and paediatric surgeons. They inspired me to found the radiology department and it was a great decision, we worked together as a friendly team for a long time,” he recalled.

Prof. Gharbi is retired but is still involved in several teaching programmes, mainly to promote the good use of ultrasound in developing countries around the world.

“I am very happy with my unusual career. I was the ninth radiologist in Tunisia and had the privilege of being a pioneer in my country and in my area in different fields: biophysics, paediatric radiology and radiation protection,” he said.

His other main interest was imaging of hydatid diseases and the study of their epidemiology and treatment. His ultrasound classification of the hydatid cyst appearance published in Radiology in 1981 is still used around the world.

He has authored or co-authored more than 25 books on paediatric radiology and tropical and infectious diseases (hydatid diseases), and has published more than 135 articles in national and international journals. He also sits on the editorial boards of several international journals.

Prof. Gharbi has received many awards recognizing his contributions to the promotion of radiology in developing countries, mainly in Africa.
10 YEARS OF EIBIR

€63,000,000 research funding
secured with EIBIR support

VISIT OUR BOOTH IN THE MAIN ENTRANCE HALL
www.eibir.org
EIBIR has secured €52 million in research funding in its first ten years.

This year marks the tenth anniversary of the European Institute for Biomedical Imaging Research (EIBIR). Over the course of the past decade EIBIR has helped shape the landscape of European biomedical imaging research by supporting scientists and helping them to secure funding.

In 2005, the idea of creating an organisation to support European imaging-related research activities was born. It originally emerged within the European Association of Radiology (EAR), which was later integrated into the European Society for Radiology (ESR). Two years later, in 2007, a committee was created to supervise imaging research activities in Europe, and to offer advice to the EAR on how to establish such an organisation with the goal of improving and coordinating imaging-related research activities in Europe.

At the European Congress of Radiology (ECR) in 2014, this committee presented an overview of Europe's existing research infrastructures and imaging-related institutions. It recommended partnering with these organisations in order to establish a pan-European research institute. Based on these recommendations a second committee was formed with the aim of building a network of research centres of excellence in biomedical imaging, and creating possibilities for strengthening biomedical imaging research and training throughout Europe.

By 2009, these efforts led to the development of an action plan entitled "Towards a European Institute for Biomedical Imaging Research," which was submitted to the European Commission (EC) under its Framework Programme. The action plan was approved in 2006 and EIBIR was officially established as a non-profit company with its registered office in Vienna, Austria.

During its start-up phase EIBIR received financial support from a core group of industry partners in order to facilitate the establishment of its operational structures and to have starting capital to initiate projects. This core group consisted of Bayer Schering Pharma (currently Bayer Healthcare), Bracco, GE Healthcare, Philips and Siemens. Together with Barco, Futura Composites, Leuven Test Objects, Noras MRI products, Quanit, Quimih and Zebra Medical Vision these companies now form the EIBIR Industry Panel. Their support and input over the last decade has played a vital role in EIBIR's success.

The first major success arrived in 2006, when two proposals for collaborative research projects were submitted under the European Commission's 7th Framework Programme and selected for funding. EIBIR acted as project coordinator for the ENIGITE project on core imaging and tracking, and the HAMMAM project on breast cancer diagnosis using multimodal imaging.

Since then, EIBIR's member network has grown to over 100 research institutions from 22 countries. These network members collaborate to develop project ideas and proposals in various Joint Initiatives on important topics in biomedical imaging research such as: biomechanical image analysis, evidence based radiology (EuroKK), chemistry, computer imaging, paediatric radiology and image guided radiotherapy.

The initial success from 2008 has been followed by involvement in five additional projects under the European Commission's 7th Framework Programme as project coordinator or leader of project management and dissemination, two COST actions, two industry-university clinical studies and roles in three EC tender projects.

Recently, EIBIR prepared various proposals for the European Commission's Horizon 2020 framework, and received favourable evaluations for six submissions, with four projects being selected for funding. "This is a major achievement considering the low success rate for Horizon 2020 proposals and proves just how valuable EIBIR's work has become to the field of biomedical imaging research," said Prof. Gabriel Krestin, EIBIR's Scientific Director. EIBIR will coordinate the HYPMED project on PET/MRI for breast cancer diagnosis, and provide project management and dissemination services for the three additional projects: CoSTREAM (computer tomography in stroke and Alzheimer's), GLINT (imaging of neoplastic tumours), and Luca (laser/ultrasound analysis of thyroid nodules). More information on these four projects, as well as on three FP7 projects with EIBIR involvement (MITIGATE on GIST, VPH-DARE (IV in dementia and VPH-PRISM on breast cancer)) will be featured on page 2 in this issue and in the following issues of ECR Today.

In addition to all this, EIBIR continues to introduce more services to support scientists, such as its Virtual Clinical Trial Unit (VCTU), headed by Prof. Myriam Hunink from Erasmus Medical Center in the Netherlands. The VCTU aims to provide support to scientists conducting investigator-initiated studies to evaluate diagnostic imaging. "We have also taken steps to increase and enhance the services EIBIR offers to researchers, and launched EIBIR's new Virtual Clinical Trial Unit, which aims to ease the administrative burden and complexity inherent in setting up a clinical study," Prof. Krestin continued.

To learn more about European research funding join EIBIR's session at ECR 2016 on Friday, March 4 at 10.30 in Room L8.
What does big data mean for radiology?

From assessing customer satisfaction or which healthcare system is the best, to looking at hidden data contained in images, big data analysis can answer many questions related to patient care. Radiologists are in the early stages of using big data for medical imaging and many are still not aware of the potential and consequences it will soon have for their work. Experts will show why radiologists should play a role in data generation, sharing, and, most importantly, analysis in a dedicated session today at the ECR.

Specialists currently estimate that 80% of all the data contained in electronic medical records (EMR) are based on medical imaging, and EMR data are growing by 20–40% a year. While these figures indicate that radiologists should take an interest in big data, it is still unclear what benefits they could extract.

The number of radiological examinations worldwide is going up together with the number of images per exam, so big data could first help to guide radiologists to the most important things to look for or the key images to look at, according to Bruce J. Hillman, professor of radiology and medical sciences and public health sciences, at the University of Virginia, Charlottesville, VA, who will speak during the session.

“Radiologists are absolutely flooded with information and they need guidance that big data could potentially supply as to which of the images that they really need to spend their efforts on and what’s important,” he said.

“This guidance may come in handy as the economic environment of healthcare is changing in the U.S. According to the American College of Radiology, radiologists need to move from volume-based imaging to a more value-based approach. They need to justify their value in the healthcare team and big data could help them to do so, Hillman believes.

“Information that could guide better patient-centred care, as well as relationships with hospitals, government, and society: all of that might be hidden in big data that we already have,” he said.

Accessing representative data nationwide or worldwide is a major challenge. Institutions produce data of the exam and are important to compare or share it with other centres. Developing networking channels or relationships with companies that can provide larger and more comprehensive data sets will therefore prove crucial in the near future.

With big data, radiologists will need to adapt to and work with machines that learn, which will assist or even take over part of their work. Presumably, this is what IBM Watson has signalled with its $1 billion (approximately €918 million) recent acquisition ofMerge Health-care and its large image and report data sets. The Watson computer system is capable of using natural language processing and machine learning to analyse large amounts of data and incorporate it in its decision making.

Although it isn’t clear what the group will do with the data, there is no doubt that such machines will, at the very least, help radiologists to read images, either by selecting the best images for an exam or by acting as a second reader to assist the radiologist. In time, however, there is no guarantee that a more effective Watson won’t displace existing radiologists by providing part stand-alone diagnostic services, Hillman warned.

“If radiologists want the status quo, they’re going to be quite disappointed. Nothing is going to remain the same. There are thousands of garage labs where very smart people are working on the same problems as IBM, i.e. on ways to improve computer aided detection and extend machine learning to computer aided diagnosis,” he said.

Comparing thousands of image data sets will, by all means, require the help of computers, according to Gianluigi Zanetti, director of the Data-intensive Computing Sector of CRS4 (Center for Advanced Studies, Research and Development) in Pula, Italy, who will also speak during the session.

“If you want to extract information from thousands of images, you cannot afford to have someone reading all that; you need a machine,” he said.

What is specific to radiology is that it needs to answer a clinical question by looking at increasingly precise and informative images. With current technology, a lot of information can be extracted from an image. “Possibly many of those things within the data set will be interesting,” said Zanetti.

In their reports, radiologists focus on the clinical question to be answered. But there may be a lot more data to extract from an image which could potentially be used to answer other questions and in clinical settings. Since this later information gathering will be mostly delegated to data mining programmers, it is important that future data extraction is as unambiguous as possible, for instance by systematically recording the radiological findings using structured reports, Zanetti explained.

Moreover, when part of the structured report – e.g. identification of the regions of interest – is the result of some sort of computational image processing, it is important to maintain a full description of what software was used and how it was configured.

“Together with the full meta information on modality configuration and acquisition protocols, e.g. stored in the DICOM header, this should provide a reasonable amount of context information that will make radiological images an important component in large-scale data-mining efforts,” Zanetti said.
Incidental findings: When in doubt, point them out … or not

Incidental findings – also known colloquially as ‘incidentalomas’ or findings that are discovered unintentionally – are on the rise around the world. Only about 1% of these findings are harmful to the patient, but still, in 1% of patients they are a problem, so what is a radiologist to do about them?

“People order CTs, MRIs, for a specific reason and we interpret those, and we see something that has nothing to do with the reason for the exam, but nevertheless, we see something that strikes us as a possibility abnormality,” said Prof. Leonard Berlin, from the University of Illinois, Chicago.

Incidentalomas are a relatively new phenomenon that account for approximately 15-20% of all findings. This is primarily because, for instance, the number of CT scans has shot up from around 3 million in 1980 to around 80 million in 2012 over the past decade in the U.S., he added. Due to the population increasing and getting older, the frequency of incidentalomas is only going to rise, he added. Beyond that, there’s also a sophistication issue; the technology around the world has become more sensitive, so radiologists see things today they didn’t 15 years ago.

“What do we do? We know statistically, the likelihood of something being significant to the patient is extremely remote,” said Berlin, who will argue at today’s session why he thinks it’s a good idea to ignore incidental findings. “On the other hand, in 1% of the cases, maybe it is a problem. But if we report every one, what happens?”

If a radiologist spots a questionable abnormality in the kidney, for instance, the patient will be subjected to surgery, and surgery has its own complications. And it’s possible all of that anxiety, time, and money will bring no benefits and might even end up causing the patient more harm, particularly if the surgery doesn’t go well. Should the information be withheld, or not?

Prof. Aad van der Lugt from the Department of Radiology at Erasmus Medical Centre in Rotterdam, the Netherlands, will present reasons why incidental findings should be reported. From Berlin’s perspective though, radiologists must be very careful what they call. They have to put the welfare of the patient first. Most people want to be informed of something that’s important to them, and if radiologists are adhering to the American Medical Association (AMA) code of ethics, or the ethics of any other societies, they all say it’s the physician’s obligation to present the medical facts accurately to the patient. Moreover, all relevant medical information should be disclosed.

“That’s the key word: relevant,” Berlin noted. “It’s in the eye of the beholder, what’s relevant and what’s not relevant, and that depends on the individual radiologist.”

His advice is to consider whether the finding has a reasonable likelihood of being abnormal, in which case, mention it. If there’s no reasonable likelihood the finding is abnormal, don’t mention it. It’s the findings that fall between those two extremes that are most worrisome.

According to Berlin, “In those cases I would say something to the effect of: ‘A nonspecific density is noted in the kidney, although its cause is indeterminate, the likelihood that it represents a serious finding is thought to be extremely remote. That’s what I would recommend when there’s something that we don’t think is significant, but we feel that it’s just remotely possible that it is something. We mention it, but make clear that we think the likelihood of it being serious is remote. And then it’s up to the patient and up to the doctor to decide what they’re going to do.”

Session moderator Dr. Sabine Weckbach, from the Diagnostic and Interventional Radiology Department at the University Hospital Heidelberg in Germany, echoes those sentiments. “The best approach to look at incidental findings is to have certified and specially trained radiologists that are aware of all the consequences of reporting these findings,” she said.

Weckbach says the medical community is becoming more and more aware of the underlying ethical problems and questions surrounding incidentalomas.

“Large cohort studies are conducted in Europe right now and one major point for their success will be a thoughtful and responsible handling of incidental findings,” she said. “I am sure that in some years more and more groups will work on clear position statements within a defined ethical framework, evidence-based policies for the thoughtful management and feedback of incidental findings, and practical guidance for research ethics committees.”

“People order CTs, MRIs, for a specific reason and we interpret those, and we see something that has nothing to do with the reason for the exam, but nevertheless, we see something that strikes us as a possibility abnormality.”

“Large cohort studies are conducted in Europe right now and one major point for their success will be a thoughtful and responsible handling of incidental findings.”

Involve trained radiologists who are aware of all the consequences of reporting incidental findings such as enchondroma and haemangioma, recommends Dr. Sabine Weckbach.

Elastography offers new insights into plaque imaging

Radiological challenges: children, the elderly and pregnant patients

Experts to provide insights into chest imaging in paediatrics

BY REBEKAH MOAN

ECR TODAY | WEDNESDAY, MARCH 2, 2016
For decades, traditional chemotherapeutics have been used to treat cancer by directly killing malignant cells. Recently, a new class of anti-tumor drugs was introduced, which activates the immune system to directly kill tumor cells. Checkpoint inhibitors are now approved for the treatment of melanoma and lung cancer, and more indications are to be approved in the near future. The increasing use of immune checkpoint inhibitors makes it pertinent not only for oncologists, but also for radiologists, to understand the basic mode of action of these new checkpoint inhibitors, the novel patterns of treatment response and their immune-related adverse events.

NOVEL THERAPIES – NOVEL TREATMENT RESPONSE PATTERNS

Immune checkpoint inhibitor therapies show response patterns that may be different from those of cytotoxic chemotherapies. Whereas treatment responses in classical therapies can be evaluated according to the World Health Organization response criteria or the Response Evaluation Criteria in Solid Tumors (RECIST), these classification systems may not be adequate given the pattern of response in immune therapies. Traditionally, tumor shrinkage without the development of new lesions within a few weeks after treatment is considered treatment response, whereas both tumor growth (progressive disease/ PD) and stable tumor sizes (stable disease/ SD) are considered treatment failure. In contrast, immune checkpoint inhibitors may show delayed kinetics in tumor size and, more importantly, transient enlargement as the appearance of new lesions does not necessarily indicate treatment failure. Therefore, in 2009, the first “immune-related response criteria (irRC)” were published, which differ primarily from traditional response criteria in that in the first response evaluation, a tumor growth or the appearance of a new lesion is not defined as progressive disease, as this might be the consequence of an immune cell infiltration into the tumor, and thus, be a positive treatment effect. As a consequence, extended follow-up examinations are recommended. Important key points are: there should be two consecutive follow-up examinations performed at least four weeks apart after the completion of treatment, and bi-weekly clinical and laboratory evaluations should be performed immediately after completion of treatment do not necessarily indicate tumor progression. Subsequently, follow-up studies should be performed at least four weeks apart, to verify ongoing changes in tumor size.

NOVEL THERAPIES + NOVEL ADVERSE EVENTS AND IMAGING MANIFESTATIONS

Given the new mode of action of immune-checkpoint inhibitors, they are associated with unique acute immune-related adverse events, such as colitis, dermatitis, hepatitis, hypophysitis, thyroiditis, and sarcoid-like lymphadenopathy. Of those, autoimmune colitis is an important complication due to its high mortality rate, which requires immediate diagnosis and steroid therapy. Some of these adverse events are related to typical radiological findings. Radiologists are therefore of major importance in the diagnosis and follow-up evaluation. Interestingly, the development of radiological manifestations in immune-related adverse events is associated with therapy response and disease control.

In conclusion, oncologic imaging plays an integral part in the evaluation of the efficiency and effectiveness of novel therapeutic agents, and the role of radiologists in monitoring tumor surveillance is also expected to expand. Radiologists must not only recognise the novel treatment response patterns and correctly interpret the complex variety of autoimmune-related adverse effects, but also take an active part in the development of predictive response criteria.

Dr. Lucian Beer is a medical doctor at the University Clinic for Radiology and Nuclear Medicine in Vienna. Dr. Helmut Prosch is an associate professor at the Medical University of Vienna and secretary of the Austrian Roentgen Society (ÖRÖ).

**Cancer immunotherapy presents new challenges for radiologists**

**By Lucian Beer and Helmut Prosch**

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**fMRI of the brain: heading for new shores**

As early as 1991, John W. Belliveau and his team published the first functional magnetic resonance imaging (fMRI) evidence from humans, which showed brain activity after visual stimulation.

**By Katharina Medzinka**
Elastography offers new insights into plaque imaging

Elastography has been used for many years to differentiate malignant from benign lesions, especially in the breast or liver. Experience in carotid artery disease is limited, but recent studies have shown that elastography may help to stratify plaque and reduce the risk of unnecessary surgery, as a Greek expert will show during a New Horizons session today at the ECR.

The majority of myocardial infarctions and strokes are actually caused by plaque rupture. Thanks to histological findings, physicians know that unstable, vulnerable plaques, which are prone to rupture and fibrin embolisation, are those with a large lipid core and intraplaque haemorrhage. Inflammation is also a high risk factor for plaque rupture.

Researchers have tried to establish whether it would be suitable to use ultrasound in everyday clinical practice to stratify plaque morphology, but the results combined with histopathological findings were poor. Liasis and his team at Affidea Greece, together with the University of Athens Medical School and the National Technical University of Athens, decided to conduct a prospective study in order to determine the contribution of ultrasound elastography to the description of plaque morphology.

“Ultrasound elastography is based on the principle that soft tissue deforms more than hard tissue. So plaques that are hard and stable deform less than soft, vulnerable plaques,” he said.

So far the few available papers on the topic focused on either shear wave or strain elastography. In his study, Liasis has compared both techniques against histopathological findings and he will present his results today. He estimates that the potential of both techniques for stratifying plaque is significant, and that they may be complementary in many ways as they offer information that is not accessible through B mode or Doppler flow and other US techniques.

“Elastography enables the detection of the fibrous cap, the thickness of which is an indication of plaque instability but it remains challenging to spot with traditional ultrasound. It also provides information about plaque smoothness and more accurate information on what is outside of the plaque. We have all the features that are characteristics of plaque morphology and which make plaque unstable,” he said.

Elastography offers other benefits to consider for daily practice, it is radiation free, accessible and widely available. Furthermore, it does not require any patient preparation and the costs are low. Examination times are short compared with MRI and, unlike CT, there are no allergy risks linked to contrast agents use.

However a number of technical limitations remain to be overcome and reproducibility is still challenging.

“When plaque is calcified, we are not able to describe it because of the acoustic shadow. Our biggest disadvantage is subjectivity. Reproducibility is still an issue, but using appropriate examination protocols may help,” Liasis said. It will also be necessary to adapt the technique, which has been developed for lesions in superficial organs, to small pulsating vessels.

“We need more prospective studies to evaluate its potential. US elastography in carotid plaque imaging is only a few years old. But our research is very promising to describe plaque,” he concluded.

Figure 1a: B-flow ultrasound image (Logiq E9, GE Healthcare) of an almost anechoic (GSM<25, Type I) internal carotid atherosclerotic plaque. The boundaries of the plaque are easily visible only on the b-flow image.

Figure 1b: Strain elastography of the plaque. Soft areas (represented by green and red) are mainly distributed at the juxta-atherosclerotic plaque surface.

Figure 1c: Shear-wave elastography (SWE) of the plaque. The plaque appears predominantly soft on the SWE images (soft areas are represented by blue on SWE images). Low on kPa plaque.

Figure 2: Shear-wave (SWE) elastography of the plaque. The plaque is represented by blue on SWE images. Low on kPa plaque.

Figure 5a: B-flow ultrasound image (Logiq E9, GE Healthcare) of an almost anechoic (GSM<25, Type I) internal carotid atherosclerotic plaque. The boundaries of the plaque are easily visible only on the b-flow image.

Figure 5b: Strain elastography of the plaque. Soft areas (represented by green and red) are mainly distributed at the juxta-atherosclerotic plaque surface.

Figure 5c: Shear-wave elastography (SWE) of the plaque. The plaque appears predominantly soft on the SWE images (soft areas are represented by blue on SWE images). Low on kPa plaque.

BY MÉLISANDE ROUGER

New Horizons Session

Wednesday, March 2, 08:30–10:00, Room O

NH 1: New frontiers in imaging of vascular wall and plaque

• Chairman’s introduction: How to use the tools?
  C. Loewe, Vienna/AT

• Molecular imaging for MR
  M. B. Makowski, Berlin/DE

• New insights using nuclear and hybrid imaging
  J. Knutti, Turku/FI

• Ultrasound elastography: how useful can it be?
  N. Liasis, Athens/GR

• New options with CT
  A. Persson, Linköping/SE

• Panel discussion: Predictive role of imaging in the evolution of atherosclerosis: where do we stand?

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ECR2016

§ Wednesday, March 2, 2016

BY TIMOTHY SPENCE

Hybrid imaging systems provide powerful tools for the detection and surveillance of disease, but manufacturers have been slow to provide the software that can help physicians recognise and interpret artefacts, a leading pioneer in the field believes.

Faster adaptation of attenuation correction technology to hybrid imaging machines could help sort out the disturbing effects of implants, patient motion, or other factors that can skew images, according to Prof. Thomas Beyer, professor of physics at the University of Duisburg’s Erwin Hahn Institute for MR Imaging. “What is noticeable is that the different algorithms that are available in stand-alone machines, like CT or MRI, are not immediately available for correcting the same artefacts in the combined imaging exams,” said Beyer, who works on the development of PETCT and PET/MR systems.

Software to correct for metal artefacts was available for CT scanners, but not for PET/CT machines, which made their commercial debut in 2010, until a few years later, he noted. “This is something that is annoying. Industry typically says it’s do with software, but quite frankly it can’t be a barrier.”

Beyer explained that the field of metal artefacts correction had evolved over the last few years. “We have the non-attenuation and attenuation correction PET images, along with the MR-based attenuation correction images, to help identify artefacts. In addition, physicians need to be cautious when reporting specific active lesions or tumours, he said. Also, the true activity of PET-visible lesions close to artefacts in the MR-based attenuation correction images might be underestimated or overstated by a few percent.

The proposal for correcting the loss of imaging energy through obstructions, scattering and other factors seems to be good.

“With PET/MRI, we currently see the implementation of bone tissue in the head region by using ultra-short echo time sequences, the reduction of boxes in the body by using attenuation-based methods, the correction of truncation artefacts using new sequences that are able to estimate the MR imaging field-of-view (HUGE), the correction of motion artefact in thorax and liver imaging, and finally, the reduction of metal artefacts around implants using appropriate metal artefact reduction sequences,” Quick stated.

Meanwhile, Beyer thinks the next big steps in technology can help compensate for motion, while new algorithms will address the disruption created by large implants. He sees today’s ECR discussions as one way to drive home the need for training and collaboration between disciplines (nuclear medicine and radiology as well as physicists and clinical technology) to pick up and interpret artefacts in PET/CT and the emerging field of PET/MRI. He also encourages practitioners to know the guidelines published for hybrid imaging.

“Industry must act to overcome artefacts and pitfalls.”

Hybrid imaging systems provide powerful tools for the detection and surveillance of disease, but manufacturers have been slow to provide the software that can help physicians recognise and interpret artefacts, a leading pioneer in the field believes.

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Hybrid imaging systems provide powerful tools for the detection and surveillance of disease, but manufacturers have been slow to provide the software that can help physicians recognise and interpret artefacts, a leading pioneer in the field believes.
Radiological challenges: children, the elderly and pregnant patients

Children, pregnant patients, and elderly patients form a special group within radiology. Imaging-based procedures for these patients must be tailored according to their individual circumstances and needs, and can present a challenge for the interventional radiologist, especially in the emergency room. In a session today, experts will remind attendees when and how to image special patients and provide an update on current guidelines and recommendations.

Anatomy revisited

Review of the anatomic centre of the femoral and tibial footprints of the anterior cruciate ligament.

Doctors have been reconstructing ruptured anterior cruciate ligaments (ACL) for more than forty years. The methods have changed slowly over time, always trying to improve long-term outcome and to reduce the rate of graft failures.

Detailed knowledge of the location of the femoral and tibial ACL insertions was not considered important in the management of ACL ruptures until about a decade ago. The emergence of the so-called anatomic reconstruction has induced a rise in post-operative imaging for validation and assessment of the graft tunnels after reconstruction. There has also been a constant rise in studies which report the success of their surgical technique as after imaging, with rates of cases in and out of anatomic range. However, there is no broad consensus on where the centres of the insertions are actually located. Most anatomic studies were performed on a small number of cases, mainly between 10 and 30. Furthermore, studies have been done with varying modalities (CT, MRI and radiography) and sometimes with varying methods for measurement. Thus, it is difficult to compare studies and to know whether the results were acceptable or not. We aimed to compile the previously reported study results and to provide locations of the femoral and tibial insertions which could be used in clinical practice by surgeons when planning and performing surgery, and by radiologists when reporting post-operative images.

We reviewed all anatomical and measurement studies which had measured the femoral and tibial insertions of the ACL with the Bernard and Hertel grid, respectively. PubMed was searched systematically. We started with over 1,300 articles and eventually narrowed the studies down to 16, using the inclusion criteria.

The resulting insertions centres could be calculated in 28 knee measurements for the femoral insertion and 30 measurements for the tibial insertion centre.

We calculated mean, median and 5th and 95th percentiles, all weighted according to the size of the study. The concept of presenting percentiles rather than standard deviations is new, and in my opinion provides a more robust range for ‘normal’ variations in the population. A standard deviation is always, for example, ±3%, whereas we observed that the percentiles sometimes yielded the range as ±8% and ±15%.

I firmly believe that the percentiles should be used to indicate whether a femoral or tibial tunnel after operation is ‘anatomically’ acceptable or not. Previous validation studies have relied on standard deviations from studies. This may have wrongly included or excluded ‘anatomically acceptable’ post-operative results. I hope the results from our review will ease future validation studies and prove to be helpful for both clinicians and radiologists.

Anagha P. Parkar is a radiologist at the department of radiology at Haraldsplass Deaconess Hospital in Bergen, Norway.

Scientific Session: Musculoskeletal

Wednesday, March 2, 10:30–12:00, Room E1
SS 230 Trauma and inflammation
Moderators: B. Henke; Amsterdam/NL, I.-M. Noebauer-Huhmann; Vienna/AT
• A systematic review of studies assessing the anatomic centres of the femoral and tibial footprints of the anterior cruciate ligament
A.P. Parkar, M.E.A.P. Adriaensen, S. Vindfeld, E. Solbakken; Bergen/NO, Heleen/NL
**CLINICAL CORNER**

**[18F]-FDG PET/MR for staging and restaging of lymphoma patients: is the use of DWI justified?**

By Chiara Giraudo

**(A)** 58 year-old patient with mucosa-associated lymphoid tissue (MALT) lymphoma of the left orbit. The inclusion of DWI (ADC maps in A and B) in the protocol enabled the detection of the lesion (blue arrows in A and B, respectively) at both staging and restaging; whereas the lesion was not visible on PET due to a lack of FDG avidity (fused images in C and D, respectively).

(Copyright: Department of Biomedical Imaging and Image-Guided Therapy, Medical University of Vienna, Austria.)

**Scientific Session: Oncologic**

Wednesday, March 2, 14:00–15:30, Room F1

SS 316 Dealing with metastatic disease

Moderators: D.M. Lambregts; Amsterdam/NL

A. Sohaib; London/UK

» [18F]-FDG PET/MR for staging and restaging of lymphoma patients: is the use of DWI justified? 

C. Giraudo, D. Senn, G. Karanikas, M. Weber, M. Raderer, M. Mayerhofer; Vienna/AT

*...*
Experts to provide insights into chest imaging in paediatrics

Congenital lung abnormalities include a broad spectrum of disorders and are an important cause of morbidity and mortality in children. Over the past three decades, significant progress has been made in the management of congenital lung abnormalities and today, they are being detected more and more often with routine high-resolution prenatal ultrasonography. In the first part of today’s refresher course on chest imaging in paediatrics, Prof. Mithat Haliloglu, from the department of radiology at the Hacettepe University School of Medicine, Ankara, Turkey, will speak about antenatal and postnatal appearances of common congenital chest anomalies and illustrate the best imaging techniques for their evaluation.

Congenital lung abnormalities may range from small and asymptomatic to large and symptomatic lesions. Most commonly encountered congenital lung anomalies can be divided into three categories, including vascular anomalies, combined lung and vascular abnormalities, and isolated bronchopulmonary anomalies. Congenital vascular anomalies are rare; their presentation can range from asymptomatic lesions, to lesions causing ischaemia, haemorrhage, ulceration, or high-output congestive heart failure. Advances in fetal ultrasound and magnetic resonance imaging have led to increased recognition of these and other congenital anomalies of the chest at presentation, but chest radiography and CT are also both still very important for postnatal diagnosis. Radiologists should be aware of the most common types and specific image findings to ensure appropriate perinatal and postnatal patient management.

Another central topic of this scientific session is paediatric interstitial lung diseases (ILDs), which encompass an assorted group of disorders with widespread involvement of the pulmonary interstitium, resulting in impaired gas exchange and, in some cases, high mortality and mortality. Quite recently a novel classification scheme-specific to paediatric interstitial lung diseases has been developed, which takes into account the stage of lung growth, etiology, pathophysiological mechanisms, and clinical phenotypes.

Some ILDs are unique to infants, while others occur only in older children. As some types of ILDs present with symptoms strongly associated with other disorders, the disease can easily be confused with more common disorders in some cases.

But some highly specific imaging findings may facilitate the diagnostic process. Prof. Maria Pilar García-Peña, from the department of radiology at the University Hospital Valle de Hebron, Barcelona, Spain, explained: "For some types of ILDs, imaging findings are highly specific. Good examples are bronchopulmonary dysplasia, neuroendocrine cell hyperplasia of infancy, lung growth abnormalities with Down syndrome, and pulmonary lymphangiectasia. Developmental disorders and genetic disorders of surfactant metabolism can be highly suspected in small children with interstitial lung involvement." In cases of non-specific imaging findings, laboratory tests or a biopsy is imperative in the diagnosis of paediatric ILDs.

More common than ILDs, and another hot topic of today’s session, are lung infections. Pneumonia is still one of the most common causes of illness in children, and constitutes a leading cause of mortality in both developing and developed countries. Although radiological findings are rarely specific, chest radiography is imperative in the diagnosis of pneumonia – in the appropriate clinical setting some radiographic patterns can help to provide a differential diagnosis and thus initiate and guide therapy. Furthermore, ultrasound plays a key role in the evaluation of pleural effusion and peripheral lung consolidations. But as in congenital lung abnormalities and paediatric interstitial lung diseases, knowledge about clinical presentations, potential complications, and differential diagnosis is fundamental to the correct management of lung infections in children and therefore will be highlighted in this session.

**Figure 1: Bronchopulmonary dysplasia (BPD):** Pre-term neonate with respiratory difficulty and lack of oxygen; HRCT at three months of age shows typical features of BPD as septal thickening, pseudocystic pattern, parenchymal bands, and heterogeneous aeration.

**Figure 2: Neuroendocrine cell hyperplasia of infancy (NEHI):** A 14-month-old female patient with persistent tachypnea; HRCT at three months of age shows typical features of NEHI as septal thickening, pseudocystic pattern, parenchymal bands, and heterogeneous aeration. The disease was eventually confirmed by bronchoscopy.

**Figure 3: Langenbuch’s cell histiocytosis:** A 13-month-old female patient with skin lesions; HRCT shows multiple nodules of different size and cystic lesions. Follow-up HRCT showed larger cystic lesions and fewer nodules. (All images provided by Prof. Maria Pilar García-Peña).
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Expo Level X2, Stand 307
Ultrasound firms take advice from customers in the front line

Ultrasound manufacturers are looking for ways to help their customers work faster and more efficiently, but to understand how a particular task can be done better, companies need to know exactly how it is tackled now. In the exhibition halls at ECR 2016, vendors will display equipment developed after asking sonographers and others about how they carry out routine tasks and if they can identify factors likely to cause obstructions in the hospital workflow.

On the Siemens Healthcare stand, staff are demonstrating three new additions to the Acuson range of mid-range systems: NX3 and NX3 Elite, and an upgrade to the existing premium platform, HELX Evolution with Touch Control. All offer features intended to enhance ergonomic efficiency and have been developed in consultation with people who should know how to get the most from these systems.

“Typically in most industries, a manufacturing company will look at its own technology, think how it could be improved and then develop the product. But we asked our customers what they would do if they could design their own system,” said Miguel Trigueiros, director of global product marketing with Siemens’ ultrasound business.

“We spent three years and several million euros on this project, holding 170 workshops in five different countries where we talked to 395 sonographers. We watched them perform a range of standard tasks, listened to what they had to say, and worked together to define the challenges that they face. The feedback we received has allowed us to offer improvements which will enable them to carry out faster examinations with fewer errors, and less need for repeat exams.”

The NX3 is a shared service system intended for use at general hospitals in a range of departments, notably general medicine, obstetrics/gynaecology, paediatrics, and neurology. It has the largest touch-screen panel in its class, with reduced number of function buttons positioned to encourage more intuitive movements by the operator. Trigueiros estimates that a routine ob-gyn examination can be carried out with up to 20% fewer key strokes.

“As companies, we worry about the big issues, like improving image resolution and transducer quality, but these apparently minor changes are important because they make the system easier to use. We tell customers that they have been designed by them, for them,” he noted.

Although Carestream is a relatively newcomer to the ultrasound market, its experience in other modalities has demonstrated that its customers are a key source of new ideas. At ECR 2016, the company is unveiling its Touch Prime ultrasound system, intended for general diagnostic ultrasound imaging and developed in collaboration with customers around the world.

Touch Prime XE is the company’s flagship ultrasound product, using Touch Prime Syntek to provide enhanced resolution and increase the number of images to show moving structures while optimising image output with less noise and fewer artefacts. Improvements in imaging and Doppler provide a stable display of subtle contrast differences in tissue and can improve the ability to see small structures, according to the vendor. The Touch Prime XE unit can also achieve frame rates of over 100 Hz while maintaining image quality and functionality as DICOM wireless connectivity, barcode and card readers, and elastography can all be added within the system.

Toshiba is demonstrating a range of new functions for its Aplio 500 Platinum platform, including 3D shear wave elastography, fusion imaging, and real-time 3D needle tracking. But the technology that is seen by the company as a ‘game changer’ is the 3D Superb Micro-Vascular Imaging (SMI) feature. This allows clinicians to see smaller vessels in and around structures like tumours, inflamed tissue, and lymph nodes, thanks to its capacity for visualising low-velocity flow at a level far beyond the capability of conventional Doppler techniques. Significantly, SMI improves visualisation of microvasculature, even without contrast agents, the company states.

Like its competitors, GE Healthcare is aware of the many problems bearing down on radiology department staff. That includes not just pressure on time and resources but also the need to maintain diagnostic standards for an ageing and increasingly obese patient population.

The firm is introducing the LOGIQ XDclear family, which provides a wider portfolio of probes, sophisticated anatomical models and a package of features aiming to improve clinical confidence with difficult-to-scan patients. The system offers a range of dedicated auto-optimisation and assistance tools to improve both productivity and the patient experience, through solutions intended to reduce the need for invasive tests and resulting patient discomfort.

Continued on page 18
This latest offering includes LOGIQ E9 XDclear 2.0, a new processing chain that optimises the image process from the probe to each of its pixels, delivering excellent image quality across a wide variety of cases, according to GE. The availability of extra tools such as 3D GPS Markers, MRI Auto-Registration and intra-operative probes will enhance its value, the company says.

Philips Healthcare is certain to have a stream of visitors to its stand wanting to learn about Lumify, a work in progress. It is designed for use by emergency departments and critical care centres, as well as other clinical settings, and will operate from a compatible smart device connected to a Philips ultrasound transducer. Users will also have access to an online portal where they can manage their device and access the vendor’s support, training, and IT services.

“App-based ultrasound provides valuable information to the right people at the right time. It’s designed to drive a transformation in care delivery and digital health,” said Vitor Rocha, chief executive of Philips’ ultrasound business.

Meanwhile, Hitachi Medical Systems is launching two new members of its ARIETTA range of ultrasound platforms. Both the ARIETTA Precision and Prologue use the same core technology and electronics, but with an application-specific design for the housing. The former offers versatility for interventional and surgical procedures, the company states. Its transducer range covers minimally invasive investigations through to full open surgery and it also has options for customised use in the operating room, with a large monitor that can be suspended from a wall or support arm and can be viewed from a distance.

The Arietta Prologue has a compact, portable design for point-of-care use. It can be cart-based or hand-carried, with an in-built battery for emergency use. It is equipped with a transducer range suitable for general abdominal examinations, musculoskeletal and vascular investigations as well as anesthesiology functions.

Fujifilm is unveiling an ultra-high frequency clinical ultrasound system, VERO MD, which was developed by its North American subsidiary VisualSonics and operates at up to 70 MHz, offering the potential for unparalleled image resolution. With applications across a range of clinical areas, including neuroradiology, vascular, musculoskeletal imaging and dermatology, the unit only received European regulatory approval in January 2016.

“The VERO MD allows medical professionals to see what they have never seen before — unparalleled image resolution down to 30 micrometres. This is less than half the size of a grain of sand,” said Renaud Maloberti, general manager of Fujifilm VisualSonics.

On the Samsung stand, visitors can see a demonstration of the company’s latest cardiovascular ultrasound technology. Called S3D Arterial Analysis, this function supports earlier detection of disease by executing both morphological and functional analysis of the vasculature. It enables a quantitative 3D analysis that estimates the volume of plaque within the vessel and calculates the distance to adjoining anatomical features, providing a more confident diagnosis and easier examination, the company noted.

ҫ digital era of efficiency limiting clinical expansion of ultrasound

Ultrasound - Changing Clinical Demand in Western Europe

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Changing use of for ultrasound across clinical spectrum.

Today an ultrasound system is almost as common in the emergency room as a radiology department. However, the unique characteristics and functionality of ultrasound that have allowed application diversification is also creating some significant challenges, most notably in integration with rapidly expanding health-care IT networks. Below, we assess how ultrasound will fare against these challenges in the new ‘digital’ era of interoperability.

Recent market figures highlight the gross change in clinical application of ultrasound. In 2013, only 49% of unit shipments of ultrasound in Western Europe were sold into ‘traditional’ ultrasound applications (radiology, cardiology and obstetrics and gynaecology). By 2019, this change in use to applications such as emergency medicine, interventional cardiology and anesthesiology is pronounced.

This change occurred because of three main developments: the inherent and unique flexibility of ultrasound imaging (real-time, non-invasive and radiation dose-free); the rapid progression in ultrasound technology allowing smaller, more efficient devices with greater resolution; the expansion and development of new clinically specific ultrasound toolsets for both diagnostic and procedural use (e.g. needle guidance technology for nerve block procedures). As a consequence, ultrasound spread across hospitals and clinics, becoming increasingly embedded in the multiple clinical workflows.

While this dramatic change has created new challenges, it has also presented new opportunities.

Maloberti, general manager of Fujifilm VisualSonics, stated “Today an ultrasound system is almost as common in the emergency room as a radiology department. However, the unique characteristics and functionality of ultrasound that have allowed application diversification is also creating some significant challenges, most notably in integration with rapidly expanding health-care IT networks. Below, we assess how ultrasound will fare against these challenges in the new ‘digital’ era of interoperability.

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This impressive number of supporters and the wide range of radiation protection activities in 2015, which took place as far afield as Canada and Japan, demonstrate that the ESR’s initiative comes at the right moment to have a positive and lasting impact on quality and safety in radiology.

Even though this increased visibility for radiation protection within the radiology community is to be celebrated as an important step, we must ensure that our initiatives benefit those we serve as radiologists: patients. The ESR therefore continued to deliver on the EuroSafe Imaging Call for Action in 2015. Below is a rundown of last year’s highlights.

EUROSAFE IMAGING WEBSITE
With the launch of the EuroSafe Imaging as a new feature on the EuroSafe Imaging website, the ESR is giving patients, carers and members of the public the opportunity to submit questions to radiation protection experts. Three working groups, each composed of one expert in radiology, medical physics and radiography, began developing new content for the EuroSafe Imaging website in July 2015. The working groups are divided into sub-groups focusing on CT, paediatric imaging and interventional radiology. Using enquiries submitted through the website, the working group will develop frequently asked questions (FAQs) or Tips and Tricks aimed at providing professionals, patients and carers with concise, monthly articles on a specific issue in each area.

IS YOUR IMAGING EUROSAFE? AND EUROSAFE IMAGING STARS
The ‘Is Your Imaging Eurosafe?’ survey continues with two new topics in 2015, as well as the publication of preliminary results for the topics acute stroke and pulmonary embolus. In part because the collection of sufficient data for benchmarking has not proceeded as swiftly as hoped, the ESR developed the concept of ‘EuroSafe Imaging Stars’ to attract imaging departments across Europe to the EuroSafe Imaging campaign. As a way to facilitate benchmarking through the surveys, and as a model institutions promoting best practice in radiation protection, institutions that wish to become EuroSafe Imaging Stars will participate in a biannual self-evaluation based on a set of criteria developed by EuroSafe Imaging and the ESR Radiation Protection Subcommittee. The EuroSafe Imaging Stars initiative will be launched in early 2016.

RADIATION PROTECTION RESEARCH
The activities regarding radiation protection research also reached a major milestone this year, as a group of five medical associations composed of the ESR, the European Federation of Radiographer Societies (EFRS), the European Federation of Organisations in Medical Physics (EOMP), the European Association of Nuclear Medicine (EANM), and the European Society for Radiotherapy and Oncology (ESTRO) developed a joint strategic research agenda (JRA) for medical radiation protection in cooperation with the research platform MELODI (Multidisciplinary European Low-Dose Initiative). In addition to giving greater visibility to medical radiation protection research, a field previously underrepresented and fragmented, the aim of this group is to also influence the EU research programme Horizon 2020 by proposing research priorities within its area of expertise.

Furthermore, in November 2015 the ESR became a full member of MELODI and Prof. Guy Frija, member of the ESR Radiation Protection Subcommittee and chair of MELODI board, was elected to represent the medical community in the MELODI board.

PIDRL
The European Commission-funded project European Diagnostic Reference Levels for Paediatric Imaging (PIDRL) aims to provide European DRLs for paediatric imaging. On the 26th tender project started in December 2013 and ends in January 2016. In 2015, the PIDRL consortium focused on the finalisation of the European Guidelines on DRLs for Paediatric Imaging. The draft document was presented to a large audience at the PIDRL Workshop held at the European School of Health Technology (ESTeSL) in Lisbon, Portugal, in October 2015. The PIDRL project consortium encouraged wide attendance in order to ensure a good basis of discussion of the draft PIDRL guidelines and to identify the need for further action regarding DRLs and optimisation of radiation protection of paediatric patients. The workshop brought together around 80 radiologists, radiographers, medical physicists and other professionals from more than 30 countries. The final draft of the ‘European Guidelines on DRLs for Paediatric Imaging’ was submitted to the European Commission in December and will be published as an official EC publication in 2016.

INTERNATIONAL COOPERATION
Several key developments took place beyond Europe, as the ESR and EuroSafe Imaging were proud to support the launch of AFROSAFE, an African radiation protection initiative, at the FACORI conference website in July 2015. The EuroSafe Imaging Steering Committee, elected to represent the medical community in the MELODI board, took part in these meetings.

AFROSAFE, an African radiation protection initiative, at the FACORI conference website in July 2015. The EuroSafe Imaging Steering Committee, elected to represent the medical community in the MELODI board, took part in these meetings.
What is going to make the headline in radiology and diagnostic imaging in the next five years?  
Dimitris Moulavasili: Well, as an industry observer, I'm confident that the technology will keep developing at a phenomenal rate, offering improved structural imaging techniques, machine driven radiogenomic analytics and predictive biomarkers based on novel molecular imaging.

Information technology will also play a critical role in radiology's future. It will first enable an enhanced interconnectivity between modalities, radiologists, referring physicians and patients. All produced medical images will be stored in a cloud and this will fundamentally change current workflows.

So in the future we expect to see an accelerated separation between image acquisition and image interpretation, the latter conducted from radiologists' professional tablets anywhere in the world. Radiologists will then use the same medium to collaborate with referring physicians in real time over medical images and communicate with patients. This in turn will amplify the need for commonly accepted standards and protocols, so we expect to see a great evolution in this direction.

Information from stored images will amount to big data, which will facilitate significant advances in deep learning and artificial intelligence, where advanced algorithms will help radiologists in their diagnosis and will enhance their productivity.

How can providers like Affidea stay ahead in such a demanding industry?  
DM: First of all, we have more than 20 years of experience in diagnostic imaging and a vast network of 170 diagnostic- and cancer care centres across Europe, which we have been managing and growing all this time. Over the years we have been able to develop significant insight into what is important in becoming a provider of choice for all stakeholders, starting from the patient, the referring physician and the payer: be patient, payee or provider.

This has to do with the ability to provide a proven, standardised medical outcome in an efficient manner and create a unique patient experience.

To achieve this goal, we have been investing vastly both in medical and information technology. We are staffed with the best radiologists and medical professionals together with whom we have built a patient-centric, quality oriented culture. On the medical technology side, we have a very modern fleet, with over 500 imaging modalities, which rank better than the most demanding COCIR (European Coordination Committee of the Radiological, Elektromedical and Healthcare IT Industry) benchmarks, while on the information technology side, we have put in place one of the most advanced IT infrastructures in the industry.

These days, our patients can book their exams online and have full access to their results via a link to our secured cloud, which is sent to them through a simple email.

On the quality side, we have pioneered several initiatives, such as our Dose Excellence Campaign to measure and optimise the levels of ionising radiation dose that our patients are exposed to through CT scans. This represents a whole new way of thinking in diagnostics, putting patient safety at the heart of what we do, without ever compromising on image quality just shifting the focus to the patient.

Similarly, we look at the industry and we evaluate areas for improvement both as the speed and efficiency of healthcare services, as well as a commitment to consistent quality, which can only be achieved through effective management. Our lean management techniques are designed to improve efficiency and patient experience by examining the whole process of booking, registration, scanning and results delivery from a patient's perspective. This saves costs, which is not so much the goal, more of an added benefit. We are six years into our lean management programme.

Last but not least, our excellent centre staff are supported by renowned experts from the European radiology industry and healthcare payers through the Medical Advisory Board.

You talked about interconnectivity and advances in information technology. How are these advances affecting patient services today?  
DM: Online booking, for instance. Up to 20% of appointments in Ireland are now made online today; this could become something like e-check-in for flights in the near future. It requires a robust booking engine, a patient-friendly booking process and an extremely well-connected IT structure to keep the slots fully up to date, manage patient data efficiently and make this paper-light process truly effective.

The next phenomenon is remote radiology services. Using our cloud, a patient in Evora, Portugal, can have their images interpreted by a radiologist in Lisbon (or of local regulations allow) anywhere in our network of 170 centres. We can thus solve the serious problem of radiologist shortages, which is drastic in some of our areas. Of course, uniform protocols are needed here, and in some cases, we are pioneering voice recognition technology in different European languages to accelerate our radiologists' productivity across Europe.

The possibilities are endless, but they must be tailored to maximise their impact in our specific organisational structure.

You have invested in a wide-reaching hospitality project in your organisation. Why is hospitality important in the healthcare sector?  
DM: I think hospitality is extremely important. Our overriding philosophy, one of the pillars of Affidea, is empathy—You cannot provide a good service for your customers without empathising with them and this is even more true in healthcare than anywhere else. Patients come to us with health issues, they are potentially ill, worried, and they need answers, but they also need reassurance that they will receive the best care and the professional attention that their particular case requires. This is where, not only our medical staff, but everyone who comes into contact with the patient, can play a key role, which is why we want to engage all centre staff in this initiative.

Another very important aspect is to provide staff with the support and recognition they need to be able to go that extra mile and be that bit more caring and considerate. So staff needs are also a big part of this ambitious project.

What is the industry's biggest challenge today in Europe?  
I think that the industry's biggest challenge comes from the economic context. On one hand, you have healthcare payers with limited funds, as a result of the recent economic crash and the aeronomic growth in most regions. On the other, you have a growing demand for healthcare services due to population aging, growing diseases like cancer, cost of innovative treatments, and patient demand for faster access to better healthcare services.

In this context, diagnostic imaging is coming top of the list during cost reviews, and consequently we see, year after year, significant tariff reductions and new frameworks aimed at containing costs.

Another challenge is the scarcity of radiologists contrasted with the parallel, ongoing increase in both the quality and number of medical images produced by new technology scanners.

What message would you give to the European radiologists attending this year's ECR for the future of radiology?  
I would tell them that radiology is an exciting specialty and it is going to lead medical advances for years to come.

Technological advances in radiological modalities will open new horizons in diagnosis and will allow diagnoses imagined today. Interconnectivity will allow expertise to move closer to the patients and improve clinician/patient communication. It advances, rather than removing the need for radiologists, will improve radiologists' productivity.
Using sugar to detect cancer: GlucoCEST imaging of neoplastic tumours

BY KATHARINA KRISCHAK

After a highly competitive selection process for the last health call under the EU Research and Innovation programme Horizon 2020, the project GlucoCEST Imaging of Neoplastic Tumours (GLINT), with support from the European Institute for Biomedical Imaging Research (EIBIR) was selected for funding by the European Commission and began in January 2016. Cancer is one of the most devastating diseases the world is currently facing, accounting for 8.2 million deaths in 2020 according to the World Health Organisation. Cancer is usually detected through advanced medical imaging. Early detection is very important as it increases the chance of survival and the potential for full recovery. Furthermore, the high level of sophistication in treatment for cancer has led to a new unsolved problem, differentiating between treatment effect, regrowth and pseudo-progression of the tumour. To address these challenges, the GLINT project aims to develop and bring to the clinic a potentially disruptive new technology that can characterise and image glucose delivery, uptake and metabolism in cancer. GLINT is one of four successful EIBIR-supported projects to receive funding under the EU Research and Innovation programme Horizon 2020 in 2015. Under the leadership of University College London, eight partners from within and outside the European Union have joined forces to pursue their common goal of providing an inexpensive, widely available, more comprehensive, non-invasive and radiation-free method as an alternative to nuclear medicine techniques currently used for cancer assessment within Europe. The EIBIR, which coordinates and supports the development of biomedical imaging technologies and the dissemination of knowledge, successfully supported the GLINT consortium during the proposal preparation phase, and is now involved in the project as a partner for project management, dissemination, knowledge management and exploitation. As scientific coordinator of the GLINT project, I am absolutely delighted by the professional and dedicated help I could obtain from EIBIR's team during the preparation phases of the project," said Prof Xavier Golay, University College London. "From an early feedback to phase I, all the way to a detailed management plan described in the final stage II document, Monika Harrath and her team provided us with a much needed support for the funding of a strong Horizon 2020 submission. The high success rate of EIBIR in this round of funding is a testament to their professionalism and dedication. The help EIBIR provides to the community cannot be underestimated, and GLINT is a prime example of it. As a project, GLINT offers for the first time a possibility to bring to the clinic a much-touted new imaging technique, allowing to directly image by MRI native non-labelled glucose the way PET does it using the expensive radio-labelled sugar analogue fluorodeoxyglucose (FDG). This represents among others a huge hope for paediatric patients and for everyone required to undergo continuous surveillance of cancer progression. It also carries the hope to reduce or at least significantly limit the costs of diagnostic cancer imaging.”

GLINT draws from recent research revealing the sensitivity of a technique named glucose-based chemical exchange saturation transfer (glucoCEST) to detect native (D-glucose uptake and metabolism in almost all cancer types, thereby providing a wide-ranging new diagnostic tool for one of the most devastating diseases in the world. The project officially started on January 1, 2016. At the recent kick-off meeting, which was held at University College London, in London/UK, in February, the first steps of the project as well as the specifics of each project component were thoroughly discussed and defined. The GLINT project will run for 48 months. If you would like to follow the project results please visit www.eibir.org. EIBIR is honoured to be taking part in such an innovative research project and to have the opportunity to collaborate with the scientists and research organisations contributing to it. If you would like to discuss GLINT or any of EIBIR's projects please visit the EIBIR Booth in the entrance hall.

BY NICOLA HUGHES

Quantification of the spatial heterogeneity of lung cancer tumours has potential to add prognostic information beyond that of PET/CT staging.

It is well documented that heterogeneous tumours contain a variety of subpopulations of cells with different biological characteristics. This is important in the oncological setting where many chemotherapeutic agents are delivered to eliminate tumour cell populations. Our initial pilot study included a retrospective analysis of [18F] FDG PET/CT in patients with a diagnosis of primary lung malignancy. Tumour heterogeneity was evaluated by the lack of conformity of the [18F] FDG SUV pattern within the tumour region of interest to a simple 3-dimensional ellipsoidal form. Univariate and multivariate analysis, which included PET/CT stage, SUVmax, and gender, found that for the diagnostic analysis of [18F] FDG uptake patterns with the aim of optimising prognostic information from the metabolic signature of the tumour. The UCC Statistical Imaging Group from the School of Mathematical Sciences aims to produce effective and reliable techniques capable of making quantitative use of the complex information that in vivo imaging offers. Their research is focused on developing statistical methodologies for applic- ation to such data and using the results for enhanced prognostic assessments.

Cork University Hospital is one of the eight designated National Cancer Centres as defined by the National Cancer Control Programme in Ireland and provides diagnostic, surgical, medical oncology and radia- tion oncology services. The radiology department provides a broad range of diagnostic imaging and interven- tional services for cancer patients with radiology subspecialist exper- tise in all cancer areas. In our institu- tion most patients with suspected or confirmed lung cancer will undergo a PET/CT examination as part of the diagnostic work-up. In the area of lung cancer, the use of PET/CT in patients with lung cancer makes significant advances.

Tumour heterogeneity measurement using [18F] FDG PET/CT in patients with lung cancer

Dr. Nicola Hughes is a radiolo- gist at Cork University Hospital, Ireland.

[18F] FDG PET/CT provides the unique ability to perform a non-inva- sive assessment of basic cancer biol- ogy and metabolism almost instantaneously. It also allows for repeated assessments of tumours over time, which enables one to explore the interactions and temporal evolution of the disease with surrounding tissues over the course of therapy. The success of image-based tumour characterization relies on our capac- ity to derive analytical summaries that are biologically meaningful and therefore useful in making critical treatment-adaptive decisions. The Statistical Imaging Group at the University College Cork, in collaboration with the radiology department and PET/CT unit at Cork University Hospital, have recently developed statistical tools for the diagnostic analysis of [18F] FDG uptake patterns with the aim of optimising prognostic information from the metabolic signature of the tumour. The UCC Statistical Imaging Group from the School of Mathematical Sciences aims to produce effective and reliable techniques capable of making quantitative use of the complex information that in vivo imaging offers. Their research is focused on developing statistical methodologies for applic- ation to such data and using the results for enhanced prognostic assessments.

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Breast imaging society introduces more activities to support growing membership

The European Society of Breast Imaging (EUSOBI) was established in 1997. Membership has increased from 54 in 2005 to 646 in 2015 with 54 countries. Whilst the majority of attendees were from Europe, there were also attendees from the Americas, Asia and Australia. An interesting and stimulating programme was delivered, covering a wide range of topics from ‘What women want to know’ through to cutting-edge subjects, including molecular and functional imaging. The highlights of the meeting included the keynote lecture on ‘The auxiliary enigma’ by Professor Catalan and the Gold Medal lecture delivered by Professor Per Skára. There was also the opportunity for self-assessment with the UK Performance team from Loughborough University setting up a mini-lab where participants could review and report on a test set of mammography cases with immediate access to their results.

EDUCATION, TRAINING AND RESEARCH

Education, training and research are crucial for the delivery of high-quality standardised breast imaging. EUSOBI’s approach to this includes:

- Promoting a uniform training programme based on the ESR curriculum for breast imaging
- Introducing a breast imaging diploma - we introduced a European Diploma in Breast Imaging (EDBI) in 2012. We aim for this to be a common European qualification for breast imaging which will help to standardise training and expertise in breast imaging across Europe. The diploma is endorsed by the ESR and is held at both the ECR and the EUSOBI Annual Scientific Meeting. To date, 49 candidates have taken the diploma with 48 being successful.
- Hosting courses, conferences, forums, symposia and workshops.

The very popular and practical breast MRI courses, mammography course and screening course are good examples.

| Organising committees to define scientific and technical standards and to produce publications not only for professionals closely involved in this field but also for patients and their doctors, for example EUUSOBI recommendations for women’s information on mammography breast MRI.

- Specific initiatives aimed at younger radiologists (EUSOBI Young Club, fellowships, and research awards)

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- Specific initiatives aimed at younger radiologists (EUSOBI Young Club, fellowships, and research awards)
Arterial spin labelling predicts cerebellar tumour grading in children
Correlations between histopathological vascular density and perfusion MRI

Cerebral blood flow values help to grade posterior fossa tumours in children with preoperative MRI, allowing the neurosurgeon to adapt the therapeutic strategy.

Preoperative MRI still lacks the diagnostic accuracy required to grade and type posterior fossa tumours. However, disease severity varies greatly between tumour types, requiring different approaches to early management. Unlike their counterparts in adults, contrast enhancement of paediatric posterior fossa tumours does not correlate with tumour grade. Diffusion parameters overlap between benign and aggressive lesions, as well as spectroscopy values. Perfusion-weighted imaging is currently used in grading adult gliomas; but studies in children are scarce. Furthermore, T2* dynamic susceptibility contrast imaging is not suitable for young children as it requires high-flow injection of contrast media. Arterial spin labelling (ASL) is a recently described perfusion imaging technique, which does not need contrast injection, and is therefore very suitable for paediatric populations.

We retrospectively analysed cerebral blood flow (CBF) values measured with ASL of 45 posterior fossa tumours in children, looking for a difference between high-grade and low-grade lesions. We also assessed contrast enhancement of these tumours. Finally, we correlated CBF with microvascular density on pathological specimens immunostained with anti-CD31.

We found that posterior fossa high-grade neoplasms display higher CBF than low-grade neoplasms (p<0.001). Below 25mL/min/100g, tumours were low-grade neoplasms (pilocytic astrocytomas), whereas above 50mL/min/100g, tumours were high-grade neoplasms (mostly medulloblastomas and ependymomas). Between 25 and 50mL/min/100g, we found that contrast enhancement allowed us to classify tumours with very good accuracy: for a mean CBF (25-50), high-grade neoplasms display a low contrast enhancement, whereas low-grade neoplasms display a very high contrast uptake Overall, the use of this algorithm in our cohort allows us to grade posterior fossa tumours with an accuracy of 94% (80/85). CBF was strongly correlated with microvascular density measured on histopathological samples (r=0.66, p<0.001). We also found that tumour grading was strongly related to microvascular density. CBF appears to be linked to the quantity of vessels in the tumour and with the grade of the tumour. On the other hand, contrast enhancement is linked to the quality of the vessels (leakage, interstitial space), not to their quantity and is not correlated with the grade of the tumour.

Tumour diagnosis using ASL may allow a multidisciplinary team to adapt their therapeutic strategy before the pathological diagnosis. A diagnosis of malignant lesion indicates more extensive surgery. Sometimes, the surgeon may perform only a biopsy for an inoperable medulloblastoma followed by neoadjuvant chemotherapy in order to decrease the risk of post-operative seque- lage. Evidence of malignant tumour using ASL could also be a criterion to perform a spinal MRI at diagnosis, to look for metastases, and avoid diagnostic challenges caused by postoperative bleeding, fibrosis or haemorrhage. It could also help to avoid the use of computed tomography, which uses ionizing radiation, to distinguish medulloblastomas based on their hyperdensity.

Combined with other multimodal imaging techniques, perfusion MRI using ASL is an easily usable technique that provides a great improvement of diagnostic accuracy for cerebellar tumours in children.

Dr. Volodia Dangouloff-Ros is a radiology resident at the department of paediatric imaging at Hopital Universitaire Necker - Enfants Malades in Paris, France.

Scientific Session: Paediatric
Wednesday March 2, 10:30–12:30, Room M 2
SS 212 Brain and neck
Moderators: F. Guenin Florence/IT
D. Prayet Vanessa/AT

• Arterial spin labelling predicts cerebellar tumour grading in children, correlations between histopathological vascular density and perfusion MRI

• Perfusion MRI for grading grade II gliomas

• Arterial spin labelling predicts cerebellar tumour grading in children
Norwegian radiological society aims to boost levels of imaging research

The Norwegian Society of Radiology is a member of the Norwegian Medical Association and includes more than 1,200 members; both radiologists and radiologists in training are compulsory members of our society. Over the last few years, there has been an increase in active certified radiologists which currently stands at 700 members, 47% of which are women. With a population of 5.2 million there is one certified radiologist per 7,000, and so far as I know, this is only beaten by Sweden. The financial status of our country is good, but because of the low oil prices, the government has been spending a higher share of the reserves. This cannot go on over many years, so we have to expect reduced funding despite the increasing demand for radiological services like in most other countries.

All medical doctors have one and a half years of clinical practice before entering into specialisation. Certification as a medical doctor and half years of clinical practice before ing demand for radiological services, as in most other countries.

The Nordic radiological societies are seven such groups, including neuroradiology, paediatric, interventional, thoracic, abdominal, breast, and musculoskeletal radiology. The board of the Norwegian Society of Radiology uses these groups actively in solving and answering all enquiries, which improves both the quality of our work and collaboration.

Electronic research opportunities should be integrated into the work done by the board of the Society. In 2015, eight radiologists completed a PhD programme and defended their theses. The Nordic radiological societies collaborate in publishing Acta Radiologica. The journal is an important publisher of both Nordic and international radiological research. All members have access to the online edition. The Norwegian radiologist, Prof. Arnulf Skjennald, has been the chief editor for years. Additionally, we publish the bulletin Noraforum electronically in the Norwegian language. The current ECR president, Kathrine Åhlström Riklund from Sweden, has kindly invited all the Nordic countries to participate in this year’s ECR in a joint session ‘ESR meets the Nordic Countries’ on Friday, March 4, 10:30–12:00, Room B. The session is called Mammography in Nordic countries: screening and new developments. A lot of important research concerning mammography originates in our countries, and of course we are quite proud of that.

As in many other countries, research opportunities should be further strengthened. With increasing demand for radiology services, the routine workload on radiology staff will, unfortunately, often leave research work suffering. According to Norwegian health legislation, hospitals are obliged to treat patients, educate health personnel, inform patients and relatives, and conduct research. However, research is the primary obligation, and at departmental level the research responsibility varies. It is up to each health enterprise which consists of several hospitals, to earmark resources for research within the total funds allocated by the government. The research resources are not, as they might have been, a minimum percentage of the total funds. A fixed 5% research allocation would have been reasonable and provided predictable conditions. Research would have increased and would have been more determined and less dependent on the initiatives of individual radiologists and the feasibility of working with research after hours. This applies to all medical specialists, but some have been clever and have included the research time in the normal working hours. Apparently, radiologists in Norway are not among the most eager researchers, but we are trying to work on it!

Prof. Gaute Hagen is President of the Norwegian Society of Radiology.
Launched at ECR 2015, Education on Demand follows the European Training Curriculum for Radiology and provides continuing medical education to radiologists, offering various learning resources such as ESOR courses for EDiR (European Diploma in Radiology), accredited eLearning modules, self-assessments and quiz cases. We spoke to Dr. Sue Barter from the U.K. and Prof. Mario Maas from the Netherlands, who serve as Editors of the ESR’s new eLearning platform Education on Demand. They gave us an insight into the workings and recent achievements of the platform.

ECR Today: How did Education on Demand come into being, what is its overall purpose?

Sue Barter: Education on Demand was the vision of the past ESR President, Professor Lorenzo Bonomo, who had the idea of a single hub where the user could access all the educational resources that the ESR offers. Considerable investment was made to develop the platform to enable multi-modality eLearning offerings and to facilitate its use on a wide range of different devices and operating platforms, from laptops to tablets. Professor Andrea Paeli, the previous Editor, kick-started the work and we now build on the strong foundations. Our message is “you deserve to be the best, learn from the best.”

Mario Maas: Learning is increasingly becoming an individual task, in which time and place plays an important role for an optimal learning experience. Prof. Bonomo embraced this concept and initiated this eLearning platform with it in mind. Each individual, radiologist or trainee, can schedule learning sessions when they see fit and can take as much time as needed. There are many good speakers and so much qualitatively excellent material which is now fully available to the European and international radiology community.

ECRT: Why is an eLearning platform important nowadays?

SB: In a rapidly changing technological world, radiologists are moving away from conventional textbooks to access information online, whether it is to look up an interesting condition which crops up during routine work and we now build on the strong foundations. Our message is “you deserve to be the best, learn from the best.”

MM: Individual learning calls for a readily available learning platform. The reinforcement of older acquired knowledge is key in adult learning. Education on Demand enables this; each individual needs only to visit the platform when they need to recopy or update existing knowledge. The platform includes many ESR projects such as the European School of Radiology (ESOR) courses, and makes use of articles published in Insights into Imaging, the ESR’s open access journal. It will hopefully become the European educational source for all radiologists, residents in training and technologists.

ECRT: How does the platform work, what different aspects does it offer?

MM: Teachers are specifically selected presenters, educators by nature. Presentation quality is strictly checked by teams of reviewers. We recently joined forces with ESOR and some subspeciality societies, bringing us one step closer to forming a European educational community within the ESR. Everyone is invited to become a provider of knowledge from which we can all benefit!

ECRT: What motivates you to devote your time to this eLearning platform and how has being involved affected you personally and professionally?

MM: Education on Demand offers e-CME accreditation: how many points are currently available and what are the benefits of e-CME accreditation compared to CME credits from live events?

SB: e-Learning modules are uploaded and then go through the accreditation process via the Austrian Medical Chamber. It is now possible to obtain more than 250 CME points on the platform.

MM: The benefit of e-CME credits is that radiologists can receive them without needing to visit live events; as many of them simply do not have the time, but at the same time want to and also must continue their education. Online learning allows for better individual time management without the loss of CME accreditation.

ECRT: What new issues or projects are on the horizon for Education on Demand?

SB: We are consolidating the material on offer by aiming to map the European Training Charter, and have been identifying the gaps and filling them in this first year. Ultimately the aim is to have all the major subspeciality topics covered so that the user can for example watch a recorded lecture on a particular topic, read a literature module on the same topic, and if they wish then complete an accompanying self-assessment test to assess their knowledge.

MM: Since the incorporation of teacher training into the Dutch National Postgraduate Educational Program for Radiologists, the quality of education has increased, the resources of teachers have tripled and interactive learning is offered to Dutch Radiologists. I could imagine that Education on Demand might follow suit at one point, supporting young teachers by providing lessons, coaching, and tips and tricks, in a teach-the-teacher approach, so that we can enforce our educational community and support potential young teachers.

ECRT: How has the platform developed with regard to usage and the tests offered?

SB: Since its launch at ECR 2015, usage of the platform has grown steadily, now counting more than 1800 users from a wide range of countries both within Europe and globally.

MM: We are expanding the material and tests offered daily and hopefully usage will increase even further.

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30 years of Action Against Cancer: Confronting challenges to reach success

In 1985, the European Council launched its first European action programme against cancer. To mark the 30th anniversary of this action, the European Commission and the Luxembourg Council Presidency jointly organised a high level event titled ‘30 years of EU action against cancer’, held in September last year, in Brussels.

To this day, the EU encourages cooperation in relation to cancer by partnering with a wide range of stakeholders across the EU and developing an ambitious European action programme against cancer. With the Commission’s adoption of the ‘recommendation on cancer screening’ in 2007, the EU took a necessary step towards a common approach to tackling cancer. This approach was followed by the publication of the European Commission’s Communication on Action Against Cancer, leading to the launch of the Joint Action on the European Action Plan Against Cancer (EPAAC) in 2009.

ENSURING ADEQUATE REPRESENTATION OF THE RADIOLOGY PROFESSION IN CANCER CONTROL

The EPAAC Joint Action, one of the best-known EU initiatives in this regard, ended its work in 2014. The core deliverables of the initiative included the development of National Cancer Control Plans (NCCP) and were summarised in the European Action Plan on Cancer Control and consisted of representatives from Member State national authorities as well as representatives from patient groups, scientific and medical associations specialised in cancer, organisations working on cancer prevention and industry.

The EPAAC Joint Action included the development of a European Guide on Breast Cancer Screening. This guide is currently developing European guidelines for breast cancer screening. Whilst a ‘Joint Action’ is an initiative co-funded by the EU and led by Member States’ health authorities, as well as non-governmental bodies, the European Commission also established a formal ‘expert group’ on cancer control in 2016, in order to provide better coordination of the different initiatives.

Another initiative the ESR is involved in is the European Commission’s Initiative on Breast Cancer (ECIBC), under the lead of the European Commission’s Joint Research Centre (JRC) this initiative is currently developing European guidelines for breast cancer screening.

Whilst a Joint Action is an initiative co-funded by the EU and led by Member States’ health authorities, as well as non-governmental bodies, the European Commission also established a formal ‘expert group’ on cancer control, explained that the group focused, among other things, on the promotion of cancer screening programmes based on European guidelines and targeted particularly on breast, cervical and colorectal cancers. It also aims to support and promote the CANCON Joint Action’s work and other initiatives on rare cancers.

The key goals reached so far include the presentation of the fourth edition of the European Code Against Cancer’ developed by the International Agency for Research on Cancer (IARC) as well as the promotion of a European Cancer Information System (ECIS), aiming to harmonise the existing national cancer registries and coordinating all the initiatives under the umbrella of the European Network of Cancer Registries (ENCR). The first step was the handover of the European National Cancer Registry (ENCR) secretariat from the IARC to the JRC.

The groups’ upcoming activities include the development of an ENCR website, the establishment of dedicated ENCR working groups, as well as the development of a common portal for data collection and software.

Given the essential role of imaging in cancer control, it is important for the ESR to ensure that the radiology profession’s input is adequately reflected in these EU initiatives. Moreover, according to Prof. Laghi, it is evident that better coordination of the different EU initiatives is essential, which “up to now have been too scattered”, to ensure a true harmonisation of standards and guidelines at a European level.

Diversity and rich history draw renowned radiologists to Bosnian congress

From October 16 to 18, 2015, in the beautiful atmosphere of the Hotel Europe, you can see monuments from Roman times, as well as Ottoman and Austro-Hungarian times. You can also see mosques, churches, and the synagogue within Sarajevo’s many turbulent historical events. The citizens of this town have lived together despite their differences. Just around the corner from the Hotel Europe, you can see monuments from Roman times, as well as Ottoman and Austro-Hungarian times. You can also see mosques, churches, and the synagogue within Sarajevo’s many turbulent historical events. The citizens of this town have lived together despite their differences.

The special guest of the congress was Prof. Andrea Laghi, ESR representative in the EC expert group on cancer control, explaining that the group focused, among other things, on the promotion of cancer screening programmes based on European guidelines and targeted particularly on breast, cervical and colorectal cancers. It also aims to support and promote the CANCON Joint Action’s work and other initiatives on rare cancers.

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New developments in the teaching case platform EURORAD

With the new Editor-in-Chief, Prof. Olle Ekberg, from Malmö, Sweden, in office since March 2015, EURORAD has once again seen significant developments.

This valuable collection of radiological cases is the ESR’s official teaching case platform dedicated to education and is widely used world-wide by more than 16,000 unique users each month. In order to reflect its educational mission, EURORAD now publishes new cases under an open licence, allowing the readers to share and adapt the material for non-commercial educational purposes, provided that the source is acknowledged. “I believe that education should be free to use without commercial interests and easily accessible, but at the same time the authors’ intellectual property must be protected,” explains Prof. Ekberg. All cases published under this open licence feature the Creative Commons logo to distinguish them from others for which the copyright is held by the ESR.

As traditional anatomy textbooks are used less and less in the digital age we live in, there is a growing need for flexible, reliable and easily accessible alternatives. Prof. Ekberg describes the innovation: “EURORAD is intended as an educational tool, and therefore we decided to expand and promote the possibility to submit not only clinical cases, but also cases about normal anatomy and functionality, as well as anatomical anomalies.” To reflect this additional function, the new case type ‘Anatomy and Functional Imaging’ was introduced.

EURORAD also started a collaboration with the Spanish musculoskeletal society, Sociedad Española de Radiología Músculo-Esquelética (SERME), after publication, selected cases are translated into Spanish in cooperation with the society to expand the pool of multilingual cases already available on the database.

Thanks to the shortened time-frames for review introduced by the former Editor-in-Chief Prof. Hanis L. Bloem and the expansion of the reviewing team by Prof. Ekberg, the average time from submission to decision was substantially reduced to 26 days, making EURORAD even more attractive for authors. EURORAD offers a wide range of teaching material, and is appreciated by both junior and senior radiologists. Apart from teaching activities, the cases can be used for learning alone, using the ‘Teaching Cases’ function, which show only images and clinical history, allowing the reader to guess the diagnosis.

To guarantee accuracy and the highest possible scientific quality, all cases are peer-reviewed by expert radiologists specialised in the relevant fields. A unique DOI (Digital Object Identifier) assigned to all cases makes them fully citable and retrievable, and readers can access the cases using a sophisticated search engine, including multilingual navigation.

BY LUCIE MOTLOCH

ESUR still going strong after 25 years

The European Society of Urogenital Radiology (ESUR) was founded 25 years ago and is as young and exciting today as it was then. Come with us on a brief journey through our society’s history.

In the mid-1980s, Henrik S. Thomsen recognised the lack of a European uroradiological forum which could provide teaching and allow for the presentation of research. In 1987, he organised the First Copenhagen Symposium on Uroradiology to which he invited speakers from Europe and the US, and which was attended by 150 participants. Encouraged by this success, he decided to hold a Second Copenhagen Symposium in 1990. Before this meeting, he contacted a number of European uroradiologists, the majority of whom were members of the American Society of Uroradiology (US-URS). Thomsen invited them to attend a discussion on the future of European uroradiology.

On August 26, 1990, twelve uroradiologists met in the garden of Sven Sorensen in Copenhagen. There was considerable enthusiasm for a European Society of Uroradiology and the informal meeting turned into the first General Assembly of ESUR. An ad-hoc board was established, with Ludovico Dalpa Palma from Italy as president, Henrik S. Thomsen (Denmark) as secretary/treasurer and Jean-François Moreau (France), Paul van Waes (Netherlands) and Leif Ekelund (Sweden) as the members-at-large. Between 1990 and 1992, the ad-hoc board drew up the society’s bylaws, which were approved at the Third European Symposium held in Copenhagen in 1992.

Since many members were also involved in the radiology of the male and female genital tracts, the society extended its name to the European Society of Urogenital Radiology (with the same abbreviation ESUR) in 1994. The society has grown rapidly and now has members and fellows from almost every European country and from many nations around the world.

Initially, ESUR met every second year, alternating with the European Congress of Radiology meetings, but since 2010 the society holds an annual symposium. The meetings have been held in different countries throughout Europe as well as a successful meeting in Cairo/Egypt, and have always included a scientific session for members, followed by a postgraduate course, open scientific sessions and exhibits. Abstracts of scientific papers and posters presented at the meetings are published in the journal European Radiology or in a syllabus which contains all presentations given at the postgraduate course. ESUR’s activities are not limited to holding meetings though. Over the past few years, there has been a significant increase in the number of courses, owing to the increasing activity of the society’s working groups.

Two of the aims of the society, as stated in its bylaws, are to promote research and improve knowledge of contrast media. In 1994, the board of ESUR established the Contrast Media Safety Committee (CMSC), chaired by Henrik S. Thomsen. Since then, this committee has issued a series of guidelines on the safe use of contrast media which have been published in peer-reviewed journals, printed in a series of booklets and posted on the ESUR website. They have significantly elevated the global profile of the society.

All of the ESUR guidelines have been well received by the radiological community. The ESUR website is often visited for guideline advice and requests for the contrast media booklets are numerous. In addition, the guidelines have been incorporated into the protocols of many departments all over the world and are also used by the health authorities of many countries as a reference for good radiological practice.
In addition, Prof. Thomsen has edited a book with contributions from members of the CMSC, which contains the guidelines, an updated reconstruction of the text and chapters on several new topics.

More recently, as previously mentioned, several groups on many topics have been established over the past few years. The topics range from female pelvic imaging and pelvic floor to paediatrics, prostate and to breast cancer and oncology imaging. All working groups have written guidelines which have been published, or will be in the near future. They also aim to establish standards by comparing different approaches to ultrasound practice, developing new imaging techniques and producing guidelines and technical protocols.

The society is an Institutional Member of the European Society of Radiographers (ESUR) and of the European Society of Radiology (ESR). The ESUR board has worked closely with the European Commission to develop a harmonised approach to the regulation and control of medical radiation exposure. The preparation of the standards is being coordinated by a newly established working group for medical radiation exposure. The ESUR board has worked in close collaboration with the ESUR, the European Commission, the European Society of Radiology (ESR) and the Czech Radiological Society.


dated standards, provided in cooperation with the Society of Radiographers and other specialist societies and institutions involved in the application and control of medical radiation exposure. The preparation of these standards is being coordinated by a newly established working group for medical radiation exposure. The society has maintained its close links with the American Society of Uroradiology: combined meetings with our American colleagues have been held here in Europe (Zurich 1996, Genoa 2002, Dubrovnik 2011) as well as in North America (Sonora Springs/Florida, April 2001, Boca Raton 2013). A stream of workshops, the Czech Radiological Society organise a meeting every year to support association for the blind.

The Czech radiology society uses annual congresses as a platform for closer links with the American Society of Uroradiology: combined meetings with our American colleagues have been held here in Europe (Zurich 1996, Genoa 2002, Dubrovnik 2011) as well as in North America (Sonora Springs/Florida, April 2001, Boca Raton 2013). A stream of workshops, the Czech Radiological Society organise a meeting every year to support association for the blind.

NATIONAL RADIOLoGY STANDARDS

The Czech Radiological Society (CRS) has been preparing an update of the national radiology standards in cooperation with the Society of Radiographers and other specialist societies and institutions involved in the application and control of medical radiation exposure. The preparation of the standards is being coordinated by a newly established working group for medical radiation exposure under The Ministry of Health of the Czech Republic. The members of this working group are representatives of all interested parties; Prof. Vlastimil Válek has been appointed executive chairman by the Ministry of Health. New radiology standards reflect progress in the development of diagnostic equipment, as well as diagnostic and therapeutic approaches, and put them in accordance with national and European legislation.

The national standards have detailed technical specifications for each type of examination and interventional procedure. In 2015, they provided the basis for developing local radiological standards at each individual department. The Czech Radiological Society published a general report on diagnostic and therapeutic approaches all over the country.

Unlike national standards, these standards cover all areas of medical radiation exposure in the Czech Republic and are published regularly by the Ministry of Health as guidelines for the relevant legislation (laws and regulations on specific health professions, medical radiation exposure and clinical audit). Last year, all departments underwent clinical audit according to this legislation. This is the result of more than 10 years of effort by the State Office for Nuclear Safety and the Czech Radiological Society.

OPEN DAY AT MOTOL UNIVERSITY HOSPITAL IN PRAGUE ON THE INTERNATIONAL DAY OF RADIOLOGY DEDICATED TO THE 120TH ANNIVERSARY OF PAEDIATRIC RADIOLOGY

To celebrate the International Day of Radiology 2015, an open day was held at Motol University Hospital in Prague (at the paediatric part of the department of radiology) on November 8 and organised by the CRS. The Society commemorates this important day every year, and last year the attention was focused on the use of imaging methods in paediatric radiology. This is the result of several years of study, which has shown that these methods are unique, not only because of their size but also because of the different spectrum of illnesses, different composition of tissues and their higher sensitivity to radiation. It is often difficult to explain to children the importance and logistics of an examination. That is why the diagnostic equipment, surroundings, along with the attitude and knowledge of staff in radiology departments have to be adapted to these factors.

Visitors learned about sonography, x-rays and CT examinations in an open and entertaining atmosphere. They found out that these examinations do not hurt; they experienced sonography examinations, x-rayed their favourite toys and tried to solve several radiological puzzles. The whole atmosphere was lightened by the presence of the Health Clowns. Apart from these pictures of their group, visitors could take a photo from Smilbox (a digital photo booth service) as a memory.

At this event, children and their parents could look behind the scenes of a radiology department. We feel that greater awareness among the general public about this field is important. It helps to develop greater healthcare awareness in the population, especially parents of children who undergo such examinations. It is the aim of the paediatric radiology section of the CRS to introduce paediatric radiologists into specialised teams, not only in large faculty hospitals but also in smaller hospitals. Only this will ensure quality services which are integral to expert diagnostic imaging. As a result, paediatric radiology has become a certified subspecialty of radiology.

The open day was held with the help of Prof. Roček, head of the department of radiology at Motol University Hospital. Our doctors and radiographers participated, the Health Clowns entertained (newRetailMiau), Smilbox donated their services (www.smilbox.cz) and volunteers from the Volunteer Center at Motol University Hospital assisted (www.dcmotol.cz).

THE CRS OFFERS SUPPORT

The CRS provides long-term support for various non-profit organisations. Officially the society is a partner of Svítluká, the association for the blind. During our congresses we organise runs for Svítluká and the proceeds are donated to this organisation. The next step was to sign an agreement about cooperation and mutual support. Why Svítluká? We can see, thanks to radiation which cannot be seen, and so, we help those who cannot see.

Another point of cooperation is the preparation of a special, limited edition wine, which is MRI and CT compatible and has been proven by MRI to be highly hypoplastic for Svítluká. This excellent and exclusive wine, both red and white, will be sold in black, non-transparent bottles and the proceeds from the bottles sold will be donated to Svítluká. The wine will be available to buy at the Czech Radiological Congress which will be held in Brno from October 13-15, 2016, but be sure to get your bottle right away as there is a limited number!
TOFTIPS FOR BEGINNERS

PART 1: STATISTICS – I NEED HELP!

BY CHRISTIANE NYHSEN

Have you been motivated to start your own research by high quality presentations at the ECR? Have you ever felt completely out of your depth when reading about statistical tests? You are not alone. Now you can get some essential top tips from a statistics expert, Dr. Verena Hoffmann PhD, who is an expert reviewer for European Radiology. Learn where you can get free online software and interpretation advice, which software packages may suit you, and how essential it is to have the correct statistical test set out from the start of any research project. Read on and don’t be afraid!

Dr. Verena Hoffmann is a statistician at the Institute for Medical Information Sciences, Biometry, and Epidemiology at the Ludwig-Maximilians Universität in Munich, Germany. She analyses study data mainly from the fields of leukaemia research and radiology and is a consultant to researching clinicians from the university.

ECR Today: A famous saying (attributed by some to Winston Churchill) states: “Do not trust any statistics you did not fake yourself.” Can you tweak any data just the way you like it? When are statistics misused?

Verena Hoffmann: It can be easy to give the reader a wrong impression by using inappropriate statistical methods. Because of that, statistical literacy is important for scientists. Statistical methods that make sense in one context can be completely wrong in another. One popular mistake is to attempt to group data, is calculating percentages. If the data of a thousand patients are available it is totally fine to report percentages to the decimal, while it is very misleading to report 66.6%. Percentages should be reserved for tests used for prospectively planned analyses of predefined endpoints according to the protocol, to avoid the problem of multiple testing. P-values can also be used descriptively, but other measures (such as the median, mean or mean differences) are often more meaningful.

ECRT: Which statistical tests are out there and which are actually helpful and meaningful? Are there any good or bad statistical tests? How do I decide which test to apply?

VH: Almost all available methods are good for some scenario of research. The key is to find the correct method for the respective research question. Regarding statistical tests, the choice of the test depends on the nature of the data. How is the data scaled? Is it normally distributed? How many samples do you have and are the samples dependent or independent of each other? For example, if you want to know if the rates of cured patients after one year of therapy significantly differ between two groups of patients who were treated with different medications, the Chi-squared test would be an option for analysis.

ECRT: When should one use statistical tests in research publications?

VH: Statistical tests should not be used for very small sample sizes. Generally, the term ‘significant’ should be reserved for tests used for prospectively planned analyses of predefined endpoints according to the protocol, to avoid the problem of multiple testing. P-values can also be used descriptively but other measures (such as the median, mean or mean differences) are often more meaningful.

ECRT: What software could you recommend for statistical analysis?

VH: The most commonly used, commercially available software packages are SAS and SPSS. SPSS is the more beginner-friendly as you can do most analyses by selecting them in menus. Some programming skills are needed to use SAS, but it is more flexible, as is the R software, which is freely available and also provides packages including the most recently developed methods. The use of all software requires a solid base of statistical methods so you will be able to interpret the results.

ECRT: Do editors (or reviewers) check statistical manuscripts prior to publication? What do I need to consider when submitting statistical research data? What should I avoid?

VH: A check of the statistical methods is getting more and more important, if you want to know if the rates of cured patients after one year of therapy significantly differ between two groups of patients who were treated with different medications, the Chi-squared test would be an option for analysis.

ECRT: Many famous people have written about the use or abuse of statistics in various settings. What is your favourite statistics-related quote?

VH: Andrew Lang said: “He uses statistics like a drunk man uses a lamp post, more for support than illumination.” Unfortunately this is true for some researchers, who are so very convinced of their hypothesis that they would rather go searching for a statistical method that supports it than stick with an appropriate analysis method that is telling them their hypothesis might not be true.

ECRT: Could you recommend any books or online resources that are brief and simple enough for beginners and yet helpful? Is there an online forum where I could get specific advice if I am unable to get help from my hospital?

VH: Almost all available methods are good for some scenario of research. The key is to find the correct method for the respective research question. Regarding statistical tests, the choice of the test depends on the nature of the data. How is the data scaled? Is it normally distributed? How many samples do you have and are the samples dependent or independent of each other? For example, if you want to know if the rates of cured patients after one year of therapy significantly differ between two groups of patients who were treated with different medications, the Chi-squared test would be an option for analysis.

ECRT: Would you have any other recommendations?

VH: Think about the analysis methods already when planning your research. Define primary and secondary endpoints, and confirmatory and exploratory analyses. Make an analysis plan you can stick to. Also make sure to collect all the information you will need for the analysis and to collect the data in a format that can be imported into the analysis software. Do a sample-size estimation so your analysis will not be underpowered. If in doubt, consult a statistician. Most research institutions employ someone who will help you – and when talking to him or her, don’t start the conversation with the Churchill quote.

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ECRT: Could you recommend any books or online resources that are brief and simple enough for beginners and yet helpful? Is there an online forum where I could get specific advice if I am unable to get help from my hospital?

VH: The Institute for Digital Research and Education at UCLA provides a great website covering many statistical methods and tips for software and interpretation (http://wwwats.ucla.edu/) and there is a wide range of tutorials available on YouTube, especially on the use of SPSS. While there are online forums and groups (mostly specific to the software you use) where people help each other with complex questions, be sure to do your research first. Just as there are few doctors out there able or willing to answer the question “my knee hurts – what can I do?”, there are also few statisticians who can answer unspecific beginners’ questions.

ECRT: Would you have any other recommendations?

VH: Think about the analysis methods already when planning your research. Define primary and secondary endpoints, and confirmatory and exploratory analyses. Make an analysis plan you can stick to. Also make sure to collect all the information you will need for the analysis and to collect the data in a format that can be imported into the analysis software. Do a sample-size estimation so your analysis will not be underpowered. If in doubt, consult a statistician. Most research institutions employ someone who will help you – and when talking to him or her, don’t start the conversation with the Churchill quote.

Interview conducted by Dr. Christiane Nyhsen, consultant radiologist at Sunderland Royal Hospital, UK, and former chairperson of the ESR Radiology Trainees Forum.
DIVERSITY OF VOICES

ESSL ART AWARD CEE 2015

AN EXHIBITION AT THE ESSL MUSEUM

Júlia Végh, Auction (part of Fiction of the Reality), 2014
© the artist
Europe is a concert of many voices and, as we have witnessed in recent months, these voices sometimes have difficulties agreeing on a harmonised course. While the same degree of diversity is also found in the European art world, the title of the exhibition, Diversity of Voices, refers less to discrepancies than to the tremendous variety found in the creative output of this region: the coexistence of 21 different individual stances is the red thread running through this exhibition. Diversity of Voices presents the findings of the search for artistic strategies and new approaches in Bulgaria, Croatia, the Czech Republic, Hungary, Romania, Slovakia, Slovenia and Turkey.

“This generation of artists were born at a time marked by great social and political change. Many of them respond to the impact of these upheavals. The artwork created by these young people is remarkable, and we will certainly hear a lot more from some of them,” notes curator Viktoria Calvo-Tomek.

The questions that inform the works presented cannot be categorised along the line of national clichés, they are very often global in nature, involving critical comments on institutions and society, identity, themes inherent to art or a subversive approach to the media.

“The very notion of the exhibition Diversity of Voices is to highlight the multiplicity which is so contemporary, so resonant and so very much required in progress. The show provides the opportunity to review, to juxtapose and to challenge the young artists’ work within the international context and to assert their position in the wider milieu. The Essl Art Award CEE endows the value of the artists’ as well as curatorial effort to materialise the concept of the international discourse,” notes Lucia Gregorová Stach, jury member of the ESSL ART AWARD CEE and chief curator of the collection of contemporary art at the Slovak National Gallery, Bratislava.

The 21 artists are the winners of the international ESSL ART AWARD CEE, held in Bulgaria, Croatia, the Czech Republic, Hungary, Romania, Slovakia, Slovenia and Turkey. The Vienna Insurance Group is the partner of this Essl project and its exclusive sponsor. The prize is awarded every two years and is open to students at art universities. Ten artists per country are shortlisted for an exhibition in the respective country capital, and in Istanbul in the case of Turkey. They are chosen by an international jury with experts from all participating countries, as well as experts from the Essl Museum and the Vienna Insurance Group. The jury visits each exhibition in order to select two winners for the ESSL ART AWARD CEE, endowed with EUR 3,500 per winner. In addition, Prof. Agnes Essl and Mrs. Eva Wirlitsch-Essl offer a Collector’s Invitation to five artists who will also be shown at the exhibition. The work of all winning artists will now be presented at the exhibition Diversity of Voices at the Essl Museum.

**Essl Museum**

*An der Donau-Au 1 3400 Klosterneuburg*

**Opening hours:**
Tuesday–Sunday 10 am–6 pm
Wednesday 10 am–9 pm

[www.essl.museum](http://www.essl.museum)

The Essl Museum

With its 5,000 exhibits, the Essl Museum today offers an excellent overview of Austrian painting since 1945, placing it in an international context. Whenever possible the collectors acquired a number of works by those artists that were of decisive importance for Austrian art. Collecting in depth was always an essential idea and the artists’ development in the course of their œuvre was to be shown. The scope of the Austrian exhibit in the Collection ranges from Abstract Expressionism of the 1950s and 1960s to Vienna Actionism and New Painting of the 1980s, and all the way to the reductionist art of the 1990s. In addition to the post-war paintings, the Collection contains an important group of works of Classical Austrian Modernism. Artists such as Herbert Boeckl and Albert Paris Gütersloh, who played an important role in the new Austrian art after 1945, are of particular significance, but the Collection also includes high-quality works by Alfred Kubin and the artists of the ‘Nötscher Kreis’.

Irina Ghenu, Fregoli Cotard, 2013 ongoing © the artist
THEATRE & DANCE

› ENGEL DES VERGESSENS
by Maja Haderlap
Akademietheater | 19:30
1030 Vienna, Lisztstraße 1
Phone: +43 1 51444 4145
www.burgtheater.at

› FLÜGEL
Robert Palfrader & Florian Scheuba, two of Austria’s most well-known satirists, try to take the bull by the horns
Rabenhof | 20:00
1030 Vienna, Rabengasse 3
Phone: +43 1 712 82 82
www.rabenhofertheater.com

› IMPERIUM
by Jan-Christoph Gockel & Tobias Schuster, based on the novel by Christian Kracht
Schauspielhaus | 20:00
1090 Vienna, Porzellangasse 19
Phone: +43 1 317 01 01
www.schauspielhaus.at

› ANATOL
by Arthur Schnitzler
Theater in der Josefstadt | 19:30
1080 Vienna, Josefstädter Straße 26
Phone: +43 1 42 700 300
www.josefstadt.org

› LOST AND FOUND
by Yael Ronen & Ensemble
Volksoper | 20:30
1090 Vienna, Währingerstraße 78
Phone: +43 1 52111 400
www.volkstheater.at

CONCERTS & SOUNDS

› CZECH PHILHARMONIC ORCHESTRA, conductor JIŘÍ BĚLOHLÁVEK
KIRILL GERSTEIN, PIANO
A. Dvořák: ‘Othello’ Overture op. 93; P.I. Tchaikovsky: Concerto for piano and orchestra No. 1 b minor op. 23; A. Dvořák: Symphony No. 6 d major op. 66
Konzerthaus (Classical Music) | 19:30
1010 Vienna, Lothringerstraße 20
www.konzertportal.at

› JEWGENIJ KISSIN, PIANO
W.A. Mozart: Sonata c major KV 330; L. van Beethoven: Sonata f minor op. 57; J. Brahms: Intermezzi; I. Albéniz; J. Larregla
Musikverein (Classical Music) | 19:30
1010 Vienna, Baslerdomerstraße 13
www.musikverein.at

› DAVE HOLLAND TRIO (US)
Porgy & Bess (Jazz) | 20:30
1000 Vienna, Riemergasse 11
www.porgy.at

› GORILLA BISCUITS (US) + MODERN LIFE IS WAR (US) + TOUCHE AMORE (US) + GWLT (Germany)
Arena (Alternative Music) | 19:00
1020 Vienna, Baumgasse 86
www.arena.co.at

OPERA & MUSICAL

› CARMEN
by Georges Bizet
Arranged by Georg Breinschmied and Tscho Theissing for accordion, violin and double bass
Directed by Andreas Zimmermann
Kammeroper | 19:00
1010 Vienna, Fischmarkt 24
www.theater-wien.at

› DER KONGRESS TANZT
Operetta by Werner Richard Heymann
Volksoper | 19:00
1090 Vienna, Währingerstraße 78
www.volksoper.at

› ONEGIN
Ballet by Pyotr Ilyich Tchaikovsky, choreography by John Cранko
Wiener Staatsoper – Vienna State Opera | 18:30
1010 Vienna, Wagnergasse 1
www.wiener-staatsoper.at

› MOZART!
by Michael Kunze & Sylvester Levay
Raimundtheater | 19:30
1060 Vienna, Wallgasse 18–20
www.musicalwien.at

Please note that all theatre performances are in German.