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SPECIAL ISSUE: MEDICAL, TECHNICAL, PHARMACEUTICAL, INDUSTRIAL NEWS & MUCH MORE

Successful OCT imaging during cancer surgery

Awards mount up for novel technology

Brenda Marsh *reports from London*

Marginal tissue surrounding a tumour can be quickly checked for the presence of cancer, aiding the surgeon's decision on removal

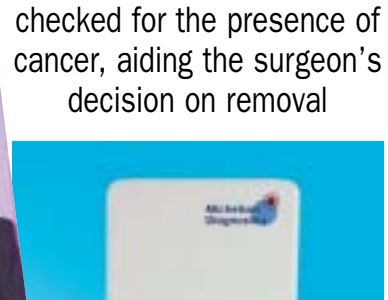
UK - Optical imaging company *Michelson Diagnostics Ltd* (MDL) has announced successful initial results from clinical testing of its novel optical coherence tomography (OCT) imaging technology. The tests, performed on cancerous and precancerous human oesophagus and lymph node tissue, were designed to establish the potential value of MDL's optical imaging technology used during cancer surgery.

Another grant: Jon Holmes, CEO of Michelson Diagnostics, accepting the 2006/7 London Development Agency R&D 'Winner Award' (value: £116k) from clinical scientist and well-known TV medical presenter Lord Robert Winston FMedSci (right) Emeritus Professor at the Division of Surgery, Oncology, Reproductive Biology and Anaesthetics, Imperial College London

The EXD1301 OCT microscope is now available with a motorised stage that enables the user to capture slices of data from their sample. These can be processed to produce 3-D-rendered images or 'fly-through' videos, or examined slice-by-slice to help find the best match with histopathology

During surgical removal of a tumour a safe margin of healthy tissue surrounding it must also be cut, to ensure no cancerous tissue remains. For this, surgeons sometimes take biopsy samples of the surrounding tissue for laboratory analysis, but must then await the result before resuming surgery.

During cancer surgery, the MDL system provides, in real-time, high-resolution sub-surface images of excised tissue — at far higher resolution than ultrasound or MRI scans, MDL reports.



OCT image of fingernail cuticle, taken with EX1301 OCT microscope, 6mm x 2mm. Scale bar: 1mm. Pixel size: 6µm

Ex-vivo clinical testing has taken place at University College Hospital, London and Gloucestershire Royal Hospital. At the latter, tissue sample images from the OCT scanner were compared with histopathology images analysed by trained pathologists. Florian Bazant-Hegemark, biophotonics expert at Gloucestershire Royal Hospital, said: 'Clinical features of oesophagus tissue and of lymph nodes can be established, in real time, with the MDL OCT scanner, which is very exciting, because it means that OCT scanning has a realistic chance of guiding biopsy and of reducing the need for biopsy, which could speed up cancer operations, reduce the pressure on overloaded pathology departments, and improve outcomes from cancer surgery. The next stage is to confirm these preliminary results in large double-blind trials.'

Michelson Diagnostics recently secured £600,000 of early stage funding to further enhance its pioneering technology and pursue in-vivo trials in a clinical environment. The investment round was led by investment fund London Seed Capital in conjunction with the London Business Angels and Catapult Venture Managers. 'This funding,' said Jon Holmes, CEO of MD, 'will enable the company to continue the development of our Optical Coherence Tomography technology and demonstrate its potential to solve significant unmet medical needs in multi-billion pound markets worldwide. We are tremendously excited by the confidence shown in Michelson Diagnostics by our new investors.'

In September, a new collaboration, led by MDL, was also awarded a £325k grant from the UK's Technology Strategy Board. This collaboration is between MDL, University of Cardiff, Gloucestershire Hospitals NHS Foundation Trust, National Physical Laboratory, semiconductor specialist Kamelian and medical imaging systems specialist Tactiq.

The funded project, named 'Omicron', will, over a period of two years, focus on the development of an in-vivo imaging probe, using the MDL OCT, to obtain high resolution sub-surface images of cancerous tissue, operating at the new, untried wavelength of 1Ìm.

Leading OCT researcher Professor Wolfgang Drexler, Director of Research at the Department of Optometry and Vision Science, University of Cardiff, said: 'We believe that images acquired at 1Ìm wavelength will offer improved contrast and resolution that will help clinicians to distinguish between healthy and cancerous tissue.'

The funding team with the EX1301 OCT Microscope. From left: Julie Newman (Catapult Venture Managers), Tom Flynn (MDL CFO), Colin Hopper (Head, Unit of Oral and Maxillofacial Surgery, University College Hospital, London), Jon Holmes (MDL CEO) and Rob Desborough (London Seed Capital)

GERMAN HOSPITAL DAY
10:00-16:00 hrs.
CCD East, 1st floor, room R
International forum I: Quality assessment systems in hospitals – towards a voluntary European accreditation system

- Quality assessment systems in Europe, Dr. Charles Shaw
- Plans of the European Commission regarding the provision and quality of healthcare services
- The quest for superior health service quality, Prof. Vleugels
- Experiences in the Netherlands
- Experiences in Denmark, Dorte Bagger
- Experiences in Germany, Dietmar Nichterlein
- The future of accreditation in Europe, Manuel Peiro

MEDICA MEDIA WORKSHOP
10:30-13:50 hrs.
Hall 16, booth A05, Workshop room
Intelligent, networked, mobile and suitable for every-day work – computers of the future in the healthcare system of today

- Technology and the healthcare system in politics, Jörg Tauss, member of the German parliament
- Technological innovations in medical care. Where are we - and where are we heading? Andreas Gräfe, FZK Forschungszentrum Karlsruhe, Dr. Christoph Kunze, FZI Forschungszentrum Informatik
- Telemedicine improves stroke care: mobile computing in the ambulance car can save crucial time in stroke emergencies, Prof. Dr. med. Bernd Grieswing and Dr. med. Volker Ziegler, Rhön-Klinikum, Dr. Carsten Holtmann, FZI Forschungszentrum Informatik
- New approaches to patient monitoring and home care: activity monitoring in multiple sclerosis care, Dr. Martin Daumer, Sylvia Lawry Centre for Multiple Sclerosis, Dr. med. Stefan Schlesinger, Rhön-Klinikum, Dipl.-Inform. Asarnusch Rashid, FZI Forschungszentrum Informatik, Karlsruhe
- The financing trap: current problems and options, Dr. Carsten Orwat, FZK Forschungszentrum Karlsruhe
- Future-oriented technologies in healthcare: approaches to generalisation and practical application, Michaela Wölk, IZT Institut für Zukunftsstudien und Technologiebewertung, Dr. Rolf Dahm, n-tier construct
- Perspectives and strategies in emergency management: the Stroke Angel system as template for preclinical stroke care, Charlotte Kögerl, Stiftung Deutsche Schlaganfall-Hilfe, Prof. Dr. med. Bernd Grieswing, Rhön-Klinikum

MEDICA MEDIA USER FORUM
11:30-13:00
Hall 16, booth A05, stage and video
The physician and telemedicine in a globalised world

- Historical background and current status of transnational activities in eHealth, Univ.-Prof. Dr. med. Otto Rienhoff, Institut für Medizininformatik, Universität Göttingen, Germany
- Pathology International: Future Options, Prof. Dr. med. Manfred Dietel, Direktor des Instituts für Pathologie, Charité Berlin, Germany
- Telepathology and cytology projects: examples for Cambodia and Tanzania, Dr. med. Gerhard Stauch, Aurich, Germany
- Experiences with telemedicine in Latin America, Dipl.-Inform. Stephan Kiefer, Group Manager Health Telematics / Homecare, Fraunhofer-Institut, Biomedizinische Technik (IBMT)
- Sourcing alternatives for medical services, Tobias Staub, Dept. Med. Informatics, Universität Göttingen

MEDICA MEDIA USER FORUM
14:00-16:00 hrs.
Hall 16, booth A05, stage with video
Panel discussion: Africa – Is telemedicine a factor in the development of the health care?

- The WHO and telemedicine, S. Yunkap Kwankam, Ph.D., Co-ordinator eHealth World Health Organisations, Geneva, Switzerland
- European telemedicine services for developing regions, Ilias Iakovidis, EC – DG Information Society and Media, European Commission, Brussels, Belgium
- The Open-MRS Applications Development in Africa, Gishlan Kouematchoua, Cameroun / University Göttingen, Abteilung Medizinische Informatik
- Telemedicine in the Republic of South Africa, Dr. Moretlo Molefi, Unit Director B. sc, MBChB, Dip Telemed, Management Programme, South African Medical Research Council

MEDICA CONGRESS
14:30–17:30 hrs.
CCD South, ground floor, room 02
Lifestyle changes in patients with type 2 diabetes in Germany

- Lifestyle interventions as non-pharmacological therapy with patients with type 2 diabetes: review of the research results, Prof. Dr. Stephan Martin, Düsseldorf, Germany
- Coaching: how to overcome psychological barriers to motivation and empowerment? Dr. phil. Dipl.-Psych. Bernhard Kulzer, Bad Mergentheim, Germany
- Diet models: Low Carb, Glyx, lots of protein, little protein – which concept should be recommended? Prof. Dr. Hubert Kolb, Düsseldorf, Germany
- Diabetes-MOBIL: an approach to group coaching for primary and secondary prevention, Gabriele Faber-Heinemann, Düsseldorf, Germany

MEDICA CONGRESS
10:00-13:00 hrs.
CCD Pavilion, 1st floor, room 16
Blood stem cells as therapeutic source for tissue replacements

- Plasticity of blood-producing stem cells, Prof. Dr. med. Rainer Haas, Universitätsklinikum Düsseldorf, Klinik für Hämatologie, Onkologie, Düsseldorf, Germany
- Blood stem cell therapy and liver diseases, Prof. Dr. Wolfram Knoefel, Düsseldorf, Germany
- Therapy of cardiac and vascular diseases with own adults stem cells, Prof. Dr. Bodo E. Strauer, Düsseldorf, Germany
- Blood stem cell therapy and neurodegenerative diseases, Dr. Marcel Dihné, Düsseldorf, Germany
- Allogene umbilical cord blood as therapy source for blood stem cells and tissue, Prof. Dr. Gesine Kögler, Düsseldorf, Germany

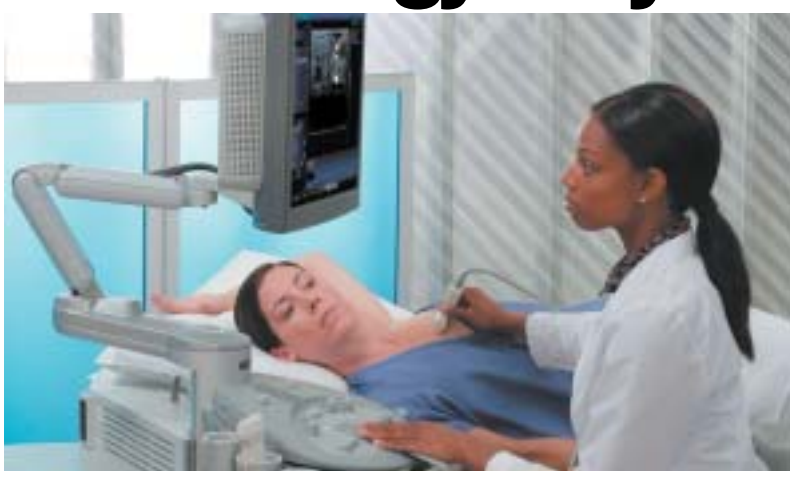
GERMAN HOSPITAL DAY
10:00-12:00 hrs.
CCD East, 1st floor, room L
Specialist Forum V: Innovation exchange, part I: Providers and users present innovations in medical technology and electro-medicine

- The cost-savings potential of innovative medical technology, Prof. Dr. Ing. Marc Kraft
- Optimisation potential in equipment management (planning, logistics, personnel management, medical technology, certification, process validation), Michael Koller, Hans-Peter Welsch
- New financing solutions for medical technology, Dr. Björn Schlosser

MEDICA CONGRESS
10:00-13:00 hrs.
Vascular surgery: what's true & tried, what's new? CCD South, 1st floor, room 07a

- Hybrid procedures vs. open procedures with thoracic-abdominal aneurysms, Dr. Peter Heider, München, Germany
- Diabetic foot syndrome: Bypass surgery with coverage of soft tissue, Prof. Dr. Werner Lang, Erlangen, Germany
- Carotid stenosis: Is the carotid stent only the second-best solution? Dr. Piotr Kasprzak, Regensburg, Germany
- New techniques for varicose vein surgery: what's the gold standard today? Dr. Thomas Noppeney, Nürnberg, Germany
- The angio suite in vascular surgery, Dr. Holger Diener, Hamburg, Germany
- Advancements in vascular surgery: are the new developments affordable? Prof. Dr. Arend Billing, Offenbach, Germany

Ultrasound technology may reduce breast biopsies



eSie Touch Elasticity Imaging, a new method in ultrasound, demonstrated by Siemens Medical Solutions in March at the European Congress of Radiology, is an adjunct to regular breast ultrasound examinations, and may provide a clinically relevant differentiation of benign and malignant tissue. Several studies have shown promising results, and suggest the method could reduce the number of unnecessary breast biopsies.

The software for this diagnostic advance is offered with the 5.0 release of the Acuson Antares ultrasound system, premium edition.

Clinicians use the application to generate an elastogram, which provides additional information about mechanical properties, e.g. the stiffness of breast lesions. Siemens reports that the method offers a significant improvement in the acquisition of the data – in most cases, the heart beat and the breathing of the patient will provide a sufficient movement to generate the elastogram.

In one published study, 80 patients with a total of 123 suspicious lesions were examined. Using elasticity measurements from the eSie Touch Elasticity Imaging application, 18 lesions were classified as malignant, which was confirmed in 17 cases by a needle-guided biopsy. Of the 105 lesions predicted as benign, all were biopsy-proven benign. 'Elasticity imaging has a high specificity,' said the head of this study, Richard G. Barr, professor for radiology at the North-eastern Ohio University College of Medicine and Radiology at the South-woods X-Ray and MRI, Ohio, USA. Prof. Barr hopes that the use of elasticity imaging will help to reduce the number of breast biopsies for many patients. The results of the Barr study are presently being validated in comprehensive studies in Europe and elsewhere in the United States.

Elasticity imaging illustrates the relative stiffness of tissue compared with its surroundings. As tissue undergoes pathologic changes, its relative stiffness will change. The stiffness of the tissue as well as its size compared to the B-mode image provides further insight into potential pathology.

eSie Touch Elasticity Imaging has been available on the Acuson Antares 5.0 ultrasound system premium edition since March this year.

HOSPITAL COMMUNICATIONS CENTRE (KCC FORUM)
12:00-12:30 hrs.
Hall 16, booth C76
Guidelines for the set-up of Ors. Chairman: Dipl.-Ing. Johannes Dehm, VDE Initiative MikroMedizin

MEDICA VISION
11:30-13:30 hrs.
Hall 3, booth H92
Patient-friendly surgery with innovative technology: orthopaedic surgery – orthoMIT, 3-D tracking for surgical navigation: new approaches and results, RWTH Aachen, Germany

- Ultrasound registration in guided hip surgery, Dr. Sergej Kammerzell, Aesculap AG, Tuttlingen, Germany
- Registration of pre-surgery MRI data with intra-operative 3-D ultrasound for computer-aided orthopaedic surgery, Susanne Winter, Neuroinformatik, Ruhr-Universität Bochum
- Guided modular mini robot systems for minimal invasive orthopaedic surgery, Martin Niggemeyer, RWTH Aachen
- Best possible correction of malformations of the lower extremities: A new approach, Peter Belei, RWTH Aachen
- Miniaturised 3-D ultrasound scan for cement removal in revision hip endoprosthetics, Stefan Heger, RWTH Aachen.

GE IN GERMANY

Customer Centre & European Research Laboratory expands

GE Healthcare reports that, in recent years, it has been making it quite clear just how important the German market is for the Group. In 2006, GE Healthcare opened its new Customer Centre in Munich to present itself there as a complete Healthcare supplier: Diagnostic Imaging (computer tomography and X-ray equipment), Clinical Systems (patient monitoring, ECG and ultrasound), Medical Diagnostics (contrast media), Life Sciences (protein separation) and Integrated IT Solutions (processing of clinical data), even through to Building Management, all are offered in Munich. A further major focal point of the corporate concept is the 'early health' model of care, which is targeted at early diagnosis, the identification of initial syndromes even before they appear and on efficient prophylaxis.

In Germany, GE Healthcare currently has 1,800 employees, about 200 of these in the Customer Centre Munich. **Rolf Hannesen**, Human Resources Manager of GE Healthcare Deutschland, said: 'At the moment we have over 200 positions vacant, mainly for physicians and medical technicians and are actively looking for suitable applicants. Up to 2009, we are planning about 300 to 400 new jobs, mainly in Sales and Service'. At Medica 2007, interested parties can inform themselves about career possibilities at GE Healthcare (Hall 10, Booth A56).

The GE Research Centre Europe is located not far from the GE Healthcare Customer Centre, on the campus of the Technical University of Munich, in Garching. The $50 million investment is intended to attract leading researchers from all over the world who work in medical technology and energy. In the GE Research Centre Europe in Garching, around 200 scientists, engineers and technicians from 20 nations are already at work and the search continues for performance-orientated top personnel.

GE says it demands a great deal of its employees, but the Group also has something exceptional to offer. 'If you don't like change, you don't like GE,' said **Rudolf Beyenburg**, company spokesman of GE Healthcare in Germany who has worked in the company for almost 28 years. 'If you get involved with GE, that it's 150%. But, on the other hand, the career opportunities also multiply correspondingly, because our success is based on performance-awareness, dynamics and change.'

Anyone who performs well at GE Healthcare can take advantage of four management programmes, the company points out. Over a period of two years, participants manage projects of their own at different European locations. At the beginning of each stage targets are set, the fulfilment of which is checked regularly. Every three months exams are completed on the theoretical background. For scientists and engineers who prefer to develop in their own specific fields, there are various specialist careers within the Group; the 'Edison Engineering Development Programme'.

Company details:
GE Healthcare at
www.gehealthcare.de

The optical biopsy: Coming into view?

Expansion of optical coherence tomography (OCT) into oncology applications

A British collaboration has secured £325,000 (€460,000) of government backing to develop an *in vivo* optical imaging probe for diagnostic and therapeutic applications in oncology. The long-term objective is to use optical coherence tomography (OCT), an interferometric imaging modality, to perform real-time diagnosis and to guide the removal of cancerous or precancerous tissue during the same procedure.

The two-year *Omicron initiative*, a consortium of industrial, clinical and academic research partners aims to explore the diagnostic efficacy of OCT at a wavelength of 1 µm. It is thought that OCT images acquired in this region of the spectrum will offer improved contrast and resolution, helping clinicians to distinguish between healthy and cancerous tissue.

'OCT scanning has the potential of both guiding and reducing the dependence on biopsies...reducing pressure on overloaded pathology departments and improving outcomes from cancer surgery,' said Dr Nick Stone, Head of Biophotonics at Gloucestershire Hospital NHS Foundation Trust (one of the Omicron partners).

It is estimated that OCT generates sales in excess of €41.5 million a year in the ophthalmology market. According to Jon Holmes, CEO of Michelson Diagnostics, the technology is already transitioning into other clinical settings. 'OCT is well-established for use in retinal applications, but commercial applications are now starting to happen in many other areas too,' he said earlier this year.*

More than 800 research papers on OCT were published in 2006. While over half of these discussed ophthalmic applications, other key areas of interest included cancer and heart disease, as well as dental and neural applications. 'Areas where the research is being done give some indication of those areas approaching commercial interest,' said Mr Holmes. 'Last year around 90 patents were filed in OCT, clearly there's a lot of activity.'

Currently 19 companies offer OCT-related products (11 in North America, seven in Europe and one in Japan). Only one third of these are focusing on ophthalmology use, other target application areas include cardiovascular, cancer and dentistry.

Omicron partners are Michelson Diagnostics (an OCT start-up), Kamelian (a specialist in III-V photonic components), Tactiq (a medical-imaging systems consultancy), Wolfgang Drexler's biomedical imaging group at Cardiff University and the National Physical Laboratory Technology transfer.

**http://medicalphysicsweb.org/cws/article/industry/27470*

POCI: AN INTRA-OPERATIVE IMAGING PROBE FOR SENTINEL NODE LOCALISATION

By Stéphanie Pitre PhD, co-inventor of the TreCam camera, CNRS, Paris

Dr Stéphanie Pitre of the Imagerie et Modélisation en Neurobiologie et Cancérologie laboratory, UMR 8165, University Paris 7-Denis Diderot and University Paris-Sud 11

Growing interest in sentinel lymph node (SLN) detection has led to its use in many clinical centres. The most successful protocols for localisation of SLNs are those that include preliminary lymphoscintigraphy performed with a conventional gamma-camera. In the absence of a nuclear medicine department, SLN protocols using only an intra-operative counting probe are generally less efficient. To overcome this problem our group has developed a high resolution intra-operative imager, POCI (Per-Operative Compact imager) dedicated to nuclear medicine use.

The current hand-held POCI prototype is based on a 40 mm diameter intensified position sensitive diode (IPSD) coupled to an interchangeable gamma head module. The spatial resolution of the POCI camera is 2.2 mm FWHM (in contact), a corresponding detection efficiency of 10.7 cps/µCi and an energy resolution of 32%. The total weight of the POCI device is 1.2 kg and the corresponding outer dimensions are 95x95x85 mm^3.

Since January 2006, a clinical study (N°P040417) at the Tenon Hospital (Paris) has been evaluating its use in a sentinel node localisation protocol for breast cancer staging in 200 patients. A peritumoural injection of 160 MBq ^{99m}Tc labelled nano-colloids is performed two hours before the lymphoscintigraphy, which is realised pre-operatively, first using a conventional single-head gamma-camera and then the POCI camera. These examinations are carried out by two different operators blinded to each other's results. The POCI is used in contact with the patients' skin scanning the whole axillary area with 10-second acquisition images.

The following day, the surgeon uses POCI to perform an intra-operative lymphoscintigraphy and then, the counting probe for transcutaneous SLNs pre-localisation. The number and the localisation of SLNs obtained by both intra-operative detectors are compared with those obtained the day before with the conventional gamma-camera. So far, 105 patients have been included in this clinical protocol. All SLNs initially localised by the standard gamma-camera were detected with the POCI camera within exploration times that ranged between two and 10 minutes.

These preliminary clinical results show that the POCI camera is able to predict the number and localisation of all SLNs.

A reprocessor for ENT endoscopes

NEW

Hall 12 F13

In bronchoscopy and gastroenterology, reprocessors are commonly used to provide a quick availability of endoscopes. However, ENT departments do not dispose of dedicated material, according to the French company Soluscope Group, which manufactures endoscope reprocessors and the detergents used to wash and disinfect them.

At MEDICA, the company is launching on to the international market the *Soluscope ENT* — designed specifically for ear, nose and throat (ENT) procedures; this results from 14 years' R&D by the company, which adds: 'It has already earned an excellent reputation in the French market, not least because the automated disinfection system dramatically reduces cost per cleaning cycle.'

This compact product — just 36cm wide – can prepare a reprocessed ready-to-use endoscope in under 12 minutes. Other assets:

- It offers a bowl adapted to ENT endoscopes, cutting down filling times and chemistry consumption.
- Complete cleaning and disinfection of an endoscope takes 12 minutes.
- It is EN-ISO-15883 compliant
- The efficient traceability system includes patient/endoscope barcodes, automatic control of the cycle data and ticket printout.
- Operators have no contact with products and fumes.
- The standard machine is delivered with its water pre-treatment, including pre-filtration and sterilising filtration, both disinfected daily during the self disinfection of the machine.

The company adds that the chemical products used for the Soluscope ENT are single-use: the Soluscope C+ cleaner, with enhanced efficacy on biofilm, and Soluscope PA, composed of peracetic acid and corrosion inhibitor. 'The low concentration of products used and the continuous leak-test guarantees optimum protection of endoscopes.'

Soluscope's other flexible endoscope reprocessors will also be on show. 'They effectively eliminate the risk of contamination for patients and users during digestive or bronchial procedures,' the firm points out.

The Novalis Tx for stereotactic radiosurgery

NEW

SURGERY

Novalis Tx, a system for stereotactic radiosurgery, has resulted from a partnership between the Munich-based medical technology company BrainLAB AG and Varian Medical Systems Inc, two firms that have successfully worked together on radiation therapy products for over a decade. The powerful linear accelerator Trilogy Tx and special technology for beam focusing was contributed by Varian; BrainLAB, which focuses on surgery and radiosurgery, provided the software.

The system is suitable for the radiation of tumours and vascular abnormalities in the brain, along with tumours in the head & neck, spine, lungs and liver. The companies report that Novalis Tx cuts down on treatment times and offers versatile radiation modalities. 'The integrated system facilitates continuous radiosurgical treatment from the planning stage to patient positioning — and monitoring and implementation. The collimator, with a fin spacing of 2.5 millimetres, adapts the treatment beam precisely to the shape of the tumour. This means that a high radiation dose can be administered whilst the surrounding tissue remains largely unaffected.'

Treatment flexibility

The Novalis Tx offers different treatment possibilities for a multitude of indications, such as malignant and benign tissue changes, vascular abnormalities and functional lesions. 'Due to the dynamic beam focusing and the frameless patient positioning clinical oncologists can choose individual treatment options such as radiosurgery or image guided radiotherapy (IGRT), depending on indication. Treatment becomes more effective and patient friendly.'

Novalis Tx uses multiple radiation energy from 6-20 million electrovolt (MeV) to treat deep-lying tumours and to preserve the surrounding, healthy tissue. The high performance of the linear accelerator with 1,000 monitor units allows hospitals to carry out twice as many radiosurgery treatments per day with the Novalis Tx than they would be able to do with any other systems currently available, the companies point out. 'With the Novalis Tx, Varian and BrainLAB are offering clinical oncologists, neurosurgeons and other experts the leading, current radiosurgery system,' said Tim Guertin, president and CEO of Varian Medical System

Stereotactic radiosurgery

Italy – The latest advance in stereotactic radiosurgery – the Leksell Gamma Knife Perfexion made by Elekta, is due for inauguration this month at the Neurosurgery Department in Niguarda Hospital, located in the northern area of Milan. This prestigious hospital employs over 700 physicians and 1,500 nurses, and over 50,000 patients are admitted annually, and over 20,000 surgical procedures are performed in 32 operating rooms.

The Neurosurgery Department is one of the most esteemed in Italy and one of the national referral centres for the treatment of cerebral vascular arteriovenous malformations (80 cases annually) skull-base tumours (50 cases) and drug-resistant epilepsy (80 cases).

Under the chairmanship of Professor Massimo Collice, who is also President of the Italian Neurosurgical Society, the Neurosurgery Department at Niguarda will treat tumours and other brain disorders with Leksell Gamma Knife Perfexion, based on protocols and treatment data from the approximately 500,000 patients who have undergone Gamma Knife surgery since this method came into clinical practice in the 1980s.

We have evaluated Leksell Gamma Knife Perfexion based on the system's performance at several hospitals around the world, not least in Marseille, France, where our colleagues have more than one year's experience using this new system,' Prof. Collice explained. 'With its unlimited cranial reach, robotic approach and fantastic ability to sculpture the dose to the target, we will get an important addition to our arsenal in the fight against different brain disorders.' Along with patients with brain metastases, a large number of patients with cerebral AVMs, skull base tumours and epilepsy will also benefit from this new installation.

'Gamma Knife surgery has become the world's most widely used radiosurgery treatment due to its extraordinary accuracy, reduction of excess radiation dose to the body, extensive history and clinical documentation. Unlike other systems, invoking compromises in order to be able to treat the whole body, Leksell Gamma Knife specifically is designed to optimize treatment to the head – a fact appreciated by neurosurgeons and patients alike,' Elekta, points out.

Developed in conjunction with leading neurosurgeons, the company adds that the Leskell Gamma Knife is:

- **Precise – thousands of radiation beams converge with a level of accuracy better than 0.15 mm, leaving nearby healthy tissue undamaged.**
- **Proven – With almost 50,000 patients treated annually, and thousands of peer-reviewed scientific articles, the system has unmatched clinical experience.**
- **Safe – Unwanted radiation dose to the body is up to 100 times less than that of competing technologies**

Multi-therapy pumps for hospitals and homecare

The latest versions of multi-therapy pumps from Q-Core Ltd. (Israel), including the AP 34 infusion pump and the EF 34 enteral feeding pump, are suitable for hospital or homecare use. The portable devices can be worn in a pouch in virtually any social environment, or hooked into a cradle for hospital staff to monitor and programme drug administration on the detachable touch screen.

The multi-therapy pumps are based on the principles of electromagnetic propulsion, increasing patient safety with dramatically improved flow accuracy, the manufacturer reports, adding that Q-Core pumps have an exceptional infusion rate from 0.1-1000 ml/h and can be used with all patients, even infants. 'This provides an economic advantage to hospitals because there is no longer any need to purchase different sized pumps and IV sets,' the manufacturer points out.

The AP 34 a next generation multi-therapy delivery system from Q-Core.

No end of uses and items for endoscopy

There are 12 categories for endoscopes or endoscopy products at MEDICA, as hundreds of firms exhibit the necessary materials or equipment for this expanding surgical field. Above and beyond today's various types of endoscopes – nasal, ear, neuro, urological – MEDICA visitors can also inspect the tubing from which they are made, the fastenings they need, the special trolleys and cleansers and disinfectants to keep them useable; they even have specific cupboards in which to be stored. On top of all these products is the video endoscope and CCD cameras; for that area, alone, there are 46 exhibitors.

Endoscopy has become an industry in itself.

Today, the smallest endoscopes have shrunk to under a millimetre in diameter, enabling them to be inserted into the most delicate passageways of the human body, whether to remove stones from the bile duct or clear salivary ducts.

Today's endoscopes feature light sources, lenses and two working channels through which, depending on requirements, forceps, a drill, a brush, a basket or a laser filament can be passed. Each piece of equipment is less than one millimetre in size — smaller than the diameter of a matchstick.

Professor Johannes Zenk, an ENT specialist at the University Hospital of Erlangen, Germany, expects these instruments to enable new discoveries about the progress of disease.

The ENT endoscopy specialist is particularly interested in the disease pattern of obstructive sialadenitis, an inflammation of the salivary glands caused in this case by stones which block the excretory duct of the major facial salivary gland. It is imperative that such stones are removed.

Prof. Zenk turns to endoscopic removal of stones in cases where it is not possible to break them up from the outside using bundled sound waves. Prof. Zenk uses a small-calibre endoscope to enter the 0.5-1.5 mm wide passages of the facial salivary glands. He uses a mini hand-powered drill to hammer away at the stone until he can retrieve the fragments with a miniature basket. While he uses an elastic device to expand strictures caused by other factors, he also uses the drill to remove tissue. The result of this operation is that more than 80% of patients remain symptom-free for many years.

NEW

Chest mounted pulse oximetry

ST&D Ltd, a UK based manufacturer of wireless monitoring systems, has designed a novel chest mounted pulse oximetry system. Patients wear just a small patch electrode, similar to a Band-Aid, onto which the miniaturised wireless monitor is clipped. The device continually measures the five vital signs; arterial oxygen saturation (SpO2), ECG, respiration, temperature and motion.

The system uses a patented optical technique that, ST&D reports, greatly decreases the risk of motion artefacts and picks up changes in oxygen saturation much more quickly than SpO2 fingertip monitoring. This reliable monitoring system enables a much quicker diagnosis of changes than is available from conventional systems, the firm points out.

Details: www.ventilators.com

NEW

Extra-bright LED laryngoscope handles

New brighter, LED laryngoscope handles are now available from the Propper Manufacturing Company Inc. (USA). These handles fit any fibre optic blade compliant with the ISO 7376-3 'Green System" standard and have an appreciably brighter LED light source lasting 1000x longer than a normal halogen bulb. The removable outer compartment allows hassle-free cleaning and sterilisation. All Propper LED handles come with a patented switch mechanism which provides a more reliable electric contact. Three handle types are available: a "C" battery powered handle, an 'A' battery powered, penlight-sized handle and 'Stubby' handle for more control via wider grip.

Ventilator with an intelligent control system

The *Newport e360 Ventilator* incorporates Newport Medical's Intelligent Control System (ICS). ICS is a combination of four features designed to improve total breath synchrony (Automatic Slope/Rise, FlexCycle (automatic Expiratory Threshold), Dual Modes VTPC and VTPS and Automatic Leak Compensation.)

'By automating two critically inter-dependent parameters, Slope Rise and Expiratory Threshold,

they can work in synergy to deliver a more sophisticated form of pressure support,' Newport Medical reports. 'The use of adaptive dual control breaths, Volume Target Pressure Control and Pressure Support, can offer the benefits of both volume and pressure control style of breath delivery to improve patient comfort and minimize imposed work. The Automatic Leak Compensation feature allows the e360 to manage leak compensation and baseline pressure management under changing patient conditions without user intervention.

'All of these sophisticated features are simple to use on the e360 ventilator,' the company points out. 'Using ICS can mean better patient-ventilator synchrony and less time at the bedside for the clinician.'

The Newport e360 is a critical care ventilator for infant, paediatric and adult patients, for invasive or non-invasive ventilatory support. 'The ventilator's compact size, comprehensive features, safety management and low cost of ownership make it ideal for today's hospital and sub-acute facilities.'

Details:
info@Ventilators.com
www.Ventilators.com

HYGIENE

Touchless hand disinfection

Hall 5 Stand J12

The Japanese hygiene products specialist SARAYA has been in business for half a century. Today, its products are still at the cutting edge. At MEDICA the firm is presenting the revised version of model UD 1000 dispenser – launched in 2005, that model has been sold 150,000 times.

The new battery-operated dispenser system has a new colour design, anthracite tray and white dispenser case and, most importantly, is equipped with touchless technology. Infrared sensors recognise an approaching hand and release the precise volume of disinfectant spray. Thus a constantly high disinfection quality is guaranteed, and the cost for the disinfectant is optimally controlled, the manufacturer explains. 'The touch necessary in manual dispenser systems is avoided, which absolutely eliminates the transmission of nosocomial germs to the dispenser case.'

Saraya's 'one-stop solutions' include the UD 1000 dispenser, customised hand and skin disinfectants, as well as the touchless soap dispenser UD 2200 which has suitable liquid soaps, and the manual soap dispenser MD 201 for foam soaps.

Details: www.saraya-europe.com

The Infector Detector

A biosensor to catch catheter infections

Team members working on their iGEM project

Urinary tract infections caused by catheterisation are a common and nasty affliction for the disabled, elderly and hospital patients. Professor Richard Kitney at the Department of Bioengineering, Imperial College London, who is one of the academic supervisors of an interesting related project at the college explained: 'Normally, in hospitals, doctors and nurses only find out that a patient has a urinary infection from their catheter when the patient's temperature rises and they become ill. By the time these symptoms are displayed, the infection has travelled up the catheter into the body, which is very serious if left untreated.'

The result of the project, involving biochemistry and bioengineering students and researchers at the college, is a biological sensor that catches infections on hospital catheters at an early stage. The concept consists of a genetically engineered device suspended in liquid that could be painted on to the end of a catheter outside the patient's body. This liquid contains a protein that seeks and latches on to a small molecule called AHL, a bacterial secretion found in these types of infections. When AHL is present and intercepted by the molecular devices, a second protein is activated, which glows green. This causes the liquid on the catheter to change colour, fluorescing green, which indicates the presence of an early-stage infection. 'Our device would mean that healthcare workers would get a clear early warning sign – in the form of a fluorescing green signal – that an infection was present on the catheter. This would allow them to perform basic disinfection, removing the bacteria from the catheter, before it could take hold in the patient,' Prof. Kitney pointed out.

The student team – consisting of 10 undergraduate students from the Departments of Life Sciences and Bioengineering – presented their project at Massachusetts Institute of Technology (MIT) in the USA this November, as Imperial's entry in the 2007 *International Genetically Engineered Machines* (iGEM) competition. Last year an Imperial College team of undergraduates scooped second place in this competition.

The iGEM competition was established in 2004 by MIT to promote student involvement in the emerging field of synthetic biology - an emerging science that combines engineering approaches with biology to use cells as manufacturing units.

James Chappell, one of the Imperial undergraduates on the team said: 'The iGEM project has been an excellent experience. It has helped me build confidence and understanding in the field of biology and given me new insights into the methodology of engineering Biology. For the first time, I have seen a project – our Infector Detector – develop from the initial brainstorming sessions to a functional synthetic machine.'

HYGIENE

SPORES SIMPLY WIPED OUT

Gama Healthcare has developed an advanced innovative wipe — *Clinell Sporicidal* — which, the company reports, is the world's first peracetic acid generating wipe specifically designed to deal with spores. The wipe was developed by a team of medical doctors and contains patent pending technology designed around the stability of the peracetic acid, the company adds.

'Clinell Sporicidal offers an easier and much safer option than the chemicals currently recommended to deal with spores such as Chlorine and Glutaraldehyde based compounds. The wipe is activated with the simple addition of water, which produces peracetic acid instantaneously to levels which are proven to kill all known germs. Peracetic acid works extremely well in dirty conditions (unlike Chlorine) and can be used directly on fresh blood spills, which will activate the wipe immediately without the need for water. The fumes produced are non-toxic, which allows for use in close proximity to patients. The breakdown products are environmentally friendly and contain no alcohol or organic solvents.

'Clinell Sporicidal is the most powerful wipe to ever be created and its development constitutes a major advancement in wipe technology and infection control. In addition, it is set to become the gold standard for dealing with spore outbreaks in hospitals and healthcare institutions across the world.'

Austrian firm expands in Germany

The international laboratory group Futurelab Holding GmbH has moved into the German laboratory market following its recent acquisition of Medizinisches Versorgungszentrum (MVZ) 'Labor Dr Tiller&Kollegen'. Futurelab has a registered base in Vienna and is one of the largest suppliers of private medical laboratory services in central and east Europe (EEC countries).

Founded two decades ago in Munich, the medical and diagnostic laboratory MVZ 'Labor Dr. Tiller & Kollegen' is one of the biggest laboratories in Bavaria. Around 250 employees analyze ca. 6,000 to 7,000 patient samples daily, received from practitioners and hospitals. In Germany it is one of the most important laboratories for special analytical procedures. Besides routine diagnostics, it also focuses on immunology, toxicology and molecular diagnostics.

Dr Friedrich-Wilhelm Tiller

Prof. Michael Havel

Futurelab reports that it plans to develop MVZ 'Labor Dr. Tiller&Kollegen' as one of its competence centres for special analytical procedures in Europe, thus creating a number of additional workplaces.

Dr Friedrich-Wilhelm Tiller MD, Medical Director of MVZ commented: 'Many years of extremely professional co-operation bonds us with Futurelab, so the integration of MVW into the Futurelab Group is a logical consequence, ensuring the continuation of our success on the international laboratory market.'

Futurelab currently employs about 2,000 people at 120 locations in Germany, Austria, Romania, Switzerland, Slovak Republic, Czech Republic, and Hungary. The company runs hospital and extramural laboratories, maintaining high-level medical laboratory diagnostics through a structurally standardised data processing network. Every day about 30,000 patient samples are run through 200,000 laboratory analysis procedures. Particularly in the area of special analysis, e.g. genetic and immunologic assays, the daily number of samples determines the quality of results, the company points out. 'Large-scale study series guarantee a better quality of results.'

In Austria, the Slovak Republic, the Czech Republic and Hungary, the laboratory group already leads the market. In Switzerland the group counts among the top three.

Professor Michael Havel, CEO of Futurelab, said: 'With the majority holding in MVZ 'Labor Dr. Tiller&Kollegen' we expect to continue driving our successful European expansion in Germany as well. Talks are already under way with a number of medical laboratories in Germany with a view to acquisition.

Incorporating all the acquisitions to date in 2007, Futurelab's consolidated annual turnover for 2007 is expected to be about €140 million.

NEW PSORIASIS RESEARCH GRANTS. APPLY NOW!

Wyeth Pharmaceuticals has launched 'Advances in Psoriasis', a new research grant programme to encourage and support ground-breaking research into a greater understanding of psoriasis and related disorders. Professor Alberto Giannetti, President of the European Academy of Dermatology and Venereology, urged: 'This is an excellent opportunity for researchers who require funding for novel projects in this area and they should apply immediately. The judging panel will be looking for new ideas based on sound scientific rationale.'

Applications from researchers based in Europe, the Middle East and Africa are invited for a total of six grants each worth €100,000. These will be awarded for studies in the inflammatory pathogenesis of psoriasis and TNF-related skin disorders. Successful applicants will be selected by an expert panel of independent international leaders in dermatology.

Ulf Wiinberg, President, Wyeth Europe, Middle East, Africa and Canada, commented: 'We are a key sponsor of World Psoriasis Day and we hope that the Advances in Psoriasis programme will eventually lead to real improvements in quality of life for patients with psoriasis around the world.'

Want to apply?

Closing date for applications: 29 February 2008.
For full details and to download an application pack, go to: www.advancesinpsoriasis.com

ENZYME THERAPY

A new scientific association promotes use in mainstream medicine

By **Anja Behringer**

Enzymes are biocatalysts that control the different metabolic processes of living organisms. These range from digestion to the copying of genetic information. As enzymes are essential for metabolism there would be no life without them. Parts of these enzymes become active in the entire organism during localised infections, which they regulate whilst at the same time reducing swelling and pain. As manifold as their effectiveness is their range of use in conventional medicine: to treat diabetes, urinary tract infections, cancerous diseases, rheumatism, joint and muscle pain, arthritis, venous disorders or bronchitis.

The German Enzyme Prize for Research Promotion

Paediatrician Professor Dieter Adam, with colleagues from Austria and Germany, founded the WGFE in January 2007, to promote research into enzyme therapy as well as inform a specialist medical audience and the general public and explain the scientific reasoning behind enzyme therapy. Research projects, lectures and conferences with international study results are being promoted. Additionally, from 2008 the WGFE will award an annual 'German Enzyme Prize' (value: €10,000) for the promotion and implementation of enzyme therapy.

PHOTOGRAPH: WGFE

WGFE members: Upper row from left: Dr Winfried Miller, Prof. Gerd Grevers, Dr Hugo Lanz, Dr Egid Strehl and Prof. Kurt Naber. Front row from left: Prof. Stephan Martin, Prof. August Heidland, Prof. Dieter Adam, Dr Werner Kullich, Prof. Gerd Birkenmeier

A therapy for all infectious diseases

Current research results confirm the effectiveness of enzymes (which are low in unwanted side effects) generally for all diseases where infections are present – either as stand-alone enzyme therapy or in addition to standard therapy. There is comprehensive experience of the use of enzymes in the treatment of cancer, in addition to radiotherapy and chemotherapy. In many cases special enzyme combinations can positively influence quality of life along with survival times – free of complaints – for tumour patients.

There is possibly also a therapeutic potential for enzyme therapy in the treatment of the ever-increasing cases of Type 2 Diabetes. A type of 'pre-diabetes' of the Type 2 diabetes is increasingly diagnosed in children and adolescents as 4-8% of schoolchildren are already obese. According to the latest findings concomitant enzyme therapy could already help these patients in the preliminary phase of the disease.

It has also been seen that enzyme therapy – in addition to standard therapy with antibiotics – achieves a faster recovery and shortens the healing process in urinary tract infections, for example uncomplicated cases of cystitis. The anti-inflammatory and decongestant effects of special enzyme combinations are also used concomitantly for the treatment of chronic rheumatic diseases.

For these, as well as other disease patterns, enzymes hold an increasing importance for use in concomitant therapy. However, despite promising, long standing clinical experience, research is still at an early stage of development in many areas. At the first scientific symposium in Hamburg Professor Adam, Chairman of the scientific advisory board of the WGFE explained: 'We want to promote research into this forward-looking field, to encourage new ways of thinking along with exchanging different types of approaches and to make the results available to the general public.'

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Our other publications

Meet our team at MEDICA!

Hall 7 Booth E15

And collect your FREE copies of our medical and healthcare publications

EH@MEDICA – Here we are again, at the greatest medical show on earth

As the official show publication, *EH@MEDICA* has been produced in three separate issues by our flagship magazine *EUROPEAN HOSPITAL* (EH). Each issue is packed with technological and medical innovations as well as news of medical and healthcare advances.

- **On *Wednesday* the issue focuses on ultrasound**
- **In the *Thursday* issue we present progress in hospital IT systems**
- ***Friday's* focus is on news surgical procedures and equipment.**

The *European Hospital* team is at the fair (hall 7, booth E15), all looking forward to meeting you, to hand out free issues if you missed any, and to answer your queries regarding editorials or advertising. Our reporters are also circulating around *MEDICA* to catch the most interesting highlights ofthe fair and report about these. Their on-the-spot reports will appear, for the first time, on our homepage **www.european-hospital.com** in a special MEDICA section. So, even if you must miss the fair, you can access daily news to keep up-to-date.

In addition, because the world-wide-web and e-mail communications have increased in importance, *European Hospital* is launching a new, online newsletter, so you can receive selected medical news directly in your own e-address! (For subscription details, please visit our website!)

Along with our main medical and healthcare publications and related activities, *European Hospital* is again organising the ***Hospital Manager Symposium 2008***, in tandem with the ***European Congress of Radiology*** (ECR). In 2007, the Symposium attracted over 300 radiologists to hear talks and lectures given by our selected international experts in Finance, IT and Management.

Also, at this year's ECR, we launched our latest publication: The ***RADBOOK***, the first guide for radiology equipment in the English language. EH will continue the successful publication of this valuable source of information for those who must make decisions on purchasing new systems for their hospitals and clinics.

We have also expanded our pan-European readership to Russia, by publishing, within our prestigious journal *European Hospital*, several special issues, as well as additional pages in the Russian language – a great success. In addition, we will publish, for the first time, a special issue for the most important Russian medical fair – *Zdravo* (Zdravookhraneniye 2007).

EH special publications in 2007
Special supplements:
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Plus: *EH@ECR, EH@ ESC, EH@Moscow Medical Fair*
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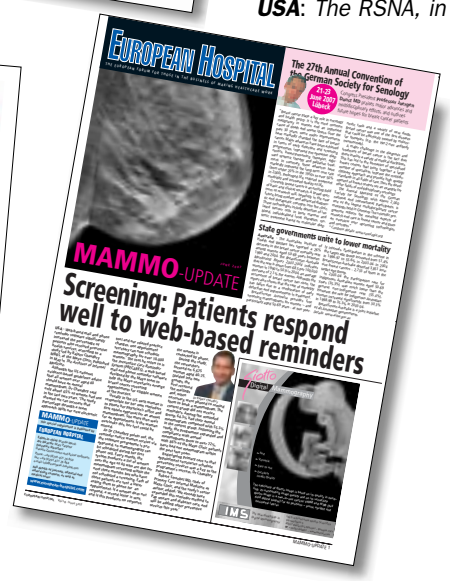

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