

Medical Solutions

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Siemens Demonstrates World's First System Capable of Simultaneous Imaging of the Brain by MRI and PET

Prototype MR-PET Technology Expected to Provide New Insights into Brain Disorders, and Neurological Stem Cell Therapy

In what could prove to be a turning point in diagnosis and therapy for millions of patients suffering from neurological diseases, stroke and cancer, Siemens Medical Solutions showed results of a prototype for the world's first fully-functioning imaging system capable of performing simultaneously Magnetic Resonance Imaging (MRI) and Positron Emission Tomography (PET). The first in-vivo human brain simultaneous MR-PET images were acquired in the Siemens facilities in USA. Testing of this new prototype MR-PET will start before the end of 2007.

MR-PET presents a tremendous leap forward in imaging capabilities. Siemens is the first company to have realized an MR-PET prototype, which brings the exceptional soft tissue contrast and high specificity of MR together with PET's excellent sensitivity in assessing physiological and metabolic state. The first MR-PET images were acquired with support of Dr. David Townsend and Dr. Claude Nahmias, both from the University of Tennessee, USA, and Dr. Heinz-Peter Schlemmer, Dr. Claus Claussen and Dr. Bernd Pichler, all from the University Tübingen in Germany. MR-PET has the potential to become the imaging modality of choice for neurological studies, certain forms of cancer, stroke, and the emerging study of stem cell therapy.

Unraveling the Mysteries of the Brain

Researchers expect that MR-PET will open new doors in understanding the pathologies and progression of various neurological disorders like Alzheimer's, Parkinson's, epilepsy, depression and schizophrenia. For example, PET can currently differentiate mild cognitive impairment from early-stage Alzheimer's, but cannot determine reduced brain volume caused by atrophy. By combining MR and PET, clinicians may be able to make a more sound determination of both cognitive impairment and atrophy.

Furthermore, combining MR-PET and the new emerging neurological biomarkers, has the great potential to strengthen the assessment of the condition.

Similarly, in stroke patients, the technology holds the promise of allowing physicians to study which brain tissues might be salvageable after a stroke. In other rehabilitation settings, such as for patients with traumatic brain injury, the Siemens MR-PET approach would improve care and workflow. In that case, patients would be only scanned once instead of having to go to two different locations and get two subsequent scans. "The ability to determine in great detail the loss of neurological function puts us on the path to better care," said Maerzendorfer.

Advancing Stem Cell Research

MR-PET holds great promises for emerging therapeutic research as well, as in the case of stem cell therapy. Because the Siemens MR-PET approach allows simultaneous measurement of anatomy, functionality and biochemistry of the body's tissues and cells, it may enable researchers to correlate MR and PET data in a way not previously possible before. This correlative approach will enable to get a much deeper understanding of track stem cell migration to damaged parts of the brain, determination over a prolonged period whether or not cells are still alive, and identification of how stem cells have been integrated into the body's neurological network.

Hybrid technology and MR-PET

Recent hybrid technologies such as PET•CT and SPECT•CT incorporate both imaging modalities into one machine, but the two scans take place sequentially. Siemens'

prototype MR-PET acquires MR and PET scans at the same time for the same imaging volume and therefore produces a higher degree of registration.

Siemens' MR-PET prototype is dedicated to the brain and the PET scanner uses a next-generation Avalanche Photodiode Detector (APD) technology. APD technology renders the PET scanner impervious to magnetic fields while providing excellent PET results. In order to maximize the research and clinical impact, Siemens's APD-based MR-PET prototype has been developed for the Magnetom Trio with Tim - enabling to benefit from 3T field strength advantages.

"At Siemens Medical Solutions, we have identified a number of 'mega trends,' and one of these is the merging of technologies to deliver solutions across the healthcare continuum," said Walter Maerzendorfer, president of Siemens Medical Solutions Division of Magnetic Resonance. "Fusing existing technologies, in this case, goes far beyond the simple fusion of images."

Molecular Medicine will Transform the Delivery of Healthcare

"From Biomarker development to imaging equipment, to clinical applications, to information technology solution, Siemens is well positioned to continue to advance the molecular imaging of biological processes" said Prof. Erich Reinhardt, CEO and President of Siemens Medical Solutions and added: "Ultimately, these advances will help us to achieve our goal: increase the quality of care while at the same time reduce its cost".

A picture accompanies this press release and may be found on the Internet under:

<http://www.siemens.com/med-picture/MR-PET>

Siemens Medical Solutions of Siemens AG (NYSE: SI) is one of the world's largest suppliers to the healthcare industry. The company is known for bringing together innovative medical technologies, healthcare information systems, management consulting, and support services, to help customers achieve tangible, sustainable, clinical and financial outcomes. Recent acquisitions in the area of in-vitro diagnostics – such as Diagnostic Products Corporation and Bayer Diagnostics – mark a significant milestone for Siemens as it becomes the first full service diagnostics company. Employing more than 41,000 people worldwide and operating in over 130 countries, Siemens Medical Solutions reported sales

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of 8.23 billion EUR, orders of 9.33 billion EUR and group profit of 1.06 billion EUR for fiscal 2006 (Sept. 30), according to U.S. GAAP. Further information can be found by visiting www.siemens.com/medical