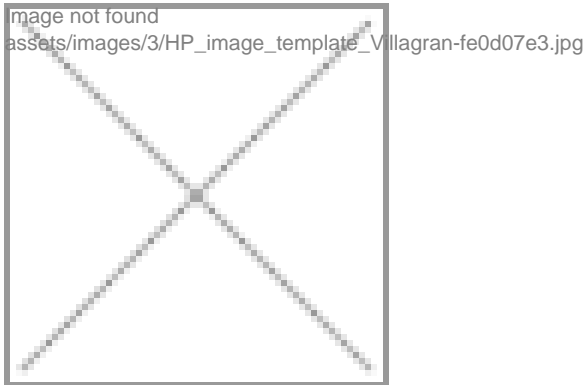


Quantitative multi-modality cardiac imaging in diagnosis and therapy monitoring

HOST INSTITUTION. Department of nuclear medicine, Klinikum rechts der Isar, Technical University of Munich, Mona Mustafa and Stephan G. Nekolla

The Technical University of Munich is one of Europe's top universities. It is committed to excellence in research and teaching, interdisciplinary education and the active promotion of promising young scientists. The university also forges strong links with companies and scientific institutions across the world. TUM's Medical School is a center of excellence with 33 individual departments and 4,500 employees from more than 60 different nationalities. The hospital's researchers and scientists are closely networked with their international colleagues and generate 200 doctoral degrees and 40 post-doctoral degrees per year. The department of nuclear medicine is a world renowned institution selecting and integrating a wide range of information from multimodal and multiparametric imaging procedures in order to create workflows which are both time and cost efficient in the diagnosis and quantitative evaluation of treatment in cardiology, neurology and oncology. The department uses the spectrum from conventional SPECT to PET/CT and PET/MRI with well validated as well as innovative tracers, from morphological imaging to multiparametric MRI including C-13 hyperpolarization in hybrid devices. Both in the preclinical and the clinical imaging domain, optimal workflows are evaluated, validated and implemented for routine use. This requires the interdisciplinary understanding of the underlying physiology, physics, and information technology which is achieved by close interactions with partners within TUM as well as national and international cooperations.



DESCRIPTION OF THE PROJECT (ESR15 - Alberto Gastón Villagrán Asiares)

Since 2011, over 120 cardiac PET/MR primary and follow-up examinations of patients have been performed at TUM-MED together with conventional imaging methods, such as SPECT. In addition, preclinical data of myocardial infarction are available together with histological reference. The ESR will validate both animal and patient data for the tissue characterization algorithms. He will integrate PET and MRI data for the detection of disease and response to therapy in myocardial ischemia and viability. A database of the quantitative results will be composed and used prospectively to demonstrate the clinical value of non-redundant, prognostic parameters for ischemia and viability imaging in the newly acquired patient examinations. This will help define recommendation for efficient workflows in cardiac PET/MRI. In order to improve the efficacy of the software development, the ESR is exposed to the image generation methods, the demands of clinical environment and the processes of commercial development. Thus, we aim to create a "best of worlds" approach: academic creativity, clinical understanding and the robustness of industrial development. Within the course of this project, secondments to a clinical and industrial

research organization at the university of Leuven (Belgium) and Siemens (Erlangen, Germany) are planned.