

# Simultaneous PET-MRI to enhance quantification and change-detection in tumour assessment

**HOST INSTITUTION.** King's College London (KCL)

King's College London is one of the top 25 universities in the world (2016/17 QS World University Rankings) and among the oldest in England. King's has more than 27,600 students (of whom 10,500 are graduate students) from 150 countries, and 6,800 staff. The Faculty of Life Sciences & Medicine is one of the largest and most successful centres for research and education in the UK with expertise in basic, translational and clinical research. The School of Biomedical Engineering & Imaging Sciences (BMEIS) is dedicated to the development, clinical translation and clinical application of medical imaging and computational modelling technologies. Occupying facilities on the St Thomas' Hospital campus opposite Big Ben, BMEIS consists of five academic departments: Cardiovascular Imaging, Cancer Imaging, Imaging Chemistry & Biology, Biomedical Engineering and Perinatal Imaging and Health. Staff and students comprise physicists, chemists, biologists, engineers, computer scientists, mathematicians and clinicians working together in a highly cross-disciplinary fashion, to answer questions in biology, physiology and pathophysiology, to develop new imaging techniques, contrast agents and computational models, to perform large-scale clinical trials and to offer the resulting new techniques for clinical application

## **DESCRIPTION OF THE ADVERTISED POSITION (ESR 7)**

The standardized uptake value (SUV), and related methods, are widely used for quantification of tumour radiotracer uptake in Positron Emission Tomography (PET) imaging. They can be used to determine how a tumour is responding to therapy so that treatment can then be adapted accordingly. Improved quantification of therapy response is expected to lead to more appropriate disease management and to achieve this we will develop and evaluate methods that use information derived from simultaneously acquired MR images, from a hybrid PET-MR scanner, in addition to the PET images themselves. The aim is to identify and quantify changes in tumour uptake in longitudinal PET studies, accounting not only for changes in tumour metabolism but also for potential inter-scan tumour growth or regression that may have occurred. This position is a 3 yr full time position as an early stage researcher (ESR) under the auspices of the HYBRID programme. The successful candidate will undertake a PhD and be part of an interdisciplinary research group investigating the feasibility, technical challenges and potential clinical value of multi-parametric imaging.